2024/01

EKF

ENERGY
KNOWLEDGE
FUTURE

ELECTRICAL EQUIPMENT CATALOGUE

ELECTRICAL EQUIPMENT CATALOGUE

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EKF

EKF

EKF IS A LEADING MANUFACTURER & SUPPLIER OF ELECTRICAL EQUIPMENT AND DERIVED SOLUTIONS

IN-HOUSE R&D

WIDE RANGE OF PRODUCTS FOR MOST ELECTRICAL APPLICATIONS

22 years of expertise in electrical equipment

over **2 000 employees** worldwide

our company **operates in 20 countries** across Eastern Europe, Middle East, Africa and Asia

more than **5 000 projects** annually all over the world implemented with over **1 000 engineering consultants**

over **19 000 SKUs** in catalogue

35 000 m² of own manufacturing facilities in Russia and Eastern Europe

over **350 distributors** all over the world

Global Team
with Local Presence
in Eastern Europe,
Asia and Middle East

EKFGROUP.COM

R&D AND MANUFACTURING

Extensive R&D covering devices, equipment, software and solutions

35 000 m^2 of **own manufacturing facilities** in Russia and Eastern Europe, complemented by OEM synergies with Asian factories

QUALITY AND RELIABILITY

Products designed and tested by an **in-house R&D and electrical test lab** for the highest level of quality, reliability and safety. ISO 9001:2015 compliant world-class manufacturing facilities with **comprehensive quality management system**

Products certified by DEKRA, TÜV and other globally accredited certification companies

TRUSTED ELECTRICAL SOLUTIONS

Over **5 000 projects implemented** every year

Over **1 000 engineering consultants** trust our equipment for their energy efficient designs in Residential, Commercial, and Industrial applications

LOCAL AND GLOBAL CUSTOMERS

Industry & Construction

Over **3 000 facilities** use EKF electrical equipment and solutions

Residential & Commercial

Over 5 000 facilities use EKF electrical equipment and solutions

RELIABLE PARTNER

We manufacture **reliable top-quality electrical equipment with warranty up to 10 years**

We **certify** our **equipment** with the world's largest expert organizations

We continuously engineer and introduce **new products, solutions and innovations** with in-house R&D

We are **a great deal**

We keep in touch to **solve any issue efficiently**

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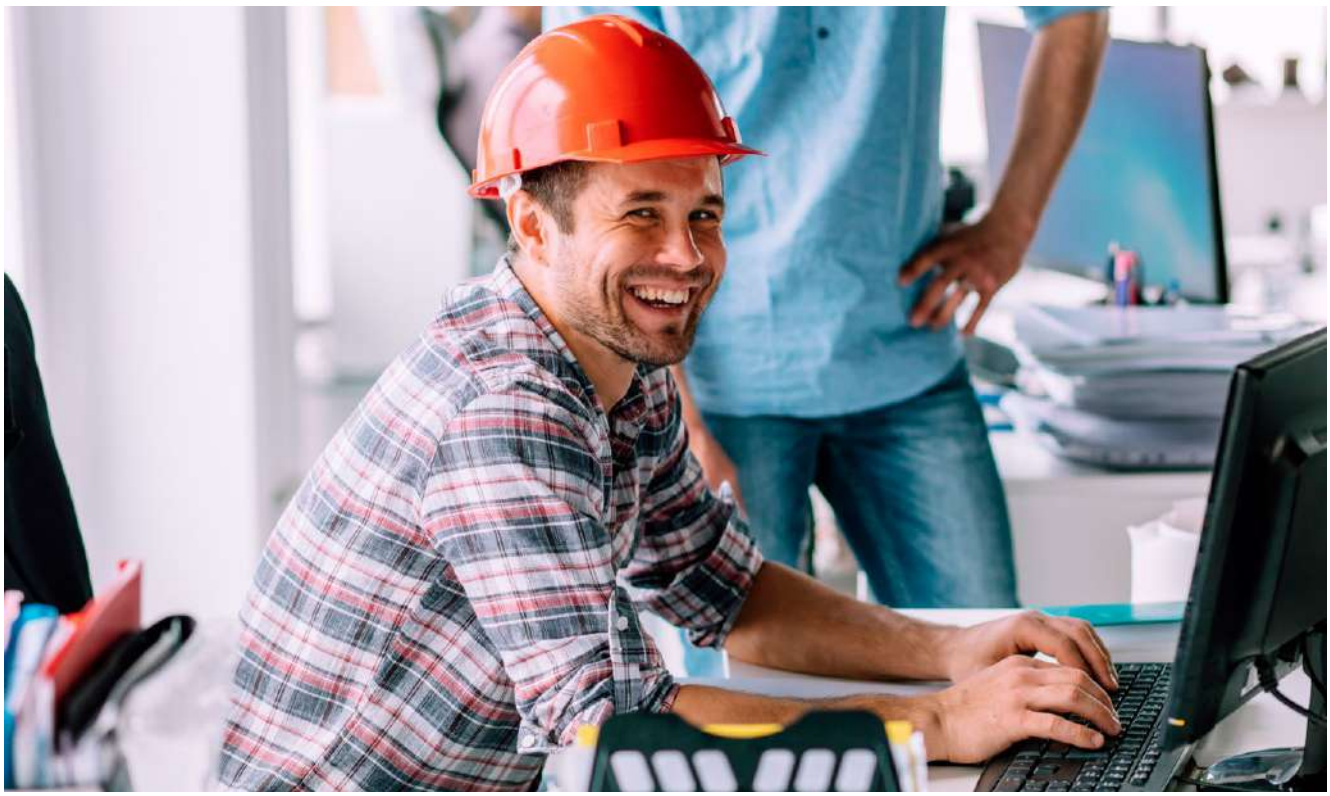
DIN Rail Modular Equipment



PROXIMA modular equipment offers a complete solution for any household, residential development, and industrial application. A comprehensive product range, advanced design, world-class quality and reliability standards, together with an extended EKF warranty make PROXIMA an ideal choice for meeting and exceeding customers' expectations across the broadest range of applications

- Clear and visible product identification
- Advanced design
- Uniform style with patented design
- Quick and easy to install
- High performance
- For household and industrial applications
- Extended product range
- Improved reliability
- EKF warranty up to 7 years
- RoHS compliant

Molded front panel protects users from sparks during arc extinguishing

Two-position DIN rail clamp for easy installation

AL/Cu connection options for both copper and aluminum wires

Available breaking capacity: from 4500 A to 15 000 A

Contact position indicator for visual confirmation of true contact position

All important information printed on the front panel

Reinforced housing with additional rivets prevents the device from blowing out in the event of short circuit

Convenient operating handle ensures reliable operation

Wide variety of accessories extending device functions

Finger safe IP20 terminals

Strong tightening screws: higher tightening torque up to 3 N·m

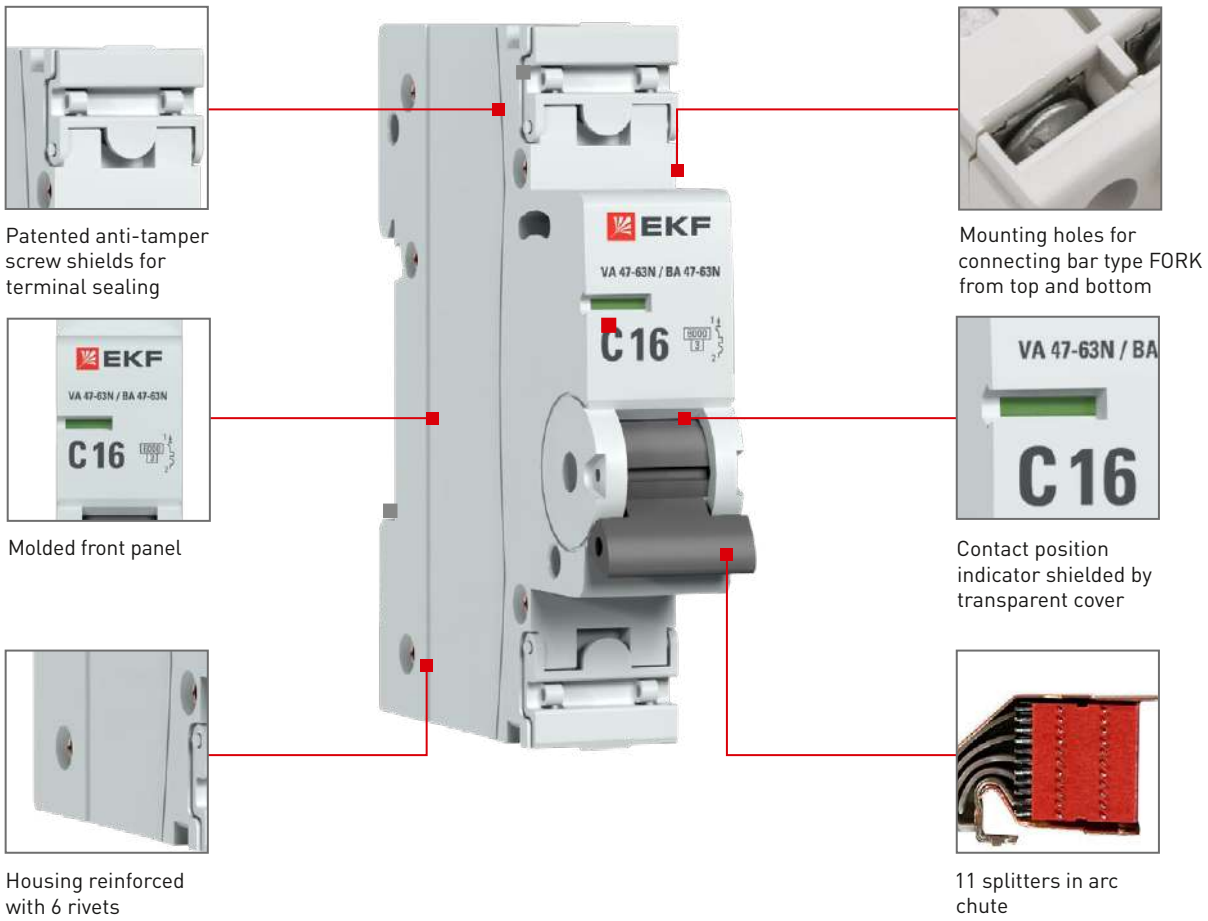
PROXIMA Miniature Circuit Breakers

Series	VA 47-63 4,5kA	VA 47-63 6kA	VA 47-63N	VA 47-63 1P+N	VA47-100	VA47-125
Contact position indicator	Yes	Yes	Yes	Yes	Yes	Yes
Standard	IEC 60898-1	IEC 60898-1	IEC 60898-1	IEC 60898-1	IEC 60898-1	IEC 60947-2
Rated frequency [Fn, Hz]	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60
Rated breaking capacity [Icn, A]	4500	6000	6000 (4500)	6000/10 000	10 000	15 000
Poles	1P, 2P, 3P, 4P	1P, 2P, 3P, (4P)	1P, 2P, 3P, 4P	1P+N	1P, 2P, 3P, 4P	1P, 2P, 3P, 4P
Rated operation voltage [Ue, V]	230 / 400	230 / 400	230 / 400 240 / 415	230 / 240	230 / 400 240 / 415	230 / 400
Rated Current [In, A]	0,5; 1; 2; 2,5; 3; 4; 6; 8; 10; 13; 16; 20; 25; 32; 40; 50; 63	6; 10; 16; 20; 25; 32; 40; 50; 63	1; 2; 3; 4; 6; 10; 13; 16; 20; 25; 32; 40; 50; 63	6, 10, 16, 20, 25, 32, 40	10; 26; 20; 25; 32; 35; 40; 50; 63; 80; 100; 125	(10; 16; 20; 25; 32; 40; 50; 63) 80; 100; 125
Tripping curves [type]	B, C, D	B, C, D	B, C, D	C, (B)	C, D	C, D
Rated impulse withstand voltage [Uimp, kV]	4	4	4	4	4	4
Energy limit class	3	3	3	3	3	3
Degree of protection	IP20	IP20	IP20	IP20	IP20	IP20
Mechanical durability [cycles]	20 000	20 000	20 000	20 000	20 000	20 000
Electrical durability [cycles]	10 000	10 000	10 000	10 000	8000	8000
Operation ambient temperature [°C]	-25 to +50	-25 to +50	-40 to +55	-25 to +55	-25 to +50	-25 to +50
Cross-section of connected wires [mm²]	1-25	1-25	1-25	1-10	1-35	1-50
Tightening torque [N·m]	2,5	2,5	3	1,2	2,5	2,5
Line incoming type	Top or bottom	Top or bottom	Top or bottom	Top or bottom	Top or bottom	Top or bottom

Miniature circuit breakers VA 47-63N PROXIMA EKF

Miniature circuit breakers VA 47-63N 6kA PROXIMA EKF are electromechanical switching devices combining two main functions: short circuit protection and overload protection. Miniature circuit breakers (MCBs) are designed for all housing and residential applications and comply with IEC 60898-1. The MCBs of this series feature advanced design: sealable plastic screw shields that cover screw terminals and prevent unauthorized access to wires; reinforced housing with extra rivets to maximize its stiffness; and the front panel features an indicator of physical contact position. The two-position clamp ensures easy MCB mounting onto a DIN rail.

Standard: IEC/EN 60898-1



Patented anti-tamper screw shields for terminal sealing

Mounting holes for connecting bar type FORK from top and bottom

Molded front panel

Contact position indicator shielded by transparent cover

Housing reinforced with 6 rivets

11 splitters in arc chute

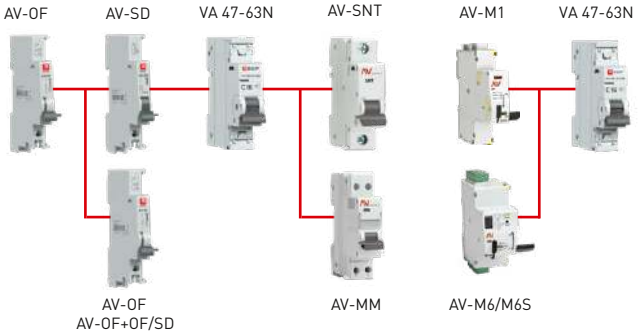
APPLICATION

MCBs VA 47-63N PROXIMA EKF are used in commercial, public, industrial and residential buildings:

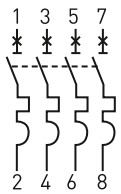
- carrying current under normal conditions;
- infrequent manual switching of individual circuit branches;
- protection against overload and short-circuit currents;
- final component of terminal power distribution system.

TECHNICAL DATA

Connection of accessories

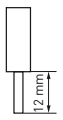
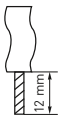
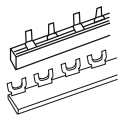


Wiring diagrams

Number of poles			
1P	2P	3P	4P
			

Installation and operation

1. Connection

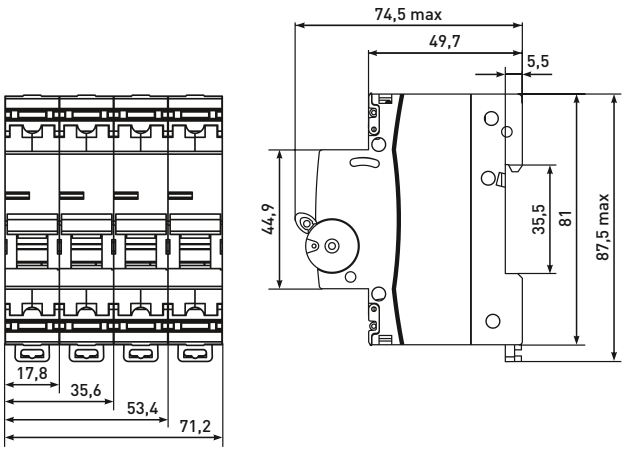
Conductor			Comb busbar
solid	stranded	ferrule	pin, fork
			

2. Accessories:

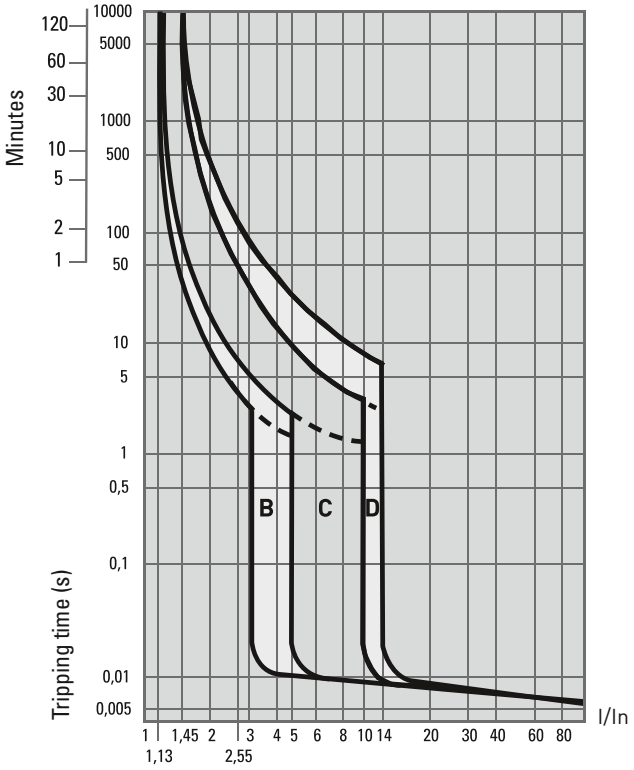
- Auxiliary contact AV-OF EKF (installed on the left)
- Alarm contact AV-SD EKF (installed on the left)
- Combined auxiliary and alarm contact AV-OF+OF/SD (installed on the left)
- Overvoltage and undervoltage release AV-MM AVERES EKF (installed on the right)
- Shunt release AV-SNT EKF (installed on the right)
- Auto recloser AV-M1, AV-M6/M6S AVERES EKF (installed on the left)
- Copper and aluminium wire connections are supported.

Parameters	Values
Rated voltage Ue, V	230 / 400; 240 / 415
Frequency fn, Hz	50 / 60
Number of poles	1, 2, 3, 4
Rated current In, A	0,5 - 63
Rated impulse withstand voltage Uimp, kV	4
Tripping curve	B, C, D
Degree of protection	IP20
Rated short-circuit breaking capacity Icn, A	6000 (4500)
Energy limiting class	3
Mechanical endurance, O-C cycles	20 000
Electrical endurance, O-C cycles	10 000
Operating temperature, °C	-40 to +55
Cross-section of connected wires, mm2	1-25
Max. tightening torque, N•m	3

Overall and installation dimensions (mm)

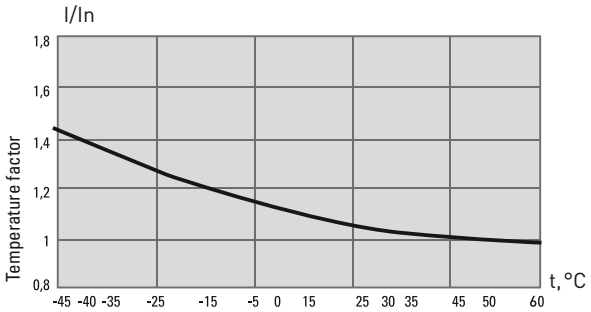


Tripping curves



B – electromagnetic protection trips at (3-5) × In.
C – electromagnetic protection trips at (5-10) × In.
D – electromagnetic protection trips at (10-14) × In.

Temperature derating



Delivery scope

Miniature circuit breakers VA 47-63N PROXIMA EKF are supplied in a group package.

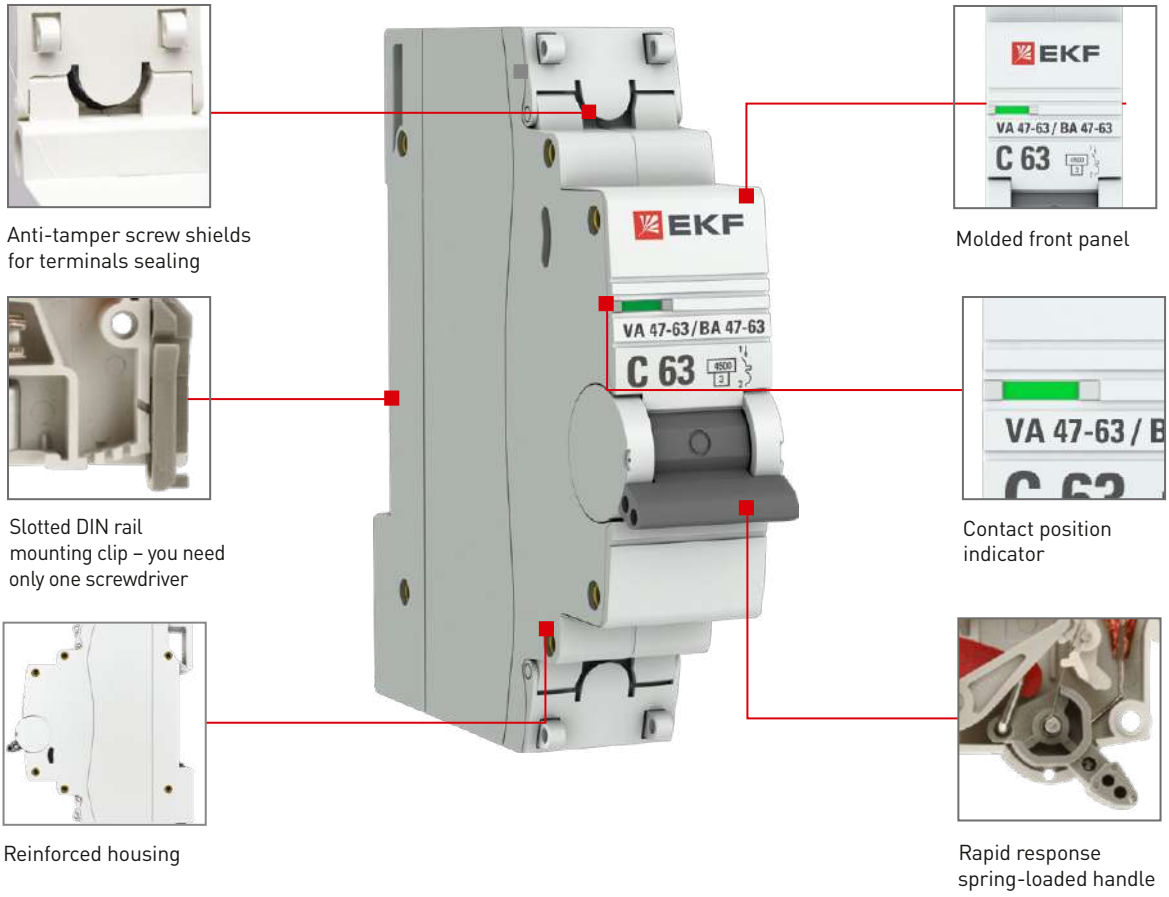
For all available documentation, scan the QR-code on the insert or on the inside of the package.

Picture	Rated current, A	B	C	D
			1P	
	1	M636101B	M636101C	M636101D
	2	M636102B	M636102C	M636102D
	3	M636103B	M636103C	M636103D
	4	M636104B	M636104C	M636104D
	6	M636106B	M636106C	M636106D
	8	M636108B	M636108C	M636108D
	10	M636110B	M636110C	M636110D
	13	M636113B	M636113C	M636113D
	16	M636116B	M636116C	M636116D
	20	M636120B	M636120C	M636120D
	25	M636125B	M636125C	M636125D
	32	M636132B	M636132C	M636132D
	40	M636140B	M636140C	M636140D
	50	M636150B	M636150C	M636150D
	63	M636163B	M636163C	M636163D
			2P	
	1	M636201B	M636201C	M636201D
	2	M636202B	M636202C	M636202D
	3	M636203B	M636203C	M636203D
	4	M636204B	M636204C	M636204D
	6	M636206B	M636206C	M636206D
	8	M636208B	M636208C	M636208D
	10	M636210B	M636210C	M636210D
	13	M636213B	M636213C	M636213D
	16	M636216B	M636216C	M636216D
	20	M636220B	M636220C	M636220D
	25	M636225B	M636225C	M636225D
	32	M636232B	M636232C	M636232D
	40	M636240B	M636240C	M636240D
	50	M636250B	M636250C	M636250D
	63	M636263B	M636263C	M636263D
			3P	
	1	M636301B	M636301C	M636301D
	2	M636302B	M636302C	M636302D
	3	M636303B	M636303C	M636303D
	4	M636304B	M636304C	M636304D
	6	M636306B	M636306C	M636306D
	8	M636308B	M636308C	M636308D
	10	M636310B	M636310C	M636310D
	13	M636313B	M636313C	M636313D
	16	M636316B	M636316C	M636316D
	20	M636320B	M636320C	M636320D
	25	M636325B	M636325C	M636325D
	32	M636332B	M636332C	M636332D
	40	M636340B	M636340C	M636340D
	50	M636350B	M636350C	M636350D
	63	M636363B	M636363C	M636363D
			4P	
	1	M636401B	M636401C	M636401D
	2	M636402B	M636402C	M636402D
	3	M636403B	M636403C	M636403D
	4	M636404B	M636404C	M636404D
	6	M636406B	M636406C	M636406D
	8	M636408B	M636408C	M636408D
	10	M636410B	M636410C	M636410D
	13	M636413B	M636413C	M636413D
	16	M636416B	M636416C	M636416D
	20	M636420B	M636420C	M636420D
	25	M636425B	M636425C	M636425D
	32	M636432B	M636432C	M636432D
	40	M636440B	M636440C	M636440D
	50	M636450B	M636450C	M636450D
	63	M636463B	M636463C	M636463D

Miniature circuit breakers VA 47-63 PROXIMA EKF

Miniature circuit breakers VA 47-63 PROXIMA EKF are electromechanical switching devices with one-, two-, three-, and four- pole options available, with breaking capacity 4500 A or 6000 A, complying with IEC 60898-1. The miniature circuit breaker (MCB) has plastic screw shields that cover screw terminals and thus prevent unauthorized access to wires. The MCB is equipped with a convenient operating handle to ensure reliable operation. The front panel features an indicator of physical contact position. The two-position clamp ensures easy DIN rail mounting of the circuit breaker.

Standard: IEC/EN 60898-1



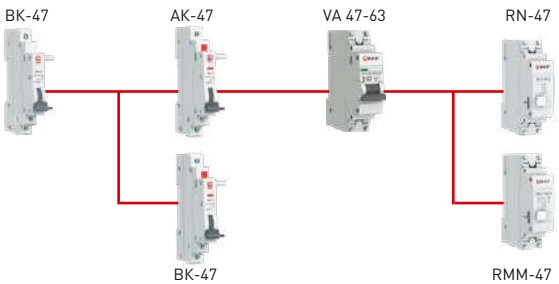
APPLICATION

MCBs are used in commercial, public, industrial and residential buildings:

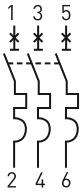
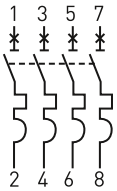
- carrying current under normal conditions;
- infrequent manual switching of individual circuit branches;
- protection against overload and short-circuit currents;
- final component of terminal power distribution system.

TECHNICAL DATA

Connection of accessories

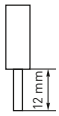
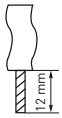
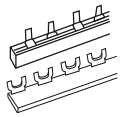


Wiring diagrams

Number of poles			
1P	2P	3P	4P
			

Installation and operation

1. Connection

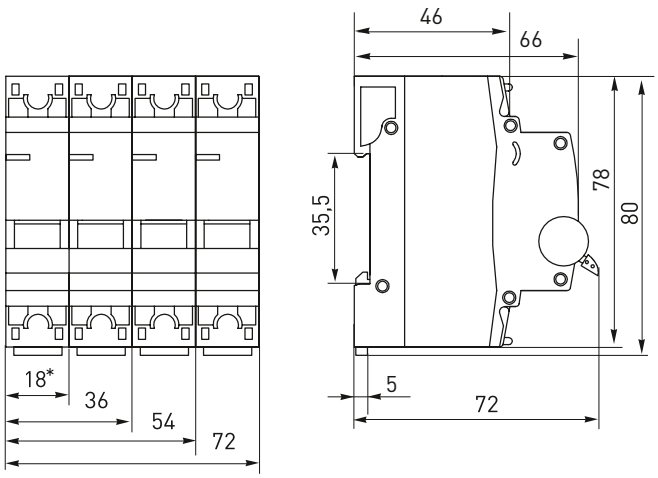
Conductor			Comb busbar
solid	stranded	ferrule	pin, fork
			

2. Accessories:

- Alarm contact AK-47 PROXIMA EKF (installed on the left)
- Auxiliary contact BK-47 PROXIMA EKF (installed on the left)
- Overvoltage and undervoltage release RMM-47 PROXIMA EKF (installed on the right)
- Shunt release RN-47 PROXIMA EKF (installed on the right)
- Copper and aluminum wire connections are supported.

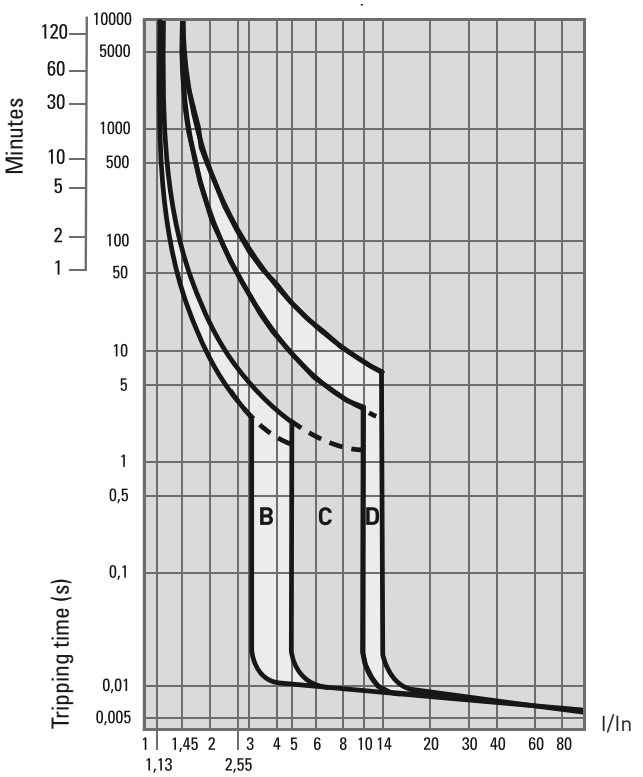
Parameters	Values	
	VA 47-63 4,5 kA	VA 47-63 6kA
Rated operating voltage Ue, V	230 / 400	
Frequency, Hz	50 / 60	
Number of poles	1; 2; 3; 4	1; 2; 3; (4)
Rated current In, A	0,5–63	6–63
Rated impulse withstand voltage Uimp, kV	4	
Tripping curve	B, C, D	
Degree of protection	IP20	
Rated short-circuit breaking capacity Icn, A	4500	6000
Energy limiting class	3	
Mechanical endurance, O-C cycles	20 000	
Electrical endurance, O-C cycles	10 000	
Operating temperature, °C	- 25 to +50	
Cross-section of connected wires, mm²	1–25	
Max. tightening torque, N·m	2,5	

Overall and installation dimensions (mm)



* width 1P (W) = n x 18$^{-0,25}$ mm

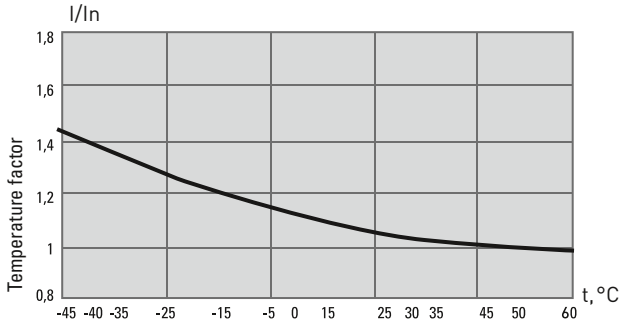
Tripping curves



Tripping curve represents the time/current behavior of a circuit breaker.

B – electromagnetic protection trips at (3-5) × In.
C – electromagnetic protection trips at (5-10) × In.
D – electromagnetic protection trips at (10-14) × In.

Temperature derating



Delivery scope

Miniature circuit breakers VA 47-63 PROXIMA EKF are supplied in a group package.

For all available documentation, scan the QR-code on the insert or on the inside of the package.

VA 47-63 4,5 kA PROXIMA EKF

Picture	Rated current, A	Tripping curve		
		B	C	D
			1P	
	0,5	–	mcb4763-1-0.5C-pro	–
	0,8	–	mcb4763-1-0.8C-pro	–
	1	mcb4763-1-01B-pro	mcb4763-1-01C-pro	mcb4763-1-01D-pro
	1,6	–	mcb4763-1-1.6C-pro	–
	2	mcb4763-1-02B-pro	mcb4763-1-02C-pro	mcb4763-1-02D-pro
	2,5	–	mcb4763-1-2.5C-pro	–
	3	mcb4763-1-03B-pro	mcb4763-1-03C-pro	mcb4763-1-03D-pro
	4	mcb4763-1-04B-pro	mcb4763-1-04C-pro	mcb4763-1-04D-pro
	5	mcb4763-1-05B-pro	mcb4763-1-05C-pro	mcb4763-1-05D-pro
	6	mcb4763-1-06B-pro	mcb4763-1-06C-pro	mcb4763-1-06D-pro
	8	mcb4763-1-08B-pro	mcb4763-1-08C-pro	mcb4763-1-08D-pro
	10	mcb4763-1-10B-pro	mcb4763-1-10C-pro	mcb4763-1-10D-pro
	13	–	mcb4763-1-13C-pro	mcb4763-1-13D-pro
	16	mcb4763-1-16B-pro	mcb4763-1-16C-pro	mcb4763-1-16D-pro
	20	mcb4763-1-20B-pro	mcb4763-1-20C-pro	mcb4763-1-20D-pro
	25	mcb4763-1-25B-pro	mcb4763-1-25C-pro	mcb4763-1-25D-pro
	32	mcb4763-1-32B-pro	mcb4763-1-32C-pro	mcb4763-1-32D-pro
	40	mcb4763-1-40B-pro	mcb4763-1-40C-pro	mcb4763-1-40D-pro
	50	mcb4763-1-50B-pro	mcb4763-1-50C-pro	mcb4763-1-50D-pro
	63	mcb4763-1-63B-pro	mcb4763-1-63C-pro	mcb4763-1-63D-pro
			2P	
	1	–	mcb4763-2-01C-pro	mcb4763-2-01D-pro
	1,6	–	mcb4763-2-1.6C-pro	–
	2	–	mcb4763-2-02C-pro	mcb4763-2-02D-pro
	2,5	–	mcb4763-2-2.5C-pro	mcb4763-2-2.5D-pro
	3	–	mcb4763-2-03C-pro	mcb4763-2-03D-pro
	4	–	mcb4763-2-04C-pro	mcb4763-2-04D-pro
	5	–	mcb4763-2-05C-pro	mcb4763-2-05D-pro
	6	mcb4763-2-06B-pro	mcb4763-2-06C-pro	mcb4763-2-06D-pro
	8	–	mcb4763-2-08C-pro	mcb4763-2-08D-pro
	10	mcb4763-2-10B-pro	mcb4763-2-10C-pro	mcb4763-2-10D-pro
	13	–	mcb4763-2-13C-pro	mcb4763-2-13D-pro
	16	mcb4763-2-16B-pro	mcb4763-2-16C-pro	mcb4763-2-16D-pro
	20	mcb4763-2-20B-pro	mcb4763-2-20C-pro	mcb4763-2-20D-pro
	25	mcb4763-2-25B-pro	mcb4763-2-25C-pro	mcb4763-2-25D-pro
	32	mcb4763-2-32B-pro	mcb4763-2-32C-pro	mcb4763-2-32D-pro
	40	mcb4763-2-40B-pro	mcb4763-2-40C-pro	mcb4763-2-40D-pro
	50	mcb4763-2-50B-pro	mcb4763-2-50C-pro	mcb4763-2-50D-pro
	63	mcb4763-2-63B-pro	mcb4763-2-63C-pro	mcb4763-2-63D-pro
			3P	
	0,5	–	mcb4763-3-0.5C-pro	–
	1	mcb4763-3-01B-pro	mcb4763-3-01C-pro	mcb4763-3-01D-pro
	1,6	–	mcb4763-3-1.6C-pro	mcb4763-3-1.6D-pro
	2	mcb4763-3-02B-pro	mcb4763-3-02C-pro	mcb4763-3-02D-pro
	2,5	–	mcb4763-3-2.5C-pro	mcb4763-3-2.5D-pro
	3	mcb4763-3-03B-pro	mcb4763-3-03C-pro	mcb4763-3-03D-pro
	3,15	–	–	mcb4763-3-3.15D-pro
	4	mcb4763-3-04B-pro	mcb4763-3-04C-pro	mcb4763-3-04D-pro
	5	–	mcb4763-3-05C-pro	mcb4763-3-05D-pro
	6	mcb4763-3-06B-pro	mcb4763-3-06C-pro	mcb4763-3-06D-pro
	6,3	–	–	mcb4763-3-6.3D-pro
	8	–	mcb4763-3-08C-pro	mcb4763-3-08D-pro
	10	mcb4763-3-10B-pro	mcb4763-3-10C-pro	mcb4763-3-10D-pro
	12,5	–	–	mcb4763-3-12.5D-pro
	13	mcb4763-3-13B-pro	mcb4763-3-13C-pro	mcb4763-3-13D-pro
	16	mcb4763-3-16B-pro	mcb4763-3-16C-pro	mcb4763-3-16D-pro
	20	mcb4763-3-20B-pro	mcb4763-3-20C-pro	mcb4763-3-20D-pro
	25	mcb4763-3-25B-pro	mcb4763-3-25C-pro	mcb4763-3-25D-pro
	31,5	–	–	mcb4763-3-31.5D-pro
	32	mcb4763-3-32B-pro	mcb4763-3-32C-pro	mcb4763-3-32D-pro
	40	mcb4763-3-40B-pro	mcb4763-3-40C-pro	mcb4763-3-40D-pro
	50	mcb4763-3-50B-pro	mcb4763-3-50C-pro	mcb4763-3-50D-pro
	63	mcb4763-3-63B-pro	mcb4763-3-63C-pro	mcb4763-3-63D-pro
			4P	
	0,5	–	mcb4763-4-0.5C-pro	–
	1	–	mcb4763-4-01C-pro	mcb4763-4-01D-pro
	1,6	–	mcb4763-4-1.6C-pro	–
	2	–	mcb4763-4-02C-pro	mcb4763-4-02D-pro
	2,5	–	mcb4763-4-02C-pro	–
	3	–	mcb4763-4-2.5C-pro	mcb4763-4-3D-pro
	4	–	mcb4763-4-04C-pro	mcb4763-4-04D-pro
	5	–	mcb4763-4-05C-pro	mcb4763-4-05D-pro
	6	–	mcb4763-4-06C-pro	mcb4763-4-06D-pro
	8	–	mcb4763-4-08C-pro	mcb4763-4-08D-pro
	10	–	mcb4763-4-10C-pro	mcb4763-4-10D-pro
	13	–	mcb4763-4-13C-pro	-
	16	–	mcb4763-4-16C-pro	mcb4763-4-16D-pro
	20	–	mcb4763-4-20C-pro	mcb4763-4-20D-pro
	25	–	mcb4763-4-25C-pro	mcb4763-4-25D-pro
	32	–	mcb4763-4-32C-pro	mcb4763-4-32D-pro
	40	–	mcb4763-4-40C-pro	mcb4763-4-40D-pro
	50	–	mcb4763-4-50C-pro	mcb4763-4-50D-pro
	63	–	mcb4763-4-63C-pro	mcb4763-4-63D-pro

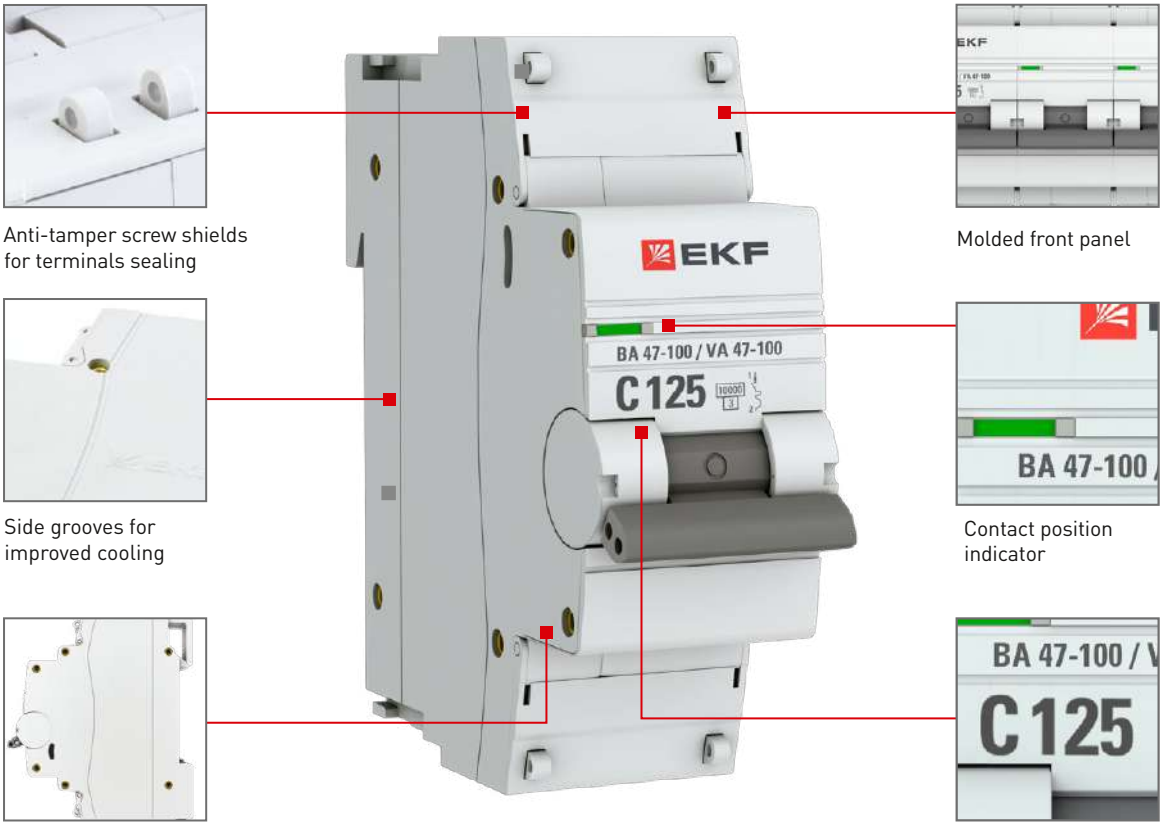
VA 47-63 6 kA PROXIMA EKF

Picture	Rated current, A	Tripping curve		
		B	C	D
		1P		
	6	mcb4763-6-1-06B-pro	mcb4763-6-1-06C-pro	mcb4763-6-1-06D-pro
	10	mcb4763-6-1-10B-pro	mcb4763-6-1-10C-pro	mcb4763-6-1-10D-pro
	16	mcb4763-6-1-16B-pro	mcb4763-6-1-16C-pro	mcb4763-6-1-16D-pro
	20	mcb4763-6-1-20B-pro	mcb4763-6-1-20C-pro	mcb4763-6-1-20D-pro
	25	mcb4763-6-1-25B-pro	mcb4763-6-1-25C-pro	mcb4763-6-1-25D-pro
	32	mcb4763-6-1-32B-pro	mcb4763-6-1-32C-pro	mcb4763-6-1-32D-pro
	40	mcb4763-6-1-40B-pro	mcb4763-6-1-40C-pro	mcb4763-6-1-40D-pro
	50	mcb4763-6-1-50B-pro	mcb4763-6-1-50C-pro	mcb4763-6-1-50D-pro
	63	mcb4763-6-1-63B-pro	mcb4763-6-1-63C-pro	mcb4763-6-1-63D-pro
		2P		
	6	mcb4763-6-2-06B-pro	mcb4763-6-2-06C-pro	mcb4763-6-2-06D-pro
	10	mcb4763-6-2-10B-pro	mcb4763-6-2-10C-pro	mcb4763-6-2-10D-pro
	16	mcb4763-6-2-16B-pro	mcb4763-6-2-16C-pro	mcb4763-6-2-16D-pro
	20	mcb4763-6-2-20B-pro	mcb4763-6-2-20C-pro	mcb4763-6-2-20D-pro
	25	mcb4763-6-2-25B-pro	mcb4763-6-2-25C-pro	mcb4763-6-2-25D-pro
	32	mcb4763-6-2-32B-pro	mcb4763-6-2-32C-pro	mcb4763-6-2-32D-pro
	40	mcb4763-6-2-40B-pro	mcb4763-6-2-40C-pro	mcb4763-6-2-40D-pro
	50	mcb4763-6-2-50B-pro	mcb4763-6-2-50C-pro	mcb4763-6-2-50D-pro
	63	mcb4763-6-2-63B-pro	mcb4763-6-2-63C-pro	mcb4763-6-2-63D-pro
		3P		
	6	mcb4763-6-3-06B-pro	mcb4763-6-3-06C-pro	mcb4763-6-3-06D-pro
	10	mcb4763-6-3-10B-pro	mcb4763-6-3-10C-pro	mcb4763-6-3-10D-pro
	16	mcb4763-6-3-16B-pro	mcb4763-6-3-16C-pro	mcb4763-6-3-16D-pro
	20	mcb4763-6-3-20B-pro	mcb4763-6-3-20C-pro	mcb4763-6-3-20D-pro
	25	mcb4763-6-3-25B-pro	mcb4763-6-3-25C-pro	mcb4763-6-3-25D-pro
	32	mcb4763-6-3-32B-pro	mcb4763-6-3-32C-pro	mcb4763-6-3-32D-pro
	40	mcb4763-6-3-40B-pro	mcb4763-6-3-40C-pro	mcb4763-6-3-40D-pro
	50	mcb4763-6-3-50B-pro	mcb4763-6-3-50C-pro	mcb4763-6-3-50D-pro
	63	mcb4763-6-3-63B-pro	mcb4763-6-3-63C-pro	mcb4763-6-3-63D-pro
		4P		
	6	mcb4763-6-4-06B-pro	mcb4763-6-4-06C-pro	mcb4763-6-4-06D-pro
	10	mcb4763-6-4-10B-pro	mcb4763-6-4-10C-pro	mcb4763-6-4-10D-pro
	16	mcb4763-6-4-16B-pro	mcb4763-6-4-16C-pro	mcb4763-6-4-16D-pro
	20	mcb4763-6-4-20B-pro	mcb4763-6-4-20C-pro	mcb4763-6-4-20D-pro
	25	mcb4763-6-4-25B-pro	mcb4763-6-4-25C-pro	mcb4763-6-4-25D-pro
	32	mcb4763-6-4-32B-pro	mcb4763-6-4-32C-pro	mcb4763-6-4-32D-pro
	40	mcb4763-6-4-40B-pro	mcb4763-6-4-40C-pro	mcb4763-6-4-40D-pro
	50	mcb4763-6-4-50B-pro	mcb4763-6-4-50C-pro	mcb4763-6-4-50D-pro
	63	mcb4763-6-4-63B-pro	mcb4763-6-4-63C-pro	mcb4763-6-4-63D-pro

Miniature circuit breakers VA 47-100 PROXIMA EKF

Due to their high breaking capacity limit of 10 kA, miniature circuit breakers VA 47–100 PROXIMA EKF combine all the advantages of the previous model (interchangeable) and the latest innovations. Miniature circuit breakers (MCB) are available in one-, two-, three, and four- pole versions. The MCB housing is 1,5 module (27 mm) wide.

Standard: IEC/EN 60898-1



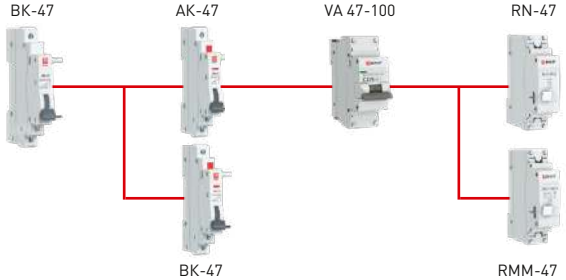
APPLICATION

MCBs VA 47-100 PROXIMA EKF are used in commercial, public, industrial and residential buildings:

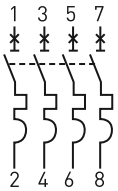
- current carrying under normal conditions;
- infrequent manual switching of individual circuit branches;
- protection against overload and short-circuit currents;
- final component of terminal power distribution system.

TECHNICAL DATA

Connection of accessories

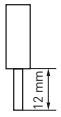
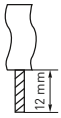
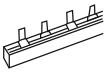


Wiring diagrams

Number of poles			
1P	2P	3P	4P
			

Installation and operation

1. Connection

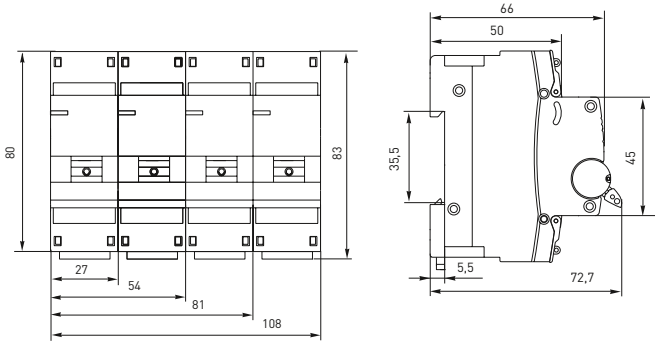
Conductor			Comb busbar
solid	starnded	ferrule	pin
			

2. Accessories:

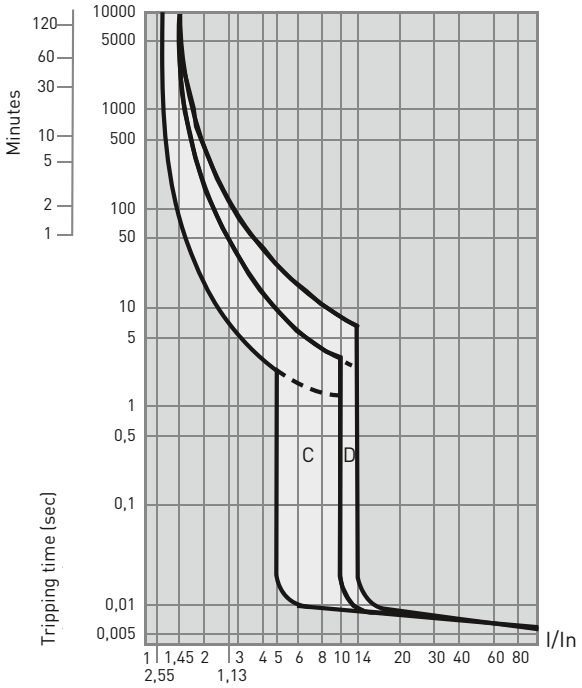
- Alarm contact AK-47 PROXIMA EKF (installed on the left)
- Auxiliary contact BK-47 PROXIMA EKF (installed on the left)
- Overvoltage and undervoltage release RMM-47 PROXIMA EKF (installed on the right)
- Shunt release RN-47 PROXIMA EKF (installed on the right)
- Copper and aluminum wire connections are supported.

Parameters	Values
Rated voltage Ue, V	230 / 400 240 / 415
Frequency fn, Hz	50 / 60
Number of poles	1, 2, 3, 4
Rated current In, A	10–125
Rated impulse withstand voltage Uimp, kV	4
Tripping curve	C, D
Degree of protection	IP20
Rated short-circuit breaking capacity Icn, A	10 000
Energy limiting class	3
Mechanical endurance, O-C cycles	20 000
Electrical endurance, O-C cycles	10 000
Operating temperature, °C	-25 to +50
Cross-section of connected wires, mm^2	1–35
Max. tightening torque, N•m	2,5

Overall and installation dimensions (mm)

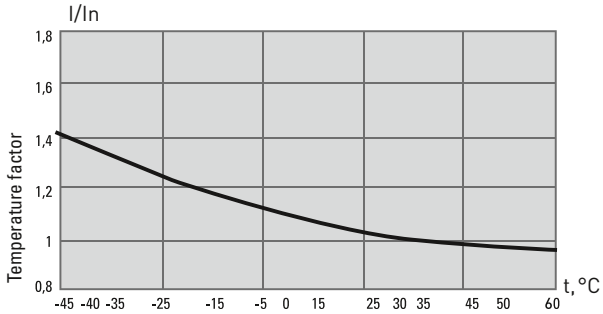


Tripping curves



C – electromagnetic protection trips at (5-10) × In.
D – electromagnetic protection trips at (10-14) × In.

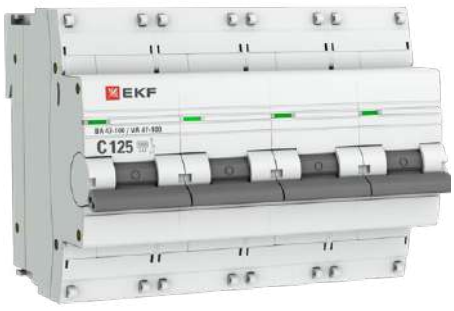
Temperature derating



Delivery scope

Miniature circuit breakers VA 47-100 PROXIMA EKF are supplied in a group package.

For all available documentation, scan the QR-code on the insert or on the inside of the package.

Picture	Rated current, A	C	D
	1P		
	10	mcb47100-1-10C-pro	mcb47100-1-10D-pro
	16	mcb47100-1-16C-pro	mcb47100-1-16D-pro
	20	mcb47100-1-20C-pro	mcb47100-1-20D-pro
	25	mcb47100-1-25C-pro	mcb47100-1-25D-pro
	32	mcb47100-1-32C-pro	mcb47100-1-32D-pro
	35	mcb47100-1-35C-pro	mcb47100-1-35D-pro
	40	mcb47100-1-40C-pro	mcb47100-1-40D-pro
	50	mcb47100-1-50C-pro	mcb47100-1-50D-pro
	63	mcb47100-1-63C-pro	mcb47100-1-63D-pro
	80	mcb47100-1-80C-pro	mcb47100-1-80D-pro
	100	mcb47100-1-100C-pro	mcb47100-1-100D-pro
	125	mcb47100-1-125C-pro	mcb47100-1-125D-pro
	2P		
	10	mcb47100-2-10C-pro	mcb47100-2-10D-pro
	16	mcb47100-2-16C-pro	mcb47100-2-16D-pro
	20	mcb47100-2-20C-pro	mcb47100-2-20D-pro
	25	mcb47100-2-25C-pro	mcb47100-2-25D-pro
	32	mcb47100-2-32C-pro	mcb47100-2-32D-pro
	35	mcb47100-2-35C-pro	mcb47100-2-35D-pro
	40	mcb47100-2-40C-pro	mcb47100-2-40D-pro
	50	mcb47100-2-50C-pro	mcb47100-2-50D-pro
	63	mcb47100-2-63C-pro	mcb47100-2-63D-pro
	80	mcb47100-2-80C-pro	mcb47100-2-80D-pro
	100	mcb47100-2-100C-pro	mcb47100-2-100D-pro
	125	mcb47100-2-125C-pro	mcb47100-2-125D-pro
	3P		
	10	mcb47100-3-10C-pro	mcb47100-3-10D-pro
	16	mcb47100-3-16C-pro	mcb47100-3-16D-pro
	20	mcb47100-3-20C-pro	mcb47100-3-20D-pro
	25	mcb47100-3-25C-pro	mcb47100-3-25D-pro
	32	mcb47100-3-32C-pro	mcb47100-3-32D-pro
	35	mcb47100-3-35C-pro	mcb47100-3-35D-pro
	40	mcb47100-3-40C-pro	mcb47100-3-40D-pro
	50	mcb47100-3-50C-pro	mcb47100-3-50D-pro
	63	mcb47100-3-63C-pro	mcb47100-3-63D-pro
	80	mcb47100-3-80C-pro	mcb47100-3-80D-pro
	100	mcb47100-3-100C-pro	mcb47100-3-100D-pro
	125	mcb47100-3-125C-pro	mcb47100-3-125D-pro
	4P		
	10	mcb47100-4-10C-pro	mcb47100-4-10D-pro
	16	mcb47100-4-16C-pro	mcb47100-4-16D-pro
	20	mcb47100-4-20C-pro	mcb47100-4-20D-pro
	25	mcb47100-4-25C-pro	mcb47100-4-25D-pro
	32	mcb47100-4-32C-pro	mcb47100-4-32D-pro
	35	mcb47100-4-35C-pro	mcb47100-4-35D-pro
	40	mcb47100-4-40C-pro	mcb47100-4-40D-pro
	50	mcb47100-4-50C-pro	mcb47100-4-50D-pro
	63	mcb47100-4-63C-pro	mcb47100-4-63D-pro
	80	mcb47100-4-80C-pro	mcb47100-4-80D-pro
	100	mcb47100-4-100C-pro	mcb47100-4-100D-pro
	125	mcb47100-4-125C-pro	mcb47100-4-125D-pro

Miniature circuit breakers VA 47-125 PROXIMA EKF

Miniature circuit breakers VA 47-125 PROXIMA EKF with high breaking capacity of 15 kA can replace regular power circuit breakers in certain applications. Miniature circuit breakers (MCB) are 1,5 module (27mm) wide, feature rated current up to 125A, and are available in one-, two-, three-, and four-pole versions. Double contact breaking and two arc chutes ensure reliable arc extinguishing. Optimal current conductivity is ensured by silver-impregnated contacts.

Standard: IEC/EN 60947-2

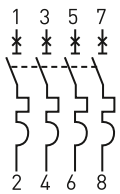
APPLICATION

MCBs VA 47-125 PROXIMA EKF are used in commercial, public, industrial and residential buildings:

- carrying current under normal conditions;
- infrequent manual switching of individual circuit branches;
- protection against overload and short-circuit currents;
- final component of terminal power distribution system;
- isolation in the industrial sector according to IEC/EN 60947-2 standard.

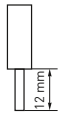
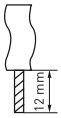
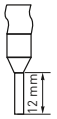
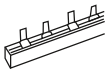
TECHNICAL DATA

Wiring diagrams

Number of poles			
1P	2P	3P	4P
			

Installation and operation

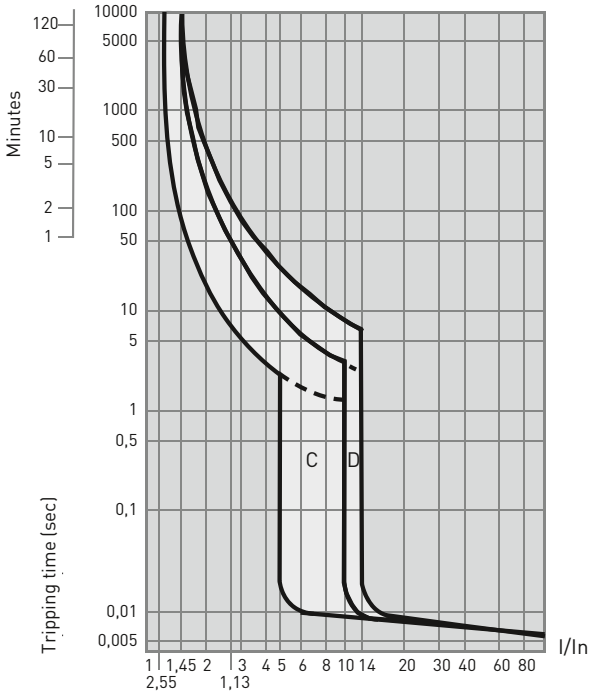
1. Connection

Conductor			Comb busbar
solid	stranded	ferrule	pin
			

2. No accessories supported

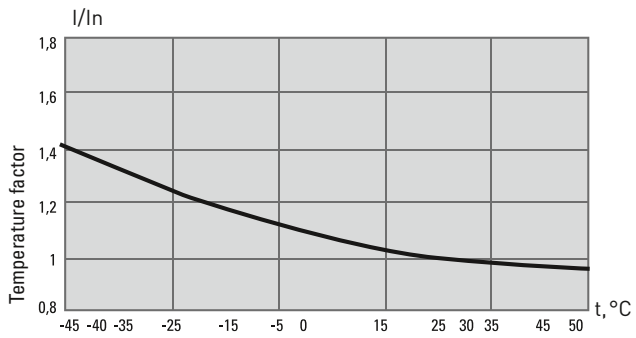
Parameters	Values
Rated voltage Ue, V	230 / 400
Frequency fn, Hz	50 / 60
Number of poles	1, 2, 3, 4
Rated current In, A	80–125 (10–63)
Rated impulse withstand voltage Uimp, kV	4
Tripping curve	C, D
Degree of protection	IP20
Rated breaking capacity Icn, A	15 000
Energy limiting class	3
Mechanical endurance, O-C cycles	20 000
Electrical endurance, O-C cycles	8000
Operating temperature, °C	-25 to +50
Cross-section of connected wires, mm²	1–50
Max. tightening torque, N•m	2,5

Tripping curves

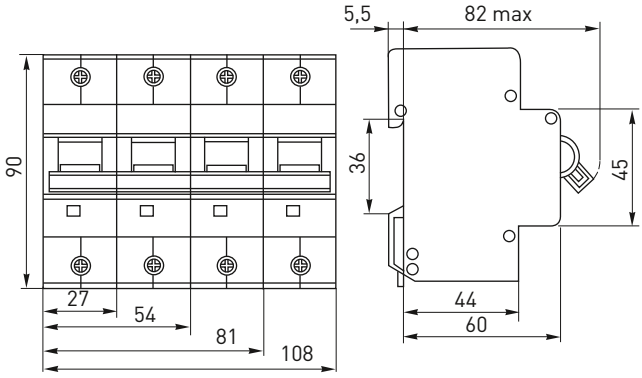


C – electromagnetic protection trips at (5-10) × In.
D – electromagnetic protection trips at (10-14) × In.

Temperature derating



Overall and installation dimensions (mm)



Delivery scope

Miniature circuit breakers VA 47-125 PROXIMA EKF are supplied in a group package.

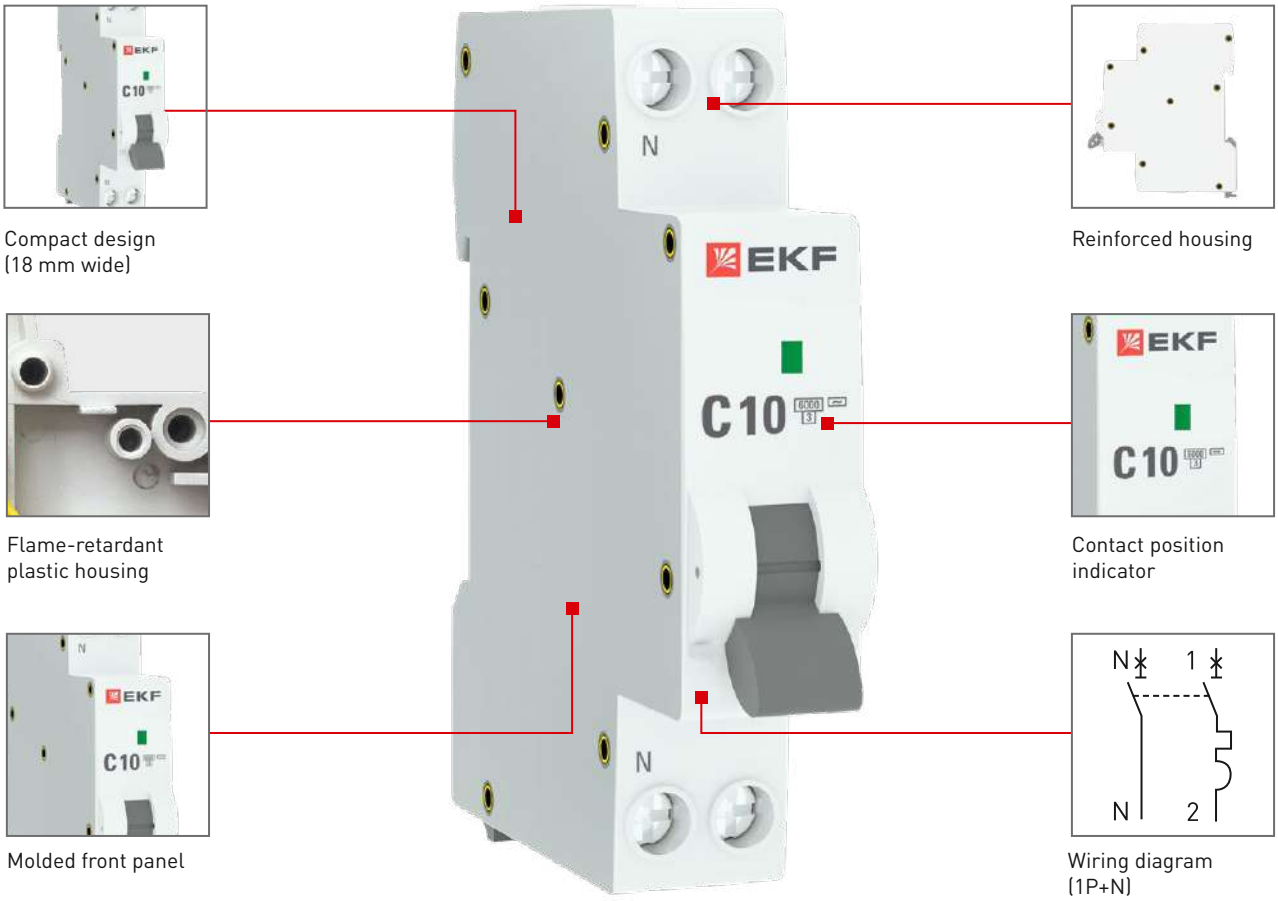
For all available documentation, scan the QR-code on the insert or on the inside of the package.

Picture	Rated current, A	Tripping curve C	Tripping curve D
	1P		
	80	mcb47125-1-80C	mcb47125-1-80D
	100	mcb47125-1-100C	mcb47125-1-100D
	125	mcb47125-1-125C	mcb47125-1-125D
	2P		
	80	mcb47125-2-80C	mcb47125-2-80D
	100	mcb47125-2-100C	mcb47125-2-100D
	125	mcb47125-2-125C	mcb47125-2-125D
	3P		
	80	mcb47125-3-80C	mcb47125-3-80D
	100	mcb47125-3-100C	mcb47125-3-100D
	125	mcb47125-3-125C	mcb47125-3-125D
	4P		
	80	mcb47125-4-80C	mcb47125-4-80D
	100	mcb47125-4-100C	mcb47125-4-100D
	125	mcb47125-4-125C	mcb47125-4-125D

Miniature circuit breakers VA 47-63 1P+N PROXIMA EKF

Miniature circuit breakers VA 47-63 1P+N PROXIMA EKF are designed to offer simultaneous phase and neutral switching capabilities. The MCB provides protection against overload and short circuit, isolated both for phase and neutral. Breaking capacity is 6000 A. The MCB housing is 1 module (18 mm) wide.

Standard: IEC/EN 60898-1



APPLICATION

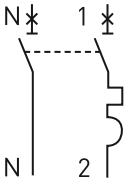
MCBs are used in public, commercial, industrial and residential buildings:

- carrying current under normal conditions;
- infrequent manual switching of individual circuit branches;
- protection against overload and short-circuit currents;
- final component of terminal power distribution system.

TECHNICAL DATA

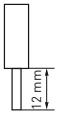
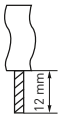
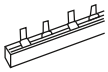
Wiring diagrams

Number of poles
1P + N



Installation and operation

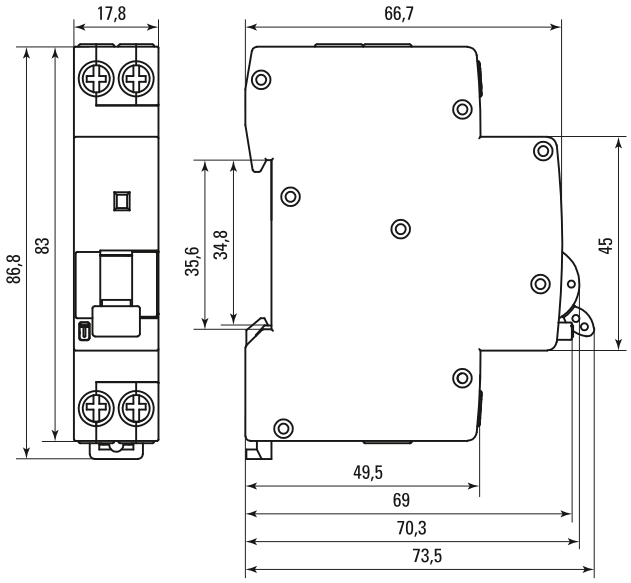
1. Connection

Conductor			Comb busbar
solid	stranded	ferrule	pin
			

2. No accessories supported

Parameters	Values
Rated voltage Ue, V	230 / 240
Frequency fn, Hz	50 / 60
Number of poles	1P+N
Rated current In, A	6, 10, 16, 20, 25,32, 40
Rated impulse withstand voltage Uimp, kV	4
Tripping curve	C, (B)
Degree of protection	IP20
Rated short-circuit breaking capacity Icn, A	6000 (10 000)
Energy limiting class	3
Mechanical endurance, O-C cycles	20 000
Electrical endurance, O-C cycles	10 000
Operating temperature, °C	-25 to +55
Cross-section of connected wires, mm²	1–10
Max. tightening torque, N•m	1,2

Overall and installation dimensions (mm)

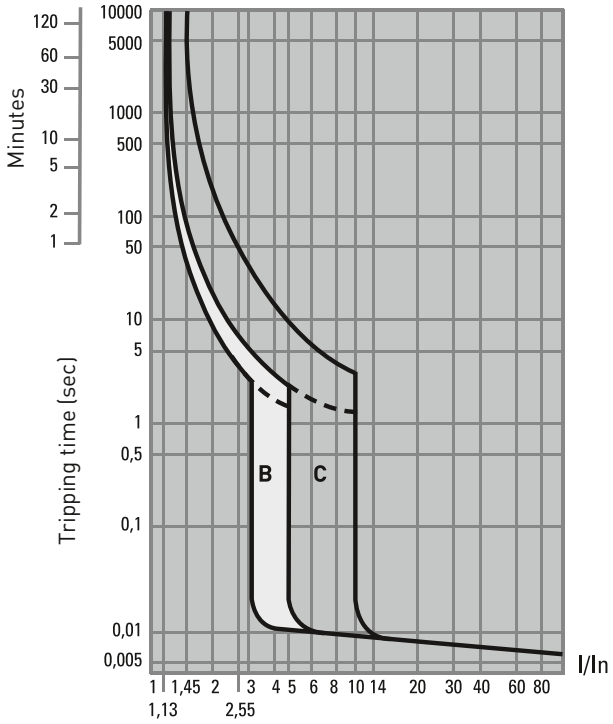


Delivery scope

Miniature circuit breakers VA 47-63 1P+N PROXIMA EKF are supplied in a group package.

For all available documentation, scan the QR-code on the insert or on the inside of the package.

Tripping curves



Picture	Rated current, A	C
		1P
	6	mcb4763-6-1pn-06C
	10	mcb4763-6-1pn-10C
	16	mcb4763-6-1pn-16C
	20	mcb4763-6-1pn-20C
	25	mcb4763-6-1pn-25C
	32	mcb4763-6-1pn-32C
	40	mcb4763-6-1pn-40C

AVERES Professional Grade DIN rail-mounted modular equipment has been designed from the ground up for use in mission-critical industrial, private and public infrastructure projects, as well as premium residential developments. Unrivalled safety and reliability, top-of-the line functionality coupled with remote connectivity options, as well as the extended service life of AVERES modular equipment, enable comprehensive electrical protection and control solutions with an unparalleled level of power efficiency.

- Premium quality
- New generation technology
- High durability
- Reliable performance
- Compliance with household and industrial standards
- Label holder
- Top or bottom electrical feed
- Remote control
- EKF warranty up to 10 years
- Split operating handle (RCBO)
- Broad range of accessories

AL/Cu: connection of both copper and aluminum wires

Robust housing, reinforced by 9 rivets eliminates the risk of blowout

All specs printed on the front panel for a quick device and circuit identification

Visual true contact position indicator with transparent cover

Large label holder for easy device and circuit identification

Wide range of accessories including auto reclosers

Molded front panel to protect users from sparks and device internals from dust ingress

Bottom or top supply connection, compatible with modular busbars

Instant switching mechanism for longer service life

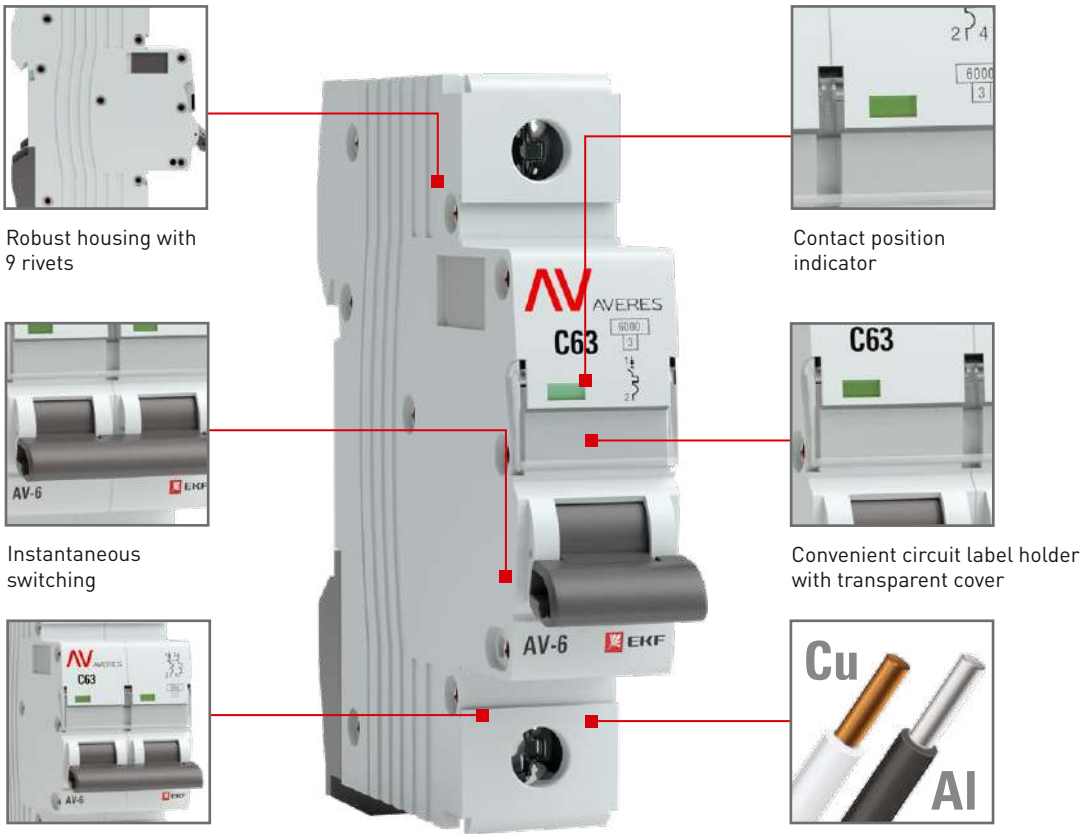
AVERES Miniature Circuit Breakers

Series	AV-6			AV-10			AV-6 DC	AV-10 DC	AV-125
Contact position indicator	Yes			Yes			Yes	Yes	Yes
Standard	IEC 60898-1	IEC 60947-2		IEC 60898-1	IEC 60947-2		IEC 60947-2	IEC 60947-2	IEC 60947-2
Rated frequency [Fn, Hz]	50 / 60			50 / 60			-	-	50 / 60
Rated breaking capacity [Icn, A]	6000	-	-	10 000	-	-	-	-	-
Ultimate short-circuit breaking capacity [Icu, A]	-	10 000	20 000	-	10 000	20 000	6000	10 000	10 000
Service short-circuit breaking capacity [Ics]	6000	75% Icu		10 000	75% Icu		75% Icu	75% Icu	75% Icu
Poles	1P, 2P, 3P, 4P			1P, 2P, 3P, 4P			1P, 2P, 3P, 4P	1P, 2P, 3P, 4P	1P, 2P, 3P, 4P
Rated operation voltage [Ue, V]	230 / 400 240 / 415	1P: 220-240; 2P, 3P, 4P: 380-415	1P: 100-133; 2P, 3P, 4P: 220-240	230 / 400 240 / 415	1P: 220-240; 2P, 3P, 4P: 380-415	1P: 100-133; 2P, 3P, 4P: 220-240	1P: 250; 2P: 500; 3P: 750; 4P: 1000	1P: 250; 2P: 500; 3P: 750; 4P: 1000	1P: 230; 2P, 3P, 4P: 400
Rated Current [In, A]	1, 2, 3, 4, 6, 8, 10, 13, 16, 20, 25, 32, 40, 50, 63			1, 2, 3, 4, 6, 8, 10, 13, 16, 20, 25, 32, 40, 50, 63			1, 2, 3, 4, 6, 10, 13, 16, 20, 25, 32, 40, 50, 63	1, 2, 3, 4, 6, 10, 13, 16, 20, 25, 32, 40, 50, 63	63, 80, 100, 125
Tripping curves [type]	B, C, D			B, C, D			C, (B)	C, (B)	C, D
Rated impulse withstand voltage [Uimp, kV]	6			6			6	6	6
Rated insulation voltage [Ui, V]	500			500			500	500	500
Energy limit class	3			3			3	3	3
Degree of protection	IP20			IP20			IP20	IP20	IP20
Mechanical durability [cycles]	20 000			20 000			20 000	20 000	10 000
Electrical durability [cycles]	10 000			10 000			10 000	10 000	8000
Operation ambient temperature [°C]	-25 to +55			-25 to +55			-25 to +55	-25 to +55	-25 to +55
Cross-section of connected wires [mm²]	1-25			1-25			1-25	1-25	1-35
Tightening torque [N•m]	3			3			3	3	3
Line incoming type	Top or bottom			Top or bottom			Top or bottom	Top or bottom	Top or bottom

Miniature circuit breakers AV-6 AVERES EKF

Miniature circuit breakers (MCB) AV-6 AVERES EKF are used for infrequent switching in electrical circuits, and for protection against overload and short-circuit currents in residential, industrial, and commercial buildings. MCBs are available in one-, two-, three, and four-pole versions. Rated breaking capacity Icn: 6000 A. MCBs can be complemented with various accessories to extend their functions. 10-year warranty.

Standards: IEC/EN 60898-1, IEC/EN 60947-2



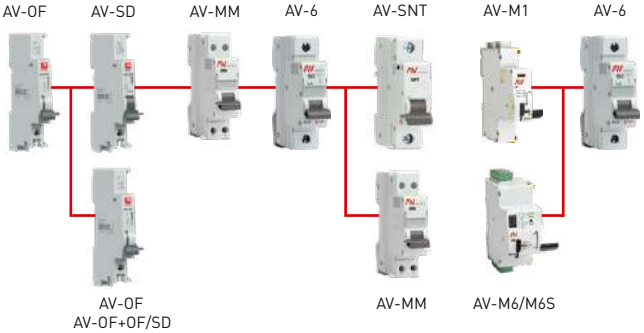
APPLICATION

MCBs are used in commercial, industrial and residential buildings:

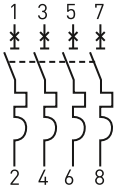
- carrying current under normal conditions;
- infrequent manual switching of individual circuit branches;
- protection against overload and short-circuit currents;
- final component of terminal power distribution system;
- isolation in the industrial sector according to IEC/EN 60947-2;
- remote monitoring, fault signaling and additional trip functionality (with installed accessories).

TECHNICAL DATA

Connection of accessories



Wiring diagrams

Number of poles			
1P	2P	3P	4P
			

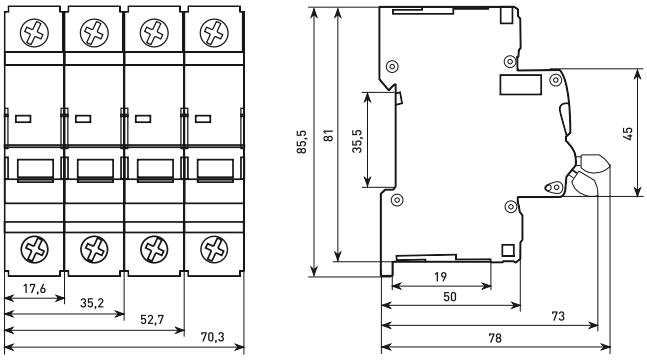
Parameters		Values
Rated operating voltage Ue, V		230 / 400; 240 / 415
Frequency, Hz		50 / 60
Number of poles		1; 2; 3; 4
Rated current In, A		1; 2; 3; 4; 6; 10; 13; 16; 20; 25; 32; 40; 50; 63
Tripping curve	B	4 In ±20%
	C	8 In ±20%
	D	12 In ±20%
Rated breaking capacity Icn, kA (IEC 60898-1)		6
Ultimate short-circuit breaking capacity Icu, kA (IEC 60947-2)	380–415 V AC	10
	220–240 V AC	20
Service short-circuit breaking capacity Ics, kA (IEC 60947-2)		75% I_{cu}
Energy limiting class		3
Rated impulse withstand voltage Uimp, kV		6
Rated insulation voltage Ui, V		500
Mechanical endurance, O-C cycles		20 000
Electrical endurance, O-C cycles		10 000
Utilization category		A
Operating temperature, °C		- 25 to +55
Max. MCB weight, kg (depending on the number of poles)		1 / 2 / 3 / 4
		0,115 / 0,23 / 0,345 / 0,46
Minimum cross-section of connected wires, mm²		1
Maximum cross-section of connected wires, mm²		25
Tightening torque, N·m		3
Degree of protection		IP20

Installation and operation

Accessories:

- Auxiliary contact AV-OF
- Alarm contact AV-SD
- Shunt release AV-SNT
- Combined auxiliary and alarm contact AV-OF+OF/SD
- Undervoltage release AV-MIN
- Overvoltage and undervoltage release AV-MM
- Auto recloser M6 (for 2P, 3P & 4P)
- Auto recloser M6S (for 1P & 2P)
- Auto recloser M1 (for 1P & 2P)

Overall and installation dimensions (mm)

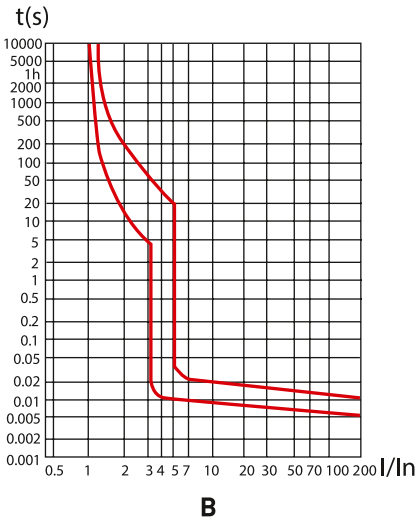


Delivery scope

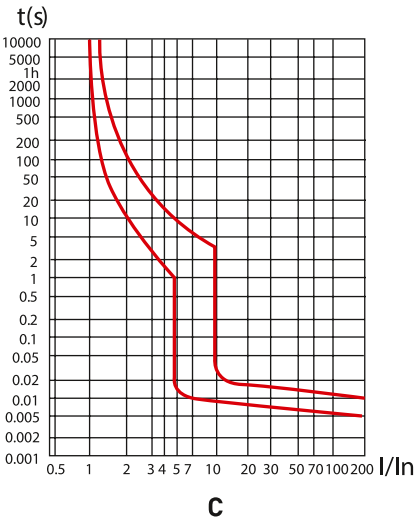
Miniature circuit breakers AV-6 AVERES EKF are supplied in a group package.

For all available documentation, scan the QR-code on the insert or on the inside of the package.

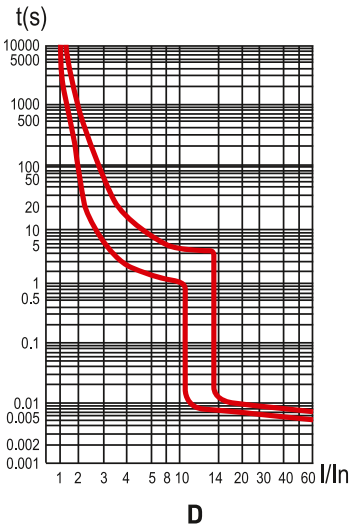
Tripping curves



B



C



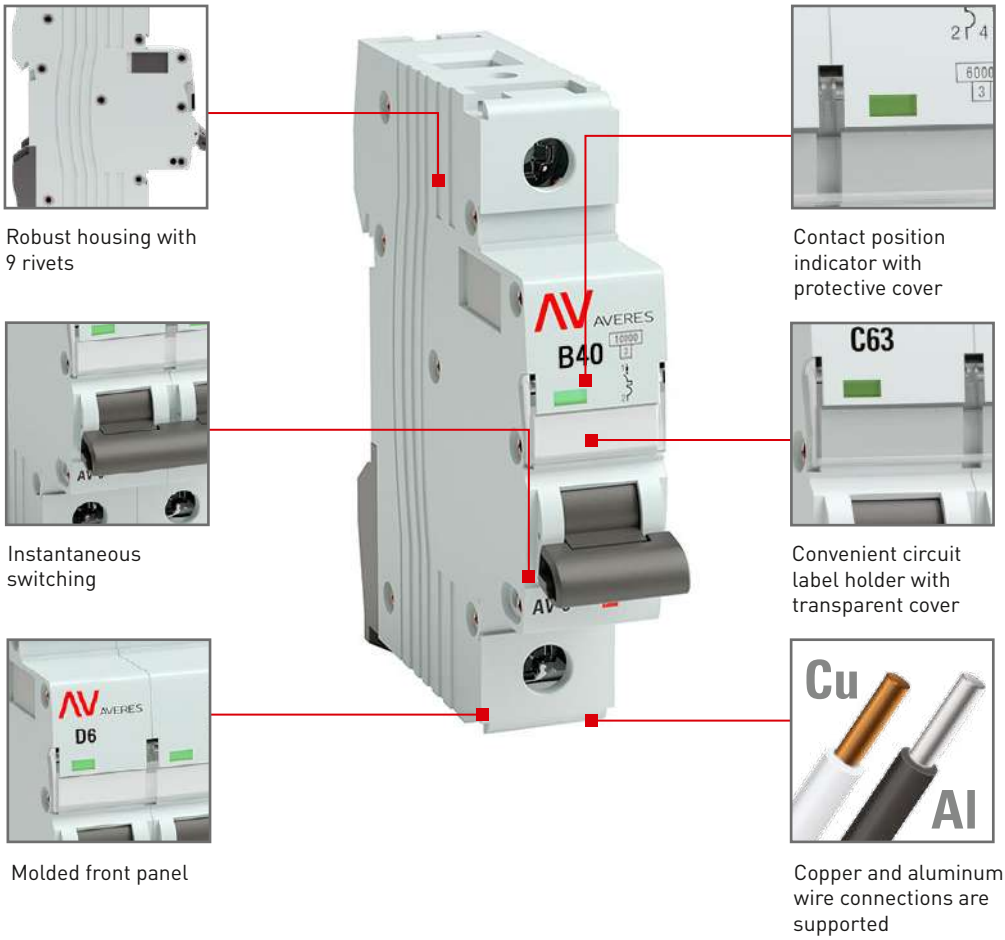
D

Picture	Rated current, A	Tripping curves		
		B	C	D
		1P		
	1	mcb6-1-01B-av	mcb6-1-01C-av	mcb6-1-01D-av
	2	mcb6-1-02B-av	mcb6-1-02C-av	mcb6-1-02D-av
	3	mcb6-1-03B-av	mcb6-1-03C-av	mcb6-1-03D-av
	4	mcb6-1-04B-av	mcb6-1-04C-av	mcb6-1-04D-av
	6	mcb6-1-06B-av	mcb6-1-06C-av	mcb6-1-06D-av
	10	mcb6-1-10B-av	mcb6-1-10C-av	mcb6-1-10D-av
	16	mcb6-1-16B-av	mcb6-1-16C-av	mcb6-1-16D-av
	20	mcb6-1-20B-av	mcb6-1-20C-av	mcb6-1-20D-av
	25	mcb6-1-25B-av	mcb6-1-25C-av	mcb6-1-25D-av
	32	mcb6-1-32B-av	mcb6-1-32C-av	mcb6-1-32D-av
	40	mcb6-1-40B-av	mcb6-1-40C-av	mcb6-1-40D-av
	50	mcb6-1-50B-av	mcb6-1-50C-av	mcb6-1-50D-av
	63	mcb6-1-63B-av	mcb6-1-63C-av	mcb6-1-63D-av
		2P		
	1	mcb6-2-01B-av	mcb6-2-01C-av	mcb6-2-01D-av
	2	mcb6-2-02B-av	mcb6-2-02C-av	mcb6-2-02D-av
	3	mcb6-2-03B-av	mcb6-2-03C-av	mcb6-2-03D-av
	4	mcb6-2-04B-av	mcb6-2-04C-av	mcb6-2-04D-av
	6	mcb6-2-06B-av	mcb6-2-06C-av	mcb6-2-06D-av
	10	mcb6-2-10B-av	mcb6-2-10C-av	mcb6-2-10D-av
	16	mcb6-2-16B-av	mcb6-2-16C-av	mcb6-2-16D-av
	20	mcb6-2-20B-av	mcb6-2-20C-av	mcb6-2-20D-av
	25	mcb6-2-25B-av	mcb6-2-25C-av	mcb6-2-25D-av
	32	mcb6-2-32B-av	mcb6-2-32C-av	mcb6-2-32D-av
	40	mcb6-2-40B-av	mcb6-2-40C-av	mcb6-2-40D-av
	50	mcb6-2-50B-av	mcb6-2-50C-av	mcb6-2-50D-av
	63	mcb6-2-63B-av	mcb6-2-63C-av	mcb6-2-63D-av
		3P		
	1	mcb6-3-01B-av	mcb6-3-01C-av	mcb6-3-01D-av
	2	mcb6-3-02B-av	mcb6-3-02C-av	mcb6-3-02D-av
	3	mcb6-3-03B-av	mcb6-3-03C-av	mcb6-3-03D-av
	4	mcb6-3-04B-av	mcb6-3-04C-av	mcb6-3-04D-av
	6	mcb6-3-06B-av	mcb6-3-06C-av	mcb6-3-06D-av
	10	mcb6-3-10B-av	mcb6-3-10C-av	mcb6-3-10D-av
	16	mcb6-3-16B-av	mcb6-3-16C-av	mcb6-3-16D-av
	20	mcb6-3-20B-av	mcb6-3-20C-av	mcb6-3-20D-av
	25	mcb6-3-25B-av	mcb6-3-25C-av	mcb6-3-25D-av
	32	mcb6-3-32B-av	mcb6-3-32C-av	mcb6-3-32D-av
	40	mcb6-3-40B-av	mcb6-3-40C-av	mcb6-3-40D-av
	50	mcb6-3-50B-av	mcb6-3-50C-av	mcb6-3-50D-av
	63	mcb6-3-63B-av	mcb6-3-63C-av	mcb6-3-63D-av
		4P		
	1	mcb6-4-01B-av	mcb6-4-01C-av	mcb6-4-01D-av
	2	mcb6-4-02B-av	mcb6-4-02C-av	mcb6-4-02D-av
	3	mcb6-4-03B-av	mcb6-4-03C-av	mcb6-4-03D-av
	4	mcb6-4-04B-av	mcb6-4-04C-av	mcb6-4-04D-av
	6	mcb6-4-06B-av	mcb6-4-06C-av	mcb6-4-06D-av
	10	mcb6-4-10B-av	mcb6-4-10C-av	mcb6-4-10D-av
	16	mcb6-4-16B-av	mcb6-4-16C-av	mcb6-4-16D-av
	20	mcb6-4-20B-av	mcb6-4-20C-av	mcb6-4-20D-av
	25	mcb6-4-25B-av	mcb6-4-25C-av	mcb6-4-25D-av
	32	mcb6-4-32B-av	mcb6-4-32C-av	mcb6-4-32D-av
	40	mcb6-4-40B-av	mcb6-4-40C-av	mcb6-4-40D-av
	50	mcb6-4-50B-av	mcb6-4-50C-av	mcb6-4-50D-av
	63	mcb6-4-63B-av	mcb6-4-63C-av	mcb6-4-63D-av

Miniature circuit breakers AV-10 AVERES EKF

Miniature circuit breakers (MCB) AV-10 AVERES EKF are used for infrequent switching operations in electrical circuits, and for protection against overload and short-circuit currents in residential, industrial, and commercial buildings. MCBs are available in one-, two-, three, and four-pole versions. Rated breaking capacity Icn: 10 000 A. MCBs can be complemented with various accessories to extend their functions. 10-year warranty.

Standards: IEC/EN 60898-1, IEC/EN 60947-2



Robust housing with 9 rivets

Contact position indicator with protective cover

Instantaneous switching

Convenient circuit label holder with transparent cover

Molded front panel

Copper and aluminum wire connections are supported

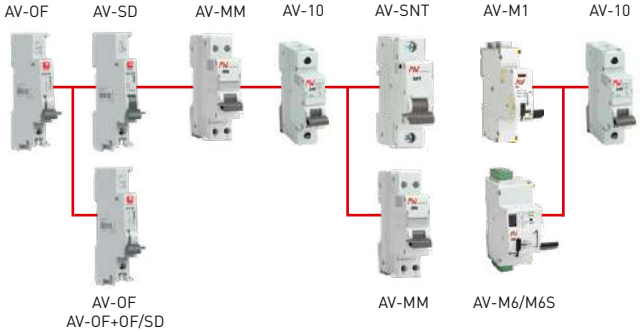
APPLICATION

MCBs are used in commercial, industrial and residential buildings:

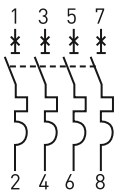
- carrying current under normal conditions;
- infrequent manual switching of individual circuit branches;
- protection against overload and short-circuit currents;
- final component of terminal power distribution system;
- isolation in the industrial sector according to IEC/EN 60947-2;
- remote monitoring, fault signaling and additional trip functionality (with installed accessories).

TECHNICAL DATA

Connection of accessories



Wiring diagrams

Number of poles			
1P	2P	3P	4P
			

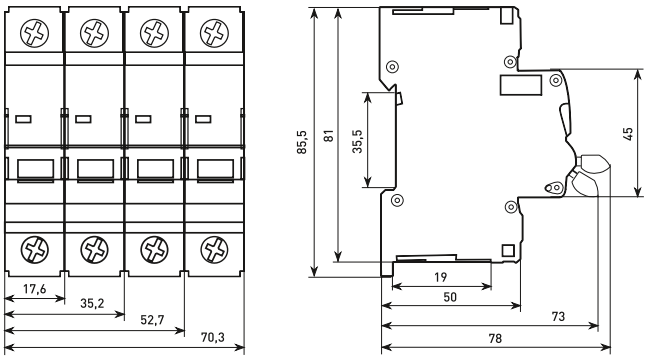
Parameters		Values
Rated operating voltage Ue, V		230 / 400; 240 / 415
Frequency, Hz		50 / 60
Number of poles		1; 2; 3; 4
Rated current In, A		1, 2, 3, 4, 6, 10, 13, 16, 20, 25, 32, 40, 50, 63
Tripping curve	B	4 In ±20%
	C	8 In ±20%
	D	12 In ±20%
Rated breaking capacity Icn, kA (IEC 60898-1)		10
Ultimate short-circuit breaking capacity Icu, kA (IEC 60947-2)	380–415 V AC	10
	220–240 V AC	20
Service short-circuit breaking capacity Ics, kA (IEC 60947-2)		75% I_{cu}
Energy limiting class		3
Rated impulse withstand voltage Uimp, kV		6
Rated insulation voltage Ui, V		500
Mechanical endurance, O-C cycles		20 000
Electrical endurance, O-C cycles		10 000
Utilization category		A
Operating temperature, °C		- 25 to +55
Max. MCB weight, kg (depending on the number of poles)		1: 0,1 / 2: 0,2 / 3: 0,3 / 4: 0,4
Minimum cross-section of connected wires, mm²		1
Maximum cross-section of connected wires, mm²		25
Tightening torque, N·m		3
Degree of protection		IP20

Installation and operation

Accessories:

- Auxiliary contact AV-OF
- Alarm contact AV-SD
- Shunt release AV-SNT
- Combined auxiliary and alarm contact AV-OF+OF/SD
- Undervoltage release AV-MIN
- Overvoltage and undervoltage release AV-MM
- Auto recloser M6 (for 2P, 3P & 4P)
- Auto recloser M6S (for 1P & 2P)
- Auto recloser M1 (for 1P & 2P)

Overall and installation dimensions (mm)

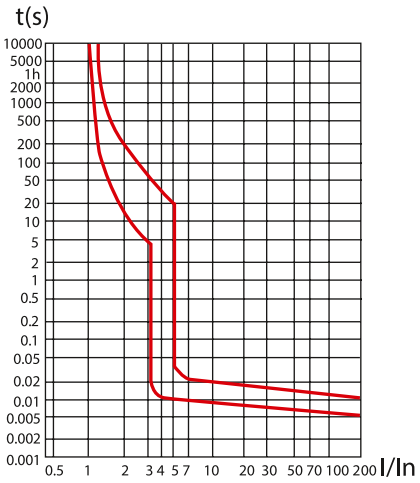


Delivery scope

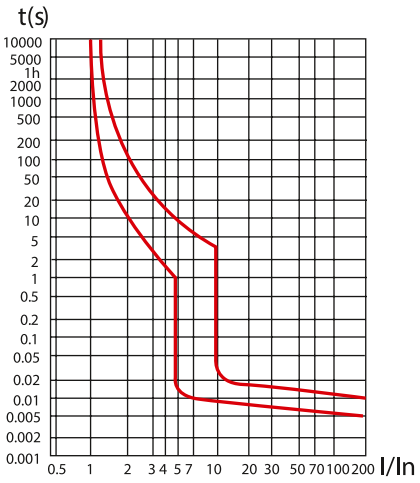
Miniature circuit breakers AV-6 AVERES EKF are supplied in a group package.

For all available documentation, scan the QR-code on the insert or on the inside of the package.

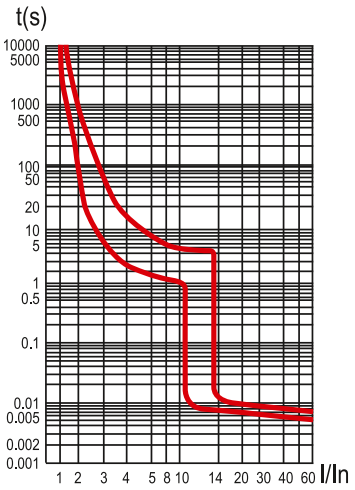
Tripping curves



B



C



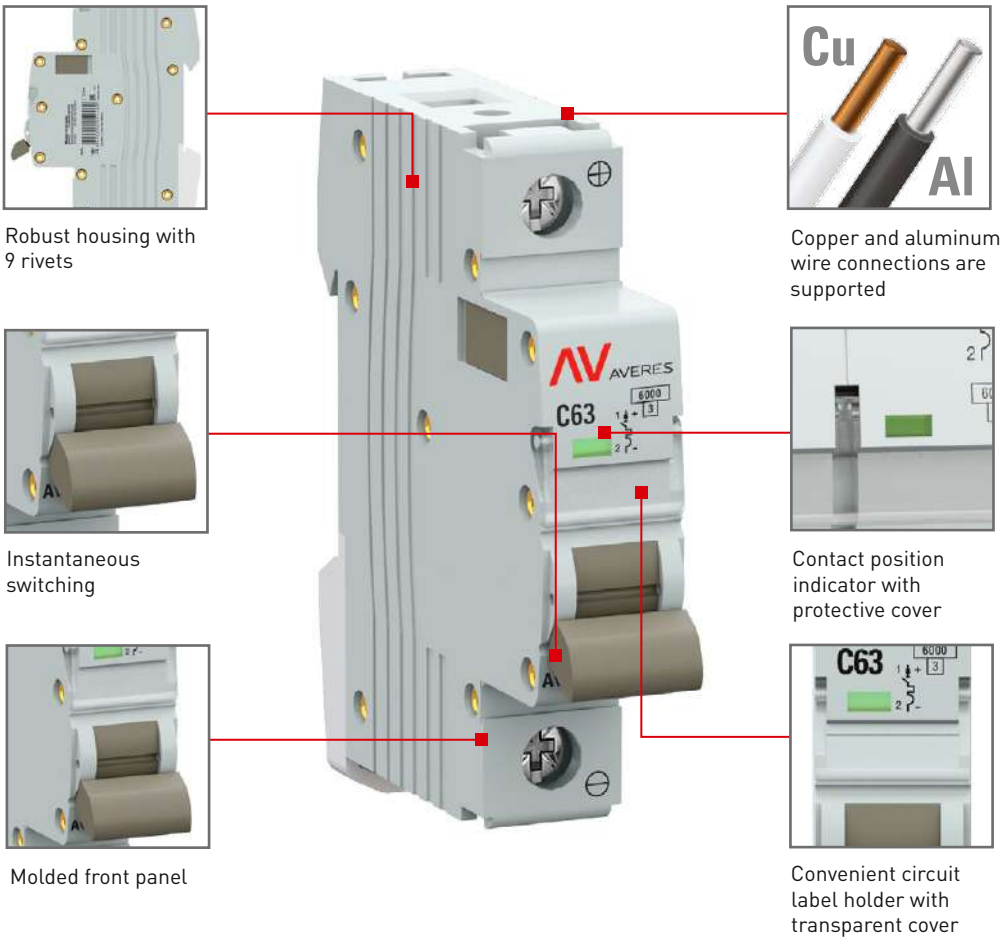
D

Picture	Rated current, A	Tripping curves		
		B	C	D
		1P		
	1	mcb10-1-01B-av	mcb10-1-01C-av	mcb10-1-01D-av
	2	mcb10-1-02B-av	mcb10-1-02C-av	mcb10-1-02D-av
	3	mcb10-1-03B-av	mcb10-1-03C-av	mcb10-1-03D-av
	4	mcb10-1-04B-av	mcb10-1-04C-av	mcb10-1-04D-av
	6	mcb10-1-06B-av	mcb10-1-06C-av	mcb10-1-06D-av
	10	mcb10-1-10B-av	mcb10-1-10C-av	mcb10-1-10D-av
	16	mcb10-1-16B-av	mcb10-1-16C-av	mcb10-1-16D-av
	20	mcb10-1-20B-av	mcb10-1-20C-av	mcb10-1-20D-av
	25	mcb10-1-25B-av	mcb10-1-25C-av	mcb10-1-25D-av
	32	mcb10-1-32B-av	mcb10-1-32C-av	mcb10-1-32D-av
	40	mcb10-1-40B-av	mcb10-1-40C-av	mcb10-1-40D-av
	50	mcb10-1-50B-av	mcb10-1-50C-av	mcb10-1-50D-av
	63	mcb10-1-63B-av	mcb10-1-63C-av	mcb10-1-63D-av
		2P		
	1	mcb10-2-01B-av	mcb10-2-01C-av	mcb10-2-01D-av
	2	mcb10-2-02B-av	mcb10-2-02C-av	mcb10-2-02D-av
	3	mcb10-2-03B-av	mcb10-2-03C-av	mcb10-2-03D-av
	4	mcb10-2-04B-av	mcb10-2-04C-av	mcb10-2-04D-av
	6	mcb10-2-06B-av	mcb10-2-06C-av	mcb10-2-06D-av
	10	mcb10-2-10B-av	mcb10-2-10C-av	mcb10-2-10D-av
	16	mcb10-2-16B-av	mcb10-2-16C-av	mcb10-2-16D-av
	20	mcb10-2-20B-av	mcb10-2-20C-av	mcb10-2-20D-av
	25	mcb10-2-25B-av	mcb10-2-25C-av	mcb10-2-25D-av
	32	mcb10-2-32B-av	mcb10-2-32C-av	mcb10-2-32D-av
	40	mcb10-2-40B-av	mcb10-2-40C-av	mcb10-2-40D-av
	50	mcb10-2-50B-av	mcb10-2-50C-av	mcb10-2-50D-av
	63	mcb10-2-63B-av	mcb10-2-63C-av	mcb10-2-63D-av
		3P		
	1	mcb10-3-01B-av	mcb 10-3-01C-av	mcb10-3-01D-av
	2	mcb10-3-02B-av	mcb10-3-02C-av	mcb10-3-02D-av
	3	mcb10-3-03B-av	mcb10-3-03C-av	mcb10-3-03D-av
	4	mcb10-3-04B-av	mcb10-3-04C-av	mcb10-3-04D-av
	6	mcb10-3-06B-av	mcb10-3-06C-av	mcb10-3-06D-av
	10	mcb10-3-10B-av	mcb10-3-10C-av	mcb10-3-10D-av
	16	mcb10-3-16B-av	mcb10-3-16C-av	mcb10-3-16D-av
	20	mcb10-3-20B-av	mcb10-3-20C-av	mcb10-3-20D-av
	25	mcb10-3-25B-av	mcb10-3-25C-av	mcb10-3-25D-av
	32	mcb10-3-32B-av	mcb10-3-32C-av	mcb10-3-32D-av
	40	mcb10-3-40B-av	mcb10-3-40C-av	mcb10-3-40D-av
	50	mcb10-3-50B-av	mcb10-3-50C-av	mcb10-3-50D-av
	63	mcb10-3-63B-av	mcb10-3-63C-av	mcb10-3-63D-av
		4P		
	1	mcb10-4-01B-av	mcb10-4-01C-av	mcb10-4-01D-av
	2	mcb10-4-02B-av	mcb10-4-02C-av	mcb10-4-02D-av
	3	mcb10-4-03B-av	mcb10-4-03C-av	mcb10-4-03D-av
	4	mcb10-4-04B-av	mcb10-4-04C-av	mcb10-4-04D-av
	6	mcb10-4-06B-av	mcb10-4-06C-av	mcb10-4-06D-av
	10	mcb10-4-10B-av	mcb10-4-10C-av	mcb10-4-10D-av
	16	mcb10-4-16B-av	mcb10-4-16C-av	mcb10-4-16D-av
	20	mcb10-4-20B-av	mcb10-4-20C-av	mcb10-4-20D-av
	25	mcb10-4-25B-av	mcb10-4-25C-av	mcb10-4-25D-av
	32	mcb10-4-32B-av	mcb10-4-32C-av	mcb10-4-32D-av
	40	mcb10-4-40B-av	mcb10-4-40C-av	mcb10-4-40D-av
	50	mcb10-4-50B-av	mcb10-4-50C-av	mcb10-4-50D-av
	63	mcb10-4-63B-av	mcb10-4-63C-av	mcb10-4-63D-av

Miniature circuit breakers AV-6 DC (AV-10 DC) AVERES EKF

Miniature circuit breakers (MCB) AV-6 DC (AV-10 DC) AVERES EKF are used for DC circuit protection against overload and short circuit currents, for infrequent switching and routine current carrying in DC circuits. MCBs can be complemented with various accessories to extend their functions. 10-year warranty.

Standard: IEC/EN 60947-2



APPLICATION

MCBs are used in commercial, industrial and residential buildings:

- carrying current under normal conditions;
- infrequent manual switching of individual circuit branches;
- protection against overload and short-circuit currents;
- final component of terminal power distribution system;
- isolation in the industrial sector according to IEC/EN 60947-2;
- remote monitoring, fault signaling and additional trip functionality (with installed accessories).

TECHNICAL DATA

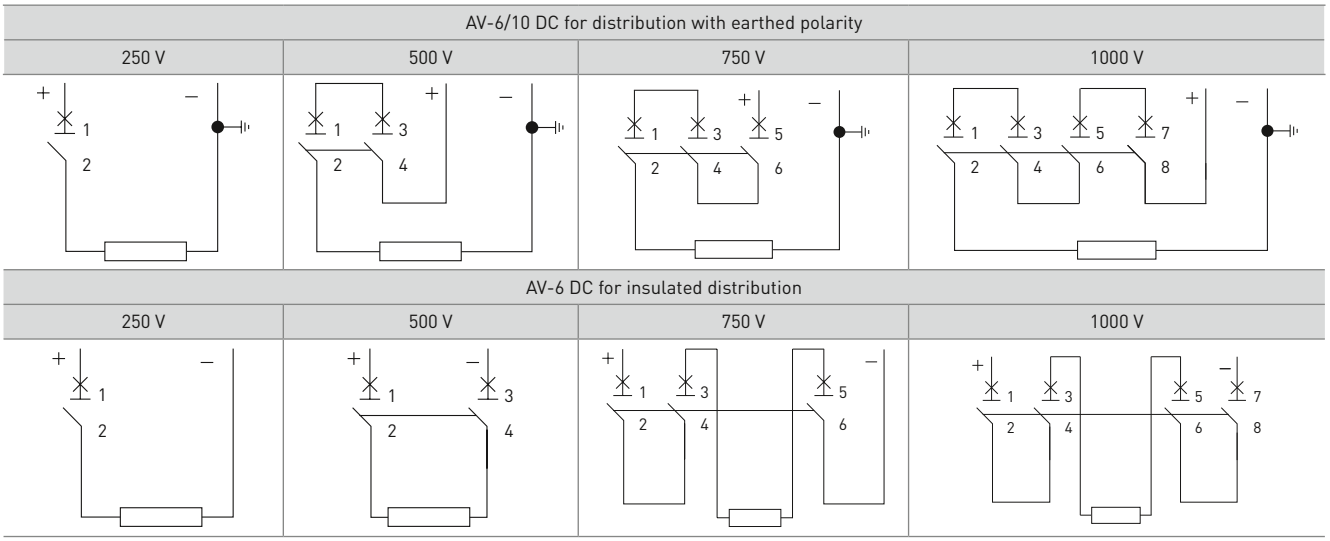
Connection of accessories

Installation and operation

Accessories:

- Auxiliary contact AV-0F
- Alarm contact AV-SD
- Shunt release AV-SNT, AV-SNT-2, AV-SNT-DC
- Undervoltage release AV-MIN
- Overvoltage and undervoltage release AV-MM
- Auto recloser M6S (for 1P & 2P)
- Auto recloser M6 (for 2P, 3P & 4P)
- Auto recloser M1 (for 1P & 2P)

Wiring diagrams

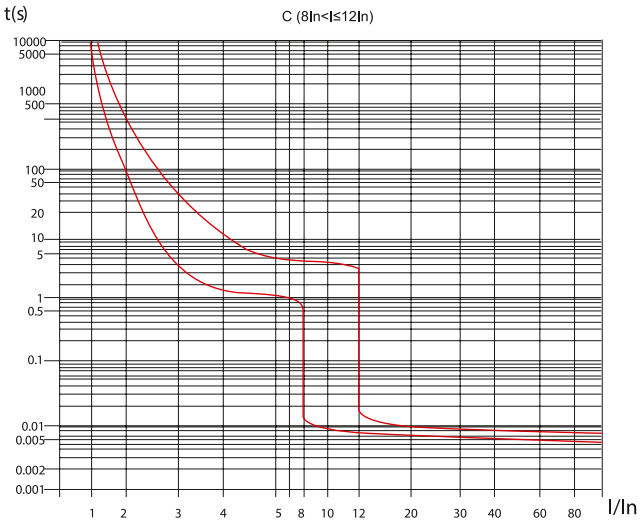


Always connect anode (+) and cathode (-) to the respective terminals of circuit breakers.

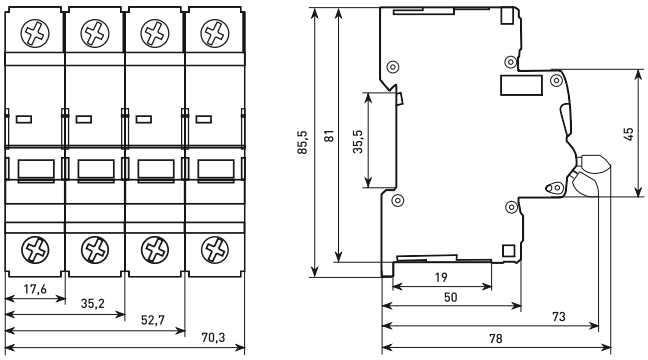
Parameters	Values
Rated operating voltage Ue, V DC	1P: 250; 2P: 500; 3P: 750; 4P: 1000 Min.value: 24
Number of poles	1; 2; 3; 4
Rated current In, A	1, 2, 3, 4, 6, 10, 13, 16, 20, 25, 32, 40, 50, 63
Tripping curve	C, (B)
Rated breaking capacity Icn, A	6000/10 000 *
Rated impulse withstand voltage Uimp, kV	6
Mechanical endurance, O-C cycles	20 000
Electrical endurance, O-C cycles	10 000
Operating temperature, °C	-25 to +55
Tightening torque, N·m	3
Degree of protection	IP20
Cross-section of connected wires, mm²	1-25

*AV-10 DC with breaking capacity 10kA can be made on order.

Tripping curves



Overall and installation dimensions (mm)



Delivery scope

Miniature circuit breakers AV-6 DC (AV-10 DC) AVERES EKF are supplied in a group package.

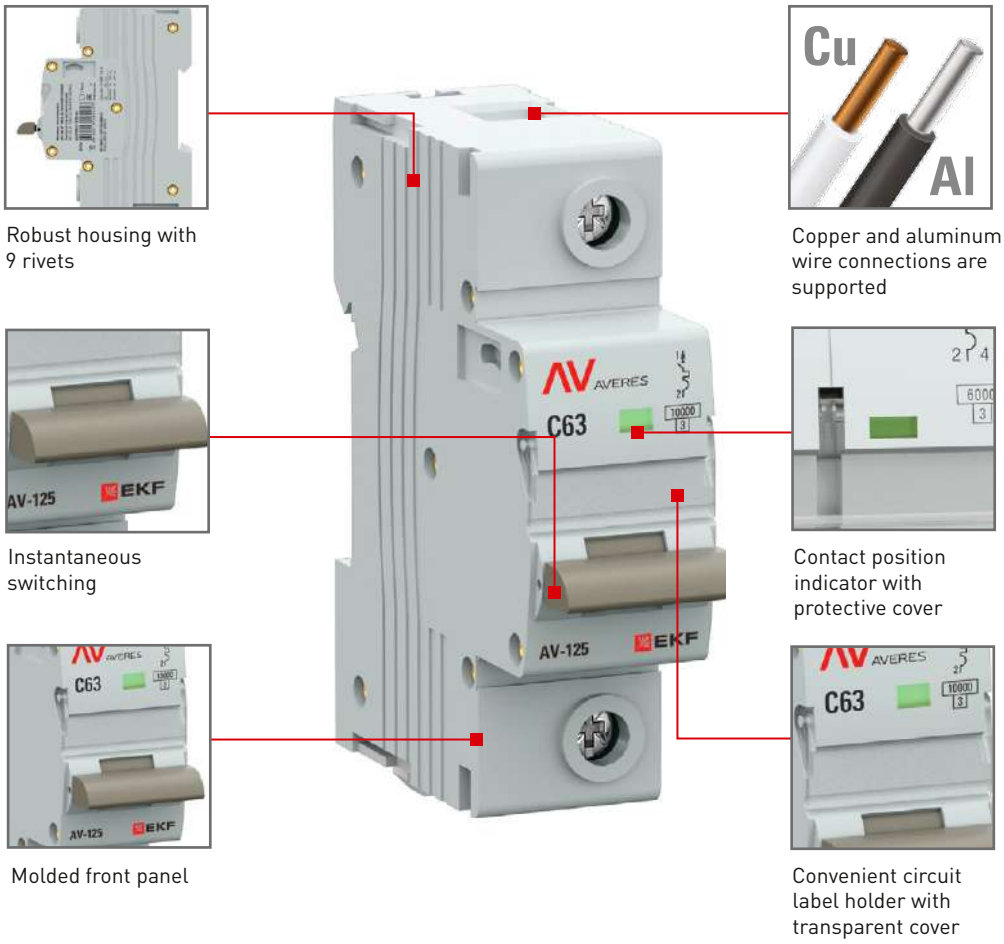
For all available documentation, scan the QR-code on the insert or on the inside of the package.

Picture	Rated current, A	Tripping curve C
		1P
	1	mcb6-DC-1-01C-av
	2	mcb6-DC-1-02C-av
	3	mcb6-DC-1-03C-av
	4	mcb6-DC-1-04C-av
	6	mcb6-DC-1-06C-av
	10	mcb6-DC-1-10C-av
	13	mcb6-DC-1-13C-av
	16	mcb6-DC-1-16C-av
	20	mcb6-DC-1-20C-av
	25	mcb6-DC-1-25C-av
	32	mcb6-DC-1-32C-av
	40	mcb6-DC-1-40C-av
	50	mcb6-DC-1-50C-av
	63	mcb6-DC-1-63C-av
		2P
	1	mcb6-DC-2-01C-av
	2	mcb6-DC-2-02C-av
	3	mcb6-DC-2-03C-av
	4	mcb6-DC-2-04C-av
	6	mcb6-DC-2-06C-av
	10	mcb6-DC-2-10C-av
	13	mcb6-DC-2-13C-av
	16	mcb6-DC-2-16C-av
	20	mcb6-DC-2-20C-av
	25	mcb6-DC-2-25C-av
	32	mcb6-DC-2-32C-av
	40	mcb6-DC-2-40C-av
	50	mcb6-DC-2-50C-av
	63	mcb6-DC-2-63C-av
		3P
	1	mcb6-DC-3-01C-av
	2	mcb6-DC-3-02C-av
	3	mcb6-DC-3-03C-av
	4	mcb6-DC-3-04C-av
	6	mcb6-DC-3-06C-av
	10	mcb6-DC-3-10C-av
	13	mcb6-DC-3-13C-av
	16	mcb6-DC-3-16C-av
	20	mcb6-DC-3-20C-av
	25	mcb6-DC-3-25C-av
	32	mcb6-DC-3-32C-av
	40	mcb6-DC-3-40C-av
	50	mcb6-DC-3-50C-av
	63	mcb6-DC-3-63C-av
		4P
	1	mcb6-DC-4-01C-av
	2	mcb6-DC-4-02C-av
	3	mcb6-DC-4-03C-av
	4	mcb6-DC-4-04C-av
	6	mcb6-DC-4-06C-av
	10	mcb6-DC-4-10C-av
	13	mcb6-DC-4-13C-av
	16	mcb6-DC-4-16C-av
	20	mcb6-DC-4-20C-av
	25	mcb6-DC-4-25C-av
	32	mcb6-DC-4-32C-av
	40	mcb6-DC-4-40C-av
	50	mcb6-DC-4-50C-av
	63	mcb6-DC-4-63C-av

Miniature circuit breakers AV-125 AVERES EKF

Miniature circuit breakers (MCB) AV-125 AVERES EKF are used for infrequent switching in electrical circuits, and for protection against overload and short-circuit currents in industrial and commercial buildings. MCBs are available in one-, two-, three, and four-pole versions. Rated breaking capacity Icn: 10 000 A. The MCB housing in is 1,5 module wide (27 mm) with the rated current of 63 A, 80 A, 100 A and 125 A. 10-year warranty.

Standard: IEC/EN 60947-2



Robust housing with 9 rivets

Copper and aluminum wire connections are supported

Instantaneous switching

Contact position indicator with protective cover

Molded front panel

Convenient circuit label holder with transparent cover

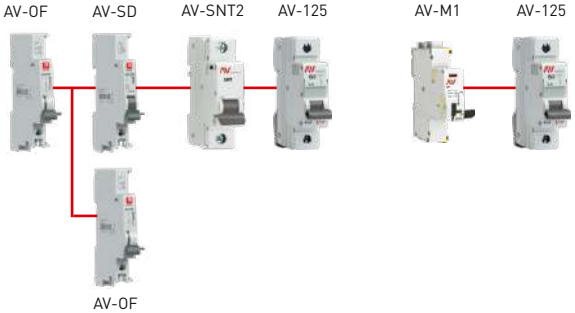
APPLICATION

MCBs are used in commercial, industrial and residential buildings:

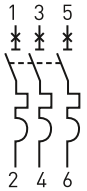
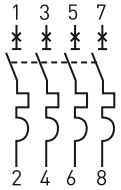
- carrying current under normal conditions;
- infrequent manual switching of individual circuit branches;
- protection against overload and short-circuit currents;
- final component of terminal power distribution system;
- isolation in the industrial sector according to IEC/EN 60947-2;
- remote monitoring, fault signaling and additional trip functionality (with installed accessories).

TECHNICAL DATA

Connection of accessories



Wiring diagrams

Number of poles			
1P	2P	3P	4P
			

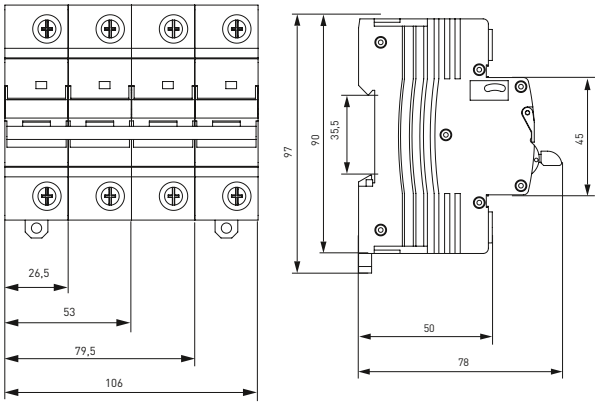
Installation and operation

Accessories:

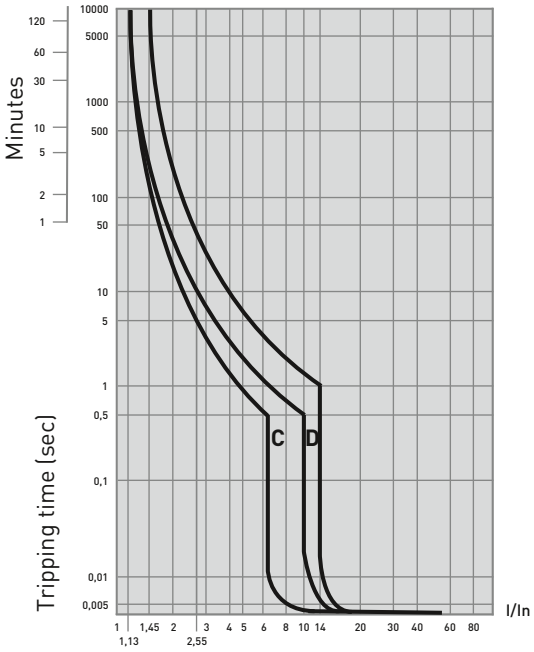
- Auxiliary contact AV-OF
- Alarm contact AV-SD
- Shunt release AV-SNT-2

Parameters	Values
Rated operating voltage Ue, V	230 / 400; 240 / 415
Frequency, Hz	50 / 60
Number of poles	1; 2; 3; 4
Rated current In, A	63, 80, 100, 125
Tripping curve	C, D
Ultimate short-circuit breaking capacity Icu, kA (IEC 60947-2)	10
Service short-circuit breaking capacity Ics, kA (IEC 60947-2)	75% Icu
Energy limiting class	3
Rated impulse withstand voltage Uimp, kV	6
Rated insulation voltage Ui, V	500
Mechanical endurance, O-C cycles	10 000
Electrical endurance, O-C cycles	8000
Utilization category	A
Operating temperature, °C	- 25 to +55
Maximum cross-section of connected wires, mm²	50
Degree of protection	IP20

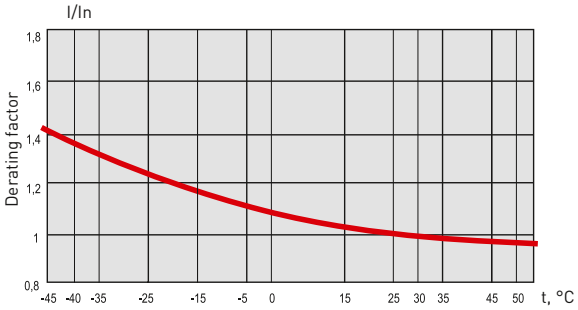
Overall and installation dimensions (mm)



Tripping curves



Temperature derating



Delivery scope

Miniature circuit breakers AV-125 AVERES EKF are supplied in a group package.

For all available documentation, scan the QR-code on the insert or on the inside of the package.

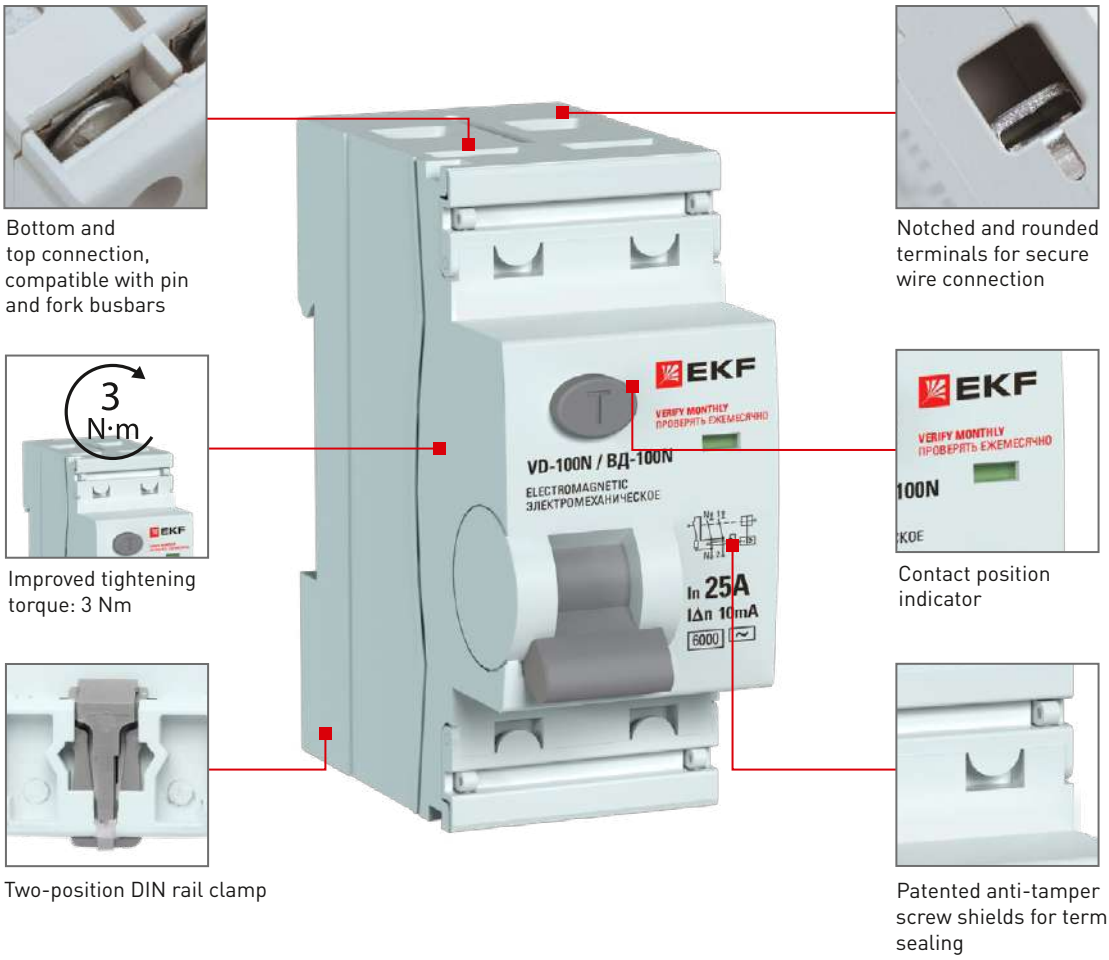
Picture	Rated current, A	Tripping curve	
		C	D
		1P	
	63	mcb125-1-63C-av	mcb125-1-63D-av
	80	mcb125-1-80C-av	mcb125-1-80D-av
	100	mcb125-1-100C-av	mcb125-1-100D-av
	125	mcb125-1-125C-av	mcb125-1-125D-av
		2P	
	63	mcb125-2-63C-av	mcb125-2-63D-av
	80	mcb125-2-80C-av	mcb125-2-80D-av
	100	mcb125-2-100C-av	mcb125-2-100D-av
	125	mcb125-2-125C-av	mcb125-2-125D-av
		3P	
	63	mcb125-3-63C-av	mcb125-3-63D-av
	80	mcb125-3-80C-av	mcb125-3-80D-av
	100	mcb125-3-100C-av	mcb125-3-100D-av
	125	mcb125-3-125C-av	mcb125-3-125D-av
		4P	
	63	mcb125-4-63C-av	mcb125-4-63D-av
	80	mcb125-4-80C-av	mcb125-4-80D-av
	100	mcb125-4-100C-av	mcb125-4-100D-av
	125	mcb125-4-125C-av	mcb125-4-125D-av

Residual current circuit breakers VD-100N PROXIMA EKF

Residual current circuit breakers VD-100N PROXIMA EKF are used in 50 / 60Hz and 240V / 415V AC electrical circuits.
Residual current circuit breakers (RCCB) are designed to:
- protect persons against electric shock by accidental contact with live parts;
- protect electrical equipment in case of damaged insulation and faults;
- protect equipment against fires and inflammations set by leakage currents and subsequent short circuits, housing or ground faults.

RCCBs withstand temperatures from -40 to +55°C. Selective versions are available.

Standards: IEC/EN 61008-2-1, IEC/EN 61008-1



Bottom and top connection, compatible with pin and fork busbars

Notched and rounded terminals for secure wire connection

Improved tightening torque: 3 Nm

Contact position indicator

Two-position DIN rail clamp

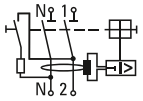
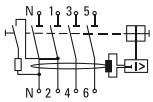
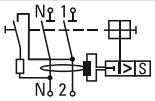
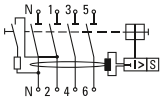
Patented anti-tamper screw shields for terminal sealing

APPLICATION

- Protection of people against electric shock by direct & indirect contact;
- Protection of electrical equipment in case of damaged insulation and faults;
- Protection of equipment against fires caused by leakage currents to housing or ground;
- RCCB type A is used in buildings and residential areas with household appliances (TV-sets, PCs, dimmers, washing machines, etc.).

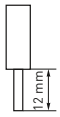
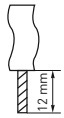
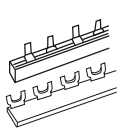
TECHNICAL DATA

Wiring diagrams

RCCB VD-100N electromagnetic	
2P	4P
	
RCCB VD-100N selective type, electromagnetic	
2P	4P
	

Installation and operation

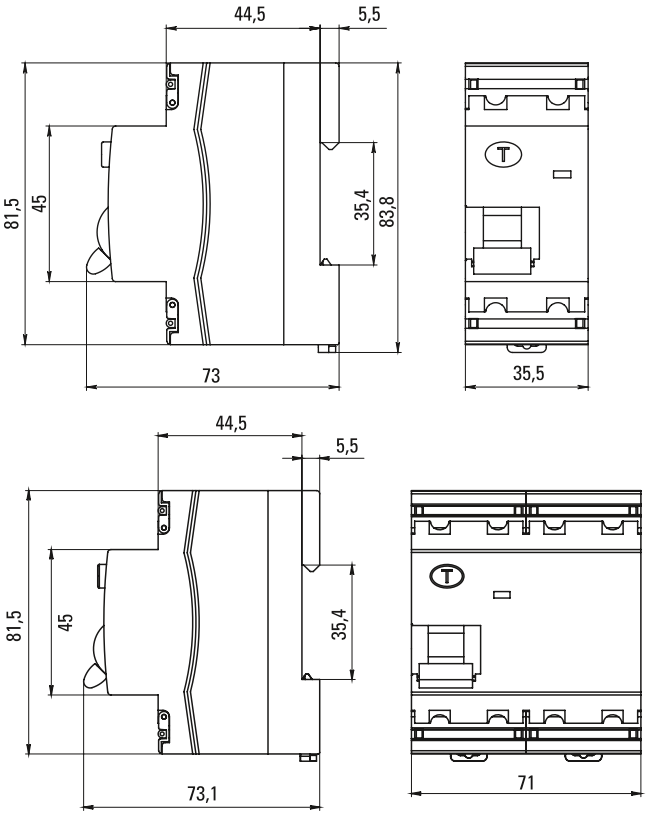
Connection

Conductor			Comb busbar
solid	stranded	ferrule	PIN, FORK
			

RCCB VD-100N PROXIMA EKF supports no accessories.

Parameters	Values
Number of poles	2, 4
Rated operating voltage Ue, V	230 / 400; 240 / 415
Rated current In, A	16, 20, 25, 32, 40, 63, 80, 100
Rated breaking residual current IΔn, mA	10, 30, 100, 300
Frequency, Hz	50 / 60
Rated conventional short-circuit current Inc, A	6000
Residual current trip type	A, AC
Type by time delay	S (type AC)
Rated residual non-operating current IΔno, mA	0,5IΔn
Residual current protection type	Electronic & electromagnetic (independent)
Mechanical endurance, O-C cycles	10 000
Electrical endurance, O-C cycles	2500
Cross-section of connected wires, mm2	25 (for 63A); 35 (for 100A)
Degree of protection	IP20
Operating temperature, °C	From -40 to +55
Max. tightening torque, N•m	3
Max. weight, kg	0,38

Overall and installation dimensions (mm)



Delivery scope

Residual current circuit breakers VD-100N PROXIMA EKF are supplied in individual and group package.

For all available documentation, scan the QR-code on the insert or on the inside of the package.

TRIPPING CHARACTERISTICS

Type	In, A	IΔn, mA	Trip /non-trip time limits for VD-100N types AC & A PROXIMA EKF in case of residual alternating current, sec.				
			IΔn	2IΔn	5IΔn	500A	Note
Non-selective	Any value	< 30	0,3	0,15	0,04	0,04	Max. trip time
		30					
		> 30					
Selective	⩾ 25	> 30	0,5	0,20	0,15	0,15	
		> 30	0,13	0,06	0,05	0,04	Min. non-trip time

Type	In, A	IΔn, mA	Maximum trip time for VD-100N type A PROXIMA EKF in case of half-wave pulse residual current, sec							
			1,4IΔn	2IΔn	2,8 IΔn	4IΔn	7IΔn	0,35A	0,5A	350A
Non-selective	Any value	< 30	-	0,3	-	0,15	-	-	0,04	0,04
		30	0,3	-	0,15	-	-	0,04	-	0,04
		> 30	0,3	-	0,15	-	0,04	-	-	0,04
Selective	⩾ 25	> 30	0,5	-	0,2	-	0,15	-	-	0,15

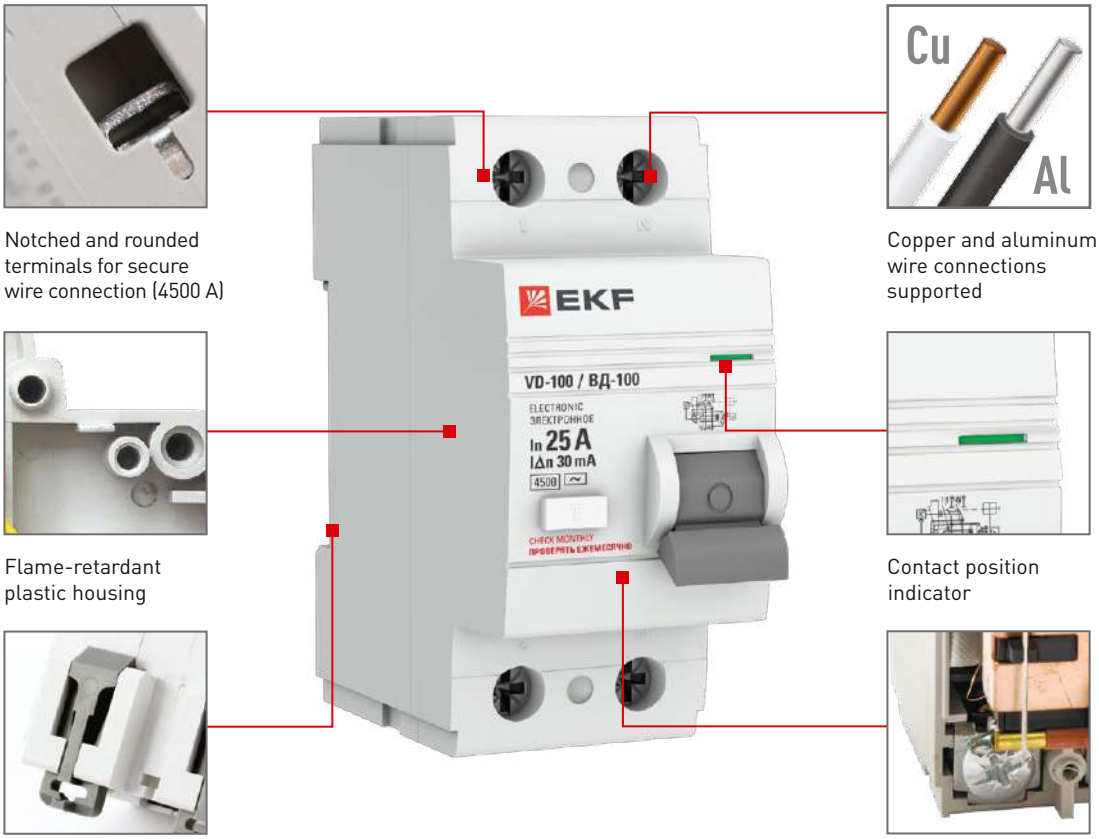
Picture	Rated current, A		10 mA	30 mA	100 mA	300 mA
	RCCB VD-100N electromagnetic type AC PROXIMA EKF					
	16	RCCB VD-100N 2P 16A PROXIMA EKF	E1026M1610	E1026M1630	-	-
	25	RCCB VD-100N 2P 25A PROXIMA EKF	E1026M2510	E1026M2530	E1026M25100	E1026M25300
	32	RCCB VD-100N 2P 32A PROXIMA EKF	E1026M3210	E1026M3230	E1026M32100	-
	40	RCCB VD-100N 2P 40A PROXIMA EKF	-	E1026M4030	E1026M40100	E1026M40300
	63	RCCB VD-100N 2P 63A PROXIMA EKF	-	E1026M6330	E1026M63100	E1026M63300
	80	RCCB VD-100N 2P 80A PROXIMA EKF	-	E1026M8030	E1026M80100	E1026M80300
	100	RCCB VD-100N 2P 100A PROXIMA EKF	-	E1026M10030	E1026M100100	E1026M100300

Picture	Rated current, A		10 mA	30 mA	100 mA	300 mA
		RCCB VD-100N electromagnetic type AC PROXIMA EKF				
	16	RCCB VD-100N 4P 16A PROXIMA EKF	E1046M1610	-	-	-
	25	RCCB VD-100N 4P 25A PROXIMA EKF	E1046M2510	E1046M2530	E1046M25100	E1046M25300
	32	RCCB VD-100N 4P 32A PROXIMA EKF	-	E1046M3230	E1046M32100	E1046M32300
	40	RCCB VD-100N 4P 40A PROXIMA EKF	-	E1046M4030	E1046M40100	E1046M40300
	63	RCCB VD-100N 4P 63A PROXIMA EKF	-	E1046M6330	E1046M63100	E1046M63300
	80	RCCB VD-100N 4P 80A PROXIMA EKF	-	E1046M8030	E1046M80100	E1046M80300
	100	RCCB VD-100N 4P 100A PROXIMA EKF	-	E1046M10030	E1046M100100	E1046M100300
		RCCB VD-100N electromagnetic type A PROXIMA EKF				
	16	RCCB VD-100N 2P 16A PROXIMA EKF	E1026MA1610	E1026MA1630	-	-
	25	RCCB VD-100N 2P 25A PROXIMA EKF	E1026MA2510	E1026MA2530	E1026MA25100	E1026MA25300
	32	RCCB VD-100N 2P 32A PROXIMA EKF	-	E1026MA3230	-	-
	40	RCCB VD-100N 2P 40A PROXIMA EKF	-	E1026MA4030	E1026MA40100	E1026MA40300
	63	RCCB VD-100N 2P 63A PROXIMA EKF	-	E1026MA6330	E1026MA63100	E1026MA63300
	80	RCCB VD-100N 2P 80A PROXIMA EKF	-	E1026MA8030	E1026MA80100	E1026MA80300
	100	RCCB VD-100N 2P 100A PROXIMA EKF	-	E1026MA10030	E1026MA100100	E1026MA100300
	16	RCCB VD-100N 4P 16A PROXIMA EKF	E1046MA1610	E1046MA1630	-	-
	25	RCCB VD-100N 4P 25A PROXIMA EKF	E1046MA2510	E1046MA2530	E1046MA25100	E1046MA25300
	32	RCCB VD-100N 4P 32A PROXIMA EKF	-	E1046MA3230	E1046MA32100	E1046MA32300
	40	RCCB VD-100N 4P 40A PROXIMA EKF	-	E1046MA4030	E1046MA40100	E1046MA40300
	50	RCCB VD-100N 4P 50A PROXIMA EKF	-	E1046MA5030	-	-
	63	RCCB VD-100N 4P 63A PROXIMA EKF	-	E1046MA6330	E1046MA63100	E1046MA63300
	80	RCCB VD-100N 4P 80A PROXIMA EKF	-	E1046MA8030	E1046MA80100	E1046MA80300
	100	RCCB VD-100N 4P 100A PROXIMA EKF	-	E1046MA10030	E1046MA100100	E1046MA100300
		RCCB VD-100N selective electromagnetic type AC PROXIMA EKF				
	16	RCCB VD-100N 2P 16A PROXIMA EKF	-	-	-	-
	25	RCCB VD-100N 2P 25A PROXIMA EKF	-	-	E1026MS25100	-
	32	RCCB VD-100N 2P 32A PROXIMA EKF	-	-	-	-
	40	RCCB VD-100N 2P 40A PROXIMA EKF	-	-	E1026MS40100	E1026MS40300
	63	RCCB VD-100N 2P 63A PROXIMA EKF	-	-	E1026MS63100	E1026MS63300
	80	RCCB VD-100N 2P 80A PROXIMA EKF	-	-	E1026MS80100	E1026MS80300
	100	RCCB VD-100N 2P 100A PROXIMA EKF	-	-	E1026MS100100	E1026MS100300
	16	RCCB VD-100N 4P 16A PROXIMA EKF	-	-	-	-
	25	RCCB VD-100N 4P 25A PROXIMA EKF	-	-	E1046MS25100	-
	32	RCCB VD-100N 4P 32A PROXIMA EKF	-	-	-	-
	40	RCCB VD-100N 4P 40A PROXIMA EKF	-	-	E1046MS40100	E1046MS40300
	63	RCCB VD-100N 4P 63A PROXIMA EKF	-	-	E1046MS63100	E1046MS63300
	80	RCCB VD-100N 4P 80A PROXIMA EKF	-	-	E1046MS80100	E1046MS80300
	100	RCCB VD-100N 4P 100A PROXIMA EKF	-	-	E1046MS100100	E1046MS100300

Residual current circuit breakers VD-100 PROXIMA EKF

Residual current circuit breakers (RCCB) VD-100 PROXIMA EKF are the latest generation of protective devices. RCCBs are designed to protect: people against electric shock by direct/indirect contact with live parts; equipment against fires caused by leakage currents and subsequent short circuits. To protect consumers against overload and short circuit, the RCCB is used in conjunction with circuit breakers. The RCCB can be operated under temperature up to +50°C. Selective versions are available.

Standards: IEC/EN 61008-2-1, IEC/EN 61008-1



Notched and rounded terminals for secure wire connection (4500 A)

Copper and aluminum wire connections supported

Flame-retardant plastic housing

Contact position indicator

Two-position DIN rail clamp

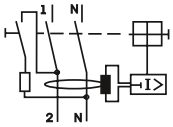
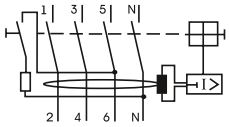
Silver-impregnated oxygen-free copper contacts

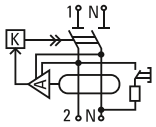
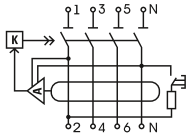
APPLICATION

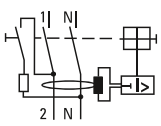
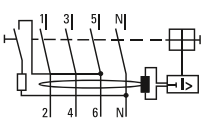
- Protection of people against electric shock by direct & indirect contact;
- Protection of electrical equipment in case of damaged insulation and faults;
- Protection of equipment against fires caused by leakage currents to housing or ground;
- RCCB type A is used in buildings and residential areas with household appliances (TV-sets, PCs, dimmers, washing machines, etc.).

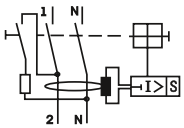
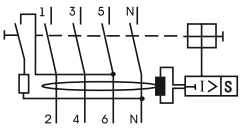
TECHNICAL DATA

Wiring diagrams

Electromagnetic RCCB	
2P	4P
	

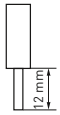
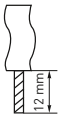
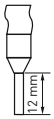
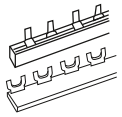
Electronic RCCB	
2P	4P
	

RCCB type A, AC	
2P	4P
	

Electromagnetic RCCB type AC-S	
2P	4P
	

Installation and operation

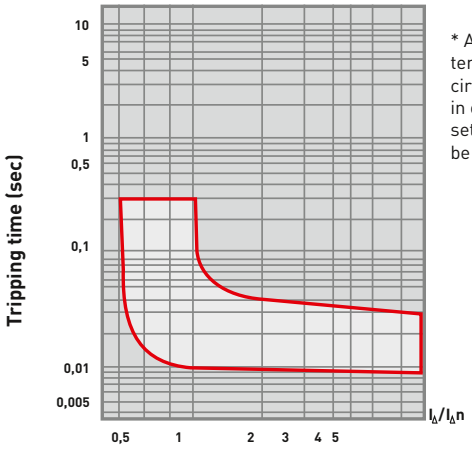
1. Connection

Conductor			Comb busbar
solid	stranded	ferrule	pin, fork
			

2. No accessories supported

Parameters	Values
Rated operating voltage Ue, V	230 / 400
Frequency, Hz	50 / 60
Number of poles	2P, 4P
Rated current In, A	16, 20, 25, 32, 40, 63, 80, 100
Neutral pole position	Right side
Degree of protection	IP20
Rated conventional short-circuit current Inc, A	4500 / 6000
Residual current protection type	Electronic / Electromagnetic
Residual current trip type	A; AC
Selectivity (S)	Available
Rated residual current IΔn, A	0,01; 0,03; 0,1; 0,3
Energy limiting class	3
Mechanical endurance, O-C cycles	10 000
Electrical endurance, O-C cycles	2500
Operating temperature, °C	-20 to +50
Cross-section of connected wires, mm²	1–25
Max. tightening torque, N·m	2,5

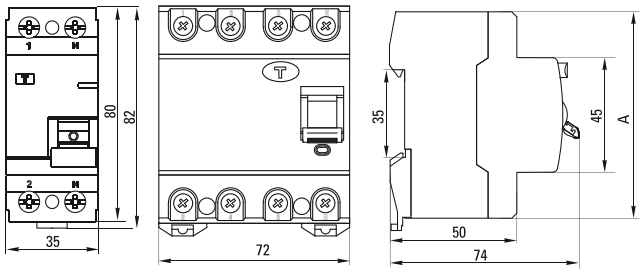
Tripping curves



* At the ambient temperature -25 °C, the circuit breaker stays in operation, but the settings can no longer be guaranteed.

Overall and installation dimensions (mm)

RCCB VD-100 2P RCCB VD-100 4P



Delivery scope

Residual current circuit breakers VD-100 PROXIMA EKF are supplied in an individual package.
For all available documentation, scan the QR-code on the insert or on the inside of the package.

Picture	Rated current, A	Rated operating residual current			
		10 mA	30 mA	100 mA	300 mA
	Type AC Electromagnetic 4,5kA 2P				
	16	elcb-2-16-10-em-pro	elcb-2-16-30-em-pro	–	–
	25	elcb-2-25-10-em-pro	elcb-2-25-30-em-pro	elcb-2-25-100-em-pro	–
	32	elcb-2-32-10-em-pro	elcb-2-32-30-em-pro	elcb-2-32-100-em-pro	–
	40	–	elcb-2-40-30-em-pro	elcb-2-40-100-em-pro	elcb-2-40-300-em-pro
	63	–	elcb-2-63-30-em-pro	elcb-2-63-100-em-pro	elcb-2-63-300-em-pro
	80	–	elcb-2-80-30-em-pro	elcb-2-80-100-em-pro	elcb-2-80-300-em-pro
	100	–	elcb-2-100-30-em-pro	elcb-2-100-100-em-pro	elcb-2-100-300-em-pro
	Type A Electromagnetic/electronic 4,5kA 2P				
	16	elcb-2-16-10-em-a-pro	elcb-2-16-30-em-a-pro	–	–
	25	elcb-2-25-10-em-a-pro	elcb-2-25-30-em-a-pro	–	–
	32	–	elcb-2-32-30-em-a-pro	–	–
	40	–	elcb-2-40-30-em-a-pro elcb-2-40-30-e-a-pro	–	–
	50	–	–	–	–
	63	–	elcb-2-63-30-em-a-pro elcb-2-63-30-e-a-pro	elcb-2-63-100-em-a-pro elcb-2-63-100-e-a-pro	–
	Type AC-S (selective) Electromagnetic 4,5kA 2P				
	25	–	–	elcb-2-25-100S-em-pro	–
	40	–	–	elcb-2-40-100S-em-pro	elcb-2-40-300S-em-pro
	63	–	–	elcb-2-63-100S-em-pro	elcb-2-63-300S-em-pro
	80	–	–	elcb-2-80-100S-em-pro	elcb-2-80-300S-em-pro
	100	–	–	elcb-2-100-100S-em-pro	elcb-2-100-300S-em-pro

Type AC Electromagnetic 4,5kA 4P				
25	elcb-4-25-10-em-pro	elcb-4-25-30-em-pro	elcb-4-25-100-em-pro	elcb-4-25-300-em-pro
32	–	elcb-4-32-30-em-pro	elcb-4-32-100-em-pro	–
40	–	elcb-4-40-30-em-pro	elcb-4-40-100-em-pro	elcb-4-40-300-em-pro
63	–	elcb-4-63-30-em-pro	elcb-4-63-100-em-pro	elcb-4-63-300-em-pro
80	–	–	elcb-4-80-100-em-pro	–
100	–	elcb-4-100-30-em-pro	elcb-4-100-100-em-pro	elcb-4-100-300-em-pro
Type A Electromagnetic/electronic 4,5kA 4P				
16	elcb-4-16-10-em-a-pro	elcb-4-16-30-em-a-pro	–	–
25	elcb-4-25-10-em-a-pro	elcb-4-25-30-em-a-pro	–	–
32	–	elcb-4-32-30-em-a-pro	–	–
40	–	elcb-4-40-30-em-a-pro elcb-4-40-30-e-a-pro	–	–
50	–	elcb-4-50-30-em-a-pro	–	–
63	–	elcb-4-63-30-em-a-pro elcb-4-63-30-e-a-pro	elcb-4-63-100-em-a-pro elcb-4-63-100-e-a-pro	–
Type AC-S (selective) Electromagnetic 4,5kA 4P				
25	–	–	elcb-4-25-100S-em-pro	–
40	–	–	elcb-4-40-100S-em-pro	elcb-4-40-300S-em-pro
63	–	–	elcb-4-63-100S-em-pro	elcb-4-63-300S-em-pro
80	–	–	elcb-4-80-100S-em-pro	elcb-4-80-300S-em-pro
100	–	–	elcb-4-100-100S-em-pro	elcb-4-100-300S-em-pro

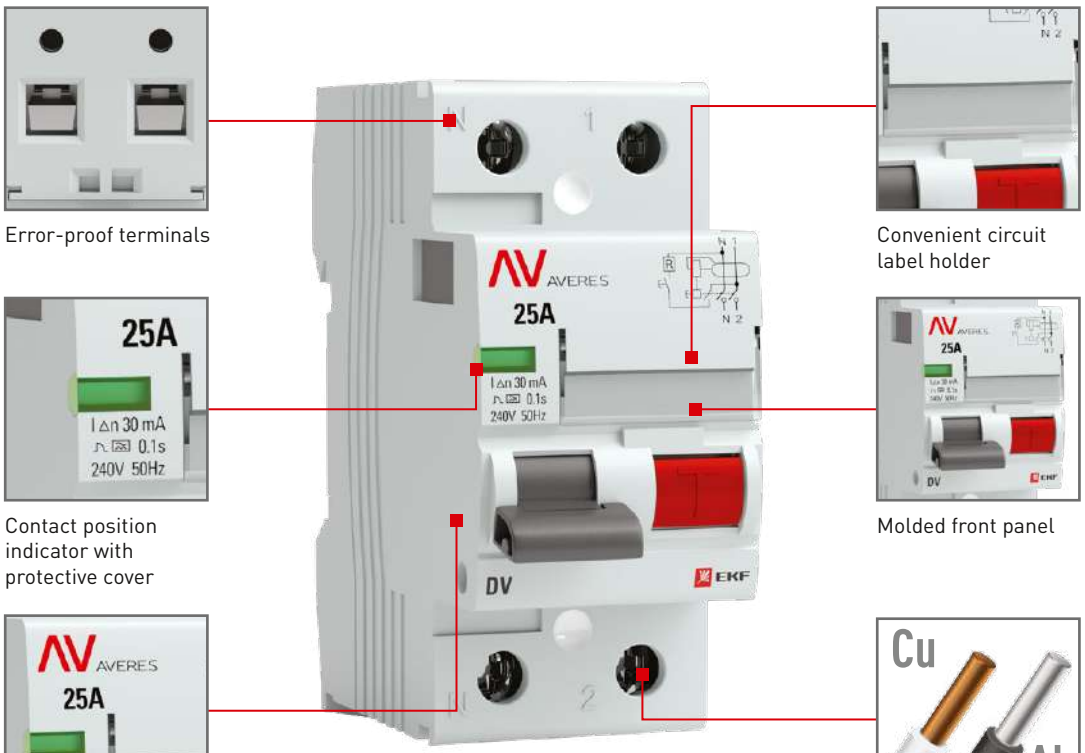
Type AC Electromagnetic 6 kA 2P				
16	elcb-2-6-16-10-em-pro	elcb-2-6-16-30-em-pro	elcb-2-6-16-100-em-pro	elcb-2-6-16-300-em-pro
25	elcb-2-6-25-10-em-pro	elcb-2-6-25-30-em-pro	elcb-2-6-25-100-em-pro	elcb-2-6-25-300-em-pro
32	elcb-2-6-32-10-em-pro	elcb-2-6-32-30-em-pro	elcb-2-6-32-100-em-pro	elcb-2-6-32-300-em-pro
40	–	elcb-2-6-40-30-em-pro	elcb-2-6-40-100-em-pro	elcb-2-6-40-300-em-pro
63	–	elcb-2-6-63-30-em-pro	elcb-2-6-63-100-em-pro	elcb-2-6-63-300-em-pro
80	–	elcb-2-6-80-30-em-pro	elcb-2-6-80-100-em-pro	elcb-2-6-80-300-em-pro
100	–	elcb-2-6-100-30-em-pro	elcb-2-6-100-100-em-pro	elcb-2-6-100-300-em-pro
Type A Electromagnetic/electronic 6kA 2P				
16	–	elcb-2-6-16-30-em-a-pro	elcb-2-6-16-100-em-a-pro	-
25	–	elcb-2-6-25-30-em-a-pro	elcb-2-6-25-100-em-a-pro	-
32	–	elcb-2-6-32-30-em-a-pro	elcb-2-6-32-100-em-a-pro	-
40	–	elcb-2-6-40-30-em-a-pro	elcb-2-6-40-100-em-a-pro	-
63	–	elcb-2-6-63-30-em-a-pro	elcb-2-6-63-100-em-a-pro	-
80	–	elcb-2-6-80-30-em-a-pro	elcb-2-6-80-100-em-a-pro	-
100	–	elcb-2-6-100-30-em-a-pro	elcb-2-6-100-100-em-a-pro	-
Type AC-S (selective) Electromagnetic 6kA 2P				
40	–	–	elcb-2-6-40-100S-em-pro	elcb-2-6-40-300S-em-pro
63	–	–	elcb-2-6-63-100S-em-pro	elcb-2-6-63-300S-em-pro
80	–	–	elcb-2-6-80-100S-em-pro	elcb-2-6-80-300S-em-pro
100	–	–	elcb-2-6-100-100S-em-pro	elcb-2-6-100-300S-em-pro

Type AC Electromagnetic 6 kA 4P				
16	elcb-4-6-16-30-em-pro	elcb-4-6-16-30-em-pro	elcb-4-6-16-100-em-pro	elcb-4-6-16-300-em-pro
25	elcb-4-6-25-10-em-pro	elcb-4-6-25-30-em-pro	elcb-4-6-25-100-em-pro	elcb-4-6-25-300-em-pro
32	elcb-4-6-32-10-em-pro	elcb-4-6-32-30-em-pro	elcb-4-6-32-100-em-pro	elcb-4-6-32-300-em-pro
40	–	elcb-4-6-40-30-em-pro	elcb-4-6-40-100-em-pro	elcb-4-6-40-300-em-pro
63	–	elcb-4-6-63-30-em-pro	elcb-4-6-63-100-em-pro	elcb-4-6-63-300-em-pro
80	–	elcb-4-6-80-30-em-pro	elcb-4-6-80-100-em-pro	elcb-4-6-80-300-em-pro
100	–	elcb-4-6-100-30-em-pro	elcb-4-6-100-100-em-pro	elcb-4-6-100-300-em-pro
Type A Electromagnetic/electronic 6kA 4P				
16	–	elcb-4-6-16-30-em-a-pro	elcb-4-6-16-100-em-a-pro	-
25	–	elcb-4-6-25-30-em-a-pro	elcb-4-6-25-100-em-a-pro	-
32	–	elcb-4-6-32-30-em-a-pro	elcb-4-6-32-100-em-a-pro	-
40	–	elcb-4-6-40-30-em-a-pro	elcb-4-6-40-100-em-a-pro	-
63	–	elcb-4-6-63-30-em-a-pro	elcb-4-6-63-100-em-a-pro	-
80	–	elcb-4-6-80-30-em-a-pro	elcb-4-6-80-100-em-a-pro	-
100	–	elcb-4-6-100-30-em-a-pro	elcb-4-6-100-100-em-a-pro	-
Type AC-S (selective) Electromagnetic 6kA 4P				
40	–	–	elcb-4-6-40-100S-em-pro	elcb-4-6-40-300S-em-pro
63	–	–	elcb-4-6-63-100S-em-pro	elcb-4-6-63-300S-em-pro
80	–	–	elcb-4-6-80-100S-em-pro	elcb-4-6-80-300S-em-pro
100	–	–	elcb-4-6-100-100S-em-pro	elcb-4-6-100-300S-em-pro

Residual current circuit breakers DV AVERES EKF

Residual current circuit breakers (RCCB) DV AVERES EKF are designed to protect people against electric shock by direct & indirect contact with live parts; and protect equipment against fires caused by leakage currents and subsequent short circuit. AVERES RCCBs include A, AC, and AC-S (selective) types. RCCBs can be complemented with various accessories to extend their functions. 10-year warranty.

Standards: IEC/EN 61008-1-2, IEC/EN 61008-1

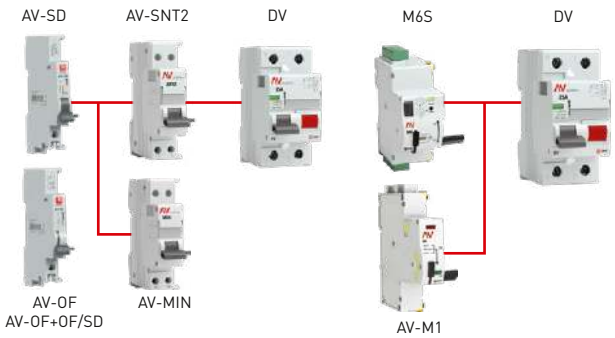


APPLICATION

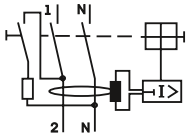
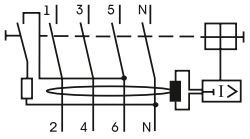
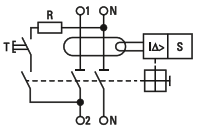
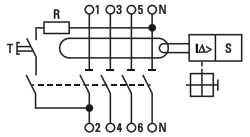
- Protection of people against electric shock by direct & indirect contact;
- Protection of electrical equipment in case of damaged insulation and faults;
- Protection of equipment against fires caused by leakage currents to housing or ground;
- RCCB type A is used in buildings and residential areas with household appliances (TV-sets, PCs, dimmers, washing machines, etc.).

TECHNICAL DATA

Connection of accessories



Wiring diagrams

Electromagnetic	
2P	4P
	
Electromagnetic selective	
2P	4P
	

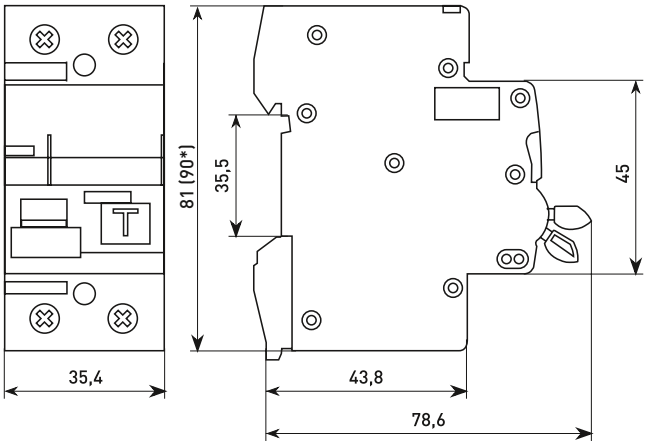
Installation and operation

Accessories:

- Auxiliary contact AV-OF
- Alarm contact AV-SD
- Combined auxiliary and alarm contact AV-OF+OF/SD
- Shunt release AV-SNT-2
- Undervoltage release AV-MIN
- Auto recloser M6S
- Auto recloser M1

Parameters	Values
Rated voltage, V	240 / 415
Frequency, Hz	50 / 60
Rated current In, A	25, 40, 63, 80, 100
Number of poles	2P, 4P
Residual current protection type	Electromagnetic
Residual current trip type	A, AC
Selectivity (S)	Available
Rated residual current IΔn, A	0,01; 0,03; 0,1; 0,3
Rated conventional short-circuit current Inc, kA	10
Mechanical endurance, O-C cycles	20 000
Electrical endurance, O-C cycles	10 000
Operating temperature, °C	-20 to +55
Max. tightening torque, N·m	3
Degree of protection	IP20
Cross-section of connected wires, mm²	25

Overall and installation dimensions for devices up to 63 (80 & 100) A (mm)



Delivery scope

Residual current circuit breakers DV AVERES EKF are supplied in a group package.
For all available documentation, scan the QR-code on the insert or on the inside of the package.

Picture	Rated current, A	Rated operating residual current			
		10 mA	30 mA	100 mA	300 mA
	2P Type A				
	25	–	rccb-2-25-30-a-av	rccb-2-25-100-a-av	rccb-2-25-300-a-av
	40	–	rccb-2-40-30-a-av	rccb-2-40-100-a-av	rccb-2-40-300-a-av
	63	–	rccb-2-63-30-a-av	rccb-2-63-100-a-av	rccb-2-63-300-a-av
	80	–	rccb-2-80-30-a-av	rccb-2-80-100-a-av	rccb-2-80-300-a-av
	100	–	rccb-2-100-30-a-av	rccb-2-100-100-a-av	rccb-2-100-300-a-av
	2P Type AC				
	25	rccb-2-25-10-ac-av	rccb-2-25-30-ac-av	rccb-2-25-100-ac-av	rccb-2-25-300-ac-av
	40	–	rccb-2-40-30-ac-av	rccb-2-40-100-ac-av	rccb-2-40-300-ac-av
	63	–	rccb-2-63-30-ac-av	rccb-2-63-100-ac-av	rccb-2-63-300-ac-av
	80	–	rccb-2-80-30-ac-av	rccb-2-80-100-ac-av	rccb-2-80-300-ac-av
	100	–	rccb-2-100-30-ac-av	rccb-2-100-100-ac-av	rccb-2-100-300-ac-av
	2P Type AC-S				
	25	–	rccb-2-25-30-s-av	rccb-2-25-100-s-av	rccb-2-25-300-s-av
	40	–	rccb-2-40-30-s-av	rccb-2-40-100-s-av	rccb-2-40-300-s-av
	63	–	rccb-2-63-30-s-av	rccb-2-63-100-s-av	rccb-2-63-300-s-av
	80	–	rccb-2-80-30-s-av	rccb-2-80-100-s-av	rccb-2-80-300-s-av
	100	–	rccb-2-100-30-s-av	rccb-2-100-100-s-av	rccb-2-100-300-s-av
	4P Type A				
	25		rccb-4-25-30-a-av	rccb-4-25-100-a-av	rccb-4-25-300-a-av
	40		rccb-4-40-30-a-av	rccb-4-40-100-a-av	rccb-4-40-300-a-av
	63		rccb-4-63-30-a-av	rccb-4-63-100-a-av	rccb-4-63-300-a-av
	80		rccb-4-80-30-a-av	rccb-4-80-100-a-av	rccb-4-80-300-a-av
	100		rccb-4-100-30-a-av	rccb-4-100-100-a-av	rccb-4-100-300-a-av
	4P Type AC				
	25		rccb-4-25-30-ac-av	rccb-4-25-100-ac-av	rccb-4-25-300-ac-av
	40		rccb-4-40-30-ac-av	rccb-4-40-100-ac-av	rccb-4-40-300-ac-av
	63		rccb-4-63-30-ac-av	rccb-4-63-100-ac-av	rccb-4-63-300-ac-av
	80		rccb-4-80-30-ac-av	rccb-4-80-100-ac-av	rccb-4-80-300-ac-av
	100		rccb-4-100-30-ac-av	rccb-4-100-100-ac-av	rccb-4-100-300-ac-av
	4P Type AC-S				
	25		rccb-4-25-30-s-av	rccb-4-25-100-s-av	rccb-4-25-300-s-av
	40		rccb-4-40-30-s-av	rccb-4-40-100-s-av	rccb-4-40-300-s-av
	63		rccb-4-63-30-s-av	rccb-4-63-100-s-av	rccb-4-63-300-s-av
	80		rccb-4-80-30-s-av	rccb-4-80-100-s-av	rccb-4-80-300-s-av
	100		rccb-4-100-30-s-av	rccb-4-100-100-s-av	rccb-4-100-300-s-av

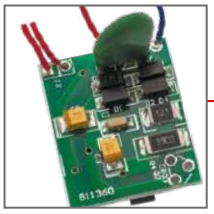
PROXIMA Residual Current Circuit Breakers with Overcurrent Protection

Series	AVDT-63	AVDT-63M	AD-32	AD-2, AD-4
Contact position indicator	Yes	Yes	Yes	Yes
Standard	IEC 61009-1	IEC 61009-1	IEC 61009-1	IEC 61009-1
Rated frequency [Fn, Hz]	50 / 60	50 / 60	50 / 60	50 / 60
Rated breaking capacity [Icn, A]	6000	6000, (10 000)	4500 / 6000	6000
Poles	1P+N	1P+N	1P+N, 3P+N	1P+N, 3P+N
Rated operating residual current [mA]	10, 30, 100	10, 30, 100	10, 30, 100, 300	10, 30, 100, 300
Rated Current [In, A]	6–63	6-32, (40)	6–63	6–63
Residual current protection type	AC, A	AC, A	AC, A	AC
Tripping curves [type]	B, C	B, C	B, C	B, C
Selective versions	N/A	N/A	Available	Available
Overvoltage protection	N/A	N/A	Available	N/A
Accessories	N/A	N/A	Available	N/A
Degree of protection	IP20	IP20	IP20	IP20
Mechanical durability [cycles]	10 000	10 000	10 000	10 000
Electrical durability [cycles]	4000	4000	4000	4000
Operation ambient temperature [°C]	-25 to +50	-25 to +55	-25 to +50	-25 to +50
Cross-section of connected wires [mm²]	1-25	1-10	1-25	1-25

Residual current circuit breakers with overcurrent protection AVDT-63 PROXIMA EKF

Residual current circuit breaker with overcurrent protection (RCBO) AVDT-63 PROXIMA EKF combines the functions of circuit breakers and electronic/electromagnetic (EM) residual current devices. When the circuit breaker detects leakage current (fault) to the ground or overcurrent (overload or short circuit) in the protected circuit section, the RCBO trips to disconnect the circuit. Breaking capacity is 6000 A. Copper and aluminum wire connections are supported.

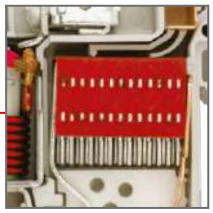
Standard: IEC/EN 61009-1



Advanced PCB with enhanced pulse interference protection

Terminals compatible with fork comb busbars

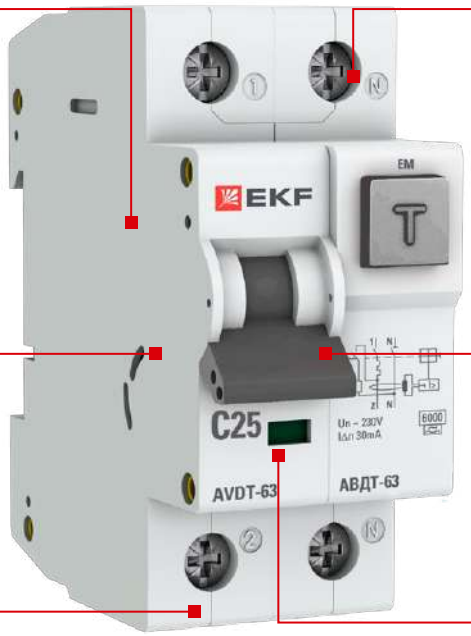
Molded front panel



Arc chute with 13 splitters

Slots for easy DIN rail mounting – only one screwdriver required

Contact position indicator

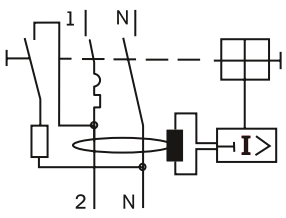
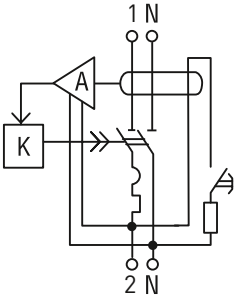


APPLICATION

- Protection of people against electric shock by direct & indirect contact;
- Protection of electrical equipment in the event of damaged insulation and faults;
- Protection of equipment against fires caused by leakage currents to housing or ground faults and subsequent short circuits;
- Auto disconnection of electrical circuit section in case of overload and short circuit.

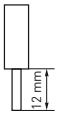
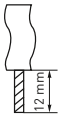
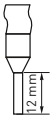
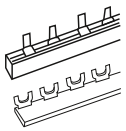
TECHNICAL DATA

Wiring diagrams

AVDT-63 (electromagnetic)	AVDT-63 (electronic)
	

Installation and operation

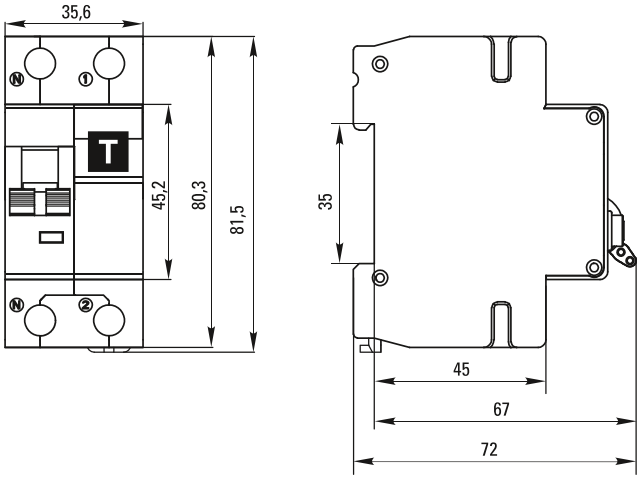
1. Connection

Conductor			Comb busbar
solid	stranded	ferrule	pin, fork
			

2. No accessories supported

Parameters	Values
Rated operating voltage Ue, V	230 / 240
Frequency, Hz	50 / 60
Number of poles	1P+N
Rated current In, A	6–63
Neutral pole position	Right
Tripping curve	B, C
Degree of protection	IP20
Rated short-circuit breaking capacity Icn, A	6000
Residual current protection type	Electronic / Electromagnetic
Residual current trip type	A; AC
Rated residual current IΔn, A	0,03; 0,1; (0,01)
Energy limiting class	3
Mechanical endurance, O-C cycles	10 000
Electrical endurance, O-C cycles	4000
Operating temperature, °C	-20 to +50
Cross-section of connected wires, mm²	1–25
Max. tightening torque, N•m	2,5

Overall and installation dimensions (mm)



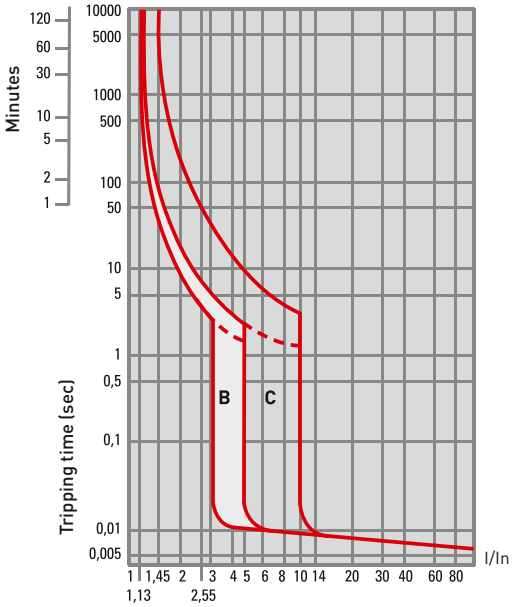
Delivery scope

Residual current circuit breakers with overcurrent protection AVDT-63 PROXIMA EKF are supplied in an individual package.

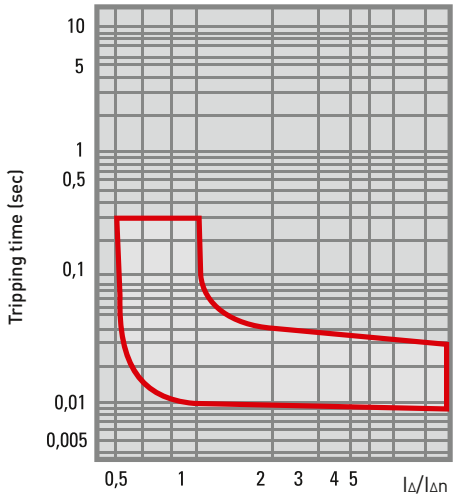
For all available documentation, scan the QR-code on the insert or on the inside of the package.

Tripping curves

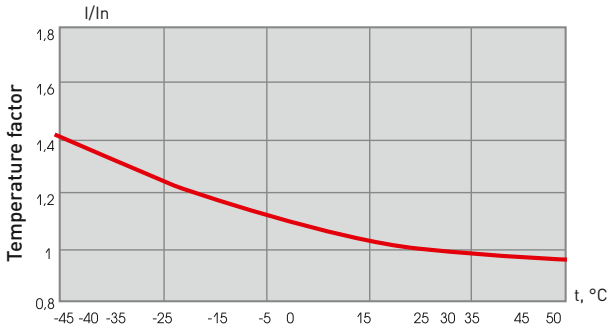
B – electromagnetic protection trips at (3-5) × In.
C – electromagnetic protection trips at (5-10) × In.



Operating time by residual current



Temperature derating

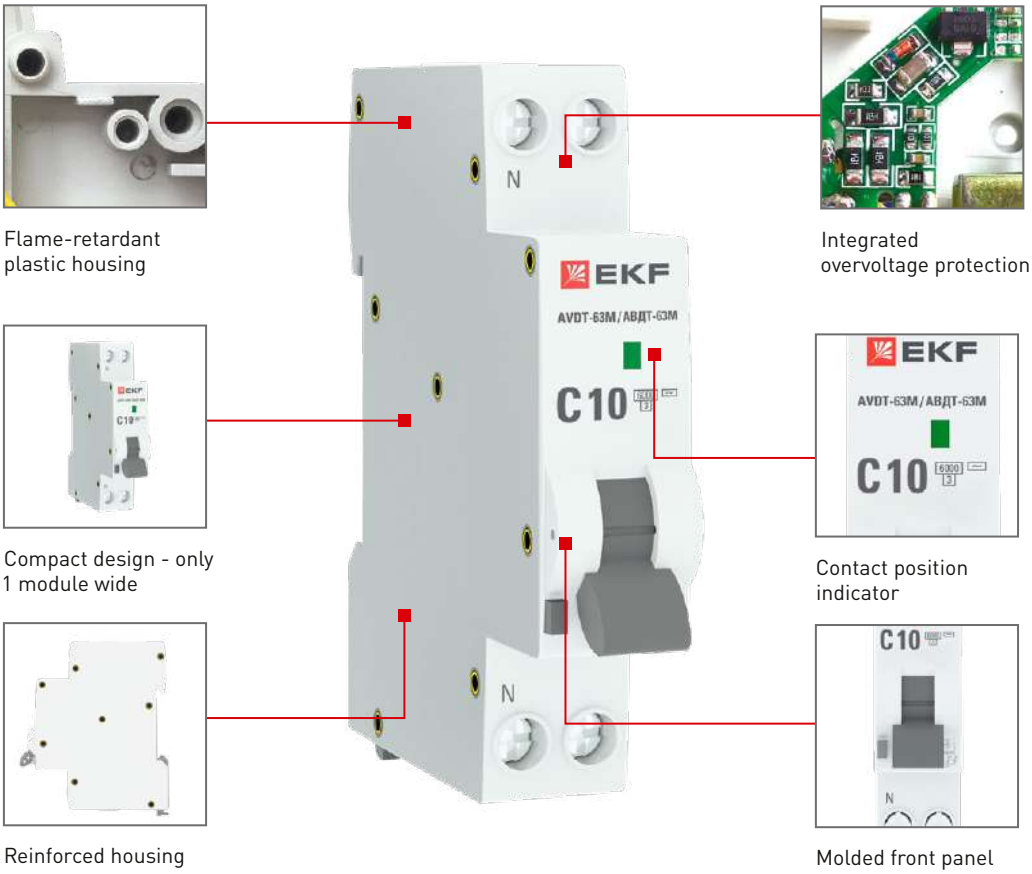


Picture	Rated current, A	Rated operating residual current	
		30 mA	100 mA
		Type A Electromagnetic	
	6	DA63-6-30	DA63-6-100em
	10	DA63-10-30	DA63-10-100em
	16	DA63-16-30	DA63-16-100em
	25	DA63-25-30	DA63-25-100em
	32	DA63-32-30	DA63-32-100em
	40	DA63-40-30	DA63-40-100em
	50	DA63-50-30	DA63-50-100em
	63	DA63-63-30	DA63-63-100em
		Type A Electronic	
	6	DA63-6-30e	–
	10	DA63-10-30e	–
	16	DA63-16-30e	–
	25	DA63-25-30e	–
	32	DA63-32-30e	DA63-32-100e
	40	DA63-40-30e	DA63-40-100e
	50	DA63-50-30e	DA63-50-100e
	63	DA63-63-30e	DA63-63-100e
		Type AC Electronic	
	6	DA63-6-30e-AC	DA63-6-100e-AC
	10	DA63-10-30e-AC	DA63-10-100e-AC
	16	DA63-16-30e-AC	DA63-16-100e-AC
	20	DA63-20-30e-AC	DA63-20-100e-AC
	25	DA63-25-30e-AC	DA63-25-100e-AC
	32	DA63-32-30e-AC	DA63-32-100e-AC
	40	DA63-40-30e-AC	DA63-40-100e-AC
	50	DA63-50-30e-AC	DA63-50-100e-AC
	63	DA63-63-30e-AC	DA63-63-100e-AC
		Type AC Electromagnetic	
	6	DA63-6-30-AC	DA63-6-100em-AC
	10	DA63-10-30-AC	DA63-10-100em-AC
	16	DA63-16-30-AC	DA63-16-100em-AC
	20	DA63-20-30-AC	DA63-20-100em-AC
	25	DA63-25-30-AC	DA63-25-100em-AC
	32	DA63-32-30-AC	DA63-32-100em-AC
	40	DA63-40-30-AC	DA63-40-100em-AC
	50	DA63-50-30-AC	DA63-50-100em-AC
	63	DA63-63-30-AC	DA63-63-100em-AC

Residual current circuit breakers with overcurrent protection AVDT-63M PROXIMA EKF

Residual current circuit breaker with overcurrent protection (RCBO) AVDT-63M PROXIMA EKF combines the functions of circuit breakers and electronic residual current devices. When the circuit breaker detects leakage current (fault) to the ground or overcurrent (overload or short circuit) in the protected circuit section, the RCBO trips to disconnect the circuit. Moreover, the EKF RCBOs feature overvoltage protection.

Standard: IEC/EN 61009-1



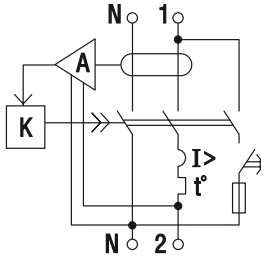
APPLICATION

- Protection of people against electric shock by direct & indirect contact;
- Protection of electrical equipment in case of damaged insulation and faults;
- Protection of equipment against fires caused by leakage currents to housing or ground;
- Auto disconnection of electrical circuit section in case of overload and short circuit.

TECHNICAL DATA

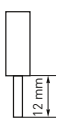
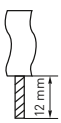
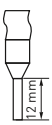
Wiring diagrams

AVDT-63M (electronic)



Installation and operation

1. Connection

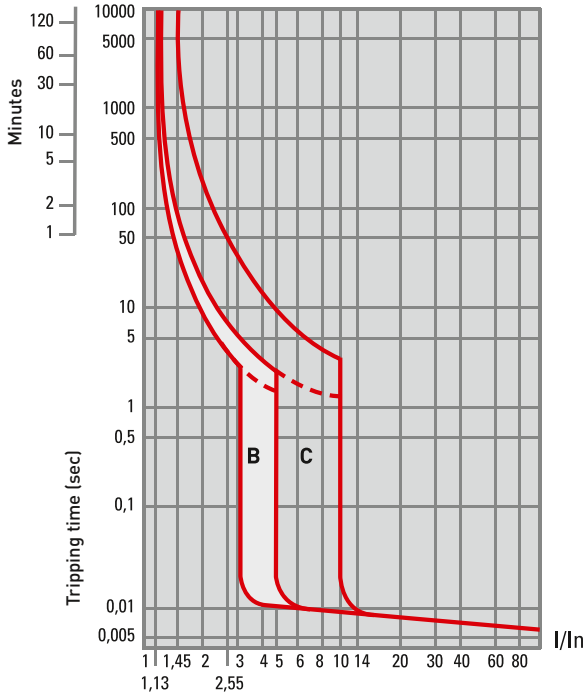
Conductor		
solid	stranded	ferrule
		

2. No accessories supported

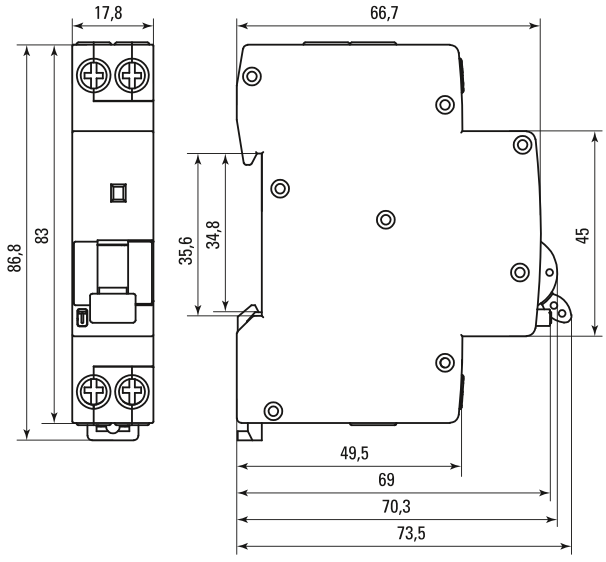
Parameters	Values
Rated operating voltage Ue, V	230 / 240
Frequency fn, Hz	50 / 60
Poles	1P+N
Rated current In, A	6–32 (40)
Neutral pole position	Left
Tripping curve	B, C
Degree of protection	IP20
Rated breaking capacity Icn, A	6000
Residual current protection type	Electronic
Residual current trip type	A; AC
Rated residual current IΔn, A	0,01; 0,03; 0,1
Energy limiting class	3
Mechanical endurance, O-C cycles	10 000
Electrical endurance, O-C cycles	4000
Operating temperature, °C	-20 to + 55
Cross-section of connected wires, mm²	1–16
Max. tightening torque, N·m	1,2

Tripping curves

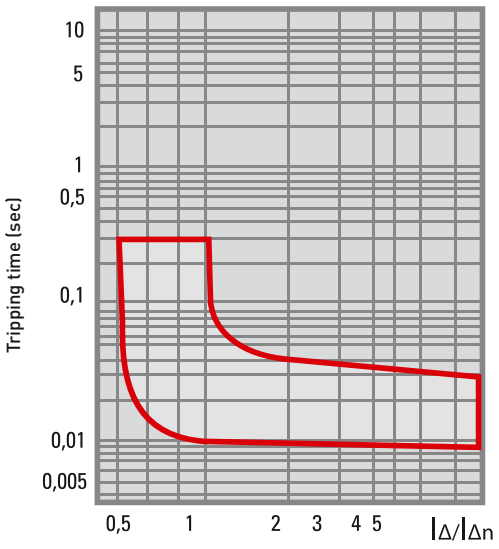
B – electromagnetic protection trips at (3-5) × In.
C – electromagnetic protection trips at (5-10) × In.



Overall and installation dimensions (mm)



Operating time by residual current

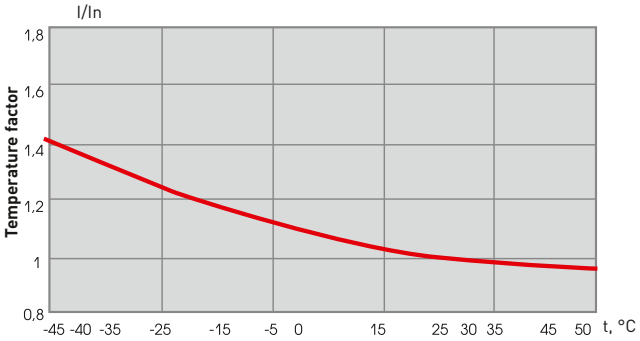


Delivery scope

Residual current circuit breakers with overcurrent protection AVDT-63M PROXIMA EKF are supplied in an individual package.

For all available documentation, scan the QR-code on the insert or on the inside of the package.

Temperature derating



Picture	Rated current, A	Rated operating residual current	
		B 10 mA	**B 30 mA**
		Type A	
	6	D636EA06B10	–
	10	–	D636EA10B30
	16	–	D636EA16B30
	20	–	–
	25	–	–
	32	–	–
		Type AC	
	6	DA63M-6B-10	–
	10	–	DA63M-10B-30
	16	–	DA63M-16B-30
	20	–	–
	25	–	–
	32	–	–

		10 mA	**30 mA**	**100 mA**
		Type A		
	6	D636EA06C10	D636EA06C30	–
	10	D636EA10C10	D636EA10C30	–
	16	D636EA16C10	D636EA16C30	–
	20	D636EA20C10	D636EA20C30	–
	25	D636EA25C10	D636EA25C30	D636EA25C100
	32	D636EA32C10	D636EA32C30	D636EA32C100
		Type AC		
	6	DA63M-6-10	DA63M-6-30	–
	10	DA63M-10-10	DA63M-10-30	–
	16	DA63M-16-10	DA63M-16-30	–
	20	DA63M-20-10	DA63M-20-30	–
	25	DA63M-25-10	DA63M-25-30	DA63M-25C-100
	32	–	DA63M-32-30	DA63M-32-100

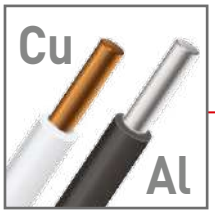
Residual current circuit breakers with overcurrent protection AD-32 PROXIMA EKF

Residual current circuit breaker with overcurrent protection (RCBO) AD-32 PROXIMA EKF combines the functions of circuit breakers and residual current devices. When the circuit breaker detects leakage current (fault) to the ground or overcurrent (overload or short circuit) in the protected circuit section, the RCBO trips to disconnect the circuit. RCBOs AD-32 are now available in type A and selective versions.

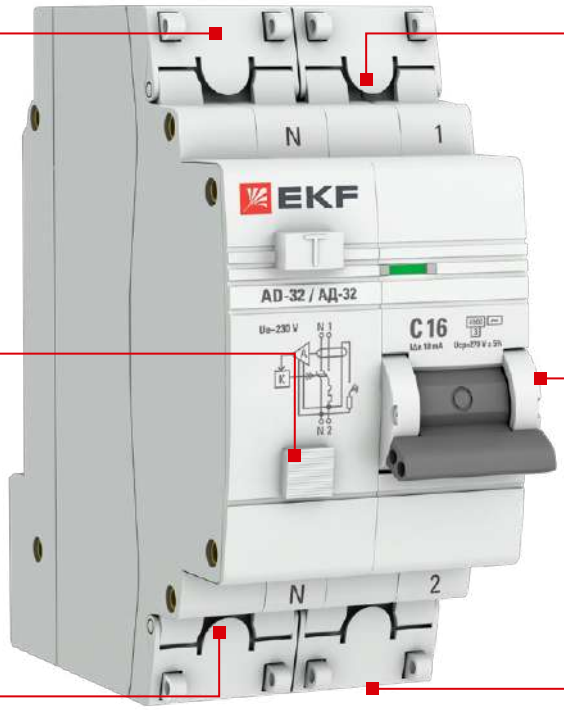
Standard: IEC/EN 61009-1

Notched and rounded terminals for secure conductor connection

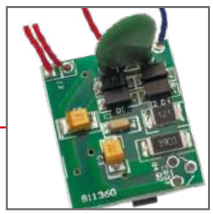
Reset button for trip indication by residual current



Copper and aluminum wire connections are supported



Side grooves for better cooling



Advanced PCB with enhanced protection against pulse interference

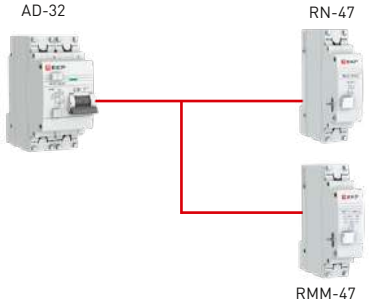
Terminals compatible with fork comb busbars

APPLICATION

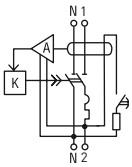
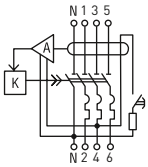
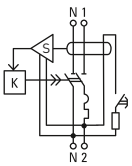
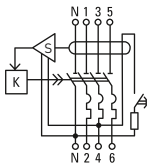
- Protection of people against electric shock by direct & indirect contact;
- Protection of electrical equipment in case of damaged insulation and faults;
- Protection of equipment against fires caused by leakage currents to housing or ground;
- Auto disconnection of electrical circuit section in case of overload and short-circuit.

TECHNICAL DATA

Connection of accessories

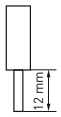
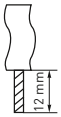
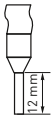
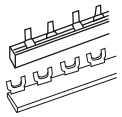


Wiring diagrams

AD-32 1P+N	AD-32 3P+N	AD-32 1P+N selective	AD-32 3P+N selective
			

Installation and operation

1. Connection

Conductor			Comb busbar
solid	stranded	ferrule	pin, fork
			

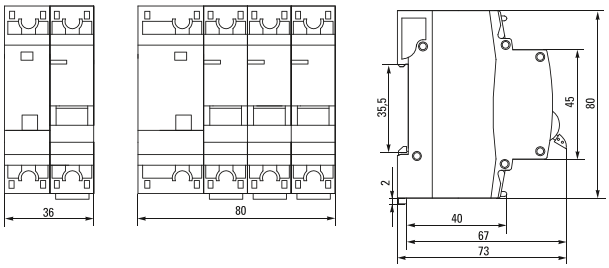
2. Accessories:

- Overvoltage and undervoltage release RMM-47 PROXIMA EKF (installed on the right)
- Shunt release RN-47 PROXIMA EKF (installed on the right)
- Copper and aluminum wire connections supported.

Parameters	Values
Rated operating voltage Ue, V	230 / 400
Frequency, Hz	50 / 60
Number of poles	1P+N, 3P+N
Rated current In, A	6–63
Neutral pole position	Left
Tripping curve	B, C
Degree of protection	IP20
Rated breaking capacity Icn, A	4500 / 6000
Residual current protection type	Electronic
Residual current trip type	A; AC; AC-S
Rated residual current IΔn, A	0,01; 0,03; 0,1; 0,3
Energy limiting class	3
Mechanical endurance, O-C cycles	10 000
Electrical endurance, O-C cycles	4000
Operating temperature, °C	-20 to +50
Cross-section of connected wires, mm²	1–25
Max. tightening torque, N·m	2,5

Overall and installation dimensions (mm)

AD-32 1P + N AD-32 3P + N



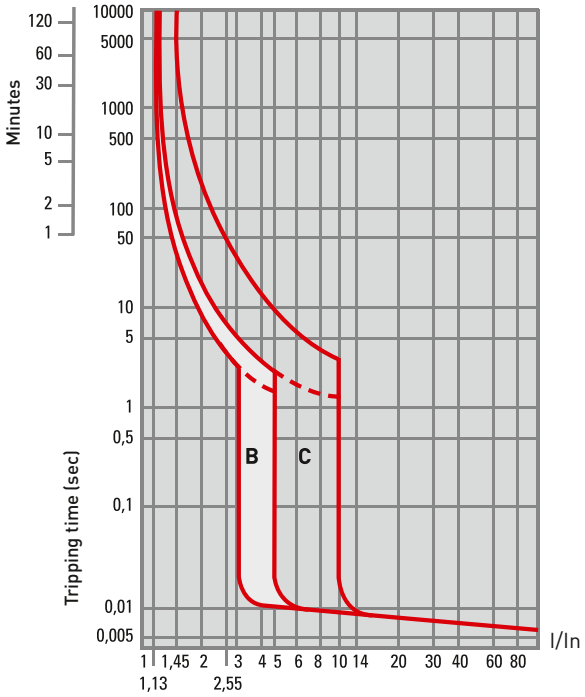
Delivery scope

Residual current circuit breakers with overcurrent protection AD-32 PROXIMA EKF are supplied in an individual package.

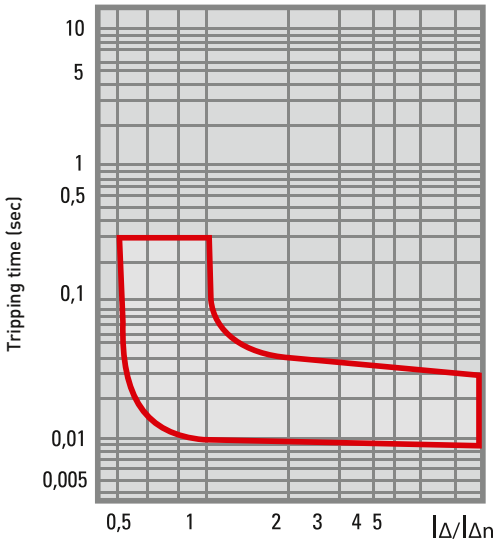
For all available documentation, scan the QR-code on the insert or on the inside of the package.

Tripping curves

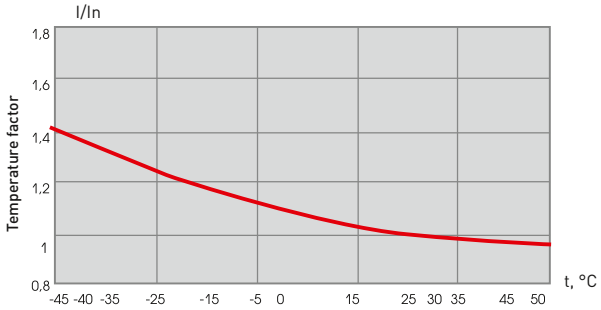
B – electromagnetic protection trips at (3-5) × In.
C – electromagnetic protection trips at (5-10) × In.



Operating time by residual current



Temperature derating

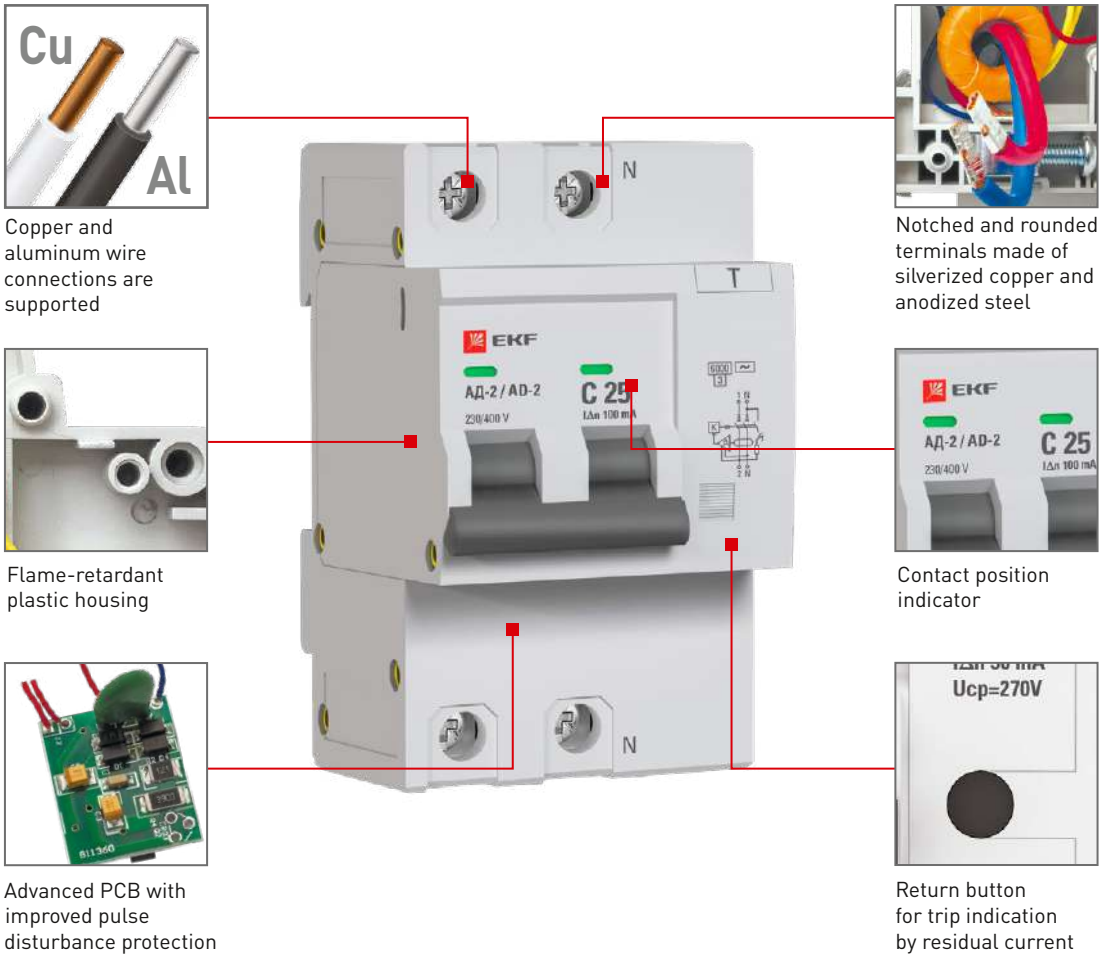


Picture	Rated current, A	Rated operating residual current			
		10 mA	30 mA	100 mA	300 mA
		AD-32 1P+N (type A) 4,5kA			
	16	DA32-16-10-a-pro	DA32-16-30-a-pro	–	–
	25	DA32-25-10-a-pro	DA32-25-30-a-pro	–	–
	32	–	DA32-32-30-a-pro	–	–
	40	–	DA32-40-30-a-pro	–	–
	50	–	DA32-50-30-a-pro	–	–
	63	–	DA32-63-30-a-pro	DA32-63-100-a-pro	–
	16	DA32-16-10-4P-a-pro	DA32-16-30-4P-a-pro	–	–
	20	–	DA32-20-30-4P-a-pro	–	–
	25	DA32-25-10-4P-a-pro	DA32-25-30-4P-a-pro	–	–
	32	–	DA32-32-30-4P-a-pro	–	–
	40	–	DA32-40-30-4P-a-pro	–	–
	50	–	DA32-50-30-4P-a-pro	–	–
	63	–	DA32-63-30-4P-a-pro	DA32-63-100-4P-a-pro	–
		AD-32 1P+N 4,5kA			
	6	–	DA32-06-30-pro	–	–
	10	–	DA32-10-30-pro	–	–
	16	DA32-16-10-pro DA32-16-B-10-pro	DA32-16-30-pro DA32-16-B-30-pro	DA32-16-100-pro	–
	20	–	DA32-20-30-pro	–	–
	25	DA32-25-10-pro DA32-25-B-10-pro	DA32-25-30-pro DA32-25-B-30-pro	DA32-25-100-pro	DA32-25-300-pro
	32	–	DA32-32-30-pro	DA32-32-100-pro	–
	40	–	DA32-40-30-pro	DA32-40-100-pro	DA32-40-300-pro
	50	–	DA32-50-30-pro	DA32-50-100-pro	DA32-50-300-pro
	63	–	DA32-63-30-pro	DA32-63-100-pro	DA32-63-300-pro
	16	–	DA32-16-30-4P-pro	DA32-16-100-4P-pro	–
	20	–	DA32-20-30-4P-pro	DA32-20-100-4P-pro	–
	25	–	DA32-25-30-4P-pro	DA32-25-100-4P-pro	DA32-25-300-4P-pro
	32	–	DA32-32-30-4P-pro	DA32-32-100-4P-pro	–
	40	–	DA32-40-30-4P-pro	DA32-40-100-4P-pro	DA32-40-300-4P-pro
	50	–	DA32-50-30-4P-pro	DA32-50-100-4P-pro	DA32-50-300-4P-pro
	63	–	DA32-63-30-4P-pro	DA32-63-100-4P-pro	DA32-63-300-4P-pro
		AD-32 (selective) 1P+N 4,5kA			
	6	–	–	DA32-6-100S-pro	DA32-6-300S-pro
	10	–	–	DA32-10-100S-pro	DA32-10-300S-pro
	16	–	–	DA32-16-100S-pro	DA32-16-300S-pro
	25	–	–	DA32-25-100S-pro	DA32-25-300S-pro
	32	–	–	DA32-32-100S-pro	DA32-32-300S-pro
	40	–	–	DA32-40-100S-pro	DA32-40-300S-pro
	50	–	–	DA32-50-100S-pro	DA32-50-300S-pro
	63	–	–	DA32-63-100S-pro	DA32-63-300S-pro
		AD-32 (selective) 3P+N 4,5kA			
	6	–	–	DA32-6-100S-4P-pro	DA32-6-300S-4P-pro
	10	–	–	DA32-10-100S-4P-pro	DA32-10-300S-4P-pro
	16	–	–	DA32-16-100S-4P-pro	DA32-16-300S-4P-pro
	20	–	–	DA32-20-100S-4P-pro	–
	25	–	–	DA32-25-100S-4P-pro	DA32-25-300S-4P-pro
	32	–	–	DA32-32-100S-4P-pro	DA32-32-300S-4P-pro
	40	–	–	DA32-40-100S-4P-pro	DA32-40-300S-4P-pro
	50	–	–	DA32-50-100S-4P-pro	DA32-50-300S-4P-pro
	63	–	–	DA32-63-100S-4P-pro	DA32-63-300S-4P-pro
		AD-32 1P+N 6 kA			
	16	–	DA32-6-16-30-ac-pro	–	–
	25	–	DA32-6-25-30-ac-pro	–	–
	40	–	DA32-6-40-30-ac-pro	–	–
		AD-32 3P+N 6 kA			
	6	DA32-6-06-10-4P-a-pro	–	–	
	16	DA32-6-16-10-4P-a-pro	DA32-6-16-30-4P-a-pro	–	DA32-6-16-300-4P-a-pro
	40	–	DA32-6-40-30-4P-a-pro	DA32-6-40-100-4P-a-pro	–
	50	–	–	DA32-6-50-100-4P-a-pro	DA32-6-50-300-4P-a-pro
	63	–	–	DA32-6-63-100-4P-a-pro	DA32-6-63-300-4P-a-pro
		AD-32 (selective) 3P+N 6 kA			
	25	–	–	DA32-6-25-100S-4P-pro	–
	32	–	–	DA32-6-32-100S-4P-pro	–
	40	–	–	DA32-6-40-100S-4P-pro	–

Residual current circuit breakers with overcurrent protection AD-2, AD-4 PROXIMA EKF

Residual current circuit breakers with overcurrent protection (RCBO) AD-2(4) PROXIMA EKF combine the functions of circuit breakers and residual current devices. When the circuit breaker detects leakage current (fault) to the ground or overcurrent (overload or short circuit) in the protected circuit section, the RCBO trips to disconnect the circuit. Moreover, EKF RCBOs feature overvoltage protection. Copper and aluminum wire connections are supported. RCBOs AD-2 and AD-4 PROXIMA EKF are available in standard and selective verisons.

Standard: IEC/EN 61009-1



Copper and aluminum wire connections are supported

Notched and rounded terminals made of silverized copper and anodized steel

Flame-retardant plastic housing

Contact position indicator

Advanced PCB with improved pulse disturbance protection

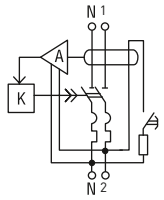
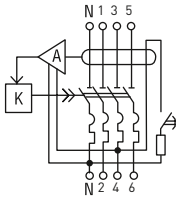
Return button for trip indication by residual current

APPLICATION

- Protection of people against electric shock by direct & indirect contact;
- Protection of electrical equipment in case of damaged insulation and faults;
- Protection of equipment against fires caused by leakage currents to housing or ground;
- Auto disconnection of electrical circuit section in case of overload and short circuit.

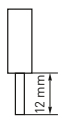
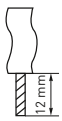
TECHNICAL DATA

Wiring diagrams

AD-2 (2S)	AD-4 (4S)
	

Installation and operation

1. Connection

Conductor		
solid	stranded	ferrule
		

2. No accessories supported

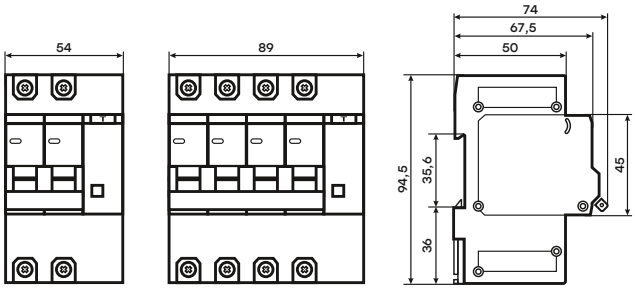
Parameters	Values
Rated operating voltage Ue, V	230 / 400
Frequency, Hz	50 / 60
Number of poles	1P+N, 3P+N
Rated current In, A	6–63
Neutral pole position	Left
Tripping curve	B, C
Degree of protection	IP20
Rated breaking capacity Icn, A	6000, (4500)
Residual current protection type	Electronic
Residual current trip type	AC
Rated residual current IΔn, A	0,01; 0,03; 0,1; 0,3
Energy limiting class	3
Mechanical endurance, O-C cycles	10 000
Electrical endurance, O-C cycles	4000
Operating temperature, °C	-20 to +50
Cross-section of connected wires, mm2	1–25
Max. tightening torque, N•m	2,5

Tripping characteristics of RCBO AD-2 and AD-4 selective type

Tripping and non-tripping time for type AC-S by residual current, sec.	Min. non-tripping time	Max. tripping time
IΔn	0,13	0,50
2IΔn	0,06	0,20
5IΔn	0,05	0,15
IΔt	0,04	0,15

Overall and installation dimensions (mm)

AD-2 AD-4



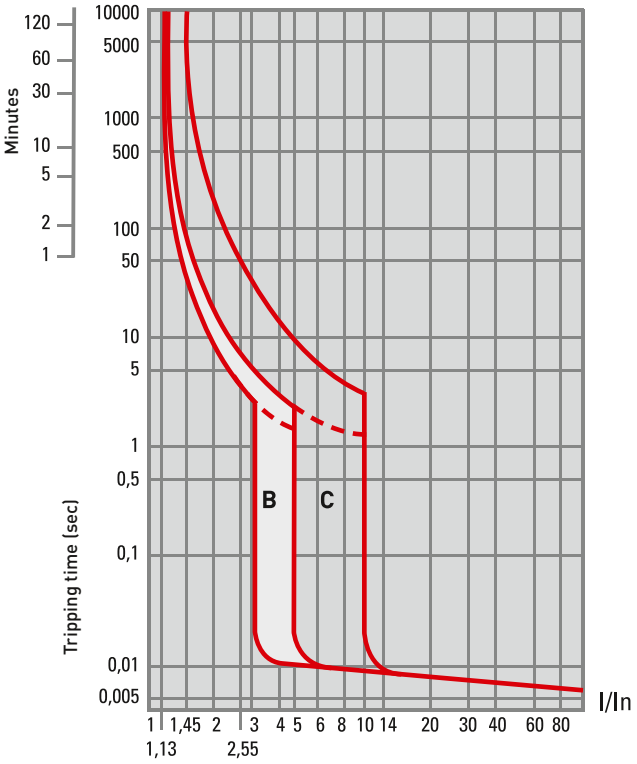
Delivery scope

Residual current circuit breakers with overcurrent protection AD-2(4) PROXIMA EKF are supplied in an individual package.

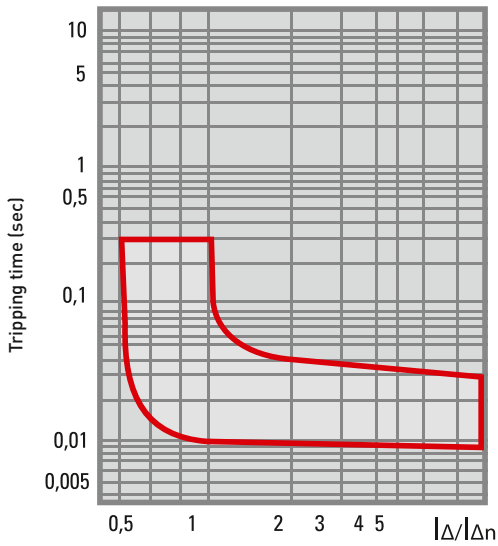
For all available documentation, scan the QR-code on the insert or on the inside of the package.

Tripping curves

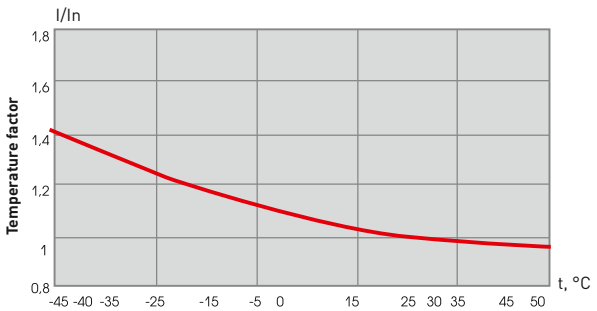
B – electromagnetic protection trips at (3-5) × In.
C – electromagnetic protection trips at (5-10) × In.



Operating time by residual current



Temperature derating

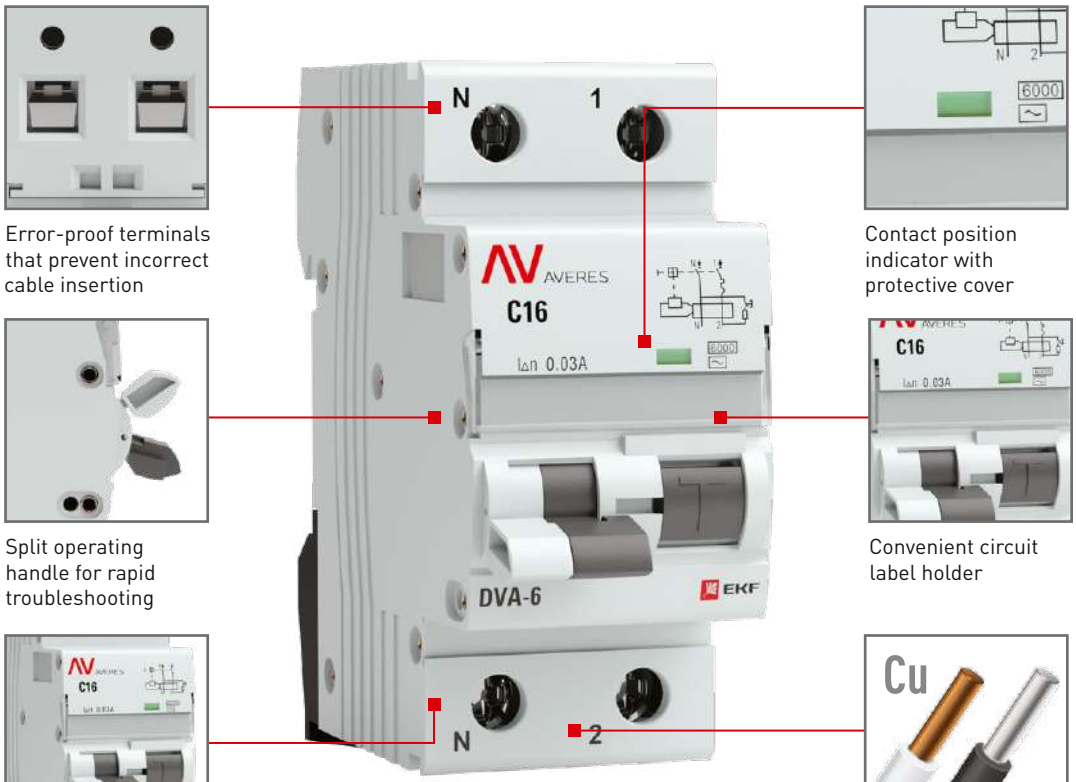


Picture	Rated current, A	30 mA, type AC	100 mA, type AC	300 mA, type AC	100 mA, type AC-S	300 mA, type AC-S
	AD-2 6 kA					
	6	DA2-6-06-30-pro	–	–	-	-
	10	DA2-6-10-30-pro	–	–	-	-
	16	DA2-6-16-30-pro	DA2-6-16-100-pro	–	-	-
	20	DA2-6-20-30-pro	–	–	-	-
	25	DA2-6-25-30-pro	DA2-6-25-100-pro	DA2-6-25-300-pro	-	-
	32	DA2-6-32-30-pro	DA2-6-32-100-pro	–	DA2-6-32-100S-pro	-
	40	DA2-6-40-30-pro	DA2-6-40-100-pro	DA2-6-40-300-pro	DA2-6-40-100S-pro	-
	50	DA2-6-50-30-pro	DA2-6-50-100-pro	DA2-6-50-300-pro	DA2-6-50-100S-pro	DA2-6-50-300S-pro
	63	DA2-6-63-30-pro	DA2-6-63-100-pro	DA2-6-63-300-pro	DA2-6-63-100S-pro	DA2-6-63-300S-pro
	AD-32 (selective) 3P+N 4,5kA					
	6	DA4-6-06-30-pro	–	–	–	–
	10	DA4-6-10-30-pro	–	–	–	–
	16	DA4-6-16-30-pro	DA4-6-16-100-pro	–	–	–
	25	DA4-6-25-30-pro	DA4-6-25-100-pro	DA4-6-25-300-pro	–	–
	32	DA4-6-32-30-pro	DA4-6-32-100-pro	DA4-6-32-300-pro	DA4-6-32-100S-pro	–
	40	DA4-6-40-30-pro	DA4-6-40-100-pro	DA4-6-40-300-pro	DA4-6-40-100S-pro	–
	50	DA4-6-50-30-pro	DA4-6-50-100-pro	DA4-6-50-300-pro	DA4-6-50-100S-pro	–
	63	DA4-6-63-30-pro	DA4-6-63-100-pro	DA4-6-63-300-pro	DA4-6-63-100S-pro	–

Residual current circuit breakers with overcurrent protection DVA-6 AVERES EKF

Residual current circuit breakers with overcurrent protection (RCBO) DVA-6 AVERES EKF are designed for protection against overload, short-circuit and leakage currents. The unique split design of the operating handle enables rapid identification of the trip condition: only part of the handle down means short circuit or overload, both parts of the handle down mean differential current. After troubleshooting the trip cause, turn the handle down and then turn it up to reclose the RCBO. RCBOs can be complemented with various accessories to extend their functions. 10-year warranty.

Standard: IEC/EN 61009-1



Error-proof terminals that prevent incorrect cable insertion

Split operating handle for rapid troubleshooting

Molded front panel

Contact position indicator with protective cover

Convenient circuit label holder

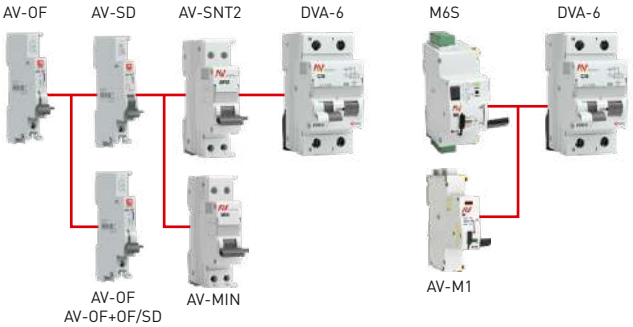
Copper and aluminum wire connections supported

APPLICATION

- Protection of people against electric shock by direct & indirect contact;
- Protection of electrical equipment in case of damaged insulation and faults;
- Protection of equipment against fires caused by leakage currents to housing or ground;
- Auto disconnection of electrical circuit section in case of overload and short circuit.

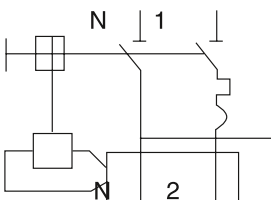
TECHNICAL DATA

Connection of accessories



Wiring diagrams

DVA-6



Installation and operation

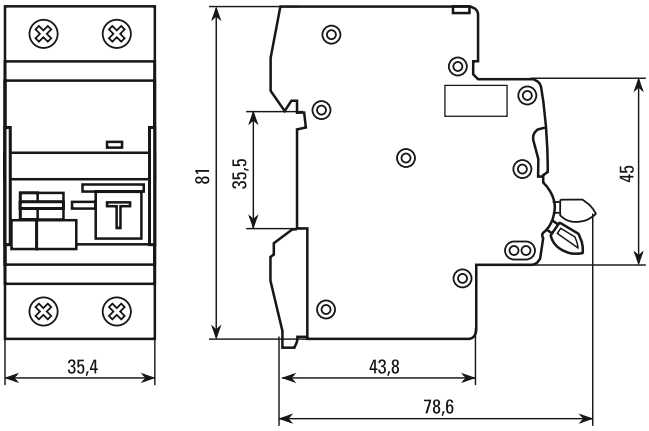
Accessories:

- Auxiliary contact AV-OF
- Alarm contact AV-SD
- Combined auxiliary and alarm contact AV-OF+OF/SD
- Shunt release AV-SNT-2
- Undervoltage release AV-MIN
- Auto recloser M6S
- Auto recloser M1 (for 1P & 2P)

Parameters	Values
Rated voltage, V	240
Frequency , Hz	50 / 60
Rated current In, A	6, 10, 13, 16, 20, 25, 32, 40
Tripping curve	B, C, D
Number of poles	1P+N
Rated breaking capacity Icn, A	6000/10 000*
Residual current protection type	Electromagnetic
Residual current trip type	A, AC
Rated residual current IΔn, A	0,03; 0,1; 0,3
Mechanical endurance, O-C cycles	20 000
Electrical endurance, O-C cycles	10 000
Operating temperature, °C	-20 to +55
Max. tightening torque, N·m	3
Degree of protection	IP20
Cross-section of connected wires, mm²	max. 25

*DVA-10 can be produced with rated breaking capacity 10 000 A

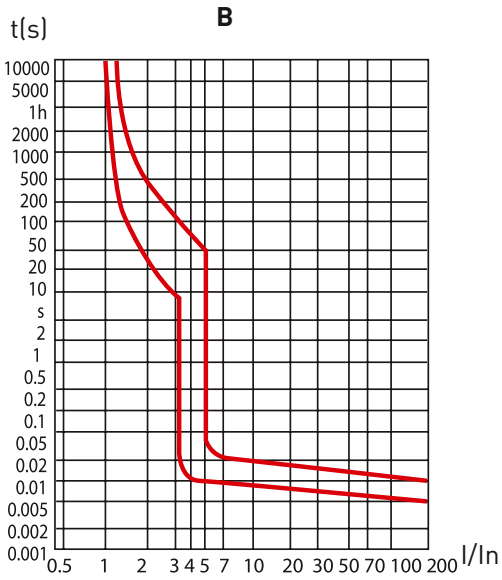
Overall and installation dimensions (mm)

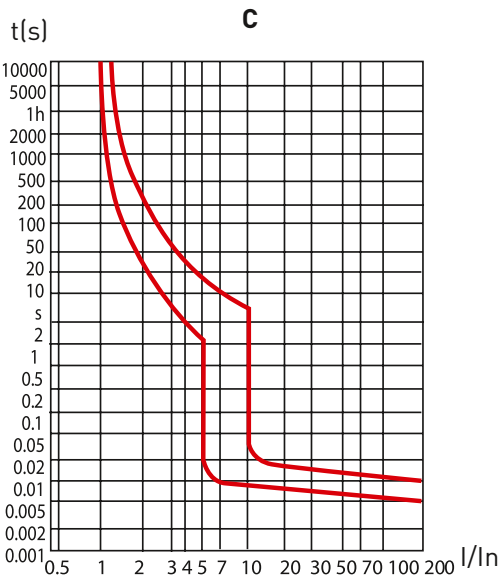


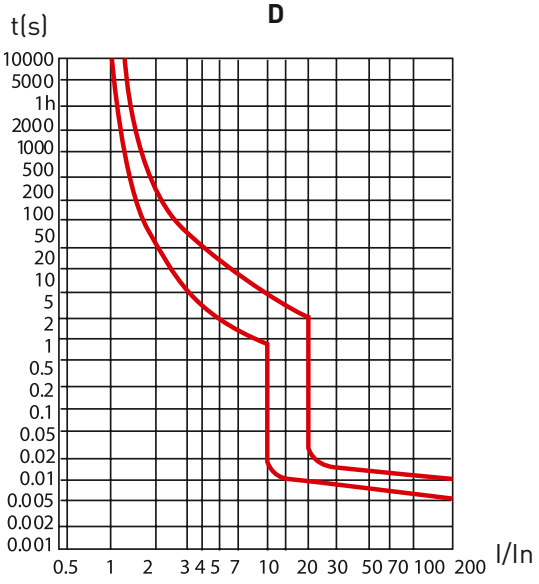
Delivery scope

Residual current circuit breakers with overcurrent protection DVA-6 AVERES EKF are supplied in a group package.
For all available documentation, scan the QR-code on the insert or on the inside of the package.

Tripping curves







Picture	Rated current, A	Tripping curve		
		B	C	D
		Type A		
		30 mA		
	6	rcbo6-1pn-6B-30-a-av	rcbo6-1pn-6C-30-a-av	rcbo6-1pn-6D-30-a-av
	10	rcbo6-1pn-10B-30-a-av	rcbo6-1pn-10C-30-a-av	rcbo6-1pn-10D-30-a-av
	13	rcbo6-1pn-13B-30-a-av	rcbo6-1pn-13C-30-a-av	rcbo6-1pn-13D-30-a-av
	16	rcbo6-1pn-16B-30-a-av	rcbo6-1pn-16C-30-a-av	rcbo6-1pn-16D-30-a-av
	20	rcbo6-1pn-20B-30-a-av	rcbo6-1pn-20C-30-a-av	rcbo6-1pn-20D-30-a-av
	25	rcbo6-1pn-25B-30-a-av	rcbo6-1pn-25C-30-a-av	rcbo6-1pn-25D-30-a-av
	32	rcbo6-1pn-32B-30-a-av	rcbo6-1pn-32C-30-a-av	rcbo6-1pn-32D-30-a-av
	40	rcbo6-1pn-40B-30-a-av	rcbo6-1pn-40C-30-a-av	rcbo6-1pn-40D-30-a-av
		100 mA		
	6	rcbo6-1pn-6B-100-a-av	rcbo6-1pn-6C-100-a-av	rcbo6-1pn-6D-100-a-av
	10	rcbo6-1pn-10B-100-a-av	rcbo6-1pn-10C-100-a-av	rcbo6-1pn-10D-100-a-av
	13	rcbo6-1pn-13B-100-a-av	rcbo6-1pn-13C-100-a-av	rcbo6-1pn-13D-100-a-av
	16	rcbo6-1pn-16B-100-a-av	rcbo6-1pn-16C-100-a-av	rcbo6-1pn-16D-100-a-av
	20	rcbo6-1pn-20B-100-a-av	rcbo6-1pn-20C-100-a-av	rcbo6-1pn-20D-100-a-av
	25	rcbo6-1pn-25B-100-a-av	rcbo6-1pn-25C-100-a-av	rcbo6-1pn-25D-100-a-av
	32	rcbo6-1pn-32B-100-a-av	rcbo6-1pn-32C-100-a-av	rcbo6-1pn-32D-100-a-av
	40	rcbo6-1pn-40B-100-a-av	rcbo6-1pn-40C-100-a-av	rcbo6-1pn-40D-100-a-av
		300 mA		
	6	rcbo6-1pn-6B-300-a-av	rcbo6-1pn-6C-300-a-av	rcbo6-1pn-6D-300-a-av
	10	rcbo6-1pn-10B-300-a-av	rcbo6-1pn-10C-300-a-av	rcbo6-1pn-10D-300-a-av
	13	rcbo6-1pn-13B-300-a-av	rcbo6-1pn-13C-300-a-av	rcbo6-1pn-13D-300-a-av
	16	rcbo6-1pn-16B-300-a-av	rcbo6-1pn-16C-300-a-av	rcbo6-1pn-16D-300-a-av
	20	rcbo6-1pn-20B-300-a-av	rcbo6-1pn-20C-300-a-av	rcbo6-1pn-20D-300-a-av
	25	rcbo6-1pn-25B-300-a-av	rcbo6-1pn-25C-300-a-av	rcbo6-1pn-25D-300-a-av
	32	rcbo6-1pn-32B-300-a-av	rcbo6-1pn-32C-300-a-av	rcbo6-1pn-32D-300-a-av
	40	rcbo6-1pn-40B-300-a-av	rcbo6-1pn-40C-300-a-av	rcbo6-1pn-40D-300-a-av
		Type AC		
		30 mA		
	6	rcbo6-1pn-6B-30-ac-av	rcbo6-1pn-6C-30-ac-av	rcbo6-1pn-6D-30-ac-av
	10	rcbo6-1pn-10B-30-ac-av	rcbo6-1pn-10C-30-ac-av	rcbo6-1pn-10D-30-ac-av
	13	rcbo6-1pn-13B-30-ac-av	rcbo6-1pn-13C-30-ac-av	rcbo6-1pn-13D-30-ac-av
	16	rcbo6-1pn-16B-30-ac-av	rcbo6-1pn-16C-30-ac-av	rcbo6-1pn-16D-30-ac-av
	20	rcbo6-1pn-20B-30-ac-av	rcbo6-1pn-20C-30-ac-av	rcbo6-1pn-20D-30-ac-av
	25	rcbo6-1pn-25B-30-ac-av	rcbo6-1pn-25C-30-ac-av	rcbo6-1pn-25D-30-ac-av
	32	rcbo6-1pn-32B-30-ac-av	rcbo6-1pn-32C-30-ac-av	rcbo6-1pn-32D-30-ac-av
	40	rcbo6-1pn-40B-30-ac-av	rcbo6-1pn-40C-30-ac-av	rcbo6-1pn-40D-30-ac-av
		100 mA		
	6	rcbo6-1pn-6B-100-ac-av	rcbo6-1pn-6C-100-ac-av	rcbo6-1pn-6D-100-ac-av
	10	rcbo6-1pn-10B-100-ac-av	rcbo6-1pn-10C-100-ac-av	rcbo6-1pn-10D-100-ac-av
	13	rcbo6-1pn-13B-100-ac-av	rcbo6-1pn-13C-100-ac-av	rcbo6-1pn-13D-100-ac-av
	16	rcbo6-1pn-16B-100-ac-av	rcbo6-1pn-16C-100-ac-av	rcbo6-1pn-16D-100-ac-av
	20	rcbo6-1pn-20B-100-ac-av	rcbo6-1pn-20C-100-ac-av	rcbo6-1pn-20D-100-ac-av
	25	rcbo6-1pn-25B-100-ac-av	rcbo6-1pn-25C-100-ac-av	rcbo6-1pn-25D-100-ac-av
	32	rcbo6-1pn-32B-100-ac-av	rcbo6-1pn-32C-100-ac-av	rcbo6-1pn-32D-100-ac-av
	40	rcbo6-1pn-40B-100-ac-av	rcbo6-1pn-40C-100-ac-av	rcbo6-1pn-40D-100-ac-av
		300 mA		
	6	rcbo6-1pn-6B-300-ac-av	rcbo6-1pn-6C-300-ac-av	rcbo6-1pn-6D-300-ac-av
	10	rcbo6-1pn-10B-300-ac-av	rcbo6-1pn-10C-300-ac-av	rcbo6-1pn-10D-300-ac-av
	13	rcbo6-1pn-13B-300-ac-av	rcbo6-1pn-13C-300-ac-av	rcbo6-1pn-13D-300-ac-av
	16	rcbo6-1pn-16B-300-ac-av	rcbo6-1pn-16C-300-ac-av	rcbo6-1pn-16D-300-ac-av
	20	rcbo6-1pn-20B-300-ac-av	rcbo6-1pn-20C-300-ac-av	rcbo6-1pn-20D-300-ac-av
	25	rcbo6-1pn-25B-300-ac-av	rcbo6-1pn-25C-300-ac-av	rcbo6-1pn-25D-300-ac-av
	32	rcbo6-1pn-32B-300-ac-av	rcbo6-1pn-32C-300-ac-av	rcbo6-1pn-32D-300-ac-av
	40	rcbo6-1pn-40B-300-ac-av	rcbo6-1pn-40C-300-ac-av	rcbo6-1pn-40D-300-ac-av

Modular switch disconnectors VN-63N and VN-125N PROXIMA EKF

Modular switch disconnectors VN-63N and VN-125N PROXIMA EKF are an upgrade of the market-proven line of switch disconnectors VN-63 PROXIMA EKF. These electromechanical switching devices are designed for switching non-inductive and inductive loads including motors protected by other switching devices. The devices of this series feature advanced design. Screw shields cover access to screw terminals to seal the device and thus prevent unauthorized access to wires. Aditionally, the device housing is reinforced with extra rivets to maximize its stiffness, and a convenient operating handle ensures reliable operation. The front panel features an indicator of physical contact position. A two-position clamp ensures easy mounting onto a DIN rail.

Standard: IEC/EN 60947-3

Bottom and top connection, compatible with pin and fork comb busbars

Patented screw shields for terminal sealing

Indicator of physical contact position with protective cover

Molded front panel

Copper and aluminum wire connection options supported

Tightening torque for power terminal screws: 3 N·m

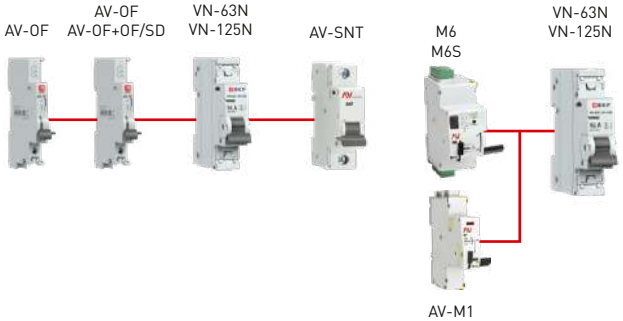
APPLICATION

Modular switch disconnectors are used in commercial, industrial and residential buildings to:

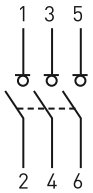
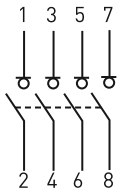
- control electrical circuits;
- disconnect circuit sections for downstream maintenance;
- ensure safety when conducting maintenance work;
- provide continuous protection for operators.

TECHNICAL DATA

Connection of accessories



Wiring diagrams

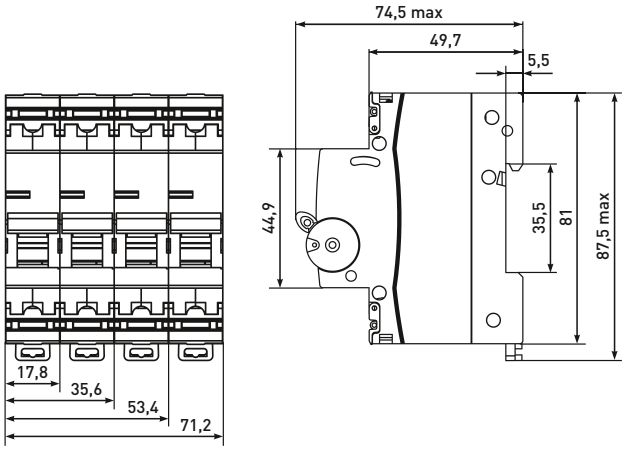
Number of poles			
1P	2P	3P	4P
			

Installation and operation

- Two auxiliary contacts AV-OF (installed on the left)
- Combined auxiliary and alarm contact AV-OF+OF/SD (installed on the left)
- Shunt release AV-SNT (installed on the right)
- Auto recloser AV-M1, AV-M6/M6S AVERES EKF (installed on the left)

Parameters	Values
Rated operating voltage Ue, V	230 / 240 400 / 415
Frequency, Hz	50 / 60
Number of poles	1; 2; 3; 4
Rated current In, A	16–125
Degree of protection	IP20
Rated short-time withstand current Icw, kA	1
Rated making capacity Icm, kA	6 / 10
Rated impulse withstand voltage Uimp, kV	6
Mechanical endurance, O-C cycles	20 000
Electrical endurance, O-C cycles	10 000
Operating temperature, °C	- 25 to +55
Cross-section of connected wires, mm^2	1–25
Max. tightening torque, N·m	3

Overall and installation dimensions (mm)



Delivery scope

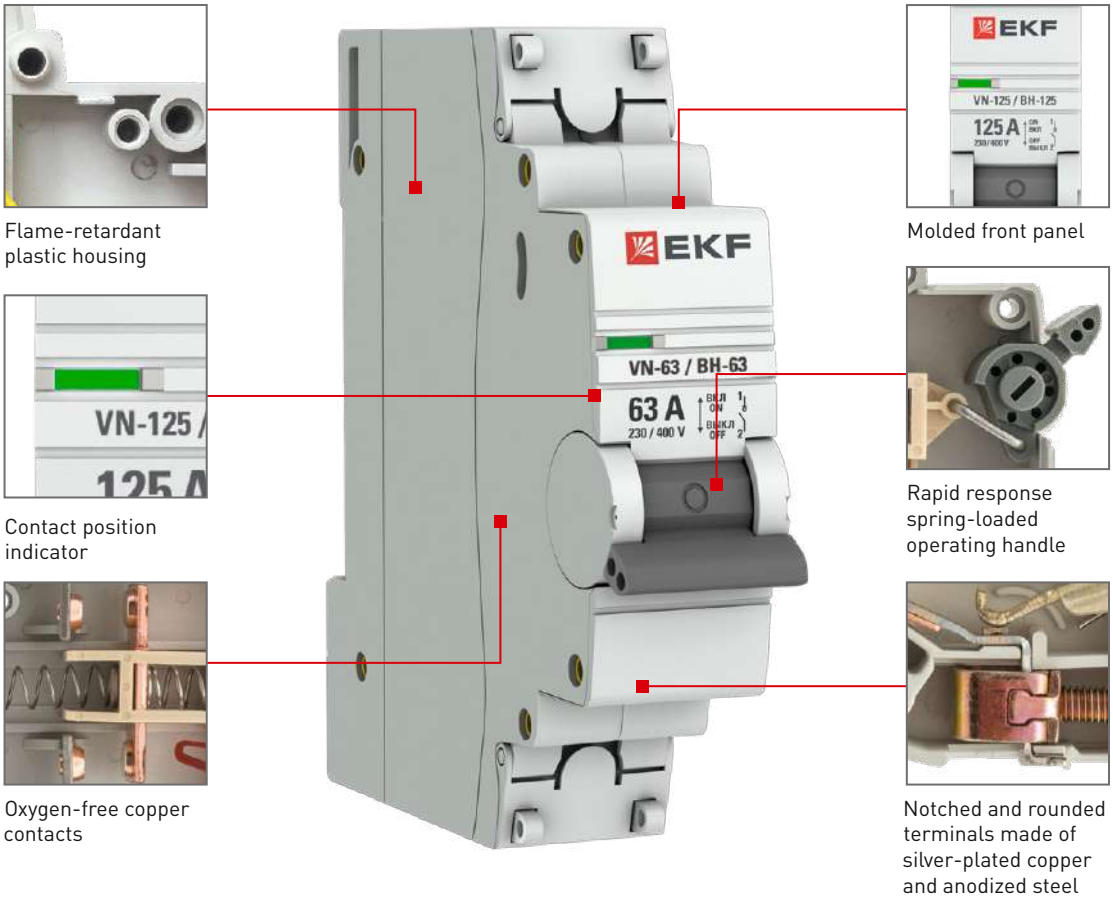
Modular switch disconnectors VN-63N and VN-125N PROXIMA EKF are supplied in a group package.
For all available documentation, scan the QR-code on the insert or on the inside of the package.

Picture	Rated current, A	VN-63N	VN-125N
	1P		
	16	S63116	–
	20	S63120	–
	25	S63125	–
	32	S63132	–
	40	S63140	–
	63	S63163	–
	80	–	S125180
	100	–	S1251100
	125	–	S1251120
	2P		
	16	S63216	–
	20	S63220	–
	25	S63225	–
	32	S63232	–
	40	S63240	–
	63	S63263	–
	80	–	S125280
	100	–	S1252100
	125	–	S1252120
	3P		
	16	S63316	–
	20	S63320	–
	25	S63325	–
	32	S63332	–
	40	S63340	–
	63	S63363	–
	80	–	S125380
	100	–	S1253100
	125	–	S1253120
	4P		
	16	S63416	–
	20	S63420	–
	25	S63425	–
	32	S63432	–
	40	S63440	–
	63	S63463	–
	80	–	S125480
	100	–	S1254100
	125	–	S1254120

Modular switch disconnectors VN-63 and VN-125 PROXIMA EKF

Modular switch disconnectors VN-63 and VN-125 PROXIMA EKF, available in one-, two-, three, and four-pole versions, are used for close/open operations in electrical circuits. The modular switch disconnector VN-63 (125) PROXIMA EKF, featuring an advanced design with the housing made of flame retardant plastic, is interchangeable with VN-63 (100) models. VN-125 models have a bridge contact. VN-63 models have the same housing as miniature circuit breakers, featuring arc runners, and support a variaty of modular accessories.

Standard: IEC/EN 60947-3



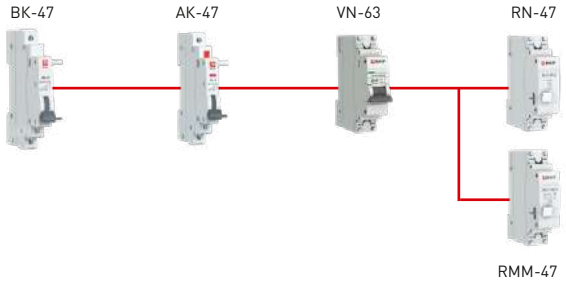
APPLICATION

Modular switch disconnectors are used in commercial, industrial and residential buildings to:

- control electrical circuits;
- disconnect circuit sections for downstream maintenance;
- ensure safety when conducting maintenance work;
- provide continuous protection for operators.

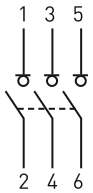
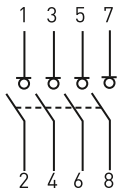
TECHNICAL DATA

Connection of accessories



VN-125: No accessories supported

Wiring diagrams

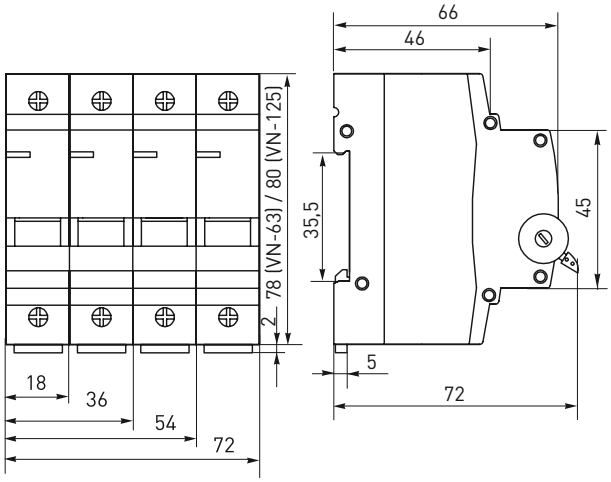
Number of poles			
1P	2P	3P	4P
			

Installation and operation

- Auxiliary contact BK-47 PROXIMA EKF (installed on the left)
- Overvoltage and undervoltage release RMM-47 PROXIMA EKF (installed on the right)
- Shunt release RN-47 PROXIMA EKF (installed on the right)
- Copper and aluminum wire connections are supported

Parameters	Values	
	VN-63	VN-125
Rated operating voltage Ue, V	230 / 240 400 / 415	
Frequency, Hz	50 / 60	
Number of poles	1; 2; 3; 4	
Rated current In, A	16–63	80-125
Degree of protection	IP20	
Rated short-time withstand current Icw, kA	1	2
Rated making capacity Icm, kA	6	10
Rated impulse withstand voltage Uimp, kV	4	
Mechanical endurance, O-C cycles	20 000	
Electrical endurance, O-C cycles	10 000	
Operating temperature, °C	–25 to +50	
Cross-section of connected wires, mm²	1–25	1–35
Max. tightening torque, N·m	2,5	

Overall and installation dimensions (mm)



Delivery scope

Modular switch disconnectors VN-63 and VN-125 PROXIMA EKF are supplied in a group package.
For all available documentation, scan the QR-code on the insert or on the inside of the package.

Picture	Rated current, A	VN-63	VN-125
	1P		
	16	SL63-1-16-pro	–
	20	SL63-1-20-pro	–
	25	SL63-1-25-pro	–
	32	SL63-1-32-pro	–
	40	SL63-1-40-pro	–
	63	SL63-1-63-pro	–
	100	–	SL125-1-100-pro
	125	–	SL125-1-125-pro
	2P		
	16	SL63-2-16-pro	–
	20	SL63-2-20-pro	–
	25	SL63-2-25-pro	–
	32	SL63-2-32-pro	–
	40	SL63-2-40-pro	–
	63	SL63-2-63-pro	–
	100	–	SL125-2-100-pro
	125	–	SL125-2-125-pro
	3P		
	16	SL63-3-16-pro	–
	20	SL63-3-20-pro	–
	25	SL63-3-25-pro	–
	32	SL63-3-32-pro	–
	40	SL63-3-40-pro	–
	63	SL63-3-63-pro	–
	80	–	SL125-3-80-pro
	100	–	SL125-3-100-pro
	125	–	SL125-3-125-pro
	4P		
	16	SL63-4-16-pro	–
	20	SL63-4-20-pro	–
	25	SL63-4-25-pro	–
	32	SL63-4-32-pro	–
	40	SL63-4-40-pro	–
	63	SL63-4-63-pro	–
	100	–	SL125-4-100-pro
	125	–	SL125-4-125-pro

Modular switch disconnectors AVN AVERES EKF

The switch disconnector AVN AVERES EKF is an electromechanical switching device used for switching in AC circuits. Switch disconnectors are designed for switching capacitive, resistive and inductive loads including motors protected by other switching devices.

Standard: IEC/EN 60947-3

Broad range of accessories (up to 63 A)

Contact position indicator with protective cover

Rated current up to 125 A

Error-proof terminals that prevent incorrect cable insertion

Convenient circuit labeling window

Copper and aluminum connections supported

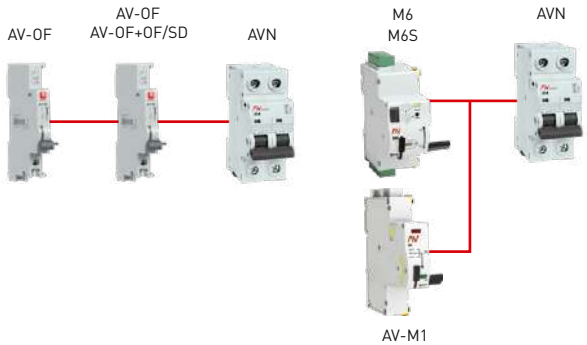
APPLICATION

Modular switch disconnectors AVN AVERES EKF are used for infrequent circuit switching in:

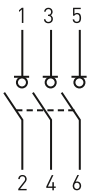
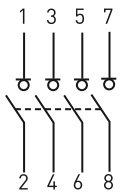
- residential & commercial buildings;
- public & infrastructure facilities;
- industrial facilities.

TECHNICAL DATA

Connection of accessories



Wiring diagrams

Number of poles			
1P	2P	3P	4P
			

Installation and operation

- Modular accessories can be used only with AVN up to 63 A.
- AVN with rated current of 100 & 125 A do not support modular accessories.

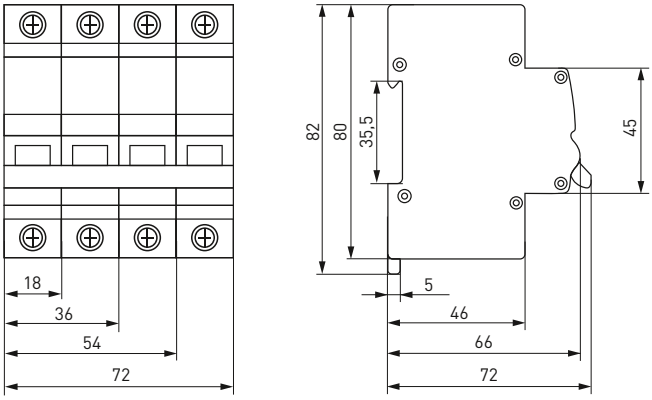
Parameters	Values
Number of poles	1; 2; 3; 4
Frequency, Hz	50 / 60
Rated operating voltage Ue, V	230 / 240 400 / 415
Rated current In, A	16, 25, 40, 63, 100, 125
Rated short-time withstand current (for 16, 25, 40, 63 A) Icw, kA	1
Rated short-time withstand current (for 100, 125 A) Icw, kA	2
Rated making capacity Icm, kA	6
Rated impulse withstand voltage Uimp, kV	6
Mechanical endurance, O-C cycles	20 000
Electrical endurance, O-C cycles	10 000
Cross-section of connected wires, mm²	25 for 16-63A; 35 for 100A & 125A
Operating temperature, °C	- 25 to +55
Max. tightening torque, N·m	3
Degree of protection	IP20

Delivery scope

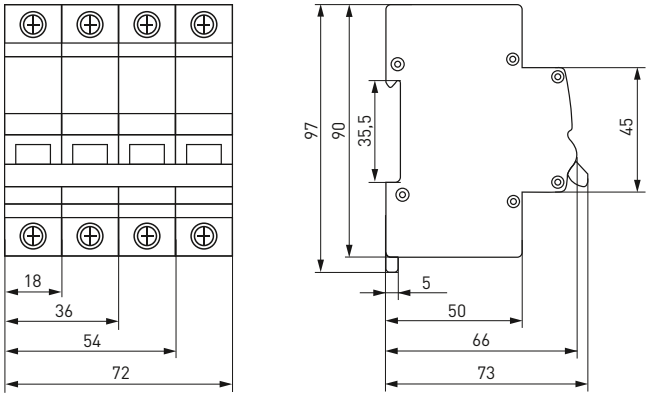
Modular switch disconnectors AVN AVERES EKF are supplied in a group package.
For all available documentation, scan the QR-code on the insert or on the inside of the package.

Overall and installation dimensions (mm)

16 A, 25 A, 40 A, 63 A



100 A, 125 A



Picture	Rated current, A	Item code
	1P	
	16	avn-1-16-av
	25	avn-1-25-av
	40	avn-1-40-av
	63	avn-1-63-av
	100	avn-1-100-av
	125	avn-1-125-av
	2P	
	16	avn-2-16-av
	25	avn-2-25-av
	40	avn-2-40-av
	63	avn-2-63-av
	100	avn-2-100-av
	125	avn-2-125-av
	3P	
	16	avn-3-16-av
	25	avn-3-25-av
	40	avn-3-40-av
	63	avn-3-63-av
	100	avn-3-100-av
	125	avn-3-125-av
	4P	
	16	avn-4-16-av
	25	avn-4-25-av
	40	avn-4-40-av
	63	avn-4-63-av
	100	avn-4-100-av
	125	avn-4-125-av

Modular switch disconnectors MS EKF

Modular switch disconnectors MS EKF are designed for switching in 400 V 50/60 Hz AC circuits. Switch disconnectors are used in switchboards of residential and public buildings, and control centers. Can be used to switch circuits under rated load.

Standard: IEC/EN 60947-3:2020

APPLICATION

Switch disconnectors are designed for manual circuit switching in:
- residential buildings;
- commercial facilities.

TECHNICAL DATA

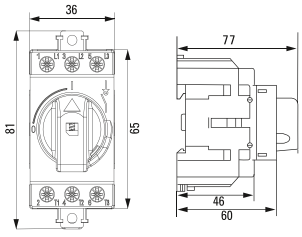
Parameters	Values
Rated voltage, V	230 / 400
Rated frequency, Hz	50 / 60
Rated current, A	16, 20, 25, 40, 63
Number of poles	3
Rated short-time withstand current Icw, kA	1260
Rated impulse withstand voltage, kV	6
Utilization category	AC-22A, AC-23A
Mechanical endurance, cycles	20 000
Degree of protection (IEC 60529)	IP20
Operating temperature, °C	-25 to +50

Delivery scope

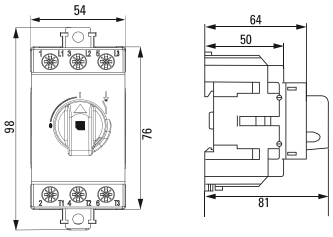
For all available documentation, scan the QR-code on the insert or on the inside of the package.

Overall and installation dimensions (mm)

MS 16-40 A



MS 63 A



Picture	Rated current, A	Item code
	16	ms - 16d
	20	ms-20d
	32	ms-25d
	40	ms-40d
	63	ms-63d

PROXIMA EKF Accessories

PROXIMA EKF accessories incorporate all the latest trends in modular equipment. They are compatible with PROXIMA EKF range of DIN rail mounted modular equipment. Each device is covered by an extended 7 year warranty.

Flame retardant plastic housing

1 2 3 4 5 6 7

Neon lamp replaced by LED (LS-47, LSF-47)

Unification of all accessories

8 9 10 11 12 13 14 15

Housing reinforced with 6 rivets

Molded front panel

16 17 18

Narrow size (LS-47) – saves space within enclosure

1. Alarm contact AK-47 PROXIMA EKF
2. Auxiliary contact BK-47 PROXIMA EKF
3. Overvoltage and undervoltage release RMM-47 PROXIMA EKF
4. Shunt release RN-47 PROXIMA EKF
5. Modular push button KM-47 (red) PROXIMA EKF
6. Modular push button KM-47 (grey) PROXIMA EKF
7. Modular bell ZD-47 PROXIMA EKF
8. Single indicator light LS-47 (yellow) PROXIMA EKF
9. Single indicator light LS-47 (white) PROXIMA EKF
10. Single indicator light LS-47 (green) PROXIMA EKF
11. Single indicator light LS-47 (red) PROXIMA EKF
12. Three-phase indicator light LSF-47 PROXIMA EKF
13. Auxilliary contact AV-OF EKF
14. Alarm contact AV-SD EKF
15. Combined auxiliary and alarm contact AV-OF+OF/SD EKF
16. Modular socket RD-47 240V PROXIMA EKF
17. Modular socket RDE-47 (EURO with protective earth-contact) 240V PROXIMA EKF
18. External rotary handle RP-47 EKF

APPLICATION

- Improving maintenance, monitoring and control capabilities of distribution panels
- Implementing a variety of automated protection scenarios for downstream equipment with operator feedback

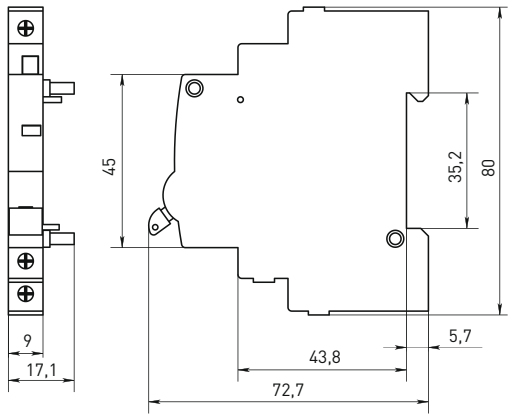
Main device	Accessories
Miniature circuit breaker VA 47-63 (4,5kA/6kA) PROXIMA EKF	Alarm contact AK-47 PROXIMA EKF Auxiliary contact BK-47 PROXIMA EKF Shunt release RN-47 PROXIMA EKF Overvoltage and undervoltage release RMM-47 PROXIMA EKF
Miniature circuit breaker VA 47-100 PROXIMA EKF	Alarm contact AK-47 PROXIMA EKF Auxiliary contact BK-47 PROXIMA EKF Shunt release RN-47 PROXIMA EKF Overvoltage and undervoltage release RMM-47 PROXIMA EKF
Residual current circuit breaker with overcurrent protection AD-32 PROXIMA EKF	Shunt release RN-47 PROXIMA EKF Overvoltage and undervoltage release RMM-47 PROXIMA EKF
Modular switch disconnector VN-63 PROXIMA EKF	Auxiliary contact BK-47 PROXIMA EKF Shunt release RN-47 PROXIMA EKF Overvoltage and undervoltage release RMM-47 PROXIMA EKF Combined auxiliary and alarm contact AV-OF+OF/SD EKF
Miniature circuit breaker VA47-63N PROXIMA EKF Modular switch disconnector VN-63N PROXIMA EKF	Auxiliary contact AV-OF EKF Alarm contact AV-SD EKF Combined auxiliary and alarm contact AV-OF+OF/SD EKF

TECHNICAL DATA

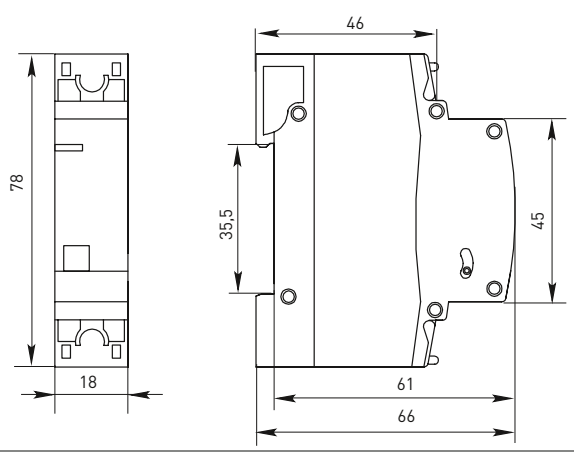
Characteristics	Accessories PROXIMA EKF							
	AK-47, BK-47	RMM-47	RN-47	KM-47	ZD-47	LS-47	RD-47	RDE-47
Rated current, A	3	–	1,3	6	0,5	0,5	16	16
Rated voltage, V AC	230 / 400	min. 170 max. 270	230	230	230	230	230	230
Contacts	–	–	–	2NO + 2NC	–	–	1P+N	1P + N + PE
Size compared to 1 module (18mm)	0,5	1	1	1	1	0,5 / 1	1	2,5
Max. cross-section of connected wires, mm²	2,5	25	25	1,5	4	1,5	25	6

Overall and installation dimensions (mm)

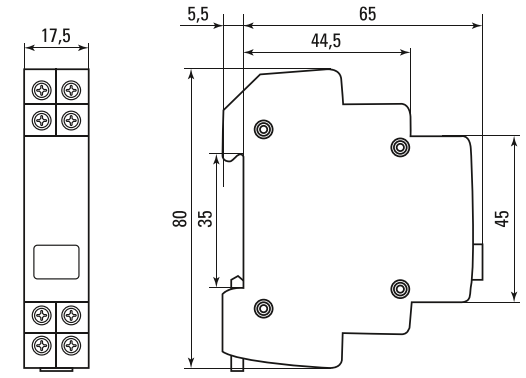
AK-47 & BK-47



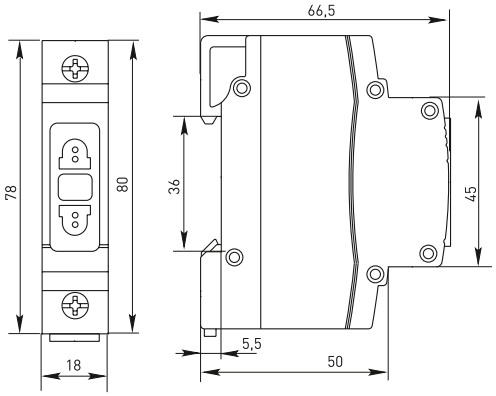
RMM-47 & RN-47



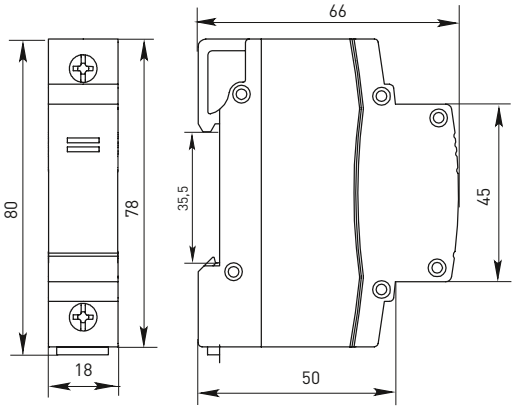
KM-47



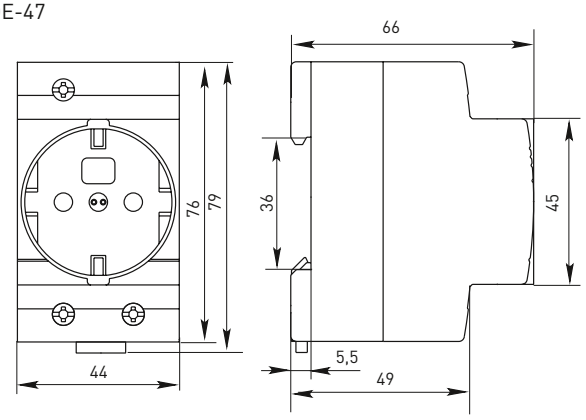
RD-47



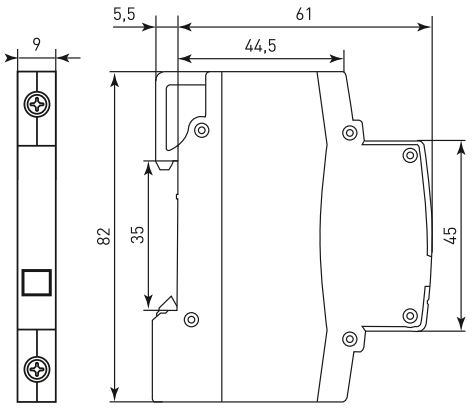
ZD-47



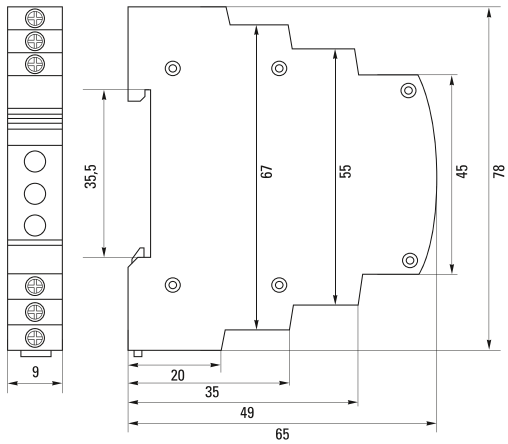
RDE-47



LS-47



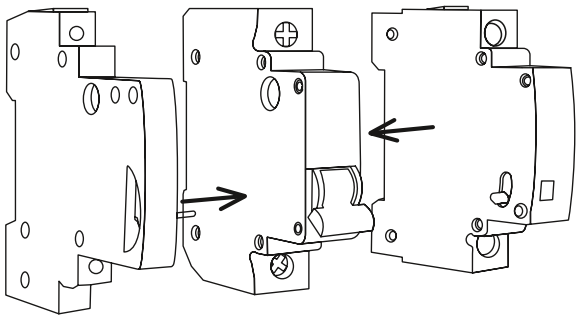
LSF-47



Installation and operation

1. Connections

Auxiliary and alarm contacts are installed to the left, while releases - to the right of devices. Install the pins (if included) before mounting the accessories.

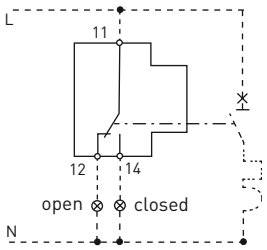
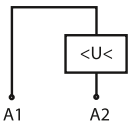
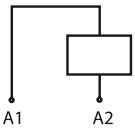
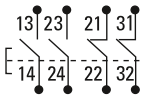
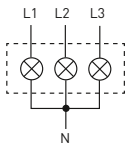
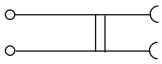
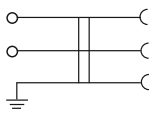


2. Release operation

When releases RN-47 or RMM-47 trip, the "RETURN" button on the front panel pushes outward. To reclose a tripped circuit breaker, press the "RETURN" button until it latches.

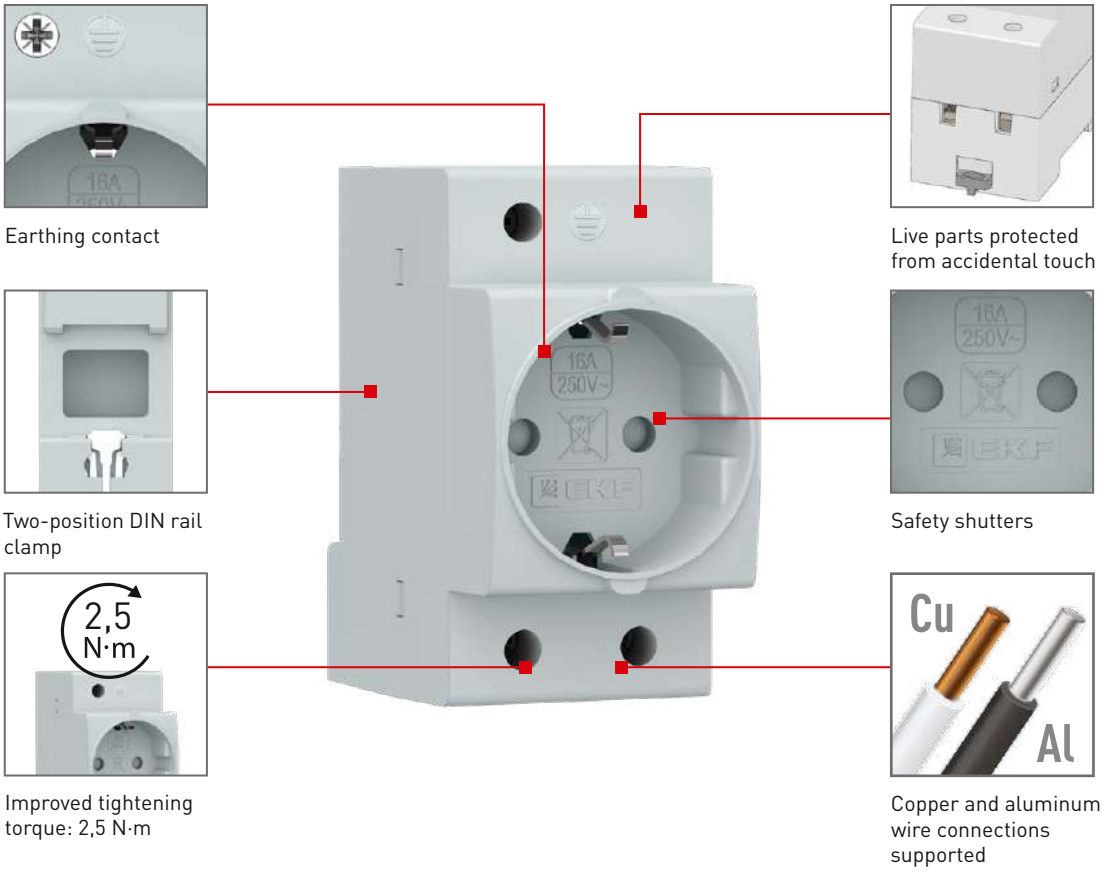
With this feature, you can identify the cause of circuit breaker tripping: overcurrent or overload in the protected circuit, incorrect voltage, or remote trip.

To prevent RN-47 coil failure due to overheating, the solenoid must be controlled in pulse mode.

Picture	Name	Wiring diagram	Description	Item code
	Alarm contact AK-47 PROXIMA EKF		Indicates contact status, when the circuit breaker is tripped by overload or short circuit.	mdac-47-pro
	Auxiliary contact BK-47 PROXIMA EKF		Indicates circuit breaker contact status when closed/ opened manually.	mdbc-47-pro
	Overvoltage and undervoltage release RMM-47 PROXIMA EKF		Trips the circuit breaker by invalid undervoltage or overvoltage. Being an electronic threshold switch, the release connects to the electrical circuit controlled. A solenoid is connected to the output of the threshold switch to actuate the circuit breaker free release mechanism.	mdrmm-47-pro
	Shunt release RN-47 PROXIMA EKF		Remotely trips the circuit breaker. Using a solenoid, the release trips the circuit breaker by actuating the MCB handle. To prevent coil failure by overheating, the solenoid must be controlled in pulse mode.	mdri-47-pro
	Modular push button KM-47 (grey & red) PROXIMA EKF		Remotely controls 230V AC circuits in all types of electrical installations (e.g. public, industrial), can be used in distribution enclosures. Featuring improved performance, the button is easy to install and service.	mdb-47-red-pro mdb-47-grey-pro
	Modular bell ZD-47 PROXIMA EKF		Generates acoustic signal. Sound volume ≈ 100 dB.	mdc-47-pro
	Single indicator light LS-47 (green, red, yellow, white) PROXIMA EKF		Serves for light indication	mdla-47-g-pro mdla-47-r-pro mdla-47-y-pro mdla-47-w-pro
	Three-phase indicator light LSF-47 PROXIMA EKF		Designed for visual control of three-phase circuit status	mdla-47-3f-pro
	Modular socket RD-47 PROXIMA EKF		Designed to connect electrical appliances (portable lamps, power supplies, etc.)	mds-47-pro
	Modular socket RDE-47 PROXIMA EKF		Designed to connect electrical appliances (portable lamps, power supplies, etc.).	mdse-47-pro / RDE4716

Modular socket RDE-47 16A (EURO with protective earth-contact) 240V PROXIMA EKF

Modular sockets RDE-47 16A (EURO with protective earth-contact) 240V PROXIMA EKF are manufactured in Russia. With in-house production, EKF keeps products available in stock to deliver them to customers promptly at a competitive price.

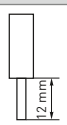
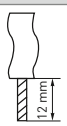
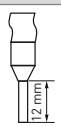


TECHNICAL DATA

Parameters	Values
Rated operating voltage Ue, V	180–250
Frequency, Hz	50 / 60
Number of poles	2P+PE
Rated current In, A	16
Degree of protection	IP20
Operating temperature, °C	- 25 to +50
Cross-section of connected wires, mm²	0,5–6
Max. tightening torque, N·m	2,5

Installation and operation

1. Connection

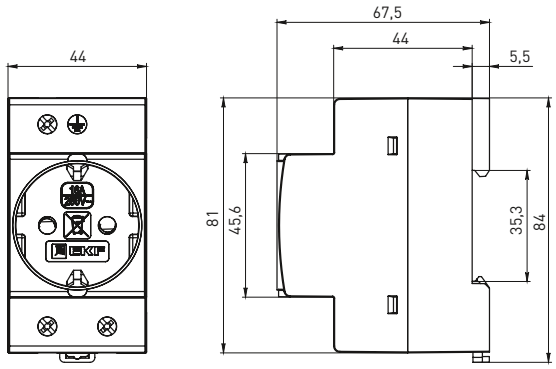
Conductor		
solid	stranded	ferrule
		

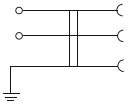
Delivery scope

Modular sockets RDE-47 16A (EURO with protective earth-contact) 240V PROXIMA EKF are supplied in a group package.

For all available documentation, scan the QR-code on the insert or on the inside of the package.

Overall and installation dimensions (mm)

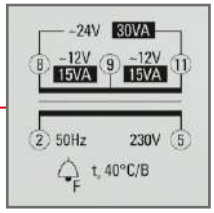


Picture	Rated current, A	Wiring diagram	Item code
	16		RDE4716
			mdse-47-pro

Bell transformer VT PROXIMA EKF

The bell transformer VT PROXIMA EKF is a fixed single-phase isolating transformer designed for home doorbells and similar signaling applications under short-term loads. Only high quality materials are used to ensure the bell transformer reliability.

DIN rail and mounting plate



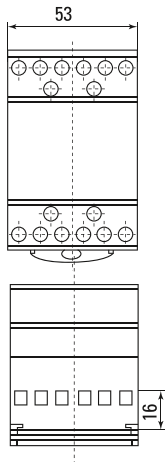
All technical information printed on the front panel

TECHNICAL DATA

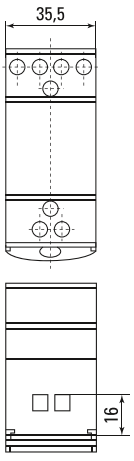
Parameters	Values	
	15VA	30VA
Primary voltage 2-5	230 V	
Secondary voltage 8-9	12 V	
Secondary voltage 9-11	12 V	
Winding power 8-9, VA	7,5	15
Winding power 9-11, VA	7,5	15
Rated frequency, Hz	50 / 60	
Connected power 8-11, P, VA	15	30
Max. rated secondary voltage deviation, %	±3	
Operating mode	Short-term at P=100% Long-term at P=75%	
Max. cross-section of connected wires, mm²	4	
Tightening torque, N·m	1,7	
Degree of protection	IP20	
Operating temperature, °C	- 25 to +50	
Altitude above sea level, m	max. 2000	
Mounting type	DIN rail	

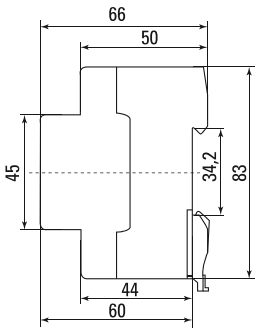
Overall and installation dimensions (mm)

30 VA



15 VA





Installation and operation

Bell transformers shall be mounted and connected by qualified electrical personnel only. DIN rail mounting. The bell transformer can be installed at any position.
Do not install the bell transformer if any damage is found. Copper and aluminum wire connections are supported.

Delivery scope

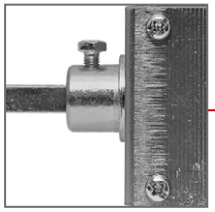
Bell transformers VT PROXIMA EKF are delivered in a group package. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Picture	Primary voltage, V	Secondary voltage, V	Connected power, VA	Item code
	230	12	15	bt-230/15va
	230	12	30	bt-230/30va

External rotary handle RP-47 EKF

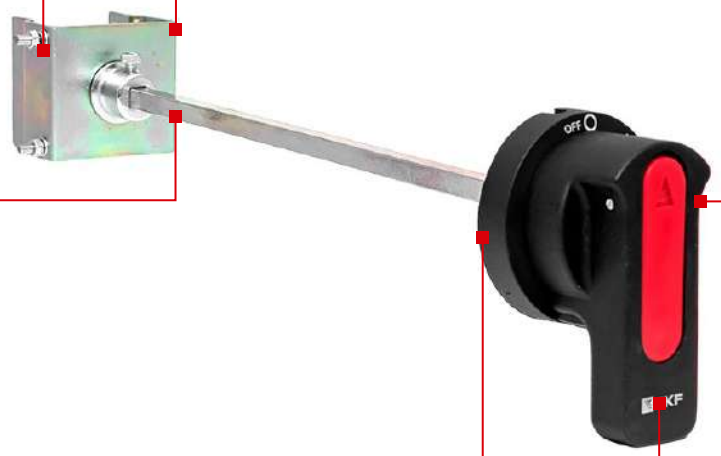
External rotary handle RP-47 EKF is designed for external operation of modular devices, e.g. miniature circuit breakers (MCB), switch disconnectors and residual current devices (RCCB & RCBO), through the door of a distribution enclosure. Handle can be locked in the OFF position to prevent unauthorized activation of the operated device for repair and maintenance of the protected circuit. Warranty: 7 years

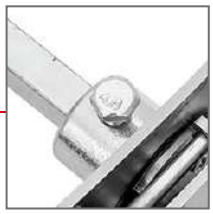
Extended shaft length: 300 mm



Easily adjustable extension shaft

Compatible with PROXIMA & AVERES devices





Fast assembly mechanism

Mating part made of 2 mm metal

Lockout in OFF position

TECHNICAL DATA

Parameters	Values
Operating temperature, °C.	-40 to +50
Extension shaft length, mm	300
Operation positions	O (OFF), TRIP, I (ON)

Installation and operation

1. Connection

MCBs: 2P, 3P, 4P (VA 47-63N, VA 47-63 4,5/6kA, VA 47-100 PROXIMA EKF; AV-6, AV-6 DC, AV-10 AVERES EKF).
Modular switch disconnectors: 2P, 3P, 4P (VN-63N; VN-63/VN-125 PROXIMA EKF; AVN AVERES EKF).
RCCBs: 1P+N/3P+N (VD-100 4,5/6 kA PROXIMA EKF, DV AVERES EKF (3P+N)).
RCBOs: 1P+N/3P+N (AD-32, AVDT-63M, AD-2/AD-4 PROXIMA EKF).

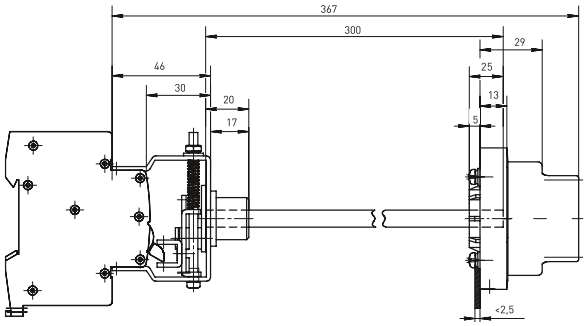
Delivery scope

External rotary handles are supplied in an individual package.

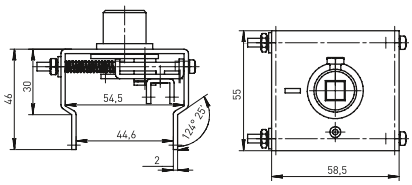
For all available documentation, scan the QR-code on the insert or on the inside of the package.

Picture	Net weight, kg	Item code
	0,5	RP47300

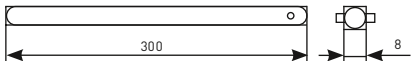
Overall and installation dimensions (mm)



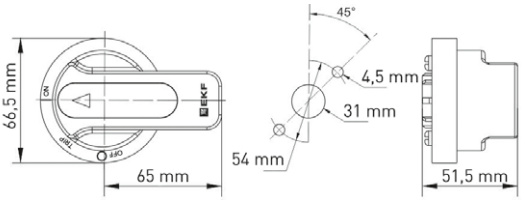
Overall dimensions of operating mechanism



Overall dimensions of extension shaft



Overall and installation dimensions of external rotary handle



AVERES EKF Accessories

EKF portfolio covers all industrial applications with a complete range of AVERES accessories designed for maintenance, monitoring and control of electrical distribution panels, assembled with AVERES miniature circuit breakers (MCB) and residual current devices (RCCB & RCBO). 10-year warranty.

Standard: IEC/EN 60947-5-1

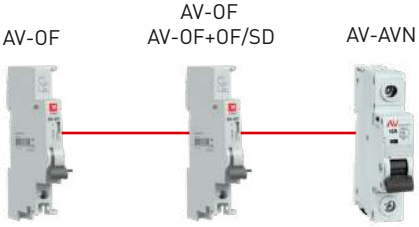
AV-SNT AV-SNT-2 AV-MIN AV-MM AV-SNT-DC

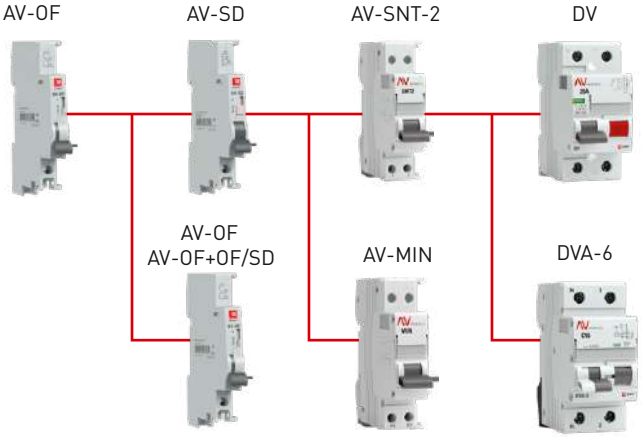
AV-OF AV-OF AV-OF+OF/SD AV-L

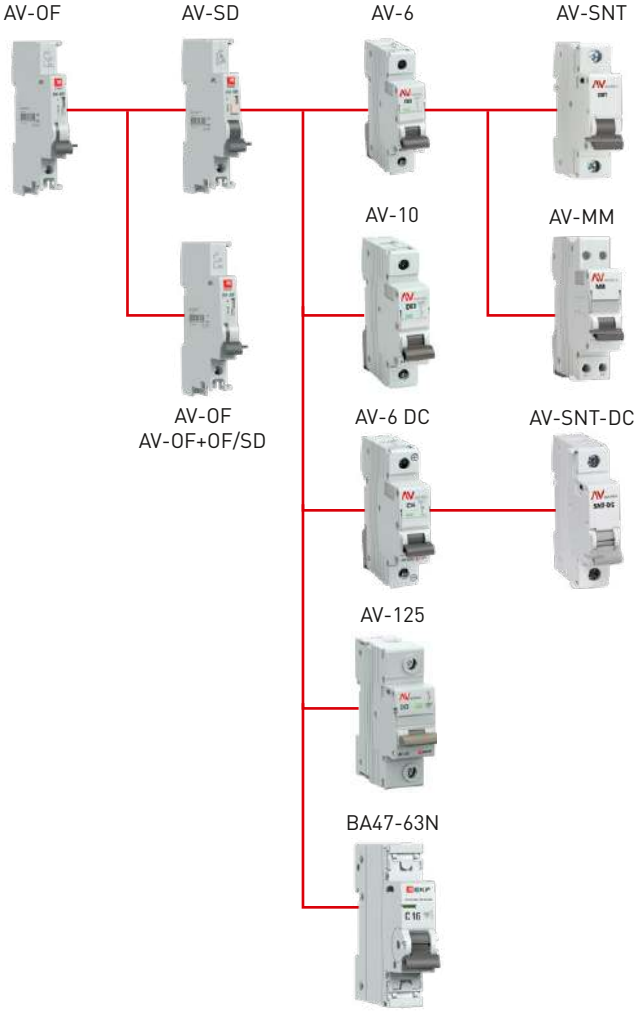
- Shunt release AV-SNT(-DC) is installed to the right of MCBs AV-6 or AV-10 to trip them when the control terminal receives a signal.
- Shunt release AV-SNT-2 features the same dimensions as AV-SNT, but is installed to the left of RCCB DV and RCBO DVA.
- Undervoltage release AV-MIN is installed to the left, while overvoltage and undervoltage release AV-MM is installed to the right of MCBs AV-6 or AV-10 to trip them under invalid voltage.
- Auxiliary contact AV-OF and alarm contact AV-SD are universal contacts for AVERES and new PROXIMA devices. The auxiliary contact AV-OF is installed to the left of AVERES modular devices to indicate contact status of the device it is connected to. The alarm contact AV-SD is installed to the left of MCBs VA47-63N PROXIMA, VN-63N, MCB AV-6 / AV-10 / AV-6 DC / AV-10 DC / AV-125, RCCB DV, and RCBOs DVA-6 / DVA-10 to indicate tripping by fault (short circuit, overload, current leakage) of the device it is connected to.
- Auto reclosers AV-M1, AV-M6 and AV-M6S are used for remote control of modular DIN rail devices both on command and in automatic mode. AV-M1 and AV-M6 are installed to the left of one- and two-pole MCB AV, modular switch disconnector AVN (up to 63A), RCCB DV (2P), and RCBO DVA-6 / DVA-10. AV-M6S is installed to the left of one- and two-pole MCB AV, one- and two-pole switch disconnector AVN (up to 63A), RCCB DV (2P), and RCBO DVA-6 / DVA-10.

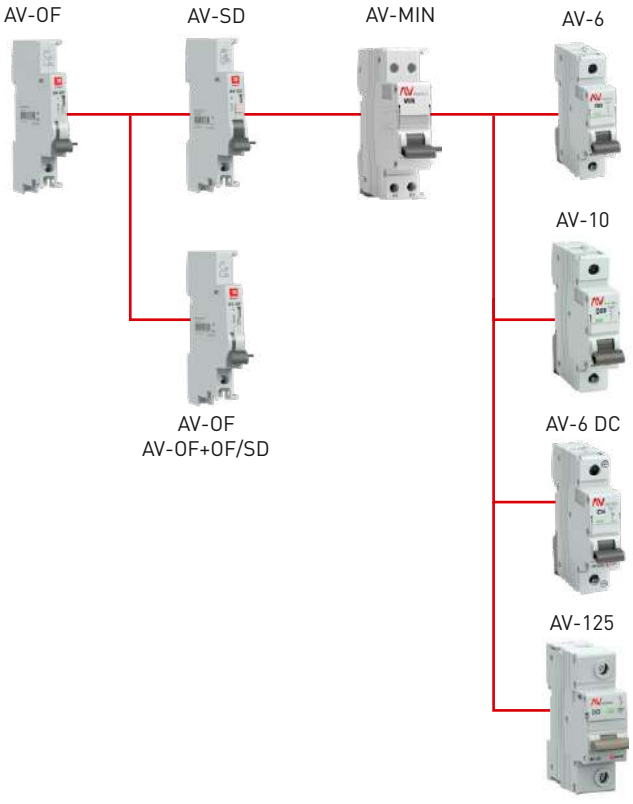
TECHNICAL DATA

Connection of accessories









Auxiliary contact AV-OF

- Load capacity:
  AC: Ue=400V Ie=3A
  Ue=230V Ie=6A
  DC: Ue=130V Ie=1A
  Ue=48V Ie=2A
  Ue=24V Ie=6A
- Dielectric strength: 2 kV/1 min
- Installed to the left of a circuit breaker to indicate position (status) of its contacts.

Alarm contact AV-SD

- Load capacity:
  AC: Ue=400V Ie=3A
  Ue=230V Ie=6A
  DC: Ue=130V Ie=1A
  Ue=48V Ie=2A
  Ue=24V Ie=6A
- Dielectric strength: 2 kV/1 min
- Installed to the left of a circuit breaker to indicate its tripping by fault.

Shunt release AV-SNT

- Rated insulation voltage Ui: 500 V
- Rated control voltage (Us): 400, 230, 125V AC (for AV-SNT, AV-SNT-2); 24V AC, 24V DC (for AV-SNT-DC)
- Control voltage range: 70%~100% Us.
- Power consumption:
  AC: 3A/400V
  AC: 6A/230V
  AC: 9A/125V
  DC: 10A/24V
- Dielectric strength: 2 kV/1 min
- Electrical endurance: ⩽4000.
- Installed to the left of MCB or RCCB to trip them by control signal.

Overvoltage and undervoltage release AV-MM

- Rated voltage Ui: 230V AC
- Rated insulation voltage Ui: 500 V
- Max. tripping voltage Umax: 280V ± 5%.
- Min. tripping voltage Umin: 170V ± 5%.
- Power consumption:
  AC: 3A/400V
  AC: 6A/230V
  AC: 9A/125V
- Dielectric strength: 2 kV/1 min
- Electrical endurance: ⩽4000.
- Installed to the right of devices to trip them by over-/undervoltage threshold.

Utilization category	Rated current, A	Rated voltage, V
AC12	3	400
	6	230
DC12	6	24
	2	48
	1	130

Shunt release AV-SNT

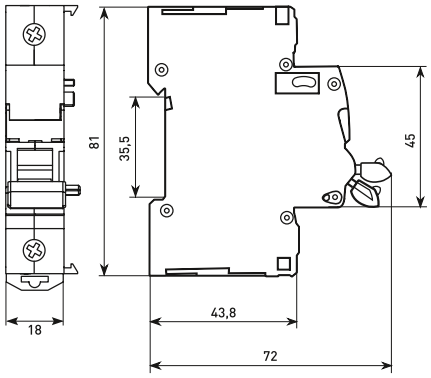
- Rated voltage: 230V AC
- Control voltage: (70%~146%) × U_e.

Undervoltage release AV-MIN

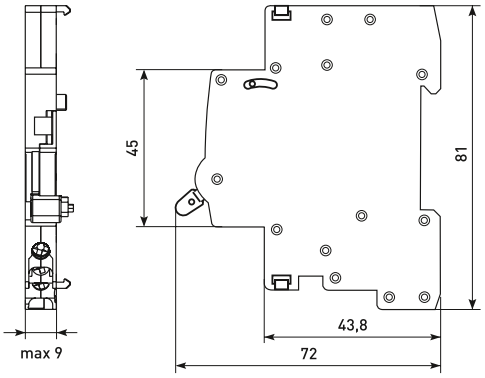
- Rated voltage: 230V AC
- Trip voltage: (35%~70%) × U_e.
- Non-trip voltage: (85%~110%) × U_e.

Overall and installation dimensions (mm)

AV-SNT, AV-SNT-2, AV-MIN, AV-MM, AV-SNT-DC



AV-OF & AV-SD



Name	Application	Item code
AV-OF EKF	Auxiliary contact AV-OF EKF is used in AC and DC control and alarm auxiliary circuits to indicate contact status (position) of the device it is connected to.	av-of-averes
AV-SD EKF	Alarm contact AV-SD EKF is used in AC and DC control and alarm auxiliary circuits to indicate tripping by fault (short circuit, overload, current leakage) of the device it is connected to.	av-sd-averes
AV-OF+OF/SD EKF	Combined auxiliary and alarm contact AV-OF+OF/SD EKF is designed for AC and DC control and alarm auxiliary circuits. The device comprises two contacts: an auxiliary contact (AV-OF) and an auxiliary (AV-OF) / alarm (AV-SD) contact. The AV-OF/AV-SD operates either as an auxiliary contact (OF) or as an alarm contact (SD) in response to the circuit breaker status.	av-of-of/sd-averes
AV-MIN AVERES EKF	Undervoltage release AV-MIN AVERES EKF trips one-, two-, three-, or four-pole circuit breakers AVERES by undervoltage.	av-min-averes
AV-MM AVERES EKF*	Overvoltage and undervoltage release AV-MM AVERES EKF trips one-, two-, three-, or four-pole circuit breakers AVERES by over- or undervoltage.	av-mm-averes
AV-SNT AVERES EKF*	Shunt release AV-SNT AVERES EKF remotely trips one-, two-, three-, or four-pole circuit breakers AVERES. AV-SNT has the size of one-pole MCB AV.	av-snt-averes
AV-SNT-2 AVERES EKF*	Shunt release AV-SNT-2 AVERES EKF remotely trips RCCB DV and RCBO DVA-6. AV-SNT-2 has the size of one-pole MCB AV.	av-snt-2-averes
AV-SNT-DC AVERES EKF*	Shunt release AV-SNT-DC (AC/DC 12-24V) AVERES EKF remotely trips one-, two-, three-, or four-pole circuit breakers AVERES. AV-SNT-DC has the size of one-pole MCB AV.	av-snt-DC-averes
AV-L AVERES EKF	Single indicator lamp AV-L AVERES EKF is used in AC control and alarm auxiliary circuits for light indication.	av-l-red-averes av-l-yellow-averes av-l-green-averes
	Three phase indicator light AV-L AVERES EKF is used in control circuits to indicate status of each phase in three-phase circuits.	av-l-3ph-averes

*Releases` AV-SNT, AV-SNT-DC, AV-MM are supplied with a metal pin.
Install the pin to the right of the device before mounting the release.
Releases AV-SNT2, AV-MIN are supplied with a pre-installed pin.

Delivery scope

Accessories AVERES EKF are supplied in a group package.

For all available documentation, scan the QR-code on the insert or on the inside of the package.

Auto recloser AV-M6/AV-M6S AVERES EKF

Auto reclosers AV-M6 & AV-M6S AVERES EKF are used for remote control both in manual and in automatic mode. The auto mode settings are used to configure the number of reclosings and their time delay. If short circuit is not removed, the auto recloser will not reclose. The device has a lockout mode for circuit maintenance and repair.

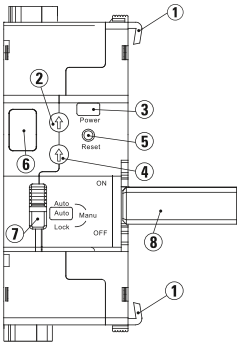
Standard: IEC/EN 60947–4–1, IEC/EN 61095

Robust housing with 7 rivets

Tripping counter window

Adjustable number of reclosing attempts and their time delay

Front panel of auto recloser AV-M6/AV-M6S



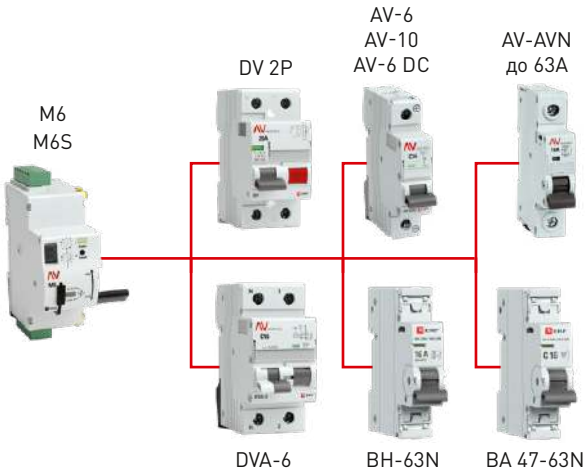
1. Locking tabs
2. Time delay selector
3. Contact position indicator
4. Reclosing attempts selector
5. Counter reset button
6. Tripping counter
7. Mode switch
8. Operating handle

APPLICATION

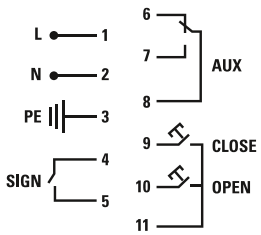
- Remote control of modular devices (on/off).
- Automatic reclosing of modular devices.
- Adjustable number and interval of reclosings.
- Visual indication of the number of attempted reclosings.
- Lockout mode for circuit repair and maintenance.
- Built-in alarm contact.

TECHNICAL DATA

Connection of accessories



Wiring diagram

Wiring diagram	Terminal	Description
	1	L – Phase
	2	N – Neutral
	3	PE – Earthing
	4, 5	Signal contacts (SIGN)
	6, 7, 8	Auxiliary contacts (AUX)
	9, 10, 11	Control contacts (CLOSE/OPEN)

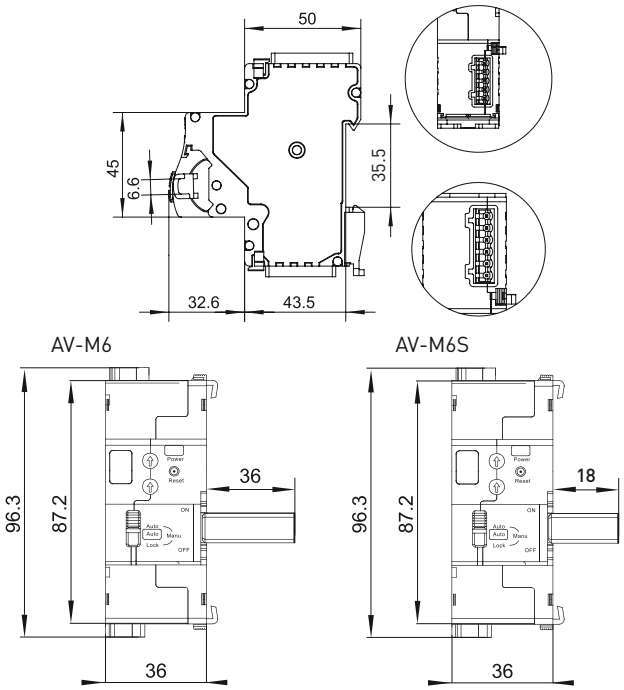
Parameters	Values
Rated operating voltage Ue, V	230
Voltage type	AC
Frequency, Hz	50 / 60
Power, VA	3
Standby power, W	0,5
Number of reclosing operations (configured), times	0, 1, 2, 3, 4, 5, 6, 7, 8, 9
Max. reclosing time, sec.	0,1
Time delay (configured), sec	0, 10, 20, 30, 45, 60, 90, 120, 150, 180
Degree of protection	IP20
Mechanical endurance, O-C cycles	8000
Electrical endurance, O-C cycles	4000
Operating temperature, °C	- 25 to +55
Weight, kg	0,232
Max. cross-section of connected wires, mm²	2,5
Max. tightening torque, N·m	0,2

Delivery scope

Auto reclosers AV-M6 & M6S AVERES EKF are delivered in an individual package.

For all available documentation, scan the QR-code on the insert or on the inside of the package.

Overall and installation dimensions (mm)

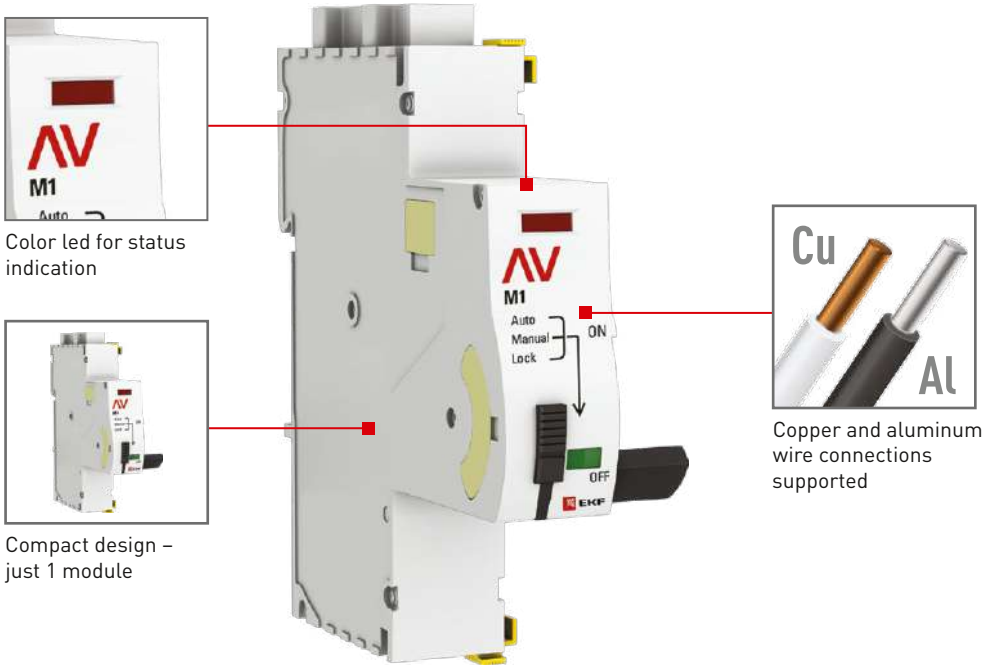


Name	Compatibility	Voltage, V	Electrical endurance	Item code
Auto recloser AV-M6	AV-6, AV-10 (2P, 3P, 4P); DVA-6, DV; AVN (1P, 2P) up to 63A, VA 47-63N, VN-63N	230	4000	av-m6-averes
Auto recloser AV-M6S	AV-6, AV-10 (1P, 2P); DVA-6, DV; AVN (1P, 2P) up to 63A, VA 47-63N, VN-63N			av-m6s-averes

Auto recloser AV-M1 AVERES EKF

The auto recloser AV-M1 AVERES EKF is used for remote control both in manual and in automatic mode. The device has a lockout mode for circuit maintenance and repair. The auto recloser AV-M1 AVERES EKF can be connected to one- and two-pole AV-6/ AV-10, DVA-6 / DVA-10, AVN and DV AVERES EKF.

Standard: IEC/EN 60947-5-1

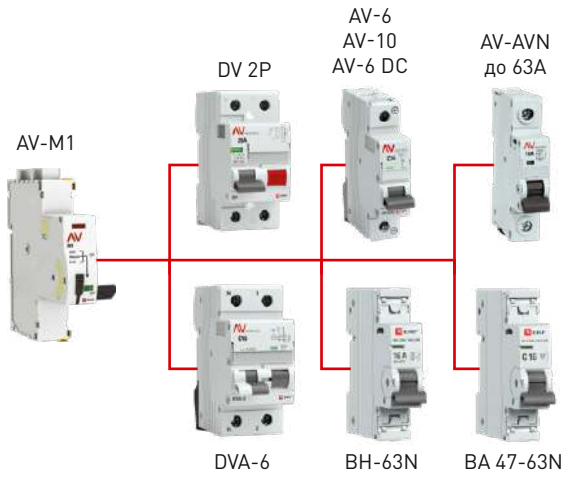


APPLICATION

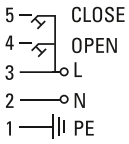
- Remote control of modular devices (on/off).
- Automatic reclosing of modular devices.
- Lockout mode for circuit repair and maintenance.

TECHNICAL DATA

Connection of accessories

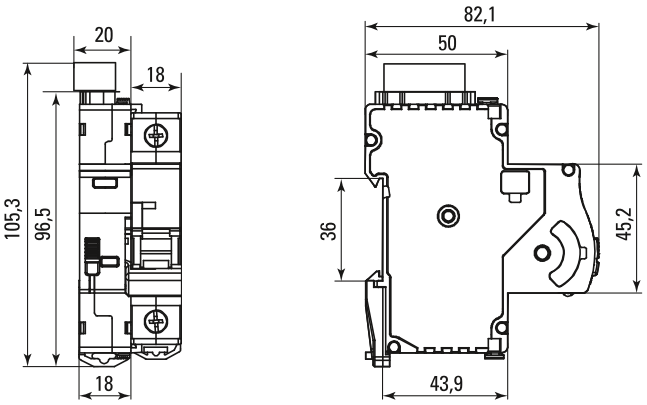


Wiring diagram

Wiring diagram	Terminal	Description
	1	PE – Earthing
	2	N – Neutral
	3	L – Phase
	4	OPEN (remote opening)
	5	CLOSE (remote closing)

Parameters	Values
Rated operating voltage Ue, V	230
Voltage type	AC
Frequency, Hz	50 / 60
Power, VA	1,5
Standby power, W	0,5
Number of reclosing operations, times	3
Reclosing time, sec	1
Time delay, sec	10–60–300
Degree of protection	IP20
Mechanical endurance, O-C cycles	8000
Electrical endurance, O-C cycles	6000
Operating temperature, °C	- 25 to +55
Weight, kg	0,138
Max. cross-section of connected wires, mm²	1,5
Max. tightening torque, N·m	0,2

Overall and installation dimensions (mm)



Delivery scope

Auto reclosers AV-M1 AVERES EKF are delivered in an individual package.

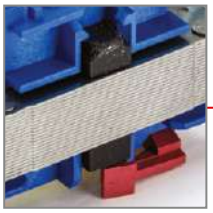
For all available documentation, scan the QR-code on the insert or on the inside of the package.

Name	Compatibility	Voltage, V	Electrical endurance	Item code
Auto recloser AV-M1	One- and two-pole AV-6, AV-10, AV-6 DC, VA 47-63N, VN-63N, AVN (up to 63A); DV (2P), DVA-6.	230	6000	av-m1-averes

Modular contactors KM PROXIMA EKF

The KM PROXIMA EKF modular contactor is a switching device in a standard modular housing. It consists of movable and fixed contacts as well as an electromagnetic coil. When the coil is energized, the resulting magnetic field attracts the movable contact, compressing the spring, and makes the connection. When the coil is de-energized, the spring pushes back and breaks the contact. Copper and aluminum wire connections are supported.

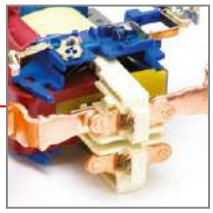
Standards: IEC/EN 60947–4–1:2018, IEC/EN 61095:2009



Rubber dampers
for quieter operation

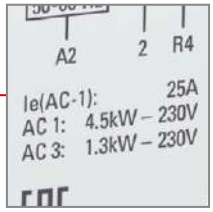
Two-position DIN rail
clamp

Silver-plated
composite contacts



Bridge contact for
quick arc quenching

Manual control option –
Contact position indicator



Can be used under AC-3
utilization category

APPLICATION

Control and automation systems for residential, commercial, industrial and critical infrastructure applications:

- lighting;
- heating, including underfloor systems;
- ventilation;
- pumps and motors.

TECHNICAL DATA

Parameters	Values
Rated operating voltage Ue, V	230 / 240 400 / 415
Rated insulation voltage Ui, V	415 (KM-16), 440 (KM-20, KM-25), 500 (others)
Rated impulse withstand voltage Uimp, kV	6
Rated conventional short-circuit current, kA	3
Inrush current of control coil, mA	30 (KM-16, KM-20), 60 (KM-25, KM-32, KM-40), 95 (KM-50, KM-63)
Hold current of control coil, mA	18 (KM-16, KM-20), 12 (others)
Contact closing voltage, V	From 195 to 253
Contact opening voltage, V	From 46 to 172
Closing response time, ms	20
Opening response time, ms	30

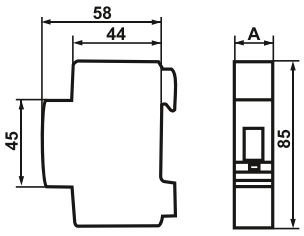
Parameters	Values
Max. power consumption of control coil, W	5
Rated AC voltage of control coil Uc, V	230
Mechanical endurance, O-C cycles	1 000 000
Electrical endurance, O-C cycles	150 000
Max. altitude above sea level, m	2000
Operation environment	Non-explosive, dust-free
Version	Fixed
Position in space	Vertical
Operating mode	Continuous
Degree of protection (IEC 60529)	IP20
Mounting	35mm DIN rail

Contactor type	Contacts		Coil	
	Cross-section of connected wires, mm²			
	solid	stranded	solid	stranded
KM-16	1-2,5	1-2,5	1-2,5	1-2,5
KM-20 KM-25	1-4	1-4	1-2,5	1-2,5
KM-32 KM-40 KM-50 KM-63	1-25	1-16	1-4	1-2,5

Name	Rated operating current Ie, A	Rated power at rated voltage, kW	
		230 / 240 V	400 / 415 V
AC-1/AC-7a (low-inductive loads)			
KM-16	16	3,0	10,5
KM-20	20	3,8	13,0
KM-25	25	4,5	16,0
KM-32	32	6,6	20,0
KM-40	40	8,4	25,0
KM-50	50	10,5	33,0
KM-63	63	13,0	40,0
AC-3/AC-7b			
KM-16	6	1,0	3,0
KM-20	7	1,0	3,6
KM-25	9	1,3	4,5
KM-32	18	3,0	10,0
KM-40	22	3,7	11,3
KM-50	27	4,5	13,7
KM-63	30	5,0	15,0

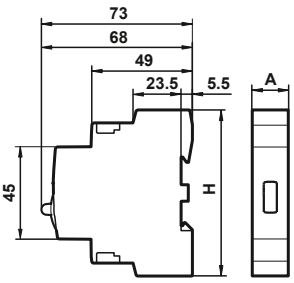
Overall and installation dimensions (mm)

KM



Module size	Module size
1	18
2	36
3	54

KM RU

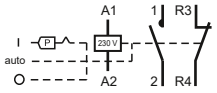
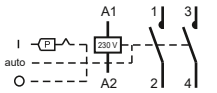
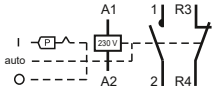
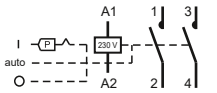
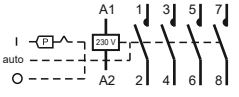


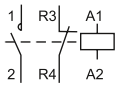
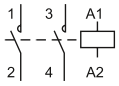
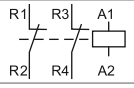
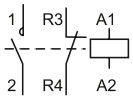
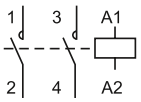
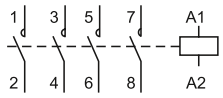
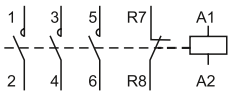
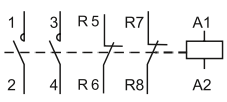
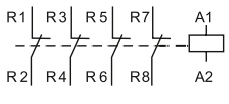
Module size	Width A, mm	Height H, mm
1	18	81
2	36	85
3	54	85

Delivery scope

Modular contactors KM PROXIMA EKF are supplied in individual or group package.

For all available documentation, scan the QR-code on the insert or on the inside of the package.

Picture	Module size	Number of contacts		Wiring diagrams	Item code
		NO	NC		
	1 M (18 mm)	1	1		km-1m-16-11
					km-1m-20-11
					km-1m-25-11
		2	0		km-1m-16-20
					km-1m-20-20
					km-1m-25-20
	2M (36 mm)	1	1		km-2m-40-11
					km-2m-63-11
		2	0		km-2m-40-20
					km-2m-63-20
	3M (54 mm)	4	0		km-3m-20-40
					km-3m-25-40
					km-3m-40-40
					km-3m-63-40

Picture	Module size	Number of contacts		Wiring diagrams	Item code	
		NO	NC			
	1M (18 mm)	1	1		km-1-16-11	
					km-1-20-11	
					km-1-25-11	
		2	0		km-1-16-20	
					km-1-20-20	
					km-1-25-20	
		0	2		km-1-25-02	
	2M (36 mm)	1	1		km-2-16-11	
					km-2-20-11	
					km-2-25-11	
					km-2-32-11	
					km-2-40-11	
					km-2-50-11	
					km-2-63-11	
		2	0		km-2-16-20	
					km-2-20-20	
					km-2-25-20	
					km-2-32-20	
					km-2-40-20	
					km-2-50-20	
					km-2-63-20	
	3M (54 mm)	4	0		km-3-16-40	
					km-3-20-40	
					km-3-25-40	km-3-25-40-24v
					km-3-32-40	km-3-32-40-24v
					km-3-40-40	km-3-40-40-24v
					km-3-50-40	
					km-3-63-40	
		3	1		km-3-16-31	
					km-3-20-31	
					km-3-25-31	
					km-3-32-31	
					km-3-40-31	
					km-3-50-31	
					km-3-63-31	
		2	2		km-3-16-22	
					km-3-20-22	
					km-3-25-22	
					km-3-40-22	
					km-3-63-22	
		0	4		km-3-25-04	
					km-3-40-04	
					km-3-63-04	

Surge protective devices

Surge protective devices (SPD) are used to suppress voltage surges (originating from lightning strikes) in 230-440 V circuits. SPDs feature non-linear components - voltage-dependent resistors (varistors). SPDs are installed between an active conductor and ground, upstream of the protected load. When a surge happens in the upstream circuit, SPD impedance drops instantaneously and excess voltage is shunted to ground - the surge is reduced to a safe level.

SPD type
SPDs are classified by the test categories they undergo.

SPDs Type I are used for protection against high voltage surges (lightning strikes and short circuits) and are installed to protect equipment in places with high probability of direct lightning strikes or as a first line of defence in a lightning protection system. Type I SPDs are tested to withstand impulse discharge current with 10/350 μs waveform, maximum discharge current with 8/20 μs waveform, and conform to voltage protection rating for 1,2/50 μs waveform. Type I SPDs are used in main distribution switchgears, between the utility transformer secondary and the switchgear.

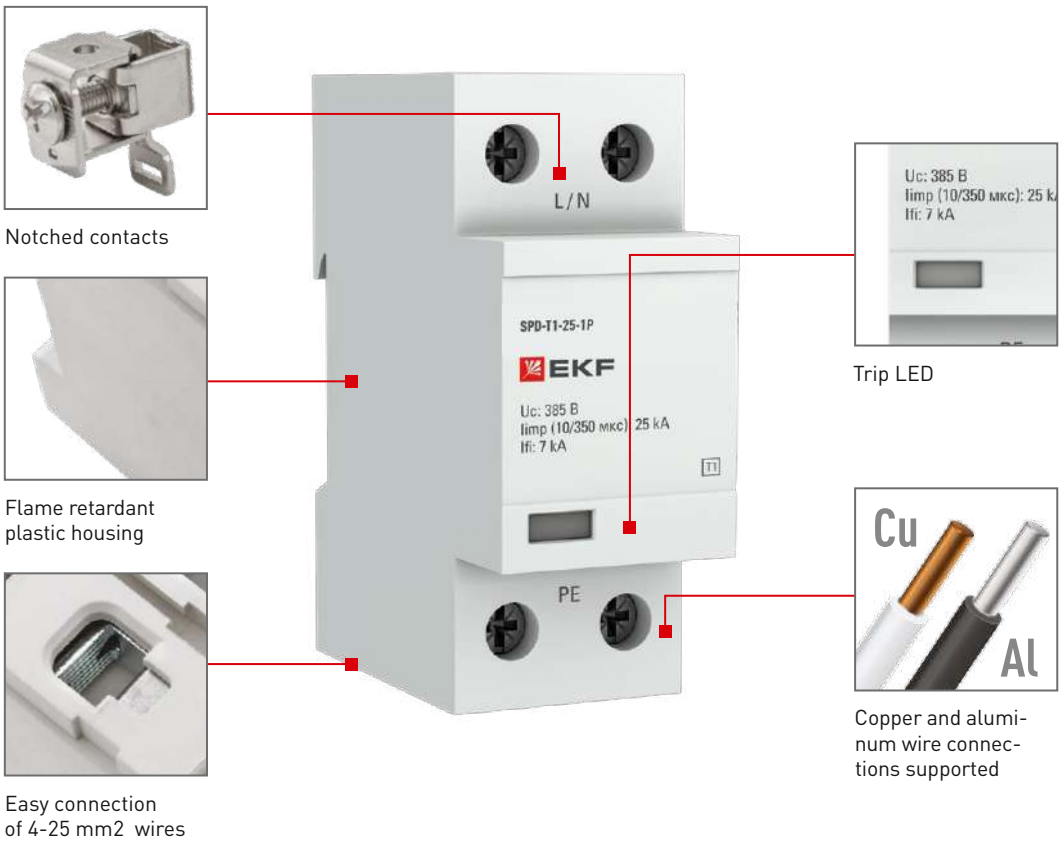
SPDs Type II are used for protection of a facility power distribution network against switching interference or transients, or as the second level of lightning protection, usually installed in sub-distribution switchboards.

CAUTION! Direct or indirect lightning or surge voltages cause SPD to trip and fail, with the trip indicator color changing from green to red. Replace the device. SPD failure resulting from overvoltage is not covered by the warranty!

Surge protective device Type I EKF

Type I surge protective devices are used in elecrical installations to protect equipment against upstream lightning strikes, short circuits or transient overvoltage and are usually installed in main switchgear, on the utility side.

Standard: IEC/EN 60947–4–1



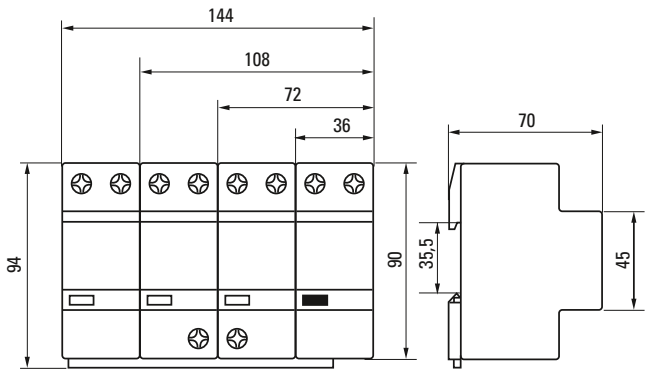
APPLICATION

SPDs are designed for protection:
- against voltage surges in electrical installations caused by direct lightning strikes to the external circuit, indirect lightning strikes (within or between clouds or nearby facilities), lightning strikes to the ground;
- against switching overvoltages in electrical installations resulting from:
- switching in high-capacity power supply systems;
- switching in power supply systems close to electrical installations;
- resonant voltage oscillations in electrical circuits;
- damage to systems, e.g. ground faults, arc faults.

TECHNICAL DATA

Parameters	Values
SPD type	I
Rated frequency, Hz	50 / 60
Maximum operating voltage Uc, V	385
Voltage protection rating, kV	2
Impulse discharge current 10/350 μs Iimp, kA	25
Maximum discharge current 8/20 μs Imax, kA	100
Rated discharge current 8/20 μs In, kA	25
Tripping time, ns	≤100
Cross-section of connected wires, mm²	from 4 to 35
Tightening torque, N·m	3
Degree of protection by IEC 60529	IP20
Operating temperature, °C	from –40 to +60
Mounting	35mm DIN rail

Overall and installation dimensions (mm)



Delivery scope

Surge protective devices Type I are supplied in a group package.

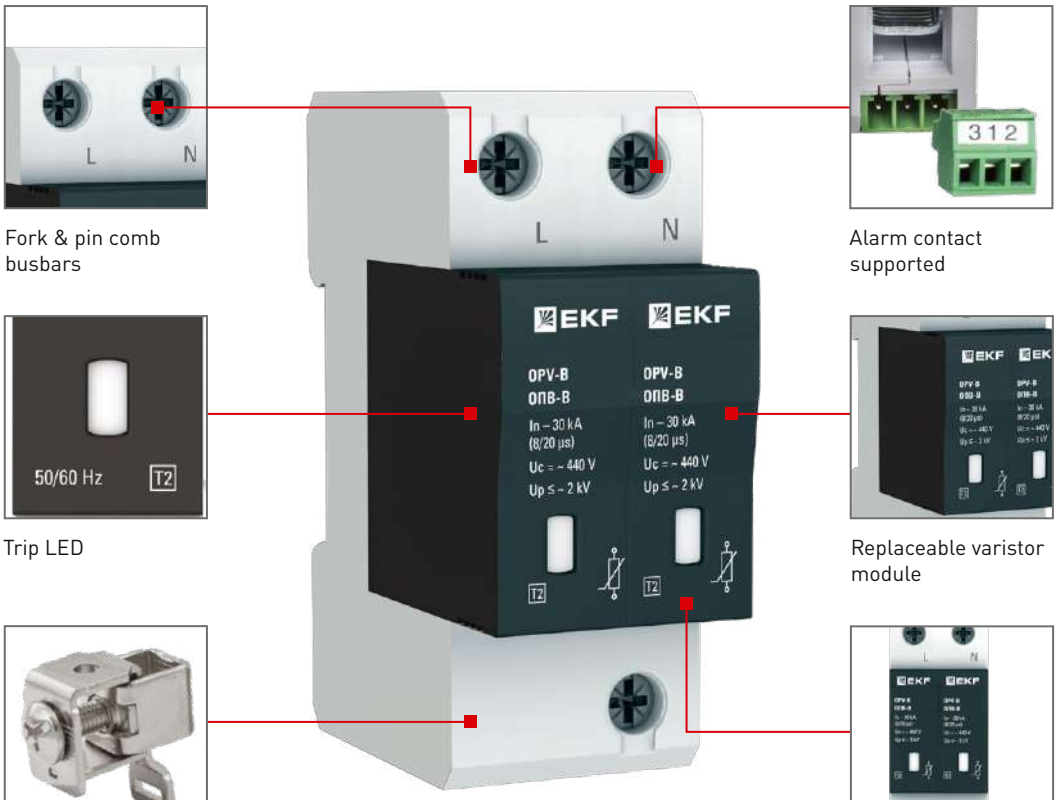
For all available documentation, scan the QR-code on the insert or on the inside of the package.

Picture	Name	Maximum discharge current 8/20 μs Imax, kA	Poles				Protection voltage rating, kV	Item code
			1P	2P	3P	4P		
	SPD Type I Iimp 25kA (10/350μs) 1P EKF	100	25				2	spd-t1-25-1p
	SPD Type I Iimp 25kA (10/350μs) 2P EKF							spd-t1-25-2p
	SPD Type I Iimp 25kA (10/350μs) 3P EKF							spd-t1-25-3p
	SPD Type I Iimp 25kA (10/350μs) 4P EKF							spd-t1-25-4p

Surge protective device OPV Type II EKF

The surge protective device OPV Type II EKF is designed to protect electrical installations against transient overvoltages and to divert surge currents in 50/60 Hz 230/400 V AC networks.

Standard: IEC/EN 61643-11



Fork & pin comb busbars

Alarm contact supported

Trip LED

Replaceable varistor module

Notched contacts

Min. 5 trips endured at rated discharge current, min. 2 trips - at max. discharge current

APPLICATION

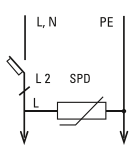
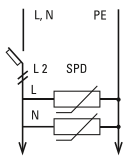
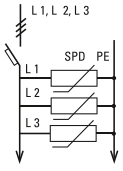
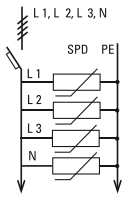
SPDs are designed for protection:

- against voltage surges in electrical installations caused by direct lightning strikes to the external circuit, indirect lightning strikes (within or between clouds or nearby facilities), lightning strikes to the ground.
- against switching overvoltages in electrical installations resulting from:

- switching in high-capacity power supply systems;
- switching in power supply systems close to electrical installations;
- resonant voltage oscillations in electrical circuits;
- damage to systems, e.g. ground faults, arc faults.

TECHNICAL DATA

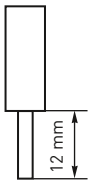
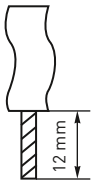
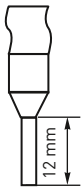
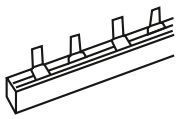
Wiring diagrams

Number of poles			
1P	2P	3P	4P
			

Parameters	Values		
	B	C	D
Degree of protection by IEC/EN 60529	IP20		
Cross-section of connected wires, mm²	From 4 to 25		
Tightening torque, N·m	2,5		
Rated frequency, Hz	50 / 60		
Operation temperature, °C	From -40 to +70		
Rated discharge current 8/20µs, I_n, kA	30	20	5
Rated operating voltage U_n, V	400	400	230
Maximum discharge current 8/20 µs Imax, kA	60	40	10
Maximum operating voltage U_c, V	440	385	275
Voltage protection rating U_p, kV	2,0	1,8	1,0
Alarm contact parameters	I = 3A, U = 250V, f = 50 Hz		

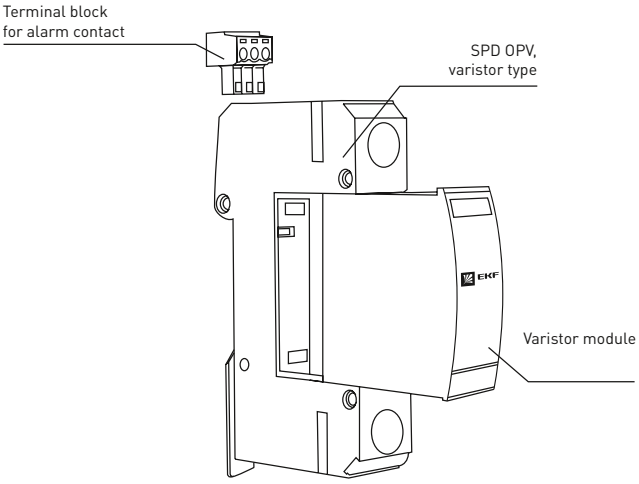
Installation and operation

1. Connection

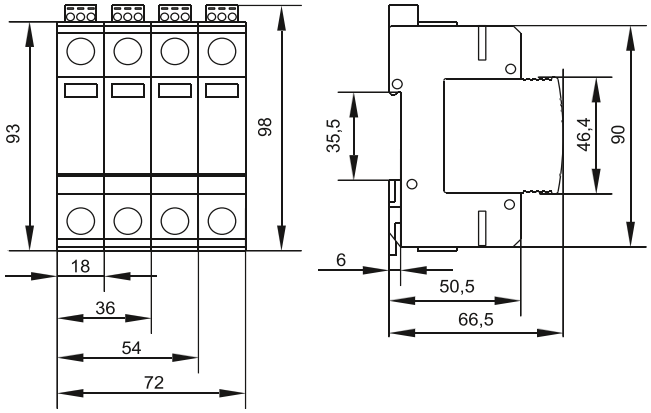
Conductor			Comb busbar
solid	stranded	ferrule	pin
			

The protective earth conductor (PE) shall be connected to the SPD bottom terminal; and the neutral conductor (N) or the phase conductor (L) shall be connected to the top terminal. A device with a guaranteed tripping function (e.g. MCB, RCBO, or fuse) shall be installed in the SPD circuit from the side of power mains. Copper and aluminum wire connections are supported.

2. Replacement of varistor module and connection of alarm contact block.



Overall and installation dimensions (mm)



Delivery scope

Surge protective devices OPV Type II EKF are supplied in an individual package.

For all available documentation, scan the QR-code on the insert or on the inside of the package.

Number of poles:

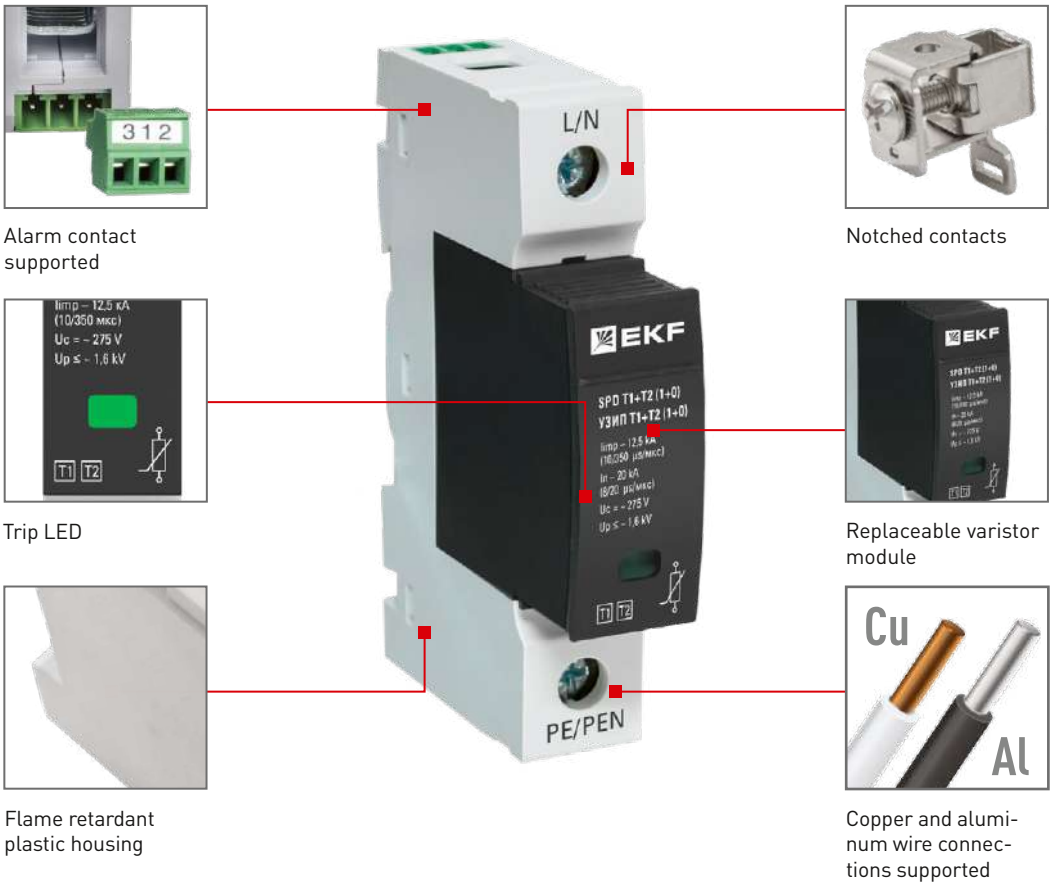
1P, 2P, 3P, 4P

Name	SPD type	Description	Rated discharge current 8/20μs, In, kA	Protection voltage rating, kV	Item code
SPD OPV-B/1P In 30kA 440V with alarm EKF	B	Protection against induced pulses from direct lightning strikes to the air-termination system of a building or overhead power line (OHL). Installed in main distribution switchboards.	30	2,0	opv-b1
SPD OPV-B/2P In 30kA 440V with alarm EKF					opv-b2
SPD OPV-B/3P In 30kA 440V with alarm EKF					opv-b3
SPD OPV-B/4P In 30kA 385V with alarm EKF					opv-b4
SPD OPV-C/1P In 20kA 385V with alarm EKF	C	Protection of a facility power distribution network against switching faults; or the second level of lightning protection. Installed in main distribution switchboards.	20	1,8	opv-c1
SPD OPV-C/2P In 20kA 385V with alarm EKF					opv-c2
SPD OPV-C/3P In 20kA 385V with alarm EKF					opv-c3
SPD OPV-C/4P In 20kA 385V with alarm EKF					opv-c4
SPD OPV-D/1P In 5kA 275V with alarm EKF	D	Protection of consumers against residual voltage surges, equipment protection against differential (imbalanced) overvoltage, high-frequency interferences filtering. Installed directly next to consumers.	5	1,0	opv-d1
SPD OPV-D/2P In 5kA 275V with alarm EKF					opv-d2
SPD OPV-D/3P In 5kA 275V with alarm EKF					opv-d3
SPD OPV-D/4P In 5kA 275V with alarm EKF					opv-d4

Surge protective device Type I+II EKF

The surge protective device (SPD) Type I+II EKF is designed to protect electrical and electronic equipment against voltage surges caused by direct lightning strikes to the air termination system or overhead power lines; and as the second level of lightning protection.

Standard: IEC/EN 61643-11



Alarm contact supported

Notched contacts

Trip LED

Replaceable varistor module

Flame retardant plastic housing

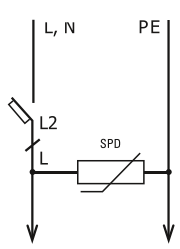
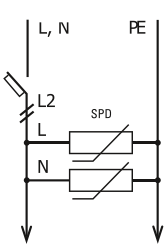
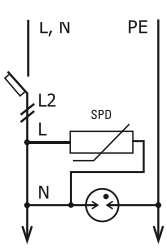
Copper and aluminum wire connections supported

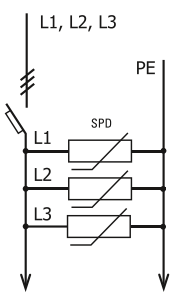
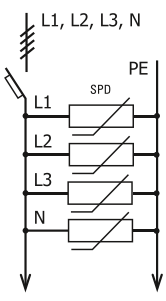
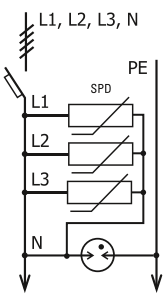
APPLICATION

SPDs are designed for protection:
• against voltage surges of electrical installations caused by direct lightning strikes to external circuits, indirect lightning strikes (within or between clouds or nearby facilities), lightning strikes to the ground
• against switching overvoltages in electrical installations resulting from:
- switching in high-capacity power supply systems;
- switching in power supply systems close to electrical installations;
- resonant voltage oscillations in electrical circuits;
- damage to systems, e.g. ground faults, arc faults.

TECHNICAL DATA

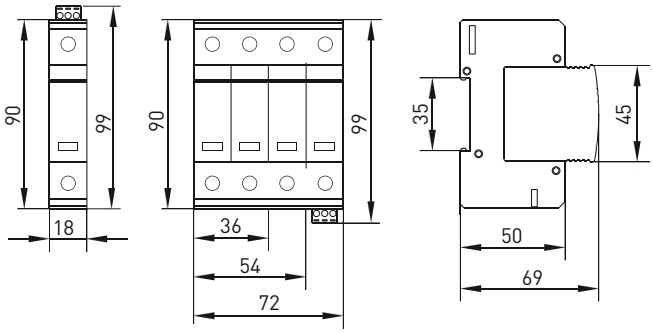
Wiring diagram

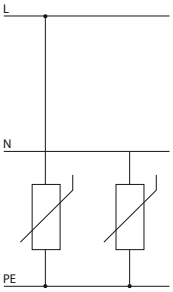
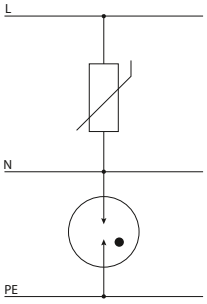
Number of poles		
1P	2P	1P+N
		

Number of poles		
3P	4P	3P+N
		

Parameters	Values
Maximum operating voltage Uc, V	275
Impulse discharge current (10/350 μs) Iimp, kA	12,5
Rated discharge current (8/20 μs) In, kA	20
Voltage protection rating Up, kV	≤1,6
Operating temperature, °C	From -15 to +60
Degree of protection by IEC 60529	IP20
Cross-section of connected wires, mm2	4–35
Alarm contact parameters	I=3 A, U=250 V, f= 50Hz

Overall and installation dimensions (mm)



Overvoltage	
Imbalanced (in-phase)	Balanced
	
Insulation or equipment between conductors and earth connection	Conductors of common cable line

For TN-S networks, "1+1" ("3+1") circuits are recommended as the most suitable when the surge source is unknown, and "2+0" ("4+0") circuits are applied when the voltage surge is from the ground

Delivery scope

Surge protective devices Type I+II EKF are supplied in an individual package.

For all available documentation, scan the QR-code on the insert or on the inside of the package.

Name	Alarm contact wiring diagram	Item code
SPD T I+II; Iimp-12,5kA; In-20kA; Uc-275V; 1+0 EKF		OV12-1-501
SPD T I+II; Iimp-12,5kA; In-20kA; Uc-275V; 1+1 EKF		OV12-11-505
SPDT I+II; Iimp-12,5kA; In-20kA; Uc-275V; 2+0 EKF		OV12-2-502
SPD T I+II; Iimp-12,5kA; In-20kA; Uc-275V; 3+0 EKF		OV12-3-503
SPD T I+II; Iimp-12,5kA; In-20kA; Uc-275V; 3+1 EKF		OV12-31-506
SPD T I+II; Iimp-12,5kA; In-20kA; Uc-275V; 4+0 EKF		OV12-4-504
SPD T I+II; Iimp-7kA; In-20kA; Uc-275V; 1+1 EKF		OV12-11-402
SPD T I+II; Iimp-7kA; In-20kA; Uc-275V; 3+1 EKF		OV12-31-404
Replacement module for SPD T I+II EKF	–	OV12-module

SPD protection

Surge protective devices require additional protection by means of a fuse in case of short circuit, e.g. due to excessive discharge current. For recommended fuse links, refer to the table below:

Name	SPD Item code	Fuse link rated current (max.)	Quantity	Fuse link Item code	Fuse link holder Item code
SPD Type I Iimp 25kA (10/350μs) 1P EKF	spd-t1-25-1p	125A	1	pvc-22x58-125	pr-22-58-1
SPD Type I Iimp 25kA (10/350μs) 2P EKF	spd-t1-25-2p	125A	2		pr-22-58-2
SPD Type I Iimp 25kA (10/350μs) 3P EKF	spd-t1-25-3p	125A	3		pr-22-58-3
SPD Type I Iimp 25kA (10/350μs) 4P EKF	spd-t1-25-4p	125A	4		pr-22-58-3 + pr-22-58-1
SPD T I+II; Iimp-12,5kA; In-20kA; Uc-275V; 1+0 EKF	OV12-1-501	80A	1	pvc-22x58-80	pr-22-58-1
SPD T I+II; Iimp-12,5kA; In-20kA; Uc-275V; 1+1 EKF	OV12-11-505	80A	2		pr-22-58-2
SPD T I+II; Iimp-12,5kA; In-20kA; Uc-275V; 3+0 EKF	OV12-3-503	80A	3		pr-22-58-3
SPD T I+II; Iimp-12,5kA; In-20kA; Uc-275V; 3+1 EKF	OV12-31-506	80A	4		pr-22-58-3 + pr-22-58-1
SPD T I+II; Iimp-12,5kA; In-20kA; Uc-275V; 4+0 EKF	OV12-4-504	80A	4		pr-22-58-3 + pr-22-58-1
SPD OPV-B/1P In 30kA 440V with alarm EKF	opv-b1	63A	1	pvc-14x51-63	pr-14-51-1
SPD OPV-B/1P In 30kA 440V with alarm EKF	opv-b2	63A	2		pr-14-51-2
SPD OPV-B/3P In 30kA 440V with alarm EKF	opv-b3	63A	3		pr-14-51-3
SPD OPV-B/4P In 30kA 440V with alarm EKF	opv-b4	63A	4		pr-14-51-3 + pr-14-51-1
SPD OPV-C/1P In 20kA 385V with alarm EKF	opv-c1	50A	1	pvc-14x51-50	pr-14-51-1
SPD OPV-C/1P In 20kA 385V with alarm EKF	opv-c2	50A	2		pr-14-51-2
SPD OPV-C/3P In 20kA 385V with alarm EKF	opv-c3	50A	3		pr-14-51-3
SPD OPV-C/4P In 20kA 385V with alarm EKF	opv-c4	50A	4		pr-14-51-3 + pr-14-51-1
SPD OPV-D/1P In 5kA 275V with alarm EKF	opv-d1	20A	1	pvc-10x38-20	pr-10-38-1
SPD OPV-D/2P In 5kA 275V with alarm EKF	opv-d2	20A	2		pr-10-38-2
SPD OPV-D/3P In 5kA 275V with alarm EKF	opv-d3	20A	3		pr-10-38-3
SPD OPV-D/4P In 5kA 275V with alarm EKF	opv-d4	20A	4		pr-10-38-3 + pr-10-38-1

Molded Case Circuit Breakers

Molded case circuit breakers AV Power AVERES EKF

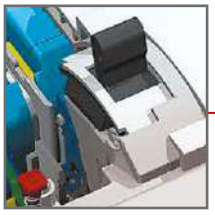
AV Power molded case circuit breakers are designed for infrequent routine close/open operations and overload/short-circuit protection in distribution networks and electric motors. Due to the standard size, you can select trip unit model best suited for your application.

- Standard thermomagnetic trip unit
- The electronic trip unit provides a three-stage protection, measuring, signalling and communication.
- The communication module can be configured to support up to four remote control units and is compatible with various communication protocols.

Standard: IEC/EN 60947-2

Optimized gas flow in the arc chute

Broad selection of trip unit models to meet user's needs



Faster tripping by 5-10% to reduce wear of contact surfaces and consequently extend MCCB service life.

Spring mechanism applies constant positive force to maintain reliable contact area, even if contact pads are worn down, extending the MCCB service life

Self-positioning contact system for larger contact area, when opened, generates a magnetic field to draw the arc into the arc chute.

Silver-alloy contact pads for lower contact transients and increased durability.

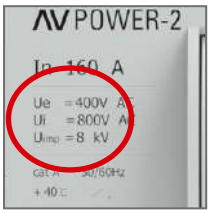
APPLICATION

- Industrial and critical infrastructure facilities;
- Residential & commercial construction projects;
- Switching component of backup power supply systems;
- Electrical circuit isolation and partitioning (three MCCBs);
- Remote switching of electrical equipment;
- Control & energy-saving systems, automated electricity metering systems.

Rated current

Compliance with standards

TRIP indicator



Standard functions:

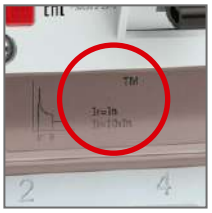
Ui – rated insulation voltage.

Uimp – rated impulse withstand voltage.

Ue – rated operating voltage.

Icu – ultimate short-circuit breaking capacity.

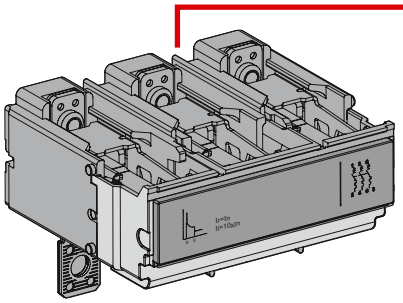
Ics – service short-circuit breaking capacity.



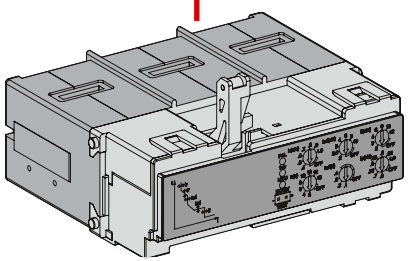
Trip unit type

ON indicator

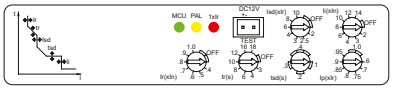
OFF indicator



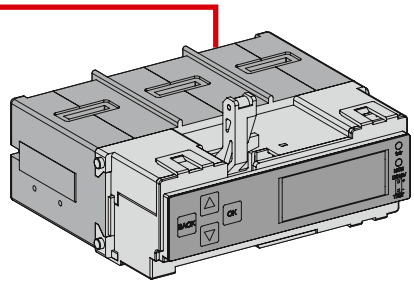
TM – thermomagnetic trip unit
tried and true downstream protection
Overload current setpoint: 10-800 A
Overcurrent setpoint: fixed 100 ... 8000 A Ir=10 × In



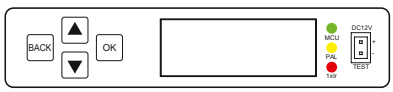
ETU2.0 – electronic trip unit (standard)
ETU2.2 – electronic trip unit (standard)
RS-485, Modbus-RTU



- Configurable rated current setpoint
- Configurable overload trip delay
- Configurable overcurrent setpoint
- Configurable overcurrent trip delay
- Configurable short-circuit current setpoint
- Configurable pre-alarm
- Communication functions



ETU6.0 – electronic trip unit (LCD)
ETU6.2 – electronic trip unit
RS-485, Modbus-RTU and LCD



- Smooth setpoint adjustment:
- Configurable rated current setpoint
- Configurable overload trip delay
- Configurable overcurrent setpoint
- Configurable overcurrent trip delay
- Configurable short-circuit current setpoint
- Configurable pre-alarm
- Configurable earth fault setpoint
- Configurable earth fault delay
- Real-time data display
- Troubleshooting
- Communication functions

TECHNICAL DATA

Thermomagnetic trip unit

Parameters		AV POWER-1		AV POWER-2		AV POWER-3		AV POWER-4	
Number of poles		3P (standard) / 4P (on order)							
Rated current In, A		10, 16, 20, 25, 32, 40, 50, 63, 80, 100, 125, 160		100, 125, 160, 180, 200, 225, 250		250, 315, 400, 500, 630		630, 700, 800	
Rated insulation voltage Ui, V AC		800	1000	1000					
Rated impulse withstand voltage Uimp, kV		8							
Rated operating voltage Ue, V AC		400 / 415 / 690							
Ultimate short-circuit breaking capacity Icu, kA	400/415 V AC	35	80	35	80	35	100	35	100
	690 V AC	8	10	8	30	8	30	8	30
Service short-circuit breaking capacity Ics, kA *	400/415 V AC	25	75	25	75	25	80	25	80
	690 V AC	5	10	5,5	12,5	5,5	15	5,5	20
Trip unit		Thermomagnetic							
Utilization category		A							
Endurance (without maintenance)	Mechanical	25 000				10 000			
	Electrical	1000				8000		7000	
Setpoint of electromagnetic trip unit		10 × In							
Dimensions, mm	W (3P/4P)	77/102	92/122	105/140	105/140	150/198		210/280	
	L	130	155	165	165	257		275	
	H	61,5	79	73	90,5	103		105	

* Icu = Ics is available on request

Characteristics

Rated current, A	Tripping time (ambient temperature +40°C)		Instant tripping current, A
	1,05In (cold) non-tripping time	1,3In (hot) tripping time	
In≤63	≥1 hour	<1 hour	10 × In ± 20%
63<In≤800	≥2 hours	<2 hours	

Ambient temperature derating factor

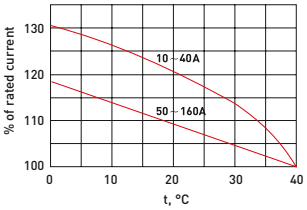
Name	+40 °C	+45 °C	+50 °C	+55 °C	+60 °C
AV POWER-1	1,0 × In	0,94 × In	0,88 × In	0,81 × In	0,74 × In
AV POWER-2		0,96 × In	0,91 × In	0,85 × In	0,78 × In
AV POWER-3		0,97 × In	0,94 × In	0,90 × In	0,86 × In
AV POWER-4					

Housing dielectric strength against altitude above sea level

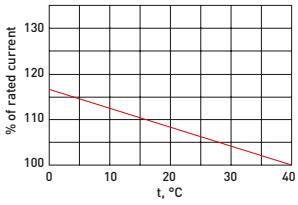
Parameters	Values						
Altitude above sea level, m	2000	2500	3000	3500	4000	4500	5000
Power-frequency withstand voltage, V	3000	3000	2500	2400	2200	2100	2000
Insulation voltage	1	1	0,9	0,85	0,8	0,72	0,7
Switching capacity derating factor	1	1	0,9	0,82	0,78	0,75	0,7
Operate current derating factor	1	1	0,98	0,97	0,96	0,95	0,94

Temperature derating factor

AV POWER-1



AV POWER-2



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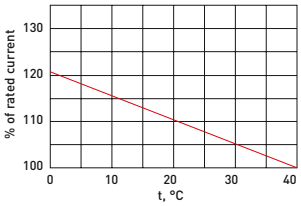
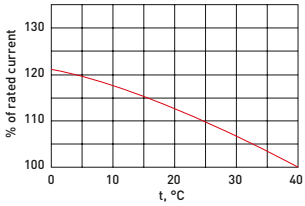
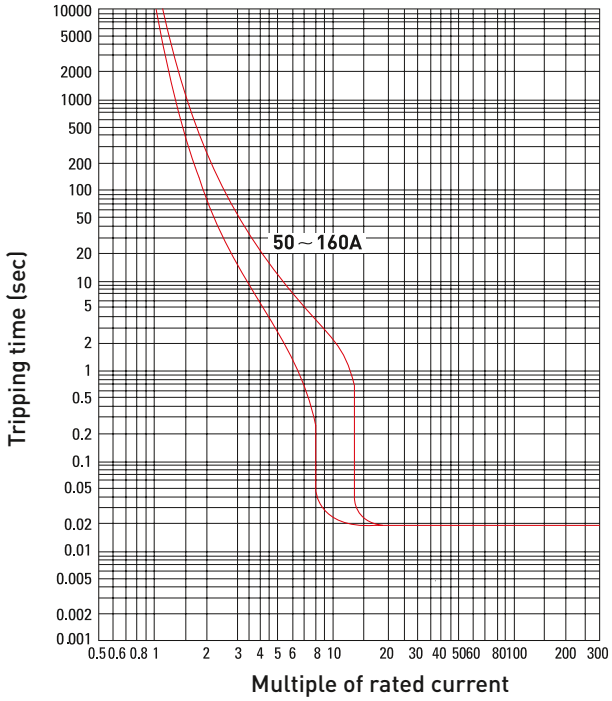


AV POWER-4



Tripping curves

AV POWER-1



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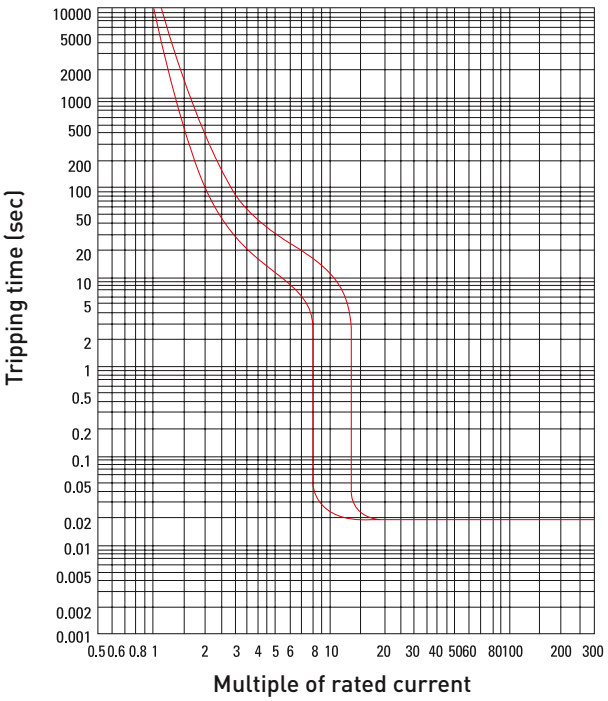
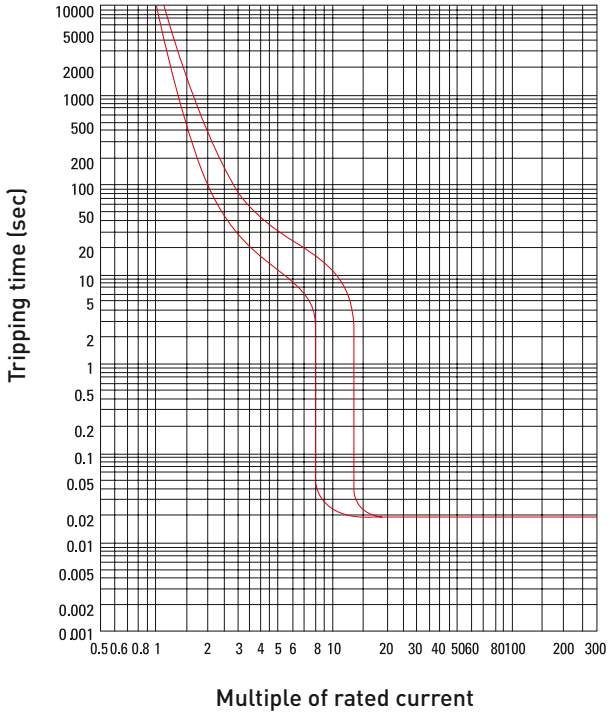
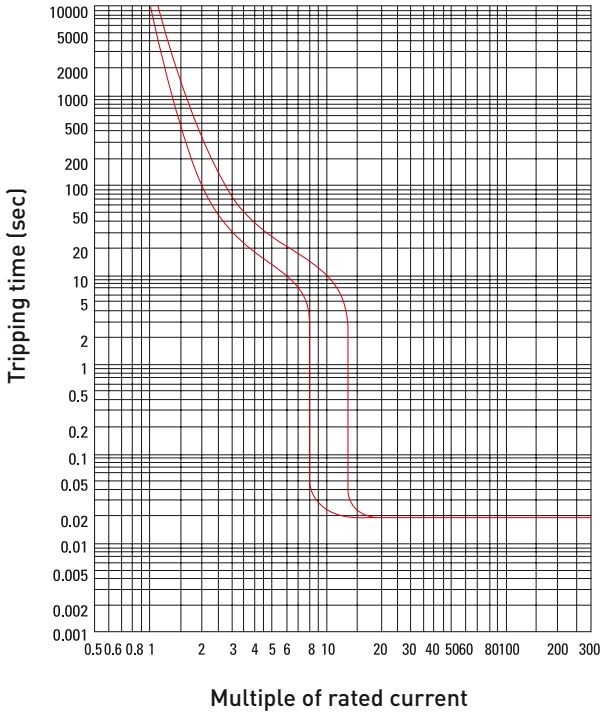


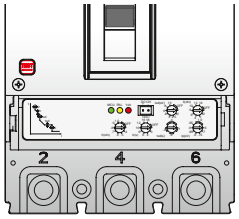
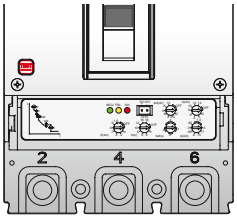
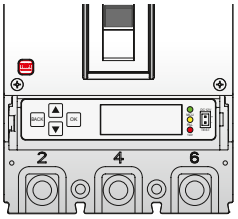
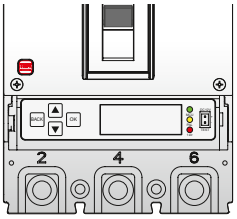
AV POWER-3



AV POWER-4



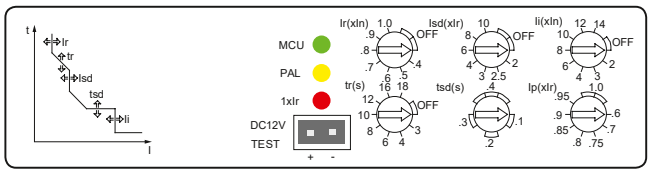
Electronic trip unit

Controller	ETU 2.0	ETU 2.2	ETU 6.0	ETU 6.2
Picture				
Current protection	Overload protection, overload trip delay time setting. Short-circuit protection, short-circuit trip delay time setting. Instantaneous short-circuit protection. Ground fault protection (for ETU 6.0/6.2).			
Other protections	Overload alarm does not trigger (on request). Neutral protection (optional). Phase imbalance protection (on request).			
Display	N/A		Digital display. Fault indication.	
Communication	N/A	Protocol: Modbus-RTU. Interface: RS-485	N/A	Protocol: Modbus-RTU. Interface: RS-485
Query	N/A		Request parameter, troubleshooting	
Function	Functional testing. Self-diagnostics.			

Parameters		AV POWER-1		AV POWER-2		AV POWER-3		AV POWER-4		AV POWER-5
Number of poles		3P (standard) /4P (on order)								
Rated current In, A		32, 63, 100, 160		250		400, 630		1000		800, 1000, 1250, 1600
Rated insulation voltage Ui, V AC		1000								
Rated impulse withstand voltage Uimp, kV		8								12
Rated operating voltage Ue, V AC		400 / 415 / 690								
Ultimate short-circuit breaking capacity Icu, kA	AC400/415	50	100	50	100	50	100	50	100	70
	AC690 V	10	30	30	40	30	40	30	40	25
Service short-circuit breaking capacity Ics, kA	AC400/415	50	75	50	75	50	75	50	75	70
	AC690 V	10	20	30	40	30	40	30	40	25
Trip unit		Electronic								
Utilization category		A				B				
Endurance (without maintenance)	Mechanical	25 000				10 000				
	Electrical	10 000				8000		7000		3000
Dimensions, mm	W (3P/4P)	92/122		105/140		150/198		210/280		288
	L	155		165		257		275		216
	H	79		73	90,5	103		105		155

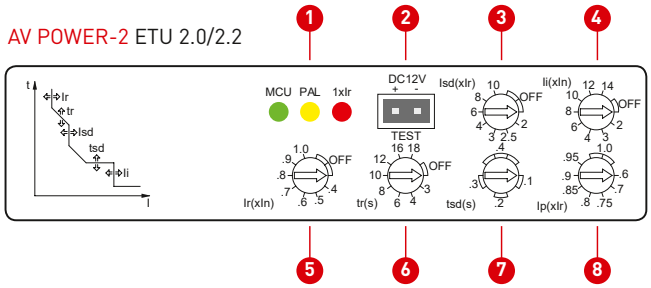
Electronic trip units ETU2.0, ETU2.2

AV POWER-1 ETU 2.0/2.2



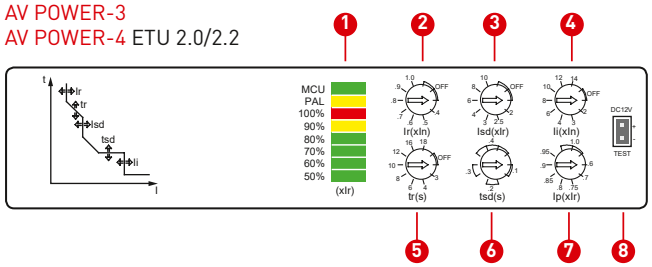
1. **MCU** Power LED
   PAL Pre-overload/fault LED
   1XIr Overload LED
2. TEST – testing port
3. Short-circuit current setpoint Isd
4. Instant short-circuit current setpoint Ii

AV POWER-2 ETU 2.0/2.2

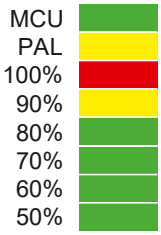


5. Thermal protection current setpoint Ir
6. Overload current trip delay time setpoint
7. Short-circuit current trip delay time setpoint
8. Pre-alarm setpoint

AV POWER-3
AV POWER-4 ETU 2.0/2.2



1.

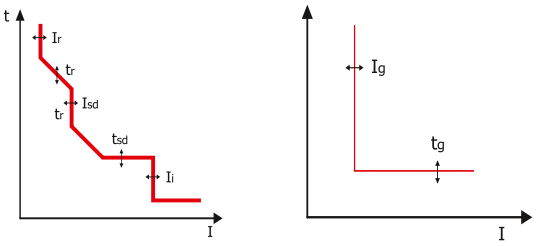


MCU: green - trip unit power on
PAL: Pre-overload /fault. **Flashing** yellow for peak current I≥Ip. **Constant** yellow for I≥1,15Ir
Overload: **100%** – constant red for I≥Ir x 105%
90% – constant yellow for I≥Ir x 105%
80% – constant green for I≥Ir x 80%
70% – constant green for I≥Ir x 70%
60% – constant green for I≥Ir x 60%
50% – constant green for I≥Ir x 50%

2. Thermal protection current setpoint Ir
3. Short-circuit current setpoint Isd
4. Instant short-circuit current setpoint Ii
5. Overload trip delay time setpoint
6. Short-circuit current trip delay time setpoint
7. Pre-alarm setpoint Ip
8. TEST – testing port

Overload . Overload delay. Ir - operating current. Ir setpoint value with ±10% tolerance.

Configuration



Overload protection, Ir											
Overload tripping current setpoint Ir ± 10%		(0,4; 0,5; 0,6; 0,7; 0,8; 0,9; 1,0) × In + OFF									
Tripping time $T_r = \frac{(6\,I_r)^2}{I^2} t_r$	Current	Operate time									
	⩽1,5 × Ir	2 hours of operation without tripping									
	1,3 × Ir	Tripping within one hour of operation									
	DIP setting	Time setting Tr, c.u.	3	4	6	8	10	12	16	18	OFF
	1,5 × Ir	Tripping time Tr, sec.	48	64	96	728	160	192	256	288	Alarm does not actuate
	2,0 × Ir	Tripping time Tr, sec.	27	36	54	72	90	108	144	162	
	6,0 × Ir	Tripping time Tr, sec.	3	4	6	8	10	12	16	18	
	7,2 × Ir	Tripping time Tr, sec.	2,08	2,77	4,17	5,55	6,94	8,33	11,1	12,5	

Overcurrent protection						
Tripping current I_{sd} ± 10%		(2; 2,5; 3; 4; 5; 6; 8; 10) × Ir + OFF				
Tripping time t_{sd} ± 15%	I_{sd}≤I<1,5I_{sd}	Dependence	I^2T_{sd}=(1,5I_{sd})$^2t_{sd}$			
Tripping time t_{sd}	1,5I_{sd}≤I<Ii	Time setpoint t_{sd}, sec	0,1	0,2	0,3	0,4
		Acceptable deviation, sec	± 0,03	± 0,04	± 0,06	± 0,08

Instant short-circuit protection	
Instant short-circuit current setpoint Ii ± 15%	(2; 3; 4; 6; 8; 10; 12; 14) × In + OFF
Tripping time ti, sec	0,05

Overload pre-alarm	
Current setpoint Ip	(0,6; 0,7; 0,75; 0,8; 0,85; 0,9; 0,95; 1,0) × Ir
Operating characteristics	Alarm signal between 0,9-1,1 × Ip

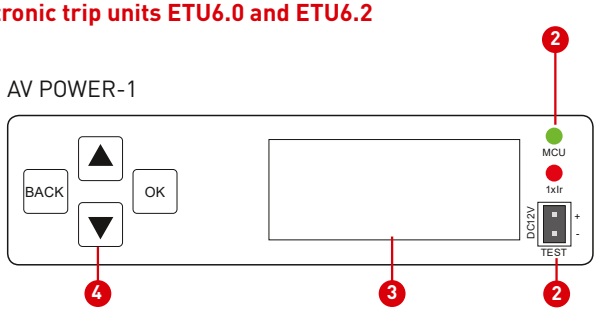
For a three-pole version, the overload pre-alarm function is included in the basic scope of delivery.
For a four-pole version, the ground fault protection function is included in the basic scope of delivery. Factory settings Ip = 0,9 × Ir

Factory settings

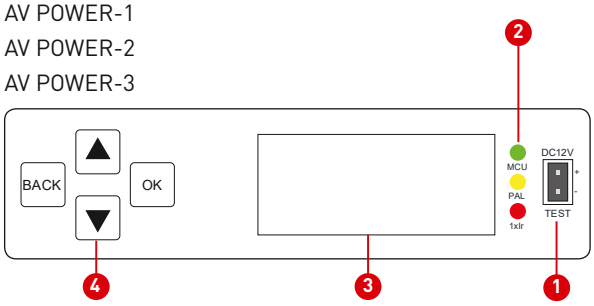
Protective characteristics			Notes
Overload protection	Current setpoint Ir, A	1,0 × In	–
	Delay time setpoint tr, sec	18	At I = 6 × Ir
Overcurrent protection	Current setpoint Isd, A	6 × Ir	–
	Delay time setpoint tsd, sec.	0,1	At 1,5Isd≤I <Ii
Instant short-circuit current protection	Current setpoint Ii, A	10 × In	–
Pre-alarm	Pre-alarm current setpoint Ip, A	0,9 × Ir	Delay 0,4s

Electronic trip units ETU6.0 and ETU6.2

AV POWER-1



AV POWER-1
AV POWER-2
AV POWER-3



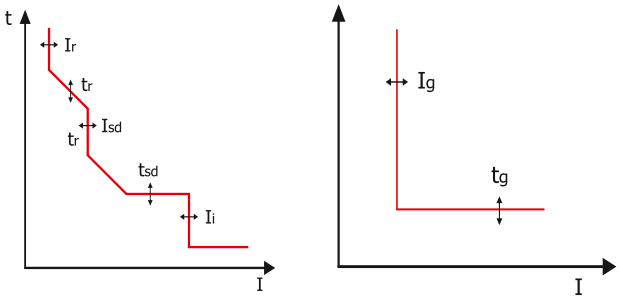
1. TEST – testing port

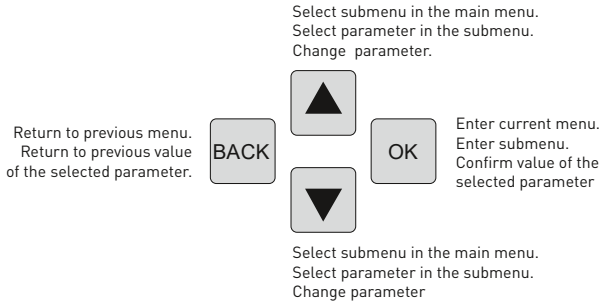
2. **MCU** Power LED
   PAL Pre-overload/fault LED
   1XIr Overload LED

3. LCD

4. Buttons:
   «Cancel/Back»
   «Down/Flip»
   «Zoom in/Page»
   «Setting /Confirm»

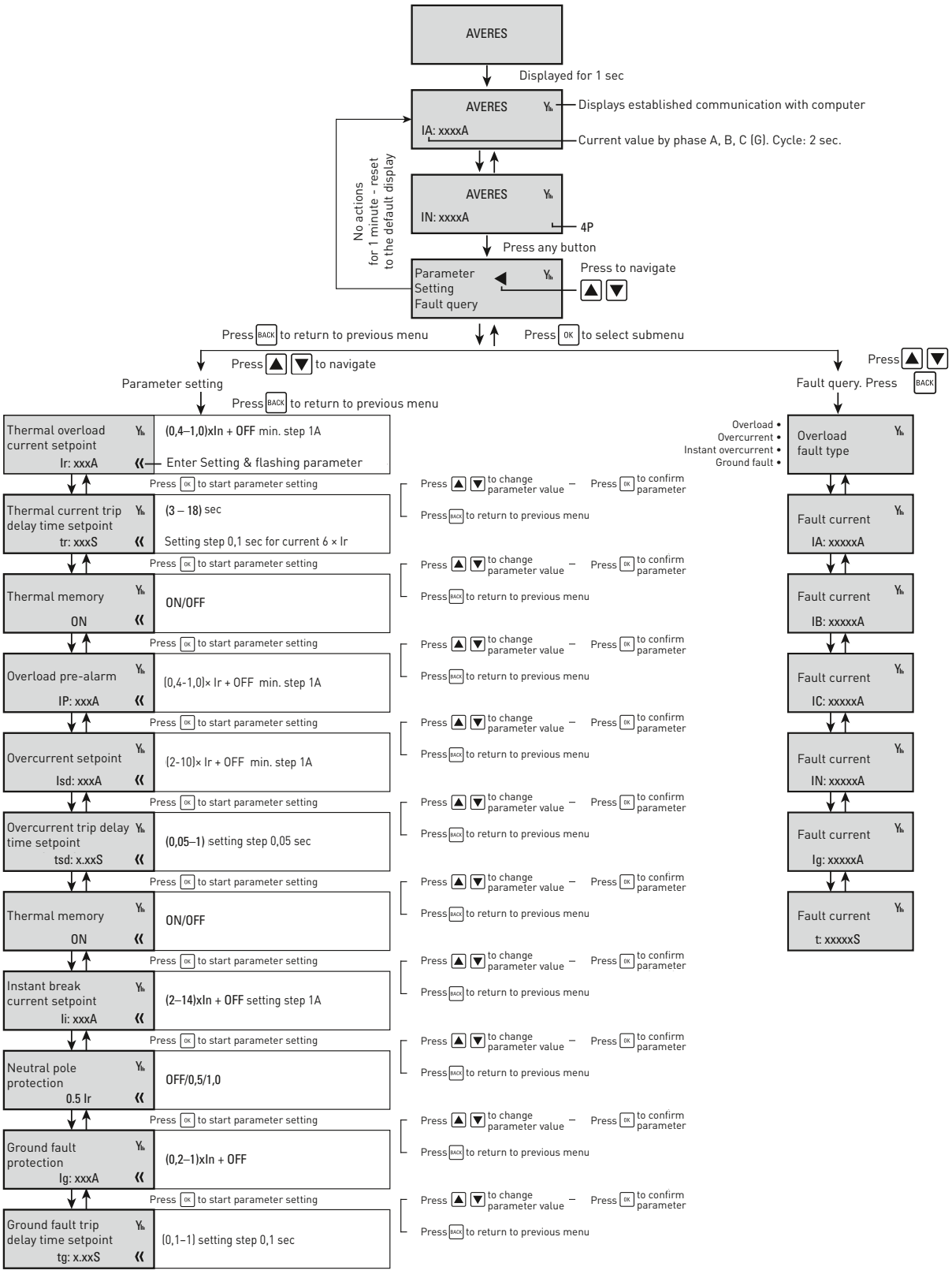
Configuration





Overload current Ir. Overload delay tr. Operating current - Ir setpoint value with ±10%

MENU



Overload protection, Ir			
Overload tripping current setpoint Ir ± 10%		(0,4~ 1) × In + OFF (minimal step: 1A)	
Tripping time Tr + 10% $T_r = \frac{(6\,I_r)^2}{I^2} t_r$	Current	Operate time	
	⩽1,05 × Ir	2 hours of operation without tripping	
	1,3 × Ir	Tripping within one hour of operation	
	6,0 × Ir	Time setpoint, sec.	Min. step: 1 sec.
	Thermal memory	10 min + OFF (power off)	ON/OFF

Overcurrent protection			
Tripping current I_{sd} ± 10%		(2~10)xIr + OFF	
Tripping time t_{sd} ± 20%	I_{sd}≤I<1,5I_{sd}	Dependence	I^2T_{sd}=(1,5I_{sd})$^2t_{sd}$
Tripping time t_{sd}	1,5I_{sd}≤I<Ii	Time setpoint t_{sd}, sec.	0,05-1 (step: 0,05 sec.)
		Acceptable deviation, sec.	± 15%
Thermal memory		5 min (can be disabled)	ON/OFF

Instant short-circuit protection	
Instant short-circuit current setpoint Ii ± 15%	(2-14) × In + OFF (min. step: 1A)
Tripping time ti, sec.	0,05

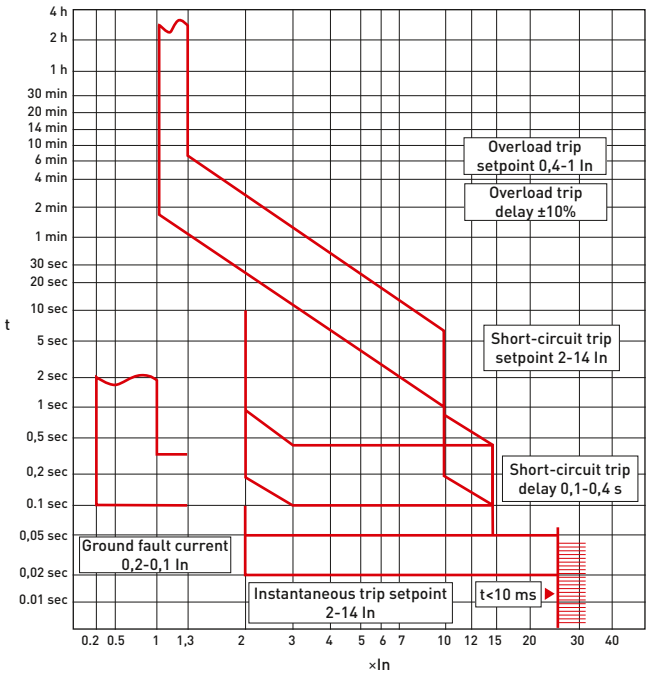
Ground fault protection	
Earth leakage setpoint Ig, ± 10%, A	(0,2~ 1) × In + OFF (min. step: 1A)
Tripping characteristics	I≤0,9Ig no tripping; I≥1,1Ig tripping
Tripping time tg, sec.	0,1s ~ 0,8s + alarm (min. step: 0,1 sec.)

Overload pre-alarm	
Current setting Ip, A	(0,6; 0,7; 0,75; 0,8; 0,85; 0,9; 0,95; 1,0) × Ir
Operating characteristics	Alarm under 0,9-1,1 × Ir
	Delay time 0,1 ~ 1,0 sec
Imbalance current	30–70%
	{Imax-Imin/Imax*100%} ≤ no actions
	{(Imax-Imin)/Imax* 100%} > and Imax> Ir tripping with 10 sec delay

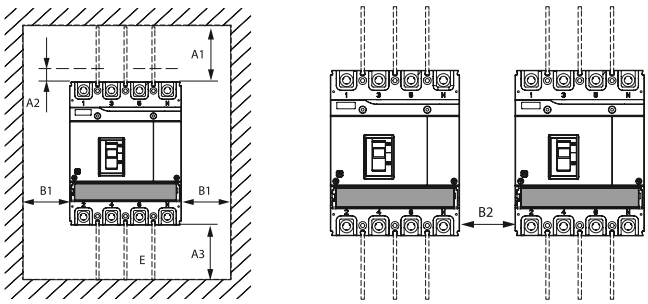
ETU-6.0/ETU-6.2. Factory settings

Protective characteristics			Notes
Overload protection	Current setpoint Ir, A	1,0 × In	–
	Delay time setpoint tr, sec	18	At I = 6Ir
Operating characteristics	Current setpoint Isd, A	6 × Ir	–
	Delay time 0,1 ~ 1,0 sec	0,1	At 1,5Isd≤I <Ii
Instant short-circuit protection	Current setpoint Ii, A	10 × In	–
Ground fault protection	Ground fault current setpoint Ig, A	0,6 × In	–
	Delay time setpoint tg, sec.	0,4	–
Pre-alarm	Pre-alarm current setpoint Ip, A	0,9 × Ir	Delay 0,4 sec.

Tripping curves



Installation

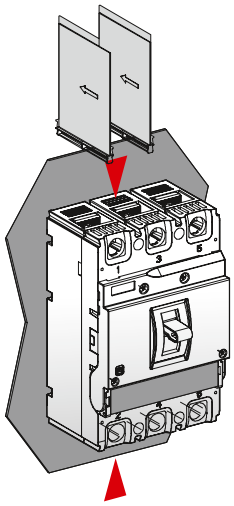


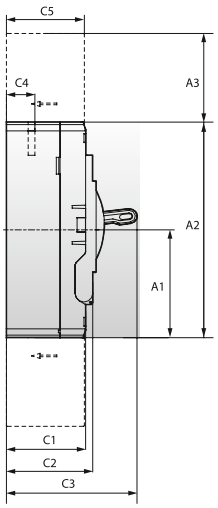
Name	Minimum installation dimensions, mm				
	A1	A2	A3	B1	B2
AV POWER-1 TR AVERES EKF	50	25	25	25	0
AV POWER-1 ETU AVERES EKF	50	25	25	25	0
AV POWER-2 AVERES EKF	80	25	25	25	0
AV POWER-3 AVERES EKF	105-8	25	25	25	0
AV POWER-4 AVERES EKF	110	25	25	25	0

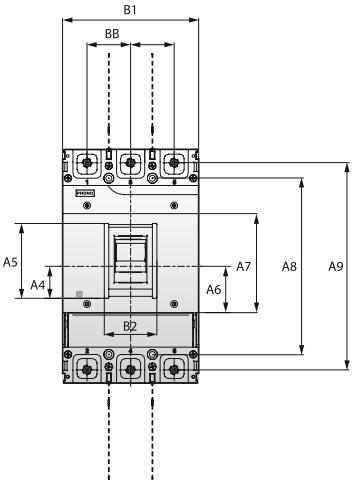
A1: Upper distance to conducting surfaces (including earthing buses)
A2: Upper distance to non-conducting surfaces
A3: Lower distance from MCCB terminal to bottom surfaces
B1: Distance from MCCB to side surfaces (including earthing buses)
B2: Distance between molded case circuit breakers
Notes: E – Interphase barriers are required

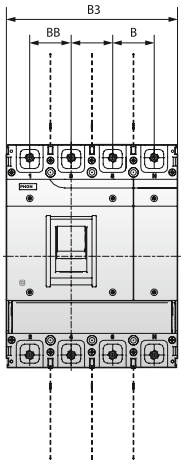
Overall and installation dimensions

Interphase barriers improve interphase insulation of the connected wires. Install barriers into the slots in the MCCB housing after it has been installed and connected. The barriers can be used with other connection accessories, except for rear connection terminals.



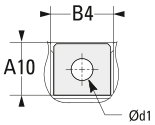




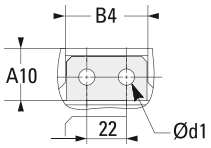


Inputs

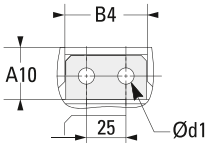
AV POWER-1-3



AV POWER-4

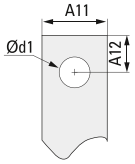


AV POWER-5

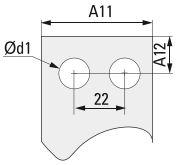


Wire cross-section

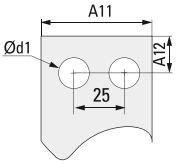
AV POWER-1-3



AV POWER-4

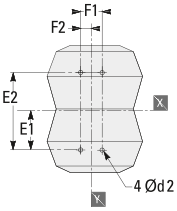


AV POWER-5

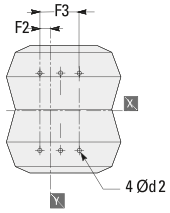


Installation dimensions

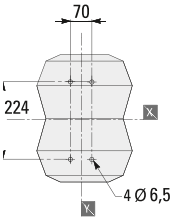
AV POWER-1-3



AV POWER-4



AV POWER-5



MCCB type	Overall dimensions, mm															
	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	B	B1	B2	B3
AV POWER-1 TR AVERES EKF	65	130	50	20,9	29,7	29,5	54,5	111	116	14	17	7	25	77	24,5	102
AV POWER-1 ETU AVERES EKF AV POWER-1 TR 80kA AVERES EKF	77,5	155	50	22,5	42,6	28	58	132	137	17,8	17	7,5	30	92	28,5	122
AV POWER-2 AVERES EKF	82,5	165	80	21	47,5	28,5	62	143	144	20,5	24	10	35	105	32,6	140
AV POWER-3 AVERES EKF	128,5	257	105,8	35,2	82,5	51	109	194	228	28,5	30	13	48	150	58	198
AV POWER-4 AVERES EKF	137,5	275	110	37,9	81,8	51	102	243	243	29	45	13	70	210	61,5	280
AV POWER-5 AVERES EKF	143,75	287,5	107	–	130	–	189	224	258,5	30	50	15.5	70	216	75	–

MCCB type	Overall dimensions, mm												
	B4	C1	C2	C3	C4	C5	E1	E2	F1	F2	F3	d1	d2
AV POWER-1 TR AVERES EKF	18	56,5	61,5	81,5	18	55	55,5	111	25	12,5	50	6,5	4
AV POWER-1 ETU AVERES EKF AV POWER-1 TR 80kA AVERES EKF	18	72	79	101	23,5	70	66	132	30	15	60	6,5	4,5
AV POWER-2 AVERES EKF	24,5	83,5	90,5	115,5	25,5	82,5	71,5	143	35	17,5	70	8,5	4,5
AV POWER-3 AVERES EKF	32	95	103,5	158	26,5	93	97	194	48	24	96	11	7
AV POWER-4 AVERES EKF	46	97	105	156,5	26	93	121,5	243	70	35	70	9	7
AV POWER-5 AVERES EKF	51	137	158	232	32,5	–	–	224	70	–	–	M10	6,5

THERMOMAGNETIC TRIP UNIT								
Rated current, A	35 kA				80 kA		100 kA	
	AV POWER-1	AV POWER-2	AV POWER-3	AV POWER-4	AV POWER-1	AV POWER-2	AV POWER-3	AV POWER-4
80	mccb-13-80-TR-av	–	–	–	mccb-13-80H-TR-av	–	–	–
100	mccb-13-100-TR-av	mccb-23-100-TR-av	–	–	mccb-13-100H-TR-av	mccb-23-100H-TR-av	–	–
125	mccb-13-125-TR-av	mccb-23-125-TR-av	–	–	mccb-13-125H-TR-av	mccb-23-125H-TR-av	–	–
160	mccb-13-160-TR-av	mccb-23-160-TR-av	–	–	mccb-13-160H-TR-av	mccb-23-160H-TR-av	–	–
200	–	mccb-23-200-TR-av	–	–	–	mccb-23-200H-TR-av	–	–
225	–	mccb-23-225-TR-av	–	–	–	mccb-23-225H-TR-av	–	–
250	–	mccb-23-250-TR-av	mccb-33-250-TR-av	–	–	mccb-23-250H-TR-av	mccb-33-250H-TR-av	–
315	–	–	mccb-33-315-TR-av	–	–	–	mccb-33-315H-TR-av	–
400	–	–	mccb-33-400-TR-av	–	–	–	mccb-33-400H-TR-av	–
500	–	–	mccb-33-500-TR-av	–	–	–	mccb-33-500H-TR-av	–
630	–	–	mccb-33-630-TR-av	–	–	–	mccb-33-630H-TR-av	mccb-43-630H-TR-av
700	–	–	–	mccb-43-700-TR-av	–	–	–	mccb-43-700H-TR-av
800	–	–	–	mccb-43-800-TR-av	–	–	–	mccb-43-800H-TR-av

ELECTRONIC TRIP UNIT								
Rated current, A	50 kA				100 kA			
	AV POWER-1	AV POWER-2	AV POWER-3	AV POWER-4	AV POWER-1	AV POWER-2	AV POWER-3	AV POWER-4
ETU2.0								
100	mccb-13-100-2.0-av	–	–	–		–	–	–
160	mccb-13-160-2.0-av	–	–	–	mccb-13-160H-2.0-av	–	–	–
250	–	mccb-23-250-2.0-av	–	–	–	mccb-23-250H-2.0-av	–	–
400	–	–	mccb-33-400-2.0-av	–	–	–	mccb-33-400H-2.0-av	–
630	–	–	mccb-33-630-2.0-av	–	–	–	mccb-33-630H-2.0-av	–
1000	–	–	–	mccb-43-1000-2.0-av	–	–	–	mccb-43-1000H-2.0-av
ETU2.2 with communication module								
100	mccb-13-100-2.2-av	–	–	–	–	–	–	–
160	mccb-13-160-2.2-av	–	–	–	mccb-13-160H-2.2-av	–	–	–
250	–	mccb-23-250-2.2-av	–	–	–	mccb-23-250H-2.2-av	–	–
400	–	–	mccb-33-400-2.2-av	–	–	–	mccb-33-400H-2.2-av	–
630	–	–	mccb-33-630-2.2-av	–	–	–	mccb-33-630H-2.2-av	–
1000	–	–	–	mccb-43-1000-2.2-av	–	–	–	mccb-43-1000H-2.2-av
ETU6.0								
100	mccb-13-100-6.0-av	–	–	–	mccb-13-160H-6.0-av	–	–	–
160	mccb-13-160-6.0-av	–	–	–	–	–	–	–
250	–	mccb-23-250-6.0-av	–	–	–	mccb-23-250H-6.0-av	–	–
400	–	–	mccb-33-400-6.0-av	–	–	–	mccb-33-400H-6.0-av	–
630	–	–	mccb-33-630-6.0-av	–	–	–	mccb-33-630H-6.0-av	–
1000	–	–	–	mccb-43-1000-6.0-av	–	–	–	mccb-43-1000H-6.0-av
ETU6.2 with communication module								
100	mccb-13-100-6.2-av	–	–	–	mccb-13-160H-6.2-av	–	–	–
160	mccb-13-160-6.2-av	–	–	–	–	–	–	–
250	–	mccb-23-250-6.2-av	–	–	–	mccb-23-250H-6.2-av	–	–
400	–	–	mccb-33-400-6.2-av	–	–	–	mccb-33-400H-6.2-av	–
630	–	–	mccb-33-630-6.2-av	–	–	–	mccb-33-630H-6.2-av	–
1000	–	–	–	mccb-43-1000-6.2-av	–	–	–	mccb-43-1000H-6.2-av

Rated current, A	70 kA			
	AV POWER-5			
	ETU4.0	ETU4.2 with communication module	ETU6.0	ETU6.2 with communication module
800	mccb-53-800M-4.0-av	mccb-53-800M-4.2-av	mccb-53-800M-6.0-av	mccb-53-800M-6.2-av
1000	mccb-53-1000M-4.0-av	mccb-53-1000M-4.2-av	mccb-53-1000M-6.0-av	mccb-53-1000M-6.2-av
1250	mccb-53-1250M-4.0-av	mccb-53-1250M-4.2-av	mccb-53-1250M-6.0-av	mccb-53-1250M-6.2-av
1600	mccb-53-1600M-4.0-av	mccb-53-1600M-4.2-av	mccb-53-1600M-6.0-av	mccb-53-1600M-6.2-av

Accessories for molded case circuit breakers AV Power AVERES EKF

Molded case circuit breakers (MCCB) AV POWER can be complemented with various accessories: shunt releases, undervoltage releases, auxiliary and alarm contacts, extended rotary handles and motor mechanisms. The electronic trip units ETU2.2, ETU4.2, ETU6.2 are equipped with a communication module for data transfer to standard databuses. With the ETU2.2, ETU4.2, ETU6.2, you can create smart control and protection circuits, using various communication modules, protocol converters, remote programming, and indication panels.
Accessories are not included in the delivery scope of AV POWER MCCBs, except for AV-TX2 communication module (included with ETU2.2 and ETU6.2 trip units).

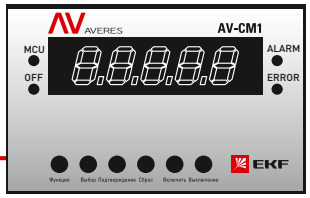
All accessories are ordered separately to complete the MCCB AV POWER to meet the application requirements. Installation procedure varies for different accessories. Auxiliary and alarm contacts, and releases shall be installed into special slots behind the front panel screwed to the MCCB housing. The wires from these accessories shall be routed to the MCCB housing through the side channels. The extended rotary handles and motor mechanisms shall be mounted to the MCCB housing. The communication modules, and the indication and programming modules shall be installed separately from the MCCB and connected with the wires from the kit.

MCCB type	Name	Item code
AV POWER-1 TR	Alarm contact AL AV POWER-1 for TR left-sided	mccb-1L-AL-TR-av
	Alarm contact AL AV POWER-1 for TR right-sided	mccb-1R-AL-TR-av
	Auxiliary and alarm contact AX+AL AV POWER-1 for TR left-sided	mccb-1L-AX+AL-TR-av
	Auxiliary and alarm contact AX+AL AV POWER-1 for TR right-sided	mccb-1R-AX+AL-TR-av
	Auxiliary contact AX AV POWER-1 for TR left-sided	mccb-1L-AX-TR-av
	Auxiliary contact AX AV POWER-1 for TR right-sided	mccb-1R-AX-TR-av
	Undervoltage release UVT AV POWER-1 for TR AC230V right-sided	mccb-1R-UVT-TR-av
	Shunt release SHT AV POWER-1 for TR AC230V left-sided	mccb-1L-SHT-TR-ac230-av
	Shunt release SHT AV POWER-1 for TR AC400V left-sided	mccb-1L-SHT-TR-ac400-av
	Shunt release SHT AV POWER-1 for TR DC220V left-sided	mccb-1L-SHT-TR-dc220-av
	Shunt release SHT AV POWER-1 for TR DC24V left-sided	mccb-1L-SHT-TR-DC24-av
	Outer connecting plates K2 AV POWER-1 for TR	mccb-1-K2-TR-av
	Outer connecting plates K3 AV POWER-1 for TR	mccb-1-K3-TR-av
	Outer connecting plates F AV POWER-1 rear connection for TR	mccb-1-F-TR-av
	Extended rotary handle CS1 AV POWER-1 for TR	mccb-1-CS1-TR-av
	Extended rotary handle CS2 AV POWER-1 for TR	mccb-1-CS2-TR-av
	Motor mechanism CD2 AV POWER-1 AC230V/DC220V for TR	mccb-1-CD2-TR-av
AV POWER-1 ETU, AV POWER-1 TR 80kA	Alarm contact AL AV POWER-1 for ETU	mccb-1-AL-ETU-av
	Auxiliary and alarm contact AX+AL AV POWER-1 for ETU	mccb-1-AX+AL-ETU-av
	Auxiliary contact AX AV POWER-1 for ETU	mccb-1-AX-ETU-av
	Undervoltage release UVT AV POWER-1 for ETU AC230V right-sided	mccb-1R-UVT-ETU-av
	Shunt release SHT AV POWER-1 for ETU AC230V left-sided	mccb-1L-SHT-ETU-ac230-av
	Shunt release SHT AV POWER-1 for ETU AC400V left-sided	mccb-1L-SHT-ETU-ac400-av
	Shunt release SHT AV POWER-1 for TR DC220V left-sided	mccb-1L-SHT-ETU-dc220-av
	Shunt release SHT AV POWER-1 for ETU DC24V left-sided	mccb-1L-SHT-ETU-DC24-av
	Outer connecting plates K2 AV POWER-1 for ETU	mccb-1-K2-ETU-av
	Outer connecting plates K3 AV POWER-1 for ETU	mccb-1-K3-ETU-av
	Outer connecting plates F AV POWER-1 rear connection for ETU	mccb-1-F-ETU-av
	Extended rotary handle CS1 AV POWER-1 for ETU	mccb-1-CS1-ETU-av
	Extended rotary handle CS2 AV POWER-1 for ETU	mccb-1-CS2-ETU-av
	Motor mechanism CD2 AV POWER-1 AC230V/DC220V for ETU	mccb-1-CD2-ETU-av
AV POWER-2	Alarm contact AL AV POWER-2 right-sided	mccb-2R-AL-av
	Auxiliary and alarm contact AX+AL AV POWER-2 right-sided	mccb-2R-AX+AL-av
	Auxiliary contact AX AV POWER-2 right-sided	mccb-2R-AX-av
	Undervoltage release UVT AV POWER-2 AC230V right-sided	mccb-2R-UVT-av
	Shunt release AV POWER-2 DC220V left-sided	mccb-2L-SHT-dc220-av
	Shunt release SHT AV POWER-2 AC230V left-sided	mccb-2L-SHT-ac230-av
	Shunt release SHT AV POWER-2 AC400V left-sided	mccb-2L-SHT-ac400-av
	Shunt release SHT AV POWER-2 DC24V left-sided	mccb-2L-SHT-dc24-av
	Outer connecting plates K2 AV POWER-2	mccb-2-K2-av
	Outer connecting plates K3 AV POWER-2	mccb-2-K3-av

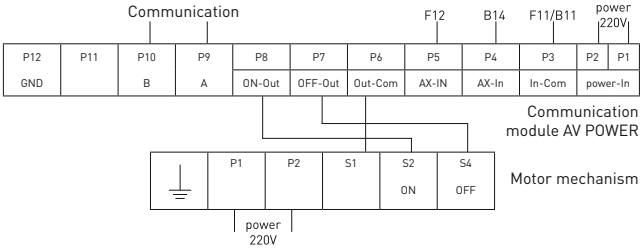
MCCB type	Name	Item code
AV POWER-2	Outer connecting plates F AV POWER-2 rear connection	mccb-2-F-av
	Extended rotary handle CS1 AV POWER-2	mccb-2-CS1-av
	Extended rotary handle CS2 AV POWER-2	mccb-2-CS2-av
	Motor mechanism CD2 AV POWER-2 AC230V/DC220V	mccb-2-CD2-av
AV POWER-3	Outer connecting plates K2 AV POWER-3 250-400A	mccb-3-K2400-av
	Outer connecting plates K2 AV POWER-3 500-630A	mccb-3-K2630-av
	Outer connecting plates K3 AV POWER-3 250-400A	mccb-3-K3400-av
	Outer connecting plates K3 AV POWER-3 500-630A	mccb-3-K3630-av
	Outer connecting plates F AV POWER-3 rear connection 250-400A	mccb-3-F400-av
	Outer connecting plates F AV POWER-3 rear connection 500-630A	mccb-3-F630-av
	Extended rotary handle CS1 AV POWER-3	mccb-3-CS1-av
	Extended rotary handle CS2 AV POWER-3	mccb-3-CS2-av
	Motor mechanism CD2 AV POWER-3 AC230V/DC220V	mccb-3-CD2-av
	Alarm contact AL AV POWER-3/4	mccb-34-AL-av
	Auxiliary and alarm contact AX+AL AV POWER-3/4	mccb-34-AX+AL-av
	Auxiliary contact AX AV POWER-3/4	mccb-34-AX-av
	Undervoltage release UVT AV POWER-3/4 AC230V right-sided	mccb-34-UVT-av
	Shunt release SHT AV POWER-3/4 AC400V left-sided	mccb-34-SHT-ac400-av
	Shunt release SHT AV POWER-3/4 DC220V left-sided	mccb-34-SHT-dc220-av
	Shunt release SHT AV POWER-3/4 DC24V left-sided	mccb-34-SHT-DC24-av
	Shunt release SHT AV POWER-3/4 AC230V	mccb-34-SHT-ac230-av
AV POWER-4	Alarm contact AL AV POWER-3/4	mccb-34-AL-av
	Auxiliary and alarm contact AX+AL AV POWER-3/4	mccb-34-AX+AL-av
	Auxiliary contact AX AV POWER-3/4	mccb-34-AX-av
	Undervoltage release UVT AV POWER-3/4 AC230V right-sided	mccb-34-UVT-av
	Shunt release SHT AV POWER-3/4 AC400V left-sided	mccb-34-SHT-ac400-av
	Shunt release SHT AV POWER-3/4 DC220V left-sided	mccb-34-SHT-dc220-av
	Shunt release SHT AV POWER-3/4 DC24V left-sided	mccb-34-SHT-DC24-av
	Shunt release SHT AV POWER-3/4 AC230V	mccb-34-SHT-ac230-av
	Outer connecting plates F AV POWER-4 rear connection	mccb-4-F-av
	Extended rotary handle CS1 AV POWER-4	mccb-4-CS1-av
	Extended rotary handle CS2 AV POWER-4	mccb-4-CS2-av
	Motor mechanism CD2 AV POWER-4 AC230V/DC220V	mccb-4-CD2-av

Communication interface for electronic trip unit ETU X.2 AVERES EKF

The MCCB AV POWER with electronic trip unit ETU X.2 is compatible with MODBUS interface and AV-CM display , which displays real-time current values and fault conditions. Moreover, AV POWER with ETU X.2 can operate in group communication networks and can be configured directly via the fieldbus using supported communication protocols

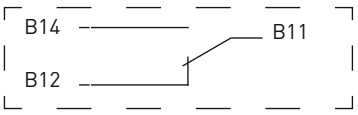
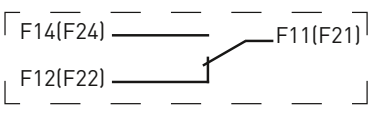


Wiring diagram



Alarm contact AL AVERES EKF

Auxiliary contact AX AVERES EKF

Alarm contact AL Indicates MCCB fault tripping					Auxiliary contact AX Indicates status of the main contacts				
MCCB type	Name	Rated operating current of contacts Ie, 220V DC, A	Rated operating current of contacts Ie, 230V, 50/60 Hz, A	Item code	Name	Rated operating current of contacts Ie, 220V DC, A	Rated operating current of contacts Ie, 230V, 50/60 Hz, A	Conventional thermal current Ith, A	Item code
AV POWER-1	AL for ETU	0,15	1	mccb-1-AL-TR-av	AX for ETU	0,15	0,3	3	mccb-1-AX-ETU-av
	AL for TR left-sided			mccb-1L-AL-ETU-av	AX for TR left-sided				mccb-1L-AX-TR-av
	AL for TR right-sided			mccb-1R-AL-ETU-av	AX for TR right-sided				mccb-1R-AX-TR-av
AV POWER-2	AL right-sided			mccb-2R-AL-av	AX right-sided				mccb-2R-AX-av
AV POWER-3/4	AL			mccb-34-AL-av	AX	0,2	0,4		mccb-34-AX-av
Wiring diagram									

Alarm + auxiliary contact AX+AL AVERES EKF

The alarm contact indicates MCCB fault tripping, while the auxiliary contact indicates main contacts status.

MCCB type	Name	Rated operating current of contacts Ie, 220V DC, A		Rated operating current of contacts Ie, 415V, 50/60 Hz, A		Item code
		AX	AL	AX	AL	
AV POWER-1	AX+AL for TR left-sided	0,15	0,15	0,3	1	mccb-1L-AX+AL-TR-av
	AX+AL for TR right-sided					mccb-1R-AX+AL-TR-av
	AX+AL for ETU					mccb-1-AX+AL-ETU-av
AV POWER-2	AX+AL right-sided					mccb-2R-AX+AL-av
AV POWER-3/4	AX+AL	0,2		0,4		mccb-34-AX+AL-av

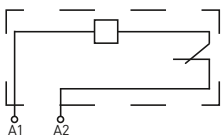
Wiring diagram

Shunt release SHT AVERES EKF

Designed for MCCB remote tripping, the shunt release SHT is a solenoid that operates the reset mechanism when the voltage is applied. After remote trip by the shunt release, the MCCB shall be switched on either by motor mechanism or rotary handle.

MCCB type	Name	Operating voltage, V	Operating voltage range	Item code
AV POWER-1	SHT for TR AC230V left-sided	230V 50/60 Hz	(0,7÷1,1) Ue	mccb-1-SHT-TR-ac230-av
	SHT for ETU AC230V left-sided	230V 50/60 Hz		mccb-1L-SHT-ETU-ac230-av
	SHT for ETU AC400V left-sided	400V 50/60 Hz		mccb-1L-SHT-ETU-ac400-av
	SHT for ETU DC220V left-sided	220V DC		mccb-1L-SHT-ETU-dc220-av
	SHT for ETU DC24V left-sided	24V DC		mccb-1L-SHT-ETU-dc24-av
	SHT for TR AC400V left-sided	400V 50/60 Hz		mccb-1-SHT-TR-ac400-av
	SHT for TR DC220V left-sided	220V DC		mccb-1-SHT-TR-dc220-av
	SHT for TR DC24 left-sided	24V DC		mccb-1L-SHT-TR-dc24-av
AV POWER-2	SHT DC220V left-sided	220V DC		mccb-2L-SHT-dc220-av
	SHT AC230V left-sided	230V 50/60 Hz		mccb-2L-SHT-ac230-av
	SHT AC400V left-sided	400V 50/60 Hz		mccb-2L-SHT-ac400-av
	SHT DC24V left-sided	24 VDC		mccb-2L-SHT-dc24-av
AV POWER-3/4	SHT AC230V left-sided	230V 50/60 Hz		mccb-34L-SHT-ac230-av
	SHT AC400V left-sided	400V 50/60 Hz		mccb-34L-SHT-ac400-av
	SHT DC220V left-sided	220V DC		mccb-34L-SHT-dc220-av
	SHT DC24V left-sided	24V DC		mccb-34L-SHT-dc24-av

Wiring diagram

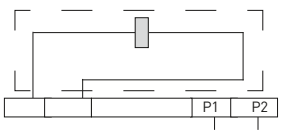


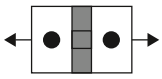
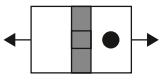
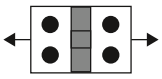
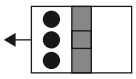
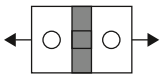
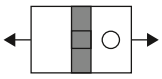
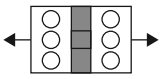
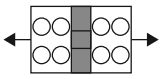
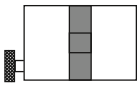
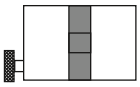
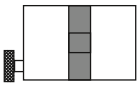
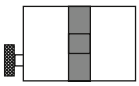
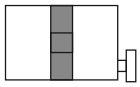
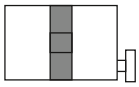
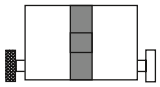
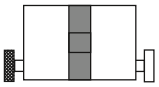
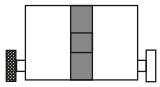
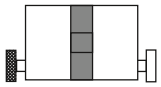
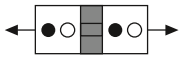
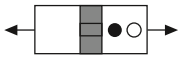
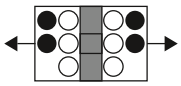
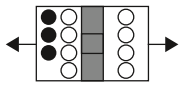
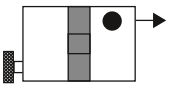
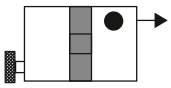
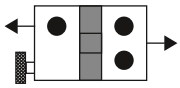
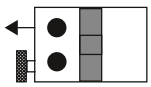
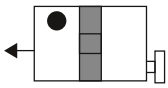
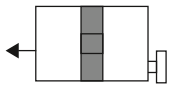
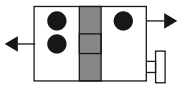
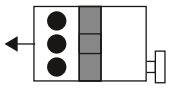
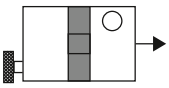
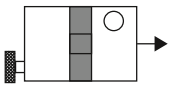
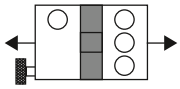
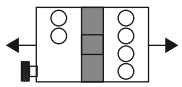
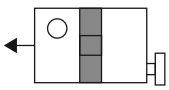
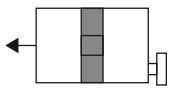
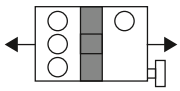
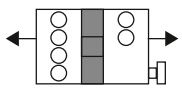
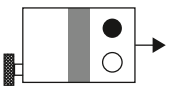
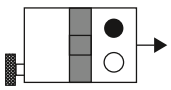
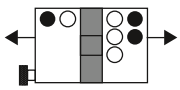
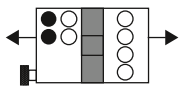
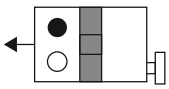
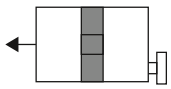
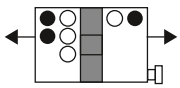
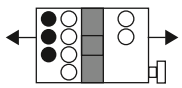
Undervoltage release UVT AVERES EKF

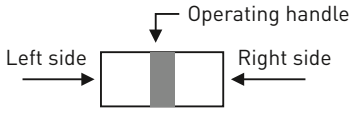
The undervoltage release UVT trips MCCB if the input voltage drops to 70% of the rated value, and prevents the MCCB from resetting if the circuit voltage is less than 85% of the rated value. The main purpose of the undervoltage release is to disconnect electrical equipment in case of undervoltage. Moreover, the undervoltage release can be used as a shunt release, if a normally closed switch is connected in series to the control circuit – if the contact of the push-button switch is momentarily opened, the shunt release trips the MCCB.

Name	Operating voltage Ue, V, 50/60 Hz	Operate voltage	Hold Voltage	Breaking voltage	Consumed power, VA, 230 V, 50/60 Hz	Item code
Undervoltage release UVT AV POWER-1 for TR AC230V right-sided AVERES EKF	230	(0,85÷1,1) Ue	(0,35÷0,7) Ue	<0,35Ue	2,6	mccb-1R-UVT-TR-av
Undervoltage release UVT AV POWER-1 for ETU AC230V right-sided AVERES EKF						mccb-1R-UVT-ETU-av
Undervoltage release UVT AV POWER-2 AC230V right-sided AVERES EKF					3,8	mccb-2R-UVT-av
Undervoltage release UVT AV POWER-3/4 right-sided AVERES EKF					2,5	mccb-34R-UVT-av

Wiring diagram



Name	AV POWER-1	AV POWER-2	AV POWER-3	AV POWER-4
	Number of poles			
	3, 4*	3, 4*	3, 4*	3, 4*
AL				
AX				
SHT				
UVT				
SHT + UVT				
AL + AX				
AL + SHT				
AL + UVT				
AX + SHT				
AX + UVT				
AX + AL +SHT				
AX + AL + UVT				



● AL – Alarm contact
○ AX – Auxiliary contact
■ SHT – Shunt release

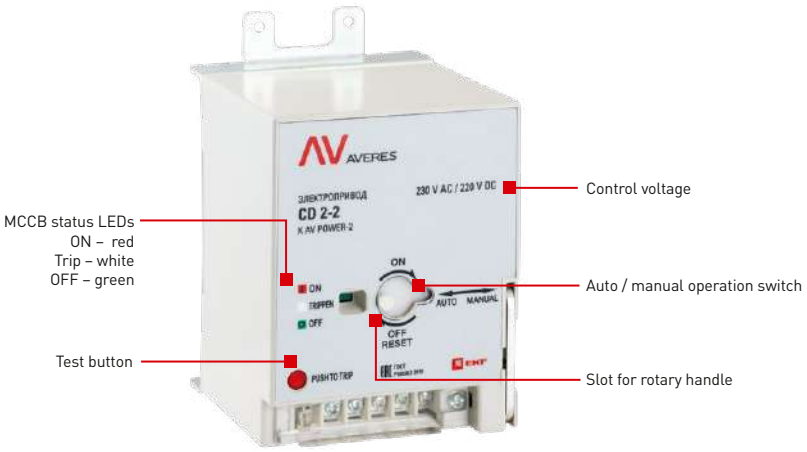
▭ UVT – Undervoltage release

→ Installation side

*For wiring diagrams of 4-pole MCCB accessories, please contact EKF Service support.

Motor mechanism CD-2 AVERES EKF

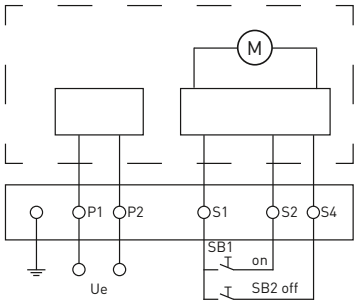
The motor mechanism is designed for remote MCCB close/open operations. The motor mechanism can be operated both remotely and manually – with a rotary handle on the front panel. Both copper and aluminum wire connections are supported.



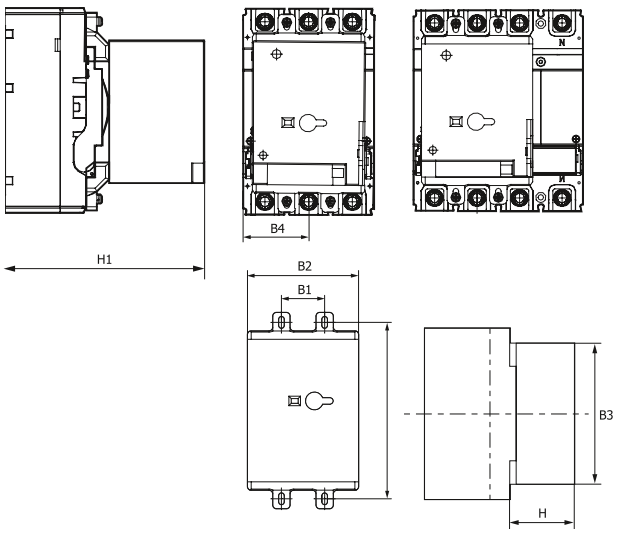
TECHNICAL DATA

Name	Operating voltage, V	Inrush current, A	Tripping time, sec.		Power, W	Mechanical endurance, O-C cycles
			ON	OFF		
Motor mechanism CD2 AV POWER-1 AC230V/DC220V for TR AVERES EKF	AC230/ DC220	⩽ 0,5	310	200	14	14 000
Motor mechanism CD2 AV POWER-1 AC230V/DC220V for ETU AVERES EKF						
Motor mechanism CD2 AV POWER-2 AC230V/DC220V AVERES EKF						10 000
Motor mechanism CD2 AV POWER-3 AC230V/DC220V AVERES EKF			500	350		
Motor mechanism CD2 AV POWER-4 AC230V/DC220V AVERES EKF		⩽ 2,0	700	420	35	5000

Wiring diagram



Overall and installation dimensions (mm)



Name	Overall dimensions, mm	
	B4	H1
Motor mechanism CD2 AV POWER-1 AC230V/ DC220V for TR AVERES EKF	38,5	151
Motor mechanism CD2 AV POWER-1 AC230V/ DC220V for ETU, TR 80 kA AVERES EKF	46	167
Motor mechanism CD2 AV POWER-2 AC230V/ DC220V for TR AVERES EKF	52,5	163
Motor mechanism CD2 AV POWER-2 AC230V/ DC220V for ETU, TR 80kA AVERES EKF	52,5	180,5
Motor mechanism CD2 AV POWER-3 AC230V/ DC220V AVERES EKF	75	250,5
Motor mechanism CD2 AV POWER-4 AC230V/ DC220V AVERES EKF	105	252

Name	Overall dimensions, mm				
	A1	B1	B2	B3	H
Motor mechanism CD2 AV POWER-1 AC230V/ DC220V for TR AVERES EKF	111	25	74	102	95
Motor mechanism CD2 AV POWER-1 AC230V/ DC220V for ETU, TR 80 kA AVERES EKF	132	30	90,5	116	95
Motor mechanism CD2 AV POWER-2 AC230V/ DC220V AVERES EKF	143	35	90,5	116	97
Motor mechanism CD2 AV POWER-3 AC230V/ DC220V AVERES EKF	194	48	129	175	156
Motor mechanism CD2 AV POWER-4 AC230V/ DC220V AVERES EKF	243	70	130	176	155

Name	Rated operating voltage Ue, V		Item code
	50–60Hz	DC	
Motor mechanism CD2 AV POWER-1 AC230V/DC220V for TR AVERES EKF	230	220	mccb-1-CD2-TR-av
Motor mechanism CD2 AV POWER-1 AC230V/DC220V for ETU AVERES EKF			mccb-1-CD2-ETU-av
Motor mechanism CD2 AV POWER-2 AC230V/DC220V AVERES EKF			mccb-2-CD2-av
Motor mechanism CD2 AV POWER-3 AC230V/DC220V AVERES EKF			mccb-3-CD2-av
Motor mechanism CD2 AV POWER-4 AC230V/DC220V AVERES EKF			mccb-4-CD2-av

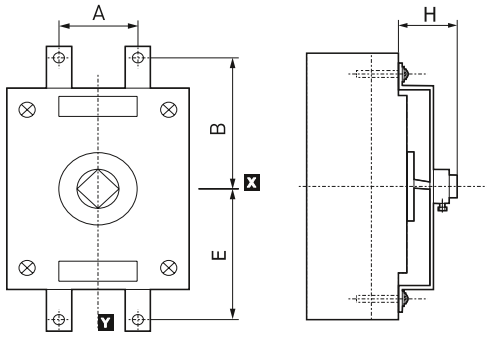
Rotary extended handle CS1, CS2 AVERES EKF

The rotary extended handle is designed for manual MCCB close/open operations through the enclosure door. The CS1 features center mechanism, while the CS2 – eccentric mechanism.

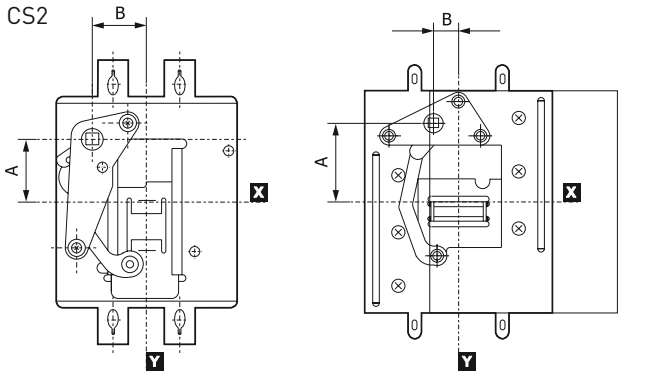
TECHNICAL DATA

Overall and installation dimensions

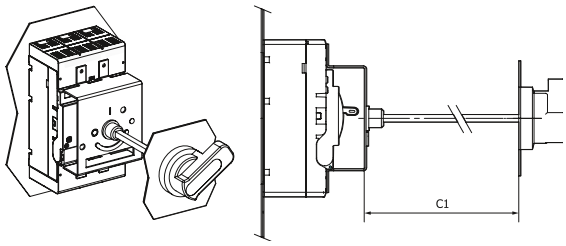
CS1

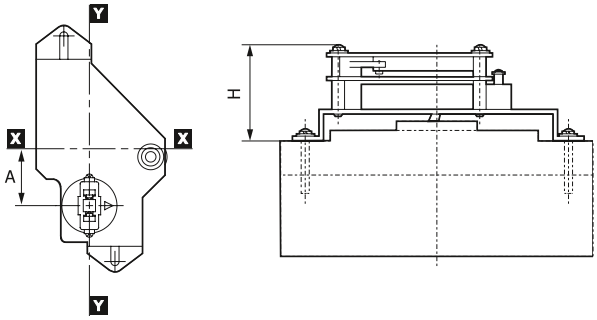


CS2



Note. Compatible both with vertically and horizontally installed MCCBs.

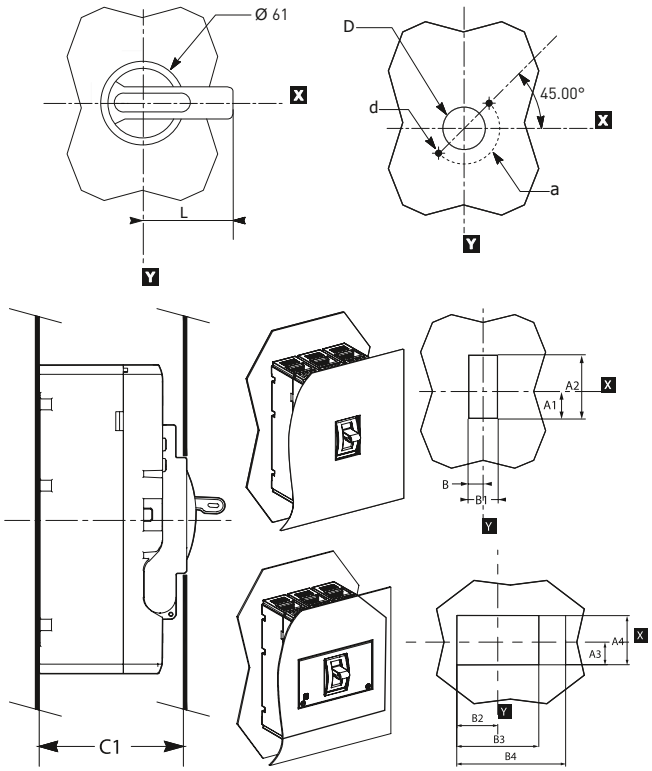




Name	Overall dimensions, mm			
	A	B	E	H
Extended rotary handle CS1 AV POWER-1 for TR AVERES EKF	25	55,5	55,5	52
Extended rotary handle CS1 AV POWER-1 for ETU AVERES EKF	30	66	66	52
Extended rotary handle CS1 AV POWER-2 AVERES EKF	35	71,5	71,5	56
Extended rotary handle CS1 AV POWER-3 AVERES EKF	48	97	97	87
Extended rotary handle CS1 AV POWER-4 AVERES EKF	198	121,5	121,5	76

Name	Overall dimensions, mm		
	A	B	H
Extended rotary handle CS2 AV POWER-1 for TR AVERES EKF	28	–	44
Extended rotary handle CS2 AV POWER-1 for ETU AVERES EKF	35	8,5	50
Extended rotary handle CS2 AV POWER-2 AVERES EKF	35	31	46
Extended rotary handle CS2 AV POWER-3 AVERES EKF	68	15	59
Extended rotary handle CS2 AV POWER-4 AVERES EKF	78	15	61

MCCB type	Name	Overall dimensions, mm				Item code
		A	B	E	H	
AV POWER-1	Extended rotary handle CS1AV POWER-1for TR AVERES EKF	25	55,5	55,5	52	mccb-1-CS1-TR-av
	Extended rotary handle CS1 AV POWER-1 for ETU AVERES EKF	30	66	66	52	mccb-1-CS1-ETU-av
	Extended rotary handle CS2 AV POWER-1 for TR AVERES EKF	28	–	–	44	mccb-1-CS2-TR-av
	Extended rotary handle CS2 AV POWER-1 for ETU AVERES EKF	35	8,5	–	50	mccb-1-CS2-ETU-av
AV POWER-2	Extended rotary handle CS1 AV POWER-2 AVERES EKF	35	71,5	71,5	56	mccb-2-CS1-av
	Extended rotary handle CS2 AV POWER-2 AVERES EKF	35	31	–	46	mccb-2-CS2-av
AV POWER-3	Extended rotary handle CS1 AV POWER-2 AVERES EKF	48	97	97	87	mccb-3-CS1-av
	Extended rotary handle CS2 AV POWER-2 AVERES EKF	68	15	–	59	mccb-3-CS2-av
AV POWER-4	Extended rotary handle CS1 AV POWER-2 AVERES EKF	198	121,5	121,5	76	mccb-4-CS1-av
	Extended rotary handle CS2 AV POWER-2 AVERES EKF	78	15	–	61	mccb-4-CS2-av



Name	Overall dimensions, mm	
	F1	F2
D	Ø 34	Ø 34
d	Ø 5,5	Ø 5,5
a	Ø 53	Ø 53
L	65	95

Type F (F1 for AV POWER 1/2; F2 for AV POWER 3/4).

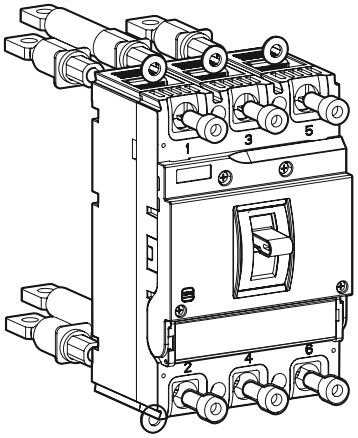
Note:
1. The standard length of extension shaft is 150 mm.
2. The three- and four-pole MCCBs match the rotary handles of the same size.

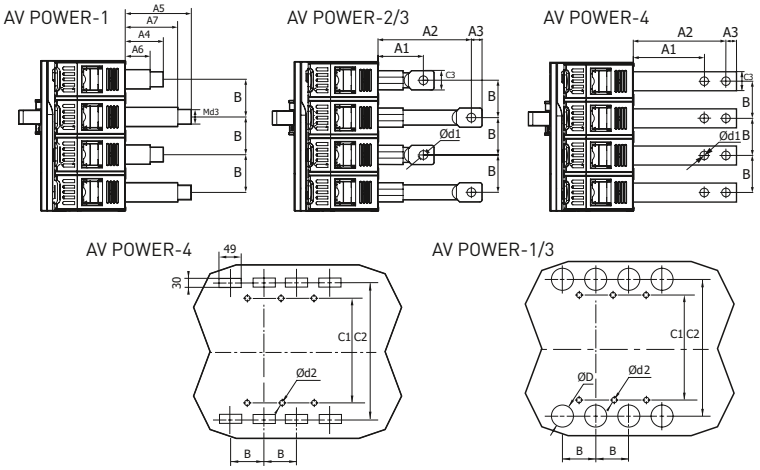
MCCB type	Overall dimensions, mm									
	A1	A2	A3	A4	B	B1	B2	B3	B4	C1
AV POWER-1 TR	15,5	31	24,5	55	12,5	26	38,5	77	102	66,5
AV POWER-1 ETU	22	44	29	59	14,5	30	46	92	122	85
AV POWER-2	24	48	29	63	16,8	33,5	52,8	105,5	140,5	96,5
AV POWER-3	36	84	52	110	29,5	59	76	152	200	107
AV POWER-4	39	83	52	104	31,5	63	106	212	282	109

Outer connecting plates for rear connection AV POWER AVERES EKF

The outer connecting plates are used for the MCCB connection through the mounting plate the circuit breaker is installed on. The busbars and cables can be connected both vertically and horizontally.

Overall and installation dimensions



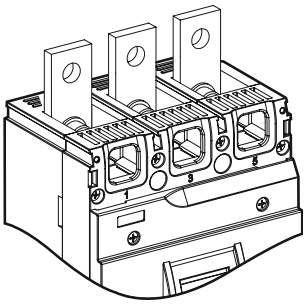


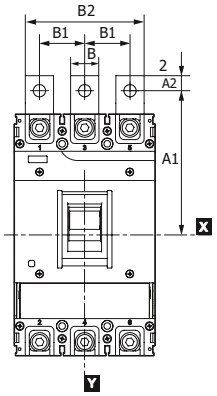
Name	Overall dimensions, mm														
	A1	A2	A3	A4	A5	A6	A7	B	C1	C1	C3	d1	d2	d3	D
Outer connecting plates F AV POWER-1 rear connection for TR	–	–	–	55,5	85,5	30,5	60,5	25	111	116	–	8,5	4	8	15
Outer connecting plates F AV POWER-1 rear connection for ETU	–	–	–	51	81	26	56	90	132	137	–	8,5	4	8	15
Outer connecting plates F AV POWER-2 rear connection	42,5	87,5	10	–	–	–	–	35	143	144	22	8,5	4,5	–	24
Outer connecting plates F AV POWER-3 rear connection	46	105	18	–	–	–	–	48	194	228	30	12,5	7	–	30
Outer connecting plates F AV POWER-4 rear connection	67	102	15	–	–	–	–	70	243	243	35	11	7	–	20×40

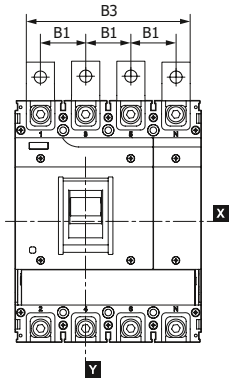
Name	Picture	Item code
Outer connecting plates F AV POWER-1 rear connection for TR AVERES EKF		mccb-1-F-TR-av
Outer connecting plates F AV POWER-1 rear connection for ETU AVERES EKF		mccb-1-F-ETU-av
Outer connecting plates F AV POWER-2 rear connection AVERES EKF		mccb-2-F-av
Outer connecting plates F AV POWER-3 rear connection 250-400A AVERES EKF		mccb-3-F400-av
Outer connecting plates F AV POWER-3 rear connection 500-630A AVERES EKF		mccb-3-F630-av
Outer connecting plates F AV POWER-4 rear connection AVERES EKF		mccb-4-F-av

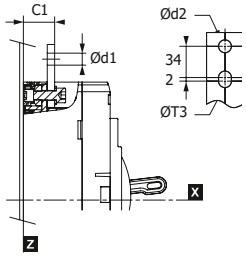
Outer connecting plates K2 AVERES EKF

Overall and installation dimensions







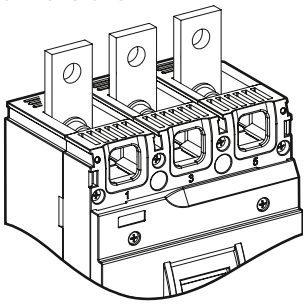


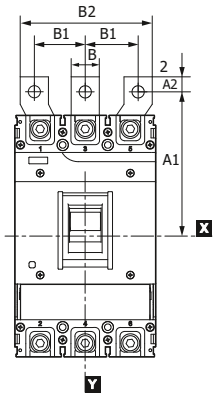
MCCB type	Overall dimensions, mm								
	A1	A2	B	B1	B2	B3	C1	d1	d2
AV POWER-1 TR	93	10	18	25	68	93	26,8	9	-
AV POWER-1 ETU	103,5	10	18	30	78	108	31,5	9	-
AV POWER-2	112,5	10	24,5	35	94,5	129,5	30	9	-
AV POWER-3	157	14,8	32	48	128	176	33/35	14	-
AV POWER-4	210,5	15	46	70	186	256	45,5	14	14

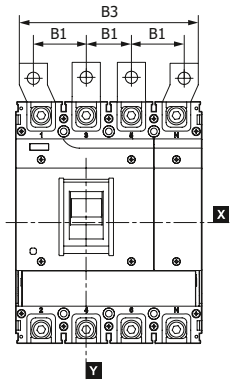
Name	Picture	Item code
Outer connecting plates K2 AV POWER-1 for TR AVERES EKF		mccb-1-K2-TR-av
Outer connecting plates K2 AV POWER-1 for ETU AVERES EKF		mccb-1-K2-ETU-av
Outer connecting plates K2 AV POWER-2 AVERES EKF		mccb-2-K2-av
Outer connecting plates K2 AV POWER-3 250-400A AVERES EKF		mccb-3-K2400-av
Outer connecting plates K2 AV POWER-3 500-630A AVERES EKF		mccb-3-K2630-av
Outer connecting plates K2 AV POWER-4 500-600A AVERES EKF		mccb-4-K2-av

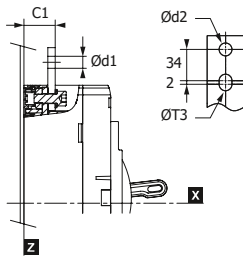
Outer connecting plates K3 AVERES EKF

Overall and installation dimensions







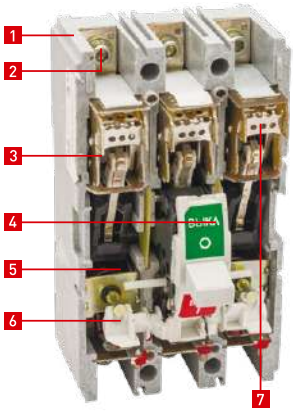


MCCB type	Overall dimensions, mm								
	A1	A2	B	B1	B2	B3	C1	d1	d2
AV POWER-1 TR	93	10	22	30	82	112	26,8	9	-
AV POWER-1 ETU	103,5	10	22	30	82	112	31,5	9	-
AV POWER-2	112,5	10	22	45	112	147	30	9	-
AV POWER-3	157	14,8	28	60	148	208	33/35	14	-
AV POWER-4	210,5	15	40	70	180	250	45,5	14	14

Name	Picture	Item code
Outer connecting plates K3 AV POWER-1 for TR AVERES EKF		mccb-1-K3-TR-av
Outer connecting plates K3 AV POWER-1 for ETU AVERES EKF		mccb-1-K3-ETU-av
Outer connecting plates K3 AV POWER-2 AVERES EKF		mccb-2-K3-av
Outer connecting plates K3 AV POWER-3 250-400A AVERES EKF		mccb-3-K3400-av
Outer connecting plates K3 AV POWER-3 500-630A AVERES EKF		mccb-3-K3630-av
Outer connecting plates K2 AV POWER-4 500-600 A AVERES EKF		mccb-4-K2-av

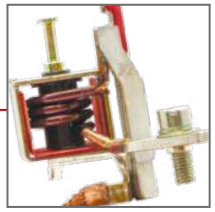
Molded case circuit breakers VA-99M EKF

VA-99M is a monoblock consisting of a base and a front panel with an aperture for the operating handle and the TEST button cap to test the tripping mechanism. The base (1), made of thermal-resistant, flame-retardant ABS plastic serves as a support structure for terminals (2), fixed and movable contacts (3), arc chutes (7), an operating handle (4) and overcurrent protection unit. When assembled, the base and the front panel enclose the internal mechanism and live parts.
WARNING! The operating handle of the molded case circuit breaker has three positions "ON", "OFF" and "TRIP". To switch on the MCCB after tripping, move the operating handle from the intermediate position to the "OFF" position and then to the "ON" position.
Reinforced return spring enables rapid tripping action. When the operating handle (4) is moved into the ON position, the insulating bar (5) with spring-loaded movable power contacts moves in the side guides, ensuring movable and fixed power contacts engage, while leaving enough slack to equalize the pressure exerted on movable contacts. The return spring is locked by the lever elements arranged in a straight line, with one shoulder resting on the trip latch shear. The latch position is controlled by a flat bar(5) actuated via adjusting screws (6) by the thermal and electromagnetic trip units. The MCCB VA-99M power supply can be connected from both the top or bottom of the circuit breaker. The kit includes bolts and clamps required for installation. Copper and aluminum wire connections are supported.

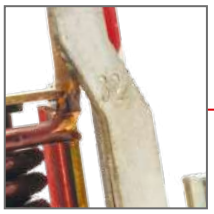


Standard: IEC/EN 60947-2

Internal conductive parts made of electrical copper



Coiled magnetic release for improved short-circuit tripping



Bonded bimetal strip for stable long-term operation

Simple and reliable design

Solid plates of uniform thickness for improved arc quenching

Instantaneous switching

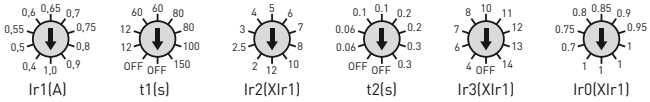
APPLICATION

MCCBs VA-99M are used in residential buildings, commercial facilities and industrial applications:

- protection of electric motor circuits;
- protection of downstream equipment, switchboards and distribution panels;
- switching component of backup power supply systems;
- electrical circuit isolation and partitioning (three MCCBs);
- VA-99M with rated voltage of 400, 630, 800, 1250, 1600V can be also used to protect outgoing lines on the consumer side of 10/0,4 kV transformer substation;
- remote switching of electrical equipment;
- infrequent starting of asynchronous motors;
- control and energy-saving systems.

TECHNICAL DATA

Electronic trip unit VA-99M

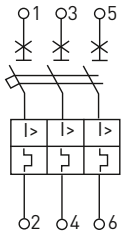


Ir1 (A) – overload tripping setpoint, A. Set values are relative to In. The switch has 10 positions (0,4–1,0 × In).
t1 (s) – overload tripping delay time 2 × Ir1, sec. Setting range: 12-150 sec.

Ir2(× Ir1) – short circuit tripping setpoint is set relative to preset Ir1. The switch has 10 positions (2-12 × Ir1).
t2 (s) – short-circuit current tripping delay time. Setting range: 0,06–0,3 sec. The function is available for any time t2 set except OFF.
Ir3 (× Ir1) – instant short-circuit current tripping setpoint is set relative to preset Ir1. The switch has 10 positions (4–14 × Ir1).
Ir0 (× Ir1) – Overload alarm current setpoint is set relative to the preset Ir1, does not trip the MCCB. The switch has 8 positions (0,7-1× Ir1).

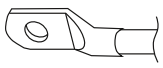
Wiring diagrams

VA-99M



Connection

The MCCB can be operated in auto mode with the motor mechanism and manually with a rotary handle on the front panel.

Power busbar	Wire with JG-type lug
	

Copper and aluminum wire connections are supported

Thermomagnetic trip unit

Parameters		Values							
		VA-99M 63	VA-99M 100	VA-99M 250	VA-99M 400	VA-99M 630	VA-99M 800	VA-99M 1250	VA-99M 1600
Number of poles		3P (standard) / 4P (on order)							
Rated current In, A		16, 20, 25, 32, 40, 50, 63	16, 20, 25, 32, 40, 50, 63, 80, 100, 125	100, 125, 160, 200, 225, 250	250, 315, 400	400, 500, 630	630, 800, 1000	800, 1000, 1250	1600
Rated insulation voltage Ui, V		800							
Rated impulse withstand voltage Uimp, kV		6000							
Rated operating voltage Ue,V AC		400 / 415 / 690							
Ultimate short-circuit breaking capacity Icu, kA	AC400/415 V	25	35	35	42	50	50	35	
	AC690 V	-	10	10	15	15	30	25	
Service short-circuit breaking capacity Ics, kA	AC400/415 V	18	26	25	31,5	35	35	35	
	AC690 V	-	5	5	8	8	15	12,5	
Trip unit		Thermomagnetic							
Utilization category		A							
Endurance (without maintenance)	Mechanical	7000			4000			2500	
	Electrical	2000						1500	
Dimensions, mm	W (3P/4P)	78/100	92/122	107/142	149/198	182/240	219	210	210
	L	136	150	165	257	270	280	332	332
	H	72	68	88	106	111	107	138	138

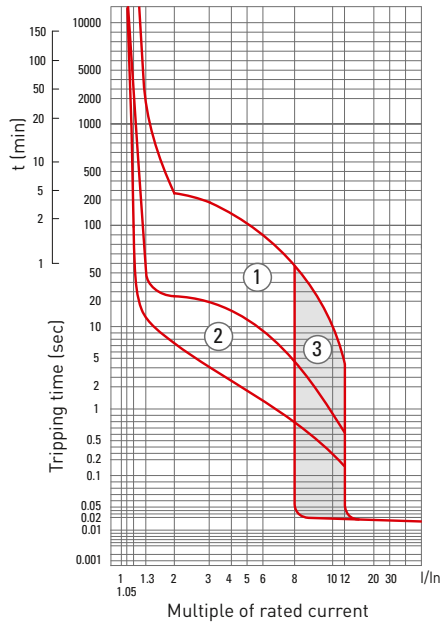
Electronic trip unit

Parameters		Values						
		BA-99M 100		BA-99M 250	BA-99M 400	BA-99M 630	BA-99M 800	BA-99M 1250
Number of poles		3P (standard) / 4P (on order)						
Rated current In, A		63	100	250	400	630	800	1250
Rated insulation voltage Ui, V		800						
Rated impulse withstand voltage Uimp, kV		8						
Rated operating voltage Ue, V AC		400						
Ultimate short-circuit breaking capacity Icu, kA	AC400/415 V	50		50	65	65	75	65
Service short-circuit breaking capacity Ics, kA	AC400/415 V	35		35	42	42	50	50
Trip unit		Electronic						
Utilization category		B						
Endurance (without maintenance)	Mechanical	8500		7000	4000	4000	2500	2500
	Electrical	1500		1000	1000	1000	500	500
Dimensions, mm	W (3P/4P)	91/122		107/142	150/198	180/240	210/280	210/280
	L	150		165	257	270	280	275
	H	91		90	108	110	115	105

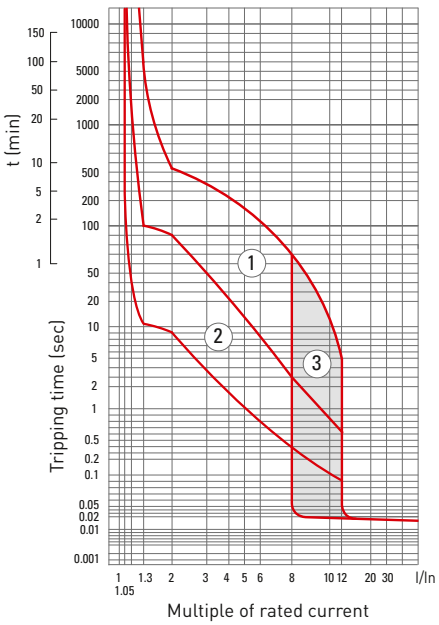
Tripping characteristics

VA-99M tripping curves

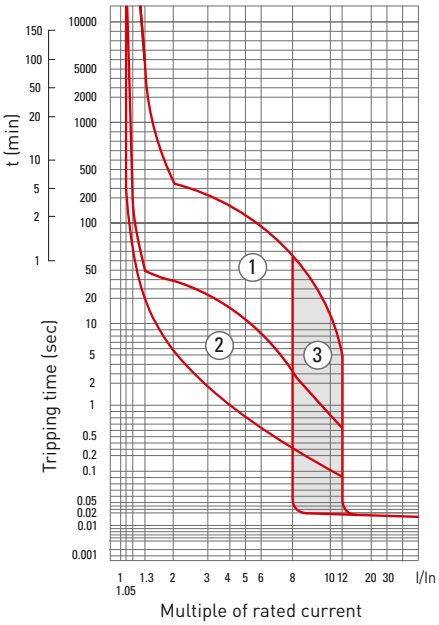
VA-99M/63



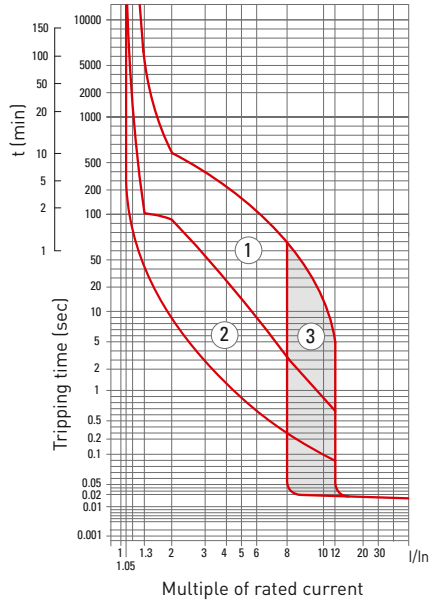
VA-99M/400



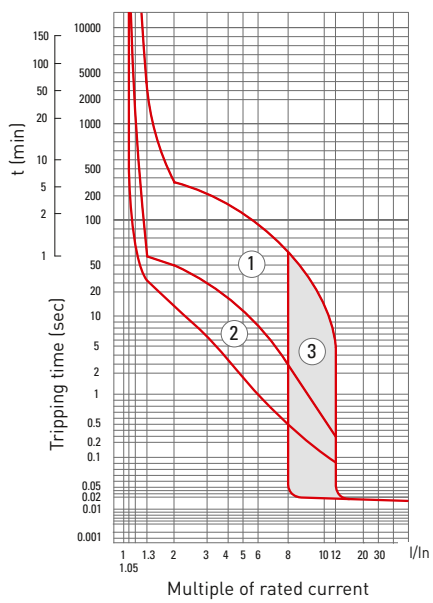
VA-99M/100



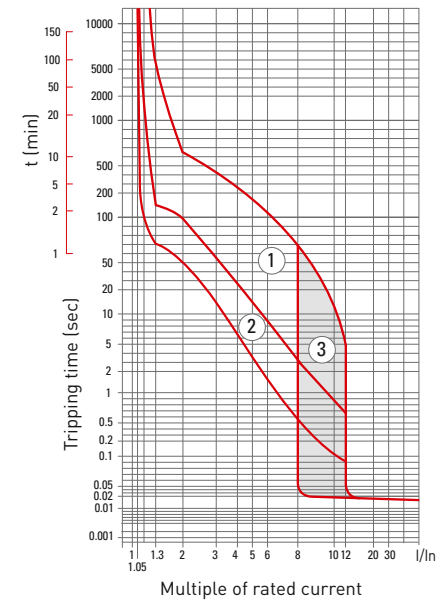
VA-99M/630



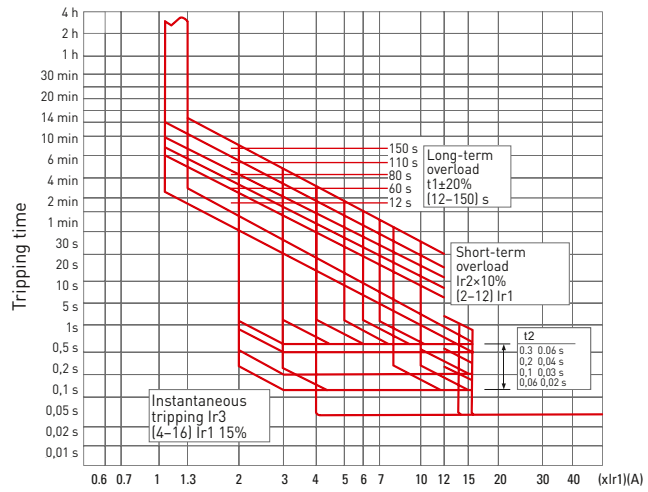
VA-99M/250



VA-99M/800 (1600)

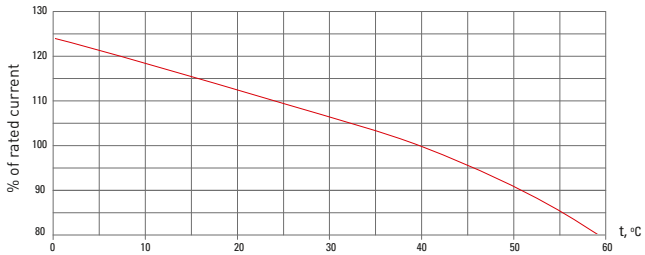


VA-99M/ 63-800A with electronic trip unit



Temperature derating factor

VA-99M/63-1600

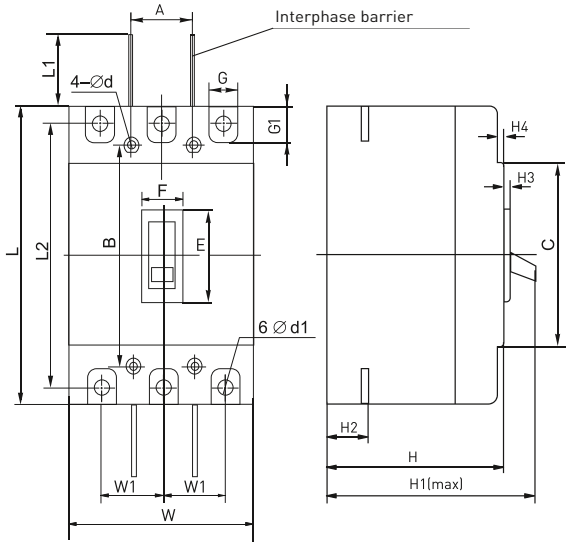


Temperature derating factor

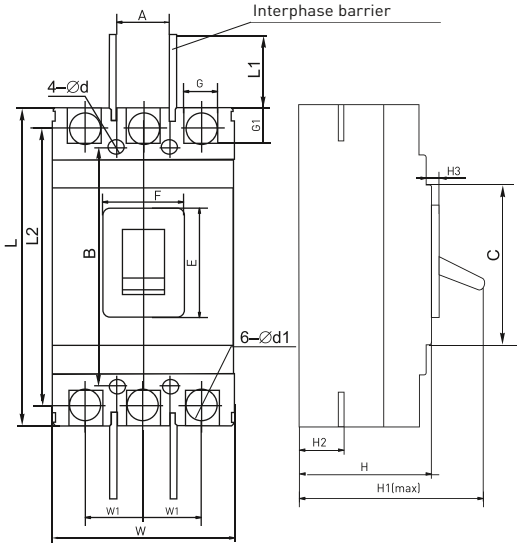
The devices shall be commissioned at normal operating temperature. The tripping time of the molded case circuit breaker is determined by its tripping curve. The actual value of the overload protection (Ir) shall be adjusted as per the diagram above.

Overall and installation dimensions

VA-99M/63-250 A



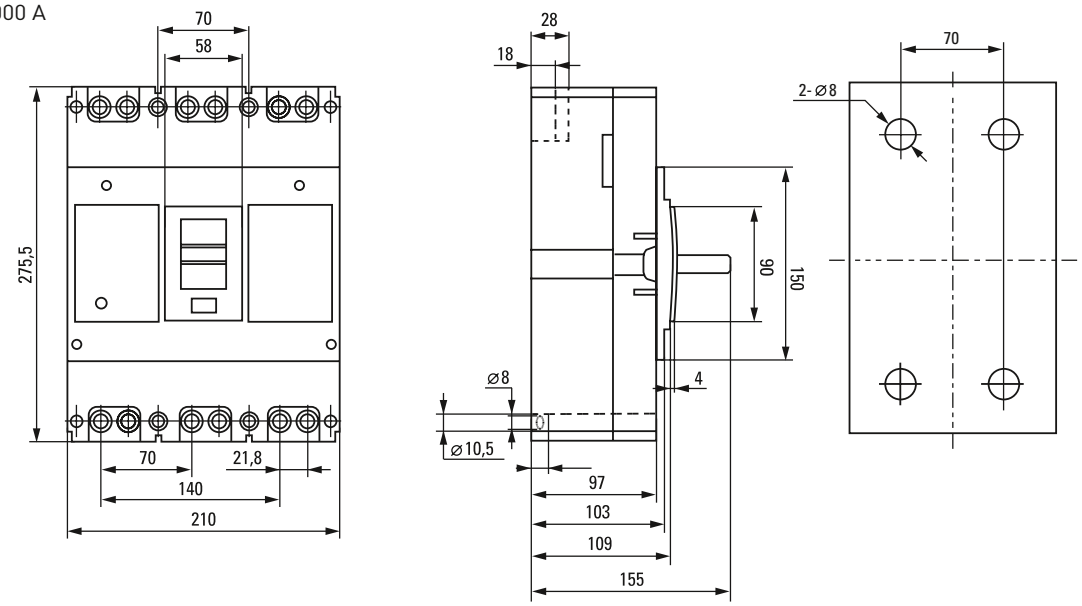
VA-99M/400-630 A



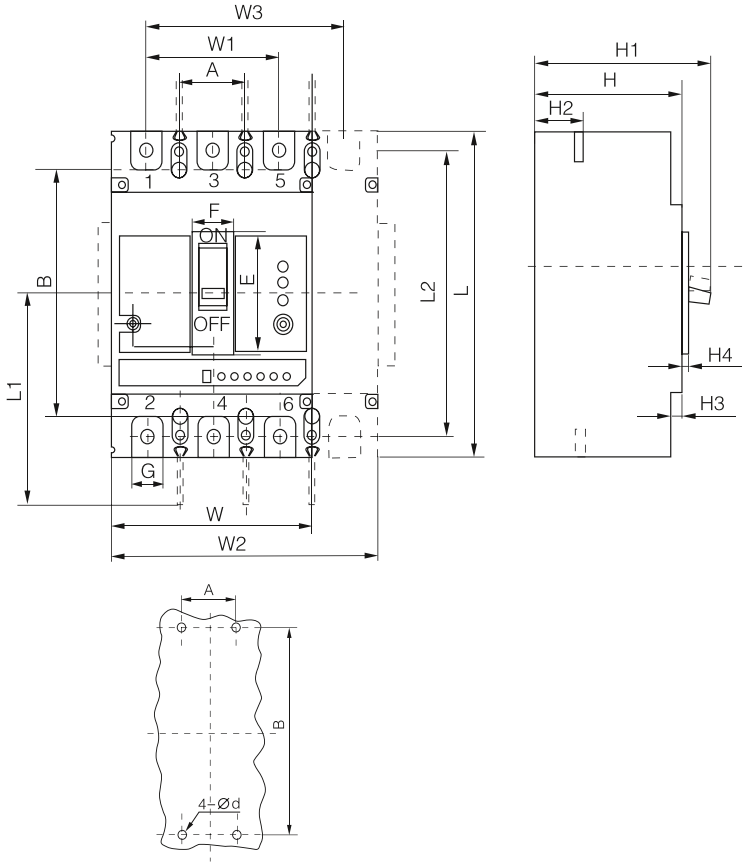
Dimensions, mm		Name		
		VA-99M/63 A	VA-99M/100 A	VA-99M/250 A
Overall dimensions	C	85	88	102
	E	48	50	50
	F	22	22	22
	G	14	18	24
	G1	14	16	24
	H	72	68	88
	H1	92	88	110
	H2	20	24	24
	H3	4,5	4	4
	H4	7	7	5
	L	136	150	165
	L1	14	60	80
	L2	117	132	144
	W	78	92	107
	W1	25	30	35
Installation dimensions	A	25	30	35
	B	117	129	126
	Ø d	3,5	4,5	5,5
	Ø d1	7	10	10

Dimensions, mm		Name	
		VA-99M/400 A	VA-99M/630 A
Overall dimensions	C	102	134
	E	86	88
	F	90	64
	G	32	45
	G1	32	34
	H	106	111
	H1	150	156
	H2	38	44
	H3	6	6,5
	L	258	272
	L1	105	105
	L2	225	234
	W	149	183
	W1	44	58
Installation dimensions	A	44	58
	B	194	200
	Ø d	7	7
	Ø d1	26	30

VA-99M/800-1000 A

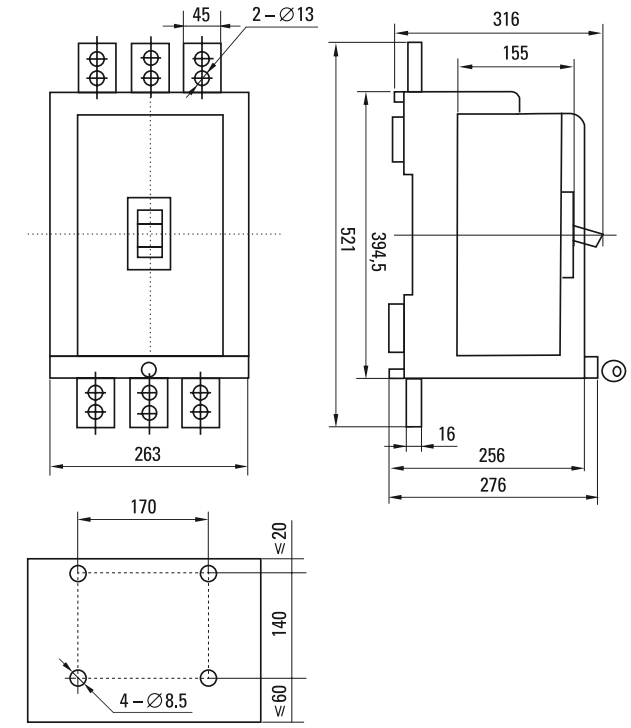


VA-99M 100-800 A with electronic trip unit

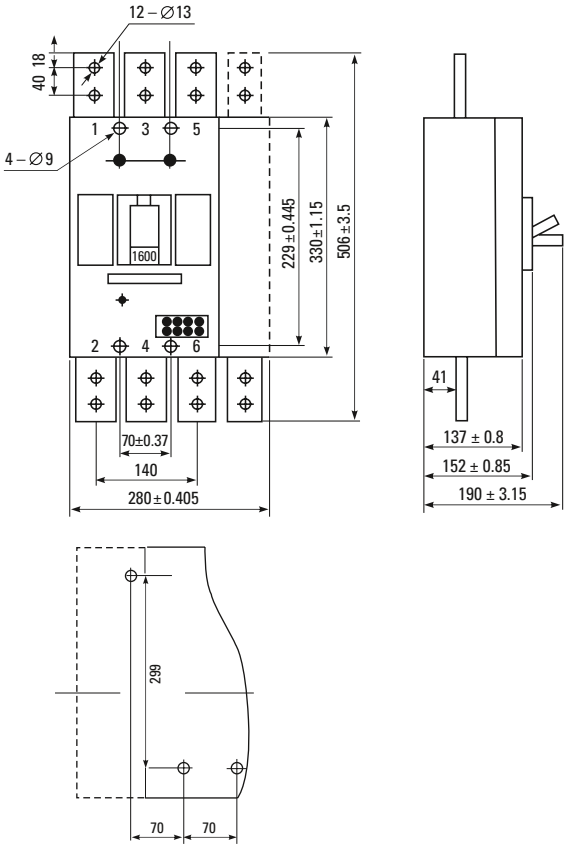


Dimensions, mm		Name			
		VA-99M 100 A	VA-99M 250 A	VA-99M 400 A	VA-99M 630-800 A
Overall dimensions	E	50	62	88,6	81
	F	22	22	65	66
	G	17,6	22	30	44
	H	92	90	106	107
	H1	108	109	150	150
	H2	28,5	24	38	45,3
	H3	10	5	4,5	8
	H4	4	4	3,5	9
	L	150	165	258	280
	L1	100	132,5	220,5	240
	L2	132	144	224	243
	W	92	107	149	210
	W1	60	70	96	140
	W2	122	142	198	280
	W3	90	105	144	210
Installation dimensions	A	30	35	44	70
	B	129	126	194	243
	Ø d	4,5	4,5	7	7

VA-99M 1250 A



VA-99M 1600 A



Storage and operation

The MCCB VA-99M shall be stored indoors in the original packaging at the ambient temperature from –45°C to +55°C and relative humidity of max. 80% at +25°C. The molded case circuit breakers can be operated at temperatures between -25°C and +40°C (+50°C). The average temperature during 24 hours shall not exceed +35 °C. Altitude above sea level shall not exceed 2000 meters. Pollution degree: III. Degree of ingress protection (according to IEC 60529): IP30 - circuit breaker housing; IP00 - power terminals. At the air temperature of +40 °C, the relative humidity shall not exceed 50%. The relative humidity may be higher at lower air temperatures. The maximum monthly average relative humidity shall not exceed 90% in the wettest month at the lowest monthly average temperature of +25°C. Be aware that sudden changes in temperature can lead to condensation on the surface of the molded case circuit breaker.

Delivery scope

1. Molded case circuit breaker
2. Interphase barriers
3. Set of mounting bolts
4. Technical manual

THERMOMAGNETIC TRIP UNIT								
Rated current In , A	VA-99M/63		VA-99M/100		VA-99M/250		VA-99M/400	
	3P	3P+N	3P	4P	3P	4P	3P	4P
16	mccb99-63-16m	mccb99-63-16m-4P	mccb99-100-16m	–	–	–	–	–
20	–	–	mccb99-100-20m	–	–	–	–	–
25	mccb99-63-20m	mccb99-63-20m-4P	mccb99-100-25m	–	–	–	–	–
32	mccb99-63-32m	mccb99-63-32m-4P	mccb99-100-32m	–	–	–	–	–
40	mccb99-63-40m	mccb99-63-40m-4P	mccb99-100-40m	–	–	–	–	–
50	mccb99-63-50m	mccb99-63-50m-4P	mccb99-100-50m	–	–	–	–	–
63	mccb99-63-63m	mccb99-63-63m-4P	mccb99-100-63m	–	–	–	–	–
80	–	–	mccb99-100-80m	mccb99-100-80mm-4p	–	–	–	–
100	–	–	mccb99-100-100m	mccb99-100-100mm-4p	–	–	–	–
125	–	–	–	mccb99-100-125mm-4p	mccb99-250-125m	mccb99-250-125mm-4p	–	–
160	–	–	–	–	mccb99-250-160m	mccb99-250-160mm-4p	–	–
200	–	–	–	–	mccb99-250-200m	mccb99-250-200mm-4p	–	–
225	–	–	–	–	mccb99-250-225m	mccb99-250-250mm-4p	–	–
250	–	–	–	–	mccb99-250-250m	mccb99-250-225mm-4p	mccb99-400-250m	mccb99-400-250mm-4p
315	–	–	–	–	–	mccb99-400-315mm-4p	mccb99-400-315m	–
400	–	–	–	–	–	–	mccb99-400-400m	mccb99-400-400mm-4p

THERMOMAGNETIC TRIP UNIT					
Rated current In , A	VA-99M/630		VA-99M/800	VA-99M/1250	VA-99M/1600
	3P	4P	3P	3P	3P
400	mccb99-630-400m	mccb99-630-400m-4P	–	–	–
500	mccb99-630-500m	mccb99-630-500m-4P	–	–	–
630	mccb99-630-630m	mccb99-630-630m-4P	–	–	–
800	–	–	mccb99-800-800m	–	–
1000	–	–	–	mccb99-1250-1000m	–
1250	–	–	–	mccb99-1250-1250m	–
1600	–	–	–	–	mccb99-1600-1600m

ELECTROMAGNETIC TRIP UNIT			
Rated current In , A	VA-99M/100	VA-99M/250	VA-99M/400
	3P	3P	3P
32	mccb99-100-32m-ma	–	–
63	mccb99-100-63m-ma	–	–
100	mccb99-100-125m-ma	–	–
160	–	mccb99-250-160m-ma	–
250	–	mccb99-250-250m-ma	–
400	–	–	mccb99-400-400m-ma

ELECTRONIC TRIP UNIT						
Rated current In , A	VA-99M/100	VA-99M/250	VA-99M/400	VA-99M/630	VA-99M/800	VA-99M/1250
63	mccb99-100-63me	–	–	–	–	–
100	mccb99-100-100me	–	–	–	–	–
250	–	mccb99-250-250me	–	–	–	–
400	–	–	mccb99-400-400me	–	–	–
630	–	–	–	mccb99-630-630me	–	–
800	–	–	–	–	mccb99-800-800me	–
1250	–	–	–	–	–	mccb99-1250-1250me

Accessories for VA-99M EKF

Molded case circuit breakers (MCCB) VA-99M can be complemented with various accessories: shunt releases, undervoltage releases, auxiliary and alarm contacts, extended rotary handles and motor mechanisms. Accessories are not included in the VA-99M delivery scope and shall be ordered seperately. Unscrew the MCCB front panel to install releases and auxiliary contacts in the intended slots. Route the wires and fix the terminals in the side slots. Assemble the MCCB in reverse order.

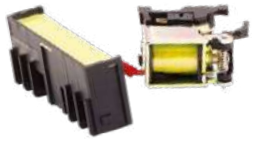
MCCB type	Accessories	Item code
VA-99M 63	Alarm+Auxiliary contact	mccb99m-63-alax
	Alarm contact	mccb99m-63-al
	Auxiliary contact	mccb99m-63-ax
	Mechanical interlock	mccb99m-63-mil-3p
	Motor mechanism CD2 220V	mccb99m-63-cd2-220dc
	Motor mechanism CD2 230V AC	mccb99m-63-cd2-230ac
	Motor mechanism CD2 24V DC	mccb99m-63-cd2-24dc
	Shunt release 110V DC	mccb99m-63-sht-110dc
	Shunt release 220V DC	mccb99m-63-sht-220dc
	Shunt release 230V AC	mccb99m-63-sht-230ac
	Shunt release 400V AC	mccb99m-63-sht-400ac
	Undervoltage release 230V AC	mccb99m-63-uvt-230ac
	Extended rotary handle CS1	mccb99m-63-cs1
VA-99M 100	Alarm+Auxiliary contact	mccb99m-100-alax
	Alarm contact	mccb99m-100-al
	Auxiliary contact	mccb99m-100-ax
	Set of connection plates (6 pcs.)	mccb99m-100-ocp-k2
	Motor mechanism CD2 220V	mccb99m-100-cd2-220dc
	Motor mechanism CD2 230V AC	mccb99m-100-cd2-230ac
	Motor mechanism CD2 24V DC	mccb99m-100-cd2-24dc
	Shunt release 110V DC	mccb99m-100-sht-110dc
	Shunt release 220V DC	mccb99m-100-sht-220dc
	Shunt release 230V AC	mccb99m-100-sht-230ac
	Shunt release 400V AC	mccb99m-100-sht-400ac
	Mechanical interlock	mccb99m-100-mil-3p
	Undervoltage release 230V AC	mccb99m-100-uvt-230ac
	Extended rotary handle CS1	mccb99m-100-cs1
VA-99M 250	Alarm+Auxiliary contact	mccb99m-250-alax
	Alarm contact	mccb99m-250-al
	Set of connection plates (6 pcs.)	mccb99m-250-ocp-k2
	Mechanical interlock	mccb99m-250-mil-3p
	Motor mechanism CD2 220V	mccb99m-250-cd2-220dc
	Motor mechanism CD2 230V AC	mccb99m-250-cd2-230ac
	Motor mechanism CD2 24V DC	mccb99m-250-cd2-24dc
	Shunt release 110V DC	mccb99m-250-sht-110dc
	Shunt release 220V DC	mccb99m-250-sht-220dc
	Shunt release 230V AC	mccb99m-250-sht-230ac
	Shunt release 400V AC	mccb99m-250-sht-400ac
	Undervoltage release 230V AC	mccb99m-250-uvt-230ac
	Extended rotary handle CS1	mccb99m-250-cs1
VA-99M 400	Alarm+Auxiliary contact	mccb99m-400-alax
	Alarm contact	mccb99m-400-al
	Auxiliary contact	mccb99m-400-ax
	Set of connection plates 400 (6 pcs.)	mccb99m-400-ocp-k2
	Mechanical interlock	mccb99m-400-mil-3p
	Motor mechanism CD2 220V	mccb99m-400-cd2-220dc
	Motor mechanism CD2 230V AC	mccb99m-400-cd2-230ac
	Motor mechanism CD2 24V DC	mccb99m-400-cd2-24dc
	Shunt release 110V DC	mccb99m-400-sht-110dc
	Shunt release 220V DC	mccb99m-400-sht-220dc
	Shunt release 230V AC	mccb99m-400-sht-230ac
	Shunt release 400V AC	mccb99m-400-sht-400ac
	Withdrawable panel rear connection	mccb99m-400-dod-3r
	Withdrawable panel front connection	mccb99m-400-dod-3f
	Undervoltage release 230V AC	mccb99m-400-uvt-230ac
	Extended rotary handle CS1	mccb99m-400-cs1

MCCB type	Accessories	Item code
VA-99M 630	Alarm+Auxiliary contact	mccb99m-630-alax
	Alarm contact	mccb99m-630-al
	Auxiliary contact	mccb99m-630-ax
	Set of connection plates (6 pcs.)	mccb99m-630-ocp-k2
	Mechanical interlock	mccb99m-630-mil-3p
	Motor mechanism CD2 220V	mccb99m-630-cd2-220dc
	Motor mechanism CD2 230V AC	mccb99m-630-cd2-230ac
	Motor mechanism CD2 24V DC	mccb99m-630-cd2-24dc
	Shunt release 110V DC	mccb99m-630-sht-110dc
	Shunt release 220V DC	mccb99m-630-sht-220dc
	Shunt release 230V AC	mccb99m-630-sht-230ac
	Shunt release 400V AC	mccb99m-630-sht-400ac
	Undervoltage release 230V AC	mccb99m-630-uvt-230ac
	Extended rotary handle CS1	mccb99m-630-cs1
VA-99M 800	Alarm+Auxiliary contact	mccb99m-800-alax
	Alarm contact	mccb99m-800-al
	Auxiliary contact	mccb99m-800-ax
	Set of connection plates (6 pcs.)	mccb99m-800-ocp-k2
	Mechanical interlock	mccb99m-800-mil-3p
	Motor mechanism CD2 220V	mccb99m-800-cd2-220dc
	Motor mechanism CD2 230V AC	mccb99m-800-cd2-230ac
	Motor mechanism CD2 24V DC	mccb99m-800-cd2-24dc
	Shunt release 110V DC	mccb99m-800-sht-110dc
	Shunt release 220V DC	mccb99m-800-sht-220dc
	Shunt release 230V AC	mccb99m-800-sht-230ac
	Shunt release 400V AC	mccb99m-800-sht-400ac
	Undervoltage release 230V AC	mccb99m-800-uvt-230ac
	Extended rotary handle CS1	mccb99m-800-cs1
VA-99M 1250	Auxiliary contact	mccb99m-1250-ax

Shunt release EKF

Designed for MCCB remote tripping, the shunt release is a solenoid that operates the reset mechanism under external voltage applied. After remote trip by the shunt release, the MCCB can be switched on either by motor mechanism or rotary handle.

Standard: IEC/EN 60947-2

Picture	Name	Operating voltage, V	Operating voltage range	Item code
	Shunt release 230V AC VA-99M 63 EKF	230 V, 50-60Hz	(0,7 ÷ 1,1) Ue	mccb99m-63-sht-230ac
	Shunt release 230V AC VA-99M 100 EKF			mccb99m-100-sht-230ac
	Shunt release 230V AC VA-99M 250 EKF			mccb99m-250-sht-230ac
	Shunt release 230V AC VA-99M 400 EKF			mccb99m-400-sht-230ac
	Shunt release 230V AC VA-99M 630 EKF			mccb99m-630-sht-230ac
	Shunt release 230V AC VA-99M 800 EKF			mccb99m-800-sht-230ac
	Shunt release 400V AC VA-99M 63 EKF	400 V, 50-60Hz		mccb99m-63-sht-400ac
	Shunt release 400V AC VA-99M 100 EKF			mccb99m-100-sht-400ac
	Shunt release 400V AC VA-99M 250 EKF			mccb99m-250-sht-400ac
	Shunt release 400V AC VA-99M 400 EKF			mccb99m-400-sht-400ac
	Shunt release 400V AC VA-99M 630 EKF			mccb99m-630-sht-400ac
	Shunt release 400V AC VA-99M 800 EKF			mccb99m-800-sht-400ac
	Shunt release 110V AC VA-99M 63 EKF	110 V DC		mccb99m-63-sht-110dc
	Shunt release 110V DC VA-99M 100 EKF			mccb99m-100-sht-110dc
	Shunt release 110V DC VA-99M 250 EKF			mccb99m-250-sht-110dc
	Shunt release 110V AC VA-99M 400 EKF			mccb99m-400-sht-110dc
	Shunt release 110V DC VA-99M 630 EKF			mccb99m-630-sht-110dc
	Shunt release 110V DC VA-99M 800 EKF			mccb99m-800-sht-110dc
	Shunt release 220V DC VA-99M 63 EKF	220 V DC		mccb99m-63-sht-220dc
	Shunt release 220V DC VA-99M 100 EKF			mccb99m-100-sht-220dc
	Shunt release 220V DC VA-99M 250 EKF			mccb99m-250-sht-220dc
	Shunt release 220V DC VA-99M 400 EKF			mccb99m-400-sht-220dc
	Shunt release 220V DC VA-99M 630 EKF			mccb99m-630-sht-220dc
	Shunt release 220V DC VA-99M 800 EKF			mccb99m-800-sht-220dc

Undervoltage release EKF

The undervoltage release trips MCCB, if the input voltage drops to 70% of the rated value, and prevents the MCCB from resetting if the circuit voltage is less than 85% of the rated value. The main purpose of the undervoltage release is to disconnect electrical equipment in case of undervoltage. Moreover, the undervoltage release can be used as a shunt release, if a normally closed switch is connected in series to the control circuit – If the contact of the push-button switch is opened, the shunt release trips the MCCB.

Standard: IEC/EN 60947-2

Picture	Name	Operating voltage Ue	Operate voltage	Hold voltage	Breaking voltage	Power consumption, W	Item code
	Undervoltage release VA-99M 63 EKF	30 V, 50-60 Hz	85–110% Ue	70–110% Ue	35–70% Ue	3,5	mccb99m-63-uvt-230ac
	Undervoltage release VA-99M 100 EKF					2,6	mccb99m-100-uvt-230ac
	Undervoltage release VA-99M 250 EKF					3,8	mccb99m-250-uvt-230ac
	Undervoltage release VA-99M 400 EKF					3,7	mccb99m-400-uvt-230ac
	Undervoltage release VA-99M 630 EKF					2,3	mccb99m-630-uvt-230ac
	Undervoltage release VA-99M 800 EKF					2,5	mccb99m-800-uvt-230ac

Auxiliary contact EKF

The auxiliary contact indicates power contacts status.

Standard: IEC/EN 60947-2

Picture	Name	Rated operating current, A	Contact configuration	Item code
	Auxiliary contact VA-99M 63 EKF	2	1 NO / 1NC	mccb99m-63-ax
	Auxiliary contact VA-99M 100 EKF			mccb99m-100-ax
	Auxiliary contact VA-99M 250 EKF	0,6		mccb99m-250-ax
	Auxiliary contact VA-99M 400 EKF			mccb99m-400-ax
	Auxiliary contact VA-99M 630 EKF			mccb99m-630-ax
	Auxiliary contact VA-99M 800 EKF			mccb99m-800-ax
	Auxiliary contact VA-99M 1250 EKF			mccb99m-1250-ax

Alarm contact EKF

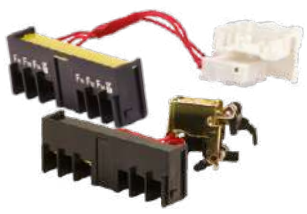
The alarm contact indicates the MCCB tripping by overcurrent (overload or short circuit), shunt release, undervoltage release, or TEST button. After the MCCB is reclosed, the alarm turns off.

Standard: IEC/EN 60947-2

Picture	Name	Rated operating current, A	Contact configuration	Item code
	Alarm contact VA-99M 63 EKF	2	1 NO / 1NC	mccb99m-63-al
	Alarm contact VA-99M 100 EKF			mccb99m-100-al
	Alarm contact VA-99M 250 EKF	0,6		mccb99m-250-al
	Alarm contact VA-99M 400 EKF			mccb99m-400-al
	Alarm contact VA-99M 630 EKF			mccb99m-630-al
	Alarm contact VA-99M 800 EKF			mccb99m-800-al

Alarm + Auxiliary contact EKF

Standard: IEC/EN 60947-2

Picture	Name	Rated operating current, A	Contact configuration	Item code
	Alarm + Auxiliary contact VA99M 63 EKF	2	Alarm contact 1 NO / 1NC Auxiliary contact 1 NO / 1NC	mccb99m-63-alax
	Alarm + Auxiliary contact VA99M 100 EKF	2		mccb99m-100-alax
	Alarm + Auxiliary contact VA99M 250 EKF	0,6		mccb99m-250-alax
	Alarm + Auxiliary contact VA99M 400 EKF	0,6		mccb99m-400-alax
	Alarm + Auxiliary contact VA99M 630 EKF	0,6		mccb99m-630-alax
	Alarm + Auxiliary contact VA99M 800 EKF	0,6		mccb99m-800-alax

Extended rotary handle EKF

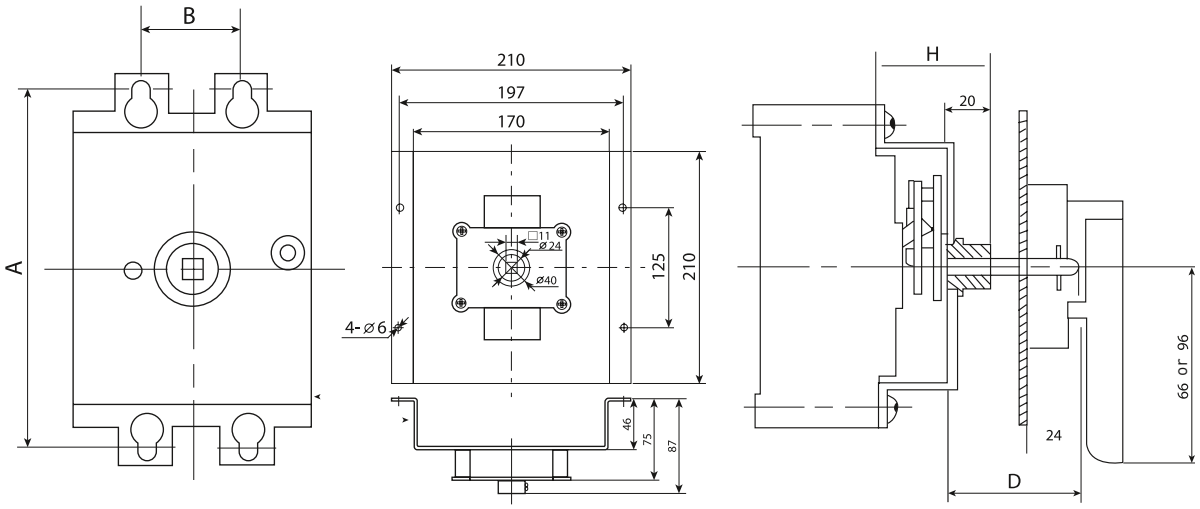
The extended rotary handle is designed to convert rotary motion into linear motion for MCCB operation. The mechanism is installed directly to the MCCB, while the rotary handle operates the mechanism through the enclosure door.

Standard: IEC/EN 60947-2

Picture	Name	Item code
	Extended rotary handle VA-99M 63 EKF	mccb99m-63-cs1
	Extended rotary handle VA-99M 100 EKF	mccb99m-100-cs1
	Extended rotary handle VA-99M 250 EKF	mccb99m-250-cs1
	Extended rotary handle VA-99M 400 EKF	mccb99m-400-cs1
	Extended rotary handle VA-99M 630 EKF	mccb99m-630-cs1
	Extended rotary handle VA-99M 800 EKF	mccb99m-800-cs1
	Extended rotary handle eccentric VA-99M 63 EKF	mccb99m-a-124
	Extended rotary handle eccentric VA-99M 100 EKF	mccb99m-a-125
	Extended rotary handle eccentric VA-99M 250 EKF	mccb99m-a-126
	Extended rotary handle eccentric VA-99M 400 EKF	mccb99m-a-127
	Extended rotary handle eccentric VA-99M 630 EKF	mccb99m-a-128
	Extended rotary handle eccentric VA-99M 800 EKF	mccb99m-a-129

Overall and installation dimensions

Extended rotary handle for VA-99M



Name	A, mm	B, mm	H, mm	D, mm
Extended rotary handle VA-99M 63 EKF	102	25	50	150
Extended rotary handle VA-99M 100 EKF	104	30	45	
Extended rotary handle VA-99M 250 EKF	142	35	47	
Extended rotary handle VA-99M 400 EKF	194	138	88	
Extended rotary handle VA-99M 630 EKF	200	168	98	
Extended rotary handle VA-99M 800 EKF	245	198	87	

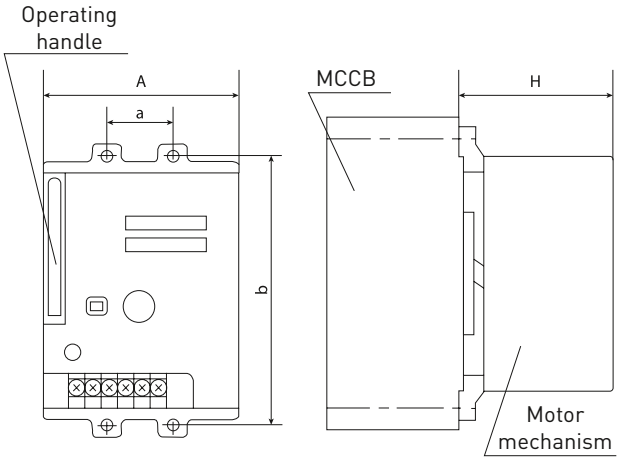
Motor mechanism for VA-99M EKF

The motor mechanism is designed for remote MCCB close/open operations. Energy generated by the motion of opening the MCCB is stored in the spring and later used to facilitate the reclosing.

Standard: IEC/EN 60947-2

Name	Rated operating voltage Ue, V	Operating voltage range	Current	Power, W	Electrical endurance, O-C cycles	Item code
Motor mechanism 230V AC VA-99M 63 EKF	230	(0,85–1,1) Ue	AC 50/60Hz	14	14 000	mccb99m-63-cd2-230ac
Motor mechanism 230V AC VA-99M 100 EKF					10 000	mccb99m-100-cd2-230ac
Motor mechanism 230V AC VA-99M 250 EKF					10 000	mccb99m-250-cd2-230ac
Motor mechanism 230V AC VA-99M 400 EKF				35	5000	mccb99m-400-cd2-230ac
Motor mechanism 230V AC VA-99M 630 EKF						mccb99m-630-cd2-230ac
Motor mechanism 230V AC VA-99M 800 EKF						mccb99m-800-cd2-230ac
Motor mechanism 100~220V DC VA-99M 63 EKF	100~220		DC	14	14 000	mccb99m-63-cd2-220dc
Motor mechanism 100~220V DC VA-99M 100 EKF					10 000	mccb99m-100-cd2-220dc
Motor mechanism 100~220V DC VA-99M 250 EKF					10 000	mccb99m-250-cd2-220dc
Motor mechanism 100~220V DC VA-99M 400 EKF				35	5000	mccb99m-400-cd2-220dc
Motor mechanism 100~220V DC VA-99M 630 EKF						mccb99m-630-cd2-220dc
Motor mechanism 100~220V DC VA-99M 800 EKF						mccb99m-800-cd2-220dc
Motor mechanism 24V DC VA-99M 63 EKF	24			14	14 000	mccb99m-63-cd2-24dc
Motor mechanism 24V DC VA-99M 100 EKF					10 000	mccb99m-100-cd2-24dc
Motor mechanism 24V DC VA-99M 250 EKF					10 000	mccb99m-250-cd2-24dc
Motor mechanism 24V DC VA-99M 400 EKF				35	5000	mccb99m-400-cd2-24dc
Motor mechanism 24V DC VA-99M 630 EKF						mccb99m-630-cd2-24dc
Motor mechanism 24V DC VA-99M 800 EKF						mccb99m-800-cd2-24dc

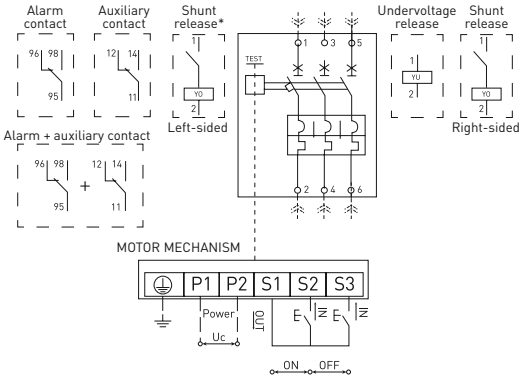
Overall and installation dimensions



Name	a, mm	b, mm	A, mm	H, mm
Motor mechanism for VA-99M 63 EKF	25	117	90	88,5
Motor mechanism for VA-99M 100 EKF	30	129		89,5
Motor mechanism for VA-99M 250 EKF	35	126		92
Motor mechanism for VA-99M 400 EKF	44	194	130	142
Motor mechanism for VA-99M 630 EKF	58	200		153
Motor mechanism for VA-99M 800 EKF	70	243		146

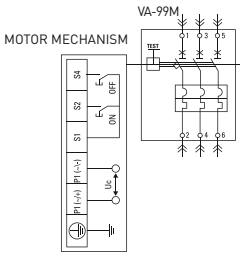
Accessories wiring diagrams

VA-99M-63-63 / VA-99M-63-100 / VA-99M-63-800



* shunt release is available in two versions: left-sided and right-sided mount. Only one accessory can be installed on each side.

Motor mechanism 230V AC for VA-99M 63, 100, 250 EKF



Installation and operation

The interlock is installed onto the front panels of MCCBs. The motor mechanism can be operated both in automatic mode and manually – with a rotary handle. Use toggle switch on the front panel to select the required mode.

The control circuits shall be connected to the terminals on the side of the motor mechanism. Use contacts P1 & P2 to connect power supply. Use contacts S2 & S4 to connect operation spring buttons. Contact S1 is a common-type contact.

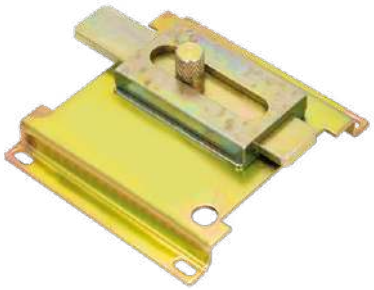
The ON button is used to switch the MCCB to the ON position, while the OFF button – to the OFF position.

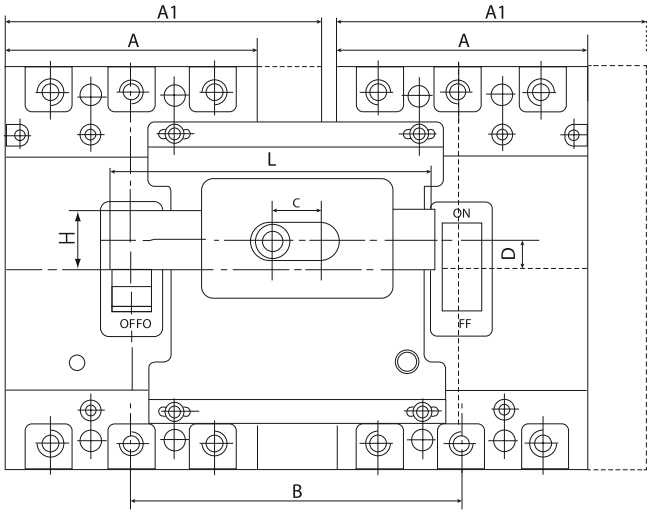
The indication window at the front panel serves for visual control of the MCCB and motor mechanism.

Mechanical interlock of two VA-99M EKF

The mechanical interlock is used to prevent simultaneous switching of the MCCB VA-99M EKF in automatic transfer switches.

Standard: IEC/EN 60947-2

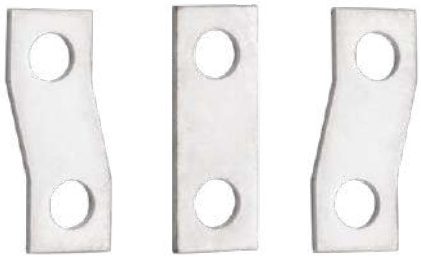




Name	Dimensions, mm							Item code
	A	A1	B	C	D	L	H	
Mechanical interlock of 2 VA-99M 63 3P EKF	78	–	102		13	95		mccb99m-63-mil-3p
Mechanical interlock of 2 VA-99M 100 3P EKF	92	–	120	18	11,5	118		mccb99m-100-mil-3p
Mechanical interlock of 2 VA-99M 250 3P EKF	107	–	135		9	130		mccb99m-250-mil-3p
Mechanical interlock of 2 VA-99M 400 3P EKF	150	–	190		16	175		mccb99m-400-mil-3p
Mechanical interlock of 2 VA-99M 630 3P EKF	182	–	220	42	12	198		mccb99m-630-mil-3p
Mechanical interlock of 2 VA-99M 800 3P EKF	210	–	240		3,5	230	22	mccb99m-800-mil-3p
Mechanical interlock of 2 VA-99M 63 4P EKF	–	103	132		13	125		mccb99m-63-mil-4p
Mechanical interlock of 2 VA-99M 100 4P EKF	–	122	152	18	11,5	150		mccb99m-100-mil-4p
Mechanical interlock of 2 VA-99M 250 4P EKF	–	142	173		9	168		mccb99m-250-mil-4p
Mechanical interlock of 2 VA-99M 400 4P EKF	–	198	240		16	225		mccb99m-400-mil-4p
Mechanical interlock of 2 VA-99M 630 4P EKF	–	240	280	42	12	258		mccb99m-630-mil-4p

Outer connecting plates VA-99M EKF

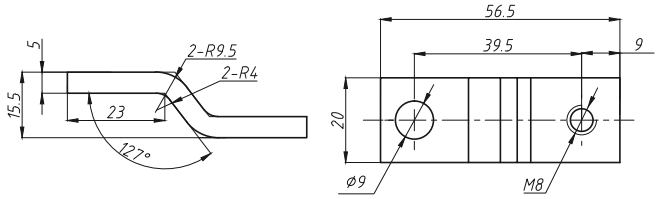
The outer connecting plates are designed for connection of busbars to the MCCB.



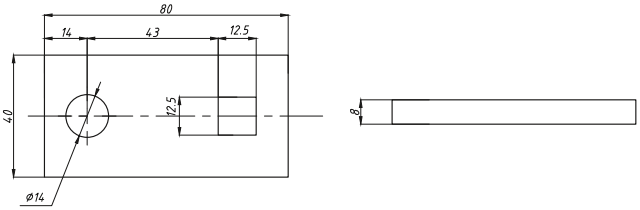
Name	MCCB type	Item code
Set of connecting plates VA-99M 100 (6 pcs.) EKF	VA-99M 100	mccb99m-a-100-ocp
Set of connecting plates VA-99M 250 (6 pcs.) EKF	VA-99M 250	mccb99m-a-250-ocp
Set of connecting plates VA-99M 400 (6 pcs.) EKF	VA-99M 400	mccb99m-a-400-ocp
Set of connecting plates VA-99M 630 (6 pcs.) EKF	VA-99M 630	mccb99m-a-630-ocp
Set of connecting plates VA-99M 800 (6 pcs.) EKF	VA-99M 800	mccb99m-a-800-ocp

Overall and installation dimensions (mm)

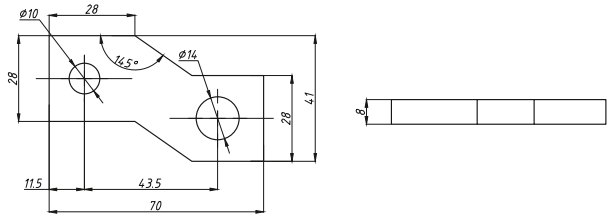
Set of outer connecting plates for VA-99M 250 EKF



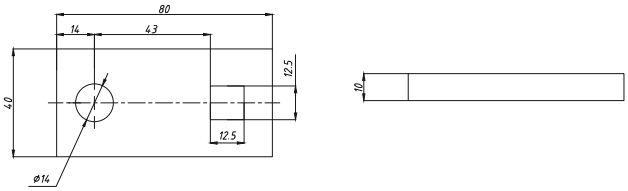
Set of outer connecting plates for VA-99M 630 EKF



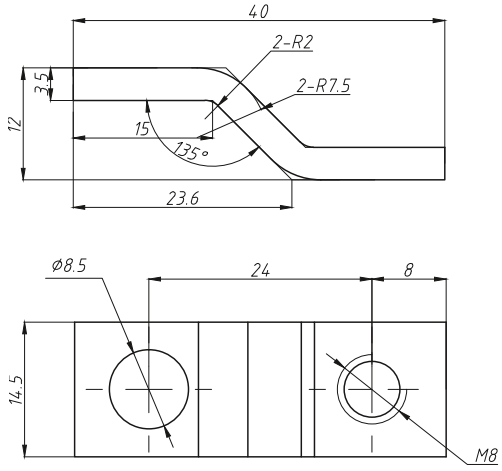
Set of outer connecting plates for VA-99M 400 EKF



Set of outer connecting plates for VA-99M 800 EKF

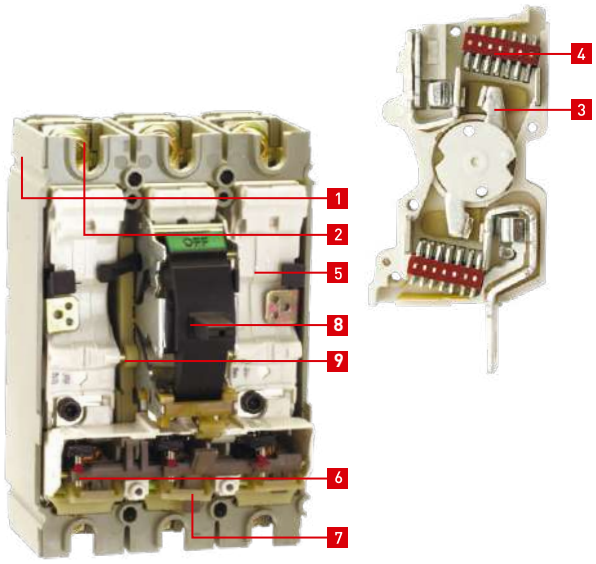


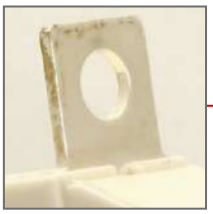
Set of outer connecting plates for VA-99M 100 EKF



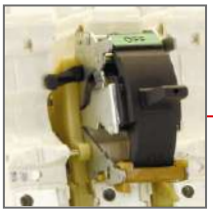
Molded case circuit breakers VA-99C EKF

The molded case circuit breaker (MCCB) VA-99C is a monoblock consisting of a base and a front panel with an aperture for the operating handle and TEST button cap to test the tripping mechanism.
The base (1), made of thermal-resistant, flame-retardant plastic, serves as a support structure for terminals (2). Rotary double-make contacts (3) with twin arc chutes (4) are enclosed in a separate sub-assembly (5). Control mechanism (6) and trip unit (7). When assembled, the base and the front panel enclose the internal mechanism and live parts.
WARNING! The operating handle of the molded case circuit breaker has three positions: "ON", "OFF" and "TRIP". To switch on the MCCB after tripping, move the operating handle from the intermediate position to the "OFF" position and then to the "ON" position.
Reinforced return spring enables rapid tripping action. When the operating handle (8) is moved into the ON position, the insulating bar (9) engages spring-loaded movable power contacts, causing them to rotate in the side guides, while leaving enough slack to equalize the pressure exerted on movable contacts. The lever elements arranged in a straight line, with one shoulder resting on trip latch shear, lock the return spring.
The MCCB VA-99C power supply can be connected from both the top or bottom of the circuit breaker. The kit includes bolts and clamps required for installation. Copper and aluminum wire connections are supported.



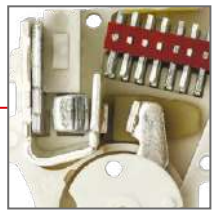


Connecting bars made of silver-coated electrical copper

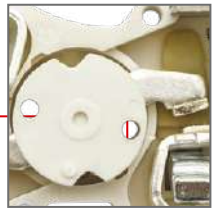


Instantaneous switching by charged spring

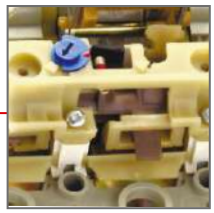
Microprocessor trip unit with configurable thermal current and overload current setpoint



Silverized tungsten composite contact pads



Rotary double-make action



Electromagnetic trip unit with configurable thermal current and overload current setpoint

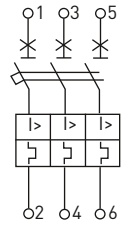
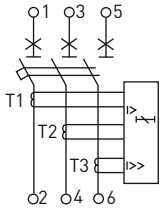
APPLICATION

MCCBs VA-99C are used in residential buildings, commercial facilities and industrial applications:

- protection of electric motor circuits;
- protection of outgoing lines, switchboards and distribution panels;
- switching component of backup power supply systems;
- electrical circuit isolation and partitioning (three MCCBs);
- protection of outgoing lines on the consumer side of 10/0,4 kV transformer substation.

TECHNICAL DATA

Wiring diagrams

Thermomagnetic trip unit	Electronic trip unit
	

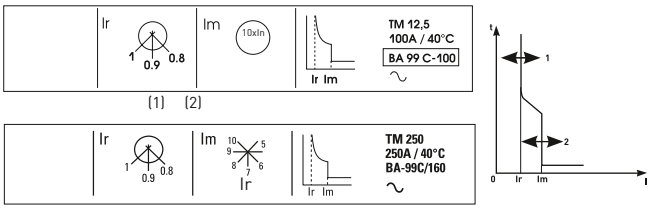
Installation and operation

Utilization category: A/B (by IEC 60947-2). Can be installed in any orientation.
Degree of ingress protection (by IEC 60529): IP30 for MCCB housing; IP40 for terminals.
The MCCB VA-99C shall be stored in the original package at the temperature between -50 and +70 °C.
The MCCB complies with IEC 60947-2.
Installation up to 2000m above sea level has no effect on the MCCB performance. When installed at the altitude above 2000 meters, consider derating in dielectric strength and air cooling behavior.
For influence of the ambient temperature, refer to the table.
The MCCB breaking capacity retains irrespective of temperature changes.

VA-99C/100-250 A with thermomagnetic trip unit EKF

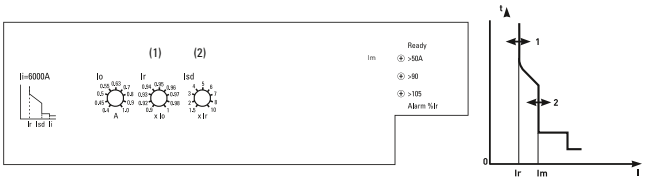
Parameters	Altitude above sea level, m			
	2000	3000	4000	5000
Insulation dielectric strength, V	3000	2500	2100	1800
Rated insulation voltage Ui, V	750	700	600	500
Maximum operating voltage, V	690	550	480	420
Average thermal resistance current at 40 °C, A	1 × In	0,96 × In	0,93 × In	0,9 × In

Thermomagnetic trip unit (TM)
Overload protection (1).
Configurable current setpoint Ir = (0,8 – 1,0) In. The switch right-hand position (min) corresponds to 0,8 In, middle position – to 0,9 In, left-hand position (max) - to 1,0 In.
Short-circuit current protection (2).
Configurable current setpoint Im = (5 – 10) Ir. The switch right-hand position corresponds to 5 Ir, left-hand position - to 10 Ir (except for VA-99C/100 EKF, VA-99C/160 EKF).

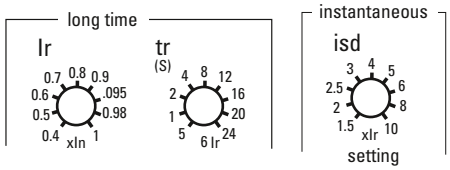


Electronic trip unit
Overload protection with adjustable current setpoint and constant time setpoint.
For VA-99C/250-630:
- rough adjustment Io = (0,4 – 1,0) In (9 positions)
- fine adjustment Ir = (0,9 – 1,0) Io (9 positions)
- short-circuit current protection (9 positions).

Selective current trip with adjustable current setpoint Isd =(1,5 - 10)Ir.



For VA-99C/1250:
Ir – overload tripping setpoint adjustment Ir = (0,4 – 1,0) In (9 positions)
tr – overload current tripping delay time tr = (0,5 – 24) sec. (9 positions)
Isd – short-circuit current setpoint adjustment Isd = (1,5 – 10) × Ir (9 positions).

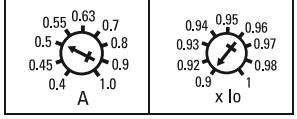


Parameters		Values					
		VA-99C/100	VA-99C/160	VA-99C/250	VA-99C/400	VA-99C/630	VA-99C/1250
Number of poles		3P (standard) / 4P (on order)					
Rated current In, A		12,5, 16, 20, 25, 32, 40, 50, 63, 80, 100	16, 20, 25, 32, 40, 50, 63, 80, 100, 125, 160	160, 180, 200, 225, 250	200, 225, 250, 300, 315, 400	315, 400, 500, 630	800, 1000, 1250, 1600
Rated insulation voltage Ui, V		800			1000		
Rated impulse withstand voltage Uimp, kV		8					
Rated operating voltage Ue, V AC		415 / 500 / 690					
Ultimate short-circuit breaking capacity Icu, kA	AC415 V	35	35	45	45	45	50
	AC500 V	35	35	45	45	45	50
	AC690 V	35	35	45	45	45	50
Service short-circuit breaking capacity Ics, kA	AC415 V	35	35	45	45	45	50
	AC500 V	35	35	45	45	45	50
	AC690 V	35	35	45	45	45	50
Trip unit		Thermomagnetic			Electronic		
Utilization category		A			B		
Endurance (without maintenance)	Mechanical	20 000			10 000		
	Electrical	10 000	8000	8000	6000	5000	1500
Dimensions, mm	W (3P/4P)	105/140			140/185		210/280
	L	161			255		327
	H	86			110		147

Additional functions
Alarm.
Front panel LED for voltage indication:
- steady ON: 90% of Ir setpoint
- flashing: over 105% of IR setpoint

Testing

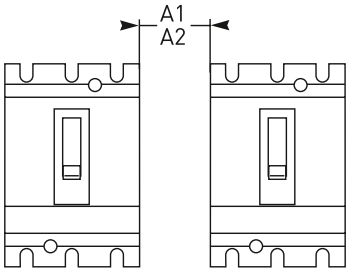
Setting example



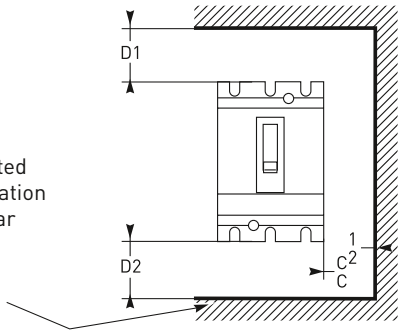
Trip unit setpoint for VA-99C 400A at Io = 0,5 and Ir = 0,9 is as follows: 400 × 0,5 × 0,9 = 180 A.
Trip unit setpoint for VA-99C 630A at the same Io and Ir is as follows: 630 x 0,5 x 0,9= 283,5 A

Enclosure installation
Keep the minimum clearances (safety distance) between MCCB and panels, busbars or other adjacent protective devices. The safety radius depends on the MCCB ultimate breaking capacity and is tested pursuant to IEC 60947-2.

Min. distance between adjacent MCCBs.

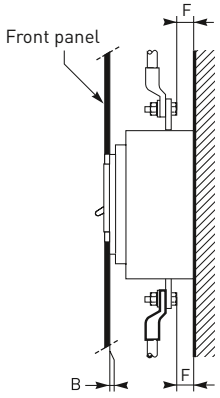


Min. distance between MCCB and top/bottom/side panel.



Metal, painted metal insulation or PE busbar

Min. distance between MCCB and front/rear panel.

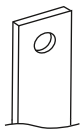


If F< 8, an insulating screen is obligatory

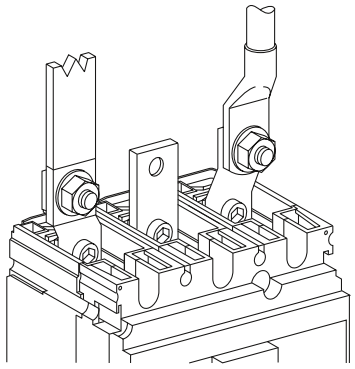
Dimensions, mm	Insulation, insulated busbars or painted metal sheet				Unpainted metal sheet					
MCCB type		C1	D1	D2	C2	D1	D2	A1[2]	A2[3]	B
VA-99C/100/250	U < 440 V	0	30	30	5	35	35	0	10	0
	U < 600 V	0	30	30	10[1]	35	35	0	20	0
	U > 600 V	0	30	30	20[1]	35	35	0	40	0
VA-99C/400/630	U < 440 V	0	30	30	5	60	60	0	10	0
	U < 600 V	0	30	30	10[1]	60	60	0	20	0
	U > 600 V	0	30	30	20[1]	100	100	0	40	0

(1) Multiplied by two if pole dividers are used.
(2) For MCCB with short/long terminal covers.
(3) For MCCB without terminal covers.
The minimum distances for VA-99C are relative to the MCCB housing; terminal covers and pole dividers are not included.

Connection

Power busbar	Wire with JG-type lug	Outer connector (ordered separately)
		

Copper and aluminum wire connections are supported.



Output terminals of MCCB VA-99C/100-630A are terminated with clip nuts and clamp screws (VA-99C/100-250A: M8, VA-99C/400-630A: M10) to connect insulated busbars and terminated cables directly to the MCCB. Extra contact plates enable all connection types.

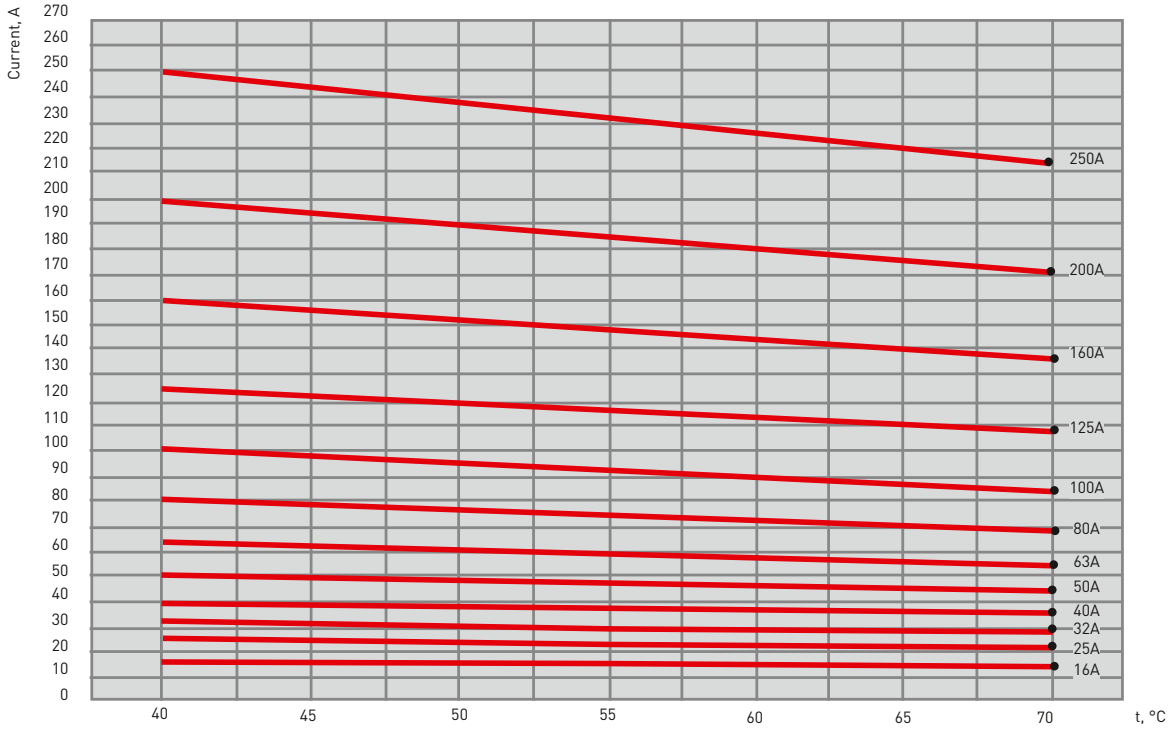
Connection of accessories

The MCCB VA-99C can be complemented with various accessories: connection plates, auxiliary contacts, shunt release, undervoltage release, and motor mechanism.
One MCCB can be used with a single release and max. five auxiliary contacts.

Delivery scope

1. Molded case circuit breaker
2. Interphase barriers
3. Bolts
4. Technical manual

Temperature derating



Ambient temperature derating factor

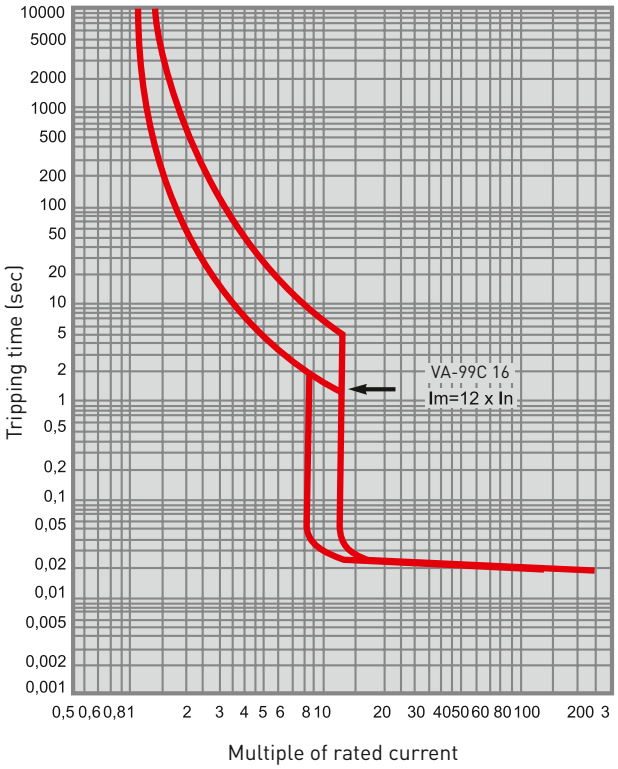
Thermomagnetic trip units: set temperature is 40 °C (50 °C for GULF region). If the ambient temperature exceeds 40 °C (50 °C for GULF region), the overload protection characteristics slightly change.

To define breaking time by characteristics, use the thermal protection setpoint Ir indicated on the MCCB, compensated for the ambient temperature.

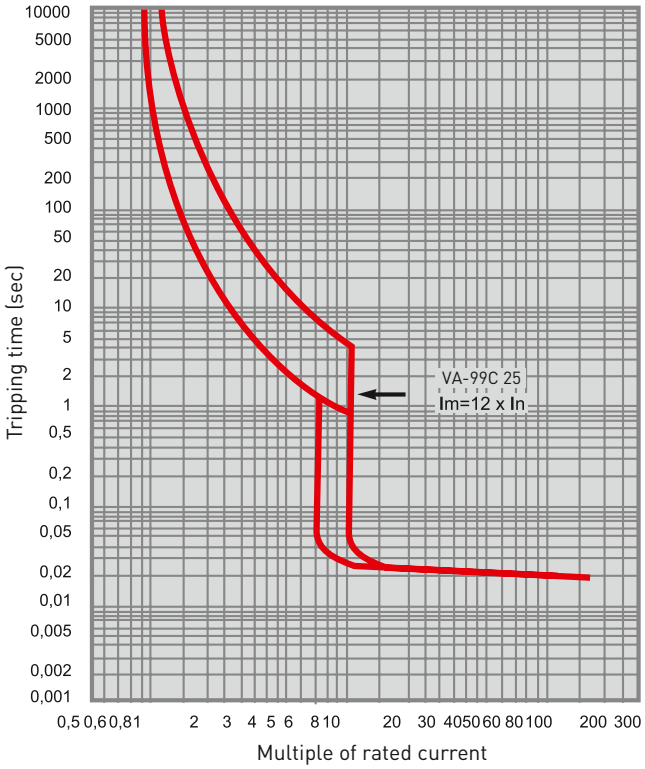
Electronic trip units are not sensitive to temperature variations. However, the current limit value of the MCCB depends on the ambient temperature.

Tripping curves

VA-99C/16

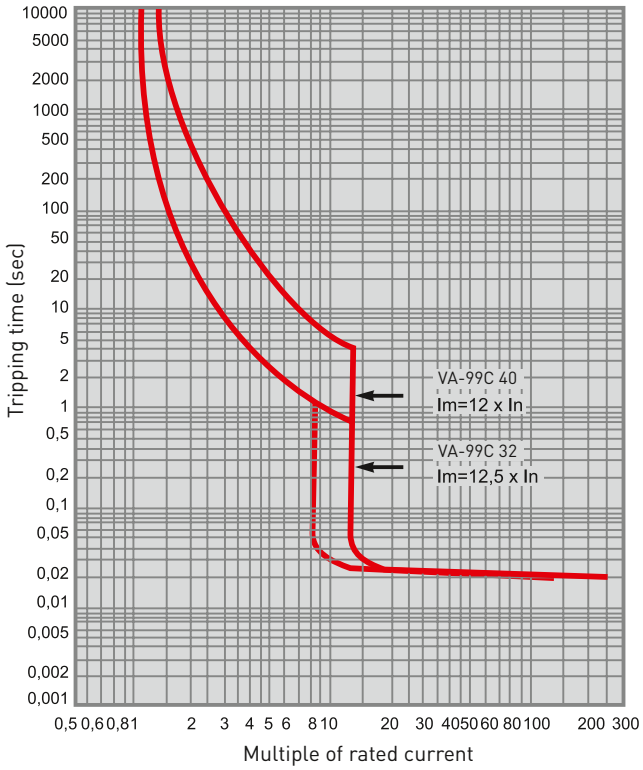


VA-99C/25

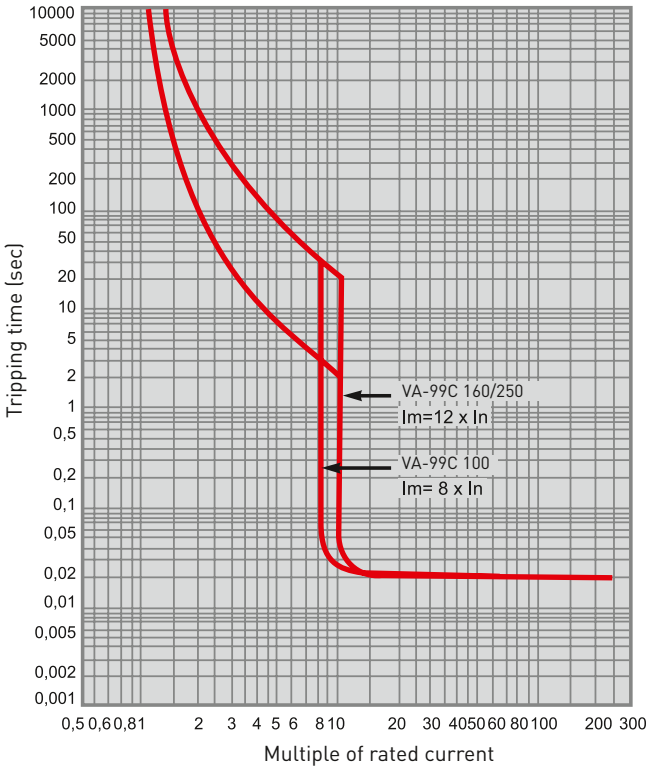


Tripping curves

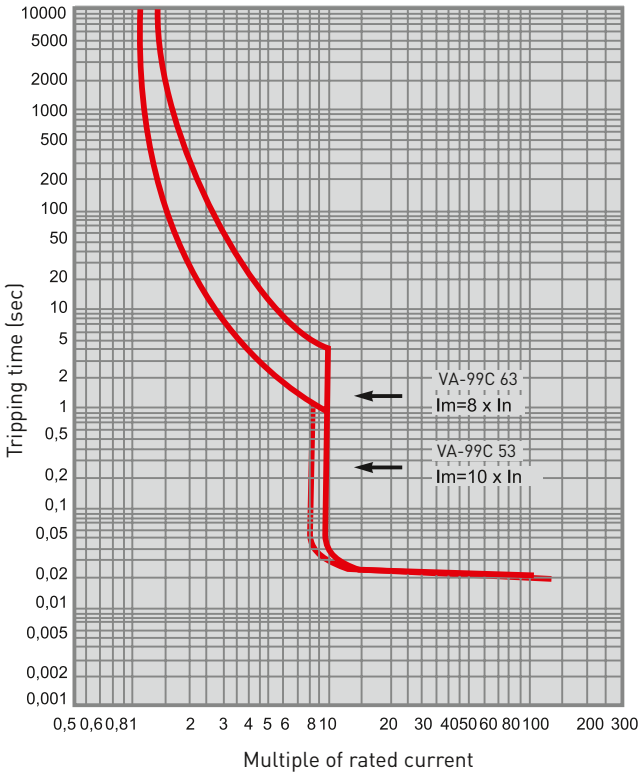
VA-99C/40



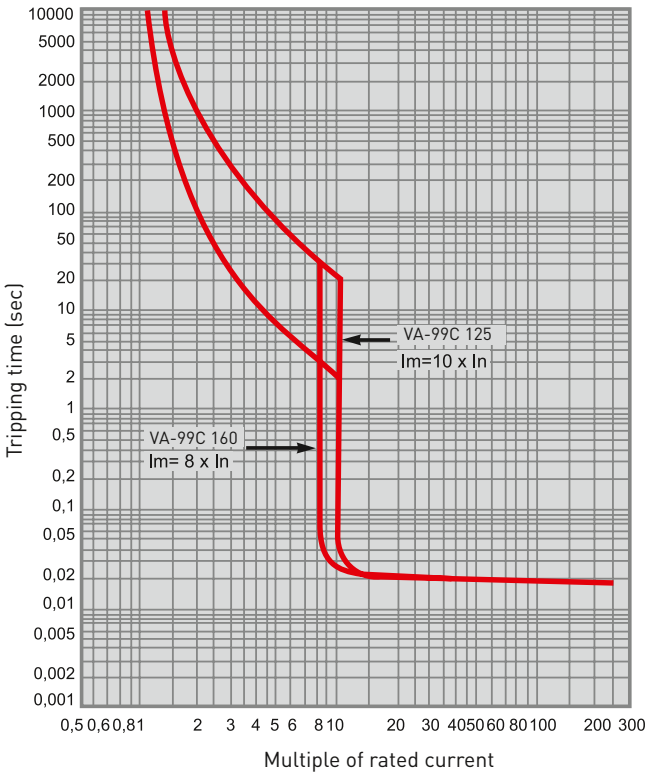
VA-99C/100



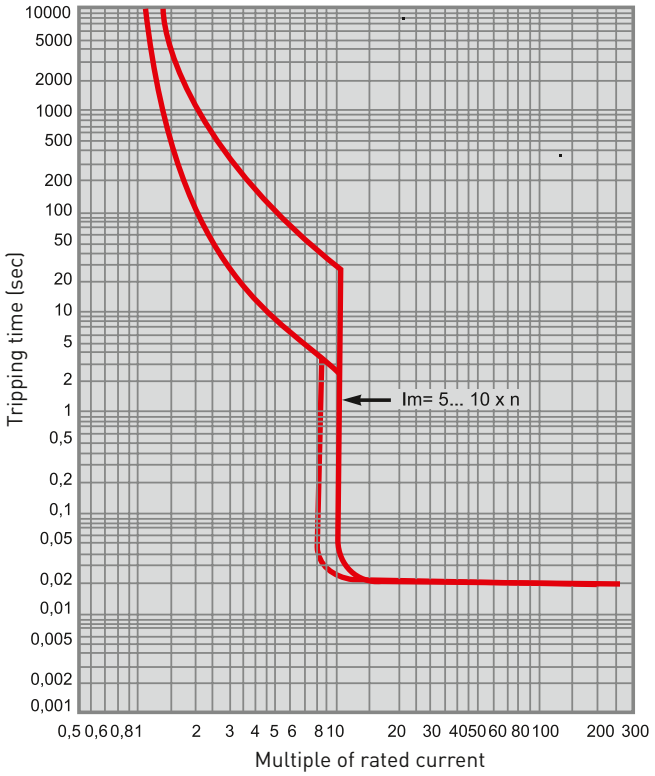
VA-99C/50, VA-99C/63



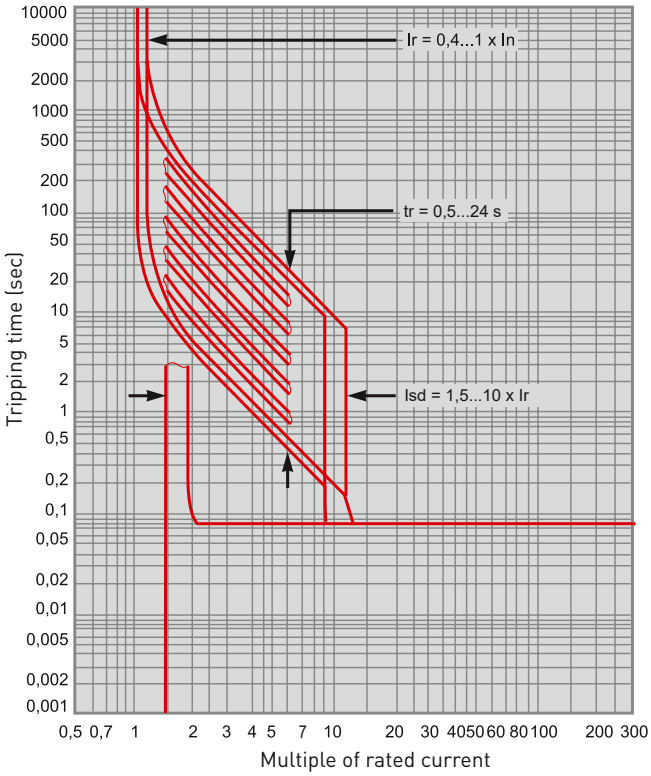
VA-99C/160



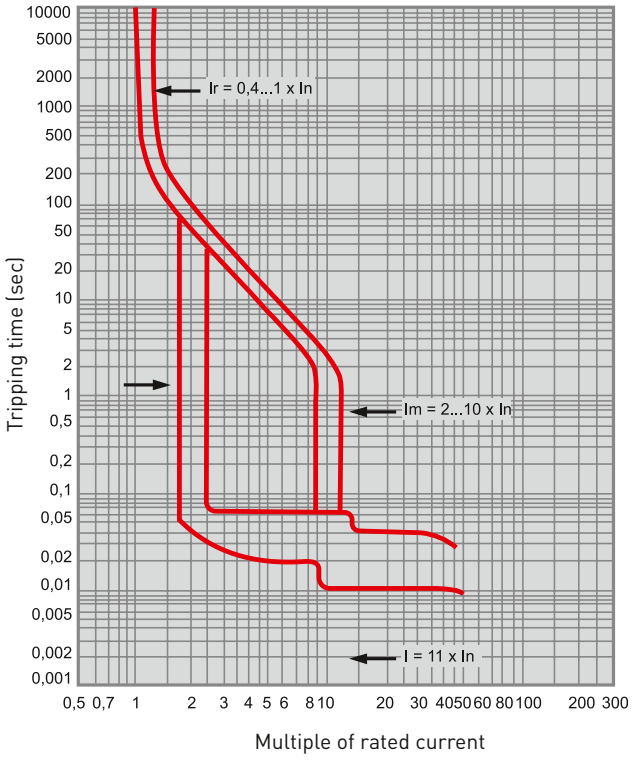
VA-99C/250



VA-99C/1250 with electronic trip unit

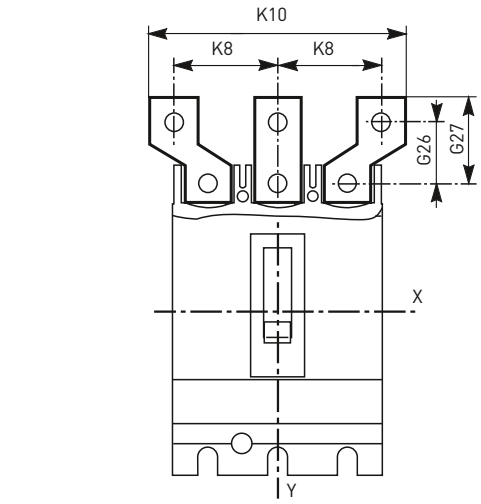


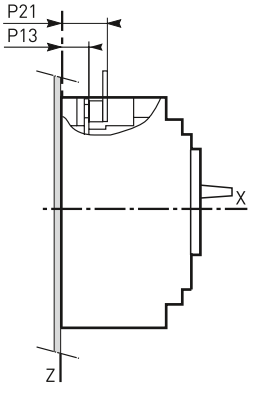
VA-99C/400 – 630

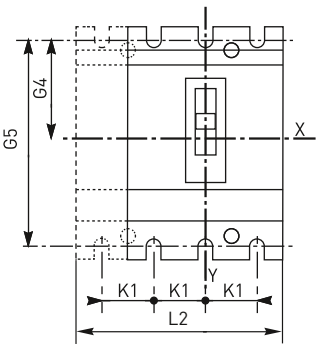


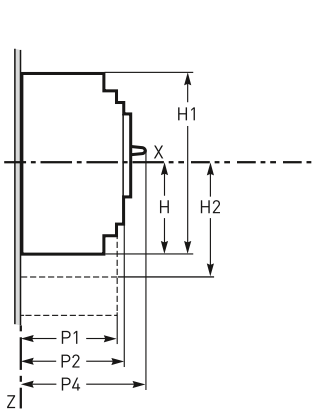
Overall and installation dimensions

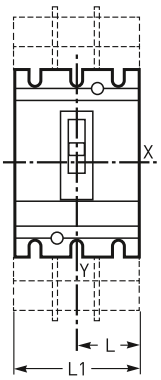
Connection dimensions

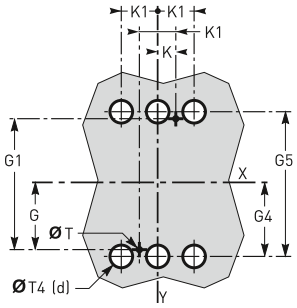


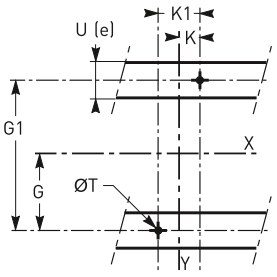


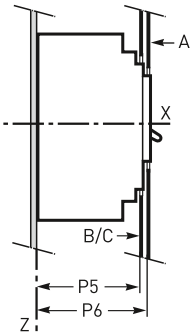


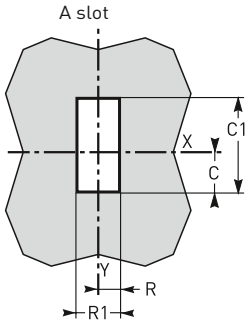


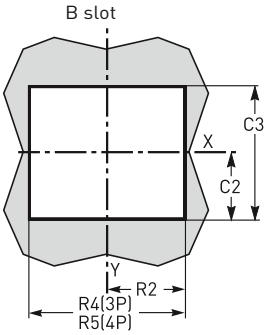


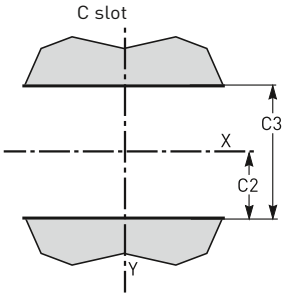


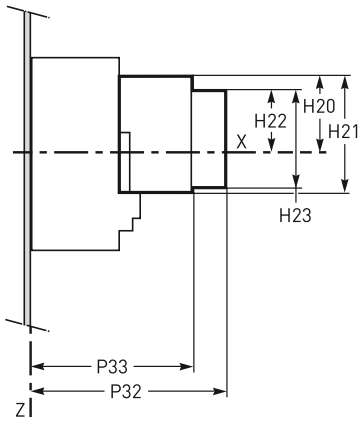


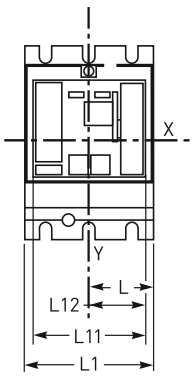


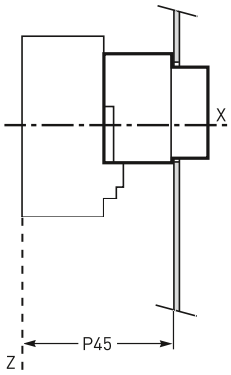


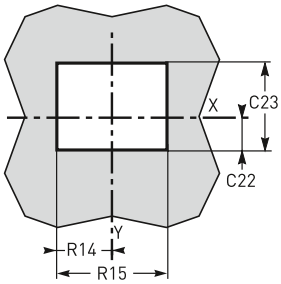












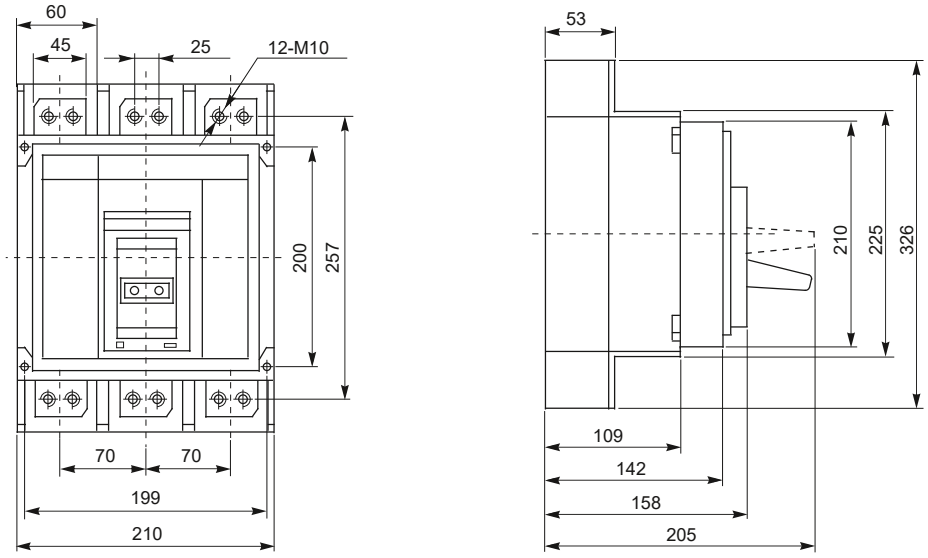
Name	C	C1	C2	C3	C22	C23	G	G1	G4	G5	G26	G27	H	H1	H2	H20	H21	H22	H23
VA-99C/100/160/250 EKF	29	76	54	108	58	43	62,5	125	70	140	30	41	80,5	161	94	86	6	22	32
VA-99C/400/630 EKF	41,5	116	92,5	184	93	63	100	200	113,5	227	39	54	127,5	255	142,5	126	6	32	32

Name	K	K1	K8	K10	L	L1	L2	L11	L12	P1	P2	P4	P6	P13	P21	P32	P33	P45
VA-99C/100/160/250 EKF	17,5	35	45	114	52,5	105	140	91	45,5	81	86	111	88	19,5*	44	178	143	145
VA-99C/400/630 EKF	22,5	45	52,5	135	70	140	185	123	61,5	95,5	110	168	88	26	44	250	215	217

Name	R	R1	R2	R4	R14	R15	R5	ØT	ØT4	U (e)
VA-99C/100/160/250 EKF	14,5	29	54	108	48,5	97	143	6	22	⩽32
VA-99C/400/630 EKF	31,5	63	71,5	143	64,5	129	188	6	32	⩽32

* P13 = 21,5 mm for VA-99C/250 EKF.

VA-99C/1250 with electronic trip unit



THERMOMAGNETIC ADJUSTABLE TRIP UNIT						
Rated current, A	VA-99C/100		VA-99C/160		VA-99C/250	
	3P	4P	3P	4P	3P	4P
16	mccb99C-100-16	–	mccb99C-160-20	–	–	–
20	mccb99C-100-20	–	mccb99C-160-25	–	–	–
25	mccb99C-100-25	–	mccb99C-160-32	–	–	–
32	mccb99C-100-32	–	mccb99C-160-40	–	–	–
40	mccb99C-100-40	–	mccb99C-160-50	–	–	–
50	mccb99C-100-50	–	mccb99C-160-63	–	–	–
63	mccb99C-100-63	mccb99C-100-63-4p-tma	mccb99C-160-80	–	–	–
80	mccb99C-100-80	mccb99C-100-80-4p-tma	mccb99C-160-100	–	–	–
100	mccb99C-100-100	mccb99C-100-100-4p-tma	mccb99C-160-125	mccb99C-160-125-4p-tma	–	–
125	–	–	mccb99C-160-160	mccb99C-160-160-4p-tma	–	–
160	–	–	–	–	mccb99c-250-160	–
180	–	–	–	–	mccb99c-250-180	–
200	–	–	–	–	mccb99C-250-200	mccb99C-250-250-4p-tma
225	–	–	–	–	mccb99C-250-225	mccb99C-250-225-4p-tma
250	–	–	–	–	mccb99C-250-250	mccb99C-250-250-4p-tma

ELECTRONIC ADJUSTABLE TRIP UNIT						
Rated current, A	VA-99C/400		VA-99C/630		VA-99C/1250	
	3P	4P	3P	4P	3P	4P
200	mccb99c-400-200	mccb99c-400-200+N	–	–	–	–
225	mccb99c-400-225	mccb99c-400-225+N	–	–	–	–
250	mccb99c-400-250	mccb99c-400-250+N	–	–	–	–
300	mccb99c-400-300	mccb99c-400-300+N	–	–	–	–
315	mccb99C-400-315	mccb99C-400-315+N	mccb99c-630-315	mccb99c-630-315+N	–	–
400	mccb99C-400-400	mccb99C-400-400+N	mccb99c-630-400	mccb99c-630-400+N	–	–
500	–	–	mccb99c-630-500	mccb99c-630-500+N	–	–
630	–	–	mccb99C-630-630	mccb99C-630-630+N	–	–
800	–	–	–	–	mccb99C-1250-800	mccb99C-1250-800+N
1000	–	–	–	–	mccb99C-1250-1000	mccb99C-1250-1000+N
1250	–	–	–	–	mccb99C-1250-1250	mccb99C-1250-1250+N
1600	–	–	–	–	mccb99C-1250-1600	mccb99C-1250-1600+N

Accessories for VA-99C EKF

Accessories are not included in the VA-99C delivery scope and shall be ordered seperately. Install the releases and contacts in the housing slots behind the front panel. Route the wires in the internal side channels and connect them to internal terminals. Connect the secondary wires with 1,5mm^2 cross-section to the integrated terminal. The releases and contacts are universal and compatible with most MCCBs. Copper and aluminum wire connections supported.

MCCB type	Accessories	Item code
VA-99C 100	Connection plates VA-99C 100-160A (6pcs.) EKF	mccb99c-a-24-160a
	Undervoltage release VA-99C MN 100-630A EKF	mccb99c-a-1
	Shunt release VA-99C MX 100-630A EKF	mccb99c-a-7
	Auxiliary contact VA-99C 100-1250A EKF	mccb99c-a-16
	Motor mechanism VA-99C CD/2-250 EKF	mccb99c-a-20
	Motor mechanism VA-99C CD/2-250 3P+N EKF	mccb99c-a-20n
	Interphase barriers VA-99C 100-250A EKF	mccb99c-a-aip-100-250
VA-99C 160	Connection plates VA-99C 100-160A (6pcs.) EKF	mccb99c-a-24-160a
	Undervoltage release VA-99C MN 100-630A EKF	mccb99c-a-1
	Shunt release VA-99C MX 100-630A EKF	mccb99c-a-7
	Auxiliary contact VA-99C 100-1250A EKF	mccb99c-a-16
	Motor mechanism VA-99C CD/2-250 EKF	mccb99c-a-20
	Motor mechanism VA-99C CD/2-250 3P+N EKF	mccb99c-a-20n
	Interphase barriers VA-99C 100-250A EKF	mccb99c-a-aip-100-250
VA-99C 250	Connection plates VA-99C 250A (6pcs.) EKF	mccb99c-a-24-250a
	Undervoltage release VA-99C MN 100-630A EKF	mccb99c-a-1
	Shunt release VA-99C MX 100-630A EKF	mccb99c-a-7
	Auxiliary contact VA-99C 100-1250A EKF	mccb99c-a-16
	Motor mechanism VA-99C CD/2-250 EKF	mccb99c-a-20
	Motor mechanism VA-99C CD/2-250 3P+N EKF	mccb99c-a-20n
	Interphase barriers VA-99C 100-250A EKF	mccb99c-a-aip-100-250
VA-99C 400	Connection plates VA-99C 400-630A (6pcs.) EKF	mccb99c-a-24-630a
	Undervoltage release VA-99C MN 100-630A EKF	mccb99c-a-1
	Shunt release VA-99C MX 100-630A EKF	mccb99c-a-7
	Auxiliary contact VA-99C 100-1250A EKF	mccb99c-a-16
	Motor mechanism VA-99C CD/2-630 EKF	mccb99c-a-21
	Interphase barriers VA-99C 400-630A EKF	mccb99c-a-aip-400-630
VA-99C 630	Connection plates VA-99C 400-630A (6pcs.) EKF	mccb99c-a-24-630a
	Undervoltage release VA-99C MN 100-630A EKF	mccb99c-a-1
	Shunt release VA-99C MX 100-630A EKF	mccb99c-a-7
	Auxiliary contact VA-99C 100-1250A EKF	mccb99c-a-16
	Motor mechanism VA-99C CD/2-630 EKF	mccb99c-a-21
	Interphase barriers VA-99C 400-630A EKF	mccb99c-a-aip-400-630
VA-99C 1250	Auxiliary contact VA-99C 100-1250A EKF	mccb99c-a-16
	Shunt release VA-99C MX 1250A EKF	mccb99c-a-22
	Motor mechanism VA-99C CD/2-1250 EKF	mccb99c-a-24
	Connection plates VA-99C 1250A (6pcs.) EKF	mccb99c-a-23

Connection plates EKF

Picture		Name	Tightening torque, N·m	Dimensions, mm			Net weight, kg	Item code
Delivery scope				width	thickness	diameter		
2	4							
		Connection plates VA-99C 100-160A (6pcs.) EKF	9	18	3	10	0,113	mccb99c-a-24-160a
		Connection plates VA-99C 250A (6pcs.) EKF	9	18	4	10	0,130	mccb99c-a-24-250a
		Connection plates VA-99C 400-630A (6pcs.) EKF	18	30	6	12	0,200	mccb99c-a-24-630a

Undervoltage release MN EKF

The main purpose of the undervoltage release is to disconnect electrical equipment in case of undervoltage.

Standard: IEC/EN 60947-2

Picture	Name	Max. power consumption, W	Current type	Voltage Ue, V	Net weight, kg	Item code
	Undervoltage release VA-99C MN 100-630A EKF	5	Alternating	230 @ 50/60 Hz	0,104	mccb99c-a-1

Parameters	Values
Operating voltage range	(0,85–1,1) Ue
Hold voltage	(0,7–1,1) Ue
Breaking voltage	(0,35–0,7) Ue

Shunt release MX EKF

The shunt release trips the MCCB remotely. The trip signal may be pulse (20 ms) or continuous. The mechanical endurance is 50% of the MCCB endurance.

Standard: IEC/EN 60947-2

Picture	Name	Max. power consumption, W	Current type	Voltage, Ue	Net weight, kg	Item code
	Shunt release VA-99C MX 100-630A EKF	5 (short-term operating mode)	Alternating	230 V, 50/60 Hz	0,122	mccb99c-a-7

Parameters	Values
Operating voltage range	(0,7–1,1) Ue
Max. operate time, ms	50

Auxiliary contact

The auxiliary contacts with a common point serve to indicate the MCCB operation to be used for signalling, electrical interlocking, relay protection, etc.

Standard: IEC/EN 60947-2

Functions:
"OF" (ON/OFF): indicates power contacts status.
"SD" (TRIP): indicates tripping by:
- Overload
- Short circuit
- Shunt release
- TEST button (push to trip)

"SDE" (fault): indicates tripping by:
- Overload
- Short circuit.

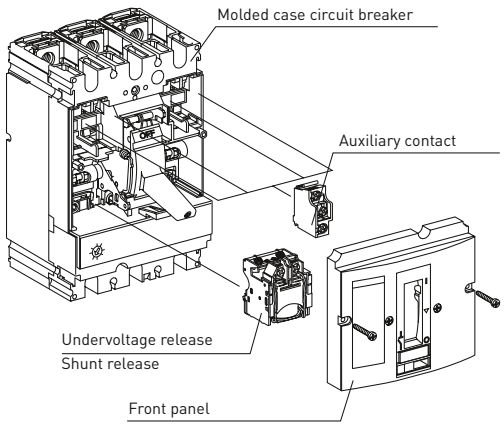
The auxiliary contacts return to their initial state after the MCCB resets. A single model of auxiliary contact fulfils functions "OF" & "SD", depending on the arrangement in the device.

Picture	Name	Conventional thermal current, A	Min. load	Item code
	Auxiliary contact VA-99C 100-1250A EKF	6	100 mA at 24 V	mccb99c-a-16

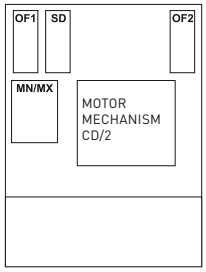
Parameters		Values			
Conventional thermal current, A		6			
Min. load		100 mA at 24 V			
Utilization category (IEC 60947-5-1)		AC-12	AC-15	DC-12	DC-14
Operating current, A	24 V	6	6	6	1
	48 V	6	6	2,5	0,2
	110 V	6	5	0,6	0,05
	220 / 240 V	6	4	–	–
	250 V	–	–	0,3	0,03
	380 / 440 V	6	2	–	–
	480 V	6	1,5	–	–
	660 / 690 V	6	0,1	–	–

Installation and operation

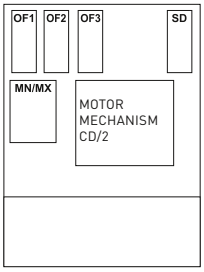
1.Installation of VA-99C accessories



2. Arrangement options



VA-99C/100-250

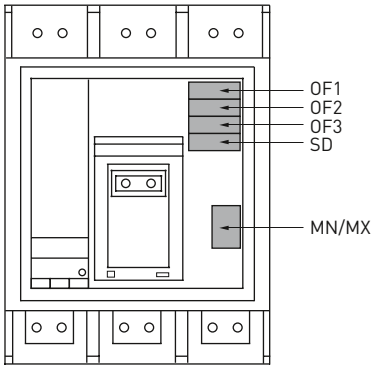


VA-99C/400-630

3. Motor mechanism CD/2.
To install the motor mechanism:
- Switch the MCCB handle to the OFF position
- Reclose the mechanism with handle, until it latches
- Fasten the mechanism onto the MCCB housing with screws
- Connect power supply and control buttons pursuant to the wiring diagram.

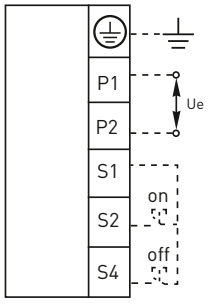
Use contacts P1 & P2 to connect power supply. Use contacts S2 & S4 to connect operation spring buttons. Contact S1 is a common-type contact. The ON button is used to switch the MCCB to the ON position, while the OFF button - to the OFF position.

Arrangement of VA-99C/1250 accessories



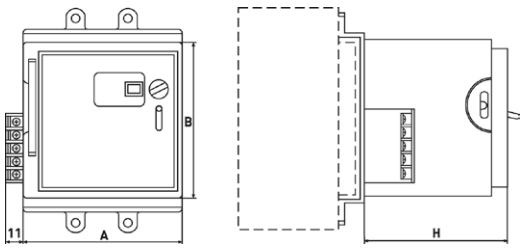
Motor mechanism CD/2 EKF

The motor mechanism CD/2 EKF is designed for remote control of the molded case circuit breakers (MCCB) VA-99C EKF: to facilitate the MCCB close/open operations and to reclose it after auto tripping.
Circuit breakers equipped with a motor mechanism feature high reliability and user-friendly operation and can used for local and remote control, automation of distribution networks, automatic transfer switches (ATS), simultaneous tripping of several circuit breakers.

Picture	Name	Rated current, A	Wiring diagram	Item code
	Motor mechanism VA-99C (Compact NS) CD/2-250 EKF	100, 160, 250	 Circuit breaker with thermomagnetic and electronic trip unit and accessories	mccb99c-a-20
	Motor mechanism VA-99C (Compact NS) CD/2-630 EKF	400, 630		mccb99c-a-21
	Motor mechanism VA-99C (Compact NS) CD/2-1250 for VA-99C 3P EKF	800, 1000, 1250, 1600		mccb99c-a-24

Parameters	Values	
	CD/2-250	CD/2-400-630
Rated voltage (Un), V	230	
Rated operating voltage Ue, %Un	85...110	
Max. operating current, A	0,5	2
Power, W	35	35
Mechanical endurance, O-C cycles	10 000	5000
Overall dimensions (W×D×H), mm	102×90×154	150×130×220
Installation dimensions, mm	130×220	130×150
Degree of protection	IP30	IP30

Overall and installation dimensions



Name	A, mm	B, mm	H, mm
CD-99-250A	105	90	80
CD-99-400A	140	150	112
CD-99-800A	140	150	112
CD-99-1600A	140	184	112
CD/2-250	102	154	90
CD/2-630	150	220	130

Air Circuit Breakers

Air circuit breakers VA-45 EKF

VA-45 EKF feature the advanced free-trip mechanism and a contact group actuated by a charged spring mechanism. ACBs are pre-assembled in a rigid frame, with the main controls and indicators on the front panel. ACBs can be complemented with various accessories to expand their functions.

Standard: IEC/EN 60947-2

Fixed and with-drawable versions

Silver-plated electrical copper connecting busbars

Electronic control unit with selective programmable pro-tection

Manual and remote control

Motor mechanism included in the basic configuration

Silverized tungsten composite contact pads

APPLICATION

ACBs VA-45 are used in residential buildings, commercial facilities and industrial applications:
- protection of electric motor circuits;
- protection of outgoing lines, switchboards and distribution panels;
- electrical circuit isolation and partitioning (three ACBs);
- remote switching of electrical equipment;
- control and energy-saving systems.

Main controls and indicators on the front panel:
1. Microprocessor trip unit
2. OFF button
3. Spring charging handle
4. ON button
5. Spring status indicator: charged/discharged
6. Main contacts status indicator: closed/opened
7. Front panel
8. Locking lug: ON, TEST, OFF
9. ACB status indicator
10. Handle for withdrawable models

ACB main components:
1. Terminal block for auxiliary connections (fixed)
2. Withdrawable base
3. Terminal covers
4. Handle
5. Terminal block for auxiliary connections (movable)
6. Auxiliary contacts
7. Undervoltage release
8. Shunt release
9. Closing release
10. Control mechanism
11. Motor for versions with motor mechanism
12. Microprocessor control unit
13. Front panel

ACB types by overcurrent protection:
– overload and short-circuit protection
– ground fault protection.

Releases and auxiliary contacts:
– Shunt release
– Undervoltage release
– Auxiliary contacts.

Control mechanisms:
– manual charge and close/open operations
– motor mechanism for remote control.

Installation types:
– Fixed version with external wires
– Withdrawable version.

Communication: Modbus.

1. Main components:

1.1. The closing, opening and tripping mechanism consists of a motor mechanism, a charged spring release for instantaneous ACB tripping by short-circuit and overload currents, and an actuator linking the mechanism to the ACB contact.

For motor versions, an electric motor drive with a gearbox is fitted the primary switching mechanism to operate the ACB remotely - by operator command or control system.

In the operational (ON) state of the circuit breaker, the release mechanism is charged. It can be manually charged by operator with a handle on the front panel of the device or by control signal.

After the spring is charged, the circuit breaker can be switched on manually by operator pressing the ON button or remotely via a control signal to the motor drive.

The circuit breaker is switched off either by operator pressing the OFF button or remotely with a control signal to the shunt or undervoltage releases. In the event of overload or short circuit, the ACB is tripped by the shunt release operated by the microprocessor trip unit.

1.2. Contact group and arc-extinguishing systems

The contact group of the air circuit breaker is an arrangement of interlocked movable and fixed contacts, connected in parallel. The metal-ceramic contact pads of the group are able to withstand severe short-circuit currents and ensure reliable contact surface once the short-circuit fault has been cleared.

Each pole of the ACB is equipped with a dedicated arc chute designed to quickly and efficiently quench electrical arcs, generated when the ACB trips by short-circuit.

1.3. Withdrawable section

The withdrawable circuit breakers feature isolating contacts for main and auxiliary circuits inside a special withdrawable section.

The section consists of right and left plates (with guides), a base and a cross panel.

The base has a slide for pulling the device in/out and a position indicator. Fixed split contacts on the base top are used to connect secondary circuits.

The ACB installed in a withdrawable section can be in three states:

– Connected - main and auxiliary circuits are connected, terminal cover is opened.
– Testing and set-up - main circuit is disconnected, terminal cover is closed. Auxiliary circuit is connected for testing.
– Disconnected - main and auxiliary circuits are disconnected, terminal cover is closed.

Circuit breakers can be physically locked in each of this states with a padlock to prevent unauthorized access.

1.4. Screw terminals

Terminal blocks at the ACB upper part are used to connect auxiliary and remote-sensing circuits.

1.5. Microprocessor control and protection units

Microprocessor units ensure control of the ACB protective behavior in overload and short circuit areas, data conversion and transmission to displays and remote sensing systems.

2. Electronic control unit

The electronic control unit is a separate device, installed into the ACB frame, that directly actuates the tripping shaft of the circuit breaker when operated.

Control units are factory tested to compy with IEC 60947-2.The parts and components are carefully tested for aging. Moreover, the finished product is continuously operated under high temperature and dry air for 168 hours, then tested and finally released from the factory. All these tests ensure high quality and reliability.

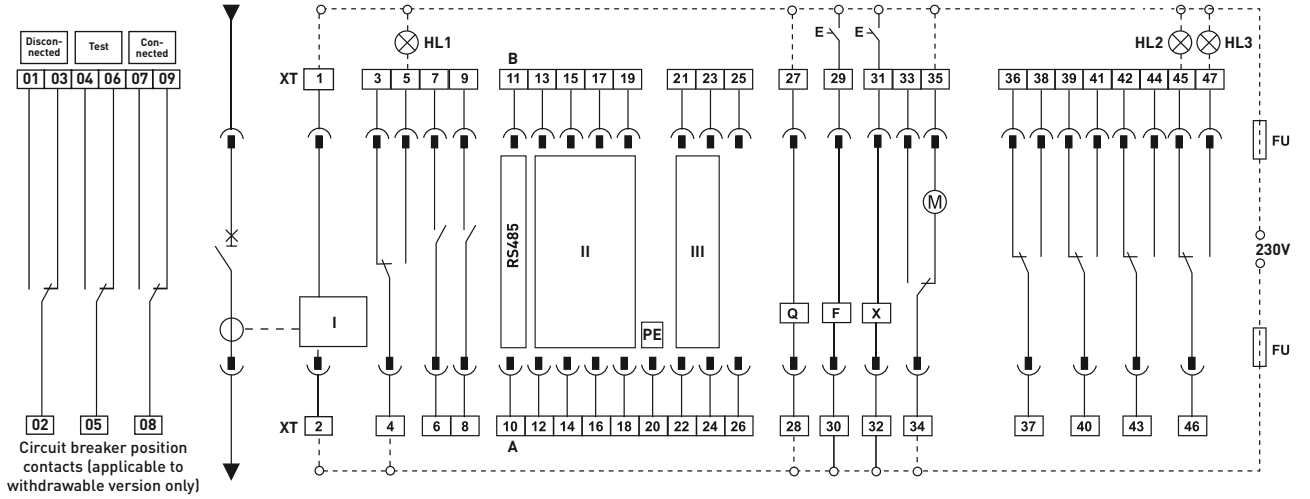
Electronic control unit functions:

1. Overload protection with long delay
2. Short circuit protection with short delay
3. Instant short circuit tripping
4. Current load monitoring
5. Alarm
6. Amperemeter
7. Testing
8. Status and trip cause indication
9. Ground fault protection
10. Self-diagnostics
11. Temperature monitoring (signal sent over 80 °C)
12. Power supply control.

TECHNICAL DATA

Wiring diagrams

Wiring diagram of secondary and control circuits of the air circuit breaker VA-45



Description

I – Controller power supply
II – Programmable relay outputs
III – Voltage measuring inputs
HL1 – ACB Trip indicator
HL2 – ACB OFF indicator
HL3 – ACB ON indicator
Q – Undervoltage release (sold separately)
F – Shunt release
X – Closing release
M – Motor mechanism
XT – Output (terminal block) of secondary circuits
FU – Fuse

Terminals of the secondary circuits

1, 2 – Controller power supply 230V AC, for direct current:
1 terminal "+", 2 terminal "–"
3, 4, 5 – Alarm contact (250V AC, 3A)
6, 7, 8, 9 – Auxiliary contacts (NO) (250V AC, 3A)
10, 11 – RS-485 communication interface
12–19 – Programmable relay outputs
20 – Protective earth
21, 22, 23, 24 – Voltage measuring inputs (21 – "N", 22 – "A", 23 – "B", 24 – "C")
25, 26 – Connection contacts for external neutral current transformer
27, 28 – Undervoltage release
29, 30 – Shunt release
31, 32 – Closing release
33, 34, 35 – Motor mechanism
36-47 – Auxiliary contacts (4 CO)

Circuit breaker position contacts (applicable to withdrawable versions only):

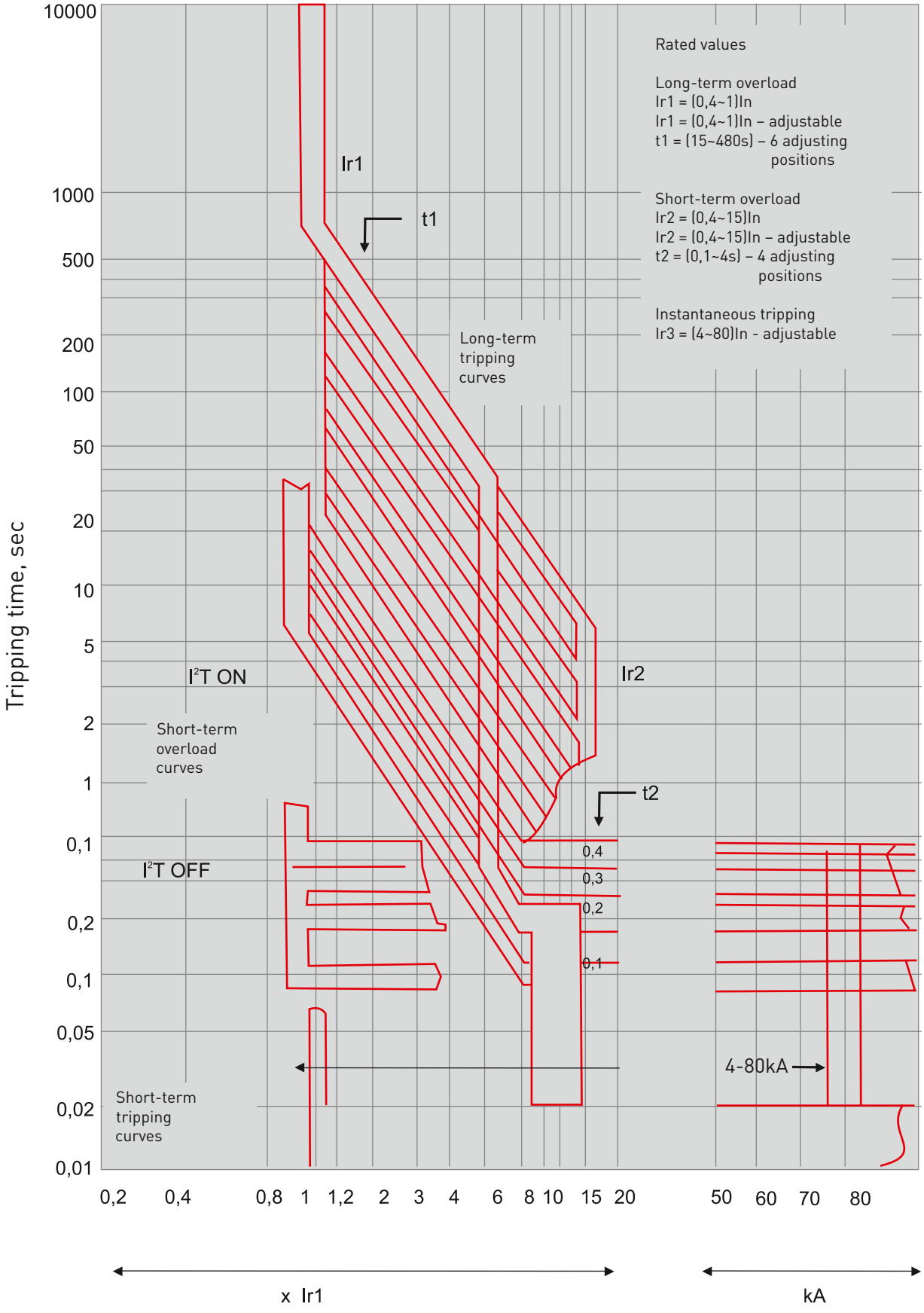
01, 02, 03 – position contact "Disconnected" (CO)
04, 05, 06 – position contact "Test" (CO)
07, 08, 09 – position contact "Connected" (CO).

Parameters		Values									
		VA-45/2000		VA-45/3200		VA-45/4000	VA-45/5000	VA-45/6300			
Number of poles		3P (standard) / 4P (on order)									
Rated current In, A		630, 800, 1000, 1250, 1600, 2000		2000, 2500, 3200		3200, 4000	5000	6300			
Rated insulation voltage Ui, V AC		1000									
Rated impulse withstand voltage Uimp, kV		12									
Rated operating voltage Ue, V AC		415 / 690									
Ultimate short-circuit breaking capacity Icu, kA	AC415 V	85		100		100	120	120			
	AC690 V	60		65		65	80	80			
Service short-circuit breaking capacity Ics, kA	AC415 V	70		65		65	80	80			
	AC690 V	55		50		50	70	70			
Rated short-time withstand current Icw, kA	AC415 V	70		65		65	85	85			
	AC690 V	55		50		50	65	65			
Trip unit		Microprocessor									
Utilization category		B									
Endurance, cycles (without maintenance)	Mechanical	10 000		5000		5000	3000	3000			
	Electrical	6500		3000		750	300	300			
Version		Fixed	Withdrawable	Fixed	Withdrawable	Withdrawable	Withdrawable	Withdrawable			
Dimensions, mm	W (3P/4P)	370/465	410/505	422/537	470/585	585/820	845/960	960			
	L	370	465	385	495	495	495	495			
	H	402	432	402	432	432	432	432			

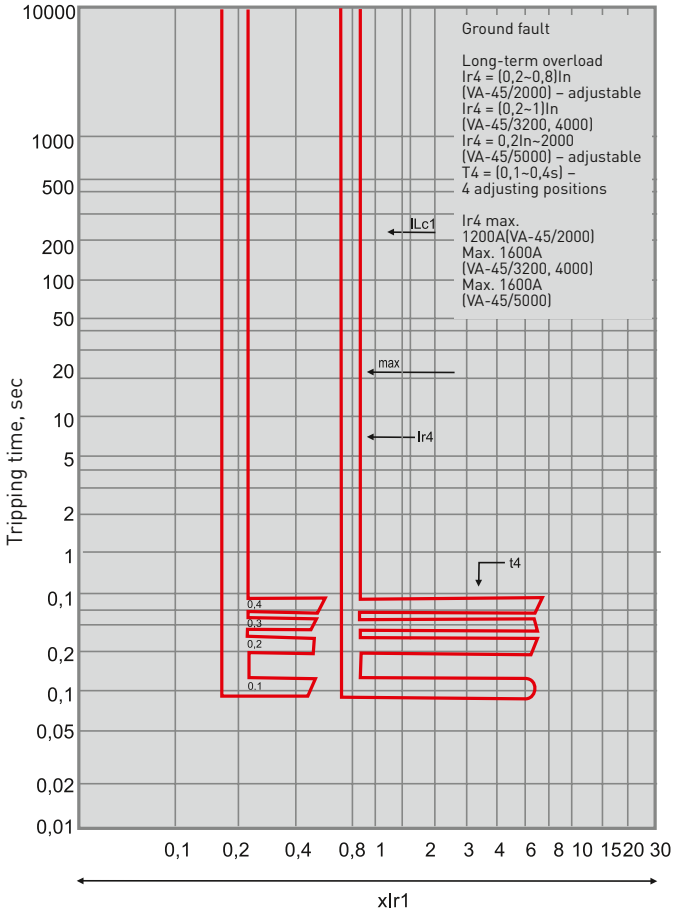
Tripping characteristics

Ambient temperature derating factor
The ACB can continuously carry rated current at ambient temperature of max. +50°C.
Once the air temperature is above this value, reduce the continuous current carrying capacity in accordance with the chart.

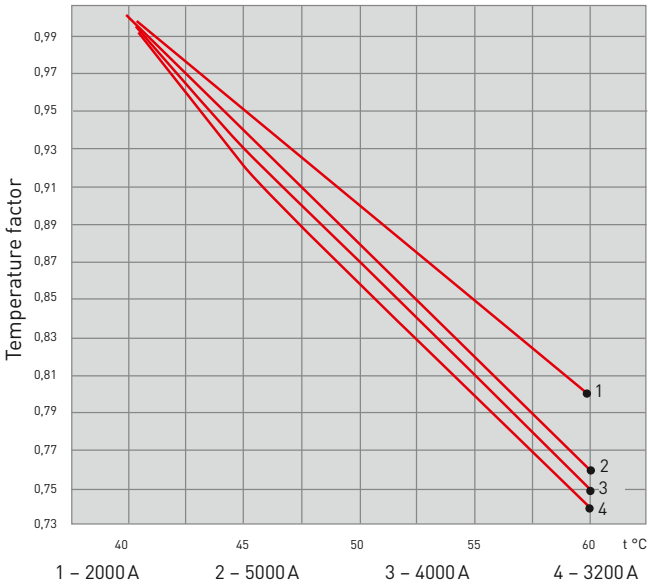
VA-45/3200



Ground fault protection

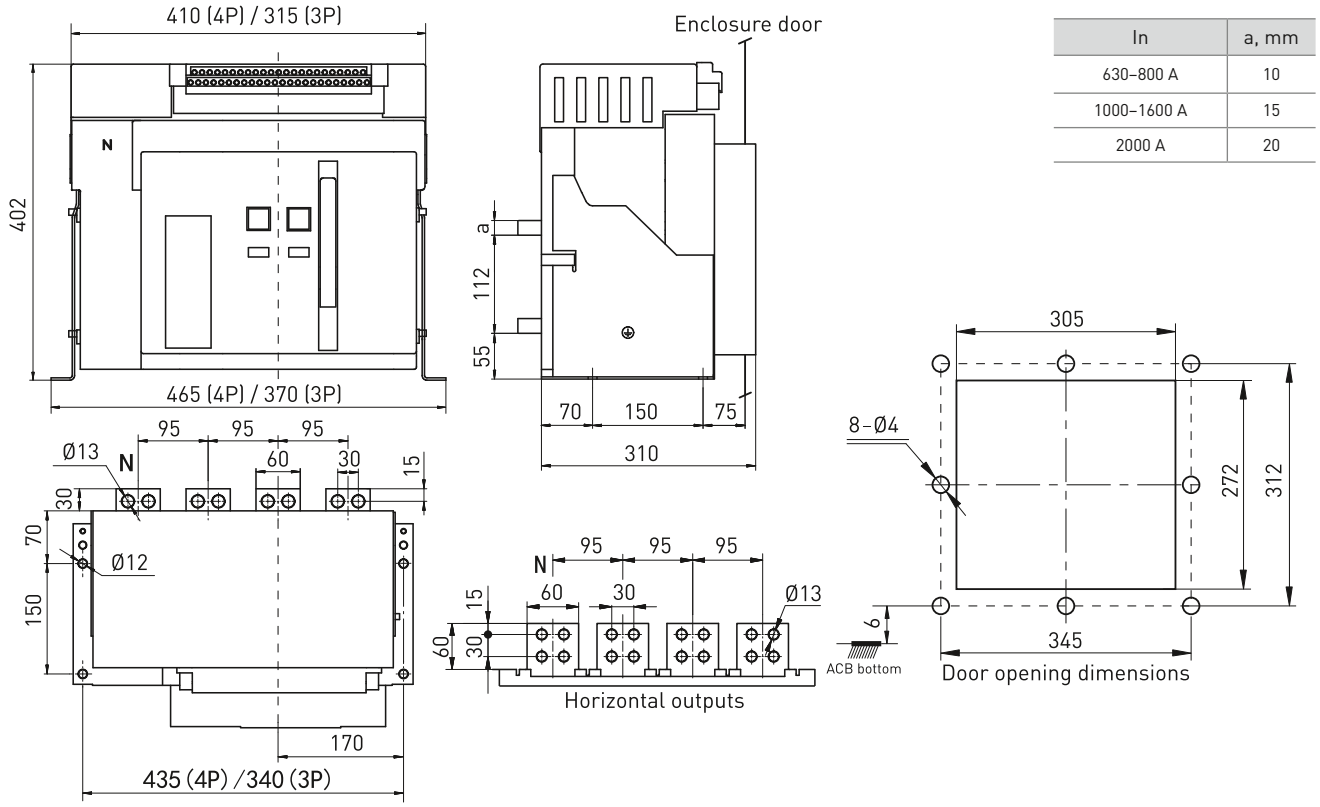


Temperature derating



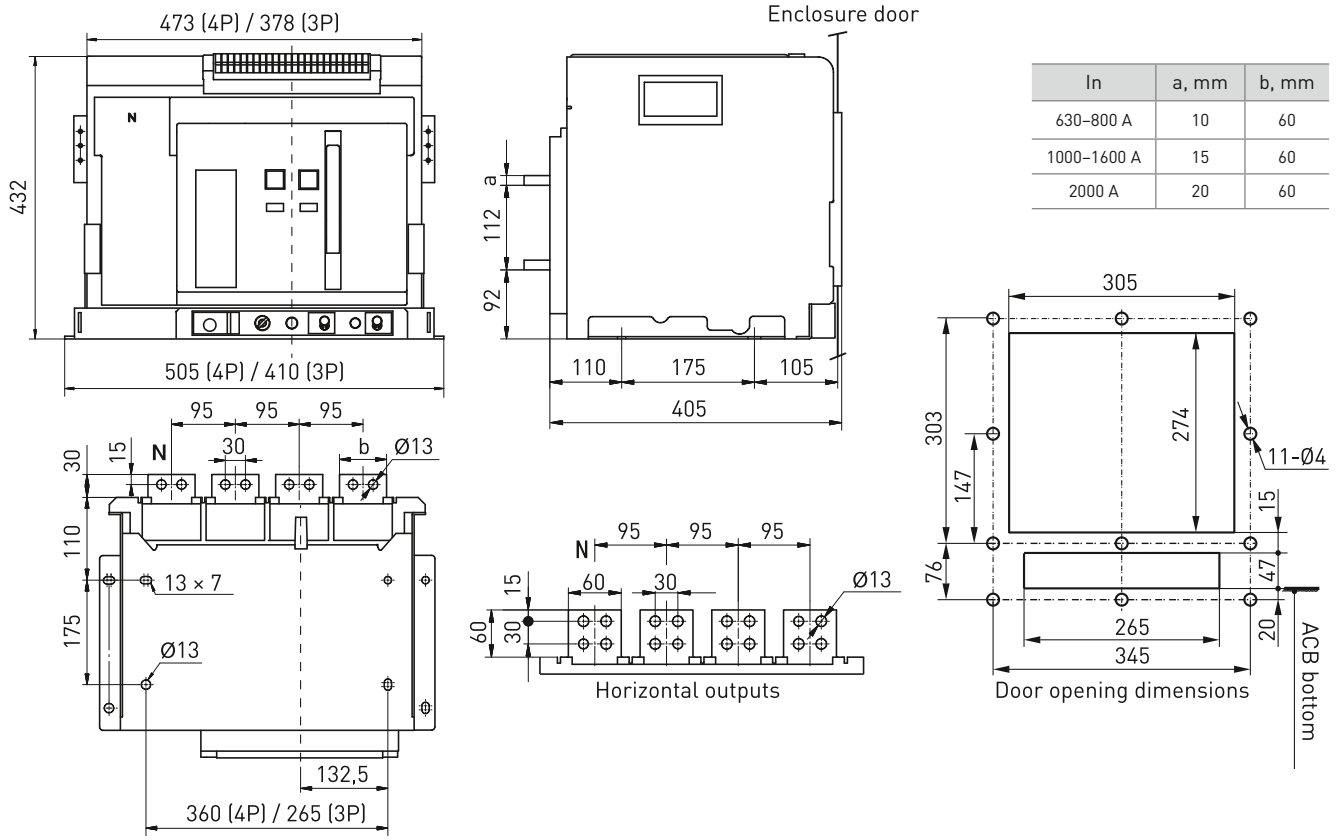
Overall and installation dimensions

VA-45/2000 fixed



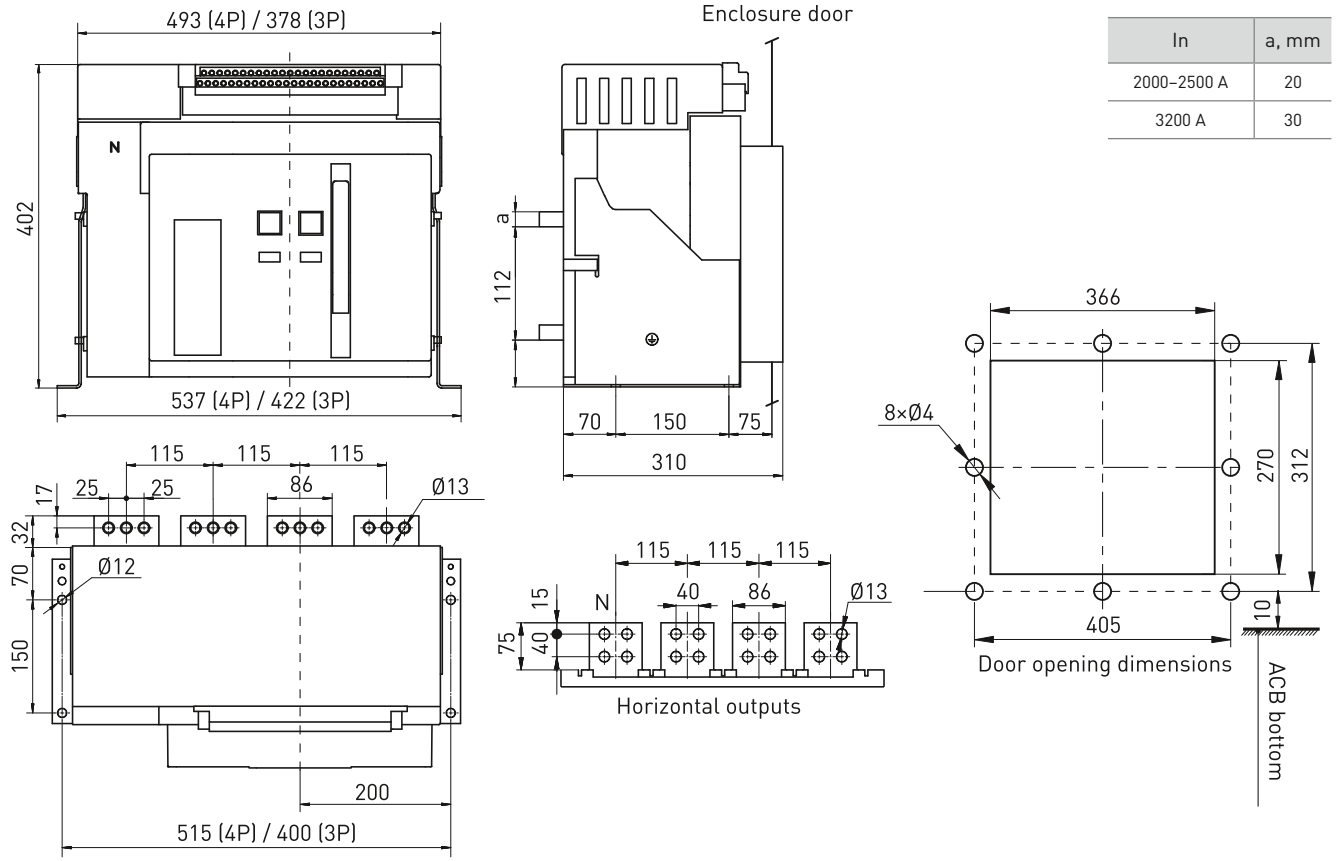
In	a, mm
630–800 A	10
1000–1600 A	15
2000 A	20

VA-45/2000 withdrawable



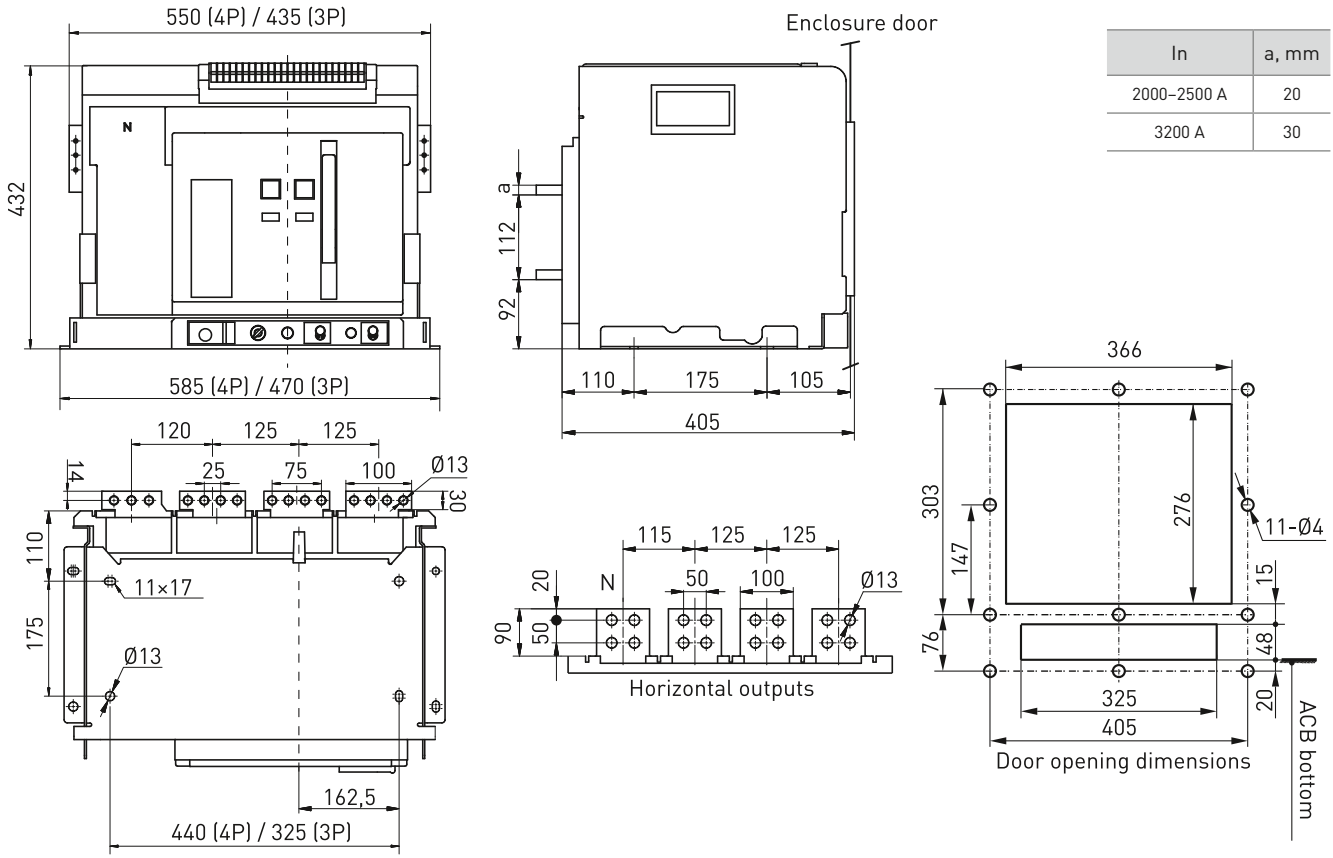
In	a, mm	b, mm
630–800 A	10	60
1000–1600 A	15	60
2000 A	20	60

VA-45/3200 fixed



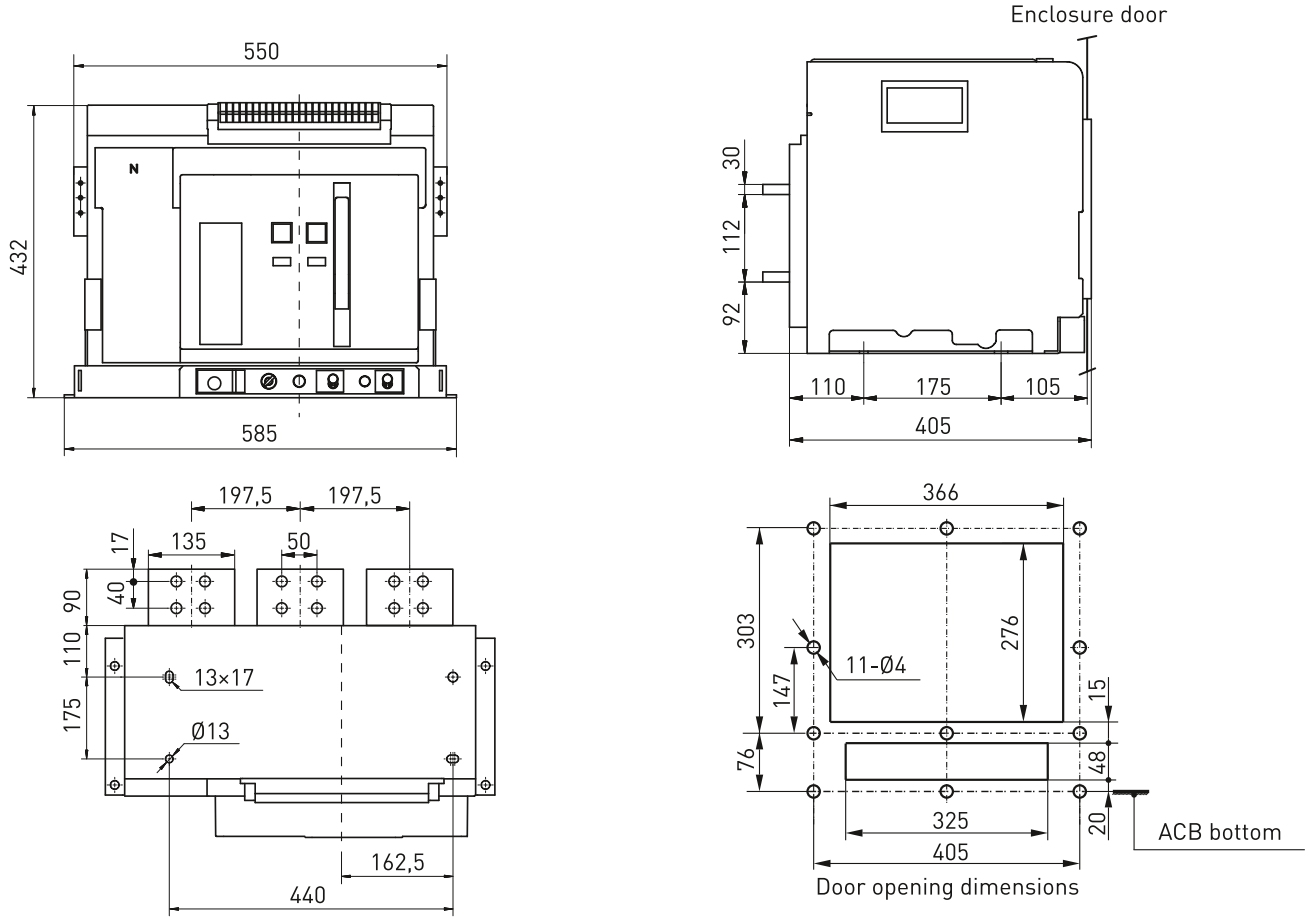
In	a, mm
2000–2500 A	20
3200 A	30

VA-45/3200 withdrawable

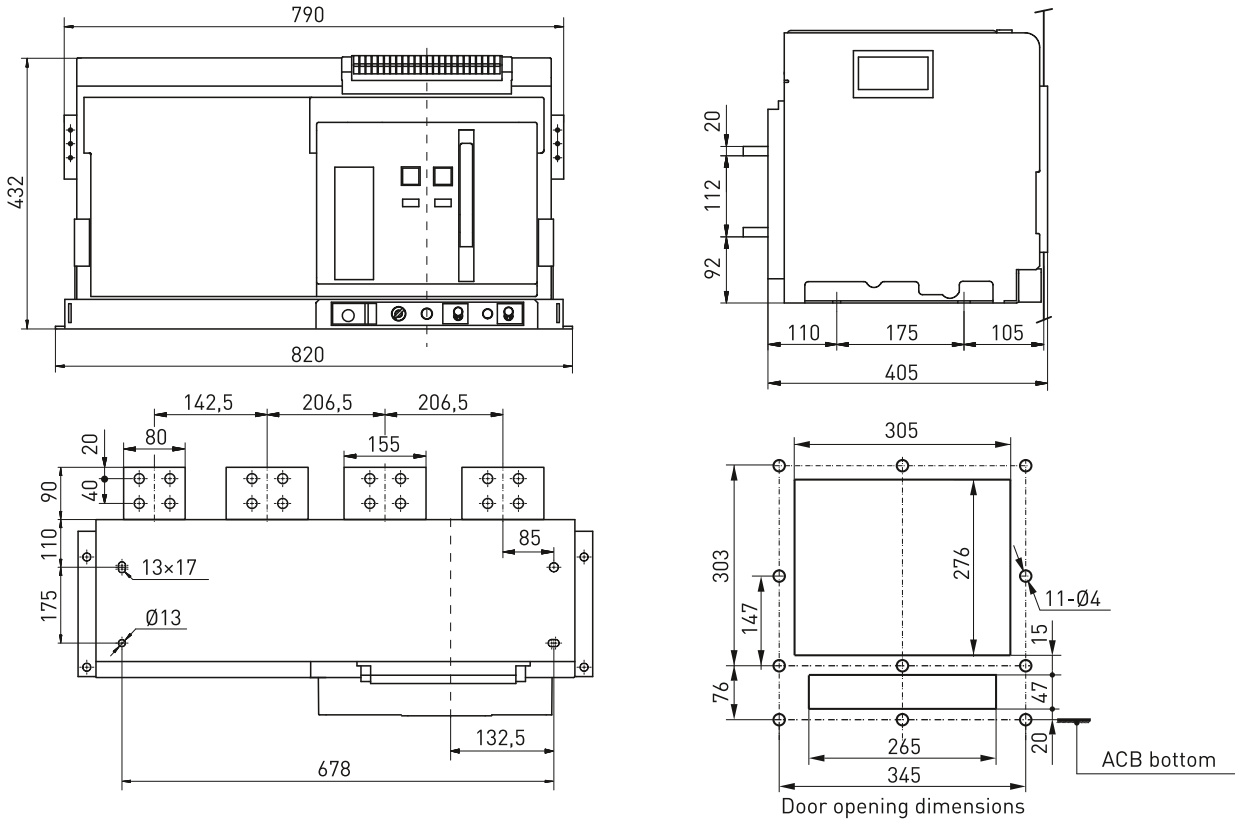


In	a, mm
2000–2500 A	20
3200 A	30

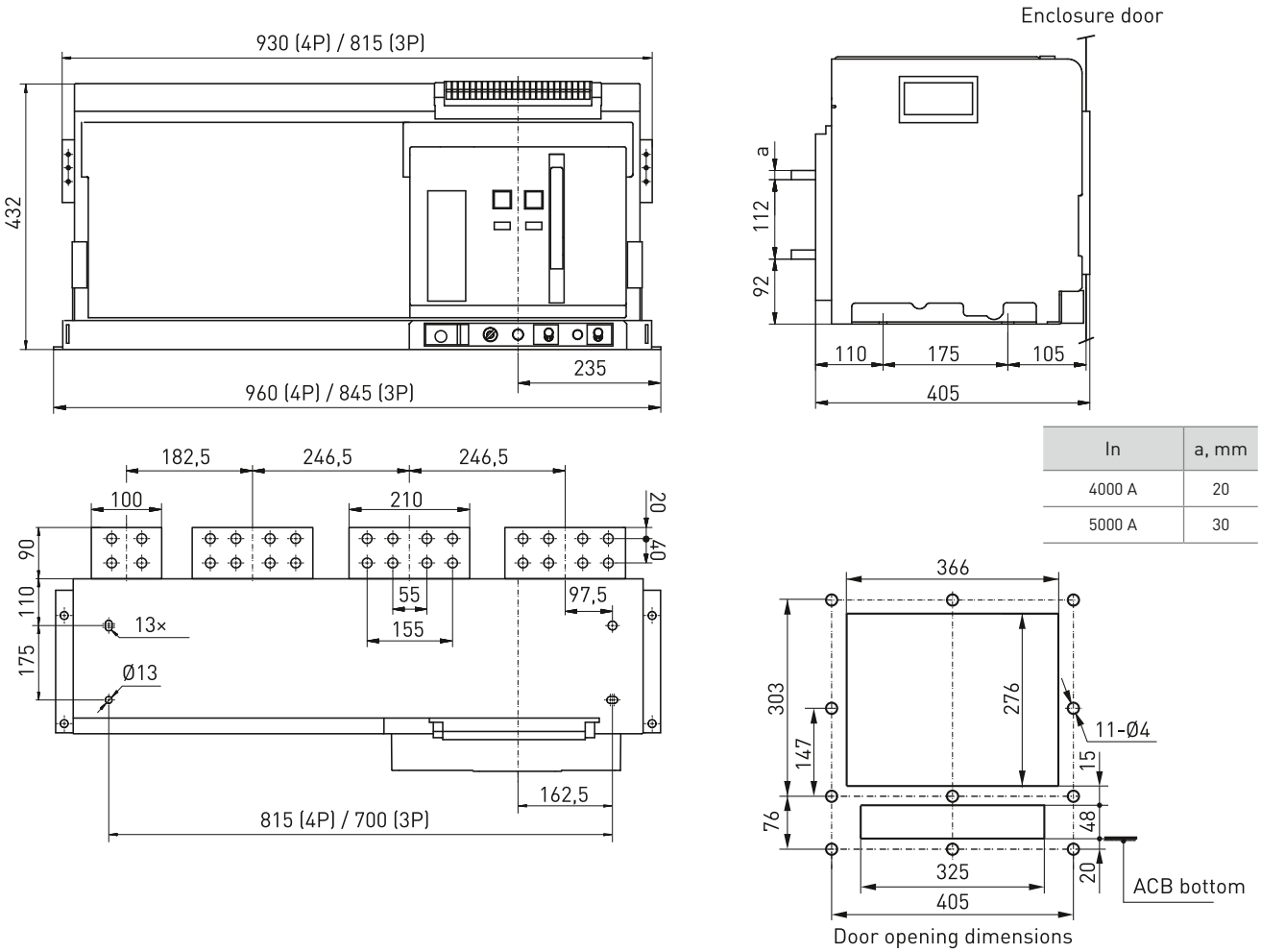
VA-45/4000 3P withdrawable



VA-45/4000 4P withdrawable

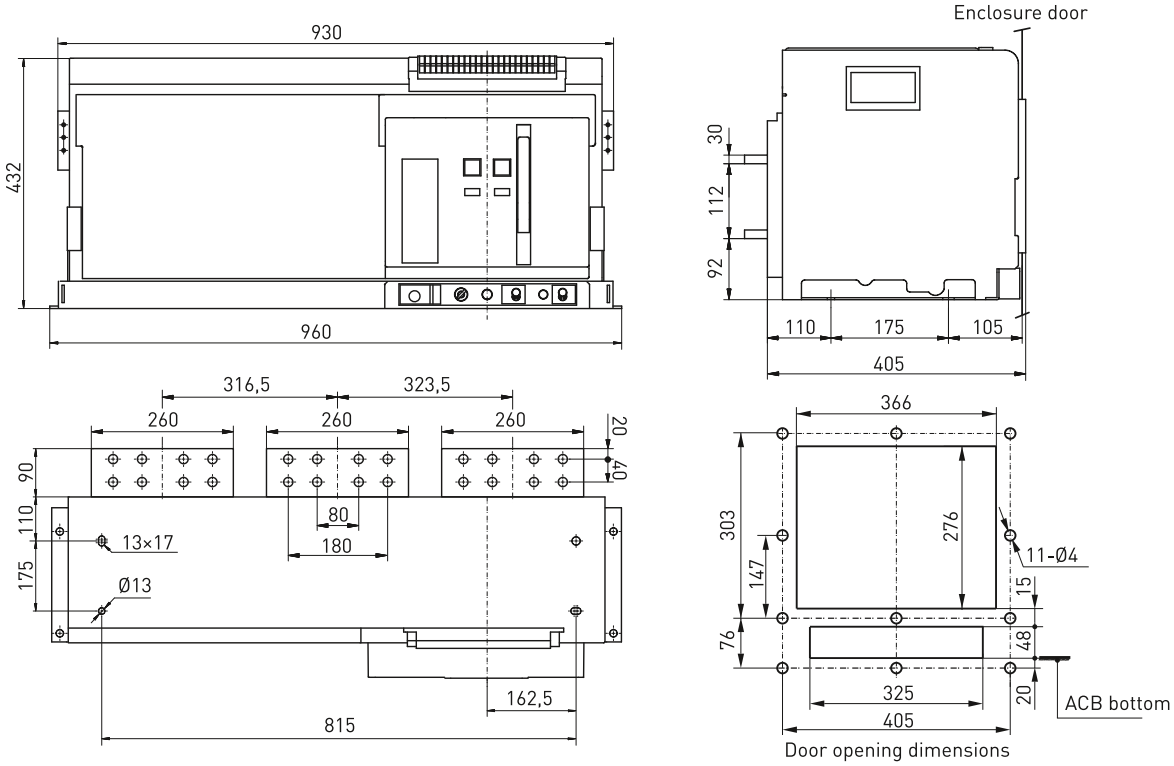


VA-45/5000 withdrawable



In	a, mm
4000 A	20
5000 A	30

VA-45/6300 withdrawable



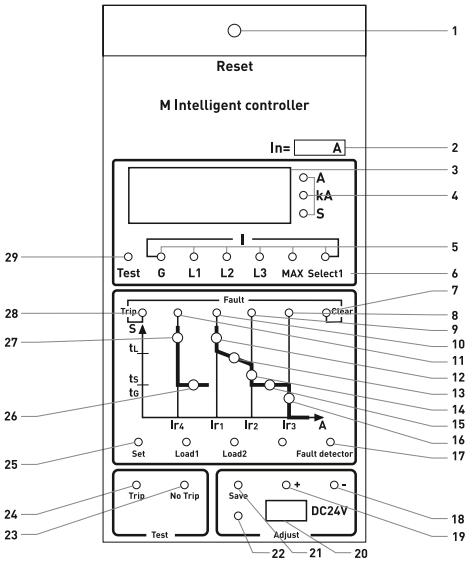
Installation and operation

Ambient temperature: from -5 to +50 °C.
Attitude above sea level without derating: max. 2000 m.
Relative humidity: max. 50% at max. ambient temperature. Do not operate the circuit breaker in explosive environments, or environments where conductive dust and gases may corrode metals and destroy insulation.
The circuit breaker shall be mounted on a horizontal metal platform or frame with max. tolerance of 5° to either side.
Degree of ingress protection: IP30; If installed in a compatible enclosure: IP40.
Before installation, make sure the technical characteristics on the nameplate correspond to the ordered specifications.

Microprocessor control and protection units

Microprocessor units enable control of the ACB behavior in overload and short circuit conditions, handle data conversion and transmission to displays and remote sensing systems.

Electronic control unit



1. Indicator/button for auto overcurrent tripping and ACB reclose authorization.
2. Rated current
3. Display for current, breaking current, tripping time delay
4. Current and time LEDs
5. LEDs for three-phase current, max. current, neutral, and ground fault currents
6. Displayed value selector
7. Signal clear LED
8. Current threshold LED
9. Short-term overload protection LED
10. Long-term overload protection LED
11. Protective earthing LED
12. Alarm LED for long-term overload current setpoint
13. Alarm LED for long-term overload time setpoint
14. Alarm LED for short-term overload current setpoint
15. Alarm LED for short-term overload time setpoint
16. Alarm LED for current threshold
17. Fault detector (fault check) button
18. Setpoint decrease button
19. Setpoint increase button
20. Power socket (24V DC) for tester
21. Save button
22. Save LED
23. Trip test button
24. No trip test button
25. Protection settings button
26. LED for ground fault delay setpoint
27. LED for ground fault current setpoint (instant alarm)
28. Trip LED
29. Test LED

The electronic control unit is a separate device, mounted into the ACB frame, that directly actuates the tripping shaft of the circuit breaker when operated.
The electronic control unit is compatible with the ACB VA-45 to protect distribution networks, electric motors and generators, electric lines and equipment from overcurrent, short circuit and ground fault.
The electronic control unit features an MCU (microcontroller) to process and monitor current signals. The ECU offers a number of outputs to enable remote monitoring and alarm, as well as local digital and light indication of ACB operating parameters. It features three-step protection and a ground fault protection. The control unit complies with IEC 60947-2.

Parameter setting
With buttons "Set", "+", "-" and "Save", you can set various ECU parameters as follows:
1. Press and hold the "Set" button to view all controller setpoints. For each selected parameter, the default value is displayed as the relevant yellow LED lights up. If no setpoint adjustment is required, keep holding the "Set" button to cycle through the setpoints.
2. To change the default value, use "+" & "-" buttons. Press the unnamed button to the left of the "Fault detector" button to change the displayed decimal size of the selected value. Repeat this operations until the desired setpoint has been selected.
3. Press the "Save" button to save the setpoint.
4. Proceed to step 1 to adjust other setpoints.

Tripping with set delay
The ACB trips after a time delay. If an inverse time delay is selected, the ACB will trip after a predetermined time delay, inversely proportional to the value of the current (the higher the current, the shorter the time delay). For instantaneous tripping, if no time delay was set manually, the ACB trips instantly.

Thermal memory
Repeated overloads can cause the wires to heat up. In the event of an overload, active short delay or any other fault, the controller will trip with a selected time delay. This activates the thermal memory function. The memory will persist for 30 minutes or, if a short delay is active, for 15 minutes. A repeat overload or short delay activation during the thermal memory period will cause the ACB to trip with a shorter time delay. When the controller is powered down, the thermal memory will automatically reset. This function can be disabled.

Short delay
Short delay function has two operating modes: 1 - Time delay mode. In this mode, if the fault current exceeds the selected short delay current value, the controller trips the ACB after the selected time delay, disregarding the value of the passing current. Mode 2: Time delay + Inverse time delay mode. For lower values of the current ($Ir2 \leqslant I < 8Ir1$), the protection follows the inverse time delay mode: the squre of the time delay is inversely proportional to the square of the current. The higher the current, the shorter the delay. If the value of the current is high ($I > Ir2$ & $I \geqslant 8Ir1$), the regular time delay mode is used.

Self-diagnostics
The self-diagnostic function of the electronic control unit is primarily used to monitor the environment and to protect the ECU. The signal contact of the device shall be connected in parallel with the ACB auxiliary contacts (normally open). When the controller is not powered up, these contacts are normally closed, when the controller is operating under normal conditions, they are normally open. If self-diagnostics fails, the contacts close.

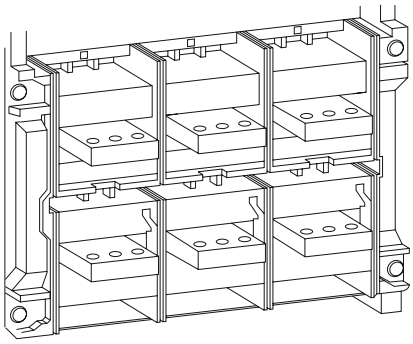
Ambient temperature control
If the ambient temperature exceeds 80 ± 5°C, the symbol "E" lights up on the controller and an alarm signal is sent. For MCU or E2PROM failure, the symbol "E2" lights up and an alarm signal is sent. If the ACB fails to trip by the remote signal, sent to the controller, the controller will make a second attempt to trip the ACB. If the ACB fails to trip after the second attempt, the symbol "E3" lights up and an alarm signal is sent.
Power supply control
If the MCU operating power supply fails while the controller is in closed-loop operation, an alarm signal is sent.

Ammeter function
Under normal operating conditions, the controller displays max. phase current. For example, if the "L2" and "MAX" LEDs are lit up, this indicates that the B phase current is the highest. Press the "Select" button (Select1) to display max. values of phases A, B, C, ground, and the third phase in sequence and their LEDs flashing in a corresponding sequence. If the controller is in trip delay mode, all buttons will be blocked and will not respond to input. If the controller is in alarm mode, these buttons will be active.

Testing
Testing and maintenance are available for "Operation" and "Test" states. You can test closing, delayed trip, short delay, and instantaneous tripping. Tests are divided into two types: with and without tripping. If a short curcuit or overload are detected during a test, the ACB will automatically switch from the testing mode to the time delay trip mode

Status and trip cause indication
After the control unit sends a trip signal, the information on the ACB trip event is shown on the controller display (by default, if no buttons have been pressed, the display will show the trip delay time). Press the "Select" button (Select1) to view the tripping current and trip time with LEDs indicating the displayed parameter. Press the "Reset" button to exit the parameter display mode and return to the operating mode. If during regular operation you need to check the previous tripping conditions, press the "Fault detector" button and repeat the above steps.

Connection



The ACB outputs are located on the rear. Busbars used to connect the ACB to the circuit must be horizontal.

Accessories
The ACB can be equipped with auxiliary contacts, shunt and undervoltage releases, motor mechanism, etc.

Delivery scope

1. Air circuit breaker VA-45 (complete with all ordered accessories).
- Auxiliary contacts, four switching contacts
- Undervoltage release (for v2 - only on order)
- Shunt release
- Closing release
- Motor mechanism
2. Mounting kit
3. Technical manual

Auxiliaries

1. Interphase barriers
2. Sealable protective cover
3. Panel frame
4. Panel cover IP54
5. Undervoltage release with configurable time delay
6. Flexible cable interlock*
7. Rigid tie rod interlock*

* Only for withdrawable versions.

Picture	Name	Rated current In, A	Item code
Fixed			
	VA-45/2000 630 A EKF	630	mccb45-2000-630-v2
	VA-45/2000 800 A EKF	800	mccb45-2000-800-v2
	VA-45/2000 1000 A EKF	1000	mccb45-2000-1000-v2
	VA-45/2000 1250 A EKF	1250	mccb45-2000-1250-v2
	VA-45/2000 1600 A EKF	1600	mccb45-2000-1600-v2
	VA-45/2000 2000 A EKF	2000	mccb45-2000-2000-v2
	VA-45/3200 2000 A EKF	2000	mccb45-3200-2000-v2
	VA-45/3200 2500 A EKF	2500	mccb45-3200-2500-v2
	VA-45/3200 3200 A EKF	3200	mccb45-3200-3200-v2
Withdrawable			
	VA-45/2000 630 A EKF	630	mccb45-2000-630v-v2
	VA-45/2000 800 A EKF	800	mccb45-2000-800v-v2
	VA-45/2000 1000 A EKF	1000	mccb45-2000-1000v-v2
	VA-45/2000 1250 A EKF	1250	mccb45-2000-1250v-v2
	VA-45/2000 1600 A EKF	1600	mccb45-2000-1600v-v2
	VA-45/2000 2000 A EKF	2000	mccb45-2000-2000v-v2
	VA-45/3200 2000 A EKF	2000	mccb45-3200-2000v-v2
	VA-45/3200 2500 A EKF	2500	mccb45-3200-2500v-v2
	VA-45/3200 3200 A EKF	3200	mccb45-3200-3200v-v2
	VA-45/4000 3200 A EKF	3200	mccb45-4000-3200v-v2
	VA-45/4000 4000 A EKF	4000	mccb45-4000-4000v-v2
	VA-45/5000 3200 A EKF	3200	mccb45-5000-3200v-v2
	VA-45/5000 5000 A EKF	5000	mccb45-5000-5000v-v2
	VA-45/6300 6300 A EKF	6300	mccb45-6300-6300v-v2

Mechanical interlock

The mechanical interlock is designed to prevent simultaneous tripping of air circuit breakers VA-45 EKF in backup power supply systems. The mechanical interlock of two circuit breakers can be performed by rigid rods or flexible cables. When mechanical interlock of two circuit breakers with rods is used, the circuit breakers are placed one above the other. When mechanical interlock with cables is used, the circuit breakers can be installed either side by side or one above the other.

Picture	Name	Version	Item code
	Mechanical interlock of two VA-45 EKF*	Rigid tie rod	mbk-va-45
	Mechanical interlock of two VA-45 EKF*	Flexible cables	mbkt-va-45

* Only for withdrawable versions

Flexible cable interlock

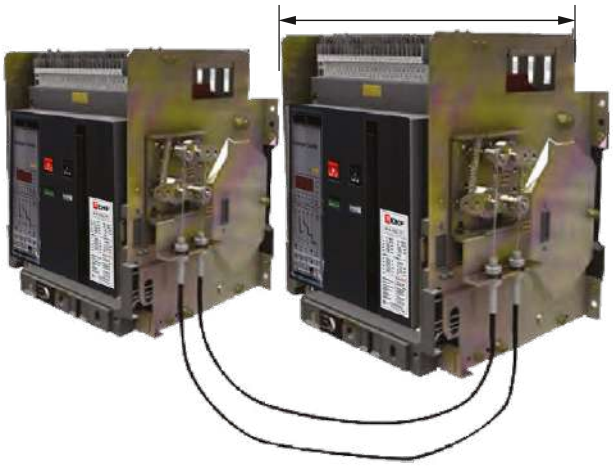
This type of interlock is used for vertically (one above the other) or horizontally installed three- and four-pole fixed versions.

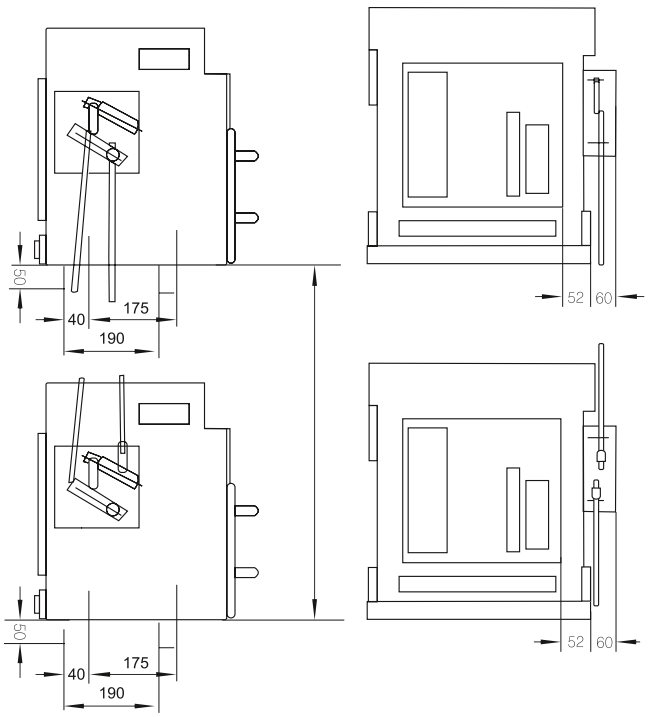
Rigid tie rod interlock

This type of interlock is used for vertically installed three- and four-pole fixed versions.

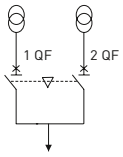
Installation and operation

1. Position the cables until the angle between them is greater than 120°.
2. Lubricate the cables with oil.
3. Max. distance between ACBs shall not exceed 2 m.





Wiring diagrams



1 QF	2 QF
0	0
0	1
1	0

Accessories for VA-45 EKF

Access lock for control push-buttons

The access cover for control push-buttons is used to prevent manual switching of the air circuit breaker VA-45 EKF. The frame is installed on the front panel. The transparent cover blocks access to both buttons. Access can be controlled with a padlock or an anti-tamper seal.

Picture	Name	Item code
	Access lock for control push-buttons	bk-va45

Undervoltage release

The undervoltage release trips the ACB if the input voltage drops to 70% of the rated value, and prevents the ACB from resetting if the circuit voltage is less than 85% of the rated value. The main purpose of the undervoltage release is to disconnect electrical equipment in case of undervoltage.

Picture	Name	Operating voltage, V	Operate voltage	Hold voltage	Breaking voltage	Item code
	Undervoltage release 230V 50/60Hz for VA-45	230V, 50/60Hz	(0,85 - 1,1) Ue	(0,7 - 1,1) Ue	<0,7Ue	acb-45-uvr-230

Closing/opening releases

Closing/opening releases are used for ACB VA-45 remote control.

Picture	Name	Operating voltage, V	Operate voltage	Hold voltage	Breaking voltage	Item code
	Closing release VA-45 230V EKF	230V, 50/60Hz	(0,85 - 1,1) Ue	(0,7 - 1,1) Ue	<0,7Ue	acb-45-kv-230
	Opening release VA-45 230V EKF					acb-45-k-230

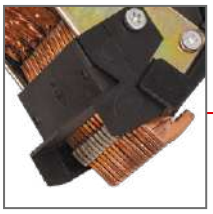
Air circuit breakers VA-450 EKF

The air circuit breakers VA-450 EKF with microprocessor control and rated current between 200 and 1600A are designed for protection AC LV (up to 690V) power circuits against short circuit and overload, including delayed trip functionality (selective type); infrequent manual local or remote switching of electrical circuits; isolation of circuits in the event of undervoltage or power supply interruption.

Standard: IEC/EN 60947-2

Most compact design

Single size frame for all rated currents

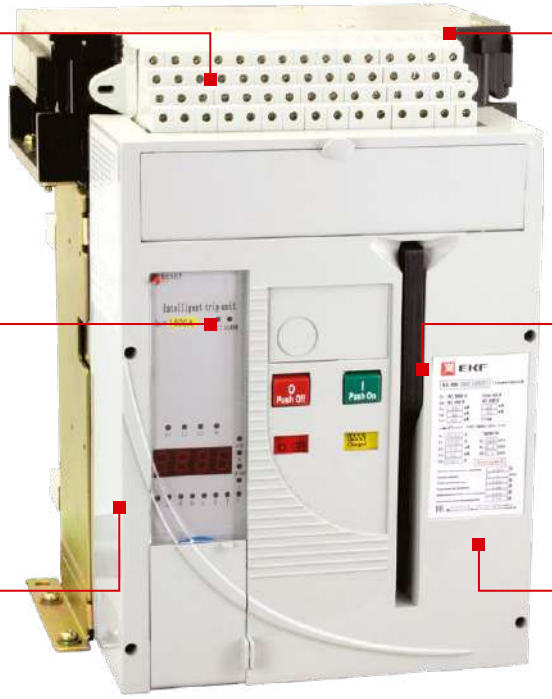


High electrical endurance

Horizontal outputs

Withdrawable and fixed versions

Copper and aluminum wire connections supported



APPLICATION

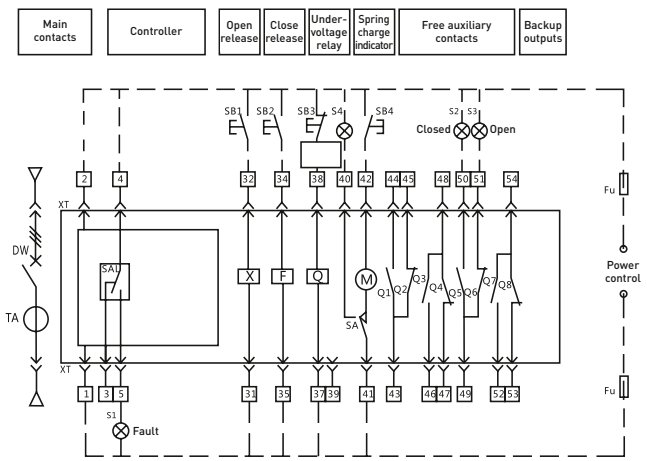
ACBs VA-450 are used in residential buildings, commercial facilities and industrial applications:

- protection of electric motor circuits;
- protection of downstream equipment, switchboards and distribution panels;
- switching component of backup power supply systems;
- electrical circuit isolation and partitioning (three ACBs);
- protection of outgoing lines on the consumer side of 10/0,4 kV transformer substation;
- Versions with 630A (and lower) rated current can be used for protection of asynchronous 50/60Hz 400V motors against overload, short circuit, phase loss and ground faults.

TECHNICAL DATA

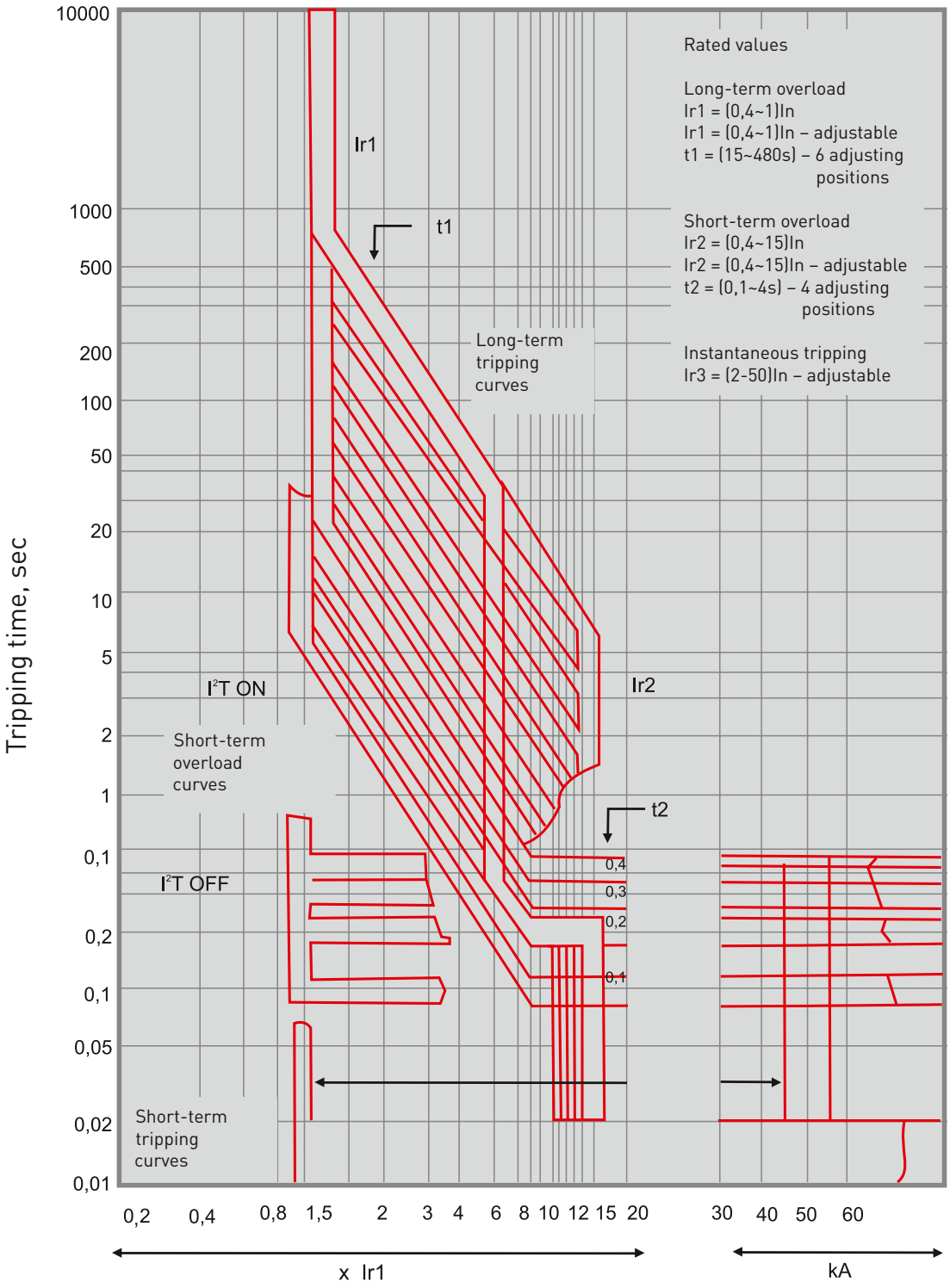
Wiring diagrams

Secondary and control circuits of the ACB VA-450 EKF



Tripping characteristics

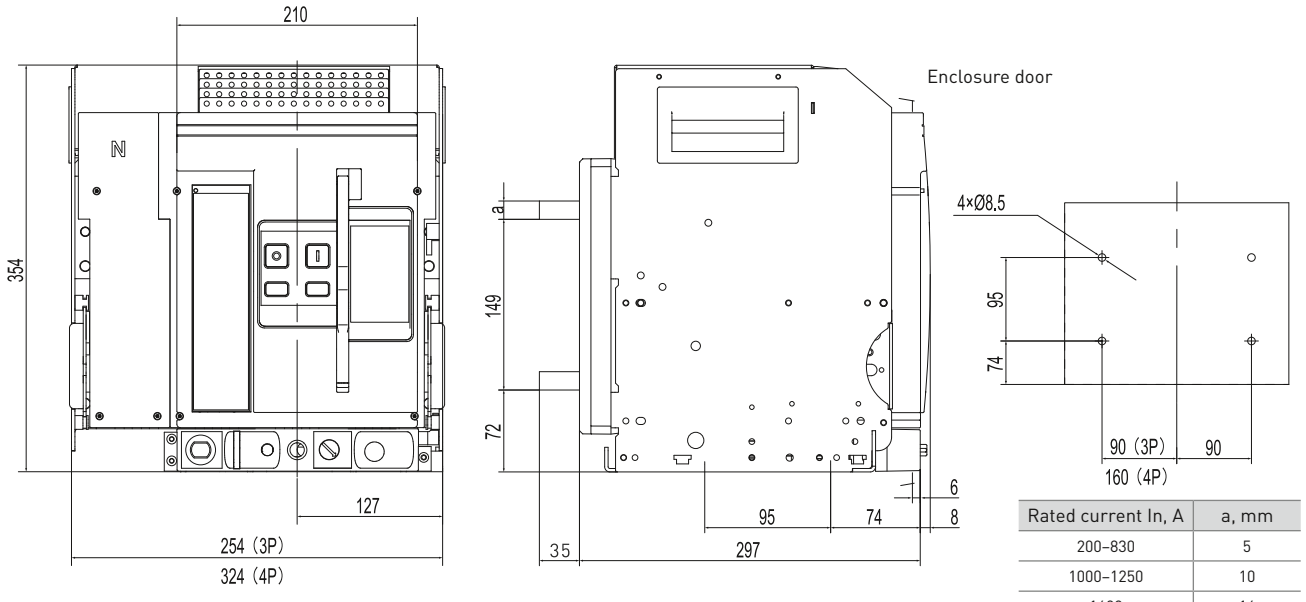
Ambient temperature derating factor
The ACB can continuously carry rated current at ambient temperature of max. +50 °C.
Once the air temperature is above this value, reduce the continuous current carrying capacity in accordance with the derating diagram.



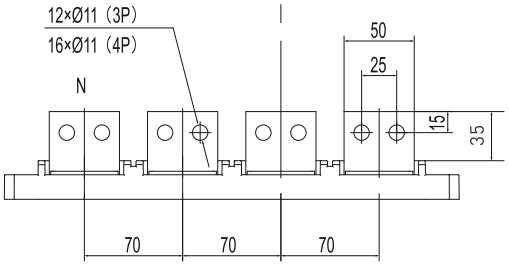
Parameters		VA-450 1000	
Number of poles		3P (standard) / 4P (on order)	
Rated current In, A		200, 400, 630, 800, 1000, 1250, 1600	
Rated insulation voltage Ui, V AC		1000	
Rated impulse withstand voltage Uimp, kV		8	
Rated operating voltage Ue, V V AC		415 / 690	
Ultimate short-circuit breaking capacity Icu, kA	AC415 V	65	
	AC690 V	50	
Service short-circuit breaking capacity Ics, kA	AC415 V	65	
	AC690 V	50	
Rated short-time withstand current Icw, kA	AC415 V	50	
	AC690 V	42	
Trip unit		Microprocessor	
Utilization category		B	
Endurance, cycles (without maintenance)	Mechanical	15 000	
	Electrical	6000	
Version		Fixed	Withdrawable
Dimensions, mm	W (3P/4P)	269/339	254/324
	D	231	332
	H	324	354

Overall and installation dimensions

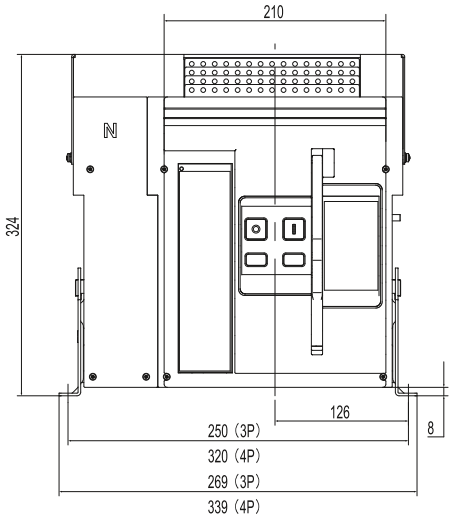
VA-450 1600 withdrawable

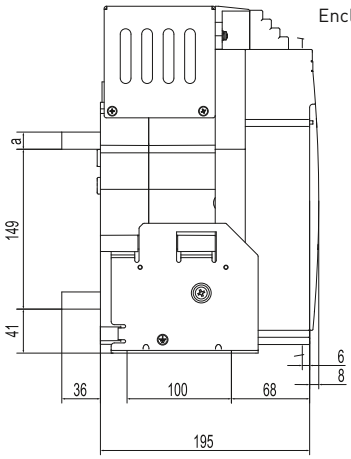


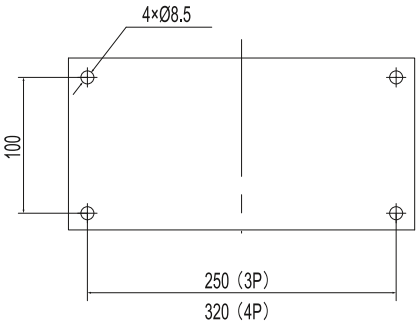
Rated current In, A	a, mm
200–830	5
1000–1250	10
1600	16



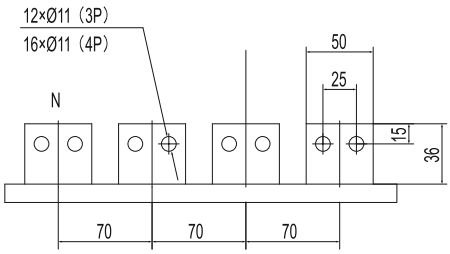
VA-450 1600 fixed







Rated current In, A	a, mm
200–830	5
1000–1250	10
1600	16



Delivery scope

1. Air circuit breakers VA-450 (complete with all ordered accessories).
- open release
- close release
- Motor mechanism
- Undervoltage release (for v2 - only on order)
- Auxiliary contacts – 4 pcs.
2. Mounting and connection kit
3. Technical manual

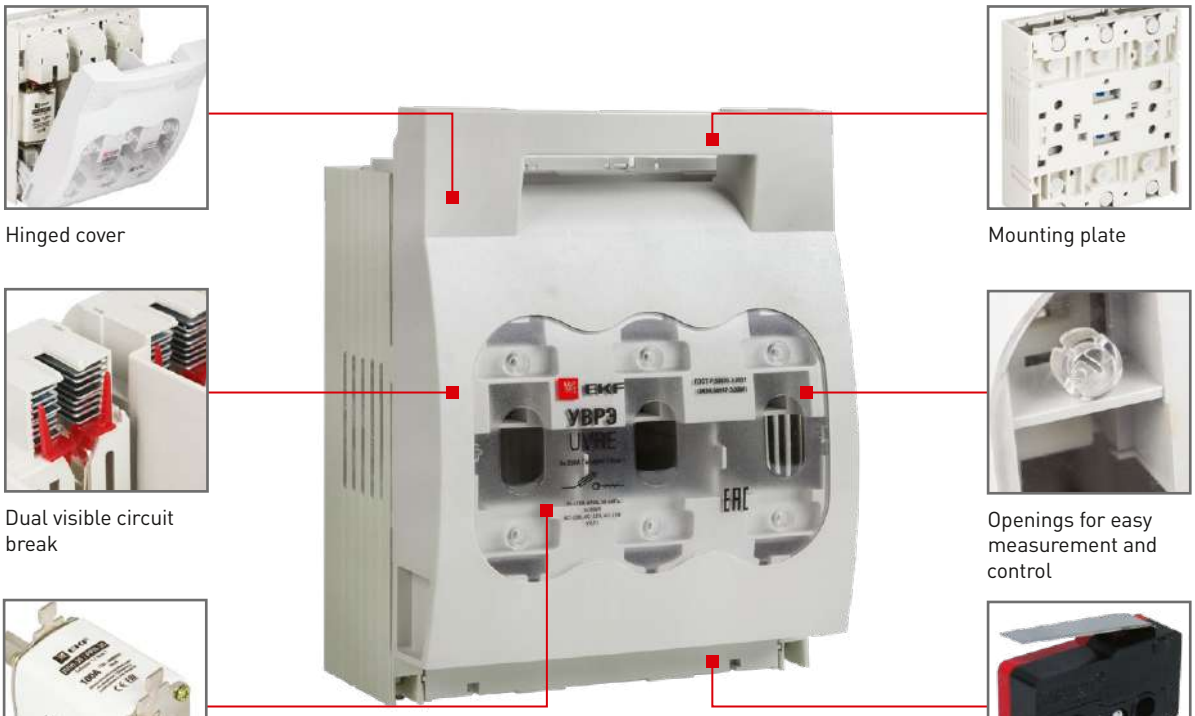
Picture	Name	Rated current In, A	Item code
Fixed			
	VA-450 1600/ 200A 3P 55kA fixed EKF	200	mccb450-1600-200-v2
	VA-450 1600/ 400A 3P 55kA fixed EKF	400	mccb450-1600-400-v2
	VA-450 1600/ 630A 3P 55kA fixed EKF	630	mccb450-1600-630-v2
	VA-450 1600/800A 3P 55kA fixed EKF	800	mccb450-1600-800-v2
	VA-450 1600/1000A 3P 55kA fixed EKF	1000	mccb450-1600-1000-v2
	VA-450 1600/1250A 3P 55kA fixed EKF	1250	mccb450-1600-1250-v2
	VA-450 1600/1600A 3P 55kA fixed EKF	1600	mccb450-1600-1600-v2
Withdrawable			
	VA-450 1600/ 200A 3P 55kA withdrawable EKF	200	mccb450-1600-200v-v2
	VA-450 1600/ 400A 3P 55kA withdrawable EKF	400	mccb450-1600-400v-v2
	VA-450 1600/ 630A 3P 55kA withdrawable EKF	630	mccb450-1600-630v-v2
	VA-450 1600/800A 3P 55kA withdrawable EKF	800	mccb450-1600-800v-v2
	VA-450 1600/1000A 3P 55kA withdrawable EKF	1000	mccb450-1600-1000v-v2
	VA-450 1600/1250A 3P 55kA withdrawable EKF	1250	mccb450-1600-1250v-v2
	VA-450 1600/1600A 3P 55kA withdrawable EKF	1600	mccb450-1600-1600v-v2

Switch Disconnectors, ATS & Fuses

Fuse switch disconnectors UVRE EKF

Fuse switch disconnectors UVRE for fuse links EKF are designed to manually close/open and protect 50/60 Hz AC circuits with rated voltage up to 690V against short circuit and overload (fuses sold separately) and are installed in distribution enclosures and control cabinets.
Visible circuit break is ensured with hinged cover equipped with fuse holders. When the cover is opened, the circuit is disconnected (the first break - in the top part). Moreover, hinged cover protects users from direct contact with live parts.
The UVRE consists of a three-pole base with fuse terminals, made of glass-fiber reinforced non-flammable polyamide, two terminal covers (the top cover has arc chutes, except for the UVRE 160A), and a hinged cover with fuse holders. The cover has openings for measuring voltage and other parameters with a probe.
The UVRE is mounted onto mounting plates. The contact terminals can be connected to busbars with bolts or to wires with cable lugs. The terminals are made of corrosion-resistant coated copper.
Optionally, switch disconnectors can be fitted with electromechanical auxiliary contact NO+NC. Copper and aluminum wire connections are supported.

Standard: IEC/EN 60947-3



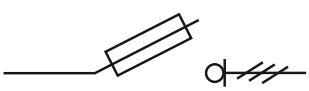
APPLICATION

Switch disconnectors are designed for manual circuit switching:
- distribution enclosures;
- switchboards;
- control rooms.

TECHNICAL DATA

Wiring diagrams

Fuse switch disconnector UVRE EKF

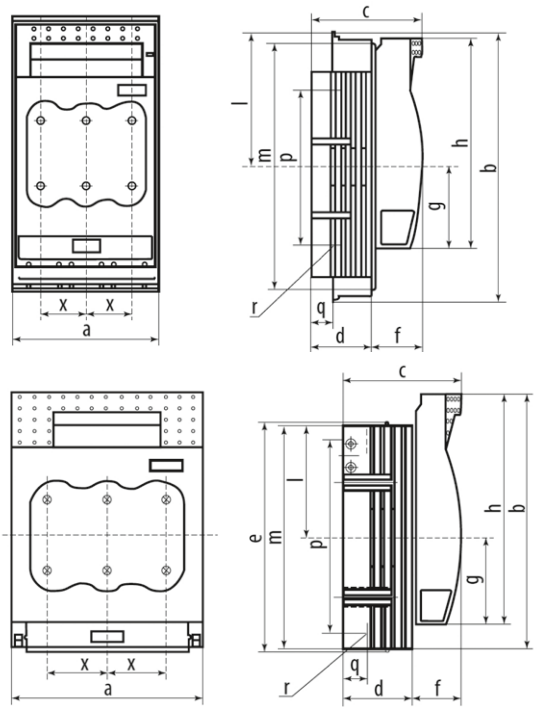


Installation and operation

The circuit cannot be completed if the fuses are not installed. A functioning fuse is required for proper operation of the switch disconnector.
To install switch disconnector:
- Open the cover to the maximum angle and slide it upwards.
- Turn the locks of the terminal covers by 90°.
- Pull out top and bottom terminal covers.
- Mark and drill out the holes in the mounting plates, mount the base.
- Connect busbars or wires.
- Reassemble the switch disconnector in reverse order.
- Insert the fuses into the hinged cover and lock them in place with holder clips.

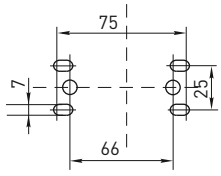
Parameters	Values			
Conventional thermal current Ith, A	160	250	400	630
Type (size) of fuse link	NH (PPN-33) size 0	NH(PPN-35) size 1	NH(PPN-37) size 2	NH (PPN-39) size 3
Maximum rated voltage Ue, V	690			
Rated frequency, Hz	50 - 60			
Maximum impulse withstand voltage Uimp, kV	6			
Rated insulation voltage Ui, V	800			
Maximum short-circuit current with fuses, kA	50			
Fuse power dissipation per 1 pole, W	12	23	34	48
Utilization category	AC-23B (400 V); AC-23B (500 V, 125 A); AC-22B (690 V); AC-21B (690 V)	AC-23B (400 V); AC-22B (690 V); AC-21B (690 V)	AC-23B (400 V); AC-22B (690 V); AC-21B (690 V)	AC-23B (400 V); AC-22B (690 V); AC-21B (690 V)
Busbar and wire connection	M8 bolt	M10 bolt	M10 bolt	M12 bolt
Cross-section of connected wires, mm^2	70	120	240	240
Min. mechanical endurance, O-C cycles	1400	1400	800	800
Degree of protection	IP30			
Number of poles	3P			
Operating temperature, °C	- 25 to + 50			
Altitude above sea level, m	max. 2000			
Min. service life, years	10			

Overall and installation dimensions

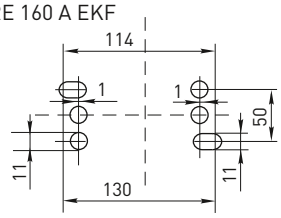


Model	Dimensions, mm													
	a	b	c	d	e	f	g	h	l	m	p	q	r	x
UVRE 160A	106	200	82,5	45	220	37	60	155	100	181	115	17	M8	33
UVRE 250 A	184	243	111,5	66		45,5	84	220	107	214,5	185	21,5	M10	57
UVRE 400 A	210	288	128	80		48	92	249	124	255	210	25	M10	65
UVRE 630 A	256	300	142,5	94,5		48	98,5	259	127,5	267	210	30	M12	81

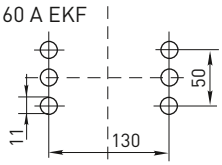
UVRE 160 A EKF



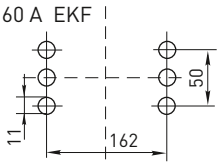
UVRE 250A EKF
UVRE 160 A EKF



UVRE 400A EKF
UVRE 160 A EKF



UVRE 630A EKF
UVRE 160 A EKF



Delivery scope

1. Switch disconnector UVRE EKF
2. Technical manual

Fuses and auxiliary contacts are not included in the delivery scope and shall be ordered separately.

Name	Rated current, A	Size of fuse link	Item code
Fuse switch disconnector UVRE 160A for fuse link NH size 00 EKF	160	00	uvre-160
Fuse switch disconnector UVRE 250A for fuse link NH size 1 EKF	250	1	uvre-250
Fuse switch disconnector UVRE 400A for fuse link NH size 2 EKF	400	2	uvre-400
Fuse switch disconnector UVRE 630A for fuse link NH size 3 EKF	630	3	uvre-630

Accessories

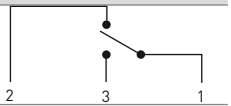
Auxiliary contact NO+NC can be mounted onto UVRE 160A (1 pc.) and UVRE 250-630A (1 or 2 pcs.). To install the contact, remove the front and top terminal covers. Install the contacts to the left/right side of the housing onto the two pins. The contacts indicate position of the hinged cover (contact status). The auxiliary contact has three outputs: C (common), NC and NO. The outputs are connected using insulated female spade connectors and 1,5mm^2 wires. Connectors (3 pcs.) are included in the kit.

Delivery scope

1. Auxiliary contact.
2. Mounting kit.
3. Connectors.

For all available documentation, scan the QR-code on the insert or on the inside of the package

TECHNICAL DATA

Parameters	Values	Wiring diagram
Rated AC voltage, V	125 / 240	
Rated operating current, A	5 / 3	
Cross-section of connected wires, mm^2	1,0 ... 1,5	

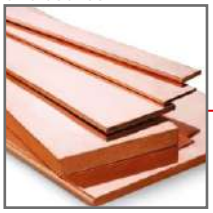
Picture	Name	Item code
	Auxiliary contact NO+NC for fuse switch disconnector UVRE EKF	vre-a-02

Strip type fuse switch disconnectors UVRE EKF

The strip type fuse switch disconnectors UVRE for fuse links are designed for manual switching and protection of the 50 / 60 Hz AC circuits with rated voltage up to 690V against short circuit and overload and are installed in lead-in distribution panels and low-voltage switchboards of transformer substations.
URVE are available both in individual and three-pole synchronous switching versions. In the OFF position, the strip type fuse switch disconnectors UVRE provide visible double circuit break to ensure safe maintenance. With their advanced design, the switch disconnectors are more compact than the previous versions.

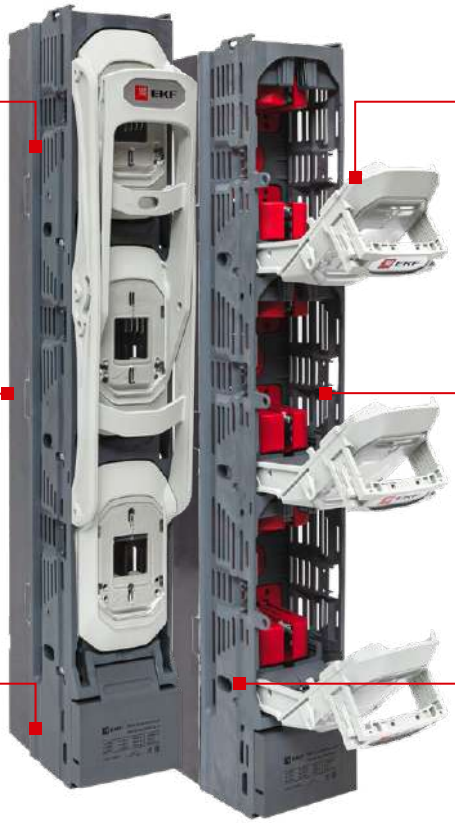
Standard: IEC/EN 60947-3

Vertical installation, can utilize smaller enclosures

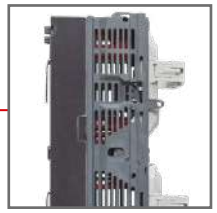


Busbars for easier connection

Safe and easy direct installation to busbar with dovetail terminals



Visible double circuit break when opened



Fully enclosed housing for safer operation

Copper and aluminum connections supported

APPLICATION

Switch disconnectors are used for manual circuit switching:

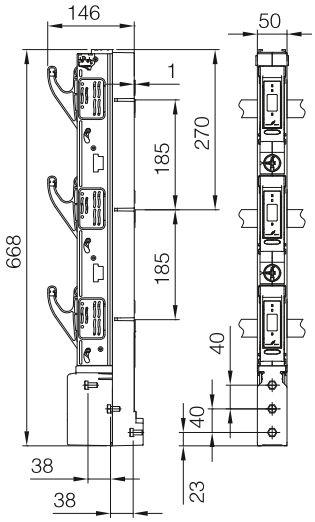
- distribution enclosures;
- switchboards;
- control rooms.

TECHNICAL DATA

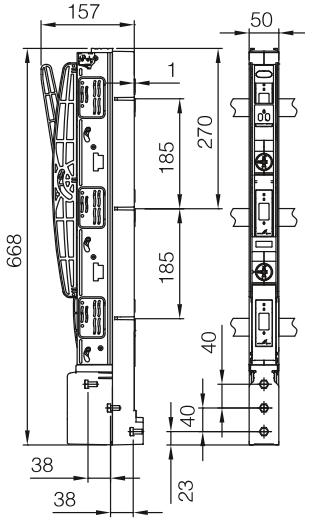
Parameters	Values											
	UVRE strip type (size 00)			UVRE strip type (size 1)			UVRE strip type (size 2)			UVRE strip type (size 3)		
Rated operating voltage Ue, V AC	415	500	690	415	500	690	415	500	690	415	500	690
Rated thermal current Ith, A	160	125	100	250	250	200	400	400	315	630	630	500
Utilization category	AC-23B	AC-23B	AC-22B	AC-23B	AC-22B	AC-21B	AC-23B	AC-22B	AC-21B	AC-23B	AC-22B	AC-21B
Rated conventional short-circuit current, kA	50			100		50	100		50	100		50
Rated insulation voltage Ui, V	100											
Maximum impulse withstand voltage Uimp, kV	8			12			12			12		
Rated frequency, Hz	50 / 60											
Size of fuse link	NH (PPN-33) size 0			NH (PPN-35) size 1			(PPN-37) size 2			NH (PPN-39)		
Power fuse dissipation Pn, W	12			18	23	32	28	34	45	40	48	60
Mechanical endurance, cycles	1400			1400			800	800	1400	800		
Degree of protection	IP30											
Number of poles	3											
Operating temperature, °C	From -5 to +55											
Conductor fastener	M8			M10			M10			M12		
Cross-section of connected wires, mm²	70			240								

Overall and installation dimensions

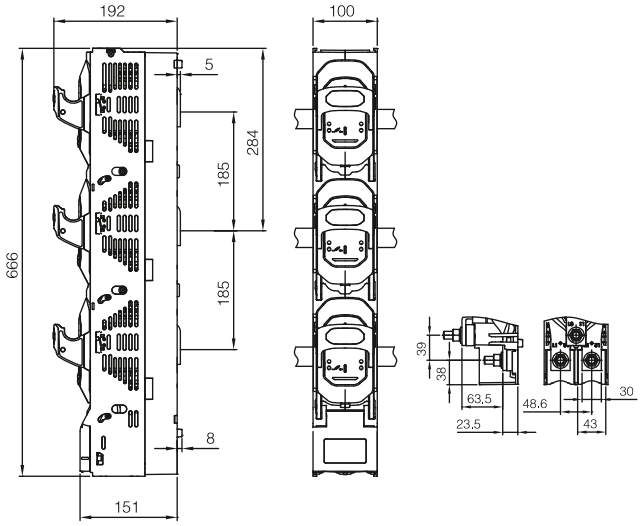
UVRE strip type (size 00) independent



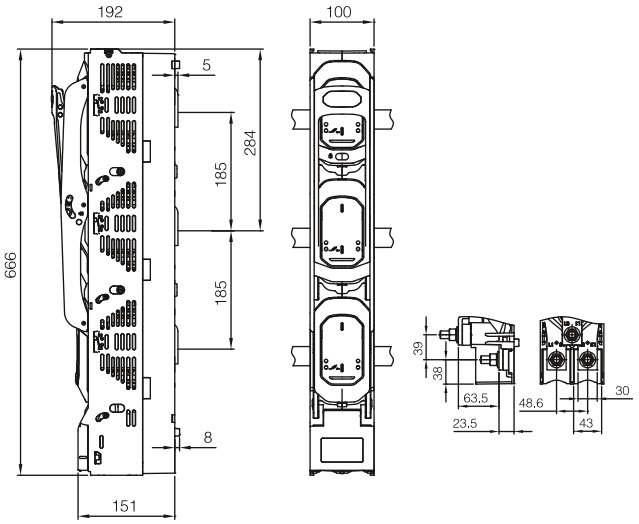
UVRE strip type (size 00) synchronous



UVRE strip type (size 1) independent
UVRE strip type (size 2) independent
UVRE strip type (size 3) independent



UVRE strip type (size 1) synchronous
UVRE strip type (size 2) synchronous
UVRE strip type (size 3) synchronous



Delivery scope

1. Strip type fuse switch disconnector UVRE for fuse link EKF
2. Technical manual

Fuses are not included in the delivery scope and shall be ordered separately.

For all available documentation, scan the QR-code on the insert or on the inside of the package.

Name	Conventional thermal current Ith, A	Type of fuse link	Utilization category	Item code
Strip type fuse switch disconnector UVRE v2 (100mm) 160A synchronous operation for fuse link NH size 00 EKF	160	NH (PPN-33) size 0	AC-23 B, AC-22 B	uvre2-v-160-o
Strip type fuse switch disconnector UVRE v2 (100mm) 160A independent operation for fuse link NH size 00 EKF	160	NH (PPN-33) size 0	AC-23 B, AC-22 B	uvre2-v-160-p
Strip type fuse switch disconnector UVRE v2 (185mm) 250A synchronous operation for fuse link NH size 1 EKF	250	NH (PPN-35) size 1	AC-23 B, AC-22 B, AC-21 B	uvre2-v-250-o
Strip type fuse switch disconnector UVRE v2 (185mm) 250A independent operation for fuse link NH size 1 EKF	250	NH (PPN-35) size 1	AC-23 B, AC-22 B, AC-21 B	uvre2-v-250-p
Strip type fuse switch disconnector UVRE v2 (185mm) 400A synchronous operation for fuse link NH size 2 EKF	400	(PPN-37) size 2	AC-23 B, AC-22 B, AC-21 B	uvre2-v-400-o
Strip type fuse switch disconnector UVRE v2 (185mm) 400A independent operation for fuse link NH size 2 EKF	400	(PPN-37) size 2	AC-23 B, AC-22 B, AC-21 B	uvre2-v-400-p
Strip type fuse switch disconnector UVRE v2 (185mm) 630A synchronous operation for fuse link NH size 3 EKF	630	NH (PPN-39)	AC-23 B, AC-22 B, AC-21 B	uvre2-v-630-o
Strip type fuse switch disconnector UVRE v2 (185mm) 630A independent operation for fuse link NH size 3 EKF	630	NH (PPN-39)	AC-23 B, AC-22 B, AC-21 B	uvre2-v-630-p

Switch disconnectors TwinBlock EKF

Switch disconnectors TwinBlock, designed to carry rated currents and switch electrical circuits with rated voltages up to 690VAC at 50/60 Hz are installed in electrical distribution enclosures. The switch disconnectors are supplied in the following versions:
- Switch disconnectors with pre-installed handle - 40, 63, 80, 100 & 125 A
- Switch disconnectors without handle (handle sold separately) - 160, 200, 250, 315, 400, 630, 800, 1000, 1250 & 1600 A
- Changeover switches with pre-installed handle - 40, 63, 80, 100 & 125 A
- Changeover switches without handle (handle sold separately) - 160, 200, 250, 315, 400, 630 & 800 A

Versions without handle can be complemented by either:
- External pistol handle
- Directly mounted rotary handle

Switch disconnectors TwinBlock 160-800A can be complemented with an extra fourth pole. Copper and aluminum wire connections are supported.

Standard: IEC/EN 60947-3

Handles can be mounted onto the enclosure front panel or directly onto the switch disconnector

Changeover switch versions

Windows on the switch disconnectors for a visible break

Constant switching speed

Safety lockout tab on the handle

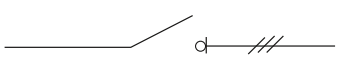
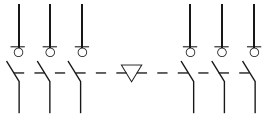
Extra pole option

APPLICATION

TwinBlock switch disconnectors are designed for manual circuit switching:
- distribution enclosures;
- switchboards;
- control cabinets.

TECHNICAL DATA

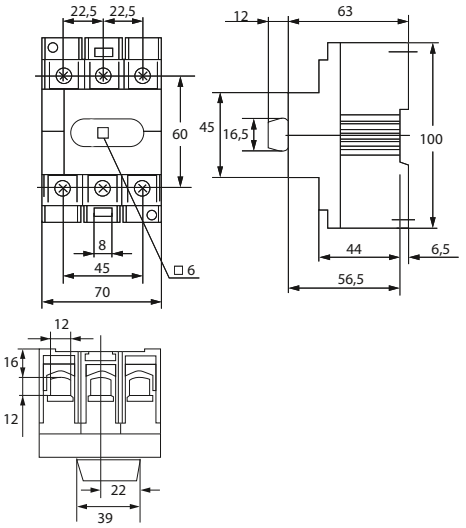
Wiring diagrams

Switch disconnector	Changeover switch
	

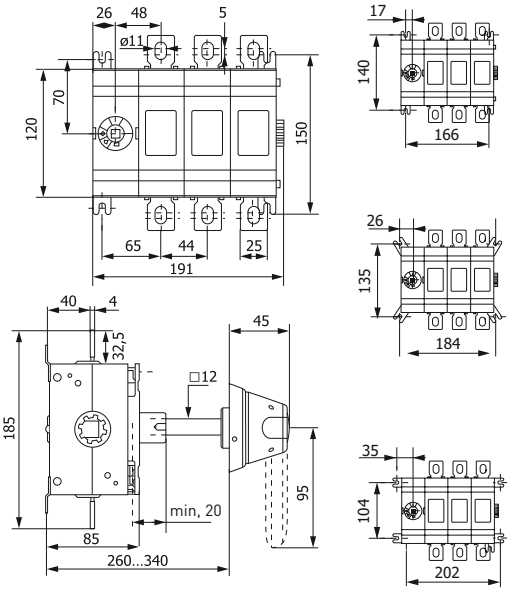
Parameters		Values											
		80	100	160	200	250	315	400	630	800	1000	1250	1600
Rated insulation voltage Ui, V		1000											
Rated AC frequency, Hz		50 / 60											
Rated operating voltage Ue, V	AC	690 / 415											
	DC	440 / 230											
Rated impulse withstand voltage Uimp, kV		12											
Number of poles		3P											
Rated current In, A		80	100	160	200	250	315	400	630	800	1000	1250	1600
Conventional thermal current Ith, A		80	100	160	200	250	315	400	630	800	1000	1250	1600
Maximum cross-section of connected copper wires, mm²		70	70	70	95	120	185	240	2x185	2x240	2x300	2x400	2x500
Rated breaking capacity for Ue=690V, AC-23, A		160	320	640	1600	2000	2520	3200	5040	6400	10 000	10 000	10 000
Rated short-time withstand current (RMS value for Ue=690V, 1s), kA		1,5	2,5	4	8	8	15	15	20	20	50	50	50
Power dissipation/pole, W		4,5	4	6,5	4	6,5	6,5	10	25	40	19	29	48
Tightening torque, N•m		7	7	7	7	7	16	16	27	27	65	65	65
Bolted connection		–	–	M8×25	M8×25	M8×25	M10×30	M10×30	M12×40	M12×40	M12×50	M12×50	M12×60
Mechanical endurance, O-C cycles		10 000	10 000	10 000	10 000	10 000	8000	8000	5000	5000	3000	3000	3000
Weight, kg		0,4	0,4	1,2	1,2	1,2	2,2	2,2	5,1	5,1	14,1	14,1	15,2
Extra pole option		N/A	N/A	Available								N/A	N/A
Degree of protection		IP20											
Operating temperature, °C		From -40 to +50											

Overall and installation dimensions (mm)

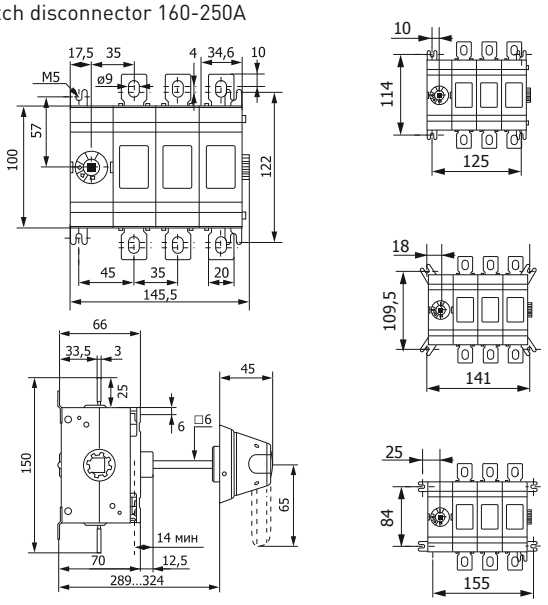
Switch disconnector 40-125 A



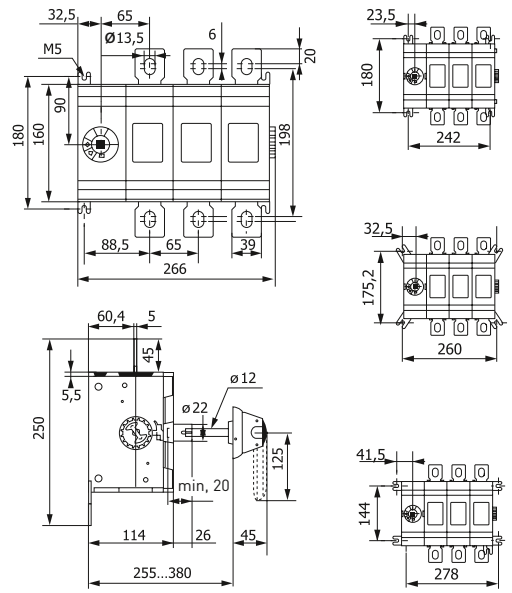
Switch disconnector 315-400 A



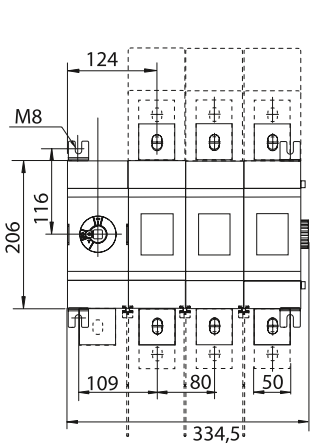
Switch disconnector 160-250A

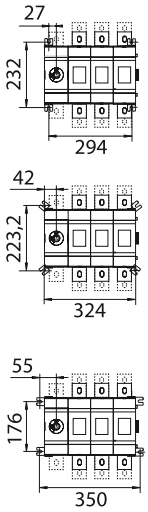


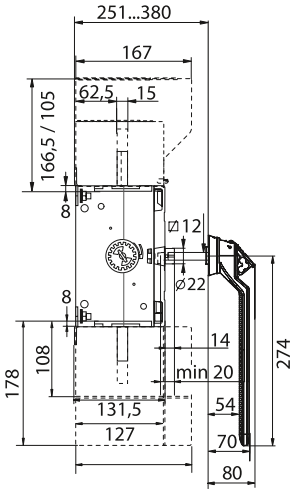
Switch disconnector 600-800 A

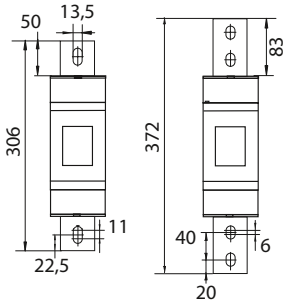


Switch disconnector 1000–1600 A

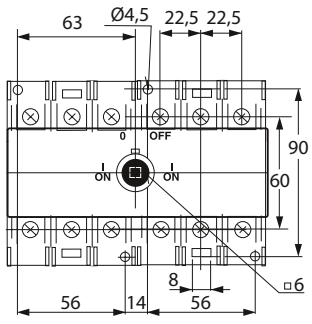


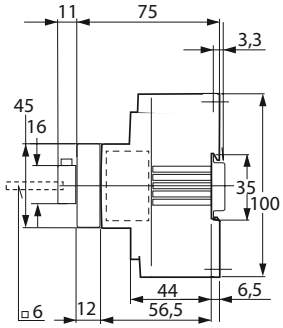


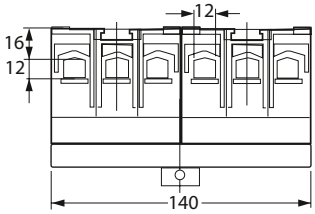




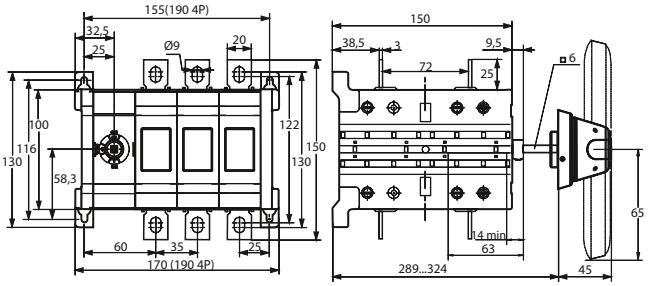
Changeover switch 40-125 A



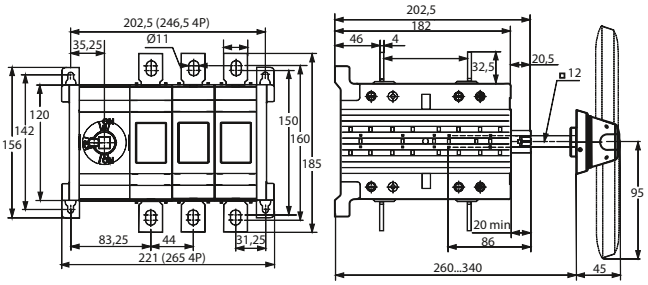




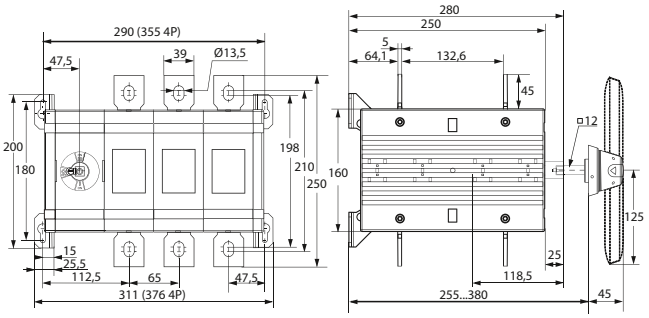
Changeover switch 160-250 A



Changeover switch 315-400 A

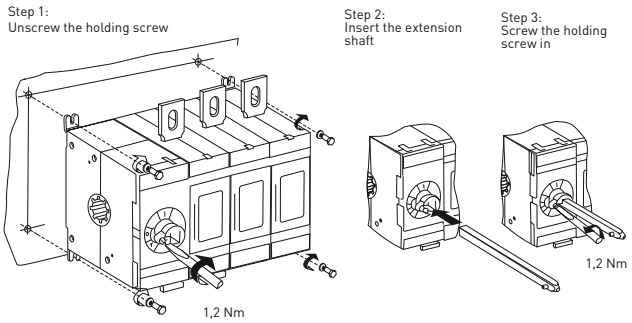


Changeover switch 630-800 A



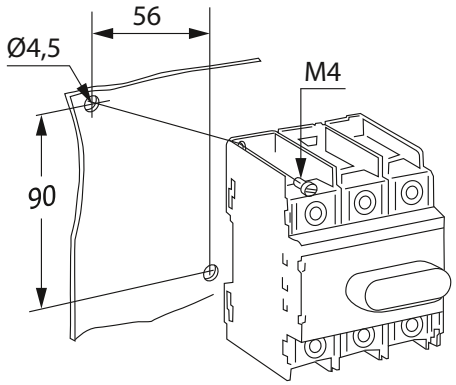
Installation and operation

Switch disconnectors shall be mounted and connected by qualified electrical personnel. Mounting options: DIN rail (for 40-125A only) and mounting plate. Can be mounted either vertically or horizontally.
Before installation, make sure that:
1) the device type meets the intended use requirements
2) the device is not damaged.
Make sure the power is off before installation and maintenance!
Under normal operating conditions, visually inspect the switch disconnectors once a year and after every short-circuit event.
During inspection:
- remove dust and dirt.
- tighten the screws.
- switch the device with disconnected load.
Do not touch terminals or exposed live conductors while operating the device.
Installation of extension shaft

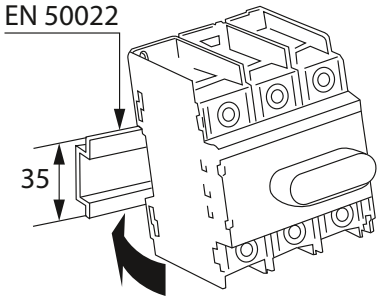


Installation of 40-125A models

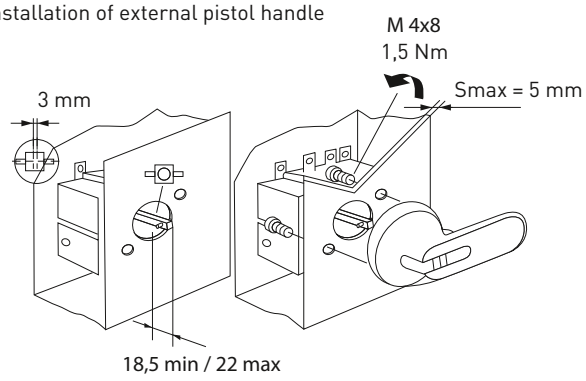
Mounting plate



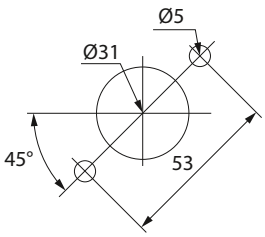
DIN rail



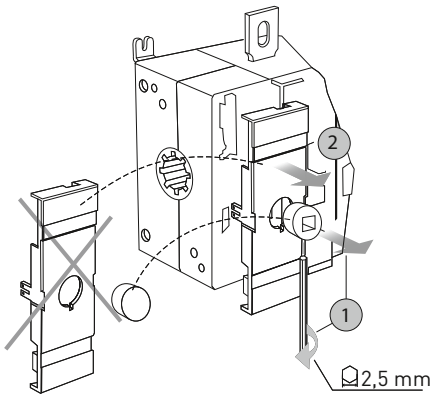
Installation of external pistol handle

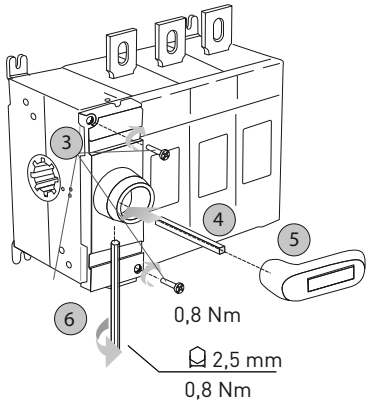


Pistol handle mounting aperture dimensions

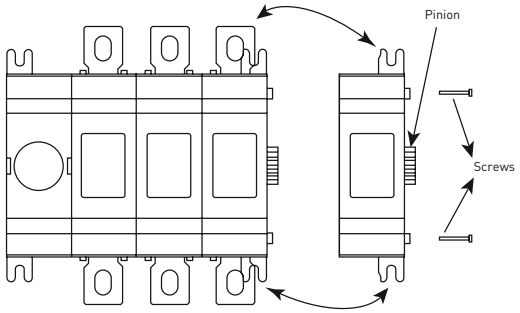


Installation of direct-mount rotary handle





Rearrangement of fasteners to panel



Delivery scope

For all available documentation, scan the QR-code on the insert or on the inside of the package.

Picture	Name	Rated current, A	Item code
	Switch disconnector 40A 3P with directly mounted rotary handle TwinBlock EKF	40	tb-40-3p-f
	Switch disconnector 63A 3P with directly mounted rotary handle TwinBlock EKF	63	tb-63-3p-f
	Switch disconnector 80A 3P with directly mounted rotary handle TwinBlock EKF	80	tb-80-3p-f
	Switch disconnector 100A 3P with directly mounted rotary handle TwinBlock EKF	100	tb-100-3p-f
	Switch disconnector 125A 3P with directly mounted rotary handle TwinBlock EKF	125	tb-125-3p-f
	Changeover switch 40A 3P with directly mounted rotary handle TwinBlock EKF	40	tb-s-40-3p-rev
	Changeover switch 63A 3P with directly mounted rotary handle TwinBlock EKF	63	tb-s-63-3p-rev
	Changeover switch 80A 3P with directly mounted rotary handle TwinBlock EKF	80	tb-s-80-3p-rev
	Changeover switch 100A 3P with directly mounted rotary handle TwinBlock EKF	100	tb-s-100-3p-rev
	Changeover switch 125A 3P with directly mounted rotary handle TwinBlock EKF	125	tb-s-125-3p-rev

Picture	Name	Rated current, A	Item code
	Switch disconnector 160A 3P without handle TwinBlock EKF	160	tb-s-160-3p
	Switch disconnector 200A 3P without handle TwinBlock EKF	200	tb-s-200-3p
	Switch disconnector 250A 3P without handle TwinBlock EKF	250	tb-s-250-3p
	Switch disconnector 315A 3P without handle TwinBlock EKF	315	tb-s-315-3p
	Switch disconnector 400A 3P without handle TwinBlock EKF	400	tb-s-400-3p
	Switch disconnector 630A 3P without handle TwinBlock EKF	630	tb-s-630-3p
	Switch disconnector 800A 3P without handle TwinBlock EKF	800	tb-s-800-3p
	Switch disconnector 1000A 3P without handle TwinBlock EKF	1000	tb-s-1000-3p
	Switch disconnector 1250A 3P without handle TwinBlock EKF	1250	tb-s-1250-3p
	Switch disconnector 1600A 3P without handle TwinBlock EKF	1600	tb-s-1600-3p
	Changeover switch 160A 3P without handle TwinBlock EKF	160	tb-s-160-3p-rev
	Changeover switch 200A 3P without handle TwinBlock EKF	200	tb-s-200-3p-rev
	Changeover switch 250A 3P without handle TwinBlock EKF	250	tb-s-250-3p-rev
	Changeover switch 315A 3P without handle TwinBlock EKF	315	tb-s-315-3p-rev
	Changeover switch 400A 3P without handle TwinBlock EKF	400	tb-s-400-3p-rev
	Changeover switch 630A 3P without handle TwinBlock EKF	630	tb-s-630-3p-rev
	Changeover switch 800A 3P without handle TwinBlock EKF	800	tb-s-800-3p-rev
	Switch disconnector 40A 4P with directly mounted rotary handle TwinBlock EKF	40	tb-40-4p-f
	Switch disconnector 63A 4P with directly mounted rotary handle TwinBlock EKF	63	tb-63-4p-f
	Switch disconnector 80A 4P with directly mounted rotary handle TwinBlock EKF	80	tb-80-4p-f
	Switch disconnector 100A 4P with directly mounted rotary handle TwinBlock EKF	100	tb-100-4p-f
	Switch disconnector 125A 4P with directly mounted rotary handle TwinBlock EKF	125	tb-125-4p-f
	Switch disconnector 160A 4P without handle TwinBlock EKF	160	tb-s-160-4p
	Switch disconnector 200A 4P without handle TwinBlock EKF	200	tb-s-200-4p
	Switch disconnector 250A 4P without handle TwinBlock EKF	250	tb-s-250-4p
	Switch disconnector 315A 4P without handle TwinBlock EKF	315	tb-s-315-4p
	Switch disconnector 400A 4P without handle TwinBlock EKF	400	tb-s-400-4p
	Switch disconnector 630A 4P without handle TwinBlock EKF	630	tb-s-630-4p
	Switch disconnector 800A 4P without handle TwinBlock EKF	800	tb-s-800-4p
	Changeover switch 40A 4P with directly mounted rotary handle TwinBlock EKF	40	tb-s-40-4p-rev
	Changeover switch 63A 4P with directly mounted rotary handle TwinBlock EKF	63	tb-s-63-4p-rev
	Changeover switch 80A 4P with directly mounted rotary handle TwinBlock EKF	80	tb-s-80-4p-rev
	Changeover switch 100A 4P with directly mounted rotary handle TwinBlock EKF	100	tb-s-100-4p-rev
	Changeover switch 125A 4P with directly mounted rotary handle TwinBlock EKF	125	tb-s-125-4p-rev
	Changeover switch 160A 4P without handle TwinBlock EKF	160	tb-s-160-4p-rev
	Changeover switch 200A 4P without handle TwinBlock EKF	200	tb-s-200-4p-rev
	Changeover switch 250A 4P without handle TwinBlock EKF	250	tb-s-250-4p-rev
	Changeover switch 315A 4P without handle TwinBlock EKF	315	tb-s-315-4p-rev
	Changeover switch 400A 4P without handle TwinBlock EKF	400	tb-s-400-4p-rev
	Changeover switch 630A 4P without handle TwinBlock EKF	630	tb-s-630-4p-rev
	Changeover switch 800A 4P without handle TwinBlock EKF	800	tb-s-800-4p-rev
	Additional pole 160A for switch disconnector TwinBlock EKF	160	tb-s-160-dp
	Additional pole 200A for switch disconnector TwinBlock EKF	200	tb-s-200-dp
	Additional pole 250A for switch disconnector TwinBlock EKF	250	tb-s-250-dp
	Additional pole 315A for switch disconnector TwinBlock EKF	315	tb-s-315-dp
	Additional pole 400A for switch disconnector TwinBlock EKF	400	tb-s-400-dp
	Additional pole 630A for switch disconnector TwinBlock EKF	630	tb-s-630-dp
	Additional pole 800A for switch disconnector TwinBlock EKF	800	tb-s-800-dp

Picture	Name	Rated current, A	Item code
	Directly mounted rotary handle for switch disconnectors TwinBlock 160-250A EKF	–	tb-160-250-fh
	Directly mounted rotary handle for switch disconnectors TwinBlock 315-400A EKF	–	tb-315-400-fh
	Directly mounted rotary handle for switch disconnectors TwinBlock 630-800A EKF	–	tb-630-800-fh
	Directly mounted rotary handle for switch disconnectors TwinBlock 1000-1600A EKF	–	tb-1000-1250-fh
	External pistol handle for switch disconnectors TwinBlock 80-100A EKF	–	tb-80-100-dh
	External pistol handle for switch disconnectors TwinBlock 160-250A EKF	–	tb-160-250-dh
	External pistol handle for switch disconnectors TwinBlock 315-400A EKF	–	tb-315-400-dh
	External pistol handle for switch disconnectors TwinBlock 630-800A EKF	–	tb-630-800-dh
	External pistol handle for switch disconnectors TwinBlock 1000-1600A EKF	–	tb-1000-1250-dh
	External pistol handle for changeover switch (I-0-II) TwinBlock 80-250A EKF	–	tb-160-250-dh-rev
	External pistol handle for changeover switch (I-0-II) TwinBlock 315-400A EKF	–	tb-315-400-dh-rev
	External pistol handle for changeover switch (I-0-II) TwinBlock 630-800A EKF	–	tb-630-800-dh-rev
	Directly mounted rotary handle for changeover switches (I-0-II) TwinBlock 160-250A EKF	–	tb-160-250-fh-rev
	Directly mounted rotary handle for changeover switches (I-0-II) TwinBlock 315-400A EKF	–	tb-315-400-fh-rev
	Directly mounted rotary handle for changeover switches (I-0-II) TwinBlock 630-800A EKF	–	tb-630-800-fh-rev
	Extension shaft 280 mm for external pistol handle TwinBlock 80-250A EKF	–	tb-a-1-280
	Extension shaft 280 mm for external pistol handle TwinBlock 315-800A EKF	–	tb-a-2-280
	Extension shaft 280 mm for external pistol handle TwinBlock 1000-1600A EKF	–	tb-a-3-280
	Bridge for changeover switches TwinBlock 160-250A EKF	–	tb-bar-160-250-rev
	Bridge for changeover switches TwinBlock 315-400A EKF	–	tb-bar-315-400-rev
	Bridge for changeover switches TwinBlock 630-800A EKF	–	tb-bar-630-800-rev
	Auxiliary contact for TwinBlock EKF	–	tb-axcontact
	Auxiliary Contact NC for TwinBlock EKF	–	tb-axcontact-nc
	Additional pole 40A for switch disconnector TwinBlock EKF	–	tb-s-40-dp
	Additional pole 63A for switch disconnector TwinBlock EKF	–	tb-s-63-dp
	Additional pole 80A for switch disconnector TwinBlock EKF	–	tb-s-80-dp
	Additional pole 100A for switch disconnector TwinBlock EKF	–	tb-s-100-dp
	Extension shaft 400 mm for external pistol handle TwinBlock 80-250A EKF	–	tb-a-1-400
	Extension shaft 400 mm for external pistol handle TwinBlock 315-800A EKF	–	tb-a-2-400
	Extension shaft 400 mm for external pistol handle TwinBlock 1000-1600A EKF	–	tb-a-3-400
	Extension shaft 520 mm for external pistol handle TwinBlock 80-250A EKF	–	tb-a-1-520
	Extension shaft 520 mm for external pistol handle TwinBlock 315-800A EKF	–	tb-a-2-520
	Extension shaft 520 mm for external pistol handle TwinBlock 1000-1600A EKF	–	tb-a-3-520
	Structural stiffening elements for changeover switches (I-0-II) TwinBlock 160-250A EKF	–	tb-str-160-250-rev
	Structural stiffening elements for changeover switches (I-0-II) TwinBlock 315-400A EKF	–	tb-str-315-400-rev
	Structural stiffening elements for changeover switches (I-0-II) TwinBlock 630-800A EKF	–	tb-str-630-800-rev
	Phase barrier for switch disconnectors TwinBlock 630-800A EKF	–	tb-fb-630-800
	Phase barrier for switch disconnectors TwinBlock 1000-1600A EKF	–	tb-fb-1000-1600
	Terminal shroud (short) 6 pcs. TwinBlock 160-250A EK	–	tb-cvrshort-6-160-250
	Terminal shroud (short) 6 pcs. TwinBlock 315-400A EKF	–	tb-cvrshort-6-315-400
	Terminal shroud (long) 6 pcs. TwinBlock 160-250A EKF	–	tb-cvrlong-6-160-250
	Terminal shroud (long) 6 pcs. TwinBlock 315-400A EKF	–	tb-cvrlong-6-315-400
	Terminal shroud (short) 8 pcs. TwinBlock 160-250A	–	tb-cvrshort-8-160-250
	Terminal shroud (short) 8 pcs. TwinBlock 315-400A EKF	–	tb-cvrshort-8-315-400
	Terminal shroud (long) 8 pcs. TwinBlock 160-250A EK	–	tb-cvrlong-8-160-250
	Terminal shroud (long) 8 pcs TwinBlock 315-400A EKF	–	tb-cvrlong-8-315-400

Fuse links PPN EKF

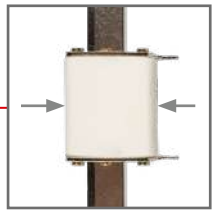
The fuse links PPN EKF are designed to protect cable lines and industrial electrical installations against overloads and short circuits in 50/60 Hz AC circuits with voltage up to 660V and are used in LV distribution equipment, e.g. switchboards, distribution panels, etc.

Standard: IEC/EN 60947-3

Ceramic housing. Filled with fine silica sand

Contact blades rounded on both sides to facilitate installation

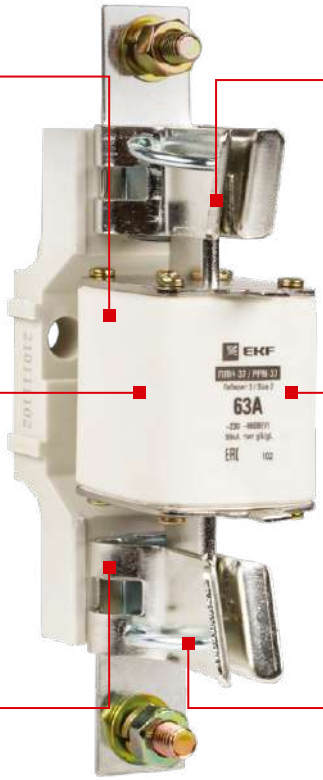
Wider blades for extended contact area



Labeled on both sides

Universal fuse replacement handle

Flat contact plate for wider contact area



APPLICATION

Fuse links are designed to protect cable lines and industrial electrical installations from overload and short-circuit currents:

- distribution enclosures;
- switchboards;
- control cabinets.

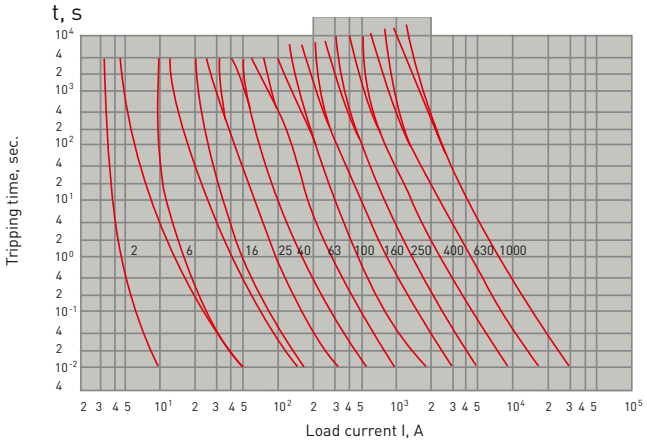
TECHNICAL DATA

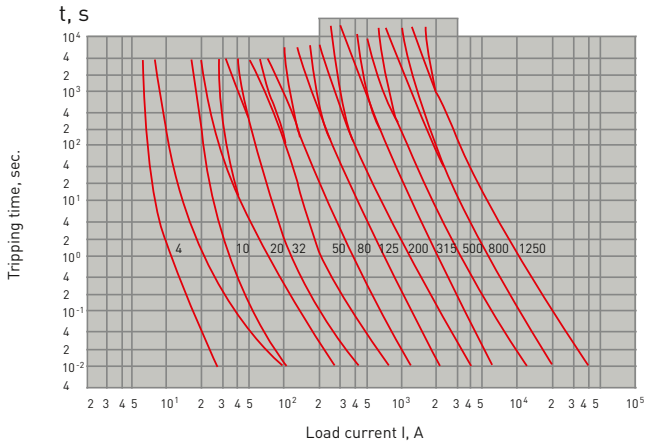
Selectivity control

In, upper fuse link (A)	In, lower fuse link (A)	
	PPN	PN
25	12	25
32	20	32
35	20	32
40	25	32
50	25	40
63	40	50
80	50	63
100	63	80
125	80	100
160	100	125
200	125	160
250	160	160
315	200	200
400	250	250
500	315	315
630	400	400
800	500	500
1000	630	500

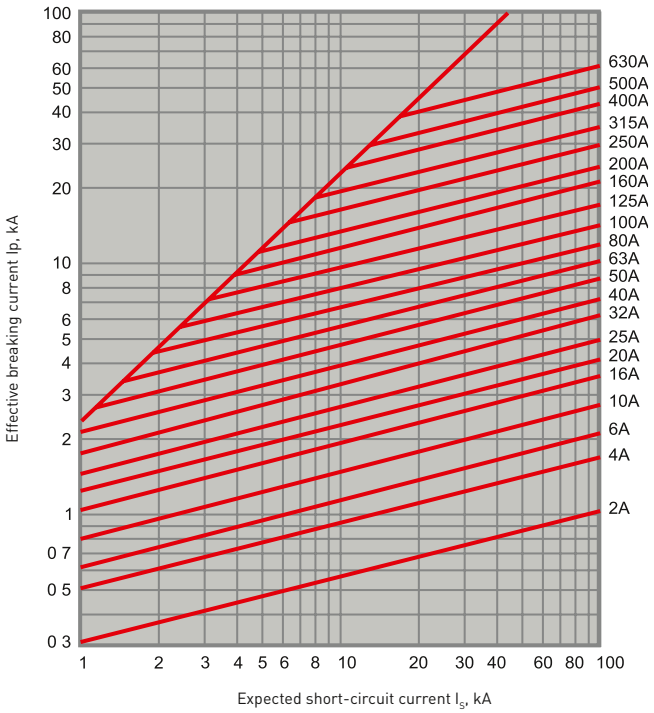
In, upper fuse link (A)	In, lower fuse link (A)	
	PPN	PN
25	8	16
32	10	20
35	12	20
40	12	25
50	16	32
63	20	40
80	25	50
100	36	63
125	40	80
160	63	100
200	80	125
250	125	160
315	125	200
400	160	250
500	200	315
630	250	400
800	315	500
1000	400	630

Tripping characteristics





Current limiting factor

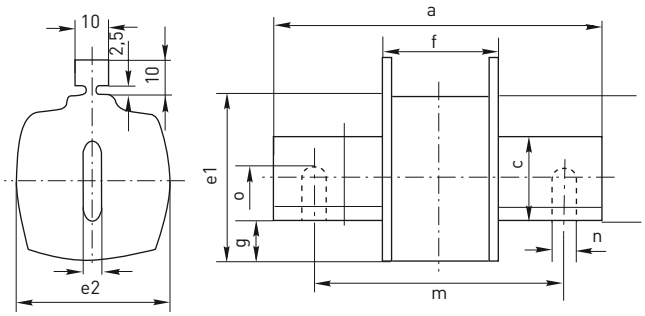


Delivery scope

For all available documentation, scan the QR-code on the insert or on the inside of the package.

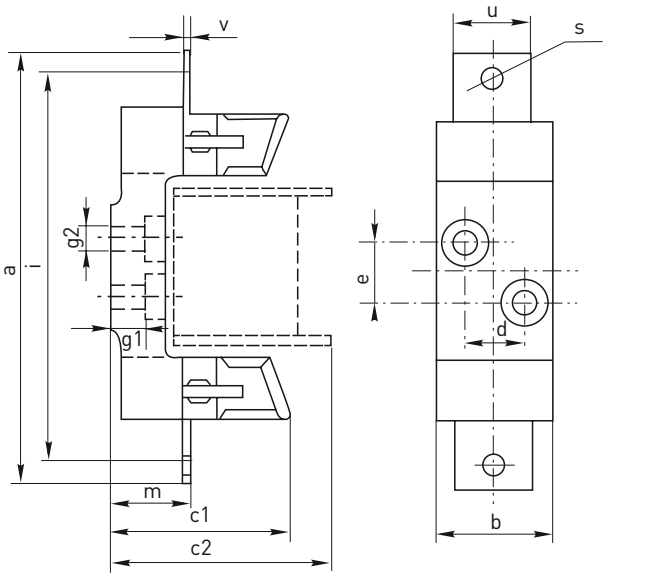
Overall and installation dimensions (mm)

Fuse links NH (PPN)



	PPN-33	PPN-33	PPN-33	PPN-35	PPN-37	PPN-39	PPN-41
	00C	00	0	1	2	3	4
Dimensions, mm							
a	77	77	121	123	136	145	200
b	35	35	35	40	48	60	83
c	15	15	15	19	25	31	50
e1	37	45	46	48	58	67	96
e2	20	29	29	48	58	67	88
l	6	6	6	6	6	6	8
f	49	48	63	67	66,5	68	80
g	4,5	11,5	12	12,5	14,5	14,5	20
m	–	–	–	–	–	–	150
n	–	–	–	–	–	–	16
o	–	–	–	–	–	–	32

Fuse link base NH



	33	33	35	37	39	41
	00C, 00	0	1	2	3	4
Dimensions, mm						
b	30	30	58	64	64	96
a	120	170	200	225	250	304
c1	60	72	82	98	105	145
c2	85	91	96	112	120	165
d	0	0	30	30	30	45
e	25	25	25	25	25	30
g1	8	8	15	17	17	4
g2	7,5	7,5	10,5	10,5	10,5	13
i	100	150	175	200	210	260
m	25	37	38	40	40,5	47,5
s	M8	M8	M10	M10	M12	M16
u	25	25	25	30	40	45
v	2	2	3	5	5,5	8,5

Fuse link bases NH EKF

Name	Type	Item code
Fuse link base NH (PPN-33) size 00, 00C EKF	33	fusb-33
Fuse link base NH (PPN-33) size 0 EKF	33	fusb-33-0
Fuse link base NH (PPN-35) size 1 EKF	35	fusb-35
Fuse link base NH (PPN-37) size 2 EKF	37	fusb-37
Fuse link base NH (PPN-39) size 3 EKF	39	fusb-39
Fuse link base NH (PPN-41) size 4 EKF	41	fusb-41

Rated current, A	Item code						
	PPN-33			PPN-35	PPN-37	PPN-39	PPN-41
	00C	00	0	1	2	3	4
2	fus-33/100/2						
4	fus-33/100/4	fus-33/160/4					
6	fus-33/100/6	fus-33/160/6					
10	fus-33/100/10	fus-33/160/10					
16	fus-33/100/16	fus-33/160/16	fus-33-0/160/16				
20	fus-33/100/20	fus-33/160/20	fus-33-0/160/20				
25	fus-33/100/25	fus-33/160/25	fus-33-0/160/25	fus-35/250/25			
32	fus-33/100/32	fus-33/160/32	fus-33-0/160/32	fus-35/250/32			
40	fus-33/100/40	fus-33/160/40	fus-33-0/160/40	fus-35/250/40	fus-37/400/40		
50	fus-33/100/50	fus-33/160/50	fus-33-0/160/50	fus-35/250/50	fus-37/400/50		
63	fus-33/100/63	fus-33/160/63	fus-33-0/160/63	fus-35/250/63	fus-37/400/63		
80	fus-33/100/80	fus-33/160/80	fus-33-0/160/80	fus-35/250/80	fus-37/400/80		
100	fus-33/100	fus-33/160/100	fus-33-0/160/100	fus-35/250/100	fus-37/400/100	fus-39/630/100	
125		fus-33/160/125	fus-33-0/160/125	fus-35/250/125	fus-37/400/125	fus-39/630/125	
160		fus-33/160	fus-33-0/160	fus-35/250/160	fus-37/400/160	fus-39/630/160	
200				fus-35/250/200	fus-37/400/200	fus-39/630/250	
250				fus-35/250	fus-37/400/250	fus-39/630/200	
315					fus-37/400/315	fus-39/630/315	
350					fus-37/400/350	fus-39/630/350	
400					fus-37/400	fus-39/630/400	
425						fus-39/630/425	
500						fus-39/630/500	
630						fus-39/630	fus-41/1250/630
800							fus-41/1250/800
1000							fus-41/1250/1000
1250							fus-41/1250
Net weight, kg	0,128	0,192	0,315	0,458	0,694	0,97	2,2

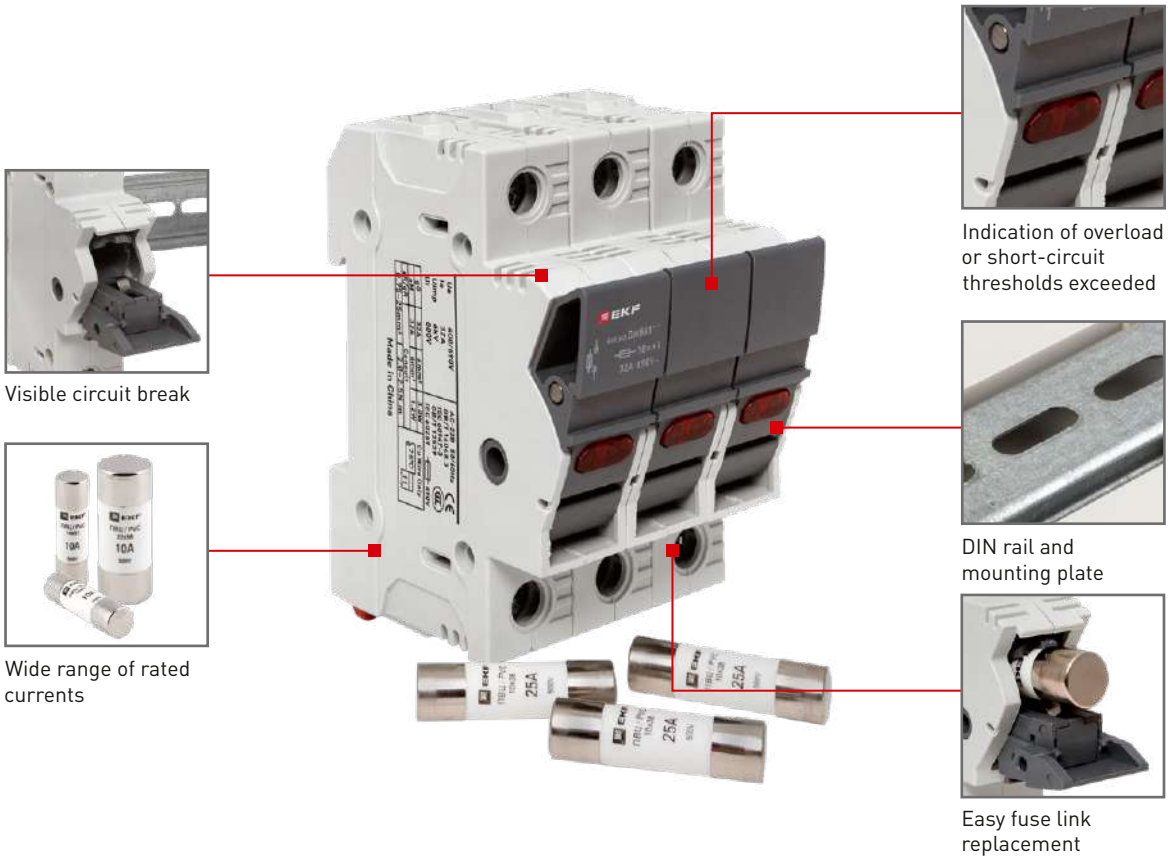
Fuse link NH (PPN) replacement handle EKF

Picture	Name	Item code
	Fuse link NH (PPN) replacement handle EKF	fus-hundle

Cylindrical fuse links and fuse disconnectors EKF

Fuse disconnector is designed for fuse link installation and circuit protection against short circuit and overload. The fuse link is a part of the fuse disconnector with a fuse that is replaced after tripping. If overload or short-circuit currents exceed thresholds, the fuse link blows out and the LED on the fuse disconnector lights up.
Fuse links are used to protect cable lines, household appliances and industrial equipment. Copper and aluminum wire connections are supported.

Standard: IEC/EN 60947-3



APPLICATION

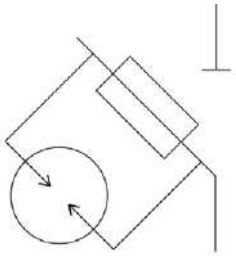
Fuse links and fuse disconnectors are designed to protect cable lines from overload and short-circuit current:

- household appliances;
- industrial equipment.

TECHNICAL DATA

Parameters	Size		
	10×38	14×51	22×58
Fuse disconnectors			
Rated current In, A	0,5; 1; 2; 4; 6; 8; 10	2; 4; 6; 8; 10; 16; 20; 25	2; 4; 6; 8; 10; 16; 20; 25; 32; 40; 50
Weight, g	50	83	170
Mechanical endurance, O-C cycles	2000		
Degree of protection: IEC 60529	IP20		
Operating temperature, C	from -10 to +55		
Cross-section of connected wires, mm²	From 1 to 25		max. 50
Tightening torque, N·m	2,5		
Cylindrical fuse links			
Rated current In, A	0,5; 1; 2; 4; 6; 8; 10; 16; 20; 25; 32	2; 4; 6; 10; 16; 20; 25; 32; 40; 50; 63	2; 4; 6; 8; 10; 16; 20; 25; 32; 40; 50; 63; 80; 100; 125
CFL type	gG		
Weight, g	7,7	20,5	58
Rated breaking capacity Ics, kA	50		
Degree of protection: IEC 60529	IP20		
Operating temperature, C	from -10 to +55		

Wiring diagram

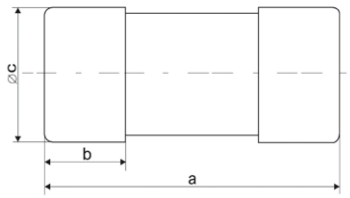


Operation

The LED lights up, when disconnector trips

Overall and installation dimensions (mm)

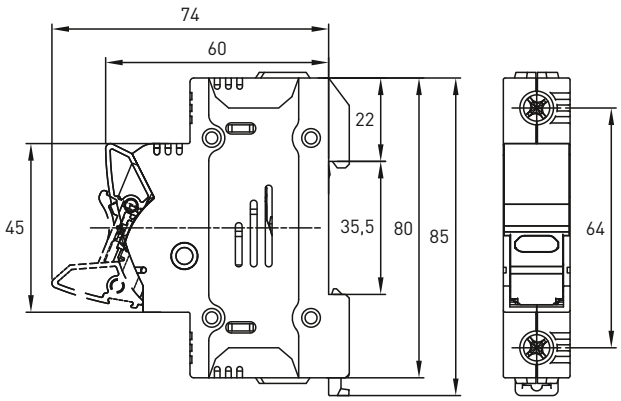
Cylindrical fuse links



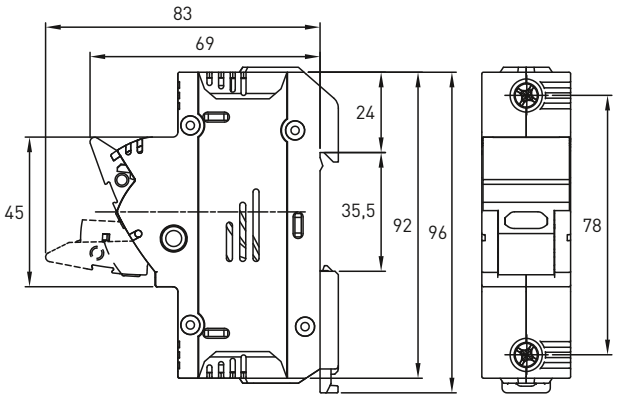
Size	a	b	c
10x38	38	10	10,3
14x51	51	12	14,3
22x58	58	16	22,2

Fuse disconnectors

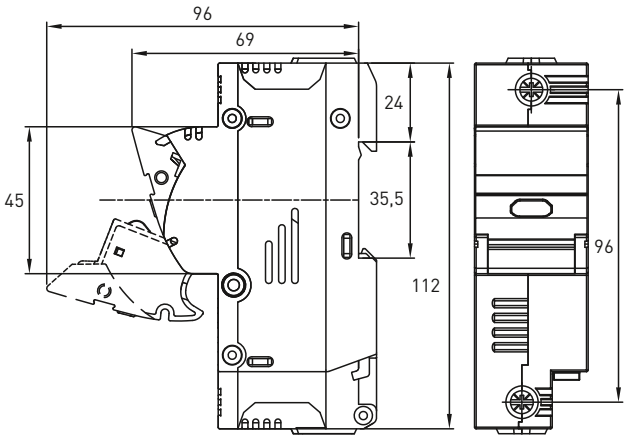
DF 10×38



DF 14×51



DF 22×58



Delivery scope

For all available documentation, scan the QR-code on the insert or on the inside of the package.

Name	Rated voltage, V	Rated frequency, Hz	Maximum current, A	Max. power dissipation, W	Item code			
					Number of poles			
					1P	2P	3P	4P
Fuse disconnector DF 10x38 1P (type CFL) EKF	500	50	8	3	df101-e	df102-e	df103-e	df104-e
Fuse disconnector DF 14x51 1P (type CFL) EKF			20	5	df141-e	df142-e	df143-e	df144-e
Fuse disconnector DF 22x58 1P (type CFL) EKF			40	9,5	df221-e	df222-e	df223-e	df224-e

Name	Rated operating current In, A	Rated voltage, V	Rated frequency, Hz	Item code		
				Fuse link		
				10×38	14×51	22×58
Cylindrical fuse link 0,5A EKF	0,5	500	50/60	pvc-10×38-0,5	–	–
Cylindrical fuse link 1A EKF	1			pvc-10×38-1	–	–
Cylindrical fuse link 2A EKF	2			pvc-10×38-2	pvc-14×51-2	pvc-22×58-2
Cylindrical fuse link 4A EKF	4			pvc-10×38-4	pvc-14×51-4	pvc-22×58-4
Cylindrical fuse link 6A EKF	6			pvc-10×38-6	pvc-14×51-6	pvc-22×58-6
Cylindrical fuse link 8A EKF	8			pvc-10×38-8	–	pvc-22×58-8
Cylindrical fuse link 10A EKF	10			pvc-10×38-10	pvc-14×51-10	pvc-22×58-10
Cylindrical fuse link 16A EKF	16			pvc-10×38-16	pvc-14×51-16	pvc-22×58-16
Cylindrical fuse link 20A EKF	20			pvc-10×38-20	pvc-14×51-20	pvc-22×58-20
Cylindrical fuse link 25A EKF	25			pvc-10×38-25	pvc-14×51-25	pvc-22×58-25
Cylindrical fuse link 32A EKF	32			pvc-10×38-32	pvc-14×51-32	pvc-22×58-32
Cylindrical fuse link 40A EKF	40			–	pvc-14×51-40	pvc-22×58-40
Cylindrical fuse link 50A EKF	50			–	pvc-14×51-50	pvc-22×58-50
Cylindrical fuse link 63A EKF	63			–	pvc-14×51-63	pvc-22×58-63
Cylindrical fuse link 80A EKF	80			–	–	pvc-22×58-80
Cylindrical fuse link 100A EKF	100			–	–	pvc-22×58-100
Cylindrical fuse link 125A EKF	125			–	–	pvc-22×58-125

Switch disconnectors PowerSwitch up to 2500A EKF

Switch disconnectors PowerSwitch EKF are used in three-phase 50/60 Hz AC networks with rated voltage up to 660 V for manual switching in electrical distribution panels. The mechanism of switch disconnector provides instantaneous (13,8 m/s) contact opening regardless of handle travel speed. The housing, made of unsaturated glass fiber reinforced polyester resin, has excellent dielectric and flame resistance properties.

Standard: IEC/EN 60947-3

External handle option

Double break at each pole

Silver-coated copper alloy contact surfaces

Mechanical lockout

Contact position indicator in compliance with IEC 60947-3

APPLICATION

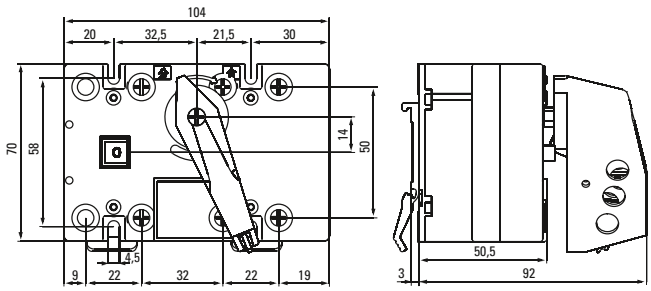
Manual electric circuit switching in:

- commercial;
- indistrial;
- low-voltage distribution applications.

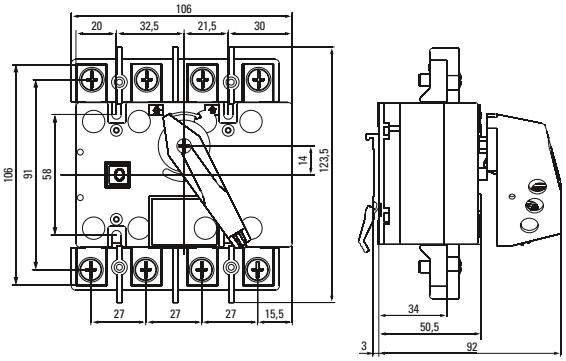
TECHNICAL DATA

Overall and installation dimensions (mm)

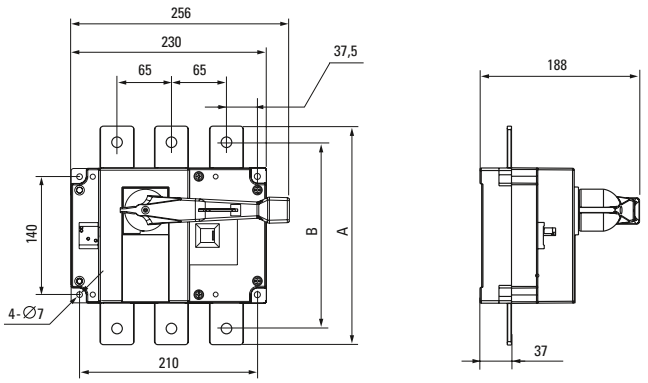
Switch disconnector PowerSwitch 63 A



Switch disconnector PowerSwitch 100 A

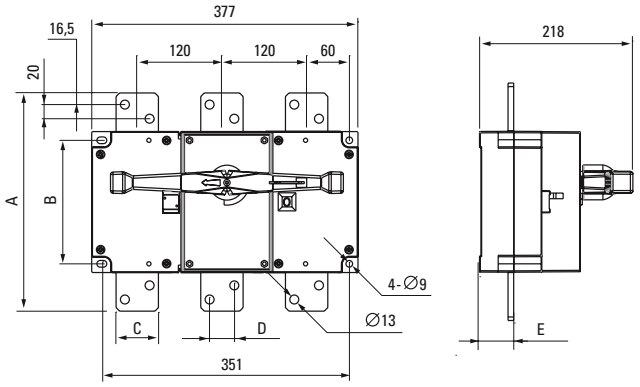


Switch disconnector PowerSwitch 400-630 A



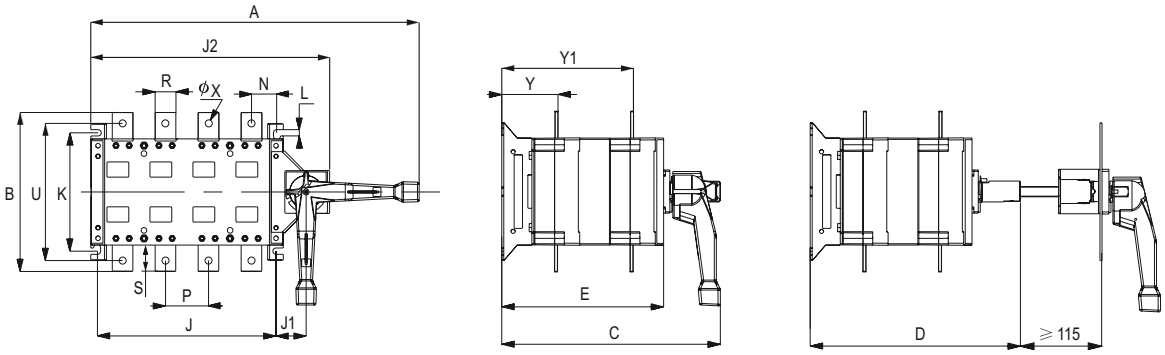
Dimensions, mm	A	B
PowerSwitch 400 A	241	208
PowerSwitch 630 A	258	220

Switch disconnector PowerSwitch 1000–1600 A



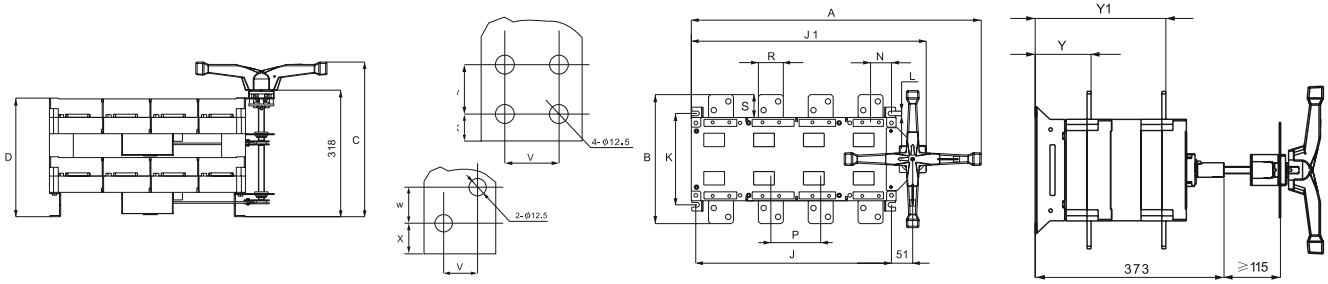
Dimensions, mm	A	B	C	D	E
PowerSwitch 1000 A 3P	310	175	60	35	49
PowerSwitch 1250 A 3P	336	175	80	40	49
PowerSwitch 1600 A 3P	336	175	80	40	50

Changeover switch PowerSwitch 63-630 A



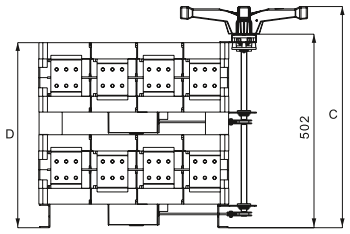
Specifications	Overall dimensions, mm															Installation dimensions, mm		
In	A	B	C	D	E	J1	J2	N	P	R	S	U	ØX	Y	Y1	J	K	L
100A – 160A/3	273	135	212	221	153	29	195	28	36	20	25	115	8,5	55	120	120	95	7
100A – 160A/4	303	135	212	221	153	29	225	22	36	20	25	115	8,5	55	120	150	95	7
200A – 250A/3	345	170	251	250	182	30	235	33	50	25	30	140	11	64	144	160	116	9
200A – 250A/4	395	170	251	250	182	30	285	33	50	25	30	140	11	64	144	210	116	9
400A/3	436	240	327	311	243	45	298	42	65	32	40	206	11	84	197	210	179	9,5
400A/4	496	240	327	311	243	45	358	38	65	32	40	206	11	84	197	270	179	9,5
630A/3	436	260	327	311	243	45	298	42	65	40	50	220	13	84	197	270	179	9,5
630A/4	496	260	327	311	243	45	358	38	65	40	50	220	13	84	197	270	179	9,5

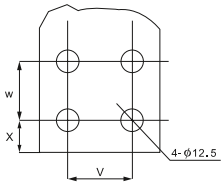
Changeover switch PowerSwitch 1000-1600 A

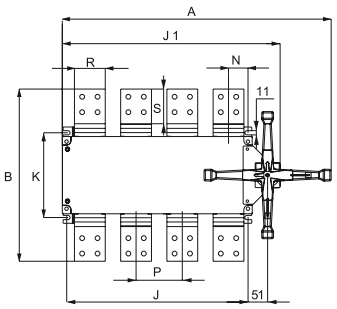


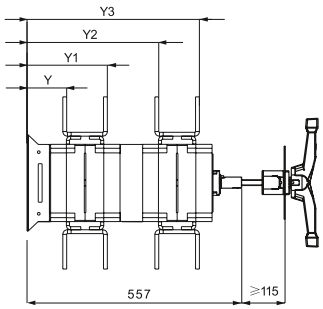
Specifications	Overall dimensions, mm														Installation dimensions, mm		
In	A	B	C	D	J1	N	P	R	S	V	W	X	Y	Y1	J	K	L
1000A/3	582	308	389	298	450	50,3	120	60	55	35	20	16,5	109	256,5	353	220	11
1000A/4	697	310	389	298	565	50,5	120	60	55	35	20	16,5	110	257,5	471	220	11
1250A/3	582	336	389	298	450	50,3	120	80	68	40	35	16	109	256,5	353	220	11
1250A/4	697	338	389	298	565	50,5	120	80	68	40	35	16	110	257,5	471	220	11
1600A/3	582	336	389	298	450	50,3	120	80	68	40	35	16	110	257,5	353	220	11
1600A/4	697	338	389	298	565	50,5	120	80	68	40	35	16	111	258,5	471	220	11

Changeover switch PowerSwitch 2000-2500 A









Specifications	Overall dimensions, mm																Installation dimensions, mm	
In	A	B	C	D	J1	N	P	R	S	V	W	X	Y	Y1	Y2	Y3	J	K
2000A/3	582	445	574	480	450	53,3	120	80	90	40	40	20	102	207,5	341	446,5	353	220
2000A/4	697	447	574	480	565	50,5	120	80	90	40	40	20	103	208,5	342	447,5	471	220
2500A/3	582	445	574	480	450	53,3	120	80	90	40	40	20	102	207,5	341	446,5	353	220
2500A/4	697	447	574	480	565	50,5	120	80	90	40	40	20	103	208,5	342	447,5	471	220

Picture	Name	Rated current, A	Rated operating current, A						Rated power AC-23, kW		Rated short-time withstand current Icw, kA	Max. operating current, A	Item code
			380–415 V			690 V							
			AC – 21B	AC – 22B	AC – 23B	AC – 21B	AC – 22B	AC – 23B	400V	690V	400V	415V	
	Switch disconnector 63A 3P with directly mounted rotary handle PowerSwitch EKF	63	63	63	50	50	32	25	25	22	5	630	psds-63-3
	Switch disconnector 100A 3P with directly mounted rotary handle PowerSwitch EKF	100	100	80	80	80	50	40	40	33	5	1000	psds-100-3
	Switch disconnector 160A 3P with directly mounted rotary handle PowerSwitch EKF	160	160	160	160	160	160	80	80	75	10	1600	psds-160-3
	Switch disconnector 250A 3P with directly mounted rotary handle PowerSwitch EKF	250	250	250	250	250	160	125	132	110	12	2500	psds-250-3
	Switch disconnector 400A 3P with directly mounted rotary handle PowerSwitch EKF	400	400	400	400	400	315	160	220	185	20	4000	psds-400-3

Picture	Name	Rated current, A	Rated operating current, A						Rated power AC-23, kW		Rated short-time withstand current Icw, kA	Max. operating current, A	Item code
			380–415 V			690 V							
			AC – 21B	AC – 22B	AC – 23B	AC – 21B	AC – 22B	AC – 23B	400V	690V	400V	415V	
	Switch disconnector 630A 3P with directly mounted rotary handle PowerSwitch EKF	630	630	630	630	500	315	200	315	185	25	6300	psds-630-3
	Switch disconnector 1000A 3P with directly mounted rotary handle PowerSwitch EKF	1000	1000	1000	800	1000	800	315	560	495	50	3000	psds-1000-3
	Switch disconnector 1250A 3P with directly mounted rotary handle PowerSwitch EKF	1250	1250	1250	800	1600	800	400	560	495	50	3750	psds-1250-3
	Switch disconnector 1600A 3P with directly mounted rotary handle PowerSwitch EKF	1600	1600	1600	800	1600	800	400	560	495	50	4800	psds-1600-3
	Switch disconnector 2000A 3P with directly mounted rotary handle PowerSwitch EKF	2000	2000	2000	–	2000	1000	–	710	750	50	6000	psds-2000-3
	Switch disconnector 2500A 3P with directly mounted rotary handle PowerSwitch EKF	2500	2500	2500	2500	2800	1250	500	710	750	50	7500	psds2500-3

Picture	Name	Rated current, A	Rated operating current, A						Rated power AC-23, kW		Rated short-time withstand current Icw, kA	Max. operating current, A	Item code
			380–415 V			690 V							
			AC – 21B	AC – 22B	AC – 23B	AC – 21B	AC – 22B	AC – 23B	400V	690V	400V	415V	
	Changeover switch 100A 3P with directly mounted rotary handle PowerSwitch EKF	100	100	80	80	80	50	40	40	33	5	1000	pscs-100-3
	Changeover switch 160A 3P with directly mounted rotary handle PowerSwitch EKF	160	160	160	160	160	160	80	80	75	10	1600	pscs-160-3
	Changeover switch 250A 3P with directly mounted rotary handle PowerSwitch EKF	250	250	250	250	250	160	125	132	110	12	2500	pscs-250-3
	Changeover switch 400A 3P with directly mounted rotary handle PowerSwitch EKF	400	400	400	400	400	315	160	220	185	20	4000	pscs-400-3
	Changeover switch 630A 3P with directly mounted rotary handle PowerSwitch EKF	630	630	630	630	500	315	200	315	185	25	6300	pscs-630-3
	Changeover switch 1000A 3P with directly mounted rotary handle PowerSwitch EKF	1000	1000	1000	800	1000	800	315	560	475	50	3000	pscs-1000-3

Picture	Name	Rated current, A	Rated operating current, A						Rated power AC-23, kW		Rated short-time withstand current Icw, kA	Max. operating current, A	Item code
			380–415 V			690 V							
			AC – 21B	AC – 22B	AC – 23B	AC – 21B	AC – 22B	AC – 23B	400V	690V	400V	415V	
	Changeover switch 1250A 3P with directly mounted rotary handle PowerSwitch EKF	1250	1250	1250	800	1000	800	400	560	475	50	3750	pscs-1250-3
	Changeover switch 1600A 3P with directly mounted rotary handle PowerSwitch EKF	1600	1600	1600	800	1600	800	400	560	475	50	4800	pscs-1600-3
	Changeover switch 2000A 3P with directly mounted rotary handle PowerSwitch EKF	2000	2000	2000	–	2000	1000	–	710	750	50	6000	pscs-2000-3
	Changeover switch 2500A 3P with directly mounted rotary handle PowerSwitch EKF	2500	2500	2500	1000	2500	1250	500	710	750	50	7500	pscs-2500-3
	Switch disconnector 63A 4P with directly mounted rotary handle PowerSwitch EKF	63	63	63	50	50	32	25	25	22	2	630	psds-63-4
	Switch disconnector 100A 4P with directly mounted rotary handle PowerSwitch EKF	100	80	80	80	80	50	40	40	33	2	1000	psds-100-4
	Switch disconnector 160A 4P with directly mounted rotary handle PowerSwitch EKF	160	160	160	160	160	160	80	80	75	8	1600	psds-160-4
	Switch disconnector 250A 4P with directly mounted rotary handle PowerSwitch EKF	250	250	250	250	250	160	125	132	110	12	2500	psds-250-4
	Switch disconnector 400A 4P with directly mounted rotary handle PowerSwitch EKF	400	400	400	400	400	315	–	220	185	25	4000	psds-400-4
	Switch disconnector 630A 4P with directly mounted rotary handle PowerSwitch EKF	630	630	630	630	500	315	–	315	185	25	6300	psds-630-4

Picture	Name	Rated current, A	Rated operating current, A						Rated power AC-23, kW		Rated short-time withstand current Icw, kA	Max. operating current, A	Item code
			380–415 V			690 V							
			AC – 21B	AC – 22B	AC – 23B	AC – 21B	AC – 22B	AC – 23B	400V	690V	400V	415V	
	Switch disconnector 1000A 4P with directly mounted rotary handle PowerSwitch EKF	1000	1000	1000	–	1000	800	–	560	475	50	3000	psds-1000-4
	Switch disconnector 1250A 4P with directly mounted rotary handle PowerSwitch EKF	1250	1250	1250	–	1600	800	–	560	475	50	3750	psds-1250-4
	Switch disconnector 1600A 4P with directly mounted rotary handle PowerSwitch EKF	1600	1600	1600	–	1600	800	–	560	475	50	4800	psds-1600-4
	Switch disconnector 2000A 4P with directly mounted rotary handle PowerSwitch EKF	2000	2000	2000	–	2000	1000	–	710	750	50	6000	psds-2000-4
	Changeover switch 100A 4P with directly mounted rotary handle PowerSwitch EKF	100	80	80	80	80	50	40	40	33	2	1000	pscs-100-4
	Changeover switch 160A 4P with directly mounted rotary handle PowerSwitch EKF	160	160	160	160	160	160	80	80	75	8	1600	pscs-160-4
	Changeover switch 250A 4P with directly mounted rotary handle PowerSwitch EKF	250	250	250	250	250	160	125	132	110	12	2500	pscs-250-4
	Changeover switch 400A 4P with directly mounted rotary handle PowerSwitch EKF	400	400	400	400	400	315	–	220	185	25	4000	pscs-400-4
	Changeover switch 630A 4P with directly mounted rotary handle PowerSwitch EKF	630	630	630	630	500	315	–	315	185	25	6300	pscs-630-4

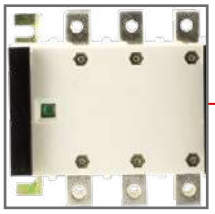
Picture	Name	Rated current, A	Rated operating current, A						Rated power AC-23, kW		Rated short-time withstand current Icw, kA	Max. operating current, A	Item code
			380–415 V			690 V							
			AC – 21B	AC – 22B	AC – 23B	AC – 21B	AC – 22B	AC – 23B	400V	690V	400V	415V	
	Changeover switch 1000A 4P with directly mounted rotary handle PowerSwitch EKF	1000	1000	1000	–	1000	800	–	560	475	50	3000	pscs-1000-4
	Changeover switch 1250A 4P with directly mounted rotary handle PowerSwitch EKF	1250	1250	1250	–	1600	800	–	560	475	50	3750	pscs-1250-4
	Changeover switch 1600A 4P with directly mounted rotary handle PowerSwitch EKF	1600	1600	1600	–	1600	800	–	560	475	50	4800	pscs-1600-4
	Changeover switch 2000A 4P with directly mounted rotary handle PowerSwitch EKF	2000	2000	2000	–	2000	1000	–	710	750	50	6000	pscs-2000-4

Picture	Name	Item code
	External handle for switch disconnector PowerSwitch 63-100A EKF	psds-ls-63-100
	External handle for switch disconnector PowerSwitch 160-630A EKF	psds-ls-160-630
	External handle for switch disconnector PowerSwitch 1000-3150A EKF	psds-ls-1000-3150
	External handle for changeover switch PowerSwitch 100-3150A EKF	pscs-ls-100-3150

Automatic transfer switches TCP1 EKF

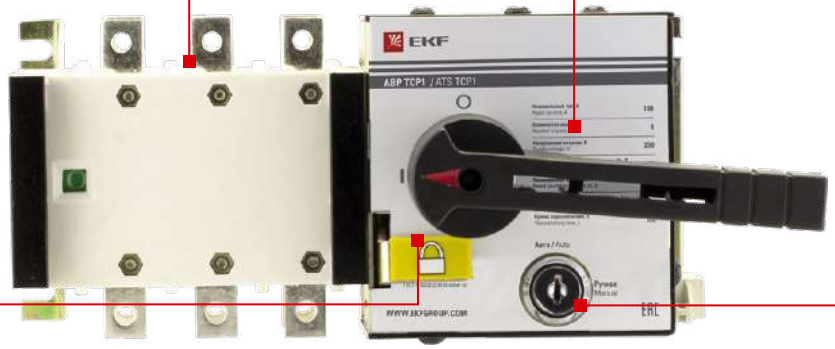
Automatic transfer switches TCP1 EKF are designed for backup power supply of equipment connected to power supply systems with primary and secondary inputs. The ATS automatically connects the secondary power line, if the primary power line fails. The control relay is powered from line L3 of the primary input.

ATS TCP1 EKF is a monoblock consisting of a contact block and a control module. The control unit has a handle for manual switching, a lock mechanism for manual/ automatic control mode switching, and a stop to lock the ATS switching. The contact block housing is made of flame retardant ABS plastic. The switching mechanism moves bridge type contact groups to close circuits of either primary or secondary line. Moreover, both lines can be disconnected. An electric motor, actuator and control relay are fitted into a metal housing of the control unit. When line L3 of the primary input is powered, the control relay energises the electric motor, closing the primary input contact groups. After main contacts close, the motor is switched off by a limit switch. If input is switched manually, the control motor will start, restoring power from the primary input. If the primary input power fails, the control relay will transfer power from the secondary input to the control motor. ATS operation from secondary input is similar to that from the primary input. ATS will automatically switch over to the primary input, when its power is restored.



Commutation mechanism - reverse circuit breaker

Changeover switch commutation



Maintenance lockout

Manual and automatic modes

APPLICATION

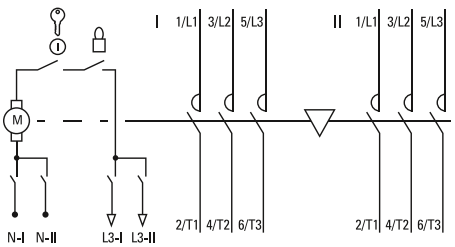
Power supply redundancy for critical load:

- hospitals;
- continuous operation and production facilities;
- power supply redundancy for non-critical load;
- non-critical production lines and industrial applications;
- dual supply office and residential buildings.

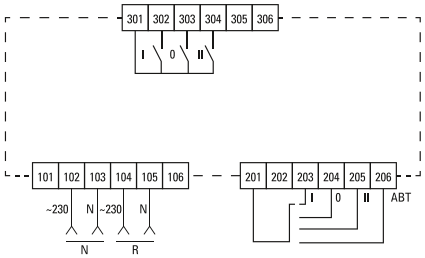
TECHNICAL DATA

Wiring diagrams

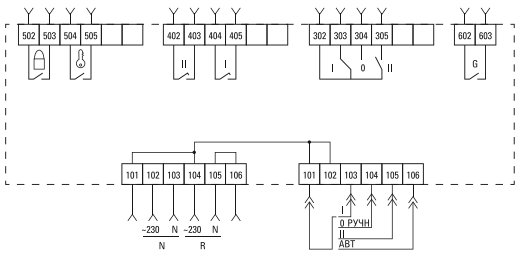
One way. Connected on control cable side with terminals 100A



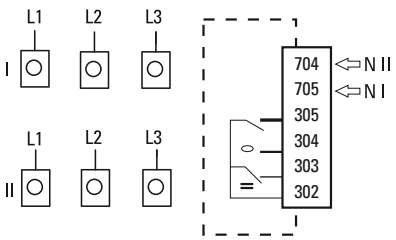
External cables connected for ATS TCP1 from 125 to 400A



External cables connected for ATS TCP1 630A



External cables connected for ATS TCP1 100A

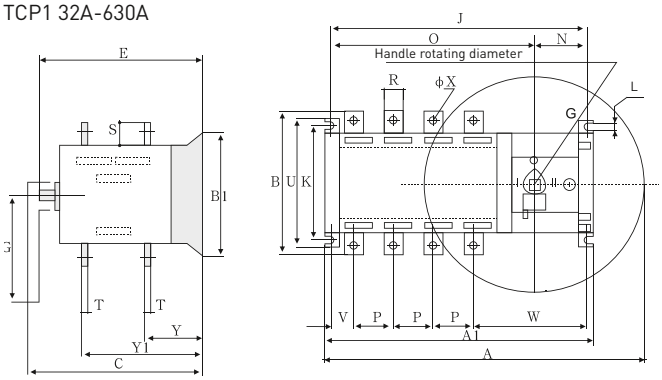


TECHNICAL DATA

Parameters			ATS TCP1 32A	ATS TCP1 40A	ATS TCP1 63A	ATS TCP1 80A	ATS TCP1 100A	ATS TCP1 125A	ATS TCP1 160A	ATS TCP1 200A	ATS TCP1 250A	ATS TCP1 400A	ATS TCP1 630A
Rated thermal current Ith, A			32A	40A	63A	80A	100A	125A	160A	200A	250A	400A	630A
Rated insulation voltage Ui, V			750									1000	
Insulation dielectric strength, V			3000					5000				8000	
Rated impulse withstand voltage Uimp, kV			6					8				12	
Rated short-time withstand current Icw, kA			2,5/2,0		5,0/4,0			10/7		16/10		25/18	
Rated making capacity Icm, AC23 380V			250	320	500	640	800	1000		1600		3200	
Rated breaking capacity Icm, AC23 380V			320	400	630	800	1000	1250		2000		4000	
Ultimate breaking capacity, kA			8		10			12		17		30	
Mechanical endurance, thousand cycles			100									5,5	
Electrical endurance at rated voltage Ue=660V	Cosφ = 0,95	AC21	5000					1500				750	
	Cosφ = 0,65	AC22	3000					1000				500	
	Cosφ = 0,35	AC23	2000					500				250	
Switching time, sec	I-0-II or II-0-I		1,0							1,1		1,2	
	I-0 or II-0		0,5					0,6		0,7		0,8	
Control motor power, W	Rated power of control motor 230V AC		25					75				90	

Overall and installation dimensions (mm)

TCP1 32A-630A



	32A-100A	125A		160A		200A		250A		400A		630A	
	3p	3p	4p	3p	4p	3p	4p	3p	4p	3p	4p	3p	4p
A	280	376	406	376	406	416	466	416	466	455	515	455	515
A1	230	283,5	316	283,5	316	323,5	373,5	323,5	373,5	378,5	438,5	378,5	438,5
B	106	135		134		170				240			
B1	107	134								208			
C	164	261								333			
E	144	208								270			
G	112	166											
J	215,5	262,5	295	262,5	295	302,5	353	302,5	353	358,5	418,5	358,5	418,5
K	84	78/108								176			
L	6	7								11			
N	80	87								103,5			
O	136	175,5	207	175,5	207	215,5	266	215,5	266	255	315	255	315
P	30	36				50				65			
R	14	20				25				32		40	
S	18	25				30				40		50	
T	2,5	3,2								5		6	
U	107	134								208			
V	30,5	33,5				40				31			
W	125	155				164				191	182,5	191	182,5
∅	6	9				11				12			
Y	38	56				60				83		84	
Y1	88	141				145				193		194	

Installation and operation

ATS TCP1 shall be stored indoors in the original package at the ambient temperature from –45°C to +55°C and relative humidity of max. 80% at +25°C.
ATS TCP1 shall be operated at temperatures between -25°C and +50°C. Average temperature within 24 hours shall not exceed +35°C. Altitude above sea level shall not exceed 2000 meters. Pollution degree: III. Degree of ingress protection (according to IEC 60529): IP00. Rapid temperature fluctuations may cause misture to condense on the device housing. This will not damage the device. Do not install in spaces with vibration over 5g.

Delivery scope

1. ATS TCP1 EKF
2. Mounting kit
3. External handle
4. Technical manual.

Name	Rated current, A	Control	Item code	
			3P	4P
ATS TCP1 32A 230V EKF	32	Relay	ats-tsr1-32A-3p-pro	ats-tsr1-32A-4p-pro
ATS TCP1 40A 230V EKF	40		ats-tsr1-40A-3p-pro	ats-tsr1-40A-4p-pro
ATS TCP1 50A 230V EKF	50		ats-tsr1-50A-3p-pro	ats-tsr1-50A-4p-pro
ATS TCP1 63A 230V EKF	63		ats-tsr1-63A-3p-pro	ats-tsr1-63A-4p-pro
ATS TCP1 80A 230V EKF	80		ats-tsr1-80A-3p-pro	ats-tsr1-80A-4p-pro
ATS TCP1 100A 230V EKF	100		ats-tsr1-100A-3p-pro	ats-tsr1-100A-4p-pro
ATS TCP1 125A 230V EKF	125		ats-tsr1-125A-3p-pro	ats-tsr1-125A-4p-pro
ATS TCP1 160A 230V EKF	160		ats-tsr1-160A-3p-pro	ats-tsr1-160A-4p-pro
ATS TCP1 200A 230V EKF	200		ats-tsr1-200A-3p-pro	ats-tsr1-200A-4p-pro
ATS TCP1 250A 230V EKF	250		ats-tsr1-250A-3p-pro	ats-tsr1-250A-4p-pro
ATS TCP1 400A 230V EKF	400		ats-tsr1-400A-3p-pro	–
ATS TCP1 630A 3P 230V EKF	630		ats-tsr1-630A-3p-pro	–

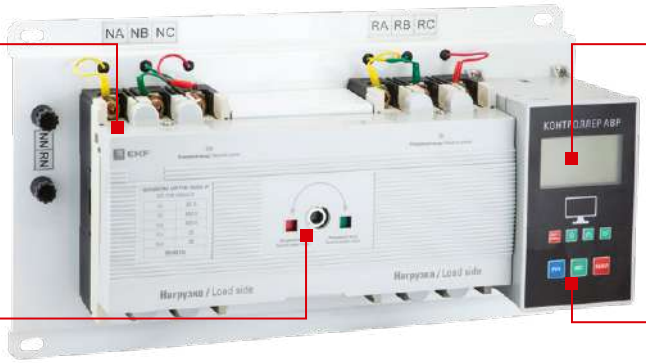
Automatic transfer switches TCM EKF

Automatic transfer switches TCM EKF are designed for backup power supply of equipment connected to power supply systems with primary and secondary inputs. The ATS automatically connects the secondary power line if the primary power line fails. Copper and aluminum wire connections are supported.
ATS TCM features overload and short circuit protection for distribution networks and motors. ATS TCM can be configured for several switching programs.
A. Input: Mains – Mains
– Automatic transfer to the secondary power line for invalid values of the primary power supply line; automatic return from the secondary line to the primary line after values of the latter are restored within set limits. Setting of transfer delay time between power lines.
– Automatic transfer to the secondary power line for invalid values of the primary one, no automatic return from the secondary line to the primary line after values of the latter are restored within set limits. Automatic transfer to the primary line after the secondary line values exceed set limits. Setting of transfer delay time between power lines.
– Manual switching between power supply lines.
B. Input: Mains - Generator
– Automatic transfer to a backup generator for invalid values of the primary power supply line, automatic return from the backup generator to the primary line after values of the latter are restored within set limits. Setting of transfer delay time between power lines.
– Manual switching between power supply lines.

ATS TCM EKF is a monoblock consisting of a contact block, a control module and two molded case circuit breakers (MCCB). Control unit features manual operation handle to save space for ATS installation.

Compact monoblock design

Manual and automatic mode



Configurable security and access settings

Integrated short circuit and overload protection

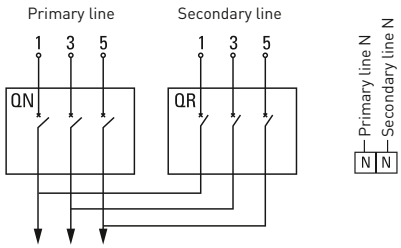
APPLICATION

Power supply redundancy for critical load:
- hospitals;
- continuous operation and production facilities;
- power supply redundancy for non-critical load;
- non-critical production lines and industrial applications;
- dual supply office and residential buildings.

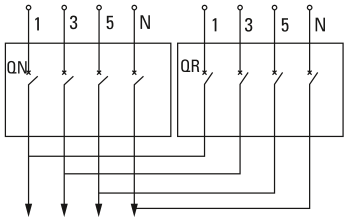
TECHNICAL DATA

External connections

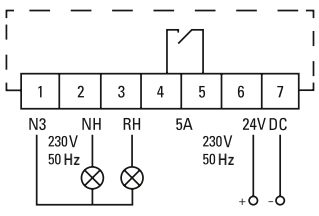
Three-pole ATS connection

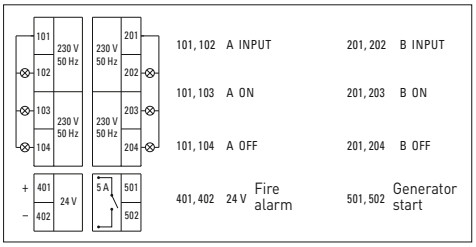


Four-pole ATS connection



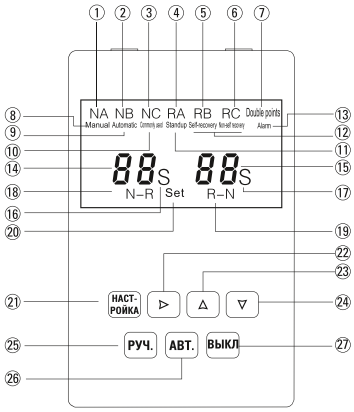
Control conductors connected to controller





Parameters	TCM-100	TCMe-100	TCM-225	TCMe 225	TCM-400	TCM-630
Rated current*, A	(25); (32); (40); (50); 63; (80); 100	63; 100	(100); (125); 160; (180); 200; (225)	160	(225); 250; (315); (350); 400	(400); 500; 600
Rated insulation voltage Ui, V	800					
Rated operating voltage Ue, V	400 / 415					
Rated impulse withstand voltage Uimp, kV	5					
Number of poles*	3P, (4P)					
Rated short-circuit breaking capacity Icu, kA	25	25	25	25	35	35
Rated max. short-circuit current Imc, kA	105	105	187	187	143	143
Control	Controller	Relay	Controller	Relay	Controller	Controller
Mechanical endurance, cycles	6000				4000	3000
Type of trip unit	Thermomagnetic					
Housing degree of protection (on front panel side)	IP30					
Min. service life, years	10					

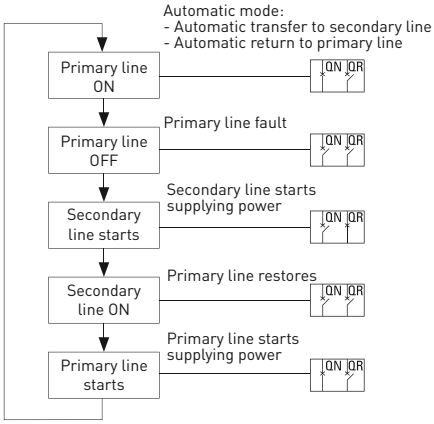
Controller LSD screen



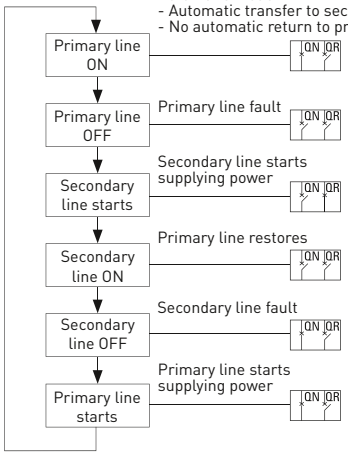
1. NA – primary power supply phase A voltage is OK. Not displayed, if phase A voltage exceeds the limits or is absent.
2. NB – primary power supply phase B voltage is OK. Not displayed, if phase B voltage exceeds the limits or is absent.
3. NC – primary power supply phase C voltage is OK. Not displayed, if phase C voltage exceeds the limits or is absent.
4. RA – secondary power supply phase A voltage is OK. Not displayed, if phase A voltage exceeds the limits or is absent.
5. RB - secondary power supply phase B voltage is OK. Not displayed, if phase B voltage exceeds the limits or is absent.
6. RC - secondary power supply phase C voltage is OK. Not displayed, if phase C voltage exceeds the limits or is absent.
7. Double points – both power supply lines failed
8. Manual – controller is operated manually
9. Automatic – controller is operated in auto mode
10. Commonly – MCCB is ON with primary power supply connected
11. Standup – MCCB is ON with secondary power supply connected
12. RB – automatic transfer to secondary line and return to primary line. RC – automatic transfer to secondary line, no auto return to primary line.
13. Alarm – tripped by failure
14. Data from primary source
15. Data from secondary source
16. Time unit - second
17. Time unit - second
18. Trasnfer delay
19. Return delay
20. Controller parameter setting
21. Set button. Push to enter setting menu.
22. Read button: for operation mode - voltage reading; for parameter setting mode – back.
23. Up button: Push to increase number

Controller operation

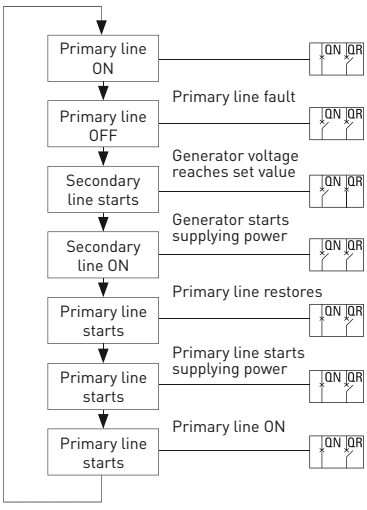
Mains - Mains



Mains - Mains



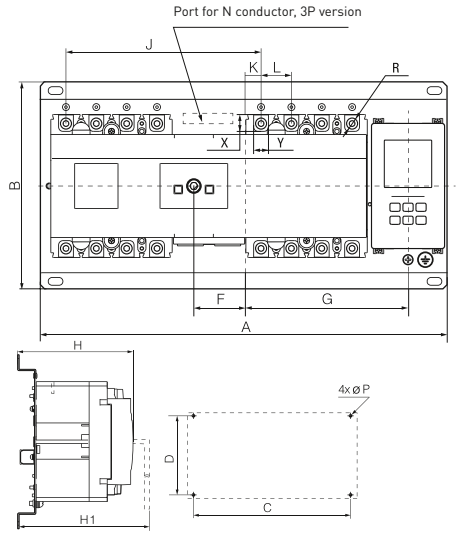
Mains - Generator



T1 - transfer delay time. Controller can be configured 0-30 sec. for primary power source fault, time before disconnection QN
T2 - return delay time. Controller can be configured 0-30 sec. for primary power source restore, time before disconnection QN
QN - Primary line circuit breaker
QR - Secondary line circuit breaker

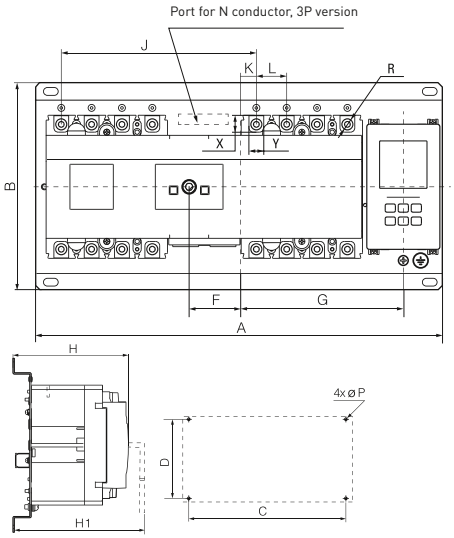
Overall and installation dimensions (mm)

TCMe



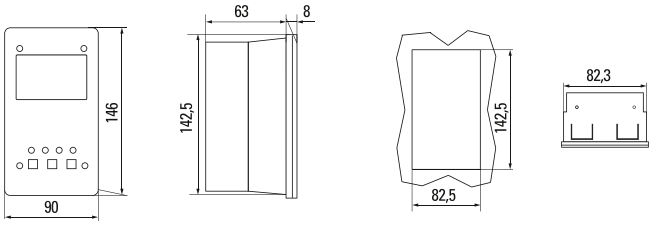
ATS	A	B	C	D	H	H1	P
	3P		3P				
TCMe-100	363	180	346,5	163,5	148,5	144	Ø 8
TCMe-225	408	195	391,5	178,5	164,5	160	Ø 8

TCM



ATS	A		B	C		D	H	H1	G	F	K	L	J	P	X	Y	R
	3P	4P		3P	4P												
TCM-100	420	420	240	385	385	220	140	180	133	52	15	30	195	ø8	16,1	18,7	ø8
TCM-225	470	470	240	385	735	220	160	190	152	60	18	36	225	ø8	19,8	23,9	ø9,6
TCM-400	615	615	330	435	555	300	200	227	195	78	26	48	305	ø10	28	34	ø12
TCM-630	740	740	330	555	680	300	200	232	232	102	32	60	385	ø10	28	44	ø12,8

Controller panel



Delivery scope

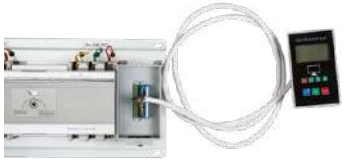
1. ATS TCM EKF
2. Fastenening kit
3. Operating handle - 1 pc.
4. Terminal block for control conductor connection - 1 pc.
5. Technical manual.

Name	Number of poles	Rated current, A	Control	Item code
ATS TCM-100/63A 3p EKF	3P (4P)*	63	Intelligent controller	ats-tsm-63A-3p-pro
ATS TCM-100/100A 3p EKF		100		ats-tsm-100A-3p-pro
ATS TCM 225/125A 3p EKF		125		ats-tsm-125A-3p-pro
ATS TCM 225/160A 3p EKF		160		ats-tsm-160A-3p-pro
ATS TCM 225/200A 3p EKF		200		ats-tsm-200A-3p-pro
ATS TCM 225/250A 3p EKF		250		ats-tsm-225-250A-3p-pro
ATS TCM 225/200A 3p EKF		250		ats-tsm-250A-3p-pro
ATS TCM 400/400A 3p EKF		400		ats-tsm-400A-3p-pro
ATS TCM 630/500A 3p EKF		500		ats-tsm-500A-3p-pro
ATS TCM 630/630A 3p EKF		630		ats-tsm-630A-3p-pro
ATS TCMe 100/63A 3p EKF		63	Relay	ats-tsme-63A-3p-pro
ATS TCMe 100/100A 3p EKF		100		ats-tsme-100A-3p-pro
ATS TCMe 225/160A 3p EKF		160		ats-tsme-160A-3p-pro

* ATSs TCM are available under request.

Controller cable ATS TCM EKF

Controller extension cable for mounting the ATS TCM on the front panel of an electrical enclosure.

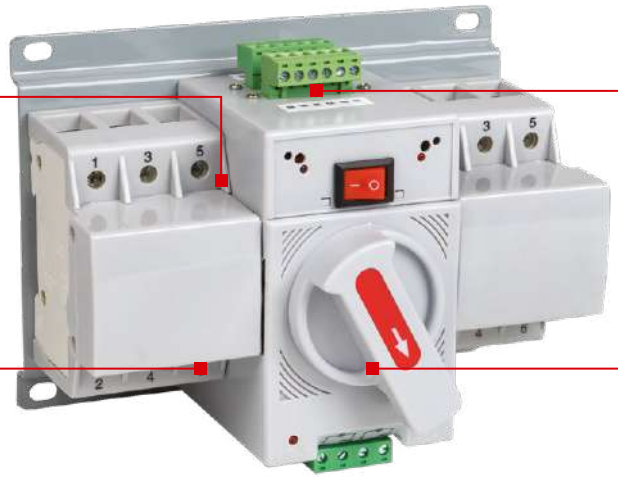
Picture	Name	Length, m	Item code
	Cable for ATS TCM controller 1,5 m EKF	1,5	ats-tsm-k-1.5
	Cable for ATS TCM controller 2 m EKF	2	ats-tsm-k-2

Automatic transfer switches MCB EKF

Automatic transfer switches MCB EKF are designed for backup power supply of equipment connected to power supply systems with primary and secondary inputs. The ATS automatically connects the secondary power line if the primary power line fails. ATS MCB EKF is a monoblock consisting of a contact block, a control module and two miniature circuit breakers (MCB). Control unit features manual operation handle to save space for ATS installation.

Manual & automatic modes

Compact housing



Short circuit & overload protection

Mechanical interlock

APPLICATION

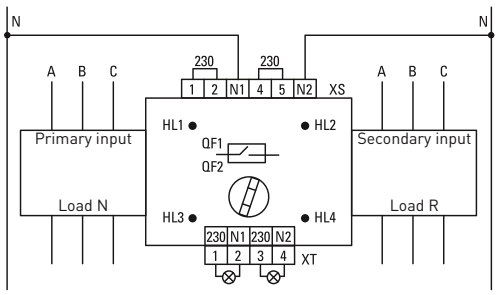
Automatic transfer switches MCB EKF are used for utilization category II applications:

- production facilities;
- infrastructure and public facilities;
- lead-in circuit-breakers in electrical distribution panels;
- residential and commercial buildings.

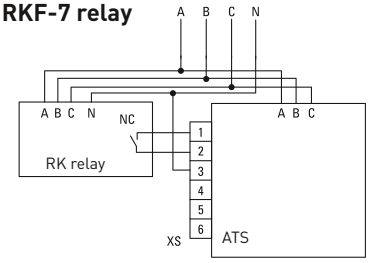
TECHNICAL DATA

Parameters	Values
Rated operating current, A	16–63
Trip curves	C, B
Utilization category	AC1, AC3
Trip current	5~10 In (type C)
Rated operating voltage Ue, V	400
Rated frequency, Hz	50 / 60
Max. breaking capacity Icn, A	4,5
Degree of protection	IP20
Operating temperature, °C	From -5 to +40
Altitude above sea level, m	Max. 2000
Mounting type	Vertical or horizontal

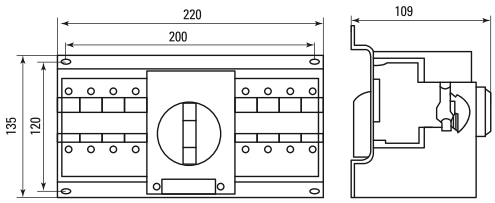
External connections



Option with RKF-7 relay



Overall and installation dimensions



All electrical works shall be implemented only by qualified electrical personnel. Voltage is controlled at one phase. ATS MCB can be used together with phase monitoring relay.

Delivery scope

1. ATS MCB EKF.
2. Technical manual.

Name	Number of poles	Rated current, A	Tripping curve	
			C	B
ATS MCB 16A	3P	16	ats-mcb-16c-3p-pro	ats-mcb-16b-3p-pro
ATS MCB 20A		20	ats-mcb-20c-3p-pro	ats-mcb-20b-3p-pro *
ATS MCB 25A		25	ats-mcb-25c-3p-pro	ats-mcb-25b-3p-pro *
ATS MCB 32A		32	ats-mcb-32c-3p-pro	ats-mcb-32b-3p-pro *
ATS MCB 40A		40	ats-mcb-40c-3p-pro	ats-mcb-40b-3p-pro *
ATS MCB 50A		50	ats-mcb-50c-3p-pro	ats-mcb-50b-3p-pro *
ATS MCB 63A		63	ats-mcb-63c-3p-pro	ats-mcb-63b-3p-pro *

* On order

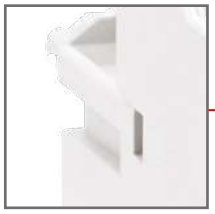
Motor Management Components

Contactors KME 9-95A EKF

The KME EKF contactors are switching devices, consisting of electromagnetic coil, movable and fixed contacts, enclosed in a housing. When the coil is energized, the generated magnetic field attracts the movable contact, compressing the spring, and making the connection. When the coil is de-energized, the spring pushes back and opens the contacts. Copper and aluminum wire connections are supported.

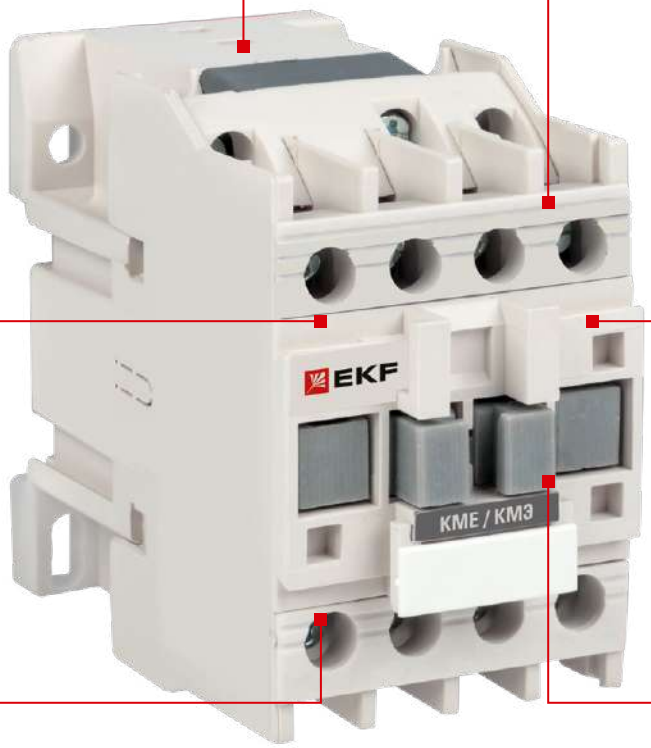
Standard: IEC/EN 60947-4-1

Hemispherical, spring-loaded self-positioning movable contacts. Bridge contact for faster arc extinguishing



Flame-retardant plastic housing. High electrical endurance. DIN rail & mounting plate options

Plate-type terminals for secure wire connection



Auxiliary contacts with textured surface for improved conductivity and reliable connection

With high-grade electrical steel core, the coil keeps contacts securely engaged at rated voltage. Rubber dampers to reduce operation noise

Silver-alloy contact pads for lower contact transients and increased durability

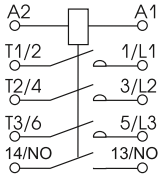
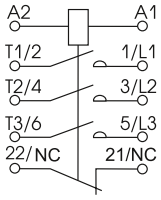
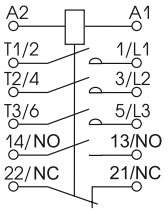
APPLICATION

The KME contactors are used in residential and commercial buildings, public facilities, and industrial applications.

- Switching of machines and equipment; control of production lines, power stations, MCCs, ventilation and other utilities.
- Illumination control: industrial, street, office, commercial facilities.
- Process control for the manufacturing of heaters, air conditioners and other mass-market electrical appliances.

TECHNICAL DATA

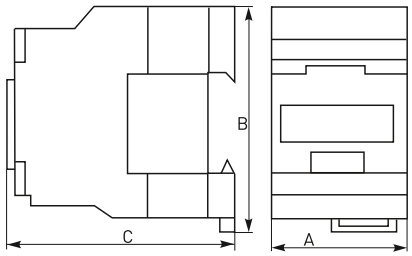
Wiring diagrams

1NO: KME 9A, KME 12A, KME 18A, KME 25A, KME 32A	1NC: KME 9A, KME 12A, KME 18A, KME 25A, KME 32A	1NO+1NC: KME 40A, KME 50A, KME 65A, KME 80A, KME 95A
		

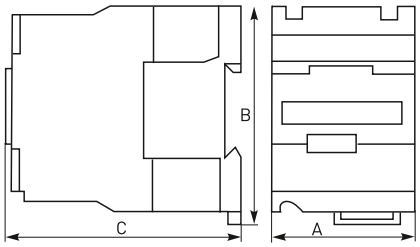
Parameters			KME 9A	KME 12A	KME 18A	KME 25A	KME 32A	KME 40A	KME 50A	KME 65A	KME 80A	KME 95A
Rated power, kW	< +40°C, 230V	AC-3	2,2	3	4	5,5	7,5	11	15	18,5	22	25
	< +40°C, 400V		4	5,5	7,5	11	15	18,5	22	30	37	45
	< +40°C, 660V		5,5	7,5	10	15	18,5	30	33	37	45	45
Rated operating current, A	< +40°C, 400V	AC-3	9	12	18	25	32	40	50	65	80	95
		AC-1	25	25	32	40	50	60	80	80	125	125
Number of poles			3P			3P		3P				
Available auxiliary contacts			1NO or 1NC	1NO or 1NC	1NO or 1NC	1NO or 1NC	1NO or 1NC	1NO + 1 NC				
Maximum short-time load (t<1 sec.), A			162	216	324	450	576	720	900	1170	1440	1710
Rated operating AC voltage Ue, V			220-240, 380-415, 690			220-240, 380-415, 690		220-240, 380-415, 690				
Rated impulse voltage Uimp, kV			6			8		8				
Rated insulation voltage Ui, V			690			690		690				
Conventional short-circuit current Inc, A			1000		3000	3000		3000				5000
Dissipation power at Ie, W/pole		AC-3	0,2	0,36	0,8	1,25	2	2,4	3,7	4,2	5,1	7,2
		AC-1	1,56	1,56	2,5	3,2	5	5,4	6	6,4	12,5	12,5
Rated voltage of control coil Uc, V			230/240, 400/415			230/240, 400/415		230/240, 400/415				
Control voltage ranges		inrush	(0,8 - 1,1)*Uc			(0,8 - 1,1)*Uc		(0,8 - 1,1)*Uc				
		release	(0,3 - 0,6)*Uc			(0,3 - 0,6)*Uc		(0,3 - 0,6)*Uc				
Power consumption of control coil at Uc, VA		inrush cos φ = 0,75	60	60	60	90	90	200	200	200	200	200
		holding cos φ = 0,3	7	7	7	7,5	7,5	20	20	20	20	20
Tripping time of control coil, ms		closing	12-22	12-22	12-22	15-24	15-24	20-26	20-26	20-26	20-26	20-26
		opening	4-19	4-19	4-19	5-19	5-19	8-12	8-12	8-12	6-20	6-20
Power dissipation of control coil, W			3	3	3	3,5	3,5	10	10	10	10	10
Electrical endurance of control coil, mln. cycles		AC-3	1,65	1,65	1,65	1,21	1,10	1,10	1,10	1,10	0,99	0,77
		AC-1	1,43	1,43	1,43	1,43	1,43	1,43	1,43	1,43	1,10	0,77
Mechanical endurance, mln. cycles			15	15	15	12	10	10	10	10	5	4
Overall dimensions, mm		width	45	45	45	56	56	74	74	74	84	84
		height	74	74	74	84	84	127	127	127	127	127
		depth	80	80	80	93	98	114	114	114	125	125
Connection of power circuit, mm		flexible cable	1-4	1-4	1,5-6	1,5-6	2,5-6	6-16	10-25	10-25	16-35	16-35
		rigid cable	1,5-4	1,5-4	2,5-6	2,5-6	4-10	10-25	16-35	16-35	25-50	25-50
		tightening torque, Nm	1,5	1,5	1,5	2,5	5	5	5	5	9	9
Connection of control circuit, mm		flexible cable	1-4			1-4		1-4				
		rigid cable	1-4			1-4		1-4				
		tightening torque, Nm	1,5			1,5		1,5				
Main accessories for contactors		auxiliary contact block	PKE 2NC; PKE 2NO; PKE 2NO+2NC; PKE 4NC; PKE 4NO; PKE NO+NC									
		pneumatic time delay attachment	PVE on delay, 0,1-30sec; PVE on delay, 0,1-3sec; PVE on delay, 10-180sec; PVE off delay, 0,1-30sec; PVE off delay, 0,1-3sec; PVE OFF delay, 10-180sec									
		interlocking devices	Mechanical interlocking up to 32A			mechanical interlocking up to 32A		mechanical interlocking from 40A				
		thermal overload relay	RTE-1305 RTE-1306 RTE-1307 RTE- 1308, RTE-1310 RTE-1312 RTE-1314 RTE-1316 RTE-1321			RTE-2322 RTE-2353 RTE-2355		RTE-3353 RTE-3355 RTE-3357 RTE-3359 RTE-3361 RTE-3361 RTE-3363 RTE-3365				

Overall and installation dimensions

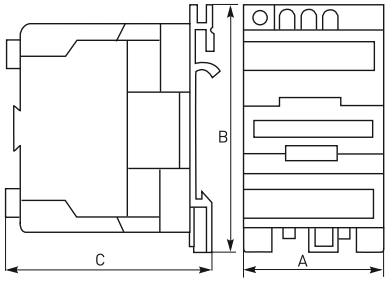
1NC or 1NO: KME 9A; KME 12A; KME 18A



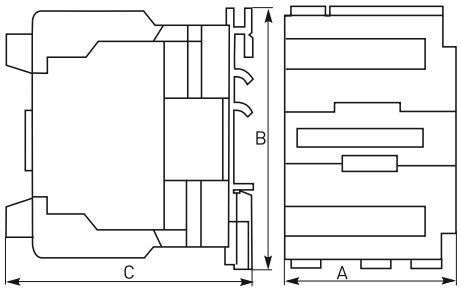
1NC or 1NO: KME 25A; KME 32A



1NO+1NC: KME 40A; KME 50A; KME 65A



1NO+1NC: KME 80A; KME 95A



Overall dimensions, mm	KME 9A	KME 12A	KME 18A	KME 25A	KME 32A
A	45	45	45	56	56
B	74	74	74	84	84
C	80	80	80	93	98

Overall dimensions, mm	KME 40A	KME 50A	KME 65A	KME 80A	KME 95A
A	74	74	74	84	84
B	127	127	127	127	127
C	114	114	114	125	125

Delivery scope

1. Contactors KME EKF are supplied in an individual package.
2. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Name	Rated operating voltage Ue, AC-3, V			Rated operating current, A,		Item code				
						Rated voltage of control coil Uc, V				
	220-240	380-415	690	AC-3	AC-1	24	36	110	230 / 240	400
Contactor KME 9A 1NO EKF	2,2	4	5,5	9	25	ctr-s-9-24-pm	ctr-s-9-36	ctr-s-9-110	ctr-s-9-230 / ctr-s-9-240m	ctr-s-9-380
Contactor KME 9A 1NC EKF						ctr-s-9-24-nc	ctr-s-9-36-nc	ctr-s-9-110-nc	ctr-s-9-220-nc	ctr-s-9-380-nc
Contactor KME 12A 1NO EKF	3	5,5	7,5	12	27	ctr-s-12-24-pm	ctr-s-12-36	ctr-s-12-110	ctr-s-12-230 / ctr-s-12-240m	ctr-s-12-380
Contactor KME 12A 1NC EKF						ctr-s-12-24-nc	ctr-s-12-36-nc	ctr-s-12-110-nc	ctr-s-12-220-nc	ctr-s-12-380-nc
Contactor KME 18A 1NO EKF	4	7,5	10	18	32	ctr-s-18-24-pm	ctr-s-18-36	ctr-s-18-110	ctr-s-18-230 / ctr-s-18-240m	ctr-s-18-380
Contactor KME 18A 1NC EKF						ctr-s-18-24-nc	ctr-s-18-36-nc	ctr-s-18-110-nc	ctr-s-18-220-nc	ctr-s-18-380-nc
Contactor KME 25A 1NO EKF	5,5	11	15	25	43	ctr-s-25-24-pm	ctr-s-25-36	ctr-s-25-110	ctr-s-25-230 / ctr-s-25-240m	ctr-s-25-380
Contactor KME 25A 1NC EKF						ctr-s-25-24-nc	ctr-s-25-36-nc	ctr-s-25-110-nc	ctr-s-25-220-nc	ctr-s-25-380-nc
Contactor KME 32A 1NO EKF	7,5	15	18,5	32	55	ctr-s-32-24-pm	ctr-s-32-36	ctr-s-32-110	ctr-s-32-230 / ctr-s-32-240m	ctr-s-32-380
Contactor KME 32A 1NC EKF						ctr-s-32-24-nc	ctr-s-32-36-nc	ctr-s-32-110-nc	ctr-s-32-220-nc	ctr-s-32-380-nc
Contactor KME 40A 1NO+1NC EKF	11	18,5	30	40	60	ctr-s-40-24	ctr-s-40-36	ctr-s-40-110	ctr-s-40-220 / ctr-s-40-240m	ctr-s-40-380
Contactor KME 50A 1NO+1NC EKF	15	22	33	50	100	ctr-s-50-24	ctr-s-50-36	ctr-s-50-110	ctr-s-50-220 / ctr-s-50-240m	ctr-s-50-380
Contactor KME 60A 1NO+1NC EKF	18,5	30	37	65	115	ctr-s-65-24	ctr-s-65-36	ctr-s-65-110	ctr-s-60-220 / ctr-s-60-240m	ctr-s-65-380
Contactor KME 80A 1NO+1NC EKF	22	37	45	80	133	ctr-s-80- 24	ctr-s-80-36	ctr-s-80-110	ctr-s-80-220 / ctr-s-80-240m	ctr-s-80-380
Contactor KME 95A 1NO+1NC EKF	25	45	45	95	145	ctr-s-95-24	ctr-s-95-36	ctr-s-95-110	ctr-s-95-220 / ctr-s-95-240m	ctr-s-95-380

Contactors KTE 115-630A EKF

The KTE EKF contactors are switching devices, consisting of electromagnetic coil, movable and fixed contacts, enclosed in a housing. When the coil is energized, the generated magnetic field attracts the movable contact, compressing the spring, and making the connection. When the coil is de-energized, the spring pushes back and opens the contacts. Reversing contactors KTE (rev) are two contactors KTE installed on single rail with a mechanical interlock to prevent accidental simultaneous operation of both contactors. Power contacts are connected by compatible busbars.

Standard: IEC/EN 60947-4-1

High endurance silver-plated contacts

Thermal overload relays up to 200 A

Option to install two accessory devices

Faster response for longer service life

Control coil easily replaced

Bridge contact for fast arc quenching

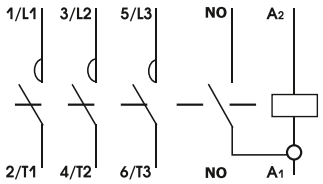
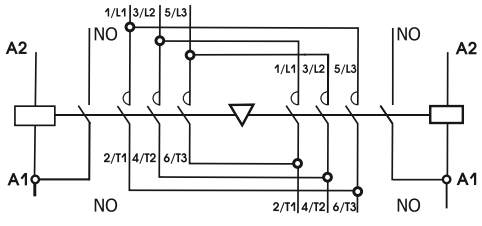
APPLICATION

KTE contactors are used in residential and commercial buildings, public facilities, and industrial applications.

- Switching of machines and equipment; control of production lines, power supply stations, MCCs, ventilation and other utilities.
- Illumination control: industrial, street, office, commercial facilities.

TECHNICAL DATA

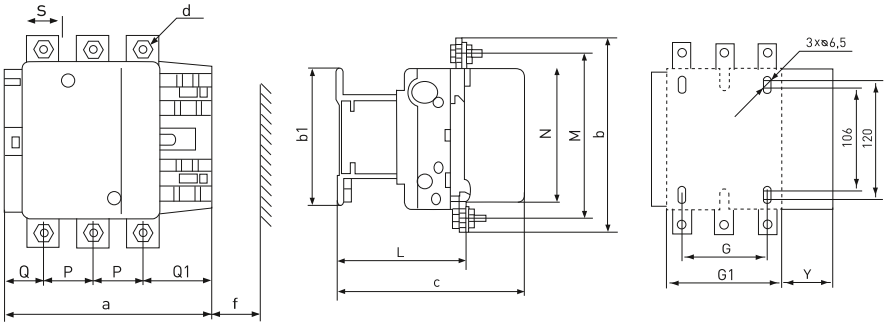
Wiring diagrams

KTE	KTE rev
	

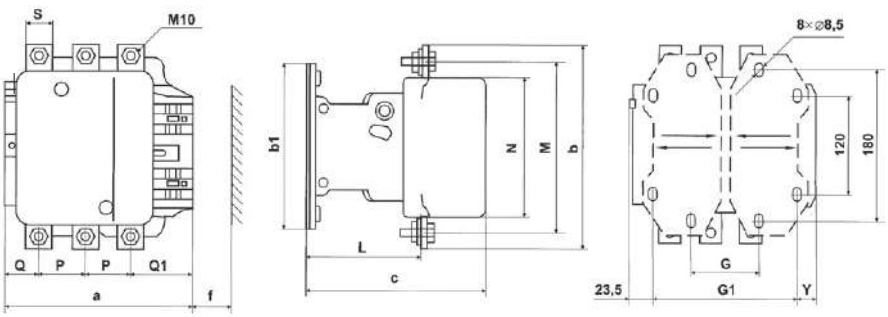
Parameters		KTE 115A	KTE 150A	KTE 185A	KTE 225A	KTE 265A	KTE 330A	KTE 400A	KTE 500A	KTE 630A
Rated operating voltage Ue, VAC		220-240, 380-415, 690								
Auxiliary contacts		1 NO								
Conventional thermal current, A	AC-1	200	250	275	315	350	400	500	700	1000
Rated insulation voltage Ui, V		1000								
Rated impulse withstand voltage Uimp, kV		8								
Maximum short-term load, A	t ⩽ 1 sec.	920	1200	1480	1800	2120	2640	3200	4000	5040
Conventional short-circuit current Inc, A		5000	10 000				18 000			
Intermittent service, operating cycles per hour		1200					600			
Power dissipation @ rated current, W/pole	AC-3	5	8	12	16	21	31	42	45	48
	AC-1	15	22	25	32	37	44	65	88	120
Control circuit characteristics										
Rated control coil voltage Uc, VAC		230, 240, 400, 415								
Control voltage range	Operate	(0,8–1,1) × Uc								
	Release	(0,3–0,6) × Uc								
Consumed power @ Uc, VA	Operate	550		805		1180	650	1075	1100	1650
	Release	45		55		84	10	15	18	22
Response time, ms	Close	23–35				40–65		40–75		40–80
	Open	5–15		7–15		100–170				100–200
Dissipation power, W		12–16		18–24		8		14	18	20
Mechanical endurance, O-C mln. cycles		3				1				
Electrical endurance, O-C mln. cycles	AC-3	1,2		0,6						0,4
	AC-1	0,8		0,3					0,2	
Power circuit connection										
Copper busbar, mm		20 x 3	25 x 3	25 x 3	30 x 4	30 x 4	30 x 5	30 x 5	40 x 5	60 x 5
Flexible wire, mm²		50	75	75	95	95	2 x 75	2 x 95	2 x 120	2 x 240
Tightening torque, N·m		10	18	18	35	35	35	35	35	58
Screw diameter, mm		6	8	8	10	10	10	10	10	12
Control circuit connection										
Copper busbar, mm		1–4								
Flexible wire, mm²		1–4								
Tightening torque, N·m		1,2								
Supported accessories										
Auxiliary contact block		PKE 2NC, PKE 2NO, PKE 2NO+2NC, PKE NO+NC, PKE 4NO, PKE 4NC								
Pneumatic time delay attachment		PVE on delay, 0,1-30sec; PVE on delay, 0,1-3sec; PVE on delay, 10-180sec; PVE off delay, 0,1-30sec; PVE off delay, 0,1-3sec; PVE OFF delay, 10-180sec								
Thermal overload relay		RTE-4355, RTE-4365, RTE-53125, RTE-4380, RTE-4390, RTE-4312, RTE-4313								
Motor protection relay		MPR 20A, MPR 80A, MPR 200A, MPR 400A								

Overall and installation dimensions (mm)

KTE 115A; KTE 150A; KTE 185A; KTE 225A; KTE 265A; KTE 330A

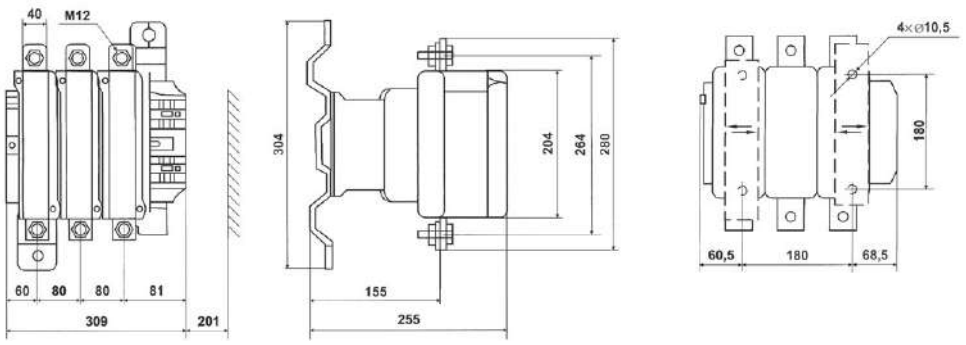


KTE 400A; KTE 500A

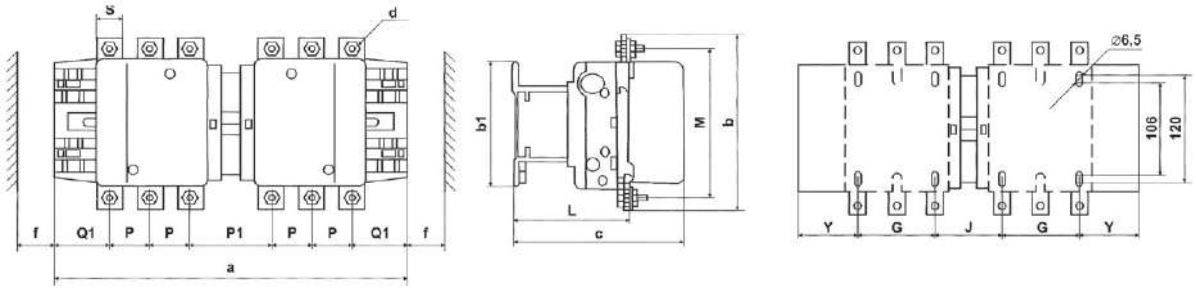


Dimensions, mm	KTE 115 A	KTE 150 A	KTE 185 A	KTE 225 A	KTE 265 A	KTE 330 A	KTE 400 A	KTE 500 A
a	163,5	163,5	168,5	168,5	201,5	213	213	233
P	37	40	40	48	48	48	48	55
Q	29,5	26	29	21	39	43	43	46
Q1	60	57,5	59,5	51,5	66,5	74	74	77
S	20	20	20	25	25	25	25	30
d	M6	M8	M8	M10	M10	M10	-	-
f	131	131	130	130	147	147	151	169
b	162	170	174	197	203	206	206	238
b1	137	137	137	137	145	145	209	209
M	147	150	154	172	178	181	181	208
N	124	124	127	127	147	158	158	172
c	171	171	181	181	213	219	219	232
L	107	107	113,5	113,5	141	145	145	146
G	80	80	80	80	96	96	80	80
G1	106	106	111	111	140	154	170	170
Y	44	44	44	44	38	38	19,5	39,5

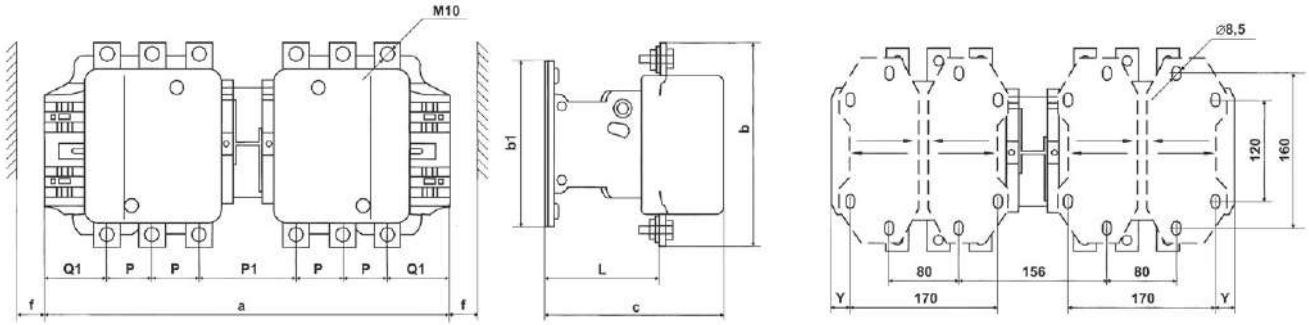
KTE 630 A



KTE rev 115 A; KTE rev 150 A; KTE rev 185 A; KTE rev 225 A; KTE rev 265 A; KTE rev 330 A

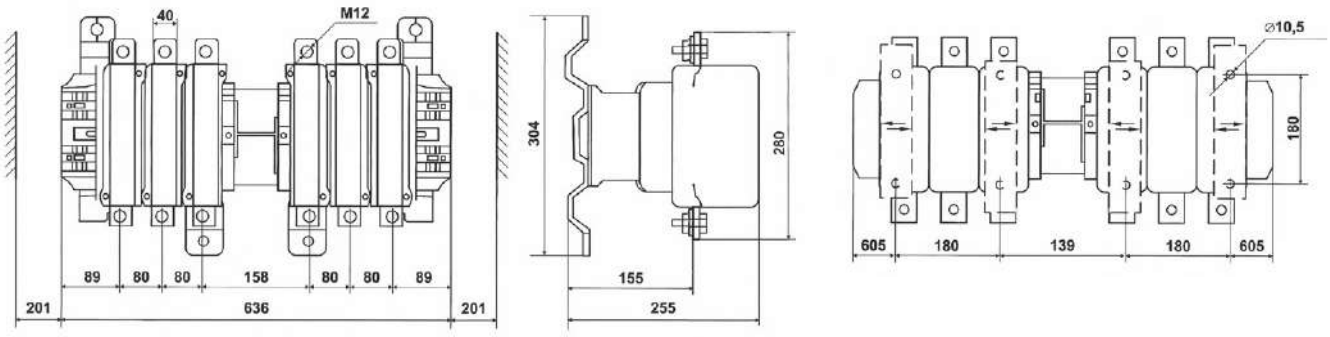


KTE rev 400 A; KTE rev 500 A

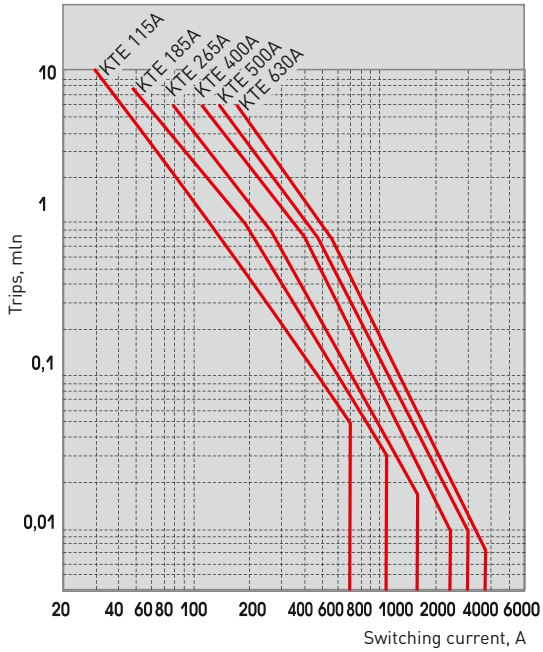


Dimensions, mm	KTE rev 115 A	KTE rev 150 A	KTE rev 185 A	KTE rev 225 A	KTE rev 265 A	KTE rev 330 A	KTE rev 400 A	KTE rev 500 A
a	346	346	357	357	424	445	445	485
P	37	40	40	48	48	48	48	55
P1	78	72	78	62	99	105	105	111
Q1	60	57,5	59,5	51,5	66,5	74	74	77
S	20	20	20	25	25	25	25	30
d	M6	M8	M8	M10	M10	M10	–	–
f	131	131	130	130	147	147	151	169
b	162	170	174	197	203	206	206	238
b1	137	137	137	137	145	145	209	209
M	147	150	154	172	178	181	181	208
c	171	171	181	181	213	219	219	232
L	107	107	113,5	113,5	141	145	145	146
G	80	80	80	80	96	96	–	–
J	72	72	78	78	109	122	–	–
Y	57	57	59,5	59,5	61,5	65,5	19,5	39,5

KTE rev 630 A



Wear resistance



Supported accessories

Contactors KTE EKF support simultaneous use of two accessories. Copper and aluminum wire connections are supported.
Contactors KTE support the following accessories:
1. Auxiliary contact block PKE EKF
2. Pneumatic time delay attachment PVE EKF
3. Replaceable control coil

Delivery scope

1. Contactors KTE EKF are supplied in an individual package.
2. For all available documentation, scan the QR-code on the insert or on the inside of the package

Name	Rated current, A @ < +40 °C, 400 V	Three-phase motors AC-3			KTE				KTE rev	
		Voltage			Item code				Item code	
		Motor power, kW			230 V	240 V	400 V	415 V	230 V	400 V
KTE 115 A EKF	115	30	55	80	ctr-b-115	ctr-b-115m	ctr-b-115-380	ctr-b-115-415m	ctr-b-r-115	ctr-b-r-115-380
KTE 150 A EKF	150	30	55	80	ctr-b-150	ctr-b-150m	ctr-b-150-380	ctr-b-150-415m	ctr-b-r-150	ctr-b-r-150-380
KTE 185 A EKF	185	55	90	110	ctr-b-185	ctr-b-185m	ctr-b-185-380	ctr-b-185-415m	ctr-b-r-185	ctr-b-r-185-380
KTE 225 A EKF	225	63	110	129	ctr-b-225	ctr-b-225m	ctr-b-225-380	ctr-b-225-415m	ctr-b-r-225	ctr-b-r-225-380
KTE 265 A EKF	265	75	132	160	ctr-b-265	ctr-b-265m	ctr-b-265-380	ctr-b-265-415m	ctr-b-r-265	ctr-b-r-265-380
KTE 330 A EKF	330	100	160	220	ctr-b-330	ctr-b-330m	ctr-b-330-380	ctr-b-330-415m	ctr-b-r-330	ctr-b-r-330-380
KTE 400 A EKF	400	100	200	280	ctr-b-400	ctr-b-400m	ctr-b-400-380	ctr-b-400-415m	ctr-b-r-400	ctr-b-r-400-380
KTE 500 A EKF	500	147	250	335	ctr-b-500	ctr-b-500m	ctr-b-500-380	ctr-b-500-415m	ctr-b-r-500	ctr-b-r-500-380
KTE 630 A EKF	630	200	335	450	ctr-b-630	ctr-b-630m	ctr-b-630-380	ctr-b-630-415m	ctr-b-r-630	ctr-b-r-630-380

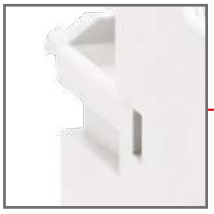
Contactors KMEp 9-95A EKF

The KMEp EKF contactors are switching devices, comprising electromagnetic coil, movable and fixed contacts, enclosed in a housing. When the coil is energized, the generated magnetic field attracts the movable contact, compressing the spring, and makes the connection. When the coil is de-energized, the spring pushes back and opens the contacts. Copper and aluminum wire connection options are supported.

Standard: IEC/EN 60947-4-1

Hemispherical, spring-loaded self-positioning movable contacts. Bridge contact for faster arc extinguishing

Auxiliary contacts with textured surface for improved conductivity and reliable connection



Flame-retardant plastic housing. High electrical endurance. DIN rail & mounting plate options

With high-grade electrical steel core, the coil keeps contacts securely energized at rated voltage. Rubber dampers reduce operation noise

Plate-type terminals for secure wire connection

Silver-alloy contact pads for lower contact transients and increased durability

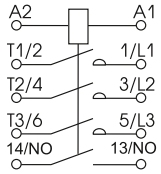
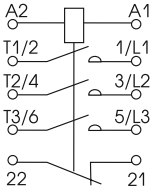
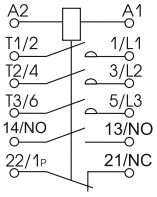
APPLICATION

The KMEp contactors are used in residential and commercial buildings, public facilities, and industrial applications.

- Switching of machines and equipment; control of production lines, power supply stations, MCCs, ventilation and other utilities.
- Illumination control: industrial, street, office, commercial facilities.
- Process control for manufacturing of heaters, air conditioners and other mass-market electrical appliances.

TECHNICAL DATA

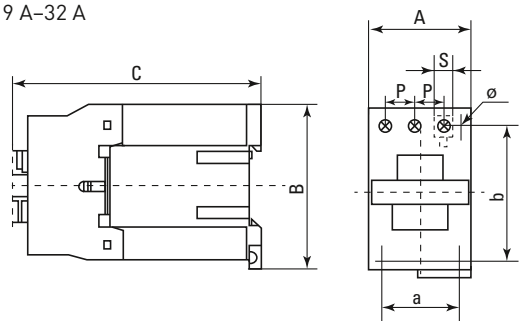
Wiring diagrams

KMEp 9A–32A 1NO	KMEp 9A–32A 1NC	KMEp 40A–95A 1NC+1NO
		

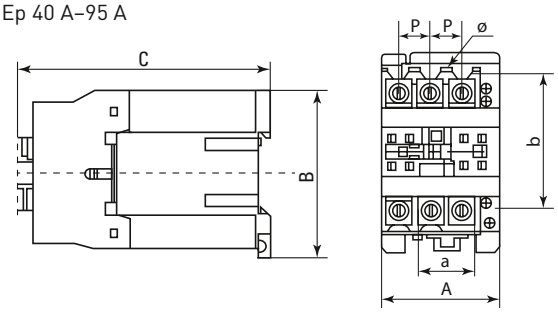
Contactor type			KMEp 9 A	KMEp 12 A	KMEp 18 A	KMEp 25 A	KMEp 32 A	KMEp 40 A	KMEp 50 A	KMEp 65 A	KMEp 80 A	KMEp 95 A
Rated operating current, A	400V	AC-3	9	12	18	25	32	40	50	65	80	95
		AC-4	3,5	5	7,7	8,5	12	18,5	24	28	37	44
Rated thermal current, A			25	25	32	40	50	60	80	80	125	125
Rated power, kW	230V		2,2	3	4	5,5	7,5	11	15	18,5	22	25
	400V		4	5,5	7,5	11	15	18,5	22	30	37	45
	415V		4	5,5	9	11	15	22	30	37	45	45
	500V		5,5	7,5	10	15	18,5	22	30	37	55	55
	600 / 690 V		5,5	7,5	10	15	18,5	30	33	37	45	55
Number of poles			3P									
Rated operating voltage Ue, VAC			220-240, 380-415									
Rated insulation voltage Ui, V			660									
Mechanical endurance, O-C cycles ×10⁴			1000				800					600
Electrical endurance, O-C cycles ×10⁴	AC-3		100				80					60
	AC-4		20					15			10	
Rated operating voltage of control coil, VDC			24, 110, 220									
Control voltage range	Operate		0,85 – 1,1 Us									
	Release		0,1 – 0,75 Us									
Auxiliary contacts			1NO (1NO+1NC for rated currents 40–95 A)									
Degree of protection			IP 20									
Power circuit connection, mm	Flexible cable		1–2,5		1,5–4		2,5–6	6–16	10–25		16–35	
	Rigid cable		1,5–4		2,5–6		4–10	10–25	16–35		25–50	
	Tightening torque, N·m		1,2				2,5				4	
Control circuit connection, mm	Flexible cable		1–4									
	Rigid cable		1-4									
	Tightening torque, N·m		1,2									
Accessories	Auxiliary contact block		PKE 2NC EKF, PKE 2NO EKF, PKE 2NO+2NC EKF, PKE 4NC EKF, PKE 4NO EKF, PKE NO+NC EKF									
	Time relay		PVE, on delay, 0,1-30sec EKF; PVE, on delay, 0,1-3sec EKF; PVE, on delay, 10-180sec EKF; PVE, off delay, 0,1-30sec EKF; PVE, off delay, 0,1-3sec EKF; PVE, OFF delay, 10-180sec EKF									
	Interlock		Mechanical interlock for contactors up to 32 A					Mechanical interlock for contactors up to 40 A				
	Thermal overload relay		RTE-1304, RTE-1305, RTE-1306, RTE-1307, RTE-1308, RTE-1310, RTE-1312, RTE-1314, RTE-1316, RTE-1321, RTE-1322, RTE-2353, RTE-2355				RTE-2353, RTE-2355	RTE-3353, RTE-3355, RTE-3357, RTE-3359, RTE-3361, RTE-3363, RTE-3365				

Overall and installation dimensions

KMEp 9 A–32 A



KMEp 40 A–95 A



Overall dimensions, mm	KMEp 9 A	KMEp 12 A	KMEp 18 A	KMEp 25 A	KMEp 32 A	KMEp 40 A	KMEp 50 A	KMEp 65 A	KMEp 80 A	KMEp 95 A
A	47			59		78			87	
B	76			86		128				
C	115		120	130	135	175			183	
a	35			45		40				
b	50-60					100/100				
Ø	4,5					6,5				
P	10,5			11,3	13,2	20				
S	8,6			10,4	11,7	8,6				

Delivery scope

1. Contactors KMEp EKF are supplied in an individual package.
2. For all available documentation, scan the QR-code on the insert or on the inside of the package.

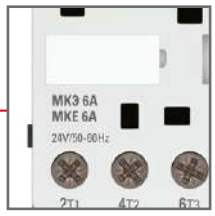
Name	Contact configuration	Rated power AC, 400V, kW	Rated current		Item code		
					Rated voltage of control coil Uc, V DC		
			AC-3	AC-1	24	110	220
KMEp 9 A EKF	1NC	4	9	25	ctr-s-9-24-1nc-p	ctr-s-9-110-nc-p	ctr-s-9-220-nc-p
	1NO				ctr-s-9-24-p	ctr-s-9-110-p	ctr-s-9-220-p
KMEp 12 A EKF	1NC	5,5	12	27	ctr-s-12-24-1nc-p	ctr-s-12-110-nc-p	ctr-s-12-220-nc-p
	1NO				ctr-s-12-24-p	ctr-s-12-110-p	ctr-s-12-220-p
KMEp 18 A EKF	1NC	7,5	18	32	ctr-s-18-24-1nc-p	ctr-s-18-110-nc-p	ctr-s-18-220-nc-p
	1NO				ctr-s-18-24-p	ctr-s-18-110-p	ctr-s-18-220-p
KMEp 25 A EKF	1NC	11	25	43	ctr-s-25-24-1nc-p	ctr-s-25-110-nc-p	ctr-s-25-220-nc-p
	1NO				ctr-s-25-24-p	ctr-s-25-110-p	ctr-s-25-220-p
KMEp 32 A EKF	1NC	15	32	55	ctr-s-32-24-1nc-p	ctr-s-32 110-nc-p	ctr-s-32-220-nc-p
	1NO				ctr-s-32-24-p	ctr-s-32-110-p	ctr-s-32-220-p
KMEp 40 A EKF	1NO 1NC	18,5	40	60	ctr-s-40-24-nc-p	ctr-s-40-110-nc-p	ctr-s-40-220-nc-no-p
KMEp 50 A EKF		22	50	100	ctr-s-50-24-nc-p	ctr-s-50-110-nc-p	ctr-s-50-220-nc-no-p
KMEp 65 A EKF		30	65	115	ctr-s-65-24-nc-p	ctr-s-65-110-nc-p	ctr-s-65-220-nc-no-p
KMEp 80 A EKF		37	80	133	ctr-s-80-24-nc-p	ctr-s-80-110-nc-p	ctr-s-80-220-nc-no-p
KMEp 95 A EKF		45	95	145	ctr-s-95-24-nc-p	ctr-s-95-110-nc-p	ctr-s-95-220-nc-p

Mini contactors MKE 6-16A EKF

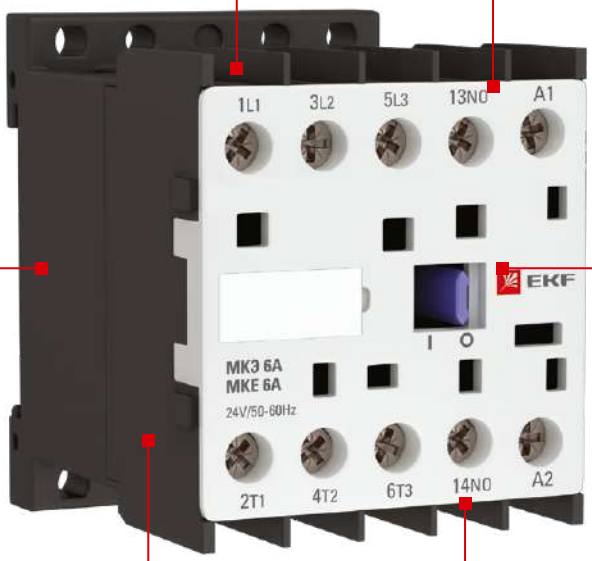
The MKE EKF mini contactors are switching devices, consisting of electromagnetic coil, movable and fixed contacts, enclosed in a compact housing. When the coil is energized, the generated magnetic field attracts the movable contact, compressing the spring, and making the connection. When the coil is de-energized, the spring pushes back and opens the contacts. Copper and aluminum wire connections are supported.

Standard: IEC/EN 60947-4-1

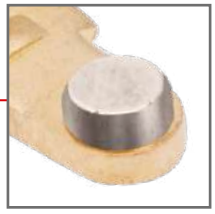
Auxiliary contacts for mini contactors to be used in automation systems



Dedicated labeling area for quick identification of contactors



DIN rail & mounting plate options



High endurance silver-plated contacts

Compact size

Plate-type terminals for secure wire connection

APPLICATION

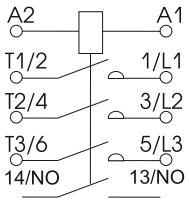
MKE contactors are a perfect solution for limited-space applications:

- HVAC systems;
- Household appliances;
- Lighting;
- Low-power motors.

TECHNICAL DATA

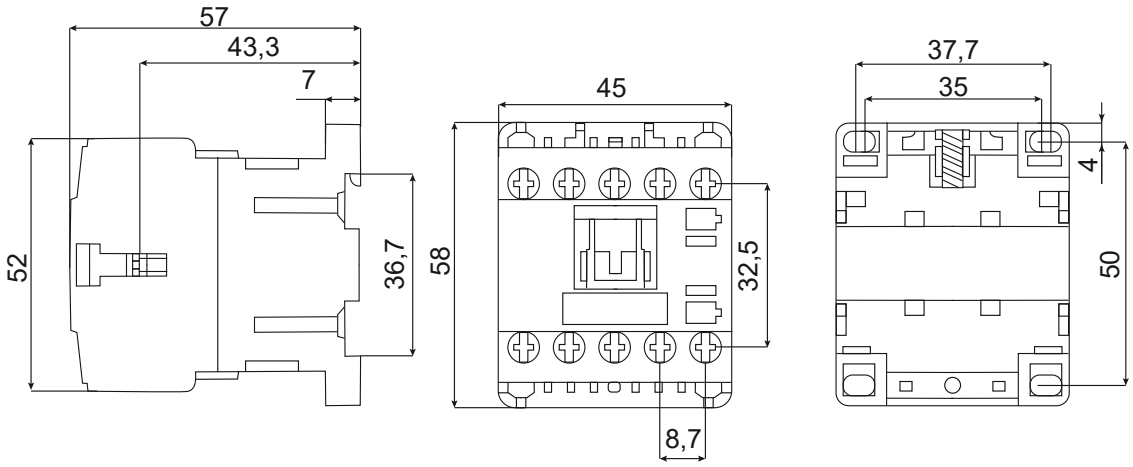
Wiring diagrams

MKE 6-16A



Parameters		MKE 6 A	MKE 9 A	MKE 12 A	MKE 16 A
Rated operating voltage Ue, VAC		230 / 400			
Rated insulation voltage Ui, V		690			
Rated impulse withstand voltage Uimp, kV		6			
Conventional free air thermal current at ⩽ 50 °C, A	for control circuit	10			
	for power circuit	20			
Insulation resistance, MOhm		> 10			
Rated voltage of control coil, V		24, 230, 400			
Number and type of auxiliary contacts		1NO			
Utilization category		AC-3			
Mechanical endurance, O-C mln. cycles		10			
Electrical endurance, O-C mln. cycles		1,3			
Rated operating current Ie, AC-3, A		6	9	12	16
Rated power AC-3, kW	230 V	1,5	2,2	3	4
	400 V	2,2	4	5,5	7,5
Max. short-term load (t ⩽0,5 sec), A		60	90	120	160
Overcurrent protection – gG fuse, A		8	10	20	20
Degree of protection by IEC 60529		IP20			
Operating temperature, °C		- 25 to +50			
Version		Fixed			
Position in space		Vertical			
Installation		35mm DIN rail			

Overall and installation dimensions (mm)



Delivery scope

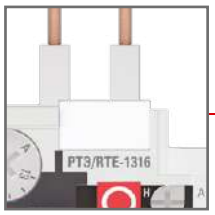
1. Mini contactors MKE EKF are supplied in an individual package.
2. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Name	Rated operating current, A	Rated power AC-3, kW			Item code		
		230 V	400 V	690 V	Rated voltage of control coil, V		
					24	230	400
Mini contactor MKE 6A 24V 1NO EKF	6	1,5	2,2	3	mctr-s-6-24	mctr-s-6-230	mctr-s-6-400
Mini contactor MKE 9A 24V 1NO EKF	9	2,2	4	4	mctr-s-9-24	mctr-s-9-230	mctr-s-9-400
Mini contactor MKE 12A 24V 1NO EKF	12	3	5,5	4	mctr-s-12-24	mctr-s-12-230	mctr-s-12-400
Mini contactor MKE 16A 24V 1NO EKF	16	4	7,5	4	mctr-s-16-24	mctr-s-16-230	mctr-s-16-400

Thermal overload relays RTE EKF

Thermal overload relays RTE EKF are designed to protect three-phase squirrel-cage asynchronous motors against prolonged overload and overcurrent, including those caused by phase loss fault. Relays RTE-1XXX — RTE-3XXX are used for motor control circuits together with contactors KME EKF. Relays RTE-4XXX — RTE-4XXX are used for motor control circuits together with contactors KTE EKF.

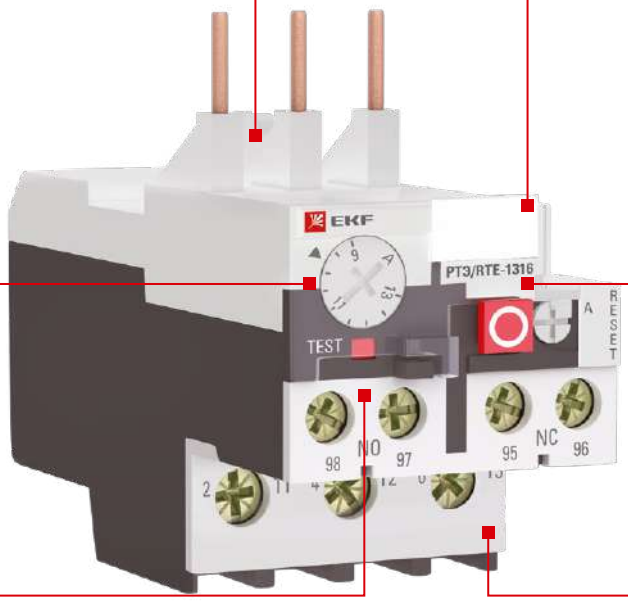
Standard: IEC/EN 60947-4-1



Dedicated labelling space for quicker and easier identification

User configurable

Sealable transparent cover to prevent unauthorized access to RTE settings



Two reclosing modes after tripping: manual & automatic

Test button for release mechanism status check & forced starter shutdown

Plate-type terminals for secure wire connection

Name	Setting range, A	Contactor	Rated operating voltage Ue, V	Rated insulation voltage Ui, V	Item code
RTE-1304 EKF	0.4–0,63	KME 9A; KME 12A; KME 18A; KME 25A	380-415	690	rel-1304-0.4-063
RTE-1305 EKF	0,63–1				rel-1305-0.63-1
RTE-1306 EKF	1–1,6				rel-1306-1-1.6
RTE-1307 EKF	1,6–2,5				rel-1307-1.6-2.5
RTE-1308 EKF	2,5–4				rel-1308-2.5-4
RTE-1310 EKF	4–6				rel-1310-4-6
RTE-1312 EKF	5,5–8				rel-1312-5.5-8
RTE-1314 EKF	7–10				rel-1314-7-10
RTE-1316 EKF	9–13				rel-1316-9-13
RTE-1321 EKF	12–18				rel-1321-12-18
RTE-1322 EKF	17–25				rel-1322-17-25
RTE-2353 EKF	23–32	KME 25A; KME 32A			rel-2353-23-32
RTE-2355 EKF	30–40				rel-2355-30-40
RTE-3353 EKF	23–32	KME 40A, KME 50A, KME 65A, KME 80A, KME 95A			rel-3353-23-32
RTE-3355 EKF	30–40				rel-3355-30-40
RTE-3357 EKF	37–50				rel-3357-37-50
RTE-3359 EKF	48–65				rel-3359-48-65
RTE-3361 EKF	55–70				rel-3361-55-70
RTE-3363 EKF	63–80				rel-3363-63-80
RTE-3365 EKF	80–93				rel-3365-80-93
RTE-4355 EKF	55–80	KTE 115A; KTE 150A; KTE 185A			rel-4355-55-80
RTE-4363 EKF	63–90				rel-4363-63-90
RTE-4380 EKF	80–110				rel-4380-80-110
RTE-4390 EKF	90–120				rel-4390-90-120
RTE-4312 EKF	120–150				rel-4312-120-150
RTE-4315 EKF	150–180				rel-4315-150-180
RTE-53125 EKF	125–200	KTE 225A			rel-53125-125-200

Accessories for contactors

Accessories are designed to extend contactor functionality and application scenarios in control & automation systems, facilitate installation and operation of electrical equipment, providing flexibility and customization. All accessories support both copper and aluminum wire connections. These accessories are not supported by AVERES contactors.

Mounting base for thermal overload relay RTE EKF

Mounting bases for thermal overload relays are used for separate RTE installation in electrical circuits.

Standard: IEC/EN 60947-4-1

Picture	Name	Compatible RTE	Item code
	Mounting base for thermal overload relay RTE 1304-1322 EKF	RTE-1304	mb-1304-1322 0,4-25A
		RTE-1305	
		RTE-1306	
		RTE-1307	
		RTE-1308	
		RTE-1310	
		RTE-1312	
		RTE-1314	
		RTE-1316	
		RTE-1321	
		RTE-1322	
	Mounting base for thermal overload relay RTE 2353-2355 EKF	RTE-2353	mb-2353-2355 23-40A
		RTE-2355	
	Mounting base for thermal overload relay RTE 3353-3365 EKF	RTE-1353	mb-3353-3365 23-93A
		RTE-1355	
		RTE-1357	
		RTE-1359	
		RTE-1361	
		RTE-1363	
		RTE-1365	

Auxiliary contact block PKE EKF

Auxiliary contact blocks are designed to increase the number of auxiliary contacts of KME and KTE contactors. One contactor can be equipped with 2- or 4- contact block PKE with different arrangements of NO & NC contacts. Auxiliary contact blocks are mechanically connected to contactors and secured with a latch.

Standard: IEC/EN 60947-4-1

Picture	Name	Number of contacts	Rated voltage, VAC	Thermal resistance current Ith, A	Degree of protection	Item code
	PKE 2NC EKF	2NC	400	10	IP20	ctr-sc-2nc
	PKE 2NO EKF	2NO				ctr-sc-2no
	PKE 2NO+2NC EKF	2NO+2NC				ctr-sc-2no2nc
	PKE 4NC EKF	4NC				ctr-sc-4nc
	PKE 4NO EKF	4NO				ctr-sc-4no
	PKE NO+NC EKF	NO+NC				ctr-sc-1no1nc

Pneumatic time delay attachment PVE EKF

Pneumatic time delay attachments enable auxiliary circuit close/open delay from 0,1 to 180 sec. With one normally open (NO) and one normally closed (NC) contact, pneumatic time delay attachments are mechanically connected to contactors and secured with a latch to ensure a rigid and secure connection.

Standard: IEC/EN 60947-4-1

Picture	Name	Number of contacts	Time delay range, sec.	Rated voltage, VAC	Thermal resistance current Ith, A	Degree of protection	Item code
	PVE, on delay, 0,1-30sec EKF	NO + NC	0,1-30 ON delay	690	10	IP20	ctr-st-01-30-on
	PVE, on delay, 0,1-3 sec EKF		0,1-3 ON delay				ctr-st-01-3-on
	PVE, on delay, 10-180sec EKF		10-180 ON delay				ctr-st-10-180-on
	PVE, off delay, 0,1-30sec EKF		0,1-30 OFF delay				ctr-st-01-30-off
	PVE, off delay, 0,1-3sec EKF		0,1-3 OFF delay				ctr-st-01-3-off
	PVE, off delay, 10-180sec EKF		10-180 OFF delay				ctr-st-10-180-off

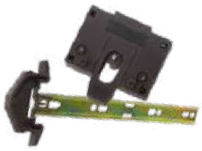
Mechanical interlock for contactor KTE EKF

Mechanical interlocks are used to prevent simultaneous operation of KTE contactors within a common platform in reversing assemblies and ATS. Mechanical interlock can be combined with electrical interlock. Mechanical interlock is installed to the KTE side between the two contactors.

Picture	Name	Item code
	Mechanical interlock for contactor KTE 115-150 EKF	ctr-k-01
	Mechanical interlock for contactor KTE 185-225 EKF	ctr-k-02
	Mechanical interlock for contactor KTE 265-500 EKF	ctr-k-03
	Mechanical interlock for contactor KTE 630 EKF	ctr-k-04

Mechanical interlock for contactor KME EKF

Mechanical interlocks are used to prevent simultaneous operation of KME contactors within a common platform in reversing assemblies and ATS. Mechanical interlock can be combined with electrical interlock. Mechanical interlock is installed to the contactor side between the two contactors.

Picture	Name	Item code
	Mechanical interlock for contactor KME 9-32A EKF	ctr-s-32a
	Mechanical interlock for contactor KME 40-95A EKF	ctr-s-95a

Set of copper busbars for reversing contactor KTE EKF

Set of copper busbars is used for building reversing contactor assemblies.

Picture	Name	Item code
	Set of copper busbars for reversing contactor KTE 115 EKF	ctr-k-10
	Set of copper busbars for reversing contactor KTE 150 EKF	ctr-k-11
	Set of copper busbars for reversing contactor KTE 185 EKF	ctr-k-12
	Set of copper busbars for reversing contactor KTE 225 EKF	ctr-k-13
	Set of copper busbars for reversing contactor KTE 265 EKF	ctr-k-14
	Set of copper busbars for reversing contactor KTE 330-400 EKF	ctr-k-15
	Set of copper busbars for reversing contactor KTE 500 EKF	ctr-k-16
	Set of copper busbars for reversing contactor KTE 630 EKF	ctr-k-17

Set of power contacts for contactor KTE EKF

Set of power contacts is used to replace contacts that are at the end of their useful life.

Picture	Name	Item code
	Set of power contacts for contactor KTE 115-150 EKF	ctr-k-18
	Set of power contacts for contactor KTE 185-225 EKF	ctr-k-19
	Set of power contacts for contactor KTE 265-330 EKF	ctr-k-20
	Set of power contacts for contactor KTE 400 EKF	ctr-k-21
	Set of power contacts for contactor KTE 500 EKF	ctr-k-22
	Set of power contacts for contactor KTE 630 EKF	ctr-k-23

Mounting rails for contactor KTE EKF

Mounting rails are used to secure contactors to each other within a reversing assembly or an ATS and serve as a mounting base.

Picture	Name	Item code
	Mounting rails for contactor KTE 115-150 EKF	ctr-k-05
	Mounting rails for contactor KTE 185-225 EKF	ctr-k-06
	Mounting rails for contactor KTE 265-400 EKF	ctr-k-07
	Mounting rails for contactor KTE 500 EKF	ctr-k-08
	Mounting rails for contactor KTE 630 EKF	ctr-k-09

Motor protection relay MPR EKF

Motor protection relays are used for continuous monitoring and protection of three-phase squirrel-cage motors against overload, load imbalance and phase loss fault. Motor protection relays MPR EKF can be installed both onto 35 mm DIN rail (20A and 80A versions) and mounting plate (200A and 400A versions).

Picture	Name	Current setting range, A	Item code
	Motor protection relay MPR 20A EKF	4-20	mpr-20
	Motor protection relay MPR 80A EKF	16-80	mpr-80
	Motor protection relay MPR 200A EKF	40-200	mpr-200
	Motor protection relay MPR 400A EKF	80-400	mpr-400

Control coil for contactor KME EKF

Control coils KME are used for contactor control by applying voltage to the coil.

Picture	Name	Current setting range, A	Item code
	Control coil for contactor KME 09-18A 24V EKF	24	ctr-k-09-18a-24v
	Control coil for contactor KME 09-18A 36V EKF	36	ctr-k-09-18a-36v
	Control coil for contactor KME 09-18A 110V EKF	110	ctr-k-09-18a-110v
	Control coil for contactor KME 09-18A 230V EKF	230	ctr-k-09-18a-230v
	Control coil for contactor KME 09-18A 400V EKF	400	ctr-k-09-18a-400v
	Control coil for contactor KME 09-18A 415V EKF	415	ctr-k-09-18a-415m
	Control coil for contactor KME 25-32A 24V EKF	24	ctr-k-25-32a-24v
	Control coil for contactor KME 25-32A 36V EKF	36	ctr-k-25-32a-36v
	Control coil for contactor KME 25-32A 110V EKF	110	ctr-k-25-32a-110v
	Control coil for contactor KME 25-32A 230V EKF	230	ctr-k-25-32a-230v
	Control coil for contactor KME 25-32A 400V EKF	400	ctr-k-25-32a-400v
	Control coil for contactor KME 25-32A 415V EKF	415	ctr-k-25-32a-415m
	Control coil for contactor KME 40-95A 24V EKF	24	ctr-k-40-95a-24v
	Control coil for contactor KME 40-95A 36V EKF	36	ctr-k-40-95a-36v
	Control coil for contactor KME 40-95A 110V EKF	110	ctr-k-40-95a-110v
	Control coil for contactor KME 40-95A 230V EKF	230	ctr-k-40-95a-230v
	Control coil for contactor KME 40-95A 400V EKF	400	ctr-k-40-95a-400v
	Control coil for contactor KME 40-95A 415V EKF	415	ctr-k-40-95a-415m

Control coil for contactor KTE EKF

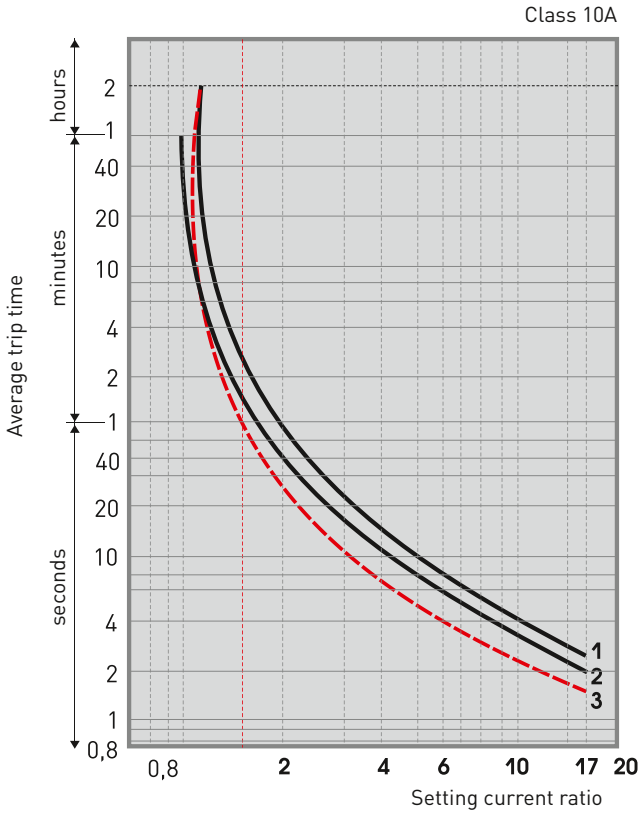
Control coils KTE are used for contactor control by applying voltage to the coil.

Picture	Name	Rated voltage, V	Item code
	Control coil for contactor KTE F 115A-150A 220V EKF	230	ctr-k-b-115/220
	Control coil for contactor KTE F 115A-150A 380V EKF	400	ctr-k-b-115/380
	Control coil for contactor KTE F 185 A–225A 220V EKF	230	ctr-k-b-185/220
	Control coil for contactor KTE F 185 A–225A 380V EKF	400	ctr-k-b-185/380
	Control coil for contactor KTE F 265A-330A 220V EKF	230	ctr-k-b-265/220
	Control coil for contactor KTE F 265A-330A 380V EKF	400	ctr-k-b-265/380
	Control coil for contactor KTE F 400A 220V EKF	230	ctr-k-b-400/220
	Control coil for contactor KTE F 400A 380V EKF	400	ctr-k-b-400/380
	Control coil for contactor KTE F 500A 220V EKF	230	ctr-k-b-500/220
	Control coil for contactor KTE F 500A 380V EKF	400	ctr-k-b-500/380
	Control coil for contactor KTE F 630A 220V EKF	230	ctr-k-b-630/220
	Control coil for contactor KTE F 630A 380V EKF	400	ctr-k-b-630/380

TECHNICAL DATA

Tripping characteristics

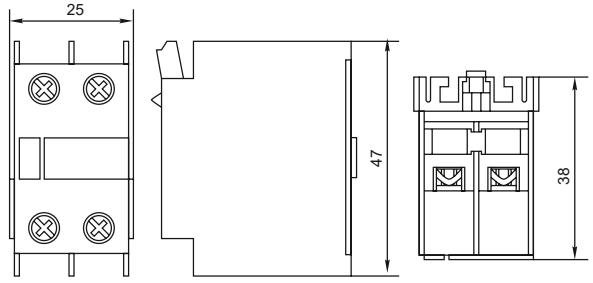
Trip curves of thermal overload relays
1. Symmetrical three-phase mode from cold state
2. Symmetrical two-phase mode from cold state
3. Symmetrical three-phase mode after prolonged rated current flow (hot state).



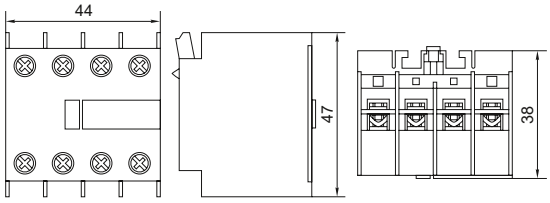
Overall and installation dimensions (mm)

Auxiliary contact block PKE EKF

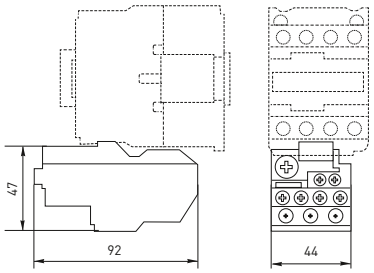
PKE 2NC EKF, PKE 2NO EKF, PKE NO+NC EKF



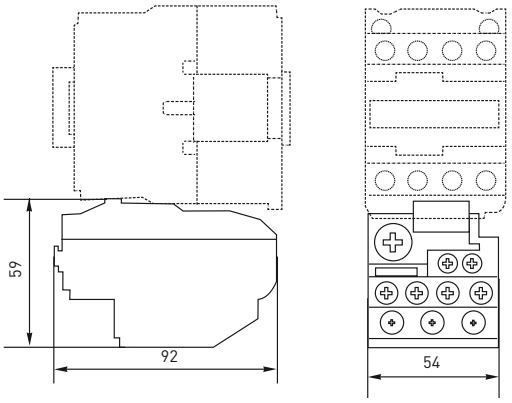
PKE 2NO+2NC EKF, PKE 4NC EKF, PKE 4NO EKF



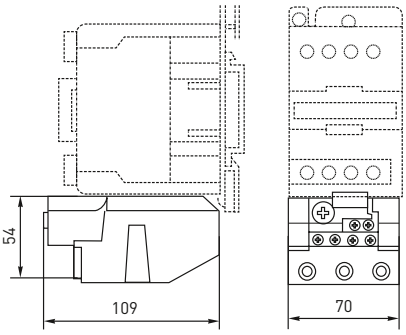
Thermal overload relays RTE
RTE-1304, RTE-1305, RTE-1306, RTE-1307, RTE-1308, RTE-1310, RTE-1312, RTE-1314, RTE-1316, RTE-1321, RTE-1322



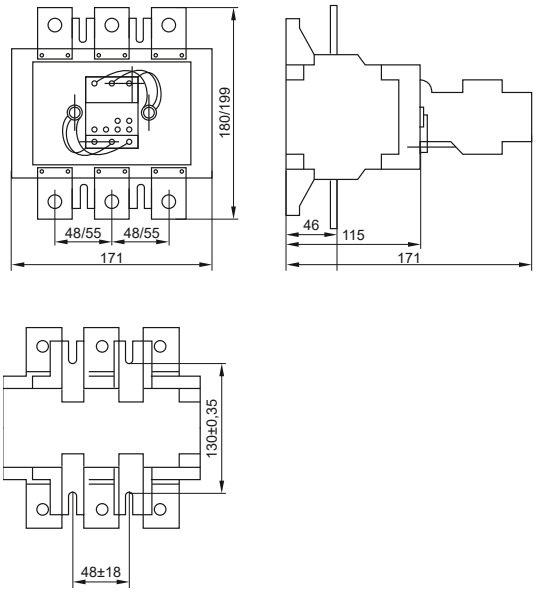
RTE-2353, RTE-2355



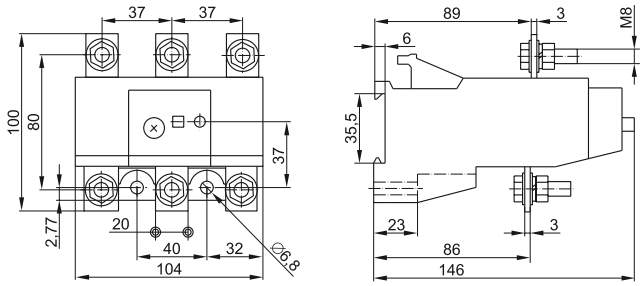
RTE-3353, RTE-3355, RTE-3357, RTE-3359, RTE-3361, RTE-3363, RTE-3365



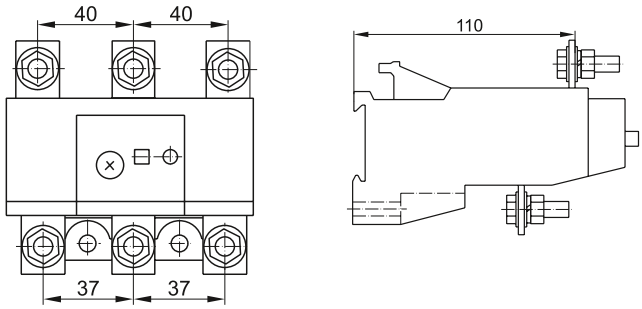
RTE-53125



RTE-4355...RTE-4315
Option 1 (min. configuration)

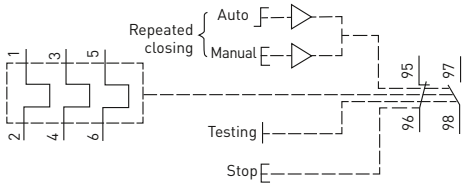


RTE-4355...RTE-4315
Option 2 (max. configuration)

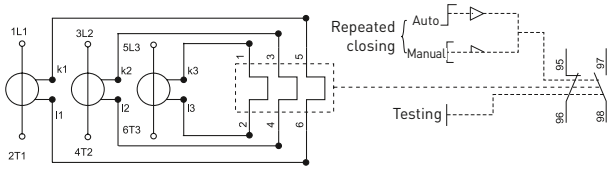


Wiring diagrams

Auxiliary contact block PKE	
PKE NO+NC	PKE 2NO
53 61 NO NC 54 62	53 63 NO NO 54 64
PKE 2NC	PKE 2NO+2NC
71 81 NC NC 72 82	53 61 71 83 NO NC NC NO 54 62 72 84
PKE 4NO	PKE 4NC
53 63 73 83 NO NO NO NO 54 64 74 84	51 61 71 81 NC NC NC NC 52 62 72 82
Pneumatic time delay attachment	
PVE, on delay, 0,1-30sec EKF; PVE, on delay, 0,1-3sec EKF; PVE, on delay, 10-180sec EKF	PVE, off delay, 0,1-30sec EKF; PVE, off delay, 0,1-3sec EKF; PVE, OFF delay, 10-180sec EKF
55 67 56 68	57 65 58 66
Thermal overload relays RTE-1304...RTE-4315	



RTE-53125



Installation and operation

1. For connection of auxiliary contact block PKE and pneumatic time delay attachment PVE, refer to Figure 1.

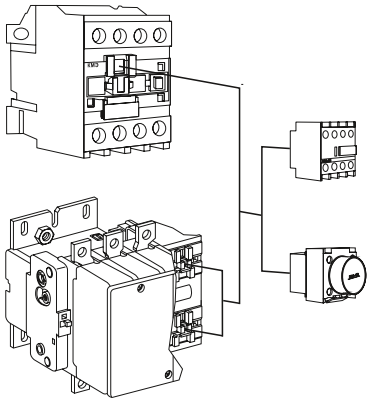


Figure 1

2. Reversing assembly with mechanical interlock (Figure 2).

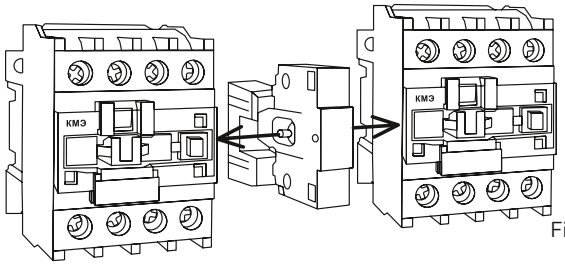


Figure 2

3. Thermal overload relays RTE

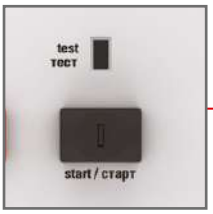
Relay setpoints are user-configurable. To change the trip setpoint, open the transparent cover on the relay housing. Set the required relay trip current by turning the adjustment dial on the left, lining up the desired current value (A) on the dial with the marking on the housing. The cover may be sealed to prevent an unauthorized set-point change. After opening the transparent cover, you can change the reclosing mode by turning the Reset switch. Press and turn the switch to the left to unlock it and turn it into a protruding button for manual relay reclosing mode. Press the switch and turn it to the right to lock it in a depressed position and switch to auto reclosing mode. The switch will remain in the automatic reclosing state until it is manually switched back to the manual reclosing position.
Close the cover to lock the switch. Press the red Stop button to activate Stop function. Press Stop button to open contacts 95-96.
Press the Test button with a screwdriver tip to activate Test function. Press Test button to simulate relay trip by overload – it changes the positions of NC & NO contacts and activates the trip indicator.

Motor starters APD-32, APD-80, GV2P EKF

Motor starters APD-32, APD-80, GV2P with thermomagnetic release are designed for switching 50/60 Hz AC circuits up to 690 V, and for control and protection of three-phase asynchronous motors against overload, phase loss fault, and short circuit.

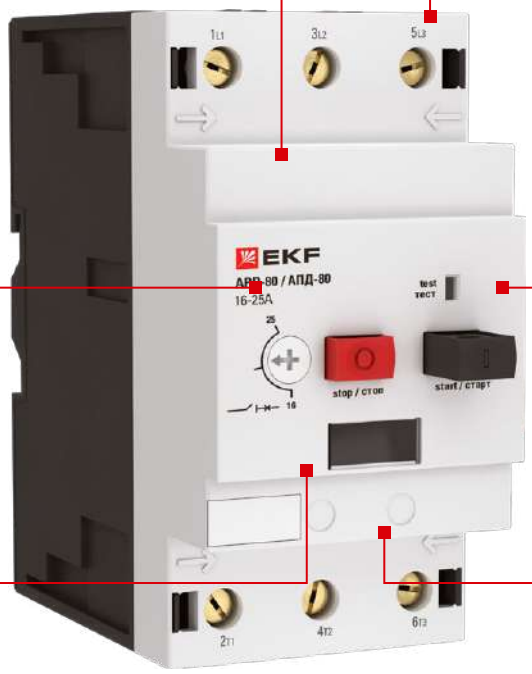
Standards : IEC/EN 60947-4-1, IEC/EN 60947-2

Easy configuration of thermal release with ampere scale

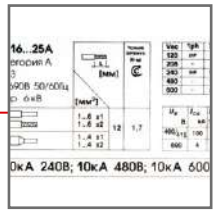


Test button to check release operation

Protection against overload & phase loss (tripped by thermal current of live phases), and short circuit (trip threshold extended to 13 × In to facilitate motor operation)



Trip indicated by switch position



Detailed characteristics marked on the housing

Plate-type terminals for secure wire connection

APPLICATION

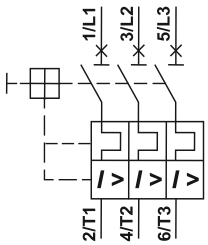
Motor starters can be used for remote control and protection of electric motors in a wide variety of applications:

- Gate control circuits
- Conveyor belt control circuits
- Heating and ventilation plants
- Fill/drain pump control circuits
- Lifting and hoisting equipment

TECHNICAL DATA

Wiring diagrams

APD



Motor starters APD-32 and GV2P EKF support following accessories:
– Auxiliary contact DK
– Alarm contact AK
– Auxiliary contact BK
– Undervoltage release RMN
– Shunt release RN

Parameters	Values	
	APD-32, GV2P	APD-80
Rated operating voltage Ue, V	400–660	
Rated insulation voltage Ui, V	690	
Rated impulse withstand voltage Uimp, kV	6	
Rated frequency, Hz	50 / 60	
Series	32	80
Setting range of thermal release Ir, A	From 0,16 to 32	From 16 to 80
Short circuit trip setting ratio	13 Ir	
Utilization category	AC-3	
Electrical endurance, O-C cycles	2000	
Mechanical endurance, O-C cycles	10 000	
Max. switching frequency, cycles/hour	25	
Power dissipation per pole, W	2,5	
Degree of protection	IP20	
Max. cross-section of connected wires, mm²	35	
Thermal release class, A	10	

Breaking capacity

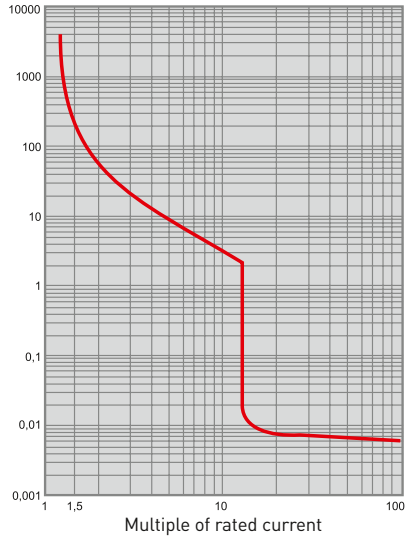
Rated operating current, A	Ultimate breaking capacity Icu & service breaking capacity Ics					
	400 / 415 V		500 V		690 V	
	Icu, кА	Ics, %Icu	Icu, кА	Ics, %Icu	Icu, кА	Ics, %Icu
APD-32, GV2P						
0,1–1,6	•	100	•	100	–	–
0,16–0,25	•	100	•	100	–	–
0,25–0,4	•	100	•	100	–	–
0,4–0,63	•	100	•	100	–	–
0,63–1	•	100	•	100	–	–
1–1,6	•	100	•	100	–	–
1,6–2,5	•	100	•	100	3	75
2,5–4	•	100	•	100	3	75
4–6,3	•	100	50	100	3	75
6–10	•	100	10	100	3	75
9–14	15	50	6	75	3	75
13–18	15	50	6	75	3	75
17–23	15	50	4	75	3	75
20-25	15	50	4	75	3	75
24-32	10	50	4	75	3	75
APD-80						
16-25	50	50	8	100	4	100
25-40	35	50	8	75	4	75
40-63	35	50	8	75	4	75
56-80	15	50	4	100	2	100

• ~ 100kA

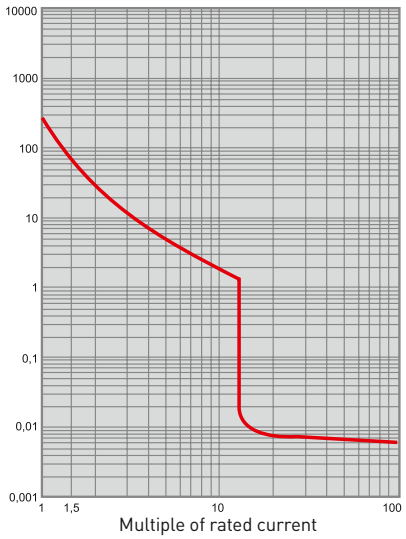
Tripping characteristics

Tripping time @ 20 °C by multiple of rated current

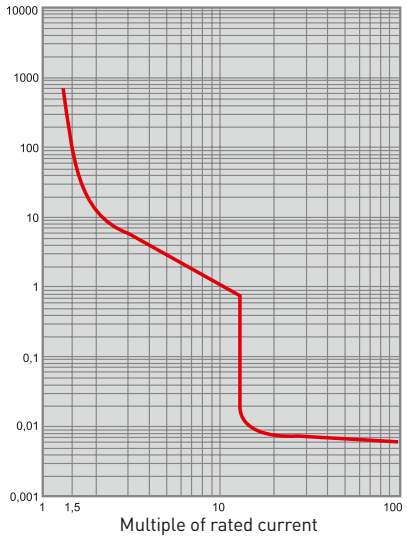
1 – three poles from cold position



2 – two poles from cold position

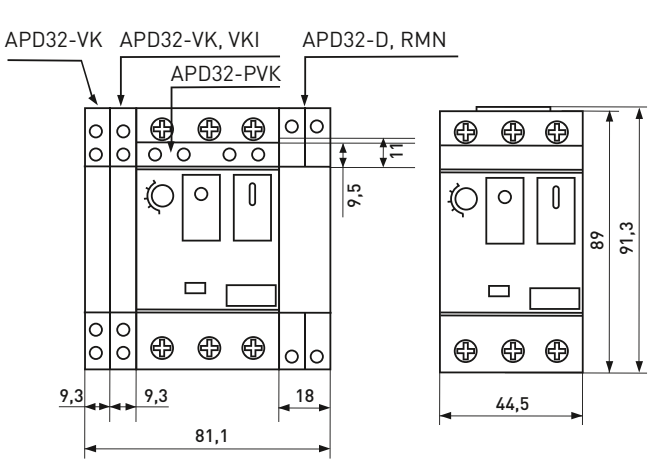


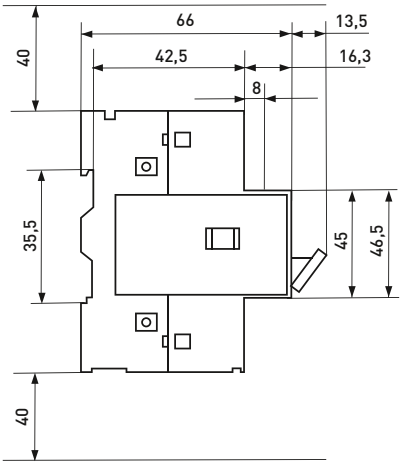
3 – three poles from hot position



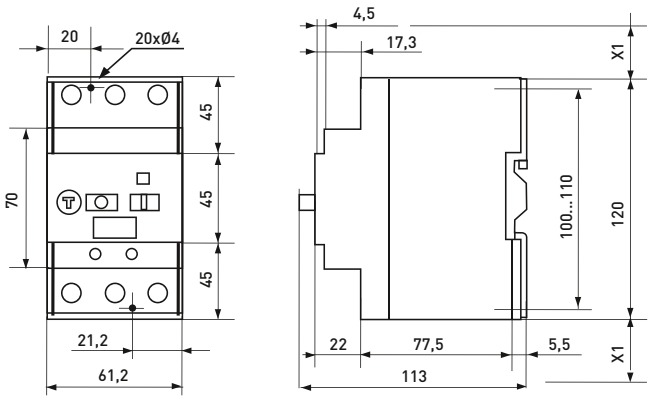
Overall and installation dimensions (mm)

APD-32



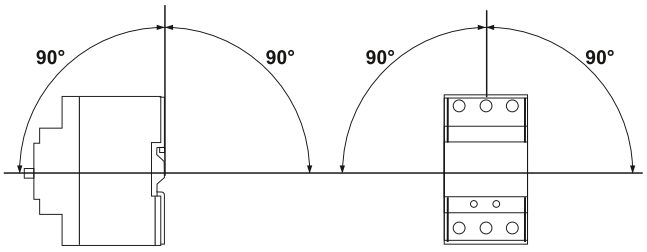


APD-80

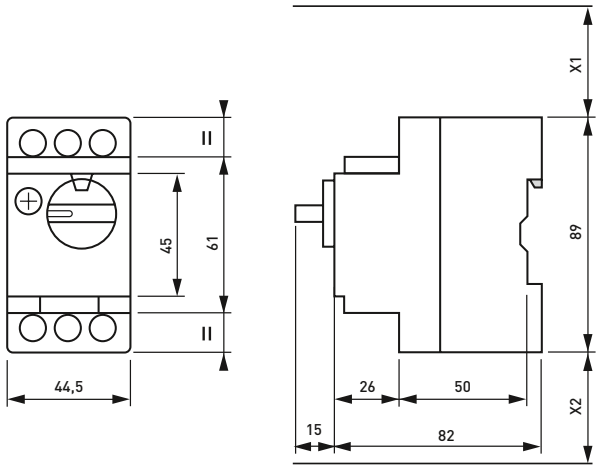


X1 – minimum distance between live parts	40 mm for Ue < 500 V
	50 mm for Ue < 690 V

Position in space



GVP2P



X1 – minimum distance between live parts (ICS max.)	40 mm for Ue = 415 V
	80 mm for Ue = 440V
	120 mm for Ue = 500, 690 V
X2	80 mm

Delivery scope

1. Motor starters GV2P, APD-32 (APD-80) are supplied in an individual package.
2. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Picture	Name	Setting range of thermal release Ir, A	Three-phase electric motor power, kW AC-3, 50/60Hz		Item code
			400/415 V	660 V	
	GV2P 0,4-0,63 A EKF	0,4-0,63	0,18	0,37	gv2p04-pro
	GV2P 0,63-1,0 A EKF	0,63-1,0	0,25	0,55	gv2p05-pro
	GV2P 1,0-1,6 A EKF	1,0-1,6	0,55	1,1	gv2p06-pro
	GV2P 1,6-2,5 A EKF	1,6-2,5	0,75	1,5	gv2p07-pro
	GV2P 2,5-4 A EKF	2,5-4	1,5	3	gv2p08-pro
	GV2P 4-6,3 A EKF	4-6,3	2,2	4	gv2p10-pro
	GV2P 6-10 A EKF	6-10	4	7,5	gv2p14-pro
	GV2P 9-14 A EKF	9-14	5,5	11	gv2p16-pro
	GV2P 13-18 A EKF	13-18	7,5	15	gv2p20-pro
	GV2P 17-23 A EKF	17-23	9	18,5	gv2p21-pro
	GV2P 20-25 A EKF	20-25	11	–	gv2p22-pro
	GV2P 24-32 A EKF	24-32	15	22	gv2p32-pro

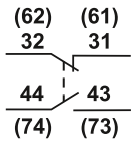
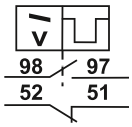
Picture	Name	Setting range of thermal release Ir, A	Three-phase electric motor power, kW		Item code
			AC-3, 50/60Hz		
			400/415 V	660 V	
	APD-32 0,1-0,16 A EKF	0,1–0,16	0,02	0,04	apd2-0.1-0.16
	APD-32 0,16-0,25 A EKF	0,16–0,25	0,06	0,11	apd2-0.16-0.25
	APD-32 0,25-0,4 A EKF	0,25–0,4	0,09	0,18	apd2-0.25-0.4
	APD-32 0,4-0,63 A EKF	0,4–0,63	0,18	0,37	apd2-0.4-0.63
	APD-32 0,63-1,0 A EKF	0,63–1	0,25	0,55	apd2-0.63-1
	APD-32 1,0-1,6 A EKF	1–1,6	0,55	1,1	apd2-1-1,6
	APD-32 1,6-2,5 A EKF	1,6–2,5	0,75	1,5	apd2-1,6-2.5
	APD-32 2,5-4 A EKF	2,5–4	1,5	3	apd2-2.5-4
	APD-32 4-6,3 A EKF	4–6,3	2,2	4	apd2-4-6,3
	APD-32 6-10 A EKF	6–10	4	7,5	apd2-6-10
	APD-32 9-14 A EKF	9–14	5,5	11	apd2-9-14
	APD-32 13-18 A EKF	13–18	7,5	15	apd2-13-18
	APD-32 17-23 A EKF	17–23	9	18,5	apd2-17-23
	APD-32 20-25 A EKF	20-25	11	–	apd2-20-25
	APD-32 24-32 A EKF	24-32	15	22	apd2-24-32
	APD-80 16-25 A EKF	16-25	11	18,5	apd3-16-25
	APD-80 25-40 A EKF	25-40	18,5	30	apd3-25-40
	APD-80 40-63 A EKF	40-63	30	45	apd3-40-63
	APD-80 56-80 A EKF	56-80	37	55	apd3-56-80

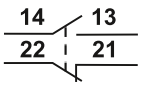
Accessories for motor starter APD-32

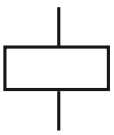
Accessories are designed to be used in electrical equipment control circuits based on APD-32. These circuits can easily integrate into a larger scale control & automation systems. All APD accessories are sold separately. Copper and aluminum wire connections are supported.

TECHNICAL DATA

Wiring diagrams

DK-11	AK-1001
	

BK-11


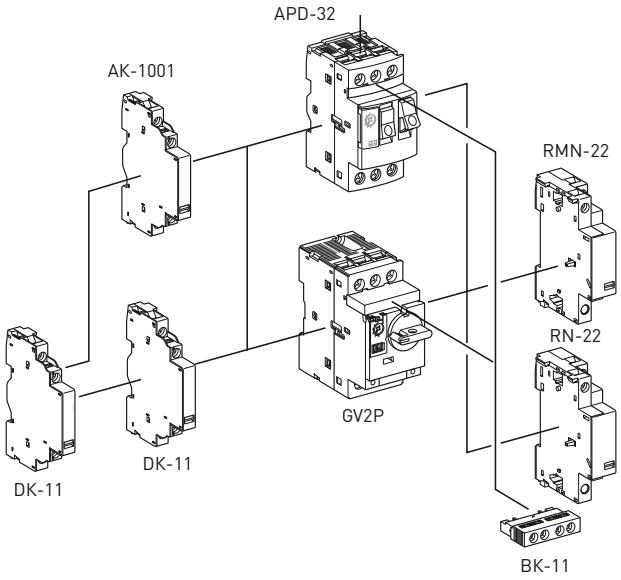
RMN-22	RN-22
	

Overall and installation dimensions

Accessories' dimensions are referred to the APD-32 installation dimensions.

Supported accessories

APD-32 can be complemented with one shunt release, two auxiliary contacts, one alarm contact and one auxiliary contact (BK).
Auxiliary and alarm contacts are installed to the left, contact BK is installed at the front, and release is installed to the right of APD.



All APD-32 accessories are compatible with motor starters GV2P.

Name	Type of contacts	Insulation voltage Ui, V	Thermal resistance current Ith, A	Item code
Auxiliary contact DK-11 NO+NC for motor starter APD-32 EKF	NO + NC	690	6	apd2-dk11
Auxiliary and alarm contact AK-1001 NO+NC for motor starter APD-32 EKF	NO + NC	690	2,5	apd2-ak1001
Auxiliary contact BK-11 NO+NC for motor starter APD-32 EKF	NO + NC	250	2,5	apd2-bk11

Name	Voltage, V				Item code
	Operating voltage Ue	Insulation voltage Ui	Hold voltage	Release voltage	
Undervoltage release RMN-22 for motor starter APD-32 220V EKF	220–240	690	(0,85...1,1) Un	(0,8...0,35) Un	apd2-rmn22
Shunt release RN-22 for motor starter APD-32 230V EKF	220–240	690	–	–	apd2-rn22

Enclosed direct-on-line starters with indication KME IP65 EKF

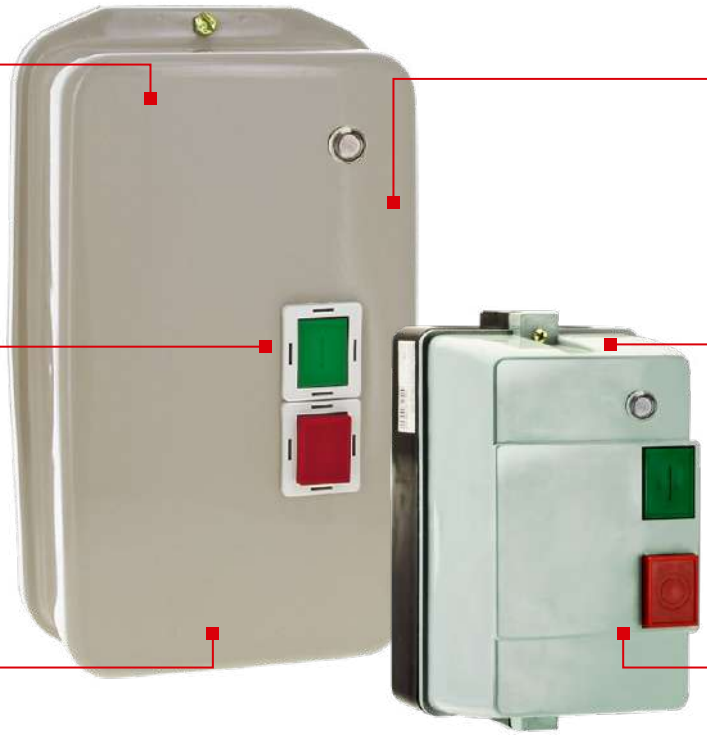
Enclosed direct-on-line starters with indication KME comprise contactor, thermal overload relay and control buttons mounted in a sealed IP65 housing. The starters are designed for remote start (by directly connecting the load to the power supply) and stop of three-phase squirrel-cage asynchronous electric motors up to 415 V AC, and for protection of motors against a prolonged overload or overcurrent caused by phase loss fault. KME 9A – KME 32A contactors feature a plastic housing, while KME 40A – KME 95A models have a metal housing.

Standard: IEC/EN 60947-4-1

Motor overload protection

Plastic housing for KME up to 40A, metal housing for KME over 40A

LED motor start indication



Start & Stop buttons on front panel

Copper and aluminum wire connections supported

Contactor KME and thermal overload relay securely pre-assembled in the housing

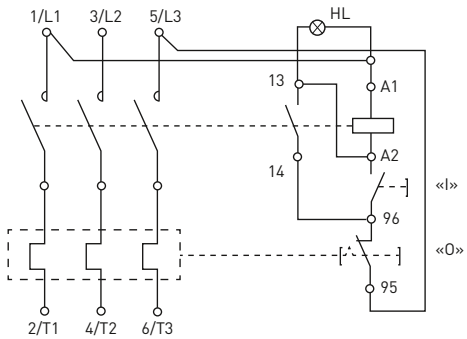
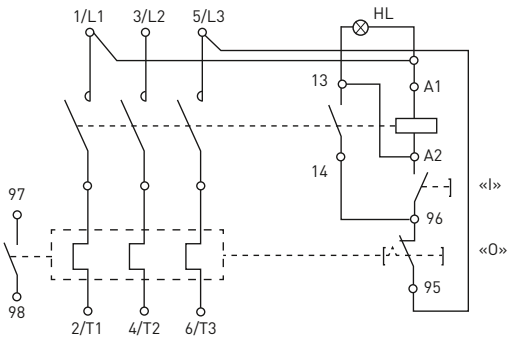
APPLICATION

Remote motor starters in a weatherproof housing can be used for remote control and protection of electric motors in a wide variety of indoor and outdoor applications where a simple forward operation of the motor is mandated:

- Conveyor belt control circuits.
- Heating and ventilation plants.
- Pump control circuits.
- Lifting and hoisting equipment.

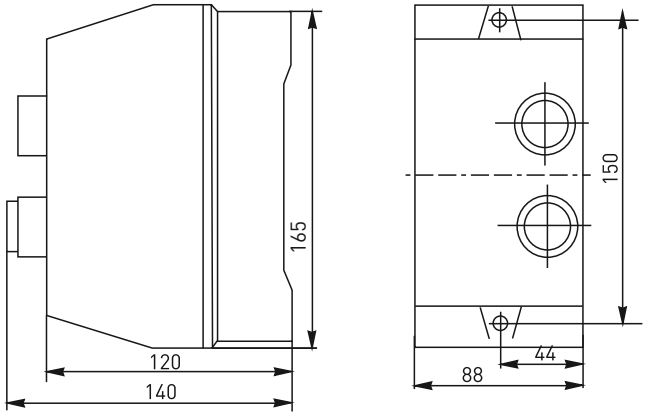
TECHNICAL DATA

Wiring diagrams

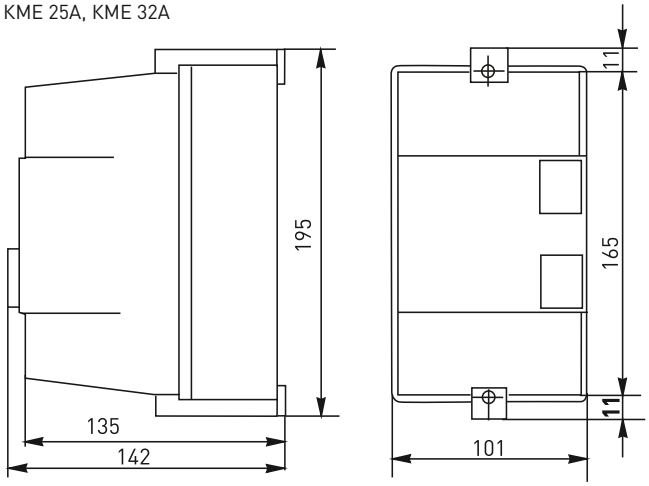
Enclosed direct-on-line starters KME 9 A – 32 A with indication	Enclosed direct-on-line starters KME 40 A – 95 A with indication
	

Overall and installation dimensions (mm)

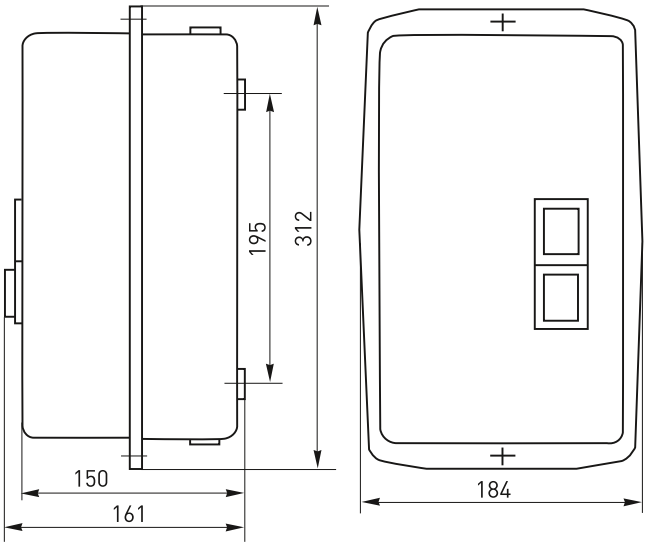
KME 09A, KME 12A, KME 18A



KME 25A, KME 32A



KME 40A, KME 50A, KME 65A, KME 80A, KME 95A



Delivery scope

1. Enclosed direct-on-line starters with indication KME IP65 EKF are supplied in an individual package.
2. For all available documentation, scan the QR-code on the insert or on theinside of the package.

Name	Housing material	Rated operating current, A	Rated power, kW	Rated control coil voltage, V	Thermal overload relay setting range, A	Item code
KME 9A 230V with thermal overload relay Ir-7-10A and indication IP65 EKF	Plastic	9	4	230	7-10	ctrp-r-9-230v-led
KME 9A 240V with thermal overload relay Ir-7-10A 50°C and indication IP65 EKF		9	4	240	7-10	ctrp-r-9-240-led-m
KME 9A 400V with thermal overload relay Ir-7-10A and indication IP65 EKF		9	4	400	7-10	ctrp-r-9-400v-led
KME 9A 415V with thermal overload relay Ir-7-10A 50°C and indication IP65 EKF		9	4	415	7-10	ctrp-r-9-415-led-m
KME 12A 230V with thermal overload relay Ir-9-13A and indication IP65 EKF		12	5,5	230	9-13	ctrp-r-12-230v-led
KME 12A 240V with thermal overload relay Ir-9-13A 50°C and indication IP65 EKF		12	5,5	240	9-13	ctrp-r-12-240-led-m
KME 12A 400V with thermal overload relay Ir-9-13A and indication IP65 EKF		12	5,5	400	9-13	ctrp-r-12-400v-led
KME 12A 415V with thermal overload relay Ir-9-13A 50°C and indication IP65 EKF		12	5,5	415	9-13	ctrp-r-12-415-led-m
KME 18A 230V with thermal overload relay Ir-12-18A and indication IP65 EKF		18	7,5	230	12-18	ctrp-r-18-230v-led
KME 18A 240V with thermal overload relay Ir-12-18A 50°C and indication IP65 EKF		18	7,5	240	12-18	ctrp-r-18-240-led-m
KME 18A 400V with thermal overload relay Ir-12-18A and indication IP65 EKF		18	7,5	400	12-18	ctrp-r-18-400v-led
KME 18A 415V with thermal overload relay Ir-12-18A 50°C and indication IP65 EKF		18	7,5	415	12-18	ctrp-r-18-415-led-m
KME 25A 230V with thermal overload relay Ir-17-25A and indication IP65 EKF		25	11	230	17-25	ctrp-r-25-230v-led
KME 25A 240V with thermal overload relay Ir-17-25A 50°C and indication IP65 EKF		25	11	240	17-25	ctrp-r-25-240-led-m
KME 25A 400V with thermal overload relay Ir-17-25A and indication IP65 EKF		25	11	400	17-25	ctrp-r-25-400v-led
KME 25A 415V with thermal overload relay Ir-17-25A 50°C and indication IP65 EKF		25	11	415	17-25	ctrp-r-25-415-led-m
KME 32A 230V with thermal overload relay Ir-23-32A and indication IP65 EKF		32	15	230	23-32	ctrp-r-32-230v-led
KME 32A 240V with thermal overload relay Ir-23-32A 50°C and indication IP65 EKF		32	15	240	23-32	ctrp-r-32-240-led-m
KME 32A 400V with thermal overload relay Ir-23-32A and indication IP65 EKF		32	15	400	23-32	ctrp-r-32-400v-led
KME 32A 415V with thermal overload relay Ir-23-32A 50°C and indication IP65 EKF		32	15	415	23-32	ctrp-r-32-415-led-m
KME 40A 230V with thermal overload relay Ir-30-40A and indication IP65 EKF	Metal	40	18,5	230	30-40	ctrp-r-40-230v-led
KME 40A 400V with thermal overload relay Ir-30-40A and indication IP65 EKF		40	18,5	400	30-40	ctrp-r-40-400v-led
KME 50A 230V with thermal overload relay Ir-37-50A and indication IP65 EKF		50	22	230	37-50	ctrp-r-50-230v-led
KME 50A 400V with thermal overload relay Ir-37-50A and indication IP65 EKF		50	22	400	37-50	ctrp-r-50-400v-led
KME 65A 230V with thermal overload relay Ir-48-65A and indication IP65 EKF		65	30	230	48-65	ctrp-r-65-230v-led
KME 65A 400V with thermal overload relay Ir-48-65A and indication IP65 EKF		65	30	400	48-65	ctrp-r-65-400v-led
KME 80A 230V with thermal overload relay Ir-63-80A and indication IP65 EKF		80	37	230	63-80	ctrp-r-80-230v-led
KME 80A 400V with thermal overload relay Ir-63-80A and indication IP65 EKF		80	37	400	63-80	ctrp-r-80-400v-led
KME 95A 230V with thermal overload relay Ir-80-95A and indication IP65 EKF		95	45	230	80-93	ctrp-r-95-230v-led
KME 95A 400V with thermal overload relay Ir-80-93A and indication IP65 EKF		95	45	400	80-93	ctrp-r-95-400v-led

Enclosed direct-on-line reversing starters KME 9-95A IP44 EKF

Enclosed direct-on-line reversing starters KME IP44 EKF are designed to start, stop, reverse, and protect electric motors from overload and overcurrent caused by phase loss fault.

Standard: IEC/EN 60947-4-1

IP44 metal housing

Motor overload protection

Reversible motor control

Start, Stop & Reverse buttons at front panel

APPLICATION

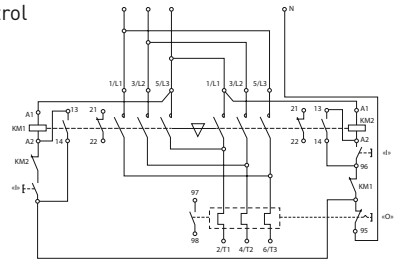
Reversible motor starters can be used for remote control and protection of electric motors in a wide variety of applications where a forward/reverse operation of the motor is mandated:

- Gate control circuits
- Conveyor belt control circuits
- Heating and ventilation plants
- Fill/drain pump control circuits
- Lifting and hoisting equipment

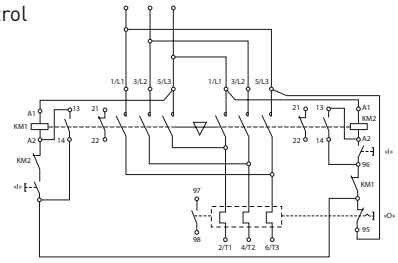
TECHNICAL DATA

Wiring diagrams

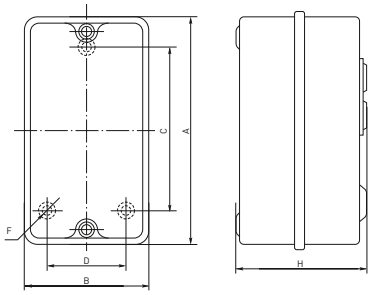
KME with control coil 230V



KME with control coil 400V



Overall and installation dimensions



Enclosed direct-on-line reversing starter KME	Dimensions, mm					
	A	B	C	D	H	F
9A / 12A / 18A	210	225	155	178	130	6
25A / 32A	225	225	178	178	130	6
40A / 50A / 65A	415	265	350	210	185	7
80A / 95A	415	265	350	210	185	7

Delivery scope

1. Enclosed direct-on-line reversing starters KME IP44 EKF are supplied in an individual package.
2. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Name	Rated operating current, A	Rated power, kW	Compatible thermal overload relay	Item code	
				Rated voltage of control coil, V	
				230	400
Enclosed direct-on-line reversing starter KME 9A	9	4	RTE-1314 (7-10A)	ctrp-r-9-230v-rev	ctrp-r-9-400v-rev
Enclosed direct-on-line reversing starter KME 12A	12	5,5	RTE-1316 (9-13A)	ctrp-r-12-230v-rev	ctrp-r-12-400v-rev
Enclosed direct-on-line reversing starter KME 18A	18	7,5	RTE-1321 (12-18A)	ctrp-r-18-230v-rev	ctrp-r-18-400v-rev
Enclosed direct-on-line reversing starter KME 25A	25	11	RTE-1322 (17-25A)	ctrp-r-25-230v-rev	ctrp-r-25-400v-rev
Enclosed direct-on-line reversing starter KME 32A	32	15	RTE-2353 (23-32A)	ctrp-r-32-230v-rev	ctrp-r-32-400v-rev
Enclosed direct-on-line reversing starter KME 40A	40	18,5	RTE-3355 (30-40A)	ctrp-r-40-230v-rev	ctrp-r-40-400v-rev
Enclosed direct-on-line reversing starter KME 50A	50	22	RTE-3357 (37-50A)	ctrp-r-50-230v-rev	ctrp-r-50-400v-rev
Enclosed direct-on-line reversing starter KME 65A	65	30	RTE-3359 (48-65A)	ctrp-r-65-230v-rev	ctrp-r-65-400v-rev
Enclosed direct-on-line reversing starter KME 80A	80	37	RTE-3363 (63-80A)	ctrp-r-80-230v-rev	ctrp-r-80-400v-rev
Enclosed direct-on-line reversing starter KME 95A	95	45	RTE-3365 (80-93A)	ctrp-r-95-230v-rev	ctrp-r-95-400v-rev

Frequency converters VECTOR-100 EKF

Industrial frequency converters VECTOR-100 EKF enable accurate control of the motor rotation speed based on external input, as well as power savings of more than 30 percent. The frequency converters are designed for rated power from 0,4 to 630 kW. Copper and aluminum wire connections are supported.

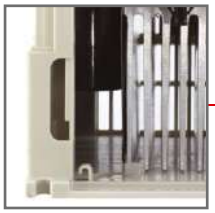
- Two motor control modes: scalar control (V/f) and non-feedback vector control.
- Starting torque of 150% @ 0,25 Hz for conveyor lines and other starting torque sensitive devices.
- Withstands short-term 150% overload (for up to 60 seconds) enabling the use of more powerful motors.
- Integrated RS-485 with Modbus support for easy integration with industrial automation systems.
- Ambient temperature range: from -10°C to +50°C to ensure reliable operation in control panels crowded with other equipment.
- Integrated PLC for simple automation tasks.
- Plug-in external display that can be mounted onto the panel door to prevent unauthorised access to the panel internals.

External operator panel cable included

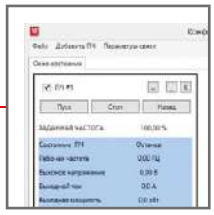
Easy standard cooling fan mount

Multilayer conformal PCB coating

Two-line LED external HMI panel



Internal structure facilitates convection airflow



Free device management and control software

APPLICATION

VECTOR-100 frequency convertors are used in ventilation and pumping automation systems, conveying and elevator systems, etc., enabling:

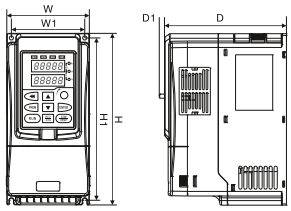
- soft start, rotation speed control and overload protection of electric motors;
- reduction of inrush current;
- single-phase to three-phase conversion (single-phase converters).

TECHNICAL DATA

Parameters	Values
Minimal single-phase power (1x230), kW	0,4
Maximum single-phase power (1x230), kW	2,2
Minimal three-phase power (3x400), kW	0,75
Maximum three-phase power (3x400), kW	360
Output frequency, Hz	600
Output voltage @ 3x380 input, V	400
Carrier frequency, kHz	16
Starting torque, %	SVC – 150 @ 0,5 Hz; V/F – 150 @ 1 Hz
Overload capacity, %	150 for 60 s; 180 for 20 s
Non-feedback vector control (SVC)	Available
Scalar control V/F	Available
Digital input connections	6
Analog input connections	3
Digital output connections	2
Analog output connections	1
RS485, ModBus RTU protocol	Available
PID	Available
PLC	Available
Cooling	Fan
Ambient temperature, °C	-10 to 60
Service life, years	7
Warranty, years	3

Overall and installation dimensions

a



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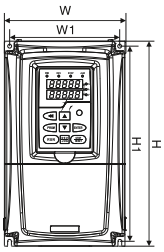
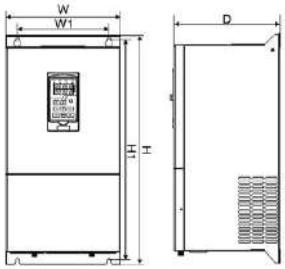


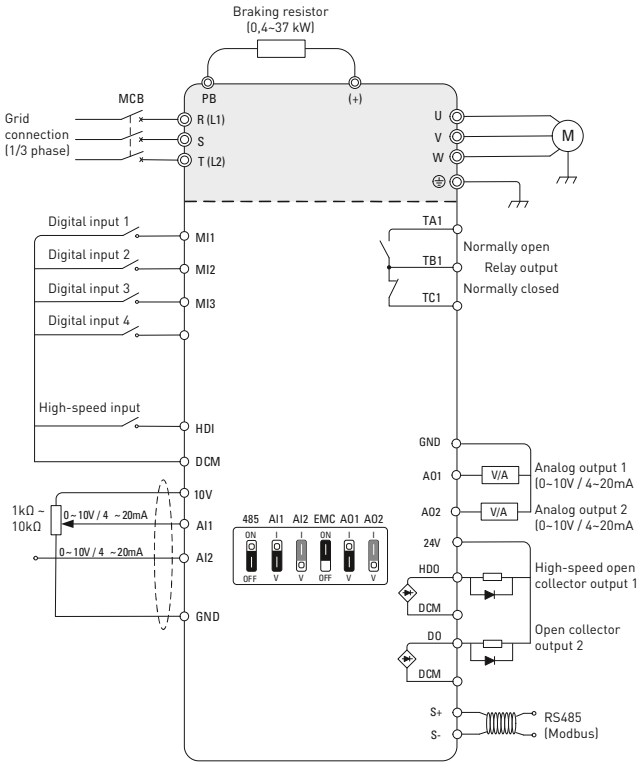
c



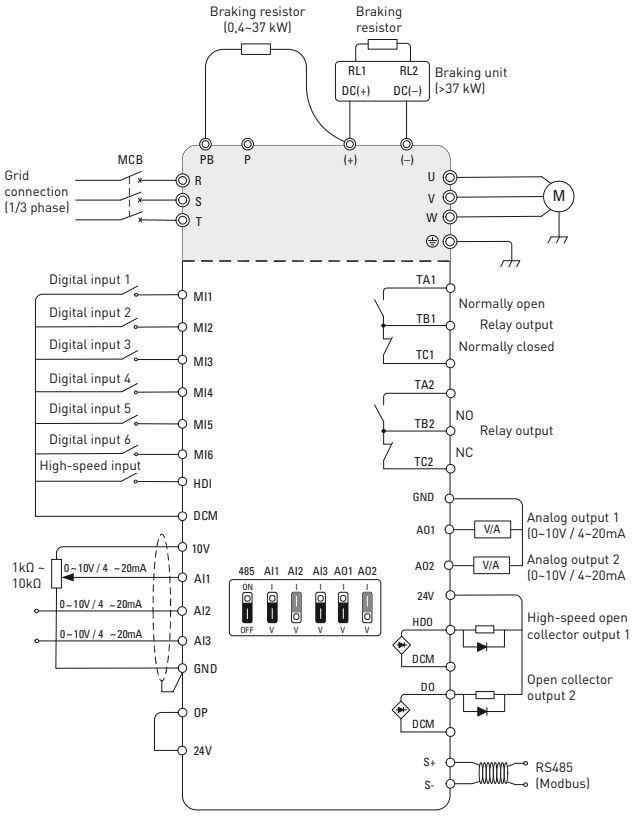
Item code	W	W1	H1	H	D	Fig.
	mm					
VT100-0R4-1(B)	90	80	177	187	133	a
VT100-0R7-1(B)						
VT100-1R5-1(B)						
VT100-2R2-1B						
VT100-0R7-3(B)						
VT100-1R5-3(B)						
VT100-2R2-3B						
VT100-4R0-3B	100	90	197	207	142	
VT100-5R5-3B	130	115	236,5	247	162	
VT100-7R5-3B						
VT100-011-3B	160	146	259	272	201	b
VT100-015-3B						
VT100-018-3B	211	196	299	313	202	
VT100-022-3B						
VT100-030-3B	252	201	399	418	206,9	c
VT100-037-3B						
VT100-045-3B	299	240	581	603	276,7	
VT100-055-3B						
VT100-075-3B	338	280	619	643	312	
VT100-090-3						
VT100-110-3						
VT100-132-3	410	320	776	803	323,7	
VT100-160-3						
VT100-185-3						
VT100-200-3						
VT100-220-3	650	520	1046,8	1078,8	430,2	
VT100-250-3						
VT100-280-3						
VT100-315-3						
VT100-355-3	800	700	1280	1320	438	
VT100-400-3						
VT100-450-3						
VT100-500-3	1028	800	1460	1500	450	
VT100-560-3						
VT100-630-3						

Wiring diagrams

0,4 to 7,5 kW



11 to 630 kW



Delivery scope

1. Frequency converter
2. Technical manual
3. Operation manual
4. External operator panel cable

Name	Rated motor power, kW	Rated pump and fan drive power, kW	Rated input current, A	Rated output current, A	Item code
Single-phase, 230 V ± 20%					
Frequency converter VECTOR-100 0,4/0,75kW 1x230V EKF	0,4	0,75	5,4	2,3	VT100-0R4-1B
Frequency converter VECTOR-100 0,75/1,5kW 1x230V EKF	0,75	1,5	8,2	4	VT100-0R7-1B
Frequency converter VECTOR-100 1,5/2,2kW 1x230V EKF	1,5	2,2	14	7	VT100-1R5-1B
Frequency converter VECTOR-100 2,2/4kW 1x230V EKF	2,2	4	24	9,6	VT100-2R2-1B
Three-phase, 400 V ± 20%					
Frequency converter VECTOR-100 0,75/1,5kW 3x380V EKF	0,75	1,5	3,4	2,5	VT100-0R7-3B
Frequency converter VECTOR-100 1,5/2,2kW 3x380V EKF	1,5	2,2	5	4,2	VT100-1R5-3B
Frequency converter VECTOR-100 2,2/4kW 3x380V EKF	2,2	4	5,8	5,5	VT100-2R2-3B
Frequency converter VECTOR-100 4/5,5kW 3x380V EKF	4	5,5	11	9,5	VT100-4R0-3B
Frequency converter VECTOR-100 5,5/7,5kW 3x380V EKF	5,5	7,5	14,6	13	VT100-5R5-3B
Frequency converter VECTOR-100 7,5/11kW 3x380V EKF	7,5	11	20,5	17	VT100-7R5-3B
Frequency converter VECTOR-100 11/15kW 3x380V EKF	11	15	26	25	VT100-011-3B
Frequency converter VECTOR-100 15/18kW 3x380V EKF	15	18	35	32	VT100-015-3B
Frequency converter VECTOR-100 18/22kW 3x380V EKF	18	22	38	37	VT100-018-3B
Frequency converter VECTOR-100 22/30kW 3x380V EKF	22	30	46	45	VT100-022-3B
Frequency converter VECTOR-100 30/37kW 3x380V EKF	30	37	62	60	VT100-030-3B
Frequency converter VECTOR-100 37/45kW 3x380V EKF	37	45	76	75	VT100-037-3B
Frequency converter VECTOR-100 45/55kW 3x380V EKF	45	55	92	90	VT100-400-3
Frequency converter VECTOR-100 45/55kW 3x380V EKF	45	55	92	90	VT100-045-3B
Frequency converter VECTOR-100 55/75kW 3x380V EKF	55	75	113	110	VT100-055-3
Frequency converter VECTOR-100 55/75kW 3x380V EKF	55	75	113	110	VT100-055-3B
Frequency converter VECTOR-100 75/90kW 3x380V EKF	75	90	157	152	VT100-075-3
Frequency converter VECTOR-100 75/90kW 3x380V EKF	75	90	157	152	VT100-075-3B
Frequency converter VECTOR-100 90/110kW 3x380V EKF	90	110	180	176	VT100-090-3
Frequency converter VECTOR-100 90/110kW 3x380V EKF	90	110	180	176	VT100-090-3B
Frequency converter VECTOR-100 110/132kW 3x380V EKF	110	132	214	210	VT100-110-3
Frequency converter VECTOR-100 110/132kW 3x380V EKF	110	132	214	210	VT100-110-3B
Frequency converter VECTOR-100 132/160kW 3x380V EKF	132	160	260	253	VT100-132-3
Frequency converter VECTOR-100 160/185kW 3x380V EKF	160	185	310	304	VT100-160-3
Frequency converter VECTOR-100 185/200kW 3x380V EKF	185	200	365	350	VT100-185-3
Frequency converter VECTOR-100 200/220kW 3x380V EKF	200	220	385	380	VT100-200-3
Frequency converter VECTOR-100 220/250kW 3x380V EKF	220	250	430	426	VT100-220-3
Frequency converter VECTOR-100 250/280kW 3x380V EKF	250	250	485	465	VT100-250-3
Frequency converter VECTOR-100 280/315kW 3x380V EKF	280	315	531	520	VT100-280-3
Frequency converter VECTOR-100 315/350kW 3x380V EKF	315	350	620	585	VT100-315-3
Frequency converter VECTOR-100 350/400kW 3x380V EKF	350	400	665	650	VT100-355-3
Frequency converter VECTOR-100 400/450kW 3x380V EKF	400	450	785	725	VT100-400-3
Frequency converter VECTOR-100 450/500kW 3x380V EKF	450	500	880	820	VT100-450-3
Frequency converter VECTOR-100 500/560kW 3x380V EKF	500	560	960	900	VT100-500-3
Frequency converter VECTOR-100 560/630kW 3x380V EKF	560	630	1050	1000	VT100-560-3
Frequency converter VECTOR-100 630/710kW 3x380V EKF	630	710	1130	1100	VT100-630-3

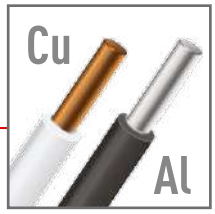
Frequency converters VECTOR-80 EKF

Compact frequency converters VECTOR-80 EKF are designed to control the rotation speed of industrial electric motors. Frequency converters enable fine speed control as well as additional power savings. Frequency converters are designed for rated motor power from 0,4 to 2,2 kW.

External control panel included in the package

PCB conformal coating

Installation on DIN rail and mounting plate



Copper and aluminum wire connections supported

Integrated RS485 interface

Compact case

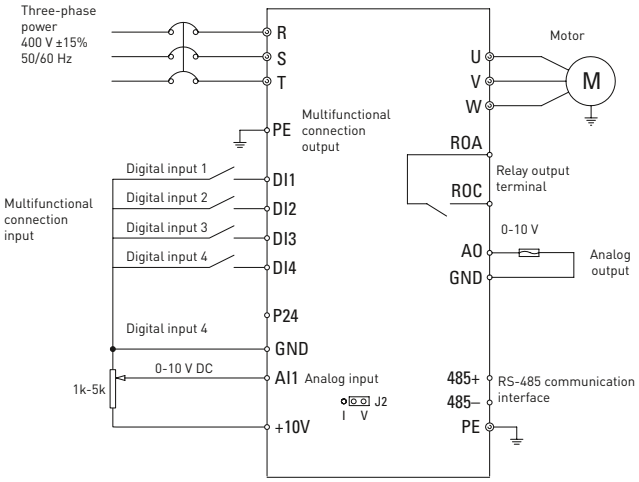
APPLICATION

Industrial frequency controllers VECTOR-80 EKF are intended for operation in ventilation and pumping automation systems, conveying or elevator systems, etc. They enable:

- motor soft start, rotation speed control, overload protection;
- reduced inrush current;
- single-phase to three-phase conversion [single-phase converters].

TECHNICAL DATA

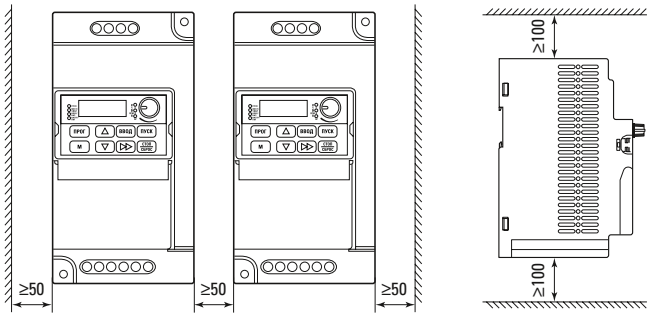
Wiring diagram



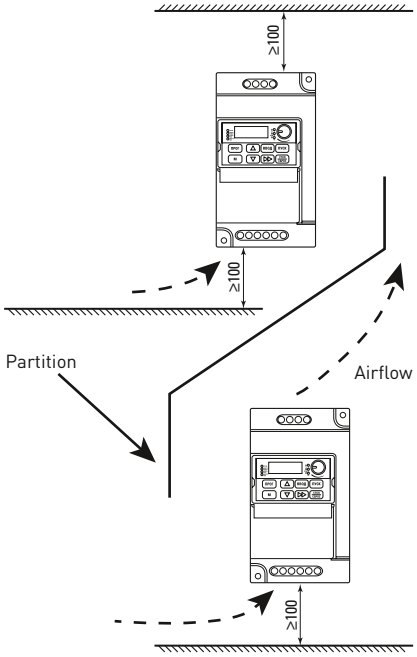
Parameters	Values
Minimal three-phase power (3x400 V), kW	0,75
Maximum three-phase power (3x400 V), kW	11
Minimal single-phase power (1x230 V), kW	0,75
Maximum single-phase power (1x230 V), kW	1,5
Output frequency, Hz	500
Carrier frequency, kHz	16
Starting torque, %	V/F – 150 @ 1 Hz
Overload capacity, %	150 for 60 s
Scalar control V/F	Available
Non-feedback vector control (SVC)	Available
Inputs/Outputs	
Digital input connections	4
Analog input connections	1
Digital output connections, relay/transistor	1
Analog output connections	1
Interfaces	
RS-485, ModBus RTU protocol	Available
Functions	
PID	Available
PLC	Available
Design	
Cooling	Fan
Ambient temperature, °C	-10 to 60
Degree of protection	IP20

Installation and operation

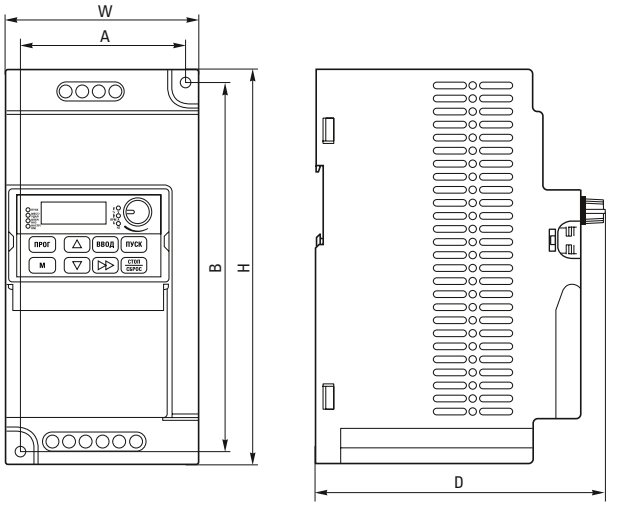
For installation requirements please, refer to installation diagrams below.



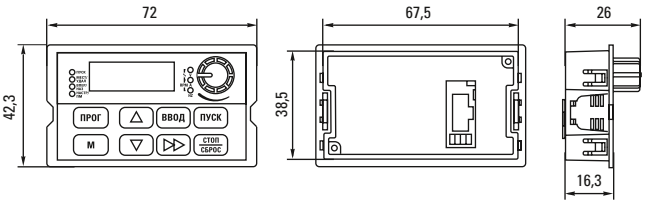
Vertical installation of multiple frequency converters



Overall and installation dimensions



Motor power, kW	Installation dimensions		W, mm	H, mm	D, mm	Mounting hole diameter, mm
	A, mm	B, mm	External dimensions			
0,75-2,2	60	141,1	72	151,8	125,6	5
4-5,5	73	166	85	179	131,6	4
7,5-11	110	205	125	220	167	4



Delivery scope

1. Frequency converter – 1 pc.
2. Operation manual - 1 pc.
3. Technical manual – 1 pc.

Name	Total capacity, kVA	Input current, A	Output current, A	Rated motor power, kW	Heat output, kW	Item code
Single-phase 230 V, 50-60 Hz						
Frequency converter 0,75 kW 1x230V VECTOR-80 EKF	1,5	8,2	4,0	0,75	0,030	VT80-0R7-1
Frequency converter 1,5 kW 1x230V VECTOR-80 EKF	3	14	7,0	1,5	0,055	VT80-1R5-1
Three-phase 400 V, 50/60 Hz						
Frequency converter 0,75 kW 3x400V VECTOR-80 EKF	1,5	3,4	2,1	0,75	0,027	VT80-0R7-3
Frequency converter 1,5 kW 3x400V VECTOR-80 EKF	3	5	3,8	1,5	0,050	VT80-1R5-3
Frequency converter 2,2 kW 3x400V VECTOR-80 EKF	4	5,8	5,1	2,2	0,066	VT80-2R2-3

EMI filters for frequency converters EKF

EMI filters for EKF frequency converter use passive components: capacitors, resistors and induction coils. EMI filters are used to comply with electromagnetic compatibility requirements in settings highly sensitive to harmonic interference (hospitals, data centers, laboratories, etc.). Three-phase EMI filters for EKF frequency converters can significantly reduce interference within a specified frequency range.

High insulation resistance

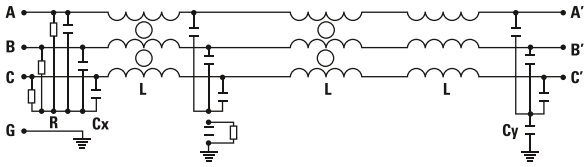
Surge immunity up to 1500 V

One-piece case

TECHNICAL DATA

Wiring diagram

Connect the EMI filter to the frequency converter on the mains side only! Make sure to minimize the conductor length between the EMI filter and the frequency converter.



Parameters	Values
Rated voltage, V	380-440 AC
Insulation test voltage between phases for 1 minute, V	1500 DC
Insulation test voltage Phase-Earth for 1 minute, V	1500 AC; 2500 DC
Frequency, Hz	50-60
Operating temperature, °C	-25 to +55
Insulation resistance, MOhm	≥1500

Interference suppression table

Item code	Rated current, A	0,15 MHz	0,5 MHz	1 MHz	5 MHz	10 MHz	30 MHz
Anti-phase interference suppression, dB							
vector-emi-1R5	5	80	85	85	75	65	70
vector-emi-4R0	10	80	90	90	75	70	65
vector-emi-7R5	16	75	90	90	75	75	65
vector-emi-15	30	75	90	85	75	65	60
vector-emi-22	45	75	90	85	75	65	55
vector-emi-37	80	58	78	75	65	60	50
vector-emi-45	100	65	85	90	80	75	70
vector-emi-55	150	55	80	75	70	65	55
vector-emi-75	200	55	85	75	70	65	55
In-phase interference suppression, dB							
vector-emi-1R5	5	85	80	80	80	75	70
vector-emi-4R0	10	70	90	90	85	85	70
vector-emi-7R5	16	70	90	90	80	75	70
vector-emi-15	30	70	90	90	85	80	70
vector-emi-22	45	85	85	75	85	80	70
vector-emi-37	80	65	85	80	65	60	50
vector-emi-45	100	65	85	80	80	65	60
vector-emi-55	150	65	80	85	80	65	55
vector-emi-75	200	70	90	90	80	75	60

Delivery scope

1. EMI filter for frequency converter EKF – 1 pc.
2. Technical manual – 1 pc.

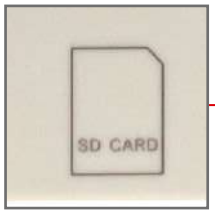
Model	Rated current, A	Frequency converter power, kW	Dimensions, mm			Item code
			Length	Width	Height	
EMI filter for frequency converter 0,75–1,5 kW EKF	5	0,75–1,5	136	105	42	vector-emi-1R5
EMI filter for frequency converter 2,2–4,0 kW EKF	10	2,2–3,7	136	105	42	vector-emi-4R0
EMI filter for frequency converter 5,5–7,5 kW EKF	20	5,5–7,5	136	105	42	vector-emi-7R5
EMI filter for frequency converter 11–15 kW EKF	30	11–15	165	130	50	vector-emi-15
EMI filter for frequency converter 18,5–22 kW EKF	50	18,5–22	240	165	80	vector-emi-22
EMI filter for frequency converter 18,5–22 kW EKF	80	30–37	300	220	100	vector-emi-37
EMI filter for frequency converter 45 kW EKF	100	45	300	220	100	vector-emi-45
EMI filter for frequency converter 55 kW EKF	120	55	300	220	100	vector-emi-55
EMI filter for frequency converter 75 kW EKF	150	75	352	185	112	vector-emi-75

Control & Automation

HMI PRO-Screen

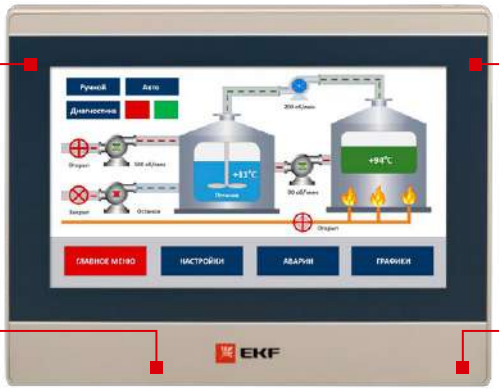
PRO-Screen is a human-machine interface device designed to establish process control and monitoring systems. PRO-Screen can be used in various industries where pocesses are controlled by programmable logic controllers and industrial automation devices. PRO-Screen is compatible with devices of any manufacturer and can be configured and programmed with the PRO-Screen Master software.

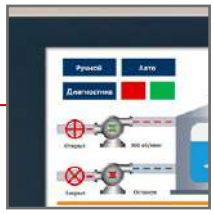
Standards: IEC/EN 61131-2



SD card slot

RS232/RS485/
RS422 interfaces





Resistive display

Ethernet interface &
USB ports

APPLICATION

PRO-Screen is used in monitoring and control systems for a variety of applications:

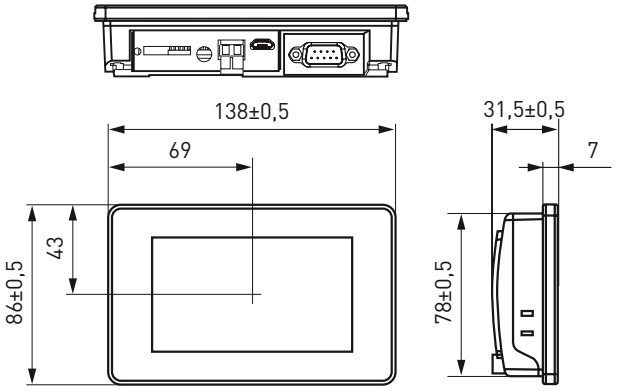
- Heating, ventilation & air-conditioning;
- Water treatment, supply & sewerage;
- Machine building;
- Production processes.

TECHNICAL DATA

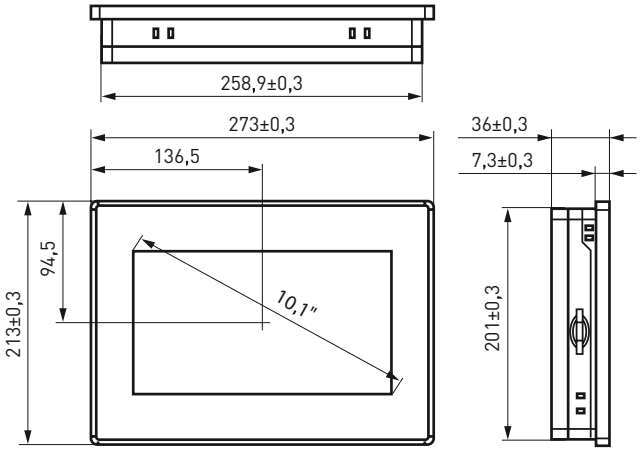
Parameters	Values				
	RSC-4	RSC-7	RSC-7E	RSC-10E	RSC-15E
Hardware specifications					
Processor	720 MHz ARM	600 MHz ARM Cortex-A8			1 GHz ARM Cortex A8
Flash storage	1 GB	128 MB			256 MB
RAM, MB	64	128			512
Real-time clock (RTC)	N/A	Integrated			
Display					
Type	4-wire resistive TFT LCD				
Size	4,3" (16:9)	7" (16:9)	7" (16:9)	10,1" (16:9)	15,6" (16:9)
Backlight	LED				
Resolution	800×480	1024×600			1920×1080
Brightness, cd/m2	250	400			250
Min. backlight MTBF	50 000 hours at 25 °C				
I/O					
COM-ports	COM1: RS232/RS485/RS422 COM3: RS232	COM1/COM3: RS232/RS485/RS422; COM2: RS485			COM1/COM3: RS232/RS485/ RS422; COM2: RS485/RS422
Ethernet	N/A		10M/100M Ethernet		10M/100M Ethernet
Supported protocols	Modbus RTU (Master/Slave), Modbus ASCII (Master)		Modbus RTU (Master/Slave), Modbus ASCII (Master), Modbus TCP (Master/Slave)		
USB Device	1xUSB Slave 2.0	1×USB Slave 2.0, 1×USB Host 2.0			
SD card slot	N/A	Available			
Power supply					
Supply voltage, V DC	24				
Voltage range, V	9–28				18–28
Max. power consumption, W	2,5	7		10	18
General specifications					
Degree of protection by IEC 60529	IP65 – front panel, IP20 – ports & interfaces				
Operating temperature, °C	From 0 to 50				
Operating humidity, RH %	10...90 (non-condensing)				
Storage temperature, °C	from -20 to 60				
Housing material	ABS + PC				Aluminum
Weight, kg	0,3	0,56		0,92	2,25

Overall and installation dimensions (mm)

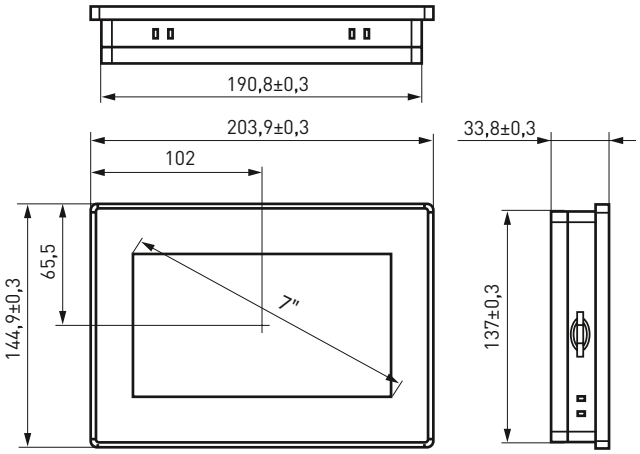
RSC-4 overall dimensions



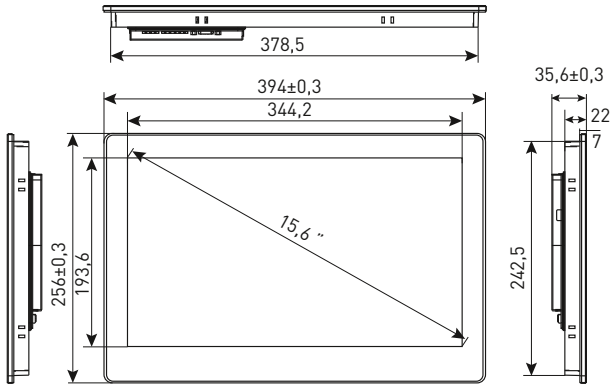
RSC-10E overall dimensions



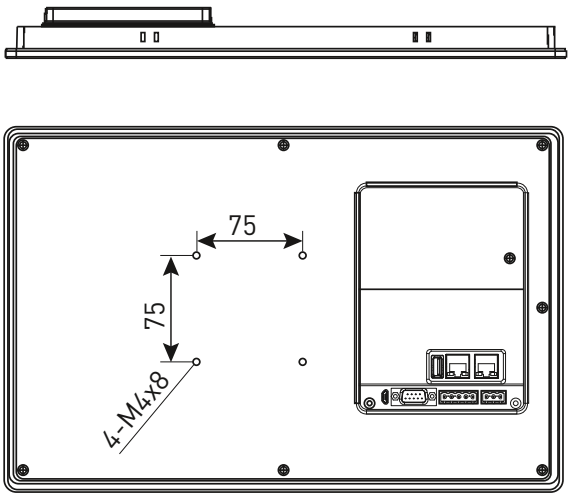
RSC-7 & RSC-7E overall dimensions



RSC-15E overall dimensions



VESA overall dimensions for RSC-15E

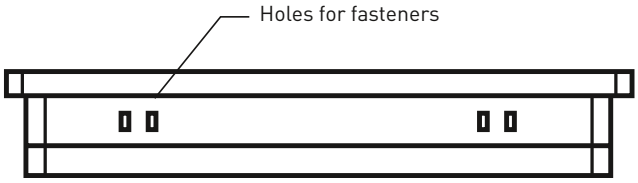


Mounting

HMI shall be installed in the enclosure. It can be installed at any tilting angle for user comfort. HMI rear panel shall be protected from moisture and dirt. The front panel is protected by a rubber gasket.

HMI Installation:

1) Place the HMI into the enclosure mounting opening.
2) Insert fasteners into the HMI housing.
3) Tighten mounting screws.



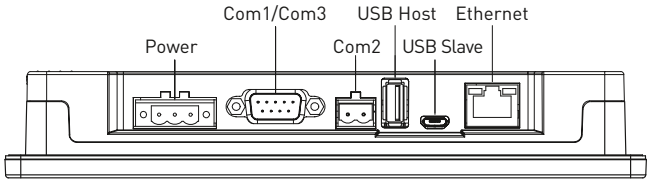
Installation and operation

Power supply

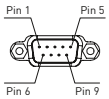
HMI shall be powered from distributed power mains with 24 V DC rated voltage or from a local power supply. When powered from distributed network, install a surge protector upstream of HMI.

Ports and interfaces

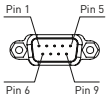
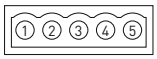
HMI has various peripherals. Refer to figure and table below.



RSC-4, RSC-7, RSC-7E, RSC-10E

Picture	Port	Values
Power supply		
	Pin1	FG
	Pin2	0V
	Pin3	DC24V
COM port DB9 (COM1/COM3)		
	Pin1	Rx-(B)
	Pin2	RxD (COM1 RS232)
	Pin3	TxD (COM1 RS232)
	Pin4	Tx-
	Pin5	GND
	Pin6	Rx+(A)
	Pin7	RxD (COM3 RS232)
	Pin8	TxD (COM3 RS232)
	Pin9	Tx+
RS-485 port		
	Pin1	A+ (COM2 RS485)
	Pin2	B- (COM2 RS485)
Ethernet Port		
	RJ45	Communication with controller and server
USB Host		
	USB Type A	USB drive connection
	MicroUSB	Upload and debugging

RSC-15E

Picture	Port	Values
Power supply		
	Pin1	DC24V
	Pin2	0V
	Pin3	FG
COM port DB9 (COM1/COM3)		
	Pin1	Rx-(B)
	Pin2	RxD (COM1 RS232)
	Pin3	TxD (COM1 RS232)
	Pin4	Tx-
	Pin5	GND
	Pin6	Rx+(A)
	Pin7	RxD (COM3 RS232)
	Pin8	TxD (COM3 RS232)
	Pin9	Tx+
Port RS-485/422 (COM2)		
	Pin1	Rx+(A)
	Pin2	Rx-(B)
	Pin3	GND
	Pin4	Tx+
	Pin5	Tx-
Ethernet Port		
	RJ45	Communication with controller or server
USB Host		
	USB Type A	USB drive connection
	MicroUSB	Project loading and debugging

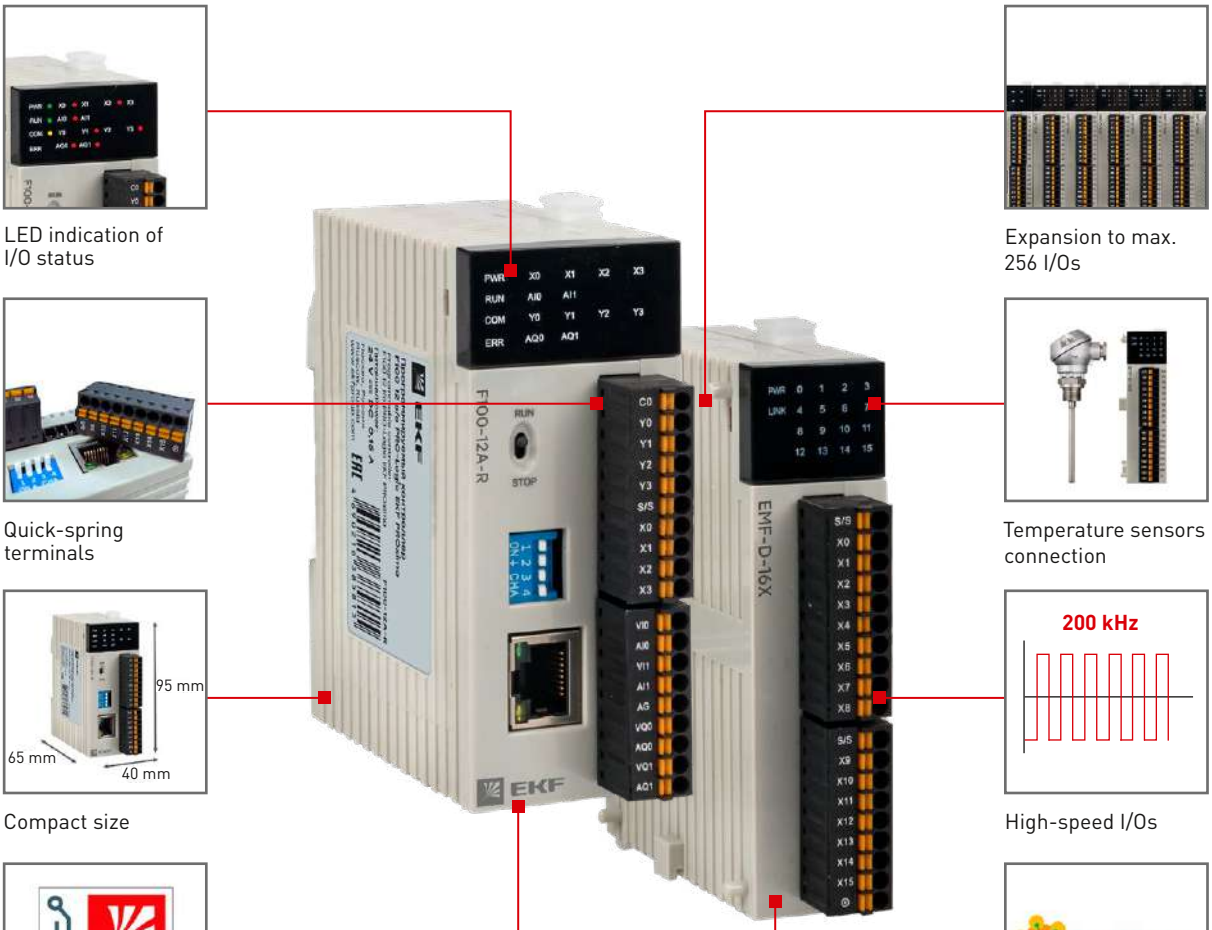
Delivery scope

1. HMI
2. Mounting kit
3. Technical manual

Name	Size	Resolution	Item code
HMI PRO-Screen 4 EKF	4,3" (16:9)	800×480	RSC-4
HMI PRO-Screen 7 EKF	7" (16:9)	1024×600	RSC-7
HMI PRO-Screen 7E EKF	7" (16:9)		RSC-7E
HMI PRO-Screen 10E EKF	10,1" (16:9)		RSC-10E
HMI PRO-Screen 15E EKF	15,6" (16:9)	1920×1080	RSC-15E

Programmable logic controllers PRO-Logic

PRO-logic PLCs are fully programmable devices for control systems designed to perform logical operations under a programmed scenario. Logic controllers are used to improve energy efficiency and safety, and ensure digitalization and automation for any industrial application, including electricity distribution, heating, ventilation, air conditioning, metal- and woodworking, water treatment and sewerage, conveying, handling and packaging systems, etc.



APPLICATION

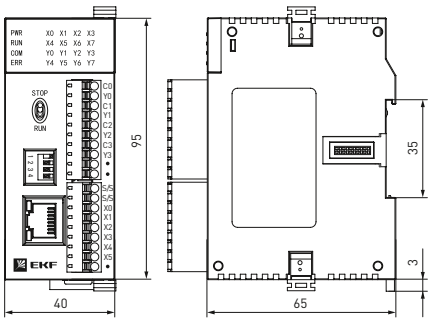
- Initial data processing from field equipment.
- Direct control of production processes and their variables by sensors (composition and weight, flow rate, pressure, temperature, rotation speed, etc.).
- Control of actuating mechanisms (actuators, motors, gates and valves, nozzles, heaters, etc.).
- Data transfer to the supervisory level for display, analysis and control (HMI, OPC-server, SCADA).

TECHNICAL DATA

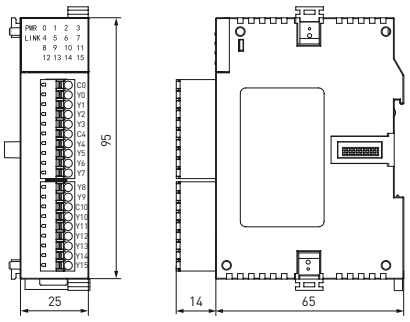
Parameters		Values			
Power supply					
Voltage, V DC		24 (20,4...28,8)			
Power consumption, W		<4,8 (per one module)			
Max. operating time after power failure, ms		10			
Operation requirements					
Operating temperature, °C		0 to 55			
Storage temperature, °C		-20 to 70			
Humidity, % RH		5-95 (non-condensing)			
Degree of protection		IP20			
Digital Inputs (DI)					
Signal type		Voltage or PNP / PNP			
Filter		6,4 ms (default), adjustable 0,8 to 51,2 ms			
Insulation type		Optic coupler for every channel			
Indication		LED (for every channel)			
Power supply, V DC		24			
Digital outputs (DO)					
Signal type		Electromagnetic relay		NPN-transistor	
Load	Resistive	2 A		0,5 A	
	Inductive	50 VA		5 W (24 V)	
	Lighting	100 W		12 W (24 V)	
Voltage		⩽ 250 V AC; ⩽ 30 V DC		⩽ 30 V DC	
Max. load		5 A (250 V AC)		1 A (for 10 sec)	
Response time		ON 10 ms; OFF 5 ms		ON 10 µs; OFF 120 µs	
Insulation		Electromechanical		Optical coupler for every channel	
Indication		LED (for every channel)			
High speed inputs / outputs (HSI / HSO)					
Max. frequency, kHz		200			
Analog inputs (AI)					
Signal type		0...10 V	0...5 V	0-20 mA & 4-20 mA	
Resolution		2,5 mV	1,25 mV	5 µA	
Resistance		6 MOhm		250 Ohm	
Max. signal value		±13 V		±30 mA	
Indication		LED (for every channel)			
Response time		5 ms / 4 channels			
Signal form		12 bit			
Relative error, %		0,2			
Insulation		Optic coupler for every channel			
Analog outputs (AO)					
Signal type		0...10 V	0...5 V	1...5 V	0-20 mA & 4-20 mA
Resolution		2,5 mV	1,25 mV	1,25 mV	5 µA
Resistance		1 kOhm (10 V)	⩾ 500 Ohm (10 V)		⩽500 Ohm
Max. signal value		±13 V			±30 mA
Indication		LED (for every channel)			
Response time		3 ms			
Signal form		12 bit			
Relative error, %		0,2			
Insulation		Optical coupler for every channel			
Interfaces					
Max. number of concurrent interfaces		Ethernet + RS-485 + 3 RS-232/RS-485 (for 3 connected EMF-I-1RS expansion modules)			
RS-232/RS-485 communication protocols		Modbus RTU, Modbus ASCII			
Communication rate via RS-485, bps		1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200			
Ethernet communication protocol		Modbus TCP			
Connection of temperature sensors (via temperature module)					
Sensor type		RTD		Thermocouple	
Sensor type		Pt100, Pt1000, Cu50, Cu100		S, K, E, J, B, N, R, Wre3/25, Wre5/26, [0,20] mV, [0,50] mV, [0,100] mV	
Resolution		0,1 °C		0,1 °C	
Signal form		12 bit			
Relative error, %		0,1			
Insulation		Optic coupler for every channel			

Overall and installation dimensions (mm)

PRO-Logic controller



Expansion module



Controllers

Digital inputs (DI)	Digital outputs (DO)	Analog inputs (AI)	Analog Outputs (AO)	High-speed inputs (HSI)	High-speed outputs (HSO)	COM-Port	Max. number of expansion modules	Item code
PRO-Logic F100								
6	4 EM relays	–	–	–	–	1 × Ethernet 1 × RS-485	5	F100-10-R
	4 NPN	–	–	–	–			F100-10-N
8	8 EM relays	–	–	–	–			F100-16-R
	8 NPN	–	–	–	–			F100-16-N
4	4 EM relays	2	2	–	–			F100-12A-R
	4 NPN	2	2	–	–			F100-12A-N
PRO-Logic F200								
8	8 EM relays	–	–	2	–	1 × Ethernet 1 × RS-485	15	F200-16-R-P20
	8 NPN	–	–	2	2			F200-16-N-P22
4	4 EM relays	2	2	1	–			F200-12A-R-P10
	4 NPN	2	2	1	1			F200-12A-N-P11

Digital expansion modules

DI	DO	Item code
8	–	EMF-D-8X
–	8 EM relays	EMF-D-8Y-R
–	8 NPN	EMF-D-8Y-N
4	4 EM relays	EMF-D-4X4Y-R
4	8 NPN	EMF-D-4X4Y-N
16	–	EMF-D-16X
–	16 EM relays	EMF-D-16Y-R
–	16 NPN	EMF-D-16Y-N

Interface expansion module

Interface	Item code
1xRS-232/485 (Modbus RTU, Modbus ASCII)	EMF-I-1RS

Temperature expansion modules

Connected sensors	Item code
4 thermocouples	EMF-T-4TC
4 RTDs	EMF-T-4TR
8 thermocouples	EMF-T-8TC

Analog expansion modules

AI	AO	Item code
4	–	EMF-A-4AI
–	4	EMF-A-4AO
2	2	EMF-A-2AI2AO
8	–	EMF-A-8AI
–	8	EMF-A-8AO
4	4	EMF-A-4AI4AO

I/O modules PRO-Logic with RS-485 EKF

PRO-Logic I/O modules are designed to establish automated monitoring & control systems. PRO-Logic modules are used as:
- Remote expansion modules for PRO-Logic PLC.
- I/O modules for PRO-Screen HMI.
- I/O modules for SCADA and supervisory level.
- I/O modules for communication with any type of devices supporting RS-485 Modbus RTU/ASCII.

I/O modules PRO-Logic with Ethernet and RS-485 EKF

PRO-Logic I/O modules are designed to establish automated monitoring & control systems. PRO-Logic modules are used as:
- Remote expansion modules for PRO-Logic PLC.
- I/O modules for PRO-Screen HMI.
- I/O modules for SCADA and supervisory level.
- I/O modules for communication with any type of devices supporting RS-485 Modbus TCP & Modbus RTU/ASCII.

RS-485 & Ethernet interfaces are firmware independent.

APPLICATION

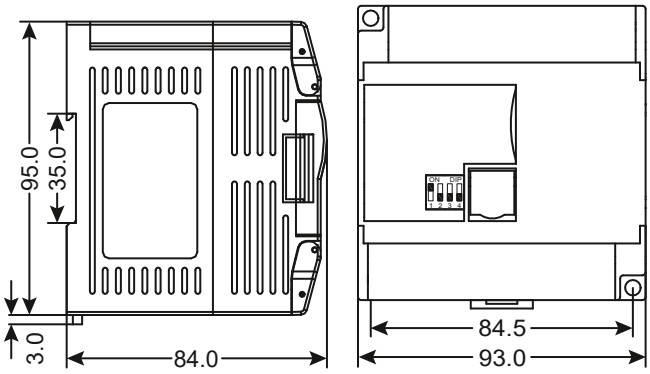
PRO-Logic I/O modules are widely used in ventilation & heating, water supply & treatment, machinery & machine tool building, power engineering.

TECHNICAL DATA

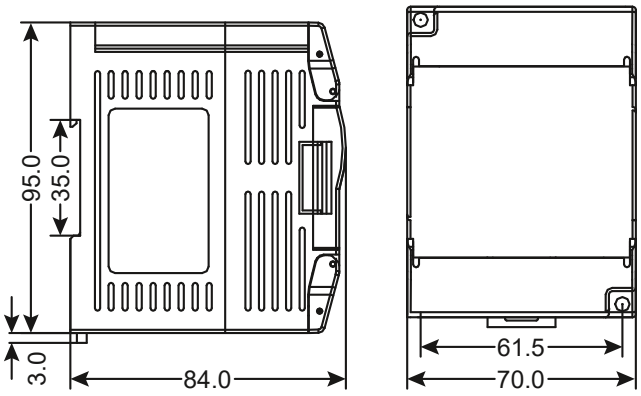
Parameters		Values				
Power supply						
Voltage, V DC		24 (20,4...28,8)				
Max. operating time after power failed, ms		10				
Operation requirements						
Operating temperature, °C		0 to 55				
Storage temperature, °C		-20 to 70				
Humidity, % RH		5-95 (no condensing)				
Degree of protection		IP20				
Digital inputs (DI)						
Signal type		Digital, PNP / NPN				
Resistance, kOhm		4,3				
Max. current, mA		10				
Filter		6,4 ms (default), ranges from 0,8 to 51,2 ms				
Insulation type		Optical coupler for every channel				
Indication		LED (for every channel)				
Digital outputs (DO)						
Output types		Electromagnetic relay			PNP / NPN transistor	
Load	Resistive	2 A			0,5 A	
	Inductive	50 VA			5 W (24 V)	
Voltage		⩽ 250 V AC; ⩽ 30 V DC			⩽ 30 V DC	
Max. load		5 A (250 V AC)			1 A (for 10 sec)	
Response time		ON 10 ms; OFF 5 ms			ON 10 µs; OFF 120 µs	
Insulation		Mechanical			Optical coupler for every channel	
Indication		LED (for every channel)				
Analog inputs (AI)						
Signal type		-10...10 V	0...10 V	0...5 V	1...5 V	0-20 mA & 4-20 mA
Resolution		5 mV	2,5 mV	1,25 mV	1,25 mV	5 µA
Resistance		6 MOhm				250 Ohm
Max. signal value		±13 V				±30 mA
Indication		LED (for every channel)				
Response time		5 ms / 4 channels				
Signal form		12 bit (0...32000)				
Relative error, %		0,2				
Insulation		Optical coupler for every channel				
Analog outputs (AO)						
Signal type		-10...10 V	0...10 V	0...5 V	1...5 V	0-20 mA & 4-20 mA
Resolution		5 mV	2,5 mV	1,25 mV	1,25 mV	5 µA
Resistance		1 kOhm (10 V)		⩾ 500 Ohm (10 V)		⩽500 Ohm
Indication		LED (for every channel)				
Response time		3 ms				
Signal form		12 bit (0...32000)				
Relative error, %		0,2				
Insulation		Optical coupler for every channel				
Temperature inputs						
Compatible sensors		RTD			Thermocouple	
Sensor type		Pt100, Pt1000, Cu50, Cu100			S, K, E, J, B, N, R, Wre3/25, Wre5/26, [0,20] mV, [0,50] mV, [0,100] mV	
Resolution, °C		0,1			0,1	
Input resistance		6 MOhm			6 MOhm	
Indication		LED (for every channel)				
Response time		560 ms / 4 channels, 880 ms / 8 channels				
Signal form		16 bit (0...32000)				
Relative error, %		0,1				
Insulation		Optical coupler for every channel				
Interfaces						
Interface type		RS-485			Ethernet	
Operating mode		Slave			Slave	
Communication protocols		Modbus RTU, Modbus ASCII			Modbus TCP (Up to 6 simultaneous connections)	
Communication rate via RS-485, bps		1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200			–	

Overall and installation dimensions

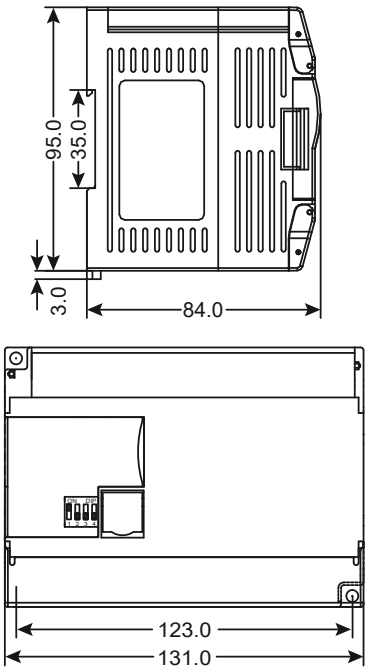
EREMF-D-24X, EREMF-D-12X12Y-R, EREMF-D-12X12Y-N, EREMF-A-8AI, EREMF-A-8AO, EREMF-T-8TR



REMF-D-16X, REMF-D-16Y-R, REMF-D-16Y-N, REMF-D-8X8Y-R, REMF-D-8X8Y-N, REMF-A-4AI, REMF-A-4AO, REMF-T-4TR, REMF-T-4TC, REMF-T-4TR, REMF-T-4TC



REMF-D-40X, REMF-D-36Y-R, REMF-D-36Y-N, EREMF-D-40X, EREMF-D-36Y-R, EREMF-D-36Y-N



Digital & analog I/O modules with RS-485

Name	Digital inputs	Digital outputs	Analog inputs	Analog outputs	Item code
Digital input module REMF 16 PRO-Logic EKF	16	–	–	–	REMF-D-16X
Digital output module REMF 16 PRO-Logic EKF	–	16 EM relays	–	–	REMF-D-16Y-R
Digital output module REMF 16 N PRO-Logic EKF	–	16 NPN	–	–	REMF-D-16Y-N
Digital input module REMF 40 PRO-Logic EKF	40	–	–	–	REMF-D-40X
Digital output module REMF 36 PRO-Logic EKF	–	36 EM relays	–	–	REMF-D-36Y-R
Digital output module REMF 36 N PRO-Logic EKF	–	36 NPN	–	–	REMF-D-36Y-N
Digital I/O module REMF 8/8 PRO-Logic EKF	8	8 EM relays	–	–	REMF-D-8X8Y-R
Digital I/O module REMF 8/8 N PRO-Logic EKF	8	8 NPN	–	–	REMF-D-8X8Y-N
Analog input module REMF 4 PRO-Logic	–	–	4	–	REMF-A-4AI
Analog output module REMF 4 PRO-Logic	–	–	–	4	REMF-A-4AO

Temperature modules

Name	Temperature inputs	Item code
Thermal resistance input module REMF 4 PRO-Logic EKF	4 RTDs	REMF-T-4TR
Thermocouple input module REMF 4 PRO-Logic RKF	4 thermocouples	REMF-T-4TC

Digital & analog I/O modules with Ethernet and RS-485

Name	Digital inputs	Digital outputs	Analog inputs	Analog outputs	Item code
Digital input module EREMF 24 PRO-Logic EKF	24	–	–	–	EREMF-D-24X
Digital input module EREMF 40 PRO-Logic EKF	40	–	–	–	EREMF-D-40X
Digital output module EREMF 36 PRO-Logic EKF	–	36 EM relays	–	–	EREMF-D-36Y-R
Digital output module EREMF 36 N PRO-Logic EKF	–	36 NPN	–	–	EREMF-D-36Y-N
Digital I/O module EREMF 12/12 PRO-Logic EKF	12	12 EM relays	–	–	EREMF-D-12X12Y-R
Digital I/O module EREMF 12/12 N PRO-Logic EKF	12	12 NPN	–	–	EREMF-D-12X12Y-N
Analog input module EREMF 8 PRO-Logic EKF	–	–	8	–	EREMF-A-8AI
Analog output module EREMF 8 PRO-Logic EKF	–	–	–	8	EREMF-A-8AO

Temperature modules

Name	Temperature inputs	Item code
Thermal resistance input module EREMF 8 PRO-Logic EKF	8 RTDs	EREMF-T-8TR

Industrial unmanaged switches TSX EKF

Industrial unmanaged switches TSX EKF are designed to establish Layer 2 (L2) Ethernet networks. TSX switches have 10/100 Mbps Ethernet ports. These switches do not require configuration and automatically detect MAC addresses of the connected devices and connection type.

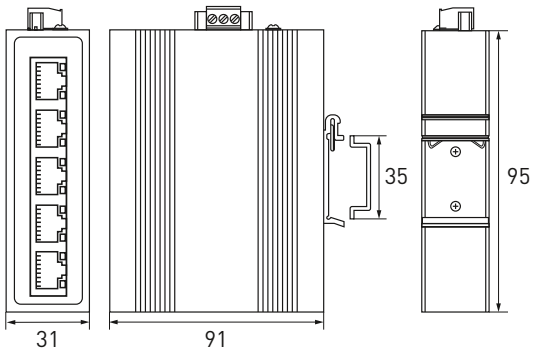
APPLICATION

TSX switches are used to establish automation systems with PRO-Logic F100/F200 controllers, PRO-Logic EREMF I/O modules with Ethernet PRO-Screen HMIs. Swicthes are capable of multi-brand controller connectivity.

TECHNICAL DATA

Parameters		Values
Power supply		
Supply voltage, V DC		12...58 (rated – 24)
Backup power supply		Available
Supply voltage, V	TSX-100-UN-5	5
	TSX-100-UN-8	6
	TSX-100-UN-16	10
Ethernet		
Number of ports (depends on version)		5 / 8 / 16
Type		10/100BASE-T/TX
Port		RJ45
Switch level		L2
Network topologies supported		Tree, Star, Bus
Standard		IEEE 802.3/802.3u/802.3x
Min insulation dielectric strength of Ethernet interfaces, V		2000
Max. communication line length, m		100
Operation requirements		
Operating temperature, °C		-30...75
Storage temperature, °C		-30...75
Humidity, %		5...95 (no condensing)
Degree of protection by IEC 60529		IP40

Overall and installation dimensions



Name	Item code
Industrial unmanaged switch TSX-100 5 ports 10/100 Mbps EKF	TSX-100-UN-5
Industrial unmanaged switch TSX-100 8 ports 10/100 Mbps EKF	TSX-100-UN-8
Industrial unmanaged switch TSX-100 16 ports 10/100 Mbps EKF	TSX-100-UN-16

Process indicators and controllers TER101 EKF

Industrial indicators-controllers TER101 are microprocessor-based devices designed to monitor and control industrial process parameters. TER101 can be used to measure and control various parameters (temperature, pressure, level, humidity, flow, etc.) in heating, water supply systems, furnaces, kilns, pasteurizers, thermal plasticizers, extruders, refrigeration units and other industrial equipment. These multifunction devices can operate as an indicator, ON/OFF controller and PID controller. In controller mode, the device can be used both for heating and cooling of the controlled medium. In PID mode, the device features both manual and automatic adjustment. TER101 has one input for measurement, one output for control and up to two outputs for signalling that can be used as control outputs as well. With integrated RS-485 interface (Modbus RTU), TER101 can be used in distributed control systems. These devices with IP65 housing are installed in enclosures.

Easy-to-read display

Mounted into enclosure door

IP65 ingress protection

RS-485 for distributed control systems

APPLICATION

EKF process indicators and controllers are used in a variety of applications:
- furnaces, extruders, chillers, pasteurizers, other industrial equipment;
- water supply & treatment, HVAC.

TECHNICAL DATA

Parameters	Values
Supply voltage, V	100...240 AC / DC
Power consumption, VA	<10
Measuring rate	2 measurements per second
Measuring channels	1
Outputs	3
Electromagnetic (EM) relays	3 A (≤ 250V AC, ≤ 30V DC)
SSR output (for solid state relay control)	NPN-transistor 30 mA (24V DC) (Pulse control)
Interface	RS-485
Protocol	Modbus RTU
Operating mode	Slave
Communication rate, bps	4800, 9600, 19200
Parity bit	n, e, o
Data bit	8
Stop bit	1
Response delay, ms	0...20

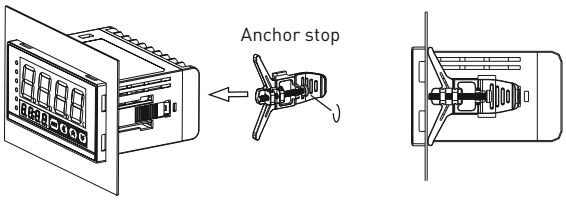
Parameters		Values
Insulation resistance (inputs - outputs - power supply - interface), MOhm		20
Interference immunity		±2500 VAC, ±1000 VDC
Operating temperature, °C		-20...+50
Storage temperature, °C		-20...+60
Humidity		10...85% RH (non-condensing)
Weight, kg	TER101-S-M1A, TER101-S-M1A-R, TER101-S-CV-M1A, TER101-S-CV-M1A-R	0,2
	TER101-M-M2A, TER101-M-M2A-R, TER101-M-CV-M2A, TER101-M-CV-M2A-R	0,3
	TER101-L-M2A, TER101-L-M2A-R, TER101-L-CV-M2A, TER101-L-CV-M2A-R	0,4
Min. MTBF, hours		100 000
Display		LED
Housing material		ABS
Front panel material		PC
Gasket material		NBR
Button material		Silicone

Compatible sensors and measuring accuracy

Signal / Sensor type	Symbol	Range	Resolution	Accuracy	Input resistance / auxiliary current	INP value
K1	c1	-50~1200	1°C	0,5%F.S.	>500 kOhm	0
K2	c2	-50,0~999,9	0,2°C	0,5%F.S.	>500 kOhm	16
J1	J1	0~1200	1°C	0,5%F.S.	>500 kOhm	1
J2	J2	0,0~999,9	0,2°C	0,5%F.S.	>500 kOhm	17
E1	E1	0~850	1°C	0,5%F.S.	>500 kOhm	2
E2	E2	0,0~850,0	0,3°C	0,5%F.S.	>500 kOhm	18
T1	t1	-50~400	1°C	0,8%F.S.	>500 kOhm	3
T2	t2	-50,0~400,0	0,4°C	0,8%F.S.	>500 kOhm	19
B	b	250~1800	1°C	1%F.S.	>500 kOhm	4
R	r	-10~1700	1°C	1%F.S.	>500 kOhm	5
S	S	-10~1600	1°C	1%F.S.	>500 kOhm	6
N1	n1	-50~1200	1°C	0,8%F.S.	>500 kOhm	7
N2	n2	-50,0~999,9	0,2°C	0,8%F.S.	>500 kOhm	20
PT100-1	Pt1	-200,0~600,0	0,2°C	0,5%F.S.	0,2 mA	8
PT100-2	Pt2	-200~600	1°C	0,5%F.S.	0,2 mA	21
JPT100-1	JPt1	-200,0~500,0	0,2°C	0,5%F.S.	0,2 mA	9
JPT100-2	JPt2	-200~500	1°C	0,5%F.S.	0,2 mA	22
CU50-1	Cu51	-50,0~150,0	0,2°C	0,5%F.S.	0,2 mA	10
CU50-2	Cu52	-50~150	1°C	0,5%F.S.	0,2 mA	23
CU100-1	Cu01	-50,0~150,0	0,2°C	0,5%F.S.	0,2 mA	11
CU100-2	Cu02	-50~150	1°C	0,5%F.S.	0,2 mA	24
0~50 мВ	mV	-1999~9999	12 bit	0,5%F.S.	>500 kOhm	12
0~400 Ом	rt	-1999~9999	12 bit	0,5%F.S.	0,2 mA	13
4~20 мА	mA	-1999~9999	12 bit	0,5%F.S.	<50 Ohm	14
0~10 В	V	-1999~9999	12 bit	0,5%F.S.	>1 MOhm	15

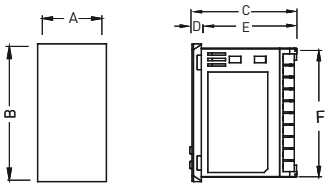
Installation and operation

The device is installed into the enclosure/panel with anchor stops supplied with the device.

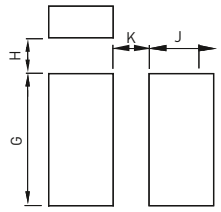


Overall and installation dimensions

Overall dimensions



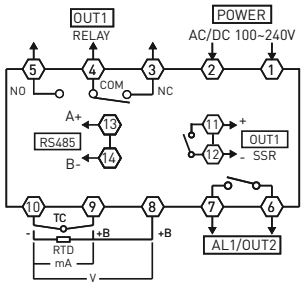
Mounting dimensions



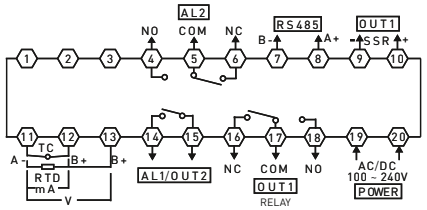
Housing	A	B	C	D	E	F	G	H	J	K
Type S	48	48	73	6,5	66,5	44	45	25	45	25
Type M	96	48	73	6,5	66,5	90	91,5	25	45	25
Type L	96	96	73	6,5	66,5	90	91,5	25	91,5	25

Wiring diagrams

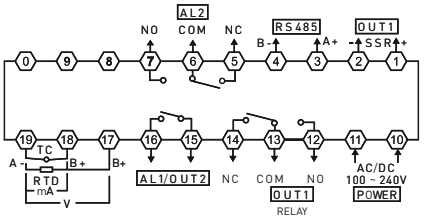
TER101-S



TER101-M



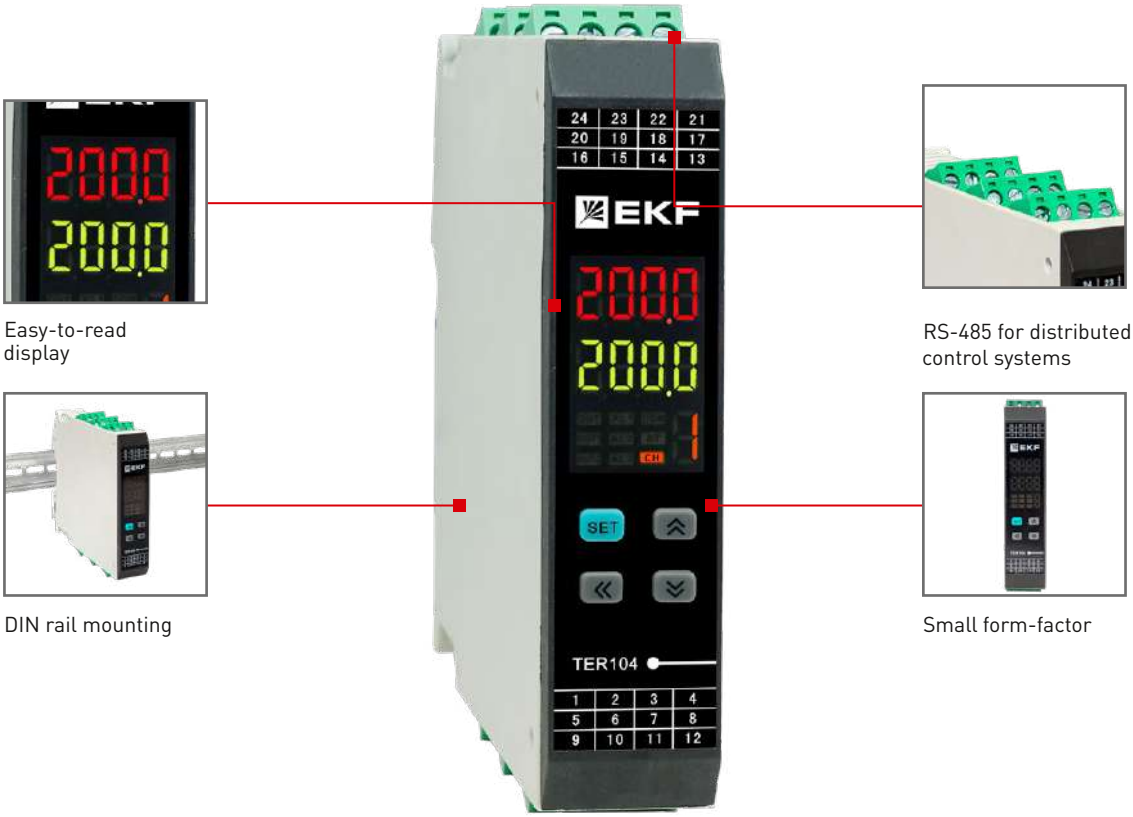
TER101-L



Housing	Input signal	Control output (OUT1)	Signal output 1 (AL1/OUT2)	Signal output 2 (AL2/OUT3)	RS-485	Item code
Meter-controller TER101						
Type S 48×48×73 mm	TC/RTD/0...50 mV / 0...400 Ohm	SSR-output or EM relay (AST switch)	EM relay	N/A	N/A	TER101-S-M1A
	TC/RTD/0...50 mV / 0...400 Ohm				Available	TER101-S-M1A-R
	0...10V / 4...20 mA				N/A	TER101-S-CV-M1A
	0...10V / 4...20 mA				Available	TER101-S-CV-M1A-R
Type M 96×48×73 mm	TC/RTD/0...50 mV / 0...400 Ohm			EM relay	N/A	TER101-M-M2A
	TC/RTD/0...50 mV / 0...400 Ohm				Available	TER101-M-M2A-R
	0...10V / 4...20 mA				N/A	TER101-M-CV-M2A
	0...10V / 4...20 mA	SSR-output or EM relay (AST switch)	EM relay		Available	TER101-M-CV-M2A-R
Type L 96×96×73 mm	TC/RTD/0...50 mV / 0...400 Ohm				N/A	TER101-L-M2A
	TC/RTD/0...50 mV / 0...400 Ohm				Available	TER101-L-M2A-R
	0...10V / 4...20 mA				N/A	TER101-L-CV-M2A
	0...10V / 4...20 mA				Available	TER101-L-CV-M2A-R

Process indicators and controllers TER104 EKF

Industrial process indicators and controllers TER104 are microprocessor-based devices designed to monitor and control temperature to be used in heating, water supply systems, furnaces, kilns, pasteurizers, thermal plasticizers, extruders, refrigeration units and other industrial equipment. Four channels operate independently of each other and can control temperatures of different processes. These multifunctional devices can operate as an indicator, ON/OFF controller and PID controller. In controller mode, the device can be used both for heating and cooling of the controlled medium. In PID mode, the device features both manual and automatic adjustment. TER104 has 4 measuring inputs and 4 control outputs. With integrated RS-485 interface (Modbus RTU), TER104 can be used in distributed control systems. These devices with a compact housing are mounted on a standard DIN rail.



APPLICATION

EKF process indicators and controllers are used in a variety of applications:
- furnaces, extruders, chillers, pasteurizers, other industrial equipment;
- water supply & treatment, HVAC.

TECHNICAL DATA

Parameters	Values
Power consumption, VA	<6
Measuring rate	1 measurement per second
Measuring channels	4
Outputs	4
NPN-transistor	110 mA (24V DC)
SSR output (for solid state relay control)	NPN-transistor 30 mA (24V DC) (pulse control)
Interface	RS-485
Protocol	Modbus RTU
Operating mode	Slave
Communication rate, bps	4800, 9600, 19200, 38400
Parity bit	n, e, o
Data bit	8
Stop bit	1
Response delay, ms	0...20

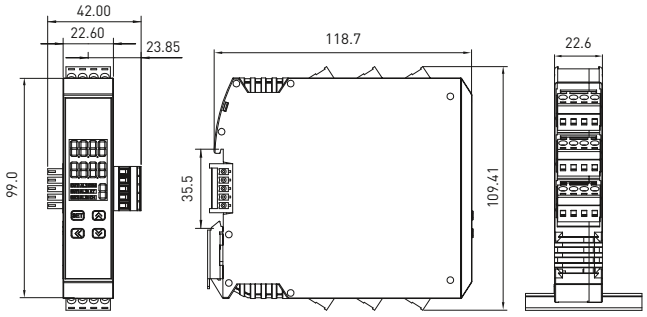
Parameters		Values
Insulation resistance (inputs - outputs - power supply - interface), MOhm		20
Interference immunity		±2500 VAC, ±1000 VDC
Operating temperature, °C		-20...+50
Storage temperature, °C		-20...+60
Humidity		10...85% RH (non-condensing)
Degree of protection by IEC 60529		IP20
Weight, kg	TER104-D-S, TER104-D-S-R, TER104-D-T, TER104-D-T-R	0,4
Min. MTBF, hours		100 000
Display		LED
Housing material		ABS
Front panel material		PC
Gasket material		NBR
Button material		Silicone

Compatible sensors and measuring accuracy

Sensor / signal type		Symbol	Range	Resolution	Accuracy	Auxiliary current	INP value
PT100	PT1	Pt1	-200~600	0,2°C	0,5% F.S.	0,33 mA	8
	PT2	Pt2	-200~600	1°C			21
JPT100	JPT1	JPt1	-200~500	0,2°C			9
	JPT2	JPt2	-200~500	1°C			22
CU50	CU51	CU51	-50~150	0,2°C			10
	CU52	CU52	-50~150	1°C			23
CU100	CU101	CU01	-50~150	0,2°C			11
	CU102	CU02	-50~150	1°C			24
0~400 Ohm		rt	-1999~9999	12 bit			13

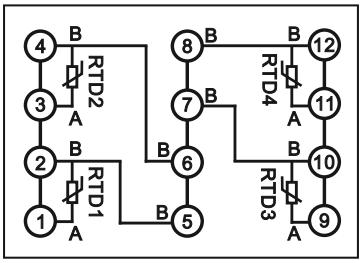
Overall and installation dimensions (mm)

The indicator-controller shall be mounted onto 35mm DIN rail.

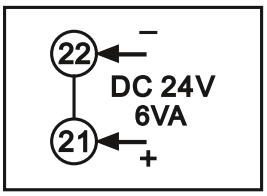


Wiring diagrams

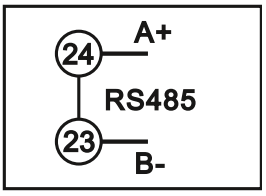
Sensor connection



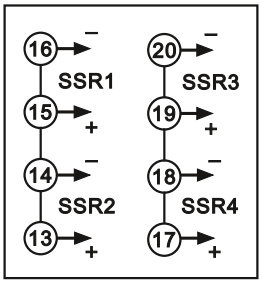
Power supply connection

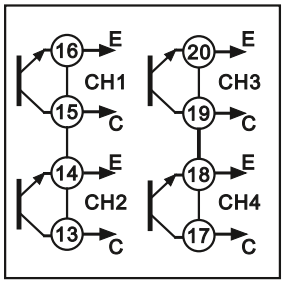


RS-485 interface connection



Outputs connection
(left – SSR outputs, right - transistor)





Housing	Input signal	Control output (OUT1-OUT4)	RS-485	Item code
Meters-controllers TER104				
Type D (DIN rail)	RTD/0...400 Ohm	SSR output (for solid state relay control)	N/A	TER104-D-S
			Available	TER104-D-S-R
		NPN-transistor	N/A	TER104-D-T
			Available	TER104-D-T-R

Pressure transmitters PRT-100 EKF

PRT-100 are general-purpose industrial pressure transmitters with ceramic measuring diaphragm. PRT-100 transmitters are designed for control systems with general accuracy requirements. With a ceramic sensor, transmitters can be used in corrosive media, perfect for public utilities, pumping and compressor stations, as well as in auxiliary control and automation. Measured media: water, liquids, steams and gases.

APPLICATION

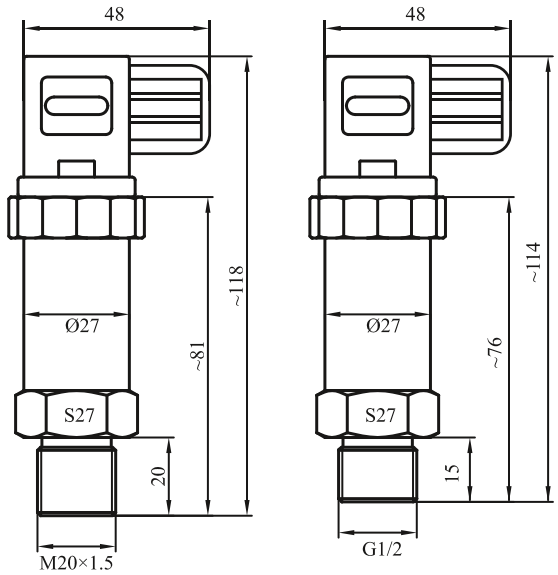
- Heating, ventilation and air conditioning (HVAC).
- Pumping stations.
- Water treatment.

TECHNICAL DATA

Parameters	Values
Power supply	
Supply voltage, V DC	12...30 (rated value - 24)
Max. power consumption, W	1,0
Pressure measurement	
Pressure type	Overpressure
Full-scale value (FSV), MPa	0,6 / 1,0 / 1,6 (depends on version)
Overload limit pressure, %	150 FSV
Basic percentage error, %	1,0 FSV
Temperature compensation	available
Output signal, mA	4...20, two-wire circuit
Load resistance	$(U_{power} - 10) / 0,02$
Design	
Sensor type	Ceramic piezoresistive
Connection	M20×1,5 or G1/2
Housing & joint materials	Stainless steel
Electrical connection	EN175301-803 (DIN43650 A)
Degree of protection	IP65
Operation requirements	
Measured media temperature, °C	From -40 to +100
Ambient temperature, °C	From -40 to +80
Air pressure, kPa	84–106,7

Overall and installation dimensions (mm)

PRT-100 overall dimensions with M20×1,5 (left-side) & G1/2 (right-side) joints



Installation and operation

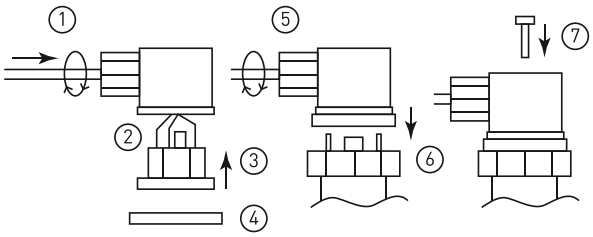
Mounting

Make sure pipeline is not pressurized before installing the transmitter. Install PRT-100 into branch tubes, headers, and valves. Seal the connection with a gasket fitted to the transmitter joint. Mount the transmitter at a maximum distance from pumps, shut-off devices, bends, expansion joints and other hydraulic components. Select installation position so that no gas locks (for gas media) or hydraulic locks (for liquid media) occur. Tightening torque shall not exceed 25 N·m.

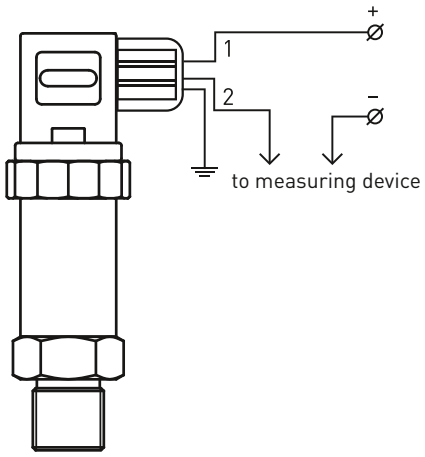
Electrical connection

Follow the procedure below:

1. Unscrew cable gland to insert the cable.
2. Connect wires as shown in the wiring diagram.
3. Insert a terminal block into the angle connector housing.
4. Insert a gasket into the terminal block.
5. Tighten the cable gland.
6. Connect the angle connector to the transmitter housing.
7. Insert and tighten fastening screws.



For wiring diagram, refer to the figure below.



Delivery scope

1. Pressure transmitter
2. Technical manual

Name	Full-scale value (FSV), MPa	Basic percentage error, FSV %	Connection	Item code
Pressure transmitter PRT-100 EKF	1,6	1,0	M20×1,5 Joint	PRT-100-1,6-1,0-M20
			G1/2 Joint	PRT-100-1,6-1,0-G2
	1,0		M20×1,5 Joint	PRT-100-1,0-1,0-M20
			G1/2 Joint	PRT-100-1,0-1,0-G2
	0,6		M20×1,5 Joint	PRT-100-0,6-1,0-M20
			G1/2 Joint	PRT-100-0,6-1,0-G2

Resistive temperature sensors RTD

Resistive temperature sensors RTD EKF are designed for continuous temperature measurement in heating, ventilation and air conditioning (HVAC) systems. Sensors are available in three versions: RTD10 (cable), RTD20 (with connection head) and RTD30 (room sensors). EKF temperature sensors are designed and manufactured in Russia, being full substitutes for European brands. RTDs are fitted with three sensor types: Pt100, Pt1000 & NTC10k. By mounting type, temperature sensors are classified into duct, immersion, surface-mounted, outdoor and room models. These devices are suitable for non-corrosive liquids and gases. Additionally, EKF can fabricate custom sensor models as per customer requirements.

APPLICATION

RTD EKF sensor is a perfect solution for temperature measurement in heating, ventilation & air conditioning systems

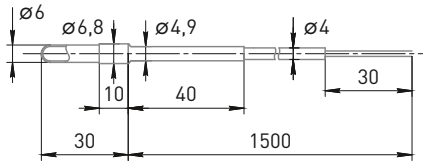
TECHNICAL DATA

Parameters			Values
Sensor types			Pt100, Pt1000, NTC10k
Sensor tolerance class			B
Operating temperature, °C	RTD10 with PVC cable		-50...+130
	RTD20 with connection head	RTD20-CH/SCR	-50...+180
		RTD20-OVH/OUT	-50...+100
	RTD30 in plastic housing		-20...+50
Wiring circuit			Two-wire
Sensor type by housing			Insulated
Connection head material			ABS plastic
Protection fitting material			AISI 304 stainless steel
Degree of protection by IEC 60529	RTD10/RTD20		IP65
	RTD30		IP21
RTD10 cable type			PVC, 2×0,25
RTD20 cable gland			M16×1,5
Average service life, years			10

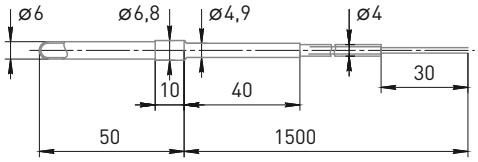
Operation conditions:
- Premises with non-regulated climatic conditions and (or) awnings;
- Air pressure: from 84 to 106,7 kPa;
- Air temperature: from -50 to +90 °C (-20...+50 °C for RTD30);
- 95% RH for max.+35 °C, non-condensing

Overall and installation dimensions (mm)

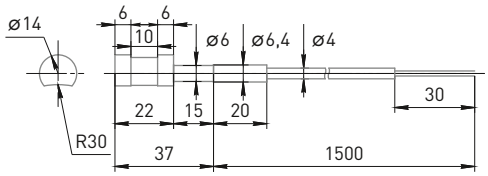
RTD10-OVH30



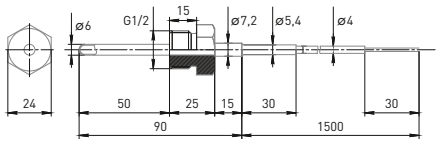
RTD10-OVH50



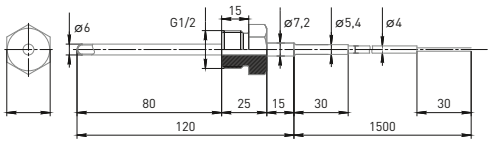
RTD10-OVH01



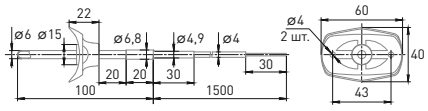
RTD10-SCR50



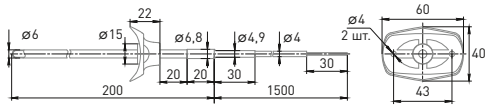
RTD10-SCR80



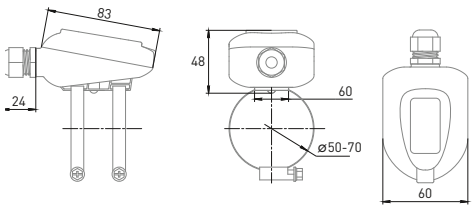
RTD10-CH100



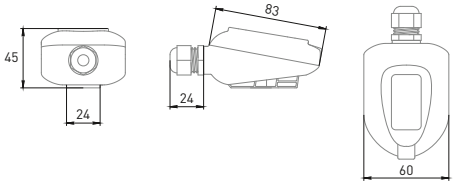
RTD10-CH200



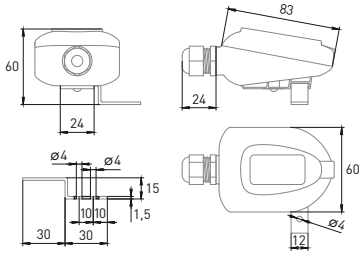
RTD20-OVH



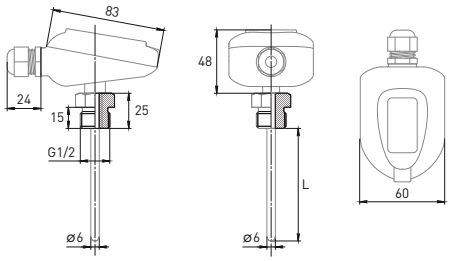
RTD20-OUT1



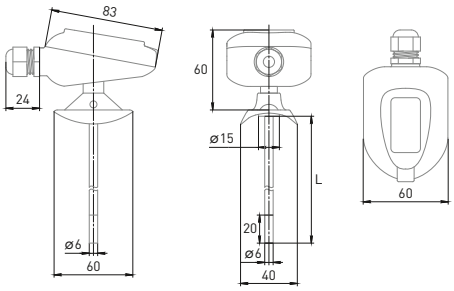
RTD20-OUT2



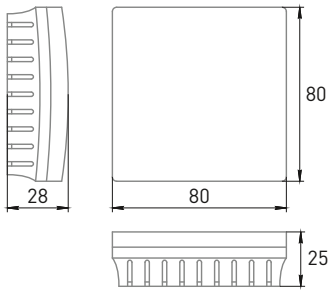
RTD20-SCR (L=50 or 80 mm)



RTD20-CH (L=50, 100, 150, 200 mm)



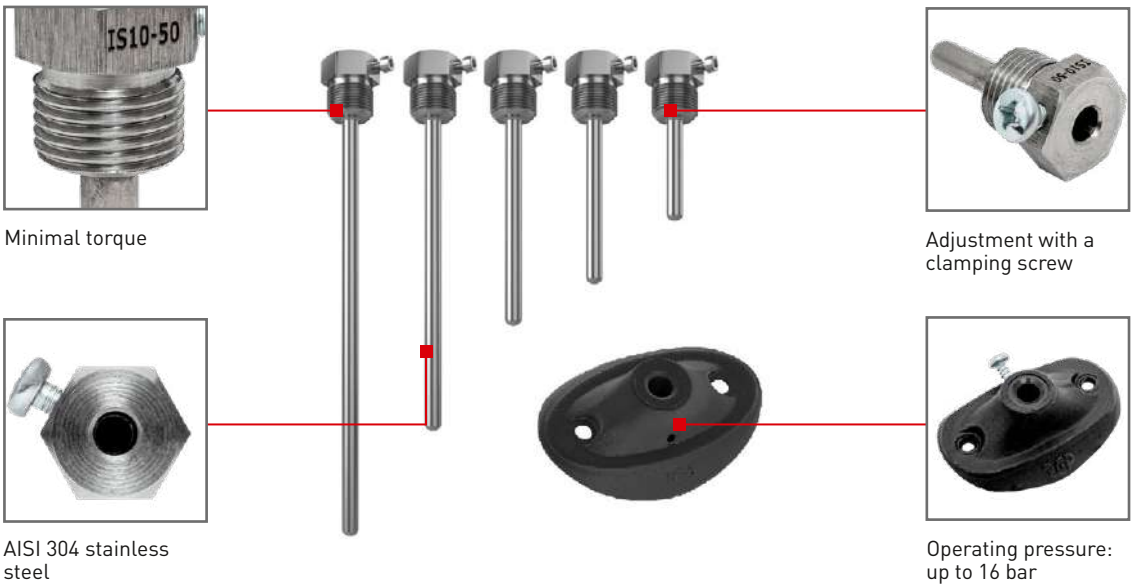
RTD30-IN



Name	Item code
Duct point temperature sensor RTD10 Pt100 100mm EKF	RTD10-CH100-PT100
Duct point temperature sensor RTD10 Pt1000 100mm EKF	RTD10-CH100-PT1000
Duct point temperature sensor RTD10 Pt100 200mm EKF	RTD10-CH200-PT100
Duct point temperature sensor RTD10 Pt1000 200mm EKF	RTD10-CH200-PT1000
Screw-in temperature sensor RTD20 Pt1000 50mm EKF	RTD20-SCR50-PT1000
Screw-in temperature sensor RTD20 Pt1000 80mm EKF	RTD20-SCR80-PT1000
Outside temperature sensor RTD20 Pt1000 EKF	RTD20-OUT1-PT1000
Outside temperature sensor (fast-acting) RTD20 Pt1000 EKF	RTD20-OUT2-PT1000
Duct temperature sensor RTD20 NTC10K 100mm EKF	RTD20-CH100-NTC10K
Duct temperature sensor RTD20 Pt1000 100mm EKF	RTD20-CH100-PT1000
Duct temperature sensor RTD20 Pt1000 150mm EKF	RTD20-CH150-PT1000
Duct temperature sensor RTD20 NTC10K150mm EKF	RTD20-CH150-NTC10K
Duct temperature sensor RTD20 NTC10K 200mm EKF	RTD20-CH200-NTC10K
Duct temperature sensor RTD20 Pt1000 200mm EKF	RTD20-CH200-PT1000
Room temperature sensor RTD30 Pt1000 EKF	RTD30-IN-PT1000
Attachable temperature sensor RTD10 Pt1000 30mm EKF	RTD10-OVH30-PT1000
Attachable temperature sensor RTD20 Pt1000 EKF	RTD20-OVH-PT1000
Attachable temperature sensor RTD10 Pt100, sleeve 30mm EKF	RTD10-OVH30-PT100
Attachable temperature sensor RTD10 Pt1000, sleeve 50mm EKF	RTD10-OVH50-PT1000
Attachable temperature sensor RTD10 NTC10K, sleeve 50mm EKF	RTD10-OVH50-NTC10K
Attachable temperature sensor RTD10 Pt100, sleeve 50mm EKF	RTD10-OVH50-PT100
Attachable liquid temperature sensor for pipes RTD10 Pt1000 EKF	RTD10-OVH01-PT1000
Attachable liquid temperature sensor for pipes RTD10 Pt100 EKF	RTD10-OVH01-PT100
Immersion cable sensor for liquid temperature RTD10 Pt1000 50mm EKF	RTD10-SCR50-PT1000
Immersion cable sensor for liquid temperature RTD10 Pt100 50mm EKF	RTD10-SCR50-PT100
Immersion cable sensor for liquid temperature RTD10 Pt1000 80mm EKF	RTD10-SCR80-PT1000
Immersion cable sensor for liquid temperature RTD10 Pt100 80mm EKF	RTD10-SCR80-PT100

Sleeves and flanges for temperature sensors IS EKF

Protective immersion sleeves IS EKF are used for mounting RTD10 & RTD20 temperature sensors (and sensors of other manufacturers) onto a pipeline, enabling sensor replacement wihout depressurizing the pipeline and stopping the process. Protective sleeves are offered in two versions: IS10 (for RTD10) and IS20 (for RTD20). Made of stainless steel, EKF immersion sleeves are manufactured in Russia, being full substitutes for European brands. Flanges FL-6 are used for mounting RTD10 and RTD20 temperature sensors onto ducts. The flanges are fitted with a clamping screw for easy adjustment of sensor immersion depth in the duct.



APPLICATION

IS EKF sleeves are best suited for RTD sensors to be used in heating, ventilation & air conditioning systems.

TECHNICAL DATA

Parameters	Values
Material	AISI 304 stainless steel
Outer thread	G1/2
Inner thread	N/A
Max. operating pressure	16 bar
Sleeve length	From 50 to 200 mm (other lengths on order)

Name	Item code
Immersion sleeve G1/2 L=100mm IS10-100 EKF	IS10-100
Immersion sleeve G1/2 L=135mm IS20-150 EKF	IS20-150
Immersion sleeve G1/2 L=185mm IS20-200 EKF	IS20-200
Immersion sleeve G1/2 L=200mm IS10-200 EKF	IS10-200
Immersion sleeve G1/2 L=50mm IS10-50 EKF	IS10-50
Immersion sleeve G1/2 L=85mm IS20-100 EKF	IS20-100
Flange for duct temperature sensor 6mm FL-6 EKF	FL-6

Capillary thermostat (temperature control) TR15 EKF

Capillary thermostats are used for temperature control in HVAC systems to prevent air heaters from freezing. Capillary thermostats control heater temperature in ventilation and air conditioning systems to prevent their rupture caused by coolant freezing.
Thermostat indicates actuation with an SPDT contact and is used to initiate safety functions in HVAC control systems.

APPLICATION

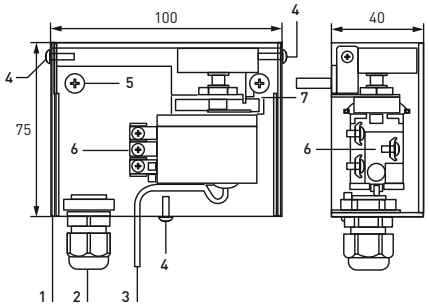
TR15 EKF capillary thermostats are used to initiate safety functions in HVAC control systems, e.g.:

- Fan stop;
- Outdoor air damper close;
- Coolant valve 100% open;
- Coolant circulating pump start;
- Alarm signal ON.

TECHNICAL DATA

Parameters	Values			
	TR-15-2	TR-15-3	TR-15-4	TR-15-6
Setting range, °C	-15...+15			
Factory setting, °C	10			
Hysteresis loop, °C	3 ± 1			
Operating temperature, °C	-10...+55			
Operating accuracy, °C	± 1,5...2			
Degree of protection	IP30			
Fault reset	Automatic			
Alternating current	AC-1		6 A, 220-240V	
	AC-3		6 A, 220-240V	
	AC-15		2 A, 220-240V	
Contact group	SPDT contacts			
Filler type	Steam			
Sensing element	Copper tube			
Capillary length	2 m	3 m	4 m	6 m

Overall and installation dimensions (mm)



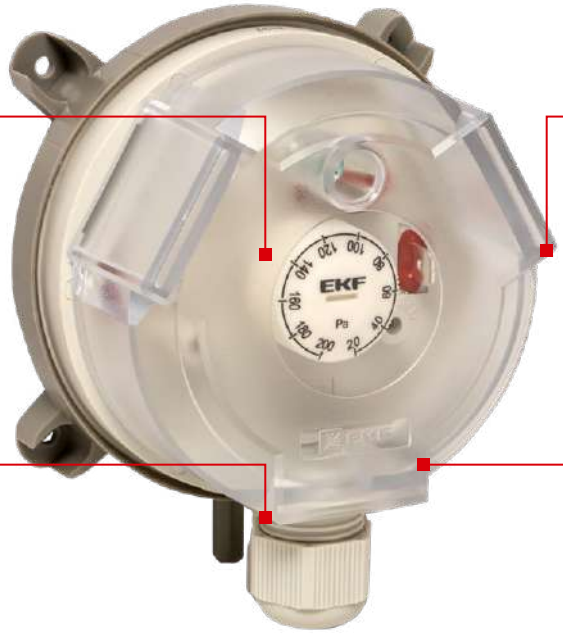
1 – Thermostat housing
2 – Cable gland M16x1,5
3 – Copper capillary
4 – Fastening screws
5 – Fastening holes
6 – SPDT contacts
7 – Adjustment opening

Name	Item code
Capillary thermostat (temperature control) TR15 2m EKF	TR-15-2
Capillary thermostat (temperature control) TR15 3m EKF	TR-15-3
Capillary thermostat (temperature control) TR15 4m EKF	TR-15-4
Capillary thermostat (temperature control) TR15 6m EKF	TR-15-6

Differential pressure switches RVG-10 EKF

Mechanical differential pressure switches RVG-10 are used in ventilation and air conditioning systems to monitor filter clogging, fan operation and duct flow direction.

Adjustment range from 20 to 1000 Pa



Wall or air duct mount

Ingress protection – IP54

Supplied with mounting kit

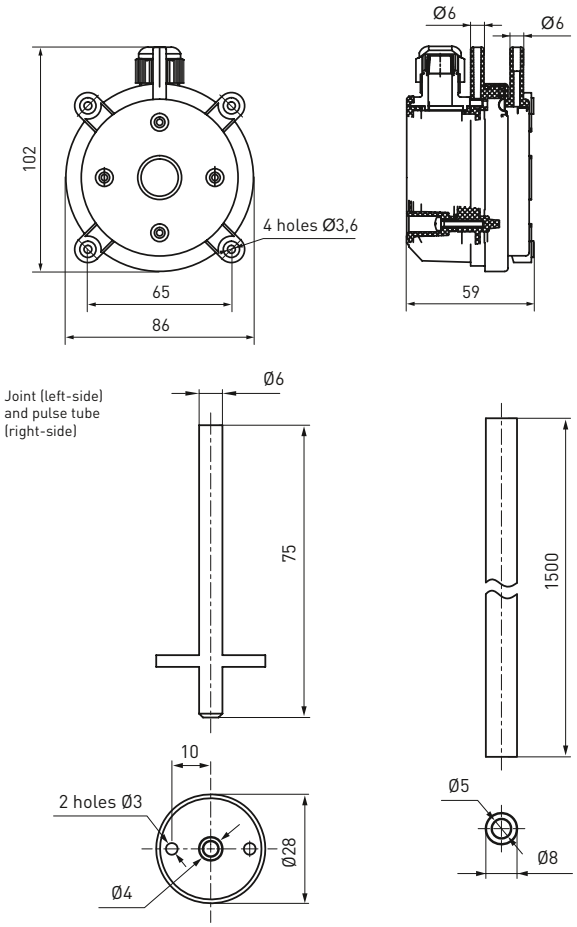
APPLICATION

RVG-10 EKF is a perfect solution for pressure monitoring in heating, ventilation & air conditioning systems.

TECHNICAL DATA

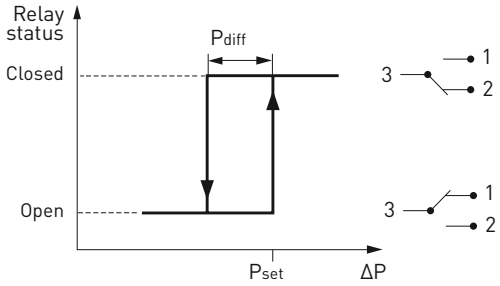
Parameters	Values			
	RVG-10-200	RVG-10-400	RVG-10-500	RVG-10-1000
Operation environment	Air, non-corrosive gases			
Differential pressure setting range, Pa	20–200	40–400	50–500	200–1000
Max. differential, Pa	10	20	20	100
Max. pressure differential between P1 & P2, kPa	10			
Max. operating error, %	15			
Output	Double throw relay (SPDT)			
Max. switching DC current for control circuits, A	1,5			
Maximum switching AC voltage, V	250			
Pressure inlet, mm	Internal joints Ø6			
Max. diameter of connected three-wire cable, mm	8			
Operating temperature, °C	From -40 to +85			
Max. relative humidity at 25°C, %	85			
Mounting hole axis	Vertical, joints down			
Degree of protection by IEC 60529	IP54			

Overall and installation dimensions (mm)

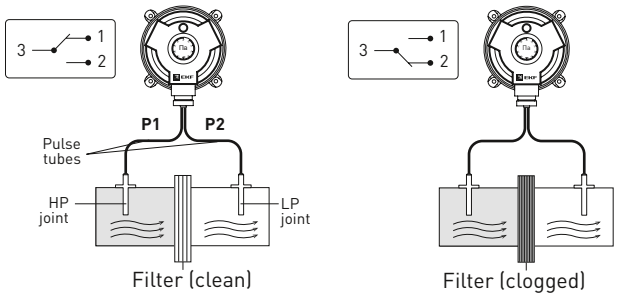


Installation and operation

If the pressure differential (between P1 & P2) is below the setpoint, the relay will be in the OFF status (contacts 3 & 2 open, contacts 3 & 1 closed).
If the pressure differential is higher than the set point, the SPDT contact will switch (contacts 3 & 2 close, contacts 3 & 1 open). The device thus transmits an alarm signal (e.g. filter clogging).
The relay contacts return to the initial state only after the differential pressure drops below the setpoint by the differential value P_{diff}. Once the fault cleared, the differential pressure drops below the setpoint and the relay contacts reset.



Example: RVG-10 controlling filter clog in a ventilation system



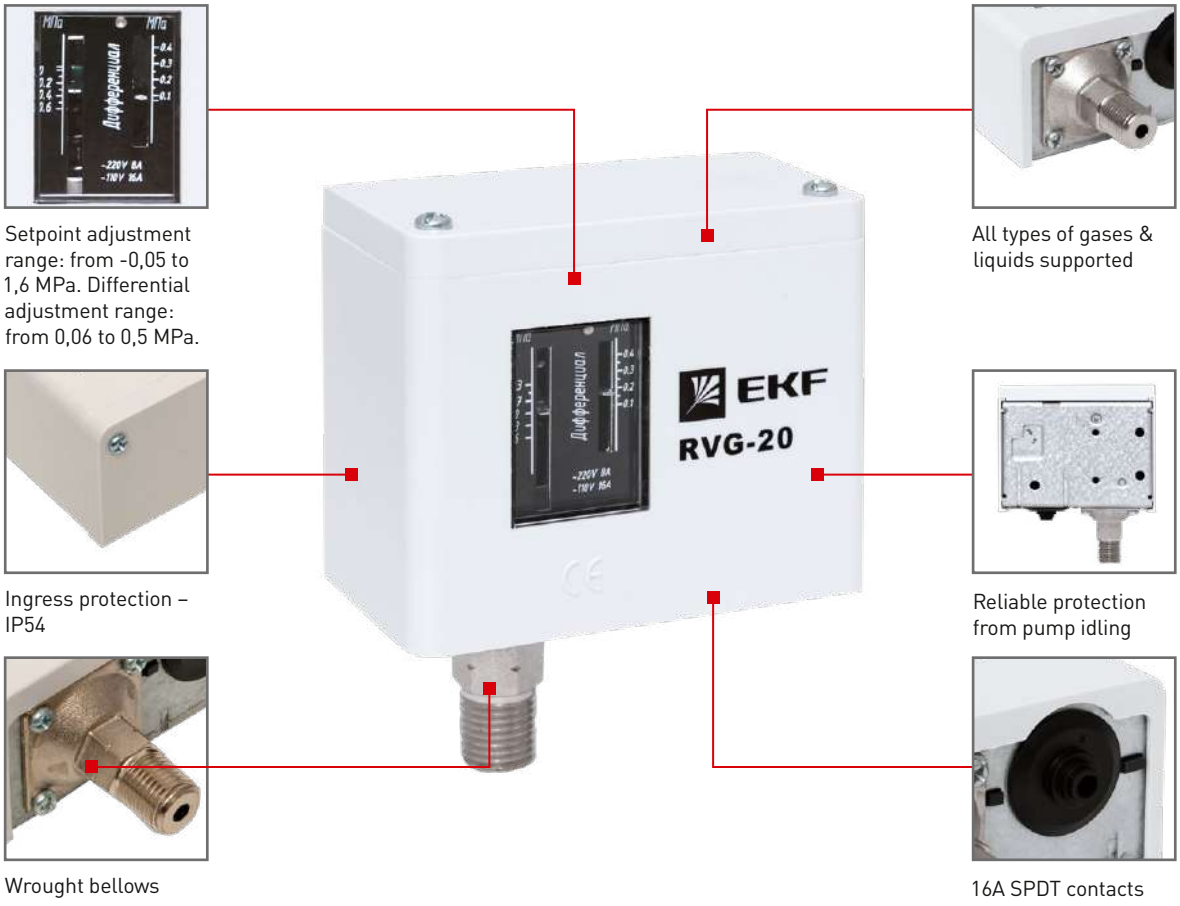
Delivery scope

1. Differential pressure switch - 1 pc.
2. Pulse tube - 1 pc.
3. Joints - 2 pcs.
4. Mounting screws - 1 set
5. Technical manual – 1 pc.

Name	Max. pressure setpoint limit, Pa	Item code
Differential pressure switch RVG-10 200 Pa EKF	200	RVG-10-200
Differential pressure switch RVG-10 400 Pa EKF	400	RVG-10-400
Differential pressure switch RVG-10 500 Pa EKF	500	RVG-10-500
Differential pressure switch RVG-10 1000 Pa EKF	1000	RVG-10-1000

Overpressure switches RVG-20 EKF

Mechanical overpressure switches RVG-20 EKF are designed for switching electrical circuits in response to pressure fluctuation of liquids and gases in heating and water supply systems. RVG-20 is used as an alarm device to control water pressure in water supply systems, for pump idling and compressor tank filling control, and heating plants feeding.



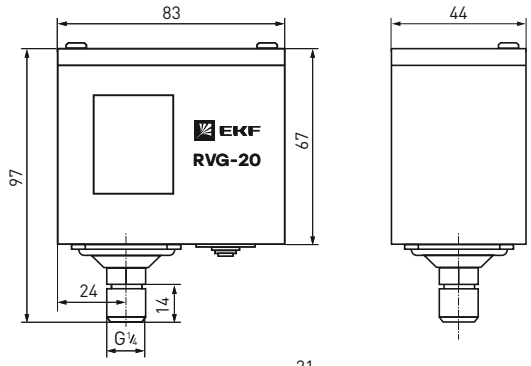
APPLICATION

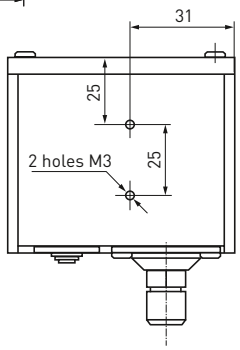
- Heating, ventilation & air-conditioning systmes;
- Refrigiration units;
- Water supply systems.

TECHNICAL DATA

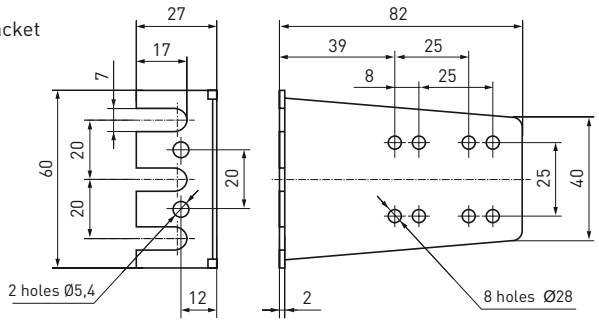
Parameters	Values	
	RVG-20-0,6	RVG-20-1,6
Operation environment	Water, liquids, oils, coolants, steam, gases and their mixtures	
Pressure setting range, Pa	-0,05–0,6	0,5–1,6
Differential, MPa	0,06–0,4	0,2–0,5
Max. operating pressure, MPa	1,65	3,5
Response error, %	± 15	
Measured media fitting	G1/4	
Diameter of connected cable, mm	3–8	
Output	Double-throw relay (SPDT)	
Max. load of contact group	AC-1 (16 A, 400 V); AC-3 (16 A, 400 V); AC-15 (10 A, 400 V); DC-13 (12 W, 220 V)	
Degree of protection by IEC 60529	IP54	
Bellows & joint materials	Nickel-plated brass	
Housing material	Aluminized steel 10	
Cover material	Plastic	
Scale material	Aluminum	
Window material	Plexiglass	
Bracket material	Anodized steel 10	
Media temperature, °C	From -20 to +110	
Ambient temperature, °C	From -40 to +65	
Max. relative humidity at 25°C, %	80	

Overall and installation dimensions (mm)





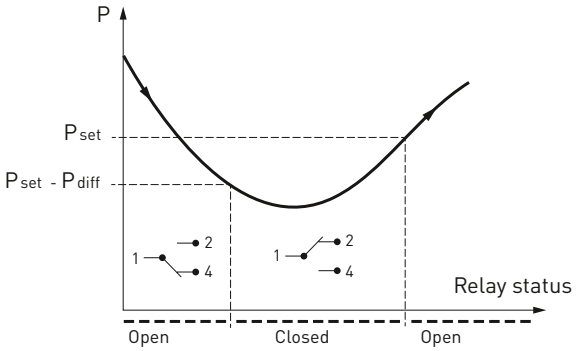
Bracket



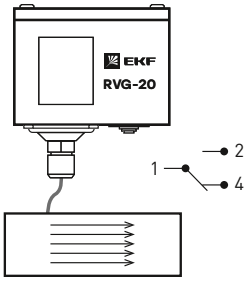
Installation and operation

If pressure exceeds the setpoint (P_{set}), the switch is in open position (contacts 1 & 4 are closed, contacts 1 & 2 are open). If pressure drops below the setpoint ($P_{set} - P_{diff}$), the single-pole contact switches (contacts 1 & 4 open, contacts 1 & 2 close). The device thus transmits an alarm signal. Once the fault cleared, the pressure exceeds the setpoint and the system resets.

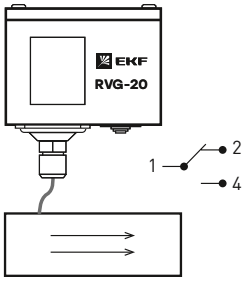
Switch operation diagram



Example: RVG-20 controlling pump operation in a pumping plant



Normal pressure



Pressure drop

Delivery scope

1. Overpressure switch
2. Mounting bracket
3. Set of mounting screws
4. Technical manual

Name	Max. pressure setpoint, Pa	Item code
Overpressure switch RVG-20 0,6 Mpa G1/4 EKF	0,6	RVG-20-0,6
Overpressure switch RVG-20 1,6 Mpa G1/4 EKF	1,6	RVG-20-1,6

Differential pressure switches RVG-30 EKF

Mechanical differential pressure switches RVG-30 EKF are designed for switching electrical circuits in response to pressure differential from two sides to bellows. The bellows, when deformed, switches SPDT contact.

10A SPDT contacts

Stainless steel

Differential pressure setpoint adjustment

Variety of measured liquids, gases & oils

APPLICATION

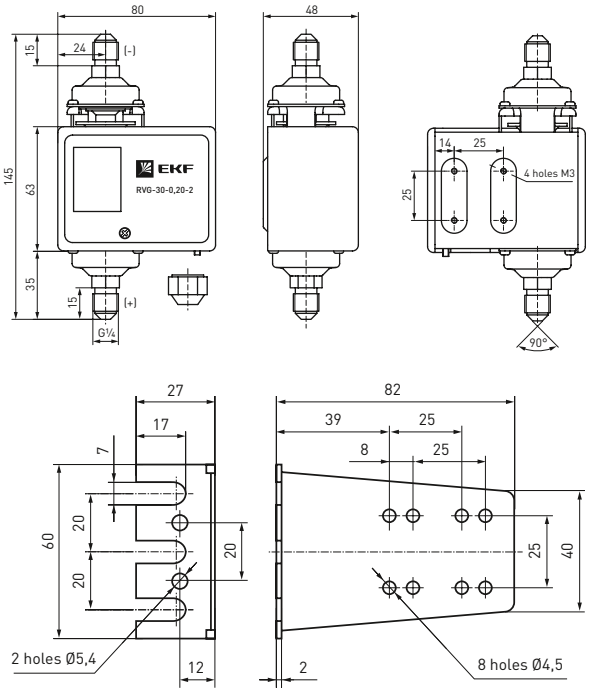
Differential pressure switches RVG-30 are used for:

- pump idling control;
- monitoring of filter clogging in ventilation and air conditioning systems;
- Infeed control for heating plants.

TECHNICAL DATA

Parameters			Values					
			RVG-30-0,2-2	RVG-30-0,2-4	RVG-30-0,35-2	RVG-30-0,35-4	RVG-30-0,6-2	RVG-30-0,6-4
Operation environment			Water, liquids, oils, coolants, steam, gases and their mixtures					
Pressure setting range, Pa			0,05–0,2	0,05–0,2	0,05–0,35	0,05–0,2	0,05–0,2	0,05–0,35
Differential, MPa			0,02–0,04	0,02–0,04	0,03–0,05	0,02–0,04	0,02–0,04	0,03–0,05
Max. operating pressure, MPa			1,65					
Measured media joint			G1/2	G1/4	G1/2	G1/2	G1/4	G1/2
Diameter of connected cable, mm			3–8					
Output			Double-throw relay (SPDT)					
Max. load of contact group	Voltage 125V AC	Resistive load	20 A					
		Full load	15 A					
		Inrush current	72 A					
	Voltage 250V AC	Resistive load	10 A					
		Full load	8 A					
		Inrush current	72 A					
	Voltage 24V DC	Resistive load	10 A					
		Full load	8 A					
		Inrush current	64 A					
Degree of protection by IEC 60529			IP42					
Bellows & joint materials			Nickel-plated brass					
Housing material			Aluminized steel					
Cover material			Plastic					
Scale material			Aluminum					
Window material			Plexiglass					
Bracket material			Anodized steel					
Operating temperature, °C			From –20 to +110					
Ambient temperature, °C			from -40 to +65					
Max. relative humidity @ 25°C, %			80					

Overall and installation dimensions (mm)



Name	Item code
Differential pressure switch RVG-30 0,2 MPa G1/2 EKF	RVG-30-0,2-2
Differential pressure switch RVG-30 0,2 MPa G1/4 EKF	RVG-30-0,2-4
Differential pressure switch RVG-30 0,35 MPa G1/2 EKF	RVG-30-0,35-2
Differential pressure switch RVG-30 0,35 MPa G1/4 EKF	RVG-30-0,35-4
Differential pressure switch RVG-30 0,6 MPa G1/2 EKF	RVG-30-0,6-2
Differential pressure switch RVG-30 0,6 MPa G1/4 EKF	RVG-30-0,6-4

Float level sensors RLF

Float level sensors RLF are designed to indicate the level of liquids and can be used in automated water/liquid tank fill/drain systems. Float level sensors RLF are universal devices, intended for applications where other types of level sensors are not suitable due to process requirements or economic constraints. Float level sensors can operate in water, solutions, petroleum products and other liquid mediums non-corrosive to the device housing and materials.

Horizontal and vertical installation

Ingress protection – IP68

Reliable means of level indication

Multipurpose device

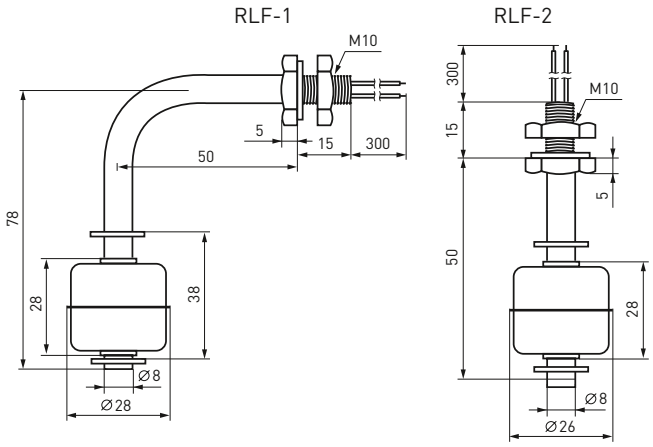
APPLICATION

- pumping stations
- chemical industry
- water treatment & sewerage systems
- storm water treatment plants

TECHNICAL DATA

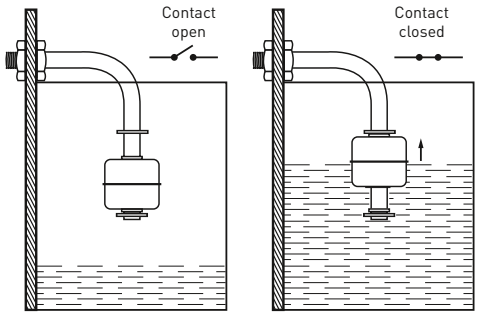
Parameters	Values	
	RLF-1-NO	RLF-2-NO
Maximum switching voltage, V	DC 180; AC 240	
Maximum switching current, A	DC 0,7; AC 0,5	
Maximum switching power, W	50	
Signal type	NO	
Stem, float, and retainer material	Stainless steel AISI 304	
Gasket material	Rubber	
Cross-section of connected wires, mm^2	0,35	
Wire length, m	0,3	
Degree of protection by IEC 60529	IP68	
Operating temperature, °C	From -25 to +120	
Max. medium pressure, MPa	6	
Min. medium density, g/cm^3	0,7	

Overall and installation dimensions (mm)



Installation and operation

The sensor includes a stem and a float. The float moves freely along the stem. A magnet, built into the float, actuates a reed switch in the stem. As the float moves up with the level of liquid, the magnet closes the reed switch, which, in turn closes the signaling or control circuit.



Delivery scope

1. Float level sensor
2. Technical manual

Name	Version	Item code
Float level sensor RLF-1 NO	Horizontal internal installation	RLF-1-NO
Float level sensor RLF-2 NO	Vertical internal installation	RLF-2-NO

Float level switches RL-1 EKF

Float switch RL-1 is designed to control the level of liquids. The device is used as a level sensor (relay) in automated water/liquid tank fill/drain systems. Float switch RL-1 is suitable for SPS (sewerage pumping station) and septic tank systems automation. Device is capable of operating in liquids with high particulate content. The device is made of materials resistant to corrosive media: chlorinated water, faecal water, domestic sewage, liquid manure, washing and alkaline solutions, organic acids, alcohols, emulsions with fuel, fats and oils.

APPLICATION

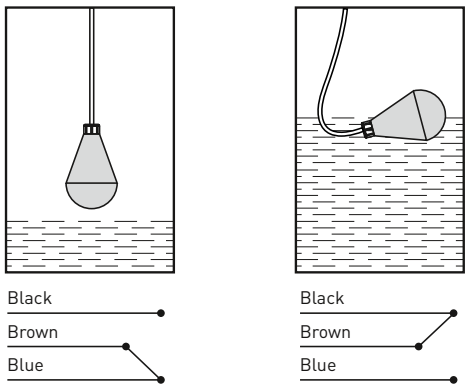
- pumping stations
- chemical industry
- water treatment & sewerage systems
- storm water treatment plants

TECHNICAL DATA

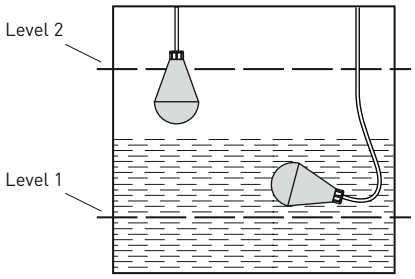
Parameters	Values
Rated switching AC voltage, V	220–240
Rated switching DC voltage, V	24
Maximum switching current, A	16
Switching angle, °	50 (±10)
Signal type	SPDT contact (NO or NC)
Housing material	Polypropylene (PP)
Cable material	Polyvinyl chloride (PVC)
Outer cable diameter, mm	6,5
Cross-section of connected wires, mm^2	1
Degree of protection by IEC 60529	IP68
Operating temperature, °C	From 0 to 70
Max, medium pressure, MPa	0,5
Medium density, kg/m^3	950–1050

Installation and operation

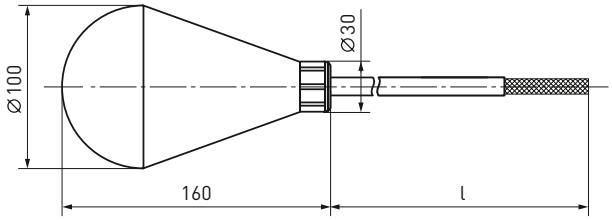
A change in orientation of the RL-1 housing when submerged in a liquid will trigger the integrated switch (relay). It will switch (open or close) the circuit, sending the signal to the controlled device (pump, valve, etc.).



When employing float switches to control multiple levels of liquid, use a separate RL-1 float per each controlled level.



Overall and installation dimensions (mm)



Delivery scope

1. Float level sensor
2. Technical manual

Name	Cable length, m	Item code
Float switch RL-1 cable 5 m	5	RL-1-5
Float switch RL-1 cable 10 m	10	RL-1-10
Float switch RL-1 cable 20 m	20	RL-1-20

Proximity sensors PROXIS EKF

Proximity sensors PROXIS EKF are designed for non-contact detection and counting of various targets located in their sensitivity area. Proximity sensors are classified into two major groups: capacitive and inductive. Inductive sensors detect metallic, magnetic, ferromagnetic materials and amorphous metals, while capacitive sensors are capable of detecting both metallic and non-metallic objects.

Capacitive proximity sensors PROXIS-1 EKF are used as limit switches to control tank filling with liquid, powder or granular substances for automated lines, conveyors, machinery and machine tools, and for positioning various mechanisms in signalling circuits, etc. Capacitive sensors are used in machinery and mechanical engineering, wood- and metal works, pharmaceuticals, pulp & paper, food and other applications requiring continuous control of target position, quantity, and possible defects.

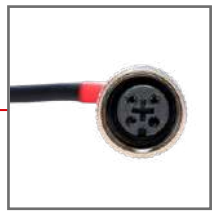
Inductive proximity sensors PROXIS-2 EKF are used as limit switches in transportation, steel industry, industrial automation, as well as in mechanical engineering and machinery. Inductive sensors are most widely used for control of automated lines and conveyors, position of metal objects in space, shaft and gear rotation and speed.

Optical proximity sensors PROXIS-3 EKF are designed for positioning, control of presence and position of targets, tag control in industrial processes, counting items at production lines, control and measurement of geometric dimensions and position of objects in space, detection of foreign objects in security systems, etc. When a target is detected, the sensor sends a control signal matching operating logic and type of output element.

Capacitive, inductive & optical models

Protection degree up to IP67

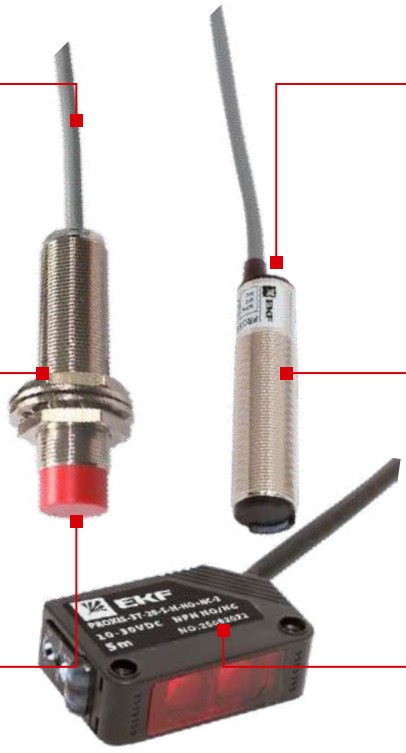
Sensing distance up to 20 meters



Cable gland & M12 connector

12-30mm housing diameter options

Optical models available in diffuse, reflective & through-beam versions



APPLICATION

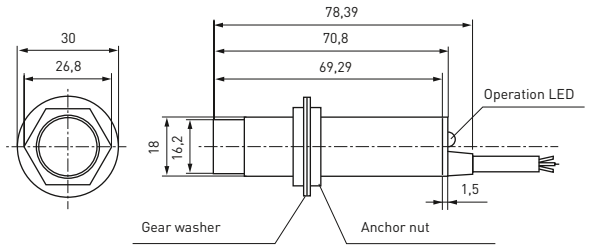
- Production lines & conveying systems;
- Machinery & mechanical engineering;
- Metal & wood works;
- Pharmaceuticals, food & beverage industries.

TECHNICAL DATA

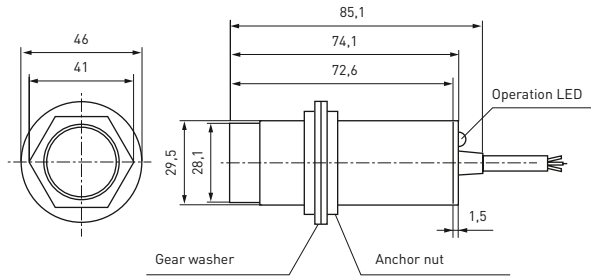
Parameters	Values		
	Capacitive PROXIS-1	Inductive PROXIS-2	Optical PROXIS-3
Supply voltage, V	10...30 DC (rated value - 24)		
Max. current consumption, mA	200		
Max. leakage current, mA	0,15		0,30
Max. voltage drop, V	6		1,5
Reverse polarity protection	Available		
Wiring diagram	3-wire, PNP or NPN		3-wire, PNP or NPN; 4 wire, NO+NC
Control signal type	Normally open (NO)		Normally open (NO); Normally closed (NC); NO + NC
Max. sensing frequency, Hz	300 (for PROXIS-1-18); 100 (for PROXIS-1-30)	300 (for PROXIS-2-18); 100 (for PROXIS-2-30)	–
Repeatability, %	≤ 3		≤ 5
Housing material	Nickel-plated brass		Nickel-plated brass (cylindrical body); PBT-plastic (rectangle body)
Moving part material	High-impact plastic		
Operating temperature, °C	-25...+70		-25...+55
Degree of protection	IP67		IP67 (cylindrical body); IP64 (plastic rectangle body)
Electrical connection	Cable, 2m		
Operation LED	Available		
Power indication	N/A		Available (only for PROXIS-3 plastic housings)

Overall and installation dimensions (mm)

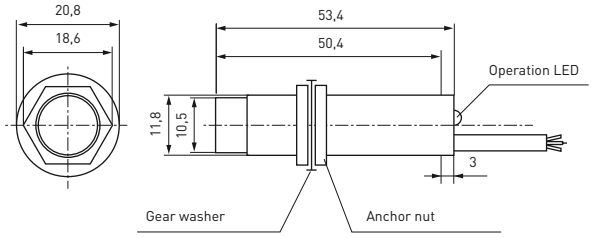
PROXIS-1-18



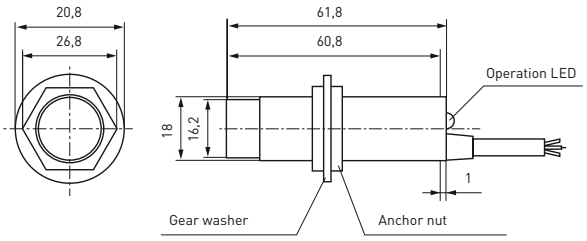
PROXIS-1-30



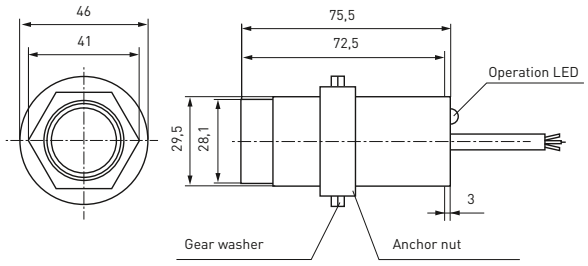
PROXIS-2-12



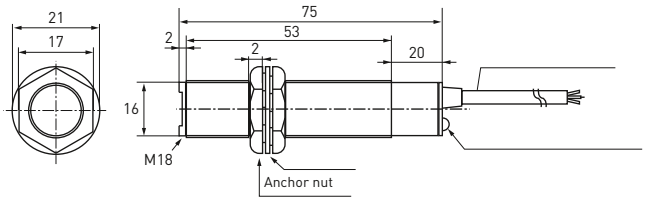
PROXIS-2-18



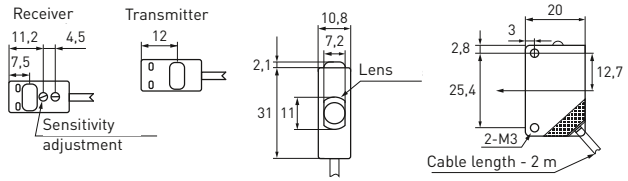
PROXIS-2-30



PROXIS-3D-18



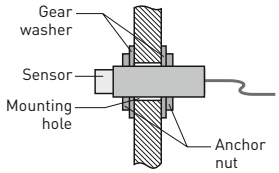
PROXIS-3D(3T)-20



Installation and operation

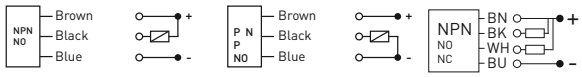
Mounting

PROXIS sensors shall be installed in a hole or slot with a thread on the body and fixed with two gear washers and two nuts.



Connection

NPN & PNP wiring diagram



Sensing distance setting

The sensing distance of PROXIS-1 capacitive sensors can be adjusted (sensing range is specific for each version). This parameter is called operation sensitivity and is set with the built-in controller next to the cable outlet. The sensitivity shall be set on site, depending on the dielectric constant of a target. The sensing distance of PROXIS-2 inductive sensors is a rated value specific to the sensor version. The sensing distance of PROXIS-3 optical sensors is set with an adjusting screw on the sensor housing.

Delivery scope

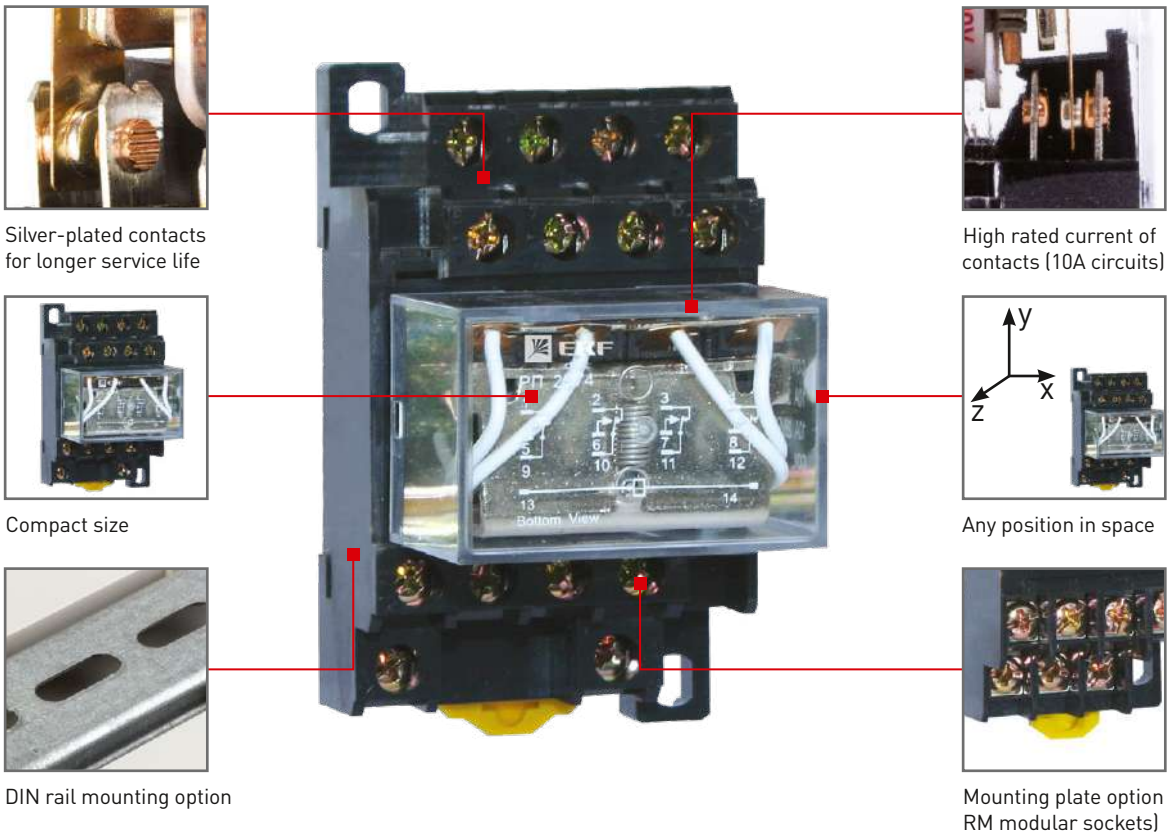
1. Sensor – 1 pc.
2. Mounting kit – 1 pc.
3. Reflector 50x50 - 1 pc. (only for reflective types)

Name	Sensor type	Housing diameter, mm	Sensing distance, mm	Wiring diagram	Output signal	Cable, m	Item code
Capacitive proximity sensor PROXIS-1	Capacitive	18	1–8 (configurable)	PNP	NO	2	PROXIS-1-18-08-P-NO-2
				NPN			PROXIS-1-18-08-N-NO-2
		30	1–15 (configurable)	PNP			PROXIS-1-30-15-P-NO-2
				NPN			PROXIS-1-30-15-N-NO-2
Inductive proximity sensor PROXIS-2	Inductive	12	4	PNP			PROXIS-2-12-04-P-NO-2
				NPN			PROXIS-2-12-04-N-NO-2
		18	8	PNP			PROXIS-2-18-08-P-NO-2
				NPN			PROXIS-2-18-08-N-NO-2
		30	15	PNP			PROXIS-2-30-15-P-NO-2
				NPN			PROXIS-2-30-15-N-NO-2
Optical proximity sensor PROXIS-3	Optical diffuse	18	100	NPN	NO+NC		PROXIS-3D-18-10-N-NO+NC-2
				PNP			PROXIS-3D-18-10-P-NO+NC-2
			300	NPN			PROXIS-3D-18-30-N-NO+NC-2
				PNP			PROXIS-3D-18-30-P-NO+NC-2
			500	NPN			PROXIS-3D-18-50-N-NO+NC-2
				PNP			PROXIS-3D-18-50-P-NO+NC-2
	Optical reflective		2000	NPN			PROXIS-3R-18-2-N-NO+NC-2
				PNP			PROXIS-3R-18-2-P-NO+NC-2
	Optical through-beam		10000	NPN			PROXIS-3T-18-10-N-NO+NC-2
				PNP			PROXIS-3T-18-10-P-NO+NC-2
			20000	NPN			PROXIS-3T-18-20-N-NO+NC-2
				PNP			PROXIS-3T-18-20-P-NO+NC-2
	Optical diffuse	20x30	300	NPN	NO + NC configurable		PROXIS-3D-20-30-N-NO+NC-2
				PNP			PROXIS-3D-20-30-P-NO+NC-2
	Optical through-beam		5000	NPN			PROXIS-3T-20-5-N-NO+NC-2
				PNP			PROXIS-3T-20-5-P-NO+NC-2

Interface relays RP EKF

Interface relays RP-22 & RP-25 EKF are switching accessories designed for electrical circuits rated up to 10A. RP interface relays can be used with relay sockets RM-22 & RM-25 to be mounted on a 35mm DIN rail. Relay sockets carry terminals for outputs, switching contacts and relay coil.

Standards: IEC/EN 60947-5-1



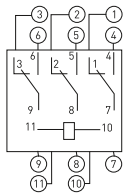
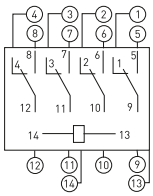
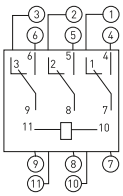
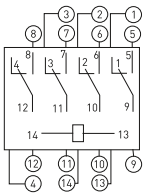
APPLICATION

RP EKF interface relays are used in control circuits with rated voltage up to 230 V AC and 24 V DC, in automation systems and control cabinets:

- switching of power circuits up to 10 A;
- galvanic isolation;
- transmission of control signals from controllers to actuators.

TECHNICAL DATA

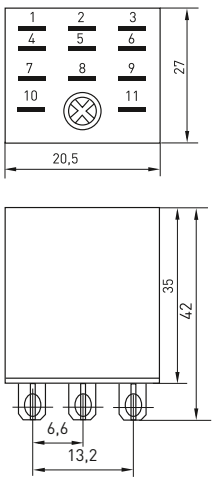
Wiring diagrams

RM 22/3	RM 22/4	RM 25/3	RM 25/4
			

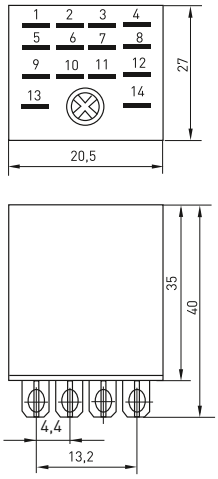
Parameters	Values	
	Interface relay	Relay socket
Electrical endurance, O-C cycles	10^5	–
Mechanical endurance, O-C cycles	10^7	–
Degree of protection	IP40	IP20
Cross-section of connected wires, mm²	–	0,75–2,5
Operating temperature, °C	-20...+40	-20...+40

Overall and installation dimensions (mm)

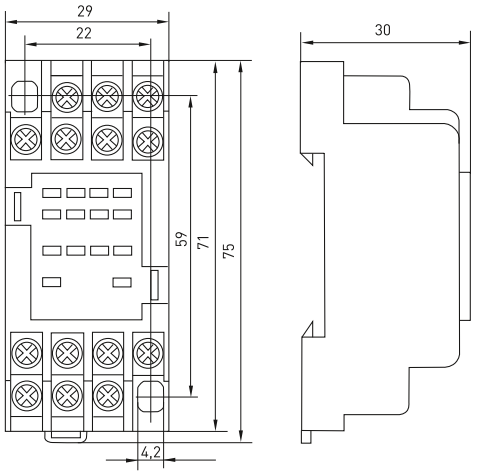
Interface relay RP 22/3



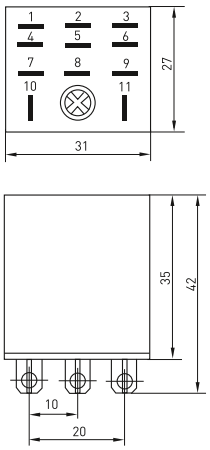
Interface relay RP 22/4



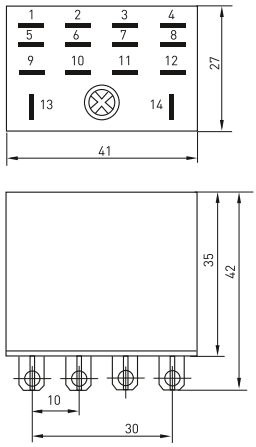
Relay socket RM 22/4



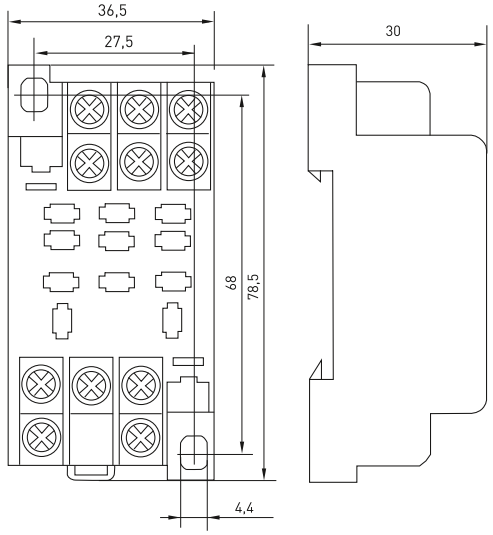
Interface relay RP 25/3



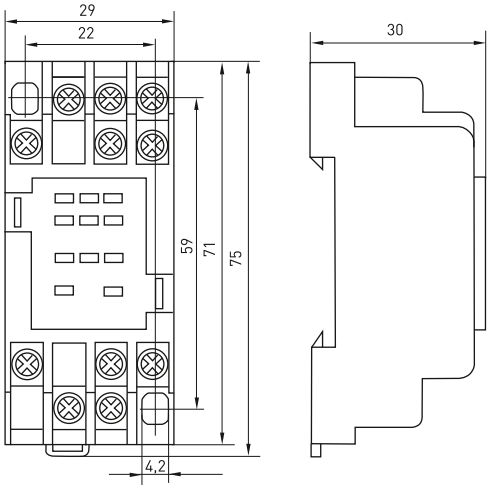
Interface relay RP 25/4



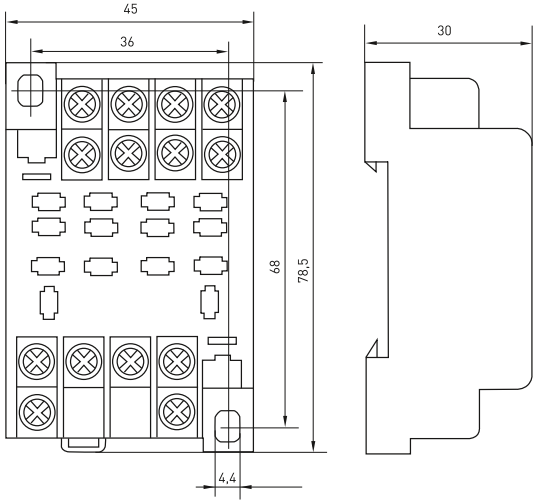
Relay socket RM 25/3



Relay socket RM 22/3



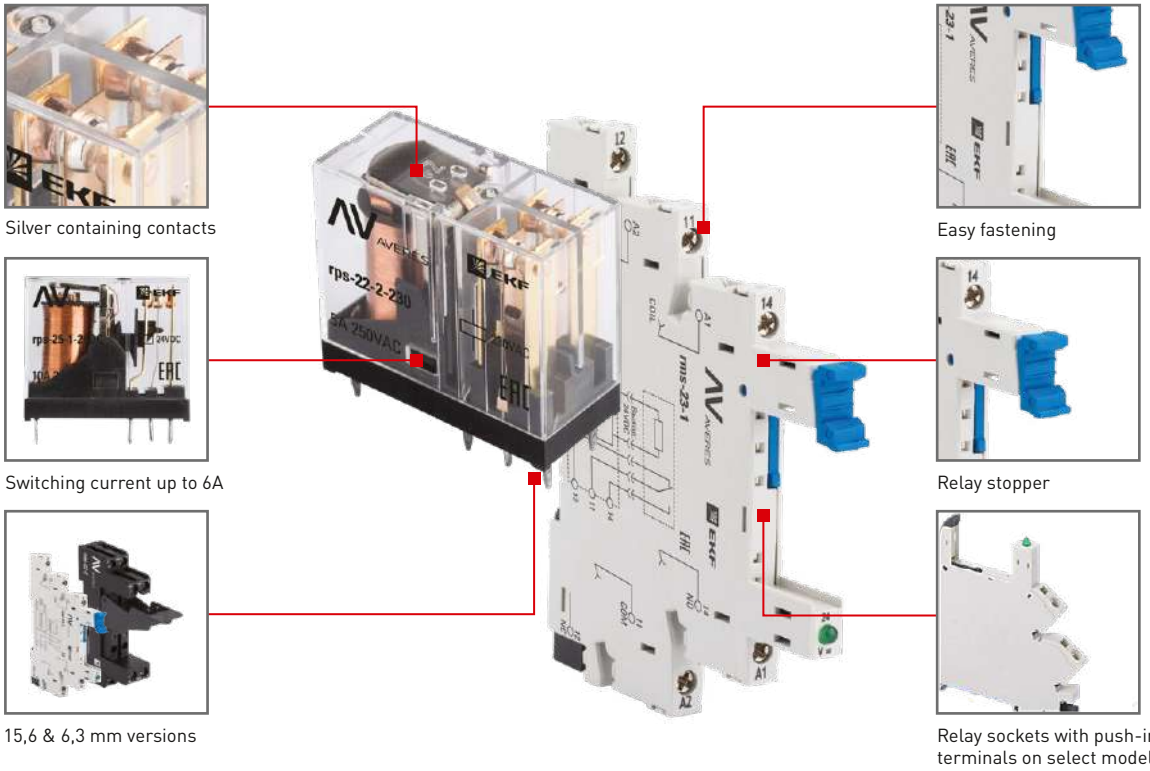
Relay socket RM 25/4



Relay	Rated contact current In, A	Rated coil voltage Uc, V	Rated coil current, mA	Item code	Socket	Item code
Interface relay RP 22/3 5A 12V AC EKF	5	12	115 AC 75 DC	rp-22-3-12	Relay socket RM 22/3 EKF	rm-22-3
Interface relay RP 22/3 5A 12V DC EKF				rp-22-3-12-DC		
Interface relay RP 22/3 5A 24V AC EKF		24	65 AC 40 DC	rp-22-3-24		
Interface relay RP 22/3 5A 24V DC EKF				rp-22-3-24-DC		
Interface relay RP 22/3 5A 230V AC EKF		230	7,5 AC	rp-22-3-230		
Interface relay RP 22/4 5A 12V AC EKF		12	115 AC 75 DC	rp-22-4-12	Relay socket RM 22/4 EKF	rm-22-4
Interface relay RP 22/4 5A 12V DC EKF				rp-22-4-12-DC		
Interface relay RP 22/4 5A 24V AC EKF		24	65 AC 40 DC	rp-22-4-24		
Interface relay RP 22/4 5A 24V DC EKF				rp-22-4-24-DC		
Interface relay RP 22/3 5A 230V AC EKF		230	7,5 AC	rp-22-4-230		
Interface relay RP 25/3 10A 12V AC EKF	10	12	170 AC 130 DC	rp-25-3-12	Relay socket RM 25/3 EKF	rm-25-3
Interface relay RP 25/3 10A 12V DC EKF				rp-25-3-12-DC		
Interface relay RP 25/3 10A 24V AC EKF		24	190 AC 80 DC	rp-25-3-24		
Interface relay RP 25/3 10A 24V DC EKF				rp-25-3-24-DC		
Interface relay RP 25/3 10A 230V AC EKF		230	15 AC	rp-25-3-230		
Interface relay RP 25/4 10A 12V AC EKF		12	170 AC 130 DC	rp-25-4-12	Relay socket RM 25/4 EKF	rm-25-4
Interface relay RP 25/4 10A 12V DC EKF				rp-25-4-12-DC		
Interface relay RP 25/4 10A 24V AC EKF		24	190 AC 80 DC	rp-25-4-24		
Interface relay RP 25/4 10A 24V DC EKF				rp-25-4-24-DC		
Interface relay RP 25/4 10A 230V AC EKF		230	15 AC	rp-25-4-230		

Interface relays RP Slim AVERES EKF

Interface relays RP Slim AVERES EKF are switching accessories designed for electrical circuits rated up to 10A. With a compact size, RP Slim can be mounted on a 35mm DIN rail with relay sockets RM Slim. Relay sockets carry terminals for outputs, switching contacts and relay coil. Copper and aluminum wire connections are supported.



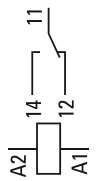
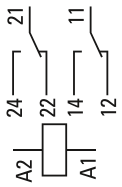
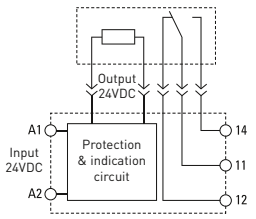
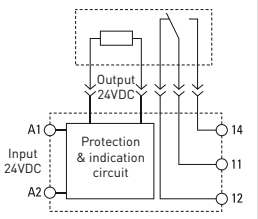
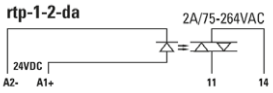
APPLICATION

RP Slim AVERES EKF interface relays are used in control circuits with rated voltage up to 240* V AC and 24 V DC, in automation systems and control cabinets:

- switching of power circuits up to 10 A;
- galvanic isolation;
- transmission of control signals from controllers to actuators.

TECHNICAL DATA

Wiring diagrams

Relay socket RM Slim 25/1 AVERES EKF	Relay socket RM Slim 22/2 AVERES EKF	Relay socket RM Slim 23/1 AVERES EKF	Relay socket RM slim 23/1 230VAC/60VDC AVERES EKF	Relay socket RM Slim 23/1 assembled with solid-state relay 2A AVERES EKF
				

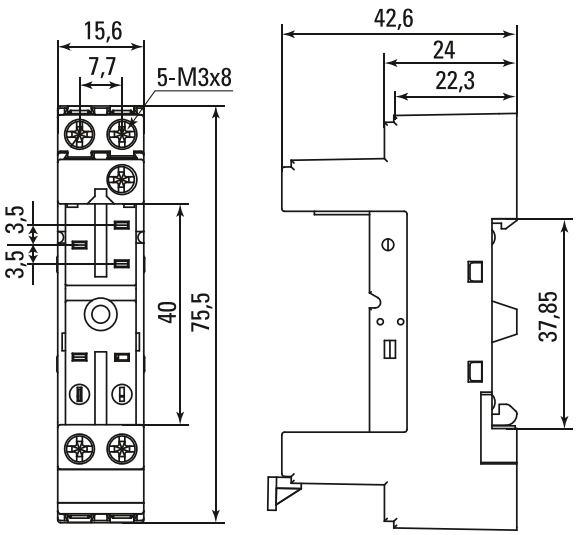
Parameters	Values		
Rated contact current, A	5	6	10
Rated voltage of control coil, V	220V DC; 230V AC	220V DC; 60V DC	220V DC; 230V AC
Number of switching contact groups	2	1	1
Max. operate time, ms	20	8	20
Max. release time, ms	10	4	10
Electrical endurance, cycles	100 000		
Mechanical endurance, cycles	10 000 000		
Degree of protection	IP40		
Min. voltage for contact operation	80% of Unom		
Ambient temperature, °C	From -40 to +60		
Breakdown voltage between adjacent contacts, V	1000		
Breakdown voltage between coil and contacts, V	5000	4000	5000
Cross-section of connected wires, mm²	0,75-2,5		

Parameters	Values
	rtp-1-2-da
Rated contact current, A	2
Minimum load current, mA	20 AC
Leakage current, mA	Max. 3
Control signal, V DC	19,2...28,8
Rated coil voltage, V AC	75...264
Control circuit resistance, kOhm	3,3
Insulation resistance, MOhm	1000
Response time, ms	10
Rated frequency, Hz	50 / 60
Operating temperature, °C	-30...+60
Storage temperature °C	-30...+100
Mounting type	PCB / relay socket RM slim 23
Insulation dielectric strength (control / output circuit)	2500 V for 1 minute

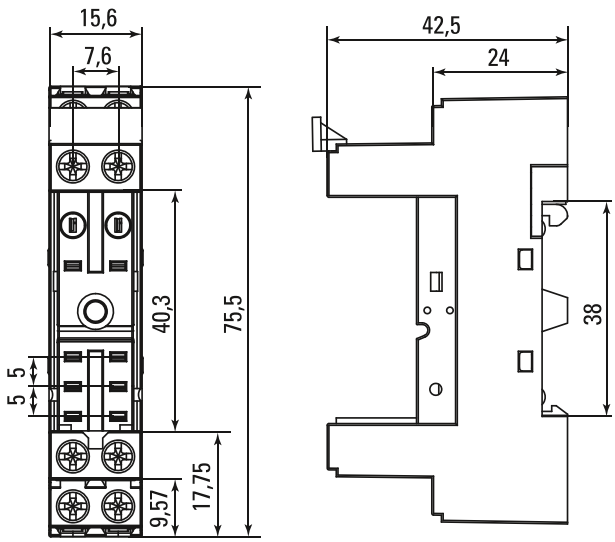
* Models rated 240V AC are available on request.

Overall and installation dimensions (mm)

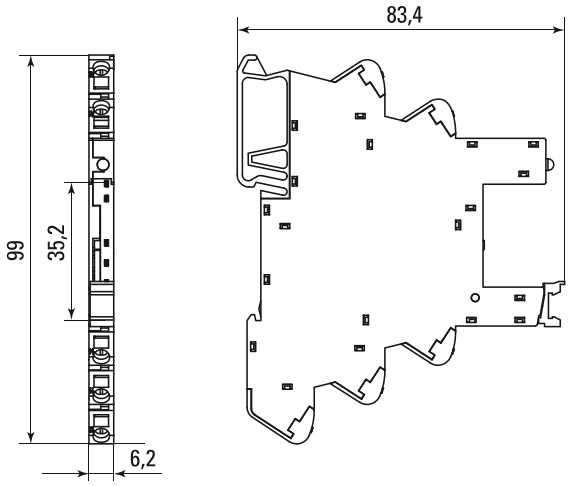
Relay socket RM Slim 25/1 AVERES EKF



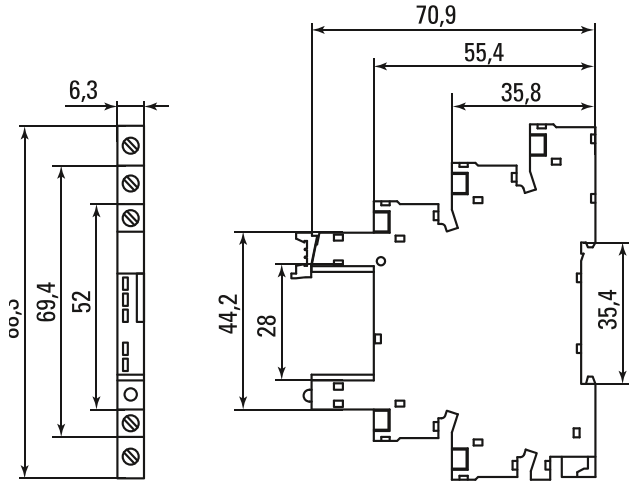
Relay socket RM Slim 22/2 AVERES EKF



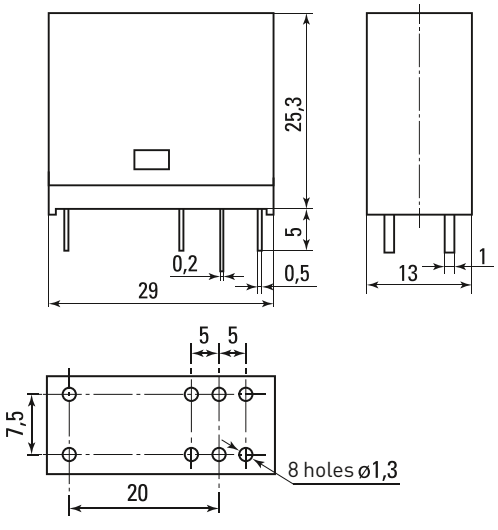
Relay socket RM slim 23/1 Push-in AVERES EKF



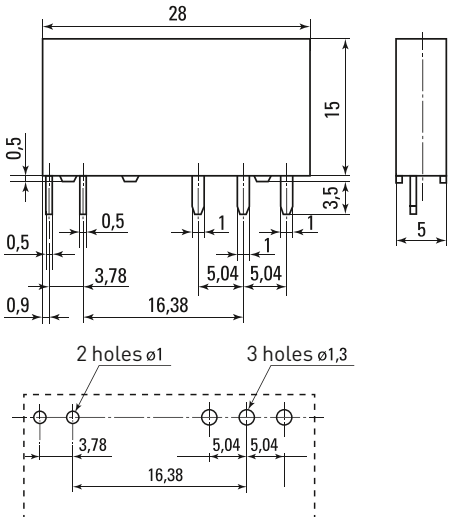
Relay socket RM Slim 23/1 AVERES EKF



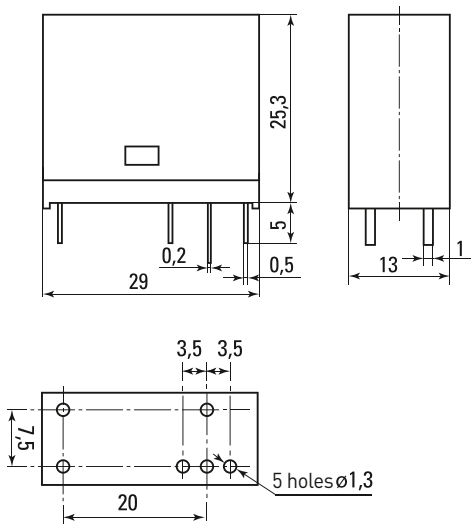
Interface relay RP Slim 25/1 AVERES EKF



Interface relay RP Slim 23/1 AVERES EKF



Interface relay RP Slim 22/2 AVERES EKF



Transportation and storage

Devices can be transported by any means of enclosed transport that protects the packaged goods from mechanical impact and weather exposure.

Interface relays shall be stored in the original package at the ambient temperature from -50°C to +50°C and relative humidity of max. 90%.

Delivery scope

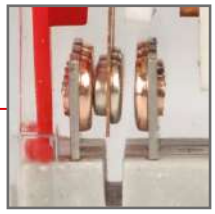
Relay sockets and solid-state relays AVERES EKF are supplied in an individual package. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Picture	Name	Rated contact current In, A	Rated voltage of control coil Uc, V	Item code
	Interface relay RP slim 25/1 10A 24V DC AVERES EKF	10	24 DC	rps-25-1-24DC
	Interface relay RP slim 25/1 10A 230V AC AVERES EKF		230 AC	rps-25-1-230
	Interface relay RP slim 22/2 5A 12V DC AVERES EKF	5	12 DC	rps-22-2-12DC
	Interface relay RP slim 22/2 5A 24V DC AVERES EKF		24 DC	rps-22-2-24DC
	Interface relay RP slim 22/2 5A 230V AC AVERES EKF		230 AC	rps-22-2-230
	Interface relay RP slim 23/1 6A 24V DC AVERES EKF	6	24 DC	rps-23-1-24DC
	Interface relay RP slim 23/1 6A 60V DC AVERES EKF		60 DC	rps-23-1-60DC
	Interface relay with socket assembled RP slim 23/1 6A 230V AC AVERES EKF		230 AC	rps-23-1-60-rms230AC
	Single-phase solid state relay RTP 2A for relay socket RM slim 23/1 AVERES EKF	2	24 DC	rtp-1-2-da
	Relay socket RM slim 25/1 AVERES EKF	–	–	rms-25-1
	Relay socket RM slim 22/2 AVERES EKF	–	–	rms-22-2
	Relay socket RM slim 23/1 AVERES EKF	–	–	rms-23-1
	Relay socket RM slim 23/1 Push-in AVERES EKF	–	–	rms-23-1-push
	Relay socket RM slim 23/1 Push-in 230VAC/60VDC AVERES EKF	–	–	rms-23-1-push60-230

Interface relays RPA AVERES EKF

Interface relays RPA AVERES EKF are accessories used in AC control circuits with voltages up to 240* V for galvanic isolation and transmission of control commands by the end devices between power and control circuits. RPA are mounted on a 35mm DIN rail with relay sockets RM4 and RM5. Relay sockets carry terminals for outputs, switching contacts and relay coil.

Manual contact switching

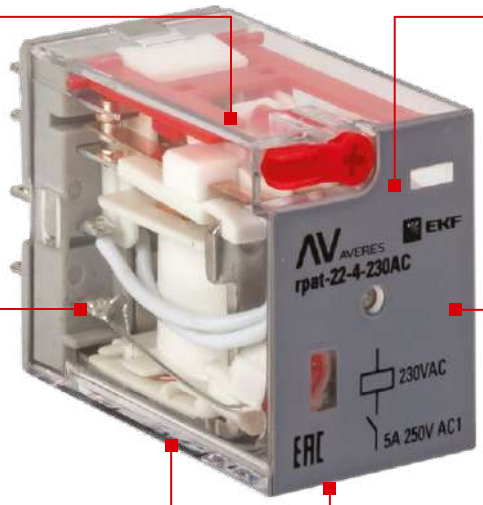

Silver containing contacts

LED indication panel

Mechanical indicator

Marking plate

Relay sockets with push-in terminals on select models



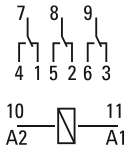
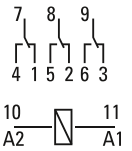
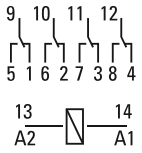
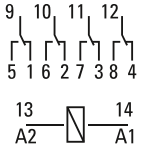
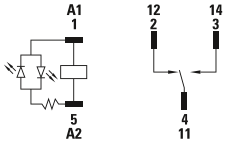
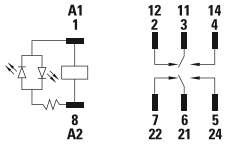
APPLICATION

RPA AVERES EKF interface relays are used in control circuits with rated voltage up to 240 V AC and 24 V DC, in automation systems and control cabinets:

- switching of power circuits up to 12 A;
- galvanic isolation;
- transmission of control signals from controllers to actuators.

TECHNICAL DATA

Wiring diagrams

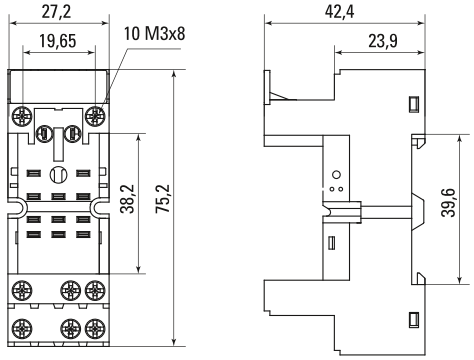
RPA 22/3 6A	RPAt 22/3 10A
	
RPAt 22/4 5A	RPA 22/4 5A
	
RPAt 25/1 12A	RPAt 25/2 8A
	

Parameters	Values	
	Coil 230V AC	Coil 24V DC
Maximum switching power AC, VA	1250	
Maximum switching power DC, W	150	
Contact resistance, MOhm	50	
Insulation dielectric strength, V	2500	
Max. operate time, ms	25	
Max. release time, ms	25	
Electrical endurance, O-C cycles	10^5	
Mechanical endurance, O-C cycles	10^7	
Degree of protection	IP40	
Operation indication LED	available	
Breakdown voltage between adjacent contacts, V	1500 for 1 minute	
Breakdown voltage between coil and contacts, V	1500 for 1 minute	
Operating temperature, °C	from -40 to +70	
Coil power consumption	1,2 VA	0,9 W
Coil resistance, kOhm	18,8	0,65
Max. operate voltage, V	176	19,2
Max. release voltage, V	66	2,4

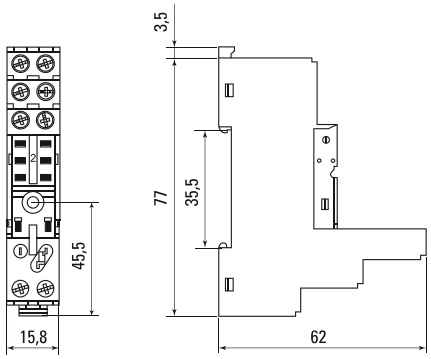
* Models rated 240V AC are available on request.

Overall and installation dimensions (mm)

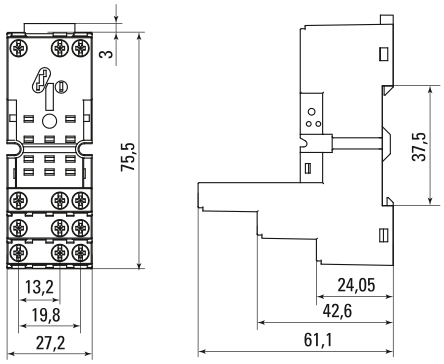
Relay socket RM4 22/3 AVERES EKF



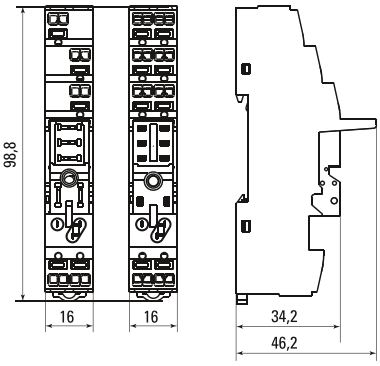
Relay socket RM5 22/2 AVERES EKF



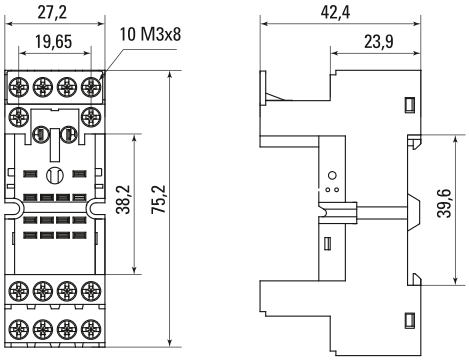
Relay socket RM5 22/3 AVERES EKF



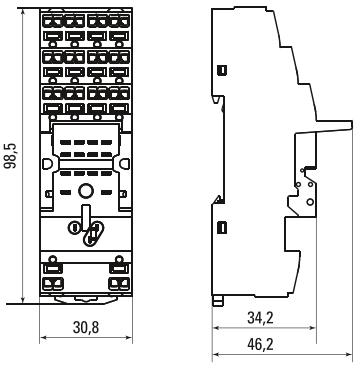
Relay sockets RM5 25/1 & 22/2 Push-in AVERES EKF



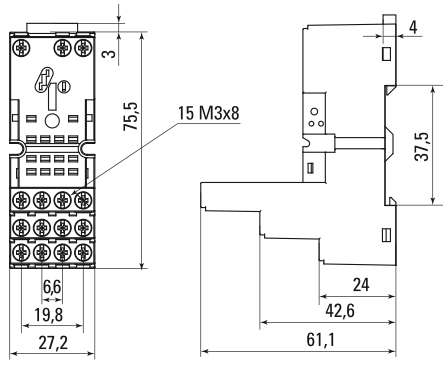
Relay socket RM4 22/4 AVERES EKF



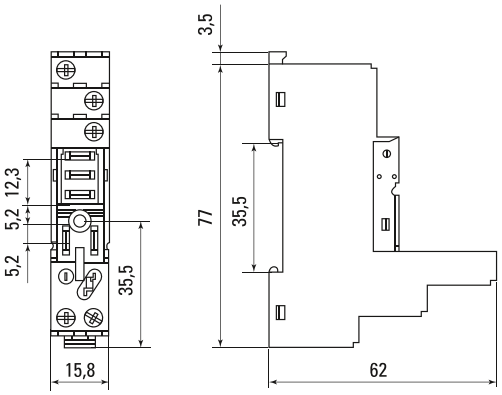
Relay socket RM5 22/4 AVERES EKF



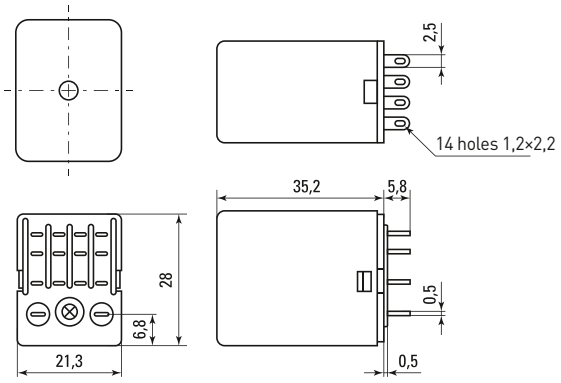
Relay socket RM5 22/5 AVERES EKF



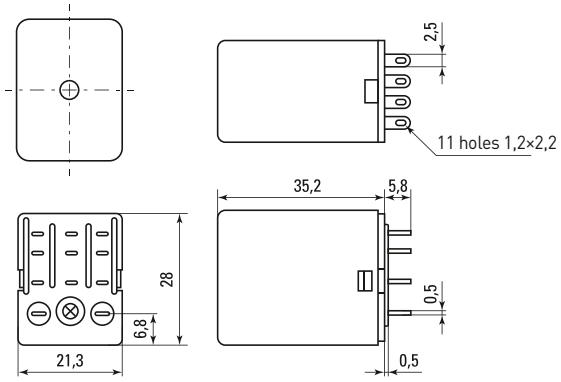
Relay socket RM5 22/1 AVERES EKF



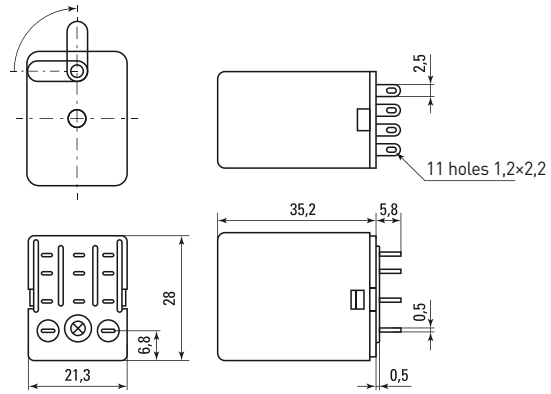
Interface relay RPA 22/4 5A AVERES EKF



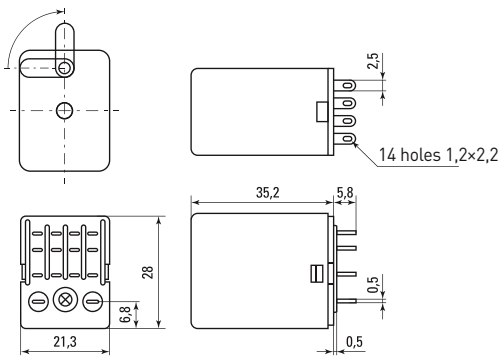
Interface relay RPA 22/3 6A AVERES EKF



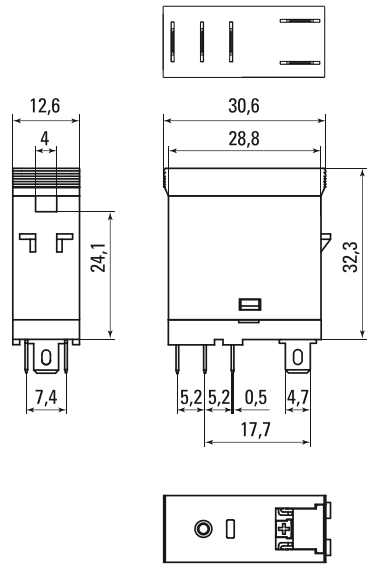
Interface relay RPAt 22/3 10A AVERES EKF



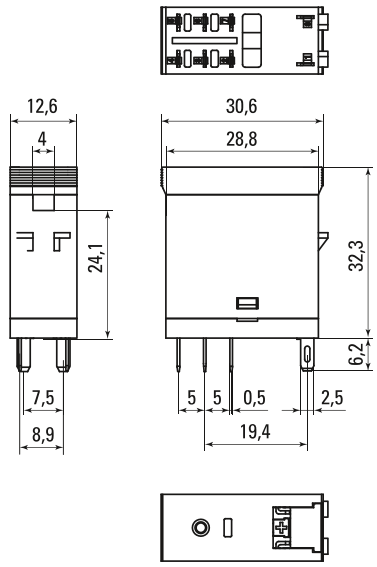
Interface relay RPAt 22/4 5A AVERES EKF



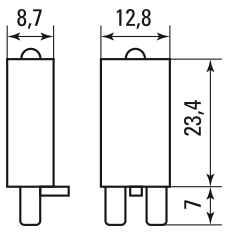
Interface relay RPA(t) 25/1 AVERES EKF



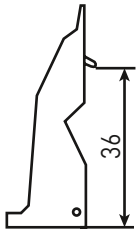
Interface relay RPA(t) 22/2 AVERES EKF



LED module 230V AC for interface relay RP AVERES EKF



Relay holder RM-22-36 AVERES EKF



Delivery scope

Relay sockets RM4 & RM5 and interface relays RPA, RPAt AVERES are supplied in an individual package. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Picture	Name	Rated contact current In, A	Rated voltage of control coil Uc, V	Item code
	Interface relay RPA 22/3 6A 230V AC AVERES EKF	6	230 AC	rpa-22-3-230AC
	Interface relay RPA 22/4 5A 230V AC AVERES EKF	5		rpa-22-4-230AC
	Interface relay RPA 22/3 6A 24V DC AVERES EKF	6	24 DC	rpa-22-3-24DC
	Interface relay RPA 22/4 5A 24V DC AVERES EKF	5		rpa-22-4-24DC
	Interface relay RPA 22/4 5A 220V DC AVERES EKF	5	220 DC	rpa-22-4-220DC
	Interface relay with push button and mechanical indication RPAt 25/1 12A 230V AC AVERES EKF	12	230 AC	rpat-25-1-230AC
	Interface relay with push button and mechanical indication RPAt 22/2 8A 230V AC AVERES EKF	8		rpat-22-2-230AC
	Interface relay with push button and mechanical indication RPAt 22/3 10A 230V AC AVERES EKF	10		rpat-22-3-230AC
	Interface relay with push button and mechanical indication RPAt 22/4 5A 230V AC AVERES EKF	5		rpat-22-4-230AC
	Interface relay with push button and mechanical indication RPAt 25/1 12A 24V DC AVERES EKF	12	24 DC	rpat-25-1-24DC
	Interface relay with push button and mechanical indication RPAt 22/2 8A 24V DC AVERES EKF	8		rpat-22-2-24DC
	Interface relay with push button and mechanical indication RPAt 22/3 10A 24V DC AVERES EKF	10		rpat-22-3-24DC
	Interface relay with push button and mechanical indication RPAt 22/4 5A 24V DC AVERES EKF	5		rpat-22-4-24DC
	Interface relay with push button and mechanical indication RPAt 22/4 5A 220V DC AVERES EKF	5	220 DC	rpat-22-4-220DC

Accessories

Picture	Name	Rated voltage Uc, V	Item code
	LED module 24V DC for interface relay RP AVERES EKF	24 DC	rp-led-24DC
	LED module 230V AC for interface relay RP AVERES EKF	230 AC	rp-led-230AC
	Relay socket RM4 22/3 AVERES EKF	–	rm4-22-3
	Relay socket RM4 22/4 AVERES EKF	–	rm4-22-4
	Relay socket RM5 22/3 AVERES EKF	–	rm5-22-3
	Relay socket RM5 22/4 AVERES EKF	–	rm5-22-4
	Relay socket RM5 22/2 AVERES EKF	–	rm5-22-2
	Relay socket RM5 25/1 AVERES EKF	–	rm5-25-1
	Relay socket RM5 22/4 Push-in AVERES EKF	–	rm5-22-4-push
	Relay socket RM5 22/2 Push-in AVERES EKF	–	rm5-22-2-push
	Relay socket RM5 25/1 Push-in AVERES EKF	–	rm5-25-1-push
	Relay holder RM-22-36 AVERES EKF	–	rm-22-36d

Solid state relays RTP EKF

Solid state relays RTP EKF enable non-contact switching of power circuits with common industry ranges of resistive or inductive load currents. Non-contact control prevents sparks and arcing, and improves relay response speed and rate. By control type, RTPs are classified into relays with phase control (LA) and zero-cross switching relays (DA and AA). Phase control enables smooth and seamless operation, while zero-cross switching minimizes electromagnetic interference. Cooling elements are used for heat dissipation generated by solid-state relays for power circuits over 5A - otherwise, the relay may fail by overheating.

Epoxy potted for additional moisture, dust and overheating protection

No voltage surge during switching

Any position in space

Operation LED

Noiseless operation

No sparks

APPLICATION

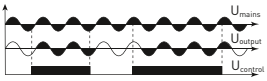
The solid-sate relay RTP EKF is used for smooth load regulation, switching of power circuits and AC control circuits up to 480 V. It is used in automation systems and control cabinets.

- Smooth lighting control.
- Smooth control of heating elements.
- Frequent load commutations.
- Frequent commutations in control circuits.

TECHNICAL DATA

Parameters	Values		
	AA	DA	LA
Load current, A	0-80		
Leakage current, mA	≤ 4		
Control signal	90-250 V AC (20mA)	3-32 V DC (6-15mA)	4-20 mA (AI)
Rated operating voltage, V AC	24-480		24-280
Insulation resistance	1000 MOhm/=500 V		
Response time, ms	10		
Rated frequency, Hz	50 / 60		
Operation temperature, °C	From -30 to +75		
Cooling	Air		
Control signal indication	LED		
Mounting type	Screwed to surface or cooling element		
Insulation dielectric strength (control / output circuit)	2500 V for 1 minute		
Insulation dielectric strength (housing/input circuit)	2500 V for 1 minute		
Insulation dielectric strength (housing/output circuit)	2500 V for 1 minute		
Weight	Single-phase - 150 g; three-phase - 400 g		

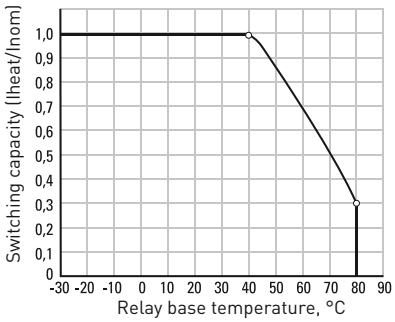
Operating procedure for zero-cross switching relays (DA & AA)

Function diagram	Description
	Load current in RTP-X-XX-DA and RTP-X-XX-AA relays is switched at zero crossing

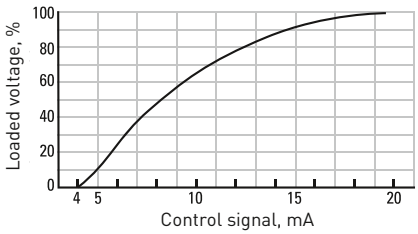
Operating procedure of phase control relay (LA)

Function diagram	Description
	RTP-X-XX-LA relay switches load current at 100 Hz (50 Hz for mains) enabling smooth control, though resulting in higher interference.

Relay current by ambient temperature



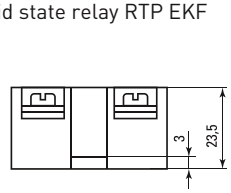
Output voltage/4-20mA input signal ratio

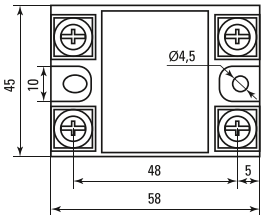


Output voltage/4-20mA input signal ratio for phase control (LA) relays

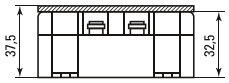
Overall and installation dimensions (mm)

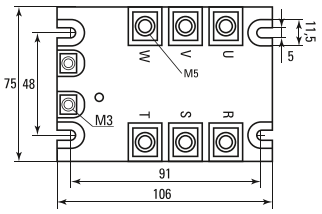
Solid state relay RTP EKF



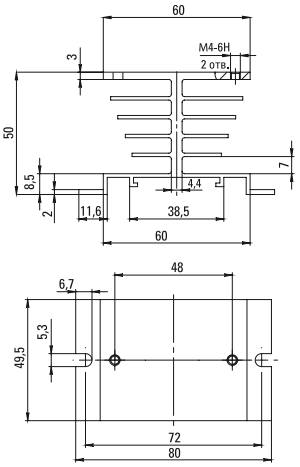


Three-phase solid state relay RTP EKF

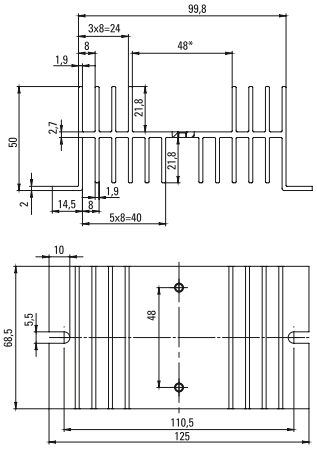




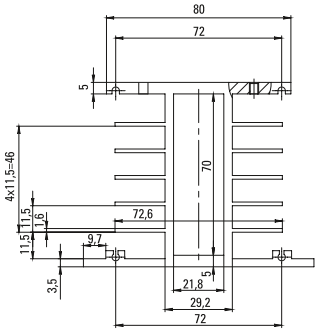
Cooling element for solid state relay 25A EKF



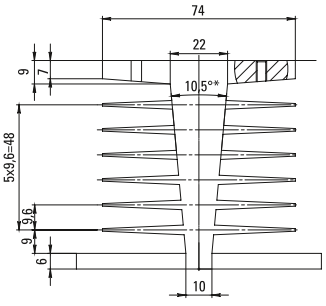
Cooling element for solid state relay 40A EKF

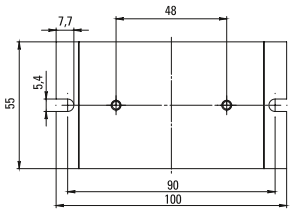


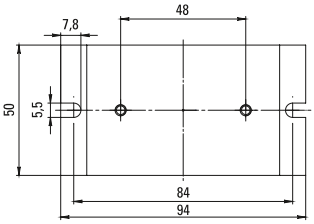
Cooling element for solid state relay 60A EKF



Cooling element for solid state relay 120A EKF







Name	Control signal type	Load current, A	Recommended load current, A		Maximum current pulse in ON state, A	Item code
			Resistive	Inductive		
Solid state relay RTP EKF	3-32 V DC	25	15	10	250	RTP-1-25-DA
		40	24	15	400	RTP-1-40-DA
		40	24	15	400	RTP-3-40-DA
		60	36	20	600	RTP-1-60-DA
		60	36	20	600	RTP-3-60-DA
		80	70	25	800	RTP-1-80-DA
		80	70	25	800	RTP-3-80-DA
	90-250 V AC	25	20	10	250	RTP-1-25-AA
		40	32	15	400	RTP-1-40-AA
		40	32	15	400	RTP-3-40-AA
		60	50	20	600	RTP-1-60-AA
		60	50	20	600	RTP-3-60-AA
		80	70	25	800	RTP-1-80-AA
		80	70	25	800	RTP-3-80-AA
	4-20 mA (analog input)	25	20	10	250	RTP-1-25-LA
		40	32	15	400	RTP-1-40-LA
		60	50	20	600	RTP-1-60-LA
		80	70	25	800	RTP-1-80-LA

Name	Maximum current, A	Item code
Cooling element for solid state relay 25A EKF	25	rad-rtp-25
Cooling element for solid state relay 40A EKF	30	rad-rtp-40
Cooling element for solid state relay 60A EKF	60	rad-rtp-60
Cooling element for solid state relay 120A EKF	120	rad-rtp-120

Digital timer TE-15 EKF

Digital timer TE-15 EKF with an LCD is a relay, activated (switched on/off) by a time setting. With a built-in clock it can also be used to keep time. Copper and aluminum wire connections are supported.

Standard: IEC/EN 60730-1

IP40 on the front panel side

Up to 16 programmable scenarios

DIN rail mounting

Easy to read LCD

Flame-retardant plastic housing

Scenario keeping time at loss of power up to 150 hours

APPLICATION

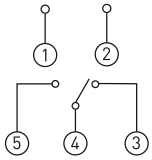
Digital timer with LCD TE-15 EKF is used in industrial and household applications; in lighting, ventilation and heating systems, as well as in industrial equipment. Designed for:

- single-phase load switching;
- contactor and starter control;
- consistent and repeatable timed switching scenarios;
- load control by day of the week and time of the day.

TECHNICAL DATA

Wiring diagrams

TE-15



Parameters	Values
Power consumption, W	6
Setting range	1 min–168 hrs
Number of programmable switching scenarios	16
Max time error, s/day	2
Max. scenario keeping time at loss of power, hours	150
Mechanical life, cycles	10^7
Electrical life, cycles	10^5
Degree of protection	IP20
Rated voltage, V	220-240
Operating temperature, °C	-25 to +40

Installation and operation

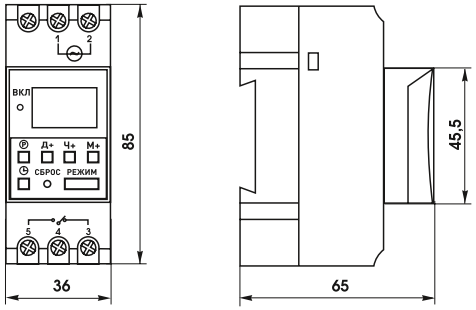
1. Design and operation

The microprocessor of the timer enables simultaneous storage and execution of 16 (TE-15) timed load switching scenarios. Scenarios can be programmed using the buttons on the front panel of the timer. Power to the timer is supplied through terminals 1 and 2. Load is connected to terminals 4 (common), 5 (NO), and 3 (NC).
In order to set the current time and day of the week, press the "Time" button and, while holding it, select the required values by pressing "Hours", "Minutes", and "Days" buttons.

2. Programming

In order to enter the scenario programming mode, press the "Programming" button. The scenario number will be displayed on LCD. Select the time of switching on by consecutively pressing the "Hours", "Minutes", and "Days" buttons. After pressing the "Programming" button for the second time you can select the time of switching off by consecutively pressing the "Hour", "Minutes", and "Day" buttons. Continue programming or press the "Time" button to finish.
To select the operating mode, press the "ON/AUTO/OFF" button.
"ON" – manual "ON".
"AUTO" – automatic operation.
"OFF" – manual "OFF".
To reset all settings, press the "RESET" button.

Overall and installation dimensions (mm)



Delivery scope

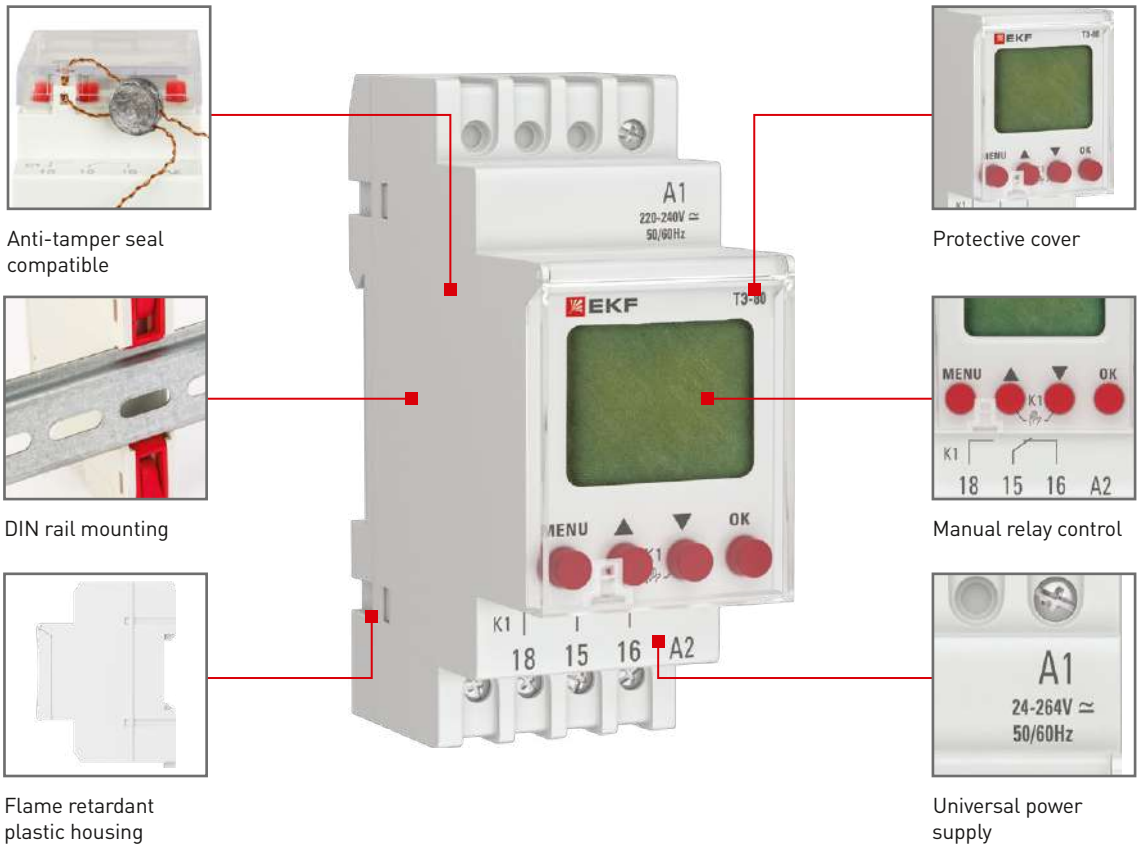
1. Digital timer TE-15 EKF

Name	Switching current, A	Item code
Digital timer TE-15 EKF	16	mdt-15

Digital timers TE-80 EKF

Digital timers TE-80 EKF with an LCD are relays, activated (switched on/off) by a time setting. With a built-in clock, they can be used to keep time. Timers support pulse mode operation, outputting an impulse 1 to 99 seconds long. This can be used, e.g. to activate school bells. Copper and aluminum wire connections are supported.

Standard: IEC/EN 60730-2-7



APPLICATION

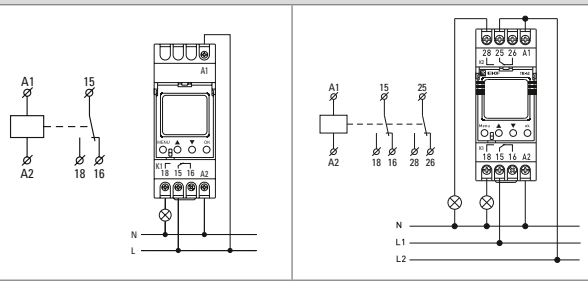
Digital timer with LCD TE-80 EKF is used in industrial and household applications; in lighting, ventilation and heating systems, as well as in industrial equipment. Designed for:

- single-phase load switching;
- pulse-mode switching scenarios;
- contactor and starter control;
- consistent and repeatable timed switching scenarios;
- load control by day of the week and time of the day.

TECHNICAL DATA

Wiring diagrams

TE-80

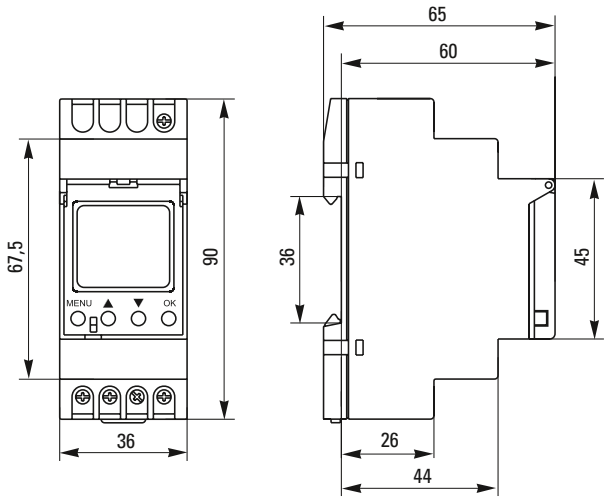


Parameters		Values
Rated frequency, Hz		50 / 60
Rated control circuit voltage, V		220-240
Insulation voltage Ui, V		250
Maximum switching current, A	at power factor = 1	16
	at power factor = 0,7	10
Maximum number of scenarios		80
Utilization category		AC1
Tightening torque, N·m		0,5
Maximum switching power		4000VA/AC; 384W/DC
Max. time error, s/day		±1
Max. power consumption, W		2
Electrical life, cycles		105
Mechanical life, cycles		106
Max. conductor cross-section, mm^2		4
Degree of protection		IP20
Max. weight, g		200
Operating temperature, °C		-20 to +55
Max. altitude above sea level, m		2000
Max. relative humidity at 40°C (non-condensing), %		50
Pollution degree		3
Position in space		Free
Mounting		35mm DIN rail

Installation and operation

Microprocessor of the timer supports up to 80 switching scenarios controlled by the time and day of the week setpoints.
Timer can be put into the "Weekend" mode that will suspend the execution of programmed scenarios. Scenarios will be saved and the switching contacts of the relay will remain in default mode: 15–16 – normally open; 15-18 – normally closed.
Output contact state can be switched in manual mode.
Built-in lithium battery will fully charge within 24 hours from the initial startup of the timer.
Connect supply conductors to timer terminals L and N. Normally open output contacts of the timer (terminals 18, 28 – normally open; 16, 26 – normally closed; 15, 25 – common) are connected to the break in the phase wire supplying power to the load, or to the break in the power supply wire of an actuator for another switching device, e.g. a contactor control coil. In dual channel timers, each channel is controlled independently and requires individual setup.

Overall and installation dimensions (mm)



Delivery scope

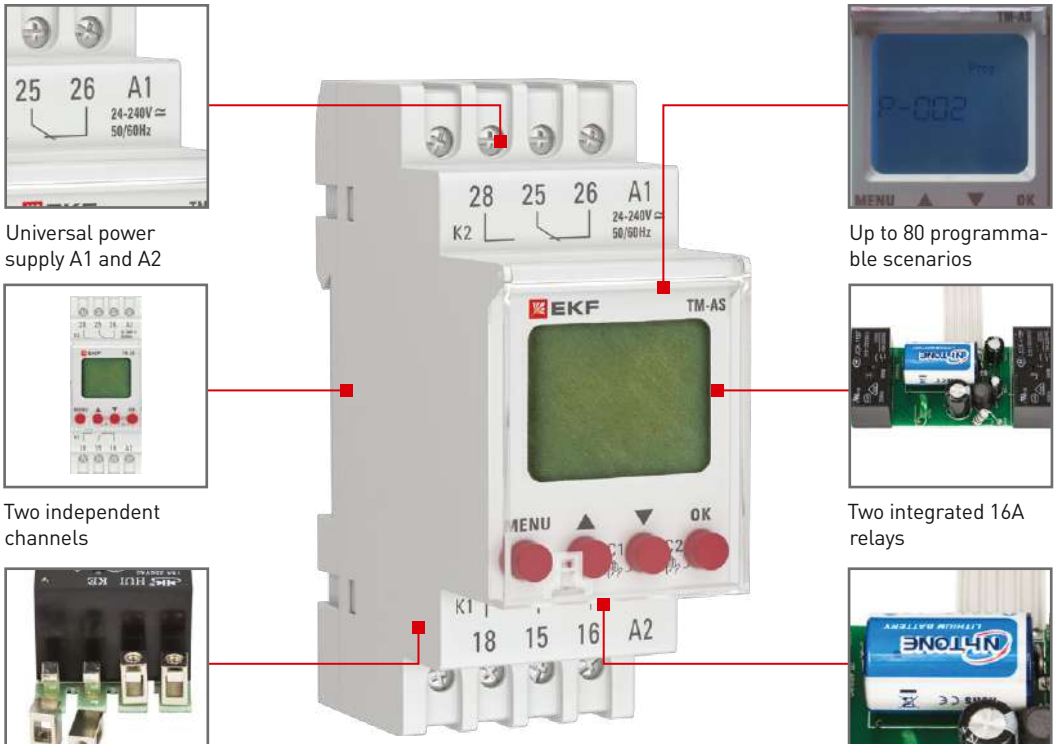
1. Digital timer TE-80 EKF

Name	Autonomous operation, years	Supply voltage, V	Contacts type and number	Item code
Digital timer TE-80 EKF	3	220-240 AC	1 C/O	te-80
Digital timer TE-80 24-230V EKF	10	AC/DC 24-264	1 C/O	te-80-24
Digital timer dual channel TE-80 24-230V EKF			2 C/O	te-80-24-2

Astro digital timers TM-AS EKF

Astro digital timer TM-AS EKF is a relay with one or two independent groups of contacts, that performs switching at the time of sunset and sunrise, based on the geographical location. The timer is capable of storing 80 switching scenarios based on time and day of the week setpoints. With a built-in clock it can be used to keep time.

Standard: IEC/EN 60947-1



Universal power supply A1 and A2

Up to 80 programmable scenarios

Two independent channels

Two integrated 16A relays

Secure connection of conductors up to 4mm²

Real time clock with 10 years of autonomous operation

APPLICATION

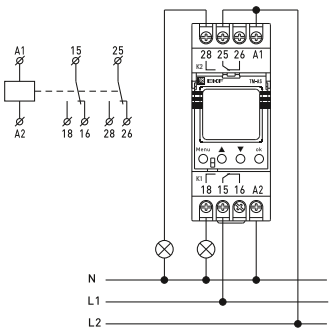
Astro digital timer TM-AS EKF is used in industrial and household applications: in lighting systems (streets, squares, courtyards, driveways, billboards), ventilation and heating. Designed for:

- enabling and disabling the load at the time of sunset and dawn;
- calculation of sunset and sunrise time by time zone and location;
- direct switching of a single-phase load;
- contactor and starter control;
- load control by day of the week and time of the day;
- consistent and repeatable timed switching scenarios.

TECHNICAL DATA

Wiring diagrams

TM-AS

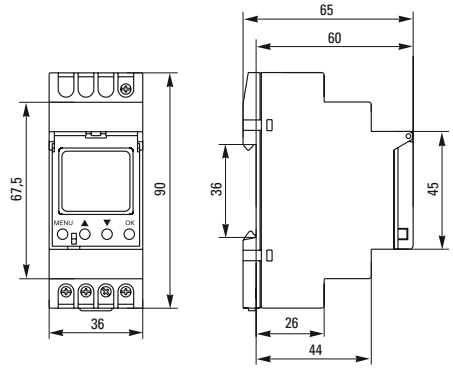


Parameters		Values
Rated supply voltage, V		AC/DC 24-264
Rated frequency, Hz		50 / 60
Rated control circuit voltage, V		220-240
Insulation voltage Ui, V		250
Maximum switching current, A	at power factor = 1	16
	at power factor = 0,7	10
Utilization category		AC1
Tightening torque, N•m		0,5
Maximum switching power		4000VA/AC1; 384W/DC
Max. time error, s/day		±1
Max. battery life, years		10
Max. power consumption, VA		2
Electrical life, cycles		10^5
Mechanical life, cycles		10^6
Max. conductor cross-section, mm²		4
Degree of protection		IP20
Max weight, g		200
Operating temperature, °C		-20...+55
Max. altitude above sea level, m		2000
Max. relative humidity at 40°C (non-condensing), %		50
Pollution degree		3
Position in space		Free
Mounting		35mm DIN rail

Installation and operation

Device shall be installed onto a standard 35 mm DIN rail in the distribution enclosure.
To avoid interference, false tripping, or malfunctioning of the relay, do not route the relay power supply wires along with the power wiring. If necessary, use shielded cable.
Screw terminals support copper and aluminium conductors with max. cross-section of 4mm^2.
Before connecting stranded conductors, terminate them with a cord end terminal or sleeve using an appropriate crimper.
Built-in lithium battery will fully charge within 24 hours from the initial start-up.
Connect power conductors to timer terminals L and N. Normally open output contacts of the timer (terminals 18, 28 - normally open; 16, 26 - normally closed; 15, 25 - common) are connected to the break in the phase wire supplying power to the load, or to the break in the power supply wire of an actuator for another switching device, such as a contactor control coil.

Overall and installation dimensions (mm)



Delivery scope

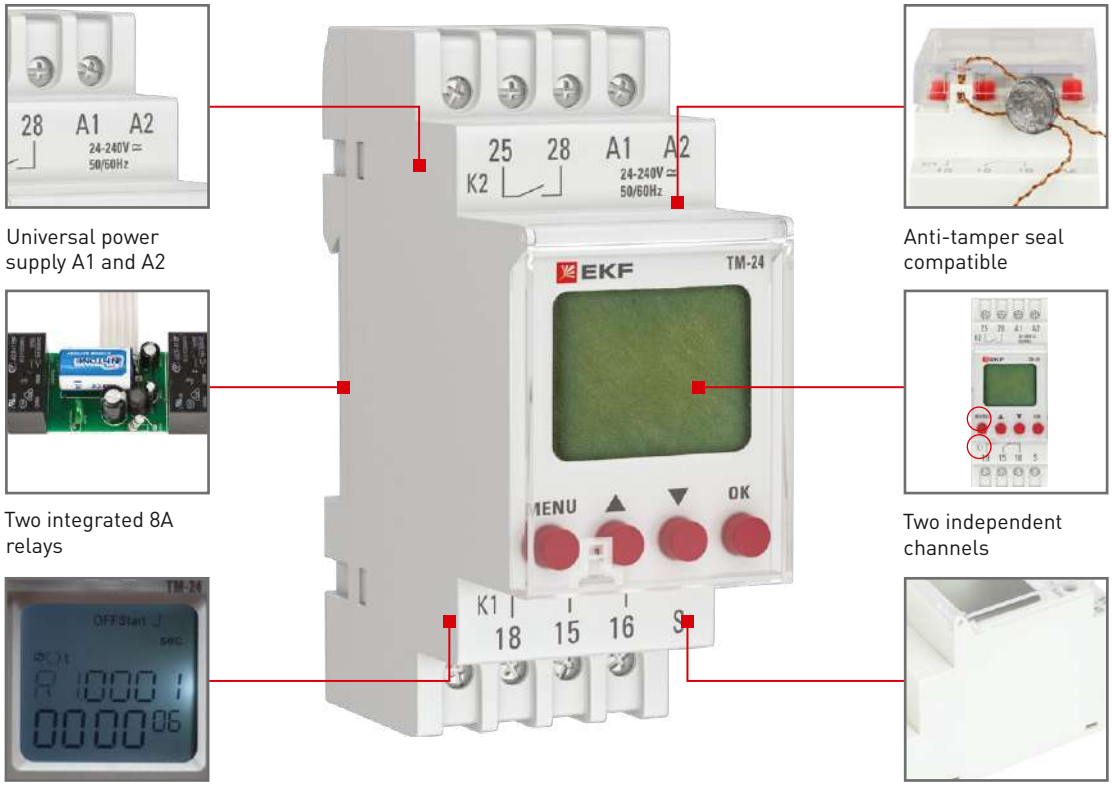
1. Astro digital timer TM-AS EKF

Name	Autonomous operation, years	Supply voltage, V	Contacts	Maximum number of scenarios	Item code
Astro digital timer TM-AS EKF	10	AC/DC 24-264	1 C/O	80	tm-as
Astro digital timer single channel TM-AS EKF	3	AC 220-240	2 C/O	52	tm-as-1

Multifunctional digital timer with display TM-24 EKF

Multifunctional digital timer with display TM-24 EKF is a relay with two independent groups of contacts, that performs switching based on t1 and t2 time setpoints and selected function (24 functions). Copper and aluminum wire connections are supported.

Standards: IEC/EN 60947-1; IEC/EN 60947-5-1



Universal power supply A1 and A2

Anti-tamper seal compatible

Two integrated 8A relays

Two independent channels

Easy to read LCD

Molded front panel

APPLICATION

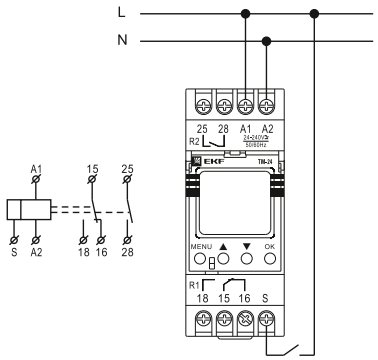
The multi-function timer TM-24 EKF is used in industrial and household applications: in lighting systems, ventilation and heating, industrial automation. Designed for:

- load control using a selected scenario (cyclic operation, pulse relay, interface relay, etc.);
- direct switching of a single-phase load;
- contactor and starter control;
- complex automation scenarios.

TECHNICAL DATA

Wiring diagrams

TM-24



Parameters	Values
Rated supply voltage, V	AC/DC 24-264
Rated frequency, Hz	50 / 60
Time delay range	0–9999 s, 0–9999 min
Max. time error, s/day	±3 (at 25°C)
Data storage	10 years
Contacts	1 C/O + 1 NO
Rated current, A	8 (AC1)
Contact capacity, A	2 (AC-15)
Electrical life, cycles	100 000
Mechanical life, cycles	1 000 000
Max. altitude above sea level, m	2000
Degree of protection	IP20
Pollution degree	3
Operating temperature, °C	-5 to +40
Storage temperature °C	- 25 to +75
Position in space	Free
Mounting	35mm DIN rail
Cross-section of connected wires, mm²	1,5

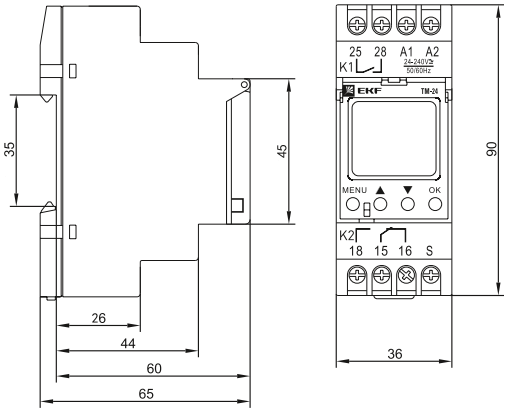
Installation and operation

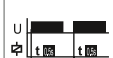
The device is installed onto a 35 mm DIN rail in a distribution enclosure.
To avoid interference, false tripping, or malfunctioning of the relay, do not route the relay power supply wires along with the power wiring. If necessary, use shielded cable.
Copper and aluminum wire connections are supported (max. cross-section is 1,5mm²).
Built-in lithium battery will fully charge within 24 hours from the initial start-up.
An integrated microprocessor supports 24 control programs via each of the two independent channels. Timer will perform the switching according to the selected program.

Delivery scope

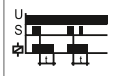
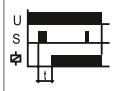
1. Multifunctional digital timer with display TM-24 EKF

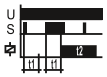
Overall and installation dimensions (mm)



	Function diagram	Description
1		**Delay On** After relay is energized, a countdown (T) is started. Once the countdown is finished, relay is switched on (contacts 15-18 close) and remains on as long as the relay is energized.
2		**One-shot (NO)** After relay is energized, it is immediately switched on (contacts 15-18) and a countdown (T) is started. Once the countdown is finished, contacts 15-18 open and contacts 15-16 close and remain closed as long as the relay is energized.
3		**Recycle (NO)** After relay is energized, a countdown (T) is started. Relay contacts 15-16 remain closed and contacts 15-18 remain open. Once the countdown is finished, contacts 15-16 open, and contacts 15-18 close for the period of T; the cycle repeats as long as the relay is energized.
4		**Delay Off Recycle** After relay is energized, contacts 15-16 open, and contacts 15-18 close, and a countdown (T) is started. Once the countdown is finished, contacts 15-18 open, and contacts 15-16 close for the period of T; the cycle continues until the relay is de-energized.
5		**Delay On One-shot (0,5s)** After relay is energized, a countdown (T) is started. Relay contacts 15-16 remain closed and contacts 15-18 remain open. Once the countdown is finished, contacts 15-16 open, and contacts 15-18 close for 0,5s and then open again, remaining open for as long as the relay is energized.
6		**Delay Off (Leading edge)** After relay is energized, it remains in a steady state until a signal (S) is detected. As soon as the signal is detected, contacts 15-16 open, contacts 15-18 close, and the countdown (T) is started. Once the countdown is finished, contacts 15-18 open, and contacts 15-16 close. The cycle repeats when the signal (S) reappears. This scenario is signal duration independent.

	Function diagram	Description
7		**Delay Off (Trailing edge)** After relay is energized, relay remains in a steady state until a signal (S) is detected and disappears. As soon as the signal disappears, contacts 15-16 open, contacts 15-18 close, and the countdown (T) is started. Once the countdown is finished, contacts 15-18 open, and contacts 15-16 close. The cycle repeats when the signal (S) appears and disappears. Reappearance and disappearance of the signal (S) while the countdown (T) is running, won't affect the execution of the scenario.
8		**Delay On (Leading edge) / Delay Off (Trailing edge)** After relay is energized, it remains in a steady state until a signal (S) is detected. As soon as the signal is detected, a countdown (T) is started. After the countdown is finished, contacts 15-16 open, and contacts 15-18 close; the relay will remain in this state as long as the signal (s) is detected. As soon as the signal disappears, a countdown (T) is started. Once the countdown is finished, contacts 15-18 open, and contacts 15-16 close. The cycle repeats when the signal (S) reappears. WARNING! If the signal (S) is shorter than the time delay (T), relay will function as if Scenario 3 (Recycle) was selected, switching on at the signal (S) detection.
9		**One-shot Bi-stable** After relay is energized, it remains in a steady state until a signal (S) is detected. As soon as the signal is detected, contacts 15-16 open, contacts 15-18 close, and relay remains in this state. As soon as the second signal is detected, contacts 15-18 open, and contacts 15-16 close. Therefore, after detecting each signal pulse the contacts will switch over from open to closed and vice versa. In this scenario T1 and T2 settings are irrelevant.
10		**Leading edge On / Delay Off (Trailing edge, countdown recycle)** After relay is energized, it remains in a steady state until a signal (S) is detected. As soon as the signal is detected, contacts 15-16 open, contacts 15-18 close, and relay remains in the steady state while the signal (S) is detected. As soon as the signal disappears, a countdown (T) is started. Once the countdown is finished, contacts 15-18 open, and contacts 15-16 close. The cycle repeats when the signal (S) reappears.

	Function diagram	Description
11		**Leading edge On / Delay Off (Trailing edge, no countdown recycle)** After relay is energized, it remains in a steady state until a signal (S) is detected. As soon as the signal is detected, contacts 15-16 open, contacts 15-18 close, and relay remains in the steady state while the signal (S) is detected. As soon as the signal disappears, a countdown (T) is started. Once the countdown is finished, contacts 15-18 open, and contacts 15-16 close. Appearance/disappearance of the signal (S) during countdown (T) does not affect relay scenario execution.
12		**Delay On (Leading edge)** After relay is energized, relay remains in a steady state until a signal (S) is detected and disappears. As soon as the signal disappears, contacts 15-16 open, contacts 15-18 close, and relay remains in this state. Appearance and disappearance of the signal (S) does not affect relay scenario execution.
13		**Interface relay** After the relay is energized, contacts 15-16 open, and contacts 15-18 close and remain in this state as long as the relay is energized. Appearance/disappearance of the signal (S) does not affect the relay. T1 and T2 settings are irrelevant.
14		**Relay Off** After relay is energized, it remains in a steady state. Appearance/disappearance of the signal (S) does not affect the relay. T1 and T2 settings are irrelevant.
15		**Delay On One-shot (T2)** After relay is energized, it remains in a steady state and a countdown (T1) is started. Once the countdown (T1) is finished, contacts 15-18 close, and contacts 15-16 open and will remain in this state for the countdown duration of T2. Once the countdown (T2) is finished, contacts 15-18 open, and contacts 15-16 close. Relay will re-cycle at the coil being de-/re-energized.
16		**One-shot (T1) / Delay On (T2)** After the relay is energized, contacts 15-18 close, and contacts 15-16 open and remain in this state for the duration of countdown (T1). Once the countdown (T1) is finished, contacts 15-18 open, contacts 15-16 close, and a new countdown (T2) is started. Once the countdown (T2) is finished, contacts 15-18 close, contacts 15-16 open and relay will remain in this state until the relay is de-energized.
17		**Recycle (Delay On T1 / Delay Off T2)** After relay is energized, it remains in a steady state and a countdown (T1) is started. Once the countdown (T1) is finished, contacts 15-18 close, and contacts 15-16 open and will remain in this state for the countdown duration of T2. Once the countdown (T2) is finished, contacts 15-18 open, contacts 15-16 close and the cycle repeats. Relay will recycle until it is de-energized.
18		**Recycle (Delay Off T1 / Delay On T2)** After the relay is energized, contacts 15-18 close, and contacts 15-16 open and remain in this state for the duration of countdown (T1). Once the countdown (T1) is finished, contacts 15-18 open, contacts 15-16 close, and a new countdown (T2) is started. Once the countdown (T2) is finished, contacts 15-18 close, contacts 15-16 open and the cycle repeats. Relay will recycle until the relay is de-energized.
19		**Delay On (Leading edge, ≥T1) / Delay Off (Trailing edge, repeat countdown)** After relay is energized, it remains in a steady state until a signal (S) is detected. After the signal (S) is detected, a countdown (T1) is started. Once the countdown (T1) is finished, contacts 15-16 open, contacts 15-18 close and the relay remains in this state until the signal (S) disappears. As soon as the signal disappears, a countdown (T2) is started. Once the countdown is finished, contacts 15-18 open, and contacts 15-16 close. If the signal (S) duration is shorter than the countdown (T1), relay will remain in the steady state. Repeat appearance/disappearance of the signal (S) will initiate repeat countdown.

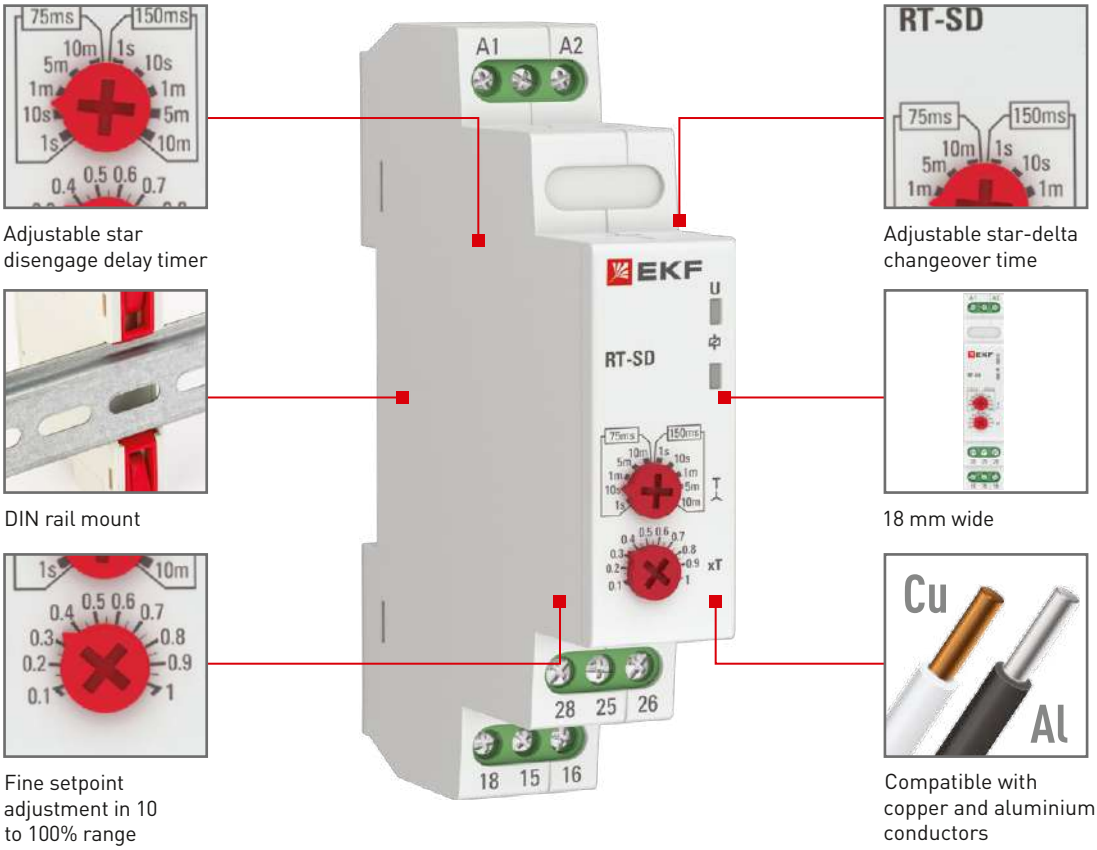
	Function diagram	Description
20		**Delay On (Leading edge, ≥T1) / Delay Off (Trailing edge, no repeat countdown)** After relay is energized, it remains in a steady state until a signal (S) is detected. After the signal (S) is detected, a countdown (T1) is started. Once the countdown (T1) is finished, contacts 15-16 open, contacts 15-18 close and the relay remains in this state until the signal (S) disappears. As soon as the signal disappears, a countdown (T2) is started. Once the countdown is finished, contacts 15-18 open, and contacts 15-16 close. If the signal (S) duration is shorter than the countdown (T1), relay will remain in the steady state. Repeat appearance/disappearance of the signal (S) does not affect the relay.
21		**Alternating pulse generation** After relay is energized, it remains in a steady state until a signal (S) is detected. As soon as the signal is detected, contacts 15-16 open, contacts 15-18 close, and the countdown (T1) is started. Once the countdown (T1) is finished, contacts 15-18 open, and contacts 15-16 close. As soon as the signal reappears, contacts 15-16 open, contacts 15-18 close, and the countdown (T2) is started. Once the countdown (T2) is finished, contacts 15-18 open, and contacts 15-16 close. At the next signal (S) the cycle repeats. Duration of the signal (S) does not affect the execution of the relay scenario.
22		**Delay Off (T1, Trailing edge) / Delay On (T2)** After relay is energized, it remains in a steady state until a signal (S) is detected. As soon as the signal is detected, contacts 15-16 open, contacts 15-18 close, and relay remains in the steady state while the signal (S) is detected. As soon as the signal disappears, a countdown (T1) is started. Once the countdown (T1) is finished, contacts 15-18 open, contacts 15-16 close, and a new countdown (T2) is started. During the countdown (T2) the signal (S) does not affect the relay scenario execution. Once the countdown (T2) is finished, and repeat signal (S) is received, contacts 15-16 open, contacts 15-18 close and the cycle repeats.
23		**Delayed On T2 Leading Edge ≥T1** After relay is energized, relay will remain in a steady state until a signal (S) is detected. After the signal (S) is detected, a countdown (T1) is started. Once the countdown (T1) is finished, contacts 15-16 open, contacts 15-18 close, and a new countdown (T2) is started. Once the countdown is finished, contacts 15-18 open, and contacts 15-16 close. If the signal (S) duration is shorter than the countdown (T1), relay will remain in the steady state. Repeat appearance/disappearance of the signal (S) does not affect the relay.
24		**One-shot (Leading edge, T1) / One-shot (Trailing edge, T2)** After relay is energized, it remains in a steady state until a signal (S) is detected. As soon as the signal is detected, contacts 15-16 open, contacts 15-18 close, and the countdown (T1) is started. Once the countdown (T1) is finished, contacts 15-18 open, and contacts 15-16 close. As soon as the signal disappears, contacts 15-16 open, contacts 15-18 close, and the countdown (T2) is started. Once the countdown (T2) is finished, contacts 15-18 open, and contacts 15-16 close. At the next signal (S) the cycle repeats. Reappearance of the signal (S) while the countdown is running does not affect the execution of the relay scenario.

Name	Supply voltage (Ue), V	Tightening torque, N·m	Mounting	Item code
Multifunctional digital timer with display TM-24 EKF	AC/DC 24–264	0,5	35 mm DIN rail	tm-24

Time relays RT-SD star-delta EKF

Time relay RT-SD is a microprocessor-based switching device intended for star-delta (wye-delta) electric motor starting. This form of soft starting lowers the inrush current and extends the service life of the motor.

Standard: IEC/EN 60947-5-1



APPLICATION

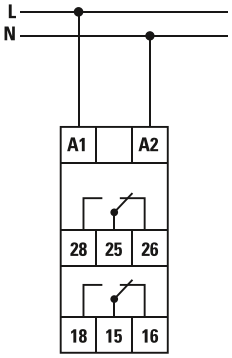
The RT-SD EKF time relay is designed for high-power industrial electric motors with high inrush currents. The relay performs the following functions:

- switching the motor from star to delta;
- star disengage delay;
- star-delta changeover delay.

TECHNICAL DATA

Wiring diagrams

RT-SD



Parameters	Values
Rated impulse voltage, V	400/415 AC
Power consumption, VA	≤1,5
Time delay range	Starting: 0,1 s up to 10 min.
	Changeover: 75/150 ms
Set-point error, %	≤5
Repeatability error, %	≤0,2
Power interruption	min. 200 ms
Electrical life, cycles	100 000
Mechanical life, cycles	1 000 000
Contacts	2 CO
Rated load current, A	2 x 8 at 230V
Interference immunity	3 in accordance with IEC 61000-4-4
Max. altitude above sea level, m	2000
Degree of protection	IP20
Pollution degree	3
Operating temperature, °C	-5 to +40
Storage temperature °C	-25 to +75

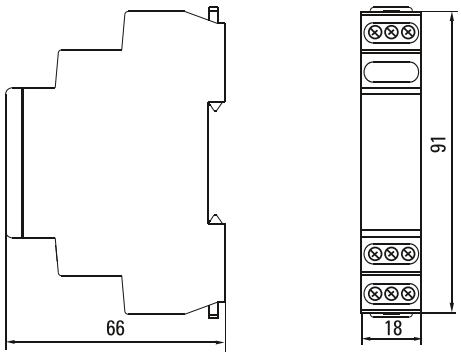
Installation and operation

1. Install and secure the relay in the intended location.
2. Connect the relay as per wiring diagram.
3. Energize the relay, the LED "U" will light up green.
4. Set the required time ranges.

Delivery scope

1. Time relay RT-SD EKF

Overall and installation dimensions (mm)



Name	Supply voltage, V	Mounting	Item code
Time relay RT-SD star-delta EKF	A1:A2: 220-240 AC A2:A3: 24 AC/DC	35 mm DIN rail	rt-sd
Time relay RT-SD 12-240V star-delta EKF	12-240 AC/DC		rt-sd-12-240

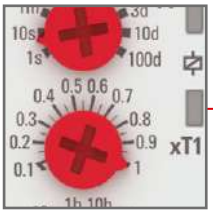
Time relays RT-2C EKF

Time relay RT-2C EKF is an electronic switching device with an adjustable time setting. The relay has two switching timer intervals (on/off), T1 and T2. Timers can be adjusted using dials on the front panel of the relay. Copper and aluminum wire connections are supported.

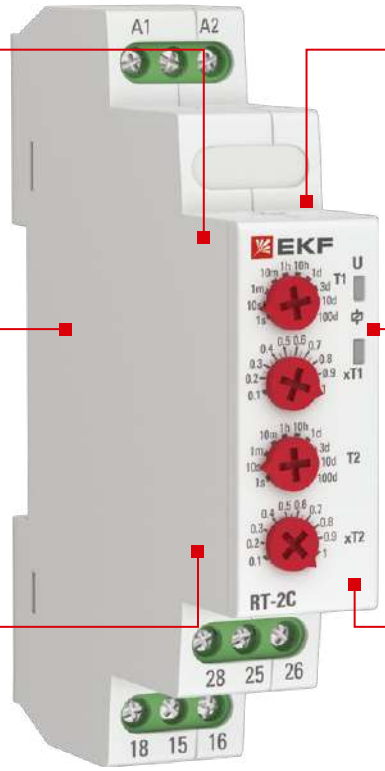
Standard: IEC/EN 60947-5-1

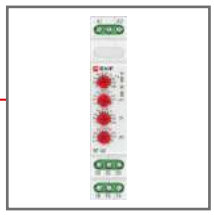
Easy setup

DIN rail and mount-ing plate installation



Fine setpoint adjustment in 10 to 100% range





Single module wide

Adjustable on/off timer setpoints

Two independent on/ off timers

APPLICATION

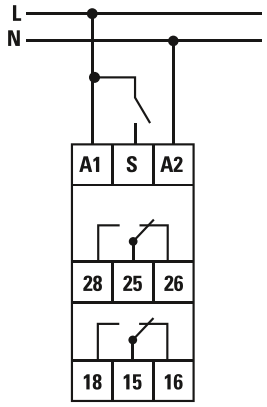
RT-2C EKF time relays are used in industrial and civil applications, where a time delay or cyclical equipment operation is required. Functions:

- control of switching equipment (contactors, starters, relays);
- two independent timer scenarios;
- cyclical equipment operation.

TECHNICAL DATA

Wiring diagrams

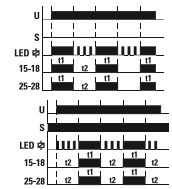
RT-2C



Contacts 16–15–18 and 26–25–28 are linked, and when switching, they work in conjunction with each other.

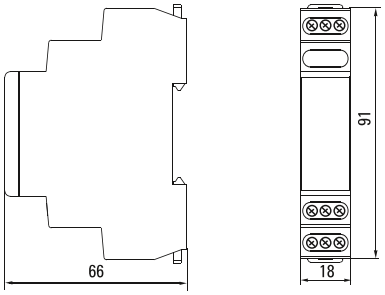
Installation and operation

1. Install and secure the relay in the intended location.
2. Connect the relay as per wiring diagram.
3. Energize the relay, the LED "U" will light up green.
4. Set the required time ranges.

Function diagram	Description
	**Recycle** After relay is energized (contacts 15-16 open, and contacts 15-18 close), a countdown (t1) is started. Once the countdown is finished, relay coil is de-energized (contacts 15-18 open, and contacts 15-16 close) and the cycle repeats as long as the power is supplied to the coil. The second group of contacts (25, 26, 28) works in conjunction with the first one. When the signal S appears, the countdown t2 starts.

Parameters	Values
Rated impulse voltage, V	380 AC
Power consumption	AC: ⩽1,5VA; DC: ⩽1W
Time delay range	0,1s to 10 days
Set-point error, %	⩽5
Repeatability error, %	⩽0,2
Power interruption, ms	min. 200
Electrical life, cycles	100 000
Mechanical life, cycles	1 000 000
Contacts	2 C/O (two change-over)
Rated load current, A	2 x 8 at 230 V, AC-1
Interference immunity	3, complies with IEC 61000-4-4
Max. altitude above sea level, m	2000
Degree of protection	IP20
Pollution degree	3
Operating temperature, °C	-5 to +40
Storage temperature °C	-25 to +75
Tightening torque, N·m	0,5
Mounting	35 mm DIN rail

Overall and installation dimensions (mm)



Delivery scope

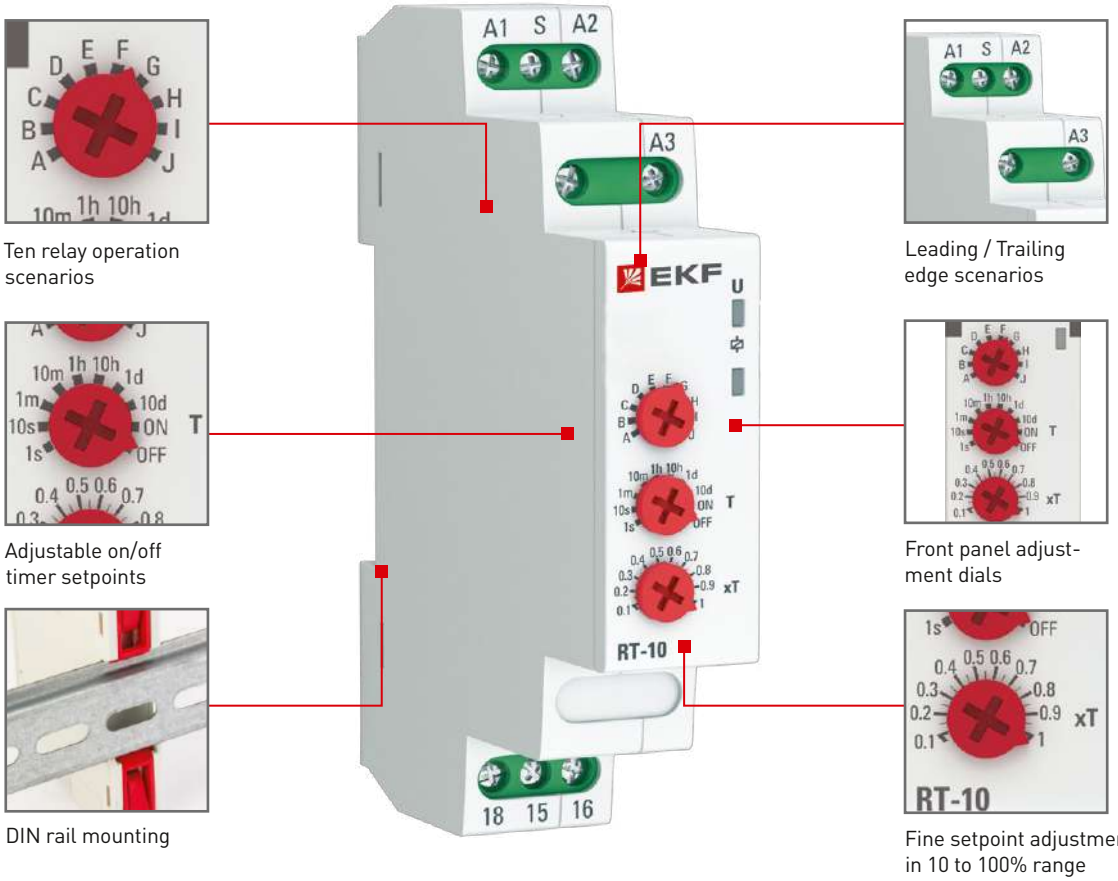
1. Time relay RT-2C EKF - 1 pc.

Name	Supply voltage, V	Mounting	Item code
Time relay RT-2C 2 timers 2 timed contacts EKF	24-240 AC/DC	35 mm DIN rail	rt-2c
Time relay RT-2C 12-240V 2 timers 2 timed contacts EKF	12-240 AC/DC		rt-2c-12-240

Time relays RT-10 EKF

Multifunctional time relay RT-10 EKF is an electronic switching device with an adjustable time setting and multiple relay operation scenarios. Timers and scenarios can be adjusted using the dials on the front panel of the relay. Copper and aluminum wire connections are supported.

Standard: IEC/EN 60947-5-1



APPLICATION

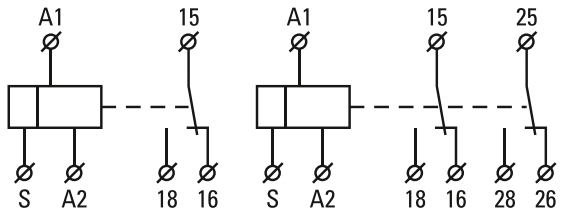
The RT-10 EKF multifunctional time relay is used in industrial, administrative, and residential buildings to control equipment, where a time delay or cyclical equipment operation is required. Functions:

- control of switching equipment;
- two independent timer scenarios;
- cyclical equipment operation;
- load control by input signal;
- pulse mode operation.

TECHNICAL DATA

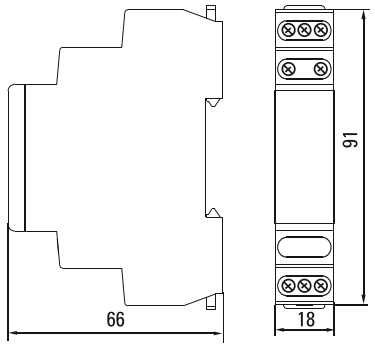
Wiring diagrams

RT-10



Parameters	Values
Rated impulse voltage, V AC	380
Power consumption	AC: ≤1,5VA; DC: ≤1W
Time delay range	From 0,1s to 10 days
Set-point accuracy, %	≤5
Repeatability, %	≤0,2
Power interruption, ms	min. 200
Electrical life, cycles	100 000
Mechanical life, cycles	1 000 000
Rated load current, A	8 at 230V, AC1
Interference immunity	3, complies with IEC 61000-4-4
Max. altitude above sea level, m	2000
Degree of protection	IP20
Pollution degree	3
Operating temperature, °C	-5 to +40
Storage temperature °C	-25 to +75
Connection	Screw terminals, max. conductor cross-section 2,5 mm²
Tightening torque, N*m	0,5
Mounting	35 mm DIN rail

Overall and installation dimensions (mm)

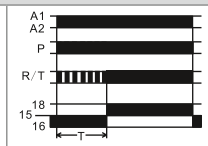
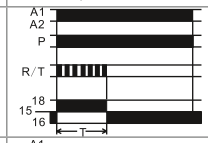
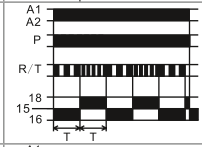
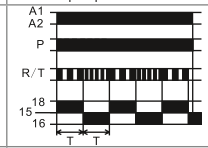
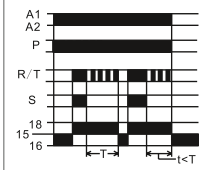
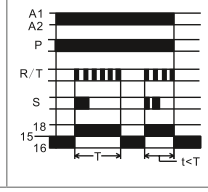


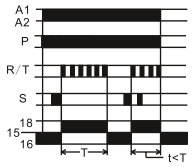
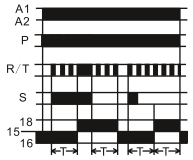
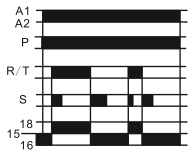
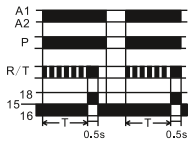
Installation and operation

1. Install and secure the relay in the intended location.
2. Connect the relay as per wiring diagram.
3. Energize the relay, the LED "U" will light up green.
4. Select the required scenario and time delays.

Delivery scope

1. Time relay RT-10 EKF (10 preset scenarios).

	Function diagram	Description
A		**Delay On (NOTC)** After relay is energized, a countdown (T) is started. During the countdown, relay contacts 15-16 remain closed and contacts 15-18 remain open. Once the countdown is finished, contacts 15-16 open, and contacts 15-18 close, remaining in this state until the relay is de-energized.
B		**Delay Off** After relay is energized, contacts 15-16 will open, and contacts 15-18 will close, and a countdown (T) is started. Once the countdown is finished, contacts 15-18 open and contacts 15-16 close and remain closed until the relay is de-energized.
C		**Recycle (NO)** After relay is energized, a countdown (T) is started. During the countdown, relay contacts 15-16 remain closed and contacts 15-18 remain open. Once the countdown is finished, contacts 15-16 open, and contacts 15-18 close for the period of T; the cycle repeats as long as the relay is energized.
D		**Delay Off Recycle** After relay is energized, a countdown (T) is started. During the countdown, relay contacts 15-16 remain closed and contacts 15-18 remain open. Once the countdown is finished, contacts 15-16 open, and contacts 15-18 close for the period of T; the cycle repeats as long as the relay is energized.
E		**Leading edge On / Trailing edge Delay Off** After relay is energized, it remains in a steady state until a signal (S) is detected. As soon as the signal is detected, contacts 15-16 open, contacts 15-18 close, and relay remains in the steady state while the signal (S) is detected. As soon as the signal (S) disappears, a countdown (T) is started. Once the countdown is finished, contacts 15-18 open, and contacts 15-16 close. The cycle repeats when the signal (S) reappears.
F		**Delay Off (Leading edge)** After relay is energized, it remains in a steady state until a signal (S) is detected. As soon as the signal is detected, contacts 15-16 open, contacts 15-18 close, and the countdown (T) is started. Once the countdown is finished, contacts 15-18 open, and contacts 15-16 close. The cycle repeats when the signal (S) reappears. Reappearance of the signal (S) while the countdown is running does not affect the execution of the relay scenario.

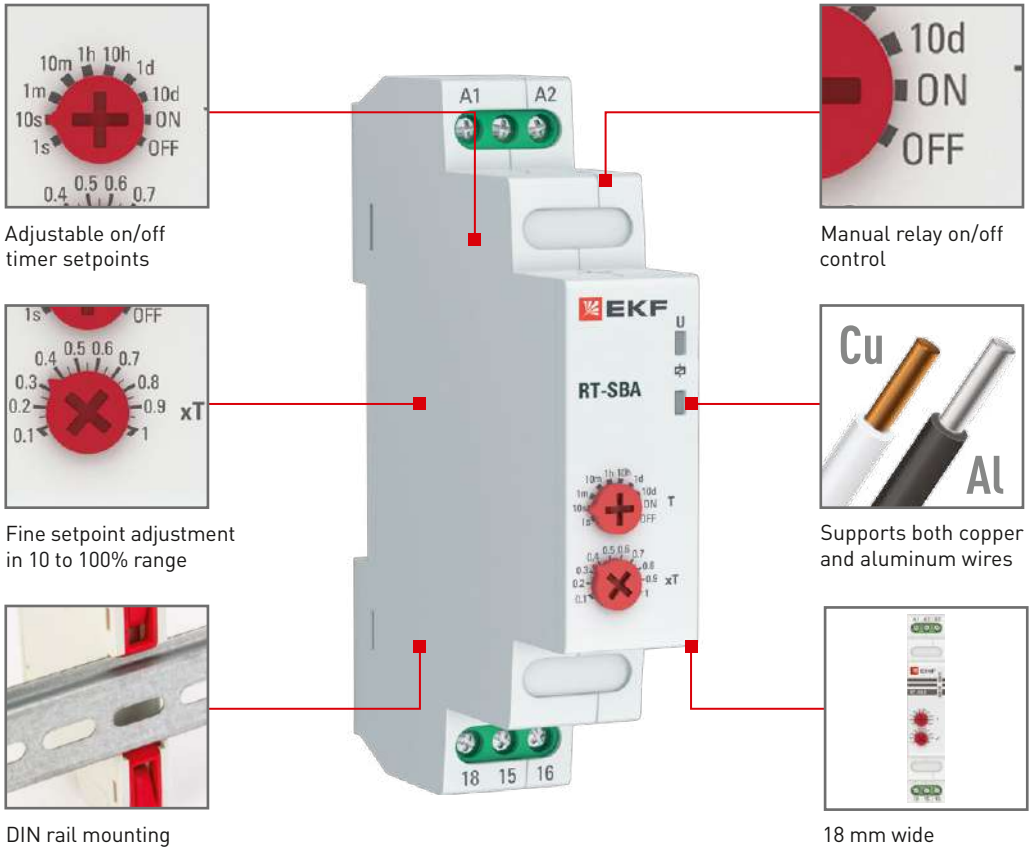
	Function diagram	Description
G		**Delay Off (Trailing edge)** After relay is energized, it remains in a steady state until a signal (S) is detected and disappears. As soon as the signal disappears, contacts 15-16 open, contacts 15-18 close, and the countdown (T) is started. Once the countdown is finished, contacts 15-18 open, and contacts 15-16 close. The cycle repeats when the signal (S) appears and disappears. Reappearance of the signal (S) while the countdown is running does not affect the execution of the relay scenario.
H		**Delay On (Leading edge) / Delay Off (Trailing edge)** After relay is energized, it remains in a steady state until a signal (S) is detected. Once the signal (S) is detected, a countdown (T) is started. After the countdown is finished, contacts 15-16 open, contacts 15-18 close, and as long as the signal (S) is detected, the relay will remain in this state. As soon as the signal disappears, a countdown (T) is started. Once the countdown is finished, contacts 15-18 open, and contacts 15-16 close. The cycle repeats when the signal (S) reappears. WARNING! If the signal (S) is shorter than the time delay (T), the relay will function as if Scenario C (Recycle) was selected, switching on at the signal (S) detection.
I		**One-shot Bi-stable** After relay is energized, it remains in a steady state until a signal (S) is detected. As soon as the signal is detected, contacts 15-16 open, contacts 15-18 close, and relay remains in this state. As soon as the second signal is detected, contacts 15-18 open, and contacts 15-16 close. Therefore, after detecting each signal pulse the contacts will switch over from open to closed and vice versa.
J		**Delay On One-shot (0,5s)** After relay is energized, a countdown (T) is started. Relay contacts 15-16 remain closed and contacts 15-18 remain open. Once the countdown is finished, contacts 15-16 open, and contacts 15-18 close for 0,5s and then open again, remaining open for as long as the relay is energized.

Name	Supply voltage, V	Contacts	Item code
Time relay (10 preset scenarios) RT-10 EKF	24-240 AC/DC	1C/O (one change-over)	rt-10
Time relay (10 preset scenarios) RT-10-2 EKF		2 C/O (two change-over)	rt-10-2
Time relay (10 preset scenarios) RT-10 12-240V EKF	12-240 AC/DC	1C/O (one change-over)	rt-10-12-240

Time relays RT-SBA delay on EKF

Time relay RT-SBA EKF is an electronic switching device with an adjustable time setting and a Delay on function. Time delay can be adjusted using the dials on the front panel of the relay.

Standard: IEC/EN 60947-5-1



APPLICATION

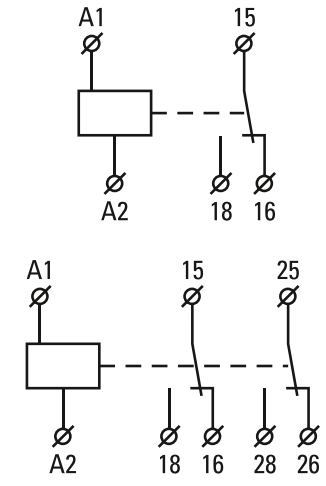
The RT-SBA EKF time relay can be used in industrial, office, and residential buildings for the equipment control, where it is necessary to turn the equipment on at the leading edge of the control signal with a time delay, and/or turn the equipment off with a time delay. Function:

- turn on the load at receiving the control signal, after time delay;
- control of switching equipment;
- adjustable countdown timer.

TECHNICAL DATA

Wiring diagrams

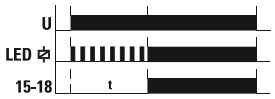
RT-SBA



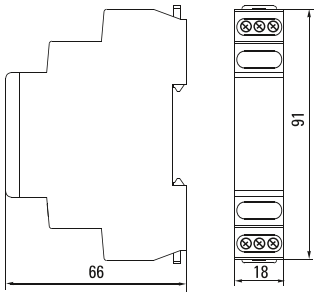
Parameters	Values
Rated impulse withstand voltage Uimp, V AC	690
Power consumption	AC: ⩽1,5VA; DC: ⩽1W
Time delay range	From 0,1s to 10 days
Set-point error, %	⩽5
Repeatability error, %	⩽0,2
Power interruption, ms	min. 200
Electrical life, cycles	100 000
Mechanical life, cycles	1 000 000
Rated load current, A	8 at 230 V AC1
Interference immunity	3, complies with IEC 61000-4-4
Max. altitude above sea level, m	2000
Degree of protection	IP20
Pollution degree	3
Operating temperature, °C	-5 to +40
Storage temperature °C	-25 to +75
Connection	Screw terminals, max. conductor cross-section 2,5 mm²
Tightening torque, N·m	0,5
Mounting	35 mm DIN rail

Installation and operation

1. Install and secure the relay in the intended location.
2. Connect the relay as per wiring diagram.
3. Energize the relay, the LED "U" will light up green.
4. Set the required time ranges.

Function diagram	Description
	Delay On (NOTC). After relay is energized, a countdown (T) is started. Relay contacts 15-16 remain closed and contacts 15-18 remain open (relay is off). Once the countdown is finished, contacts 15-16 open, and contacts 15-18 close (relay is on), remaining in this state until the relay is de-energized.

Overall and installation dimensions (mm)

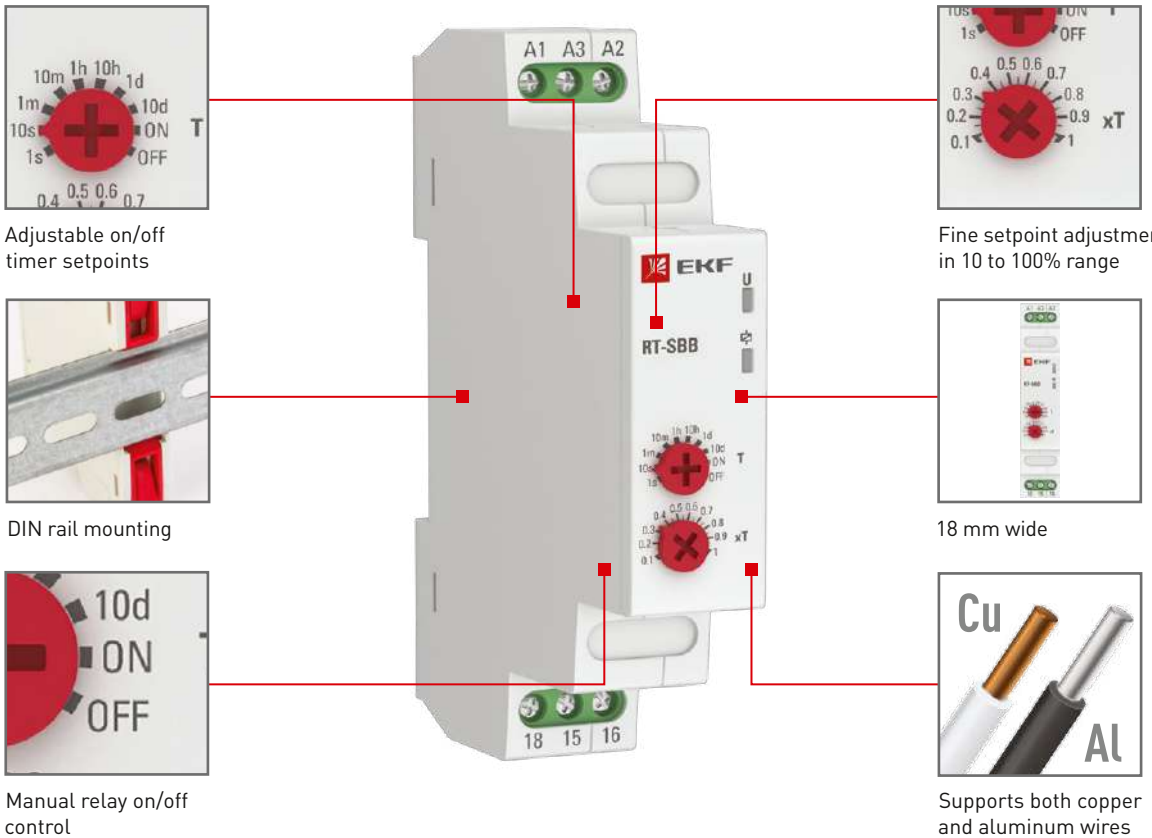


Name	Supply voltage, V	Contacts	Item code
Time relay RT-SBA delay on EKF	24-240 AC/DC	1C/O (one change-over)	rt-sba
Time relay RT-SBA-2 delay on EKF		2 C/O (two change-over)	rt-sba-2
Time relay RT-SBA-2 12-240V delay on EKF	12-240 AC/DC	1C/O (one change-over)	rt-sba-12-240

Time relays RT-SBB one shot EKF

Time relay RT-SBB EKF is an electronic switching device with an adjustable time setting and a one-shot impulse function. Time delay can be adjusted using the dials on the front panel of the relay.

Standard: IEC/EN 60947-5-1



Adjustable on/off timer setpoints

Fine setpoint adjustment in 10 to 100% range

DIN rail mounting

18 mm wide

Manual relay on/off control

Supports both copper and aluminum wires

APPLICATION

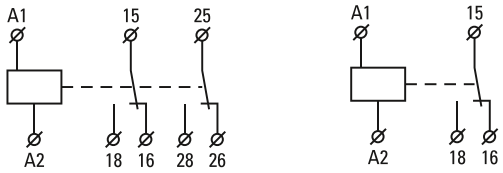
The RT-SBB EKF time relay can be used in industrial, office, and residential buildings for the equipment control, where a one-shot pulse functionality is desired. Function:

- variable-length pulse signal generation on energizing the relay;
- control of switching equipment;
- adjustable timer.

TECHNICAL DATA

Wiring diagrams

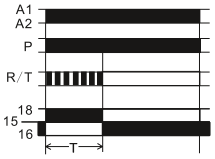
RT-SBB



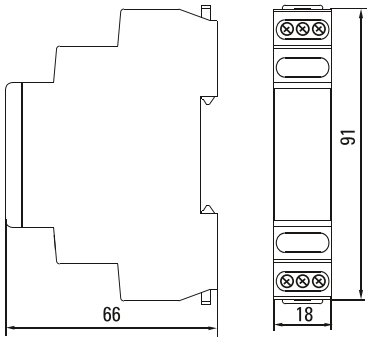
Parameters	Values
Rated impulse withstand voltage Uimp, V AC	690
Power consumption	AC: ≤1,5VA; DC: ≤1W
Time delay range	From 0,1s to 10 days
Set-point error, %	≤5
Repeatability error, %	≤0,2
Power interruption, ms	min. 200
Electrical life, cycles	100 000
Mechanical life, cycles	1 000 000
Rated load current, A	8 at 230 V AC1
Interference immunity	3, complies with IEC 61000-4-4
Max. altitude above sea level, m	2000
Degree of protection	IP20
Pollution degree	3
Operating temperature, °C	-5 to +40
Storage temperature °C	-25 to +75
Connection	Screw terminals, max. conductor cross-section 2,5 mm²
Tightening torque, N*m	0,5
Mounting	35 mm DIN rail

Installation and operation

1. Install and secure the relay in the intended location.
2. Connect the relay as per wiring diagram.
3. Energize the relay. Power supply indicator light "P" will light up yellow.
4. Set the required time range.

Function diagram	Description
	Delay Off. After relay is energized, contacts 15-16 open, contacts 15-18 close (relay is on), and a countdown (T) is started. Once the countdown is finished, contacts 15-18 open and contacts 15-16 close (relay is off) and remain closed as long as the relay is energized.

Overall and installation dimensions (mm)



Delivery scope

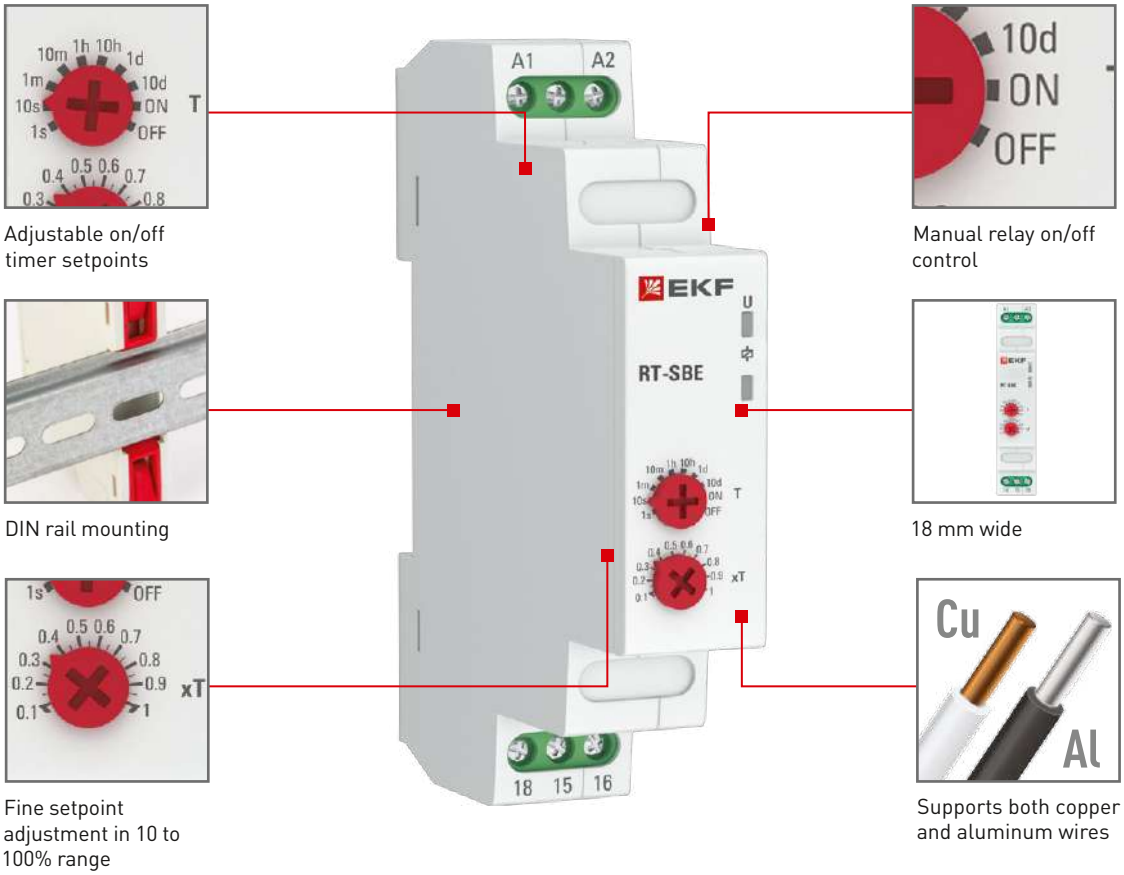
1. Time relay RT-SBB EKF.

Name	Supply voltage, V	Contacts	Item code
Time relay RT-SBB one shot EKF	24-240 AC/DC	1C/O (one change-over)	rt-sbb
Time relay RT-SBB-2 one shot EKF		2 C/O (two change-over)	rt-sbb-2
Time relay RT-SBB 12-240V one shot EKF	12-240 AC/DC	1C/O (one change-over)	rt-sbb-12-240

Time relays RT-SBE delay off trailing edge EKF

Time relay RT-SBE EKF is an electronic switching device with an adjustable time setting. Time delay can be adjusted using the dials on the front panel of the relay.

Standard: IEC/EN 60947-5-1



Adjustable on/off timer setpoints

Manual relay on/off control

DIN rail mounting

18 mm wide

Fine setpoint adjustment in 10 to 100% range

Supports both copper and aluminum wires

APPLICATION

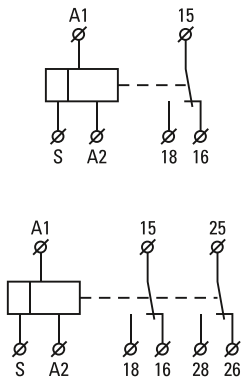
The RT-SBE EKF time relay can be used in industrial, office, and residential buildings for the equipment control, where a delayed off trailing edge functionality is desired. Examples:

- delayed auxiliary equipment shutdown when the main process equipment stops in industrial applications;
- time delay for lighting switching off;
- delayed cooling fan shutdown in HVAC systems.

TECHNICAL DATA

Wiring diagrams

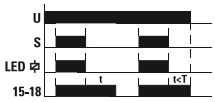
RT-SBE



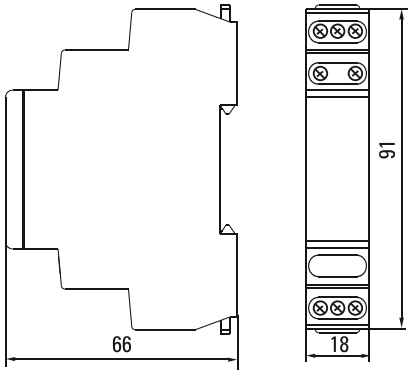
Parameters	Values
Rated impulse withstand voltage Uimp, V AC	690
Power consumption	AC: ≤1,5VA; DC: ≤1W
Time delay range	From 0,1s to 10 days
Set-point error, %	≤5
Repeatability error, %	≤0,2
Power interruption, ms	min. 200
Electrical life, cycles	100 000
Mechanical life, cycles	1 000 000
Rated load current, A	8 at 230 V AC1
Interference immunity	3, complies with IEC 61000-4-4
Max. altitude above sea level, m	2000
Degree of protection	IP20
Pollution degree	3
Operating temperature	-5 to +40
Storage temperature	-25 to +60
Connection	Screw terminals, max. conductor cross-section 2,5 mm²
Tightening torque, N·m	0,5
Mounting	35 mm DIN rail

Installation and operation

1. Install and secure the relay in the intended location.
2. Connect the relay as per wiring diagram.
3. Energize the relay, the LED "U" will light up green.
4. Set the required time ranges.

Function diagram	Description
	**Leading edge On / Trailing edge Delay Off** After relay is energized, it remains in a steady state until a signal (S) is detected. As soon as the signal is detected, contacts 15-16 open, contacts 15-18 close, and relay remains in the steady state while the signal (S) is detected. As soon as the signal disappears, a countdown (T) is started. Once the countdown is finished, contacts 15-18 open, and contacts 15-16 close. The cycle repeats when the signal (S) reappears.

Overall and installation dimensions (mm)



Delivery scope

1. Time relay RT-SBE EKF

Name	Supply voltage, V	Contacts	Item code
Time relay RT-SBE delay off trailing edge EKF	24-240 AC/DC	1C/O (one change-over)	rt-sbe
Time relay RT-SBE-2 delay off trailing edge EKF		2 C/O (two change-over)	rt-sbe-2
Time relay RT-SBE 12-240V delay off trailing edge EKF	12-240 AC/DC	1C/O (one change-over)	rt-sbe-12-240

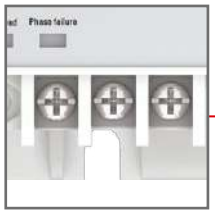
Motor protection relays MPR EKF

Motor protection relay MPR EKF is intended for continuous monitoring and protection of three-phase squirrel-cage motors against overload, load asymmetry and phase failure. Motor protection relays MPR EKF can be installed both onto 35 mm DIN rail (20A and 80A versions) and a mounting plate (200A and 400A versions). Copper and aluminum wire connections are supported.

Standard: IEC/EN 60947-5-1

Easy setup

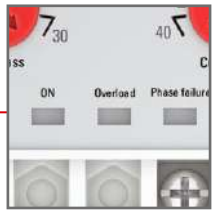
Trip class: 5-30



Convenient terminals for easy wire connection

Control of motors with rated current up to 400A

DIN rail mounting clamp for lower power models



Trip mode indicators

APPLICATION

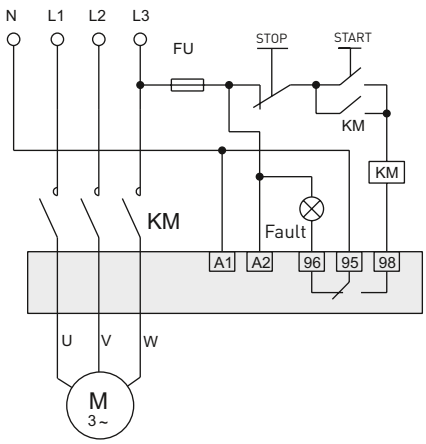
Motor protection relay MPR EKF is used in the industrial sector to protect high-power electric motors with rated currents up to 400 A and performs the following functions:

- motor overload protection;
- protection against load asymmetry;
- protection in the event of phase conductor interruption.

TECHNICAL DATA

Wiring diagrams

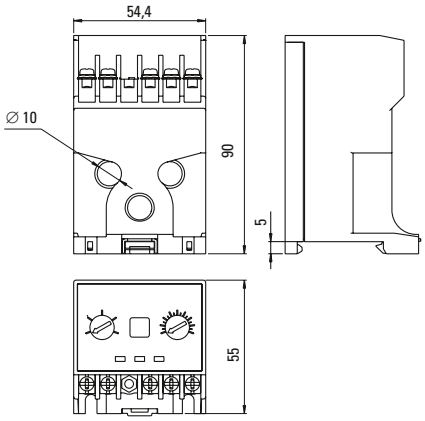
MPR



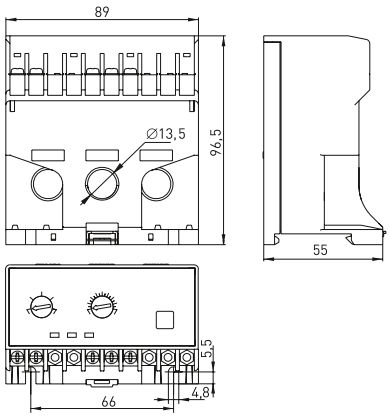
Parameters	Values			
	MPR-20	MPR-80	MPR-200	MPR-400
Rated supply voltage, V	220-240			
Rated power circuit voltage, V	400			
Rated frequency, Hz	50 / 60			
Rated insulation voltage, V	690			
Number and type of contacts	1 C/O (change-over)			
Rated relay contact current at 240V, A	1,5			
Thermal resistance current, A	5			
Utilization category	AC-15			
Max. trip time at 40% electrical imbalance, s	5			
Max. trip time at phase failure, s	3			
Trip class, selectable	5, 10 A, 10, 20, 30			
Max. current setpoint error, %	5			
Max. power consumption, W	1,5			
Electrical life, cycles	10^5			
Mechanical life, cycles	10^6			
Max. conductor cross-section, mm^2	2,5			
Tightening torque, N*m	0,5			
Degree of protection	IP20			
Mounting	35 mm DIN rail / mounting plate		Mounting plate	

Overall and installation dimensions (mm)

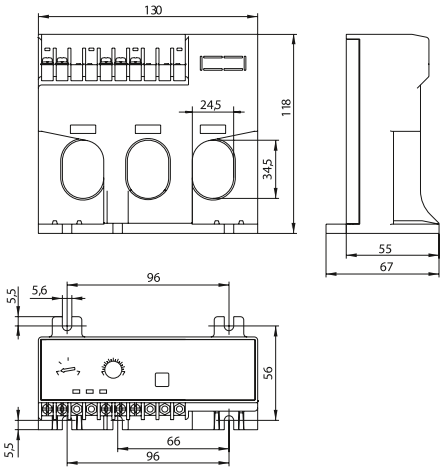
MPR-20



MPR-80



MPR-200
MPR-400



Installation and operation

Motor protection relays shall be installed and connected by qualified electrical personnel only.
WARNING! Make sure the power is off before installation, connection and setup!
Connect the relay as per wiring diagram. Power to the relay is supplied via A1 and A2 terminals.

Delivery scope

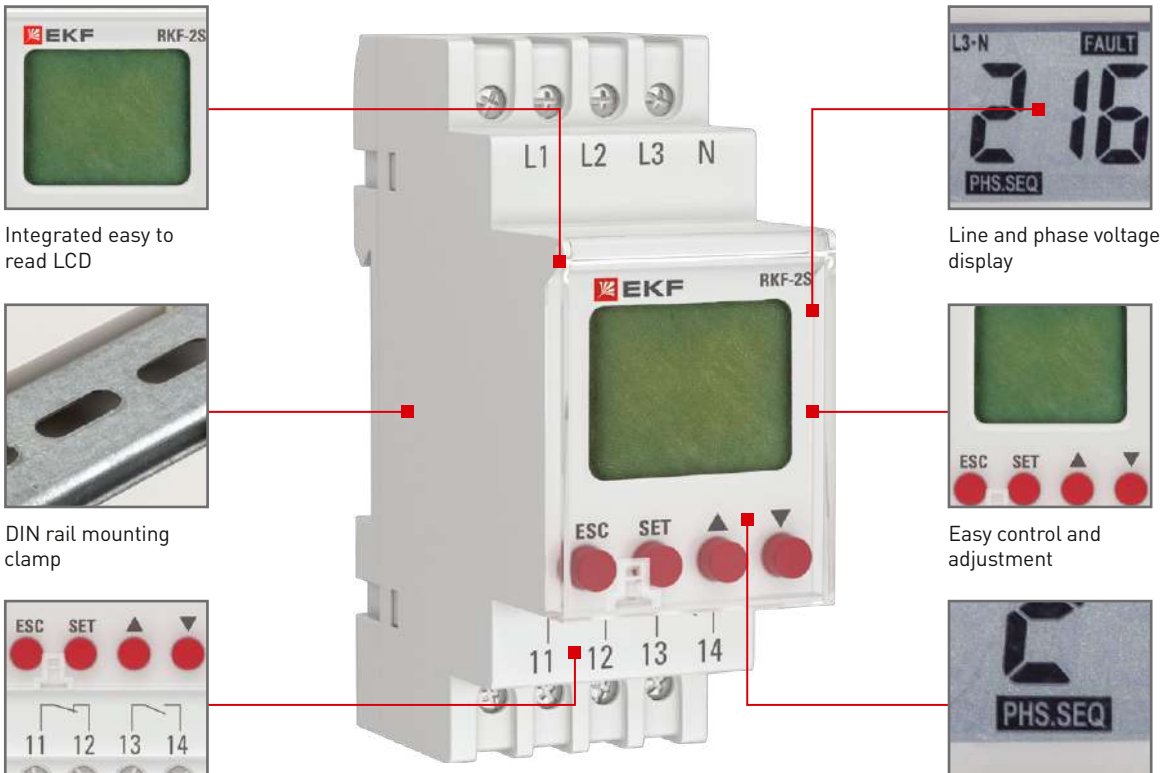
1. Motor protection relay MPR EKF
2. Technical manual

Name	Current setpoint adjustment range, A	Item code
Motor protection relay MPR 20A EKF	4–20	mpr-20
Motor protection relay MPR 80A EKF	16–80	mpr-80
Motor protection relay MPR 200A EKF	40–200	mpr-200
Motor protection relay MPR 400A EKF	80–400	mpr-400

Phase monitoring relay with LCD RKF-2S EKF

Phase monitoring relay with LCD RKF-2S EKF is a microcontroller-based switching and protection device. It has a large LCD with moonlight backlight and programming buttons on the front panel. The relay enables measuring line and phase voltages (voltmeter mode), setting initial startup and fault recovery delays, automatic fault recovery, voltage and phase sequence control functions. The relay will react immediately to phase sequence failure as this function is not timer-controlled. Phase loss fault is timer-controlled only for automatic fault recovery delay. On detecting phase loss fault, the relay will trip immediately, without any delay. The device can operate in three modes: phase monitoring relay, voltage monitoring relay, voltmeter. Both copper and aluminum wire connections are supported.

Standard: IEC/EN 60947-5-1



Integrated easy to read LCD

Line and phase voltage display

DIN rail mounting clamp

Easy control and adjustment

Two change-over contacts

Active fault display

APPLICATION

The RKF-2S EKF phase monitoring relay with LCD is designed for use in relay automation systems for monitoring of and protection against the following faults:

- phase loss;
- undervoltage with delayed response time;
- overvoltage with delayed response time;
- voltage asymmetry with delayed response time;
- phase sequence;
- lost neutral.

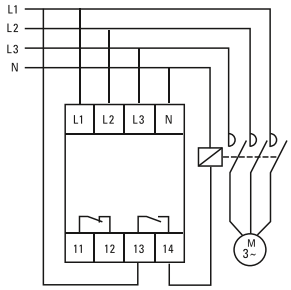
TECHNICAL DATA

Parameters	Values
Rated frequency, Hz	45-65
Overvoltage range, V AC	221-300
Undervoltage range, V AC	150-219
Asymmetry adjustment range, %	5-20
Voltage hysteresis, V	5
Trip delay (asymmetry, overvoltage and undervoltage), s	0,1–20
Max. trip time at phase loss, phase sequence fault, s	<0,2
Voltage measurement error, %	<1 (full scale)
Trip delay error, %	± 10
Rated insulation voltage, V	415
Fuse size, A	5
Contacts	2 C/O

Parameters	Values
Degree of protection	IP20
Pollution degree	3
Electrical life, cycles	100 000
Mechanical life, cycles	1 000 000
Conventional thermal current, A	5
Utilization category	AC-15
Rated load current, A	2 x 8 at 230V
Max. power consumption, VA	2
Max. altitude above sea level, m	2000
Operating temperature, °C	-5 to +40
Storage temperature °C	-25 to +55
Connection	Screw terminals, max. conductor cross-section 1,5mm^2

Wiring diagrams

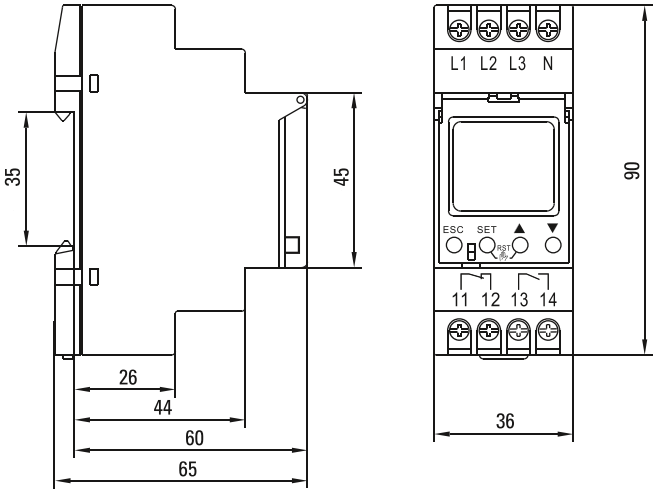
RKF-2S



Installation and operation

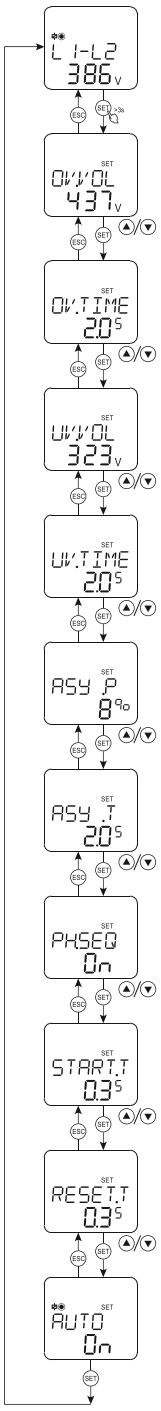
1. Install and secure the relay in the intended location.
2. Connect the relay as per wiring diagram.
3. Set the desired voltage setpoints.
4. Set the desired trip conditions and timing.

Overall and installation dimensions (mm)



Delivery scope

1. Phase monitoring relay with LCD RKF-2S EKF



❶ Main menu.
Display shows supply voltage

❷ Setting overvoltage setpoint

OFF→221→300

❸ Setting overvoltage trip delay

0.1→20.0

❹ Setting undervoltage setpoint

150→219→OFF

❺ Setting undervoltage trip delay

0.1→20.0

❻ Setting asymmetry setpoint

OFF→5→20

❼ Setting asymmetry trip delay

0.1→20.0

❽ Setting phase sequence protection

On→OFF

❾ Setting initial startup timer

0.3→30.0

❿ Setting automatic reset timer

0.3→30.0

⓫ Setting automatic reset (On/Off)

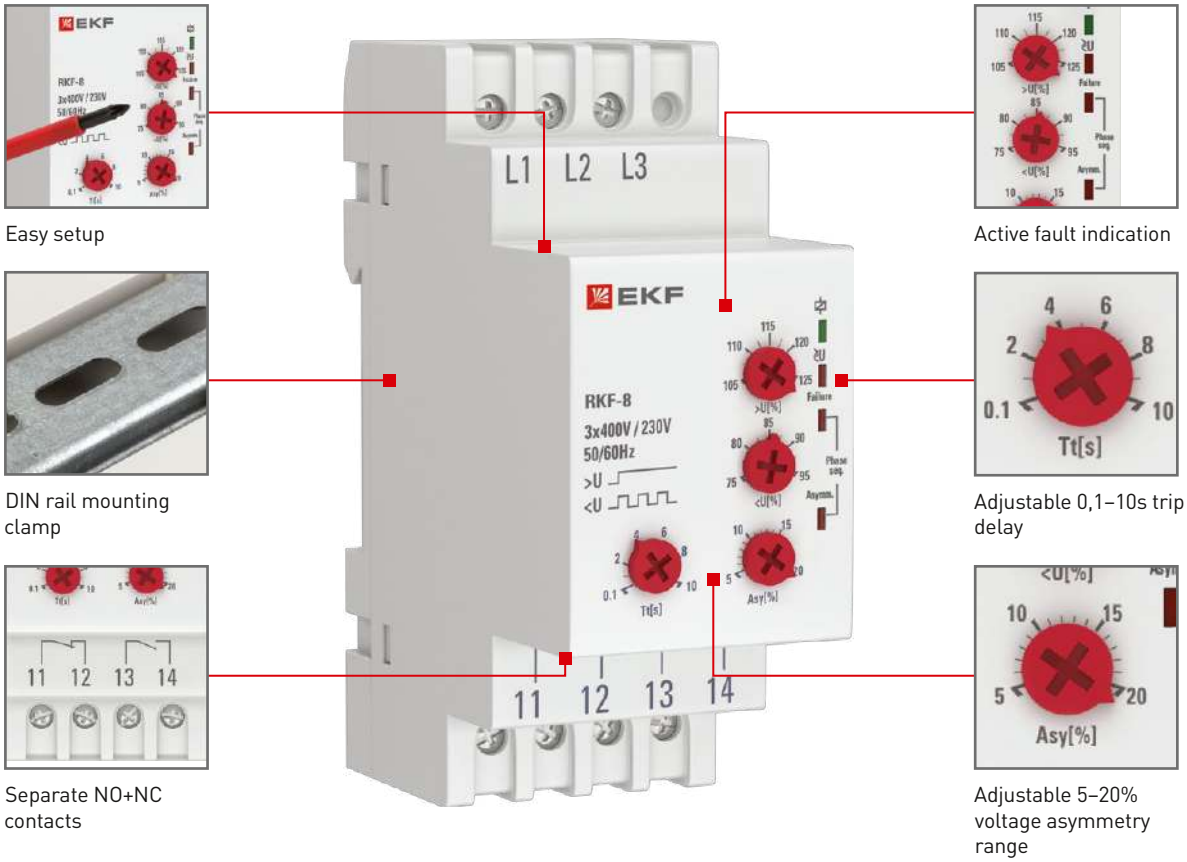
On→OFF

Name	Supply voltage (Ue), V	Tightening torque, N·m	Mounting	Item code
Phase monitoring relay with LCD RKF-2S EKF	AC 125-300V + N	0,5	35 mm DIN rail	rkf-2s

Multifunctional phase monitoring relay RKF-8 EKF

Multifunctional phase monitoring relay RKF-8 EKF is a microprocessor-based device used in automated control circuits to monitor voltage quality and protect electrical equipment in three-phase AC circuits up to 1000 V. The relay has easy-to-read LED indicators and front panel dials for adjustment of user settings.

Standard: IEC/EN 60947-5-1



APPLICATION

The RKF-8 EKF multifunctional phase monitoring relay is designed for use in relay automation systems for monitoring of and protection against the following faults:

- phase loss;
- undervoltage with delayed response time;
- overvoltage with delayed response time;
- voltage asymmetry with delayed response time;
- phase sequence.

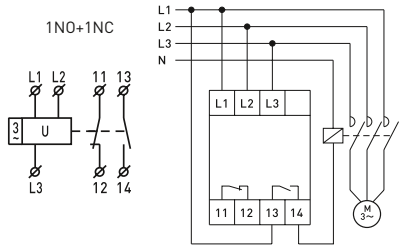
TECHNICAL DATA

Parameters	Values
Supply voltage (Ue), V	400 / 415
Rated frequency, Hz	50 / 60
Overvoltage range	(1,05–1,25)×Ue
Undervoltage range	(0,70–0,95)×Ue
Voltage asymmetry adjustment range, %	5–20
Voltage hysteresis, V	6
Trip delay (asymmetry, over- and undervoltage), s	0,2–10
Max. trip time at phase loss, phase sequence fault, s	≤0,2
Voltage measurement error, %	<1 (full scale)
Trip delay error, %	±10
Set-point error, %	1 (full scale)
Rated insulation voltage, V	480

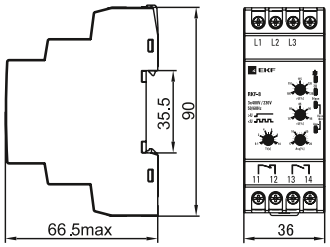
Parameters	Values
Contacts	NO + NC
Degree of protection	IP20
Pollution degree	3
Electrical life, cycles	100 000
Mechanical life, cycles	1 000 000
Rated contact current, A	8 (AC-1)
Rated load current, A	2 x 8 at 230 V (AC-1)
Max. power consumption, VA	2
Max. altitude above sea level, m	2000
Operating temperature, °C	-5 to +40
Storage temperature °C	-25 to +50
Connection	Screw terminals, max. conductor cross-section – 1,5 mm²

Wiring diagrams

RKF-8



Overall and installation dimensions (mm)



Installation and operation

1. Install and secure the relay in the intended location.
2. Connect the relay as per wiring diagram.
3. Set the desired voltage setpoints.
4. Set the desired trip delay.
5. After energizing the relay, if no faults are detected, a yellow LED will light up and the output contacts will switch: 11-12 will open and 13-14 will close. If the relay does not switch, check the LED indicators for active fault.
6. The relay will trip and open the output contacts after a preset time delay in the event of undervoltage, overvoltage, and voltage asymmetry fault.
7. At phase loss or phase sequence fault the relay will trip immediately, ignoring trip delay timer.
8. If the circuit voltage is ≤0,5 Ue, the relay will trip with phase loss.
9. If the circuit voltage is ≥1,5 Ue, the relay will trip with no time delay.

Delivery scope

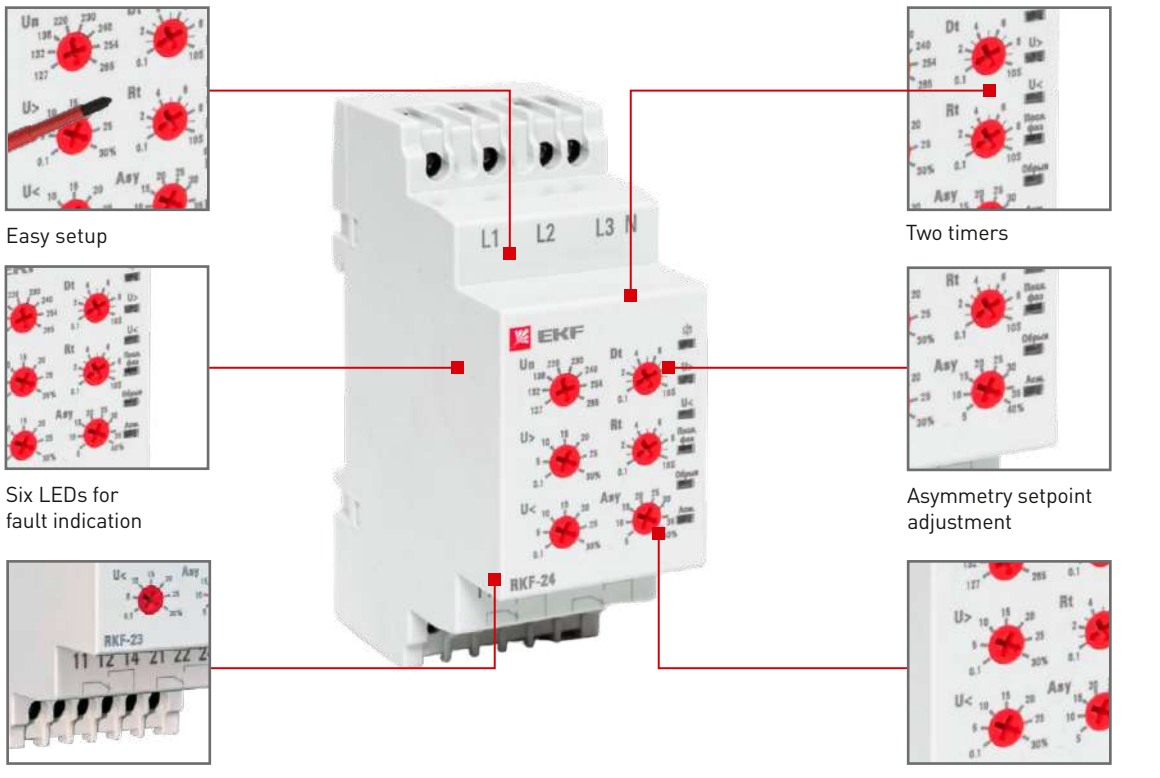
Multifunctional phase monitoring relay RKF-8 EKF.

Name	Supply voltage (Ue), V	Tightening torque, N·m	Mounting	Item code
Multifunctional phase monitoring relay RKF-8 EKF	AC 380-415	0,5	35 mm DIN rail	rkf-8

Multifunctional phase monitoring relays RKF-23/24 EKF

Multifunctional phase monitoring relay RKF-24/23 EKF is a microprocessor-based device used in automated control circuits to monitor voltage quality and protect electrical equipment in three-phase AC circuits up to 1000 V. The relay monitors the following: phase loss, undervoltage with trip time delay, overvoltage with trip time delay, voltage asymmetry with trip time delay, phase sequence. The relay has easy to read LED indicators and front panel dials for adjustment of user settings.

Standard: IEC/EN 60947-5-1

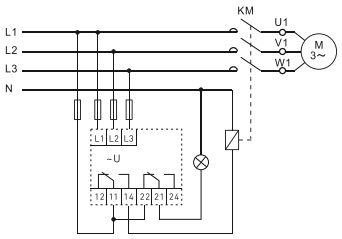


TECHNICAL DATA

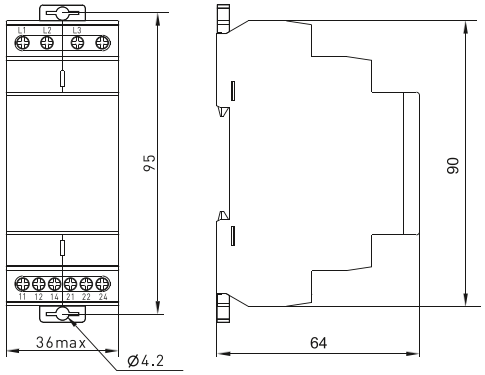
Parameters	Values	
	rkf-24	rkf-23
Supply voltage (Ue), V	127 / 132 / 138 / 220 / 230 / 240 / 254 / 265	220 /230 / 240 / 380 / 400 / 415 / 440 /459
Rated frequency, Hz	45–65	
Overvoltage range	(1,02-1,3)*Ue	
Undervoltage range	(0,7-0,98)*Ue	
Asymmetry adjustment range, %	5 - 40	
Voltage hysteresis, %	2	
Trip delay (asymmetry, overvoltage and undervoltage), s	0,1–10	
Max. trip time at phase loss, phase sequence fault, s	≤0,2	
Re-closing delay, s	0,1 – 10	
Voltage measurement accuracy, %	<1 (full scale)	
Trip delay accuracy, %	±10	
Set-point accuracy, %	1 (full scale)	
Rated insulation voltage, V	690	
Contacts	2 C/O (change-over)	
Degree of protection	IP20	
Pollution degree	3	
Electrical life, cycles	105	
Mechanical life, cycles	107	
Rated contact current, A	8 (AC-1)	
Rated load current at 250V, A	2x8 (AC-1)	
Max. power consumption, VA	2	
Max. altitude above sea level, m	2000	
Operating temperature, °C	-20 to +55	
Storage temperature °C	-35 to +75	
Connection	Screw terminals, max. conductor cross-section 2,5 mm²	

Wiring diagrams

RKF-8



Overall and installation dimensions (mm)



Installation and operation

If the power supply is normal, the contacts of the relay (11-14; 21-24) are closed and the coil of the contactor or another control device will be energized. In the event of a fault, relay contacts open and the contactor is de-energized. After the supply voltage stabilizes within the preset voltage range, the relay will automatically re-close after a preset time delay.

Setup

1. Install and secure the relay in the intended location.
2. Connect the relay as per wiring diagram.
3. Set the desired voltage setpoints.
4. Set the desired trip delay.
5. After the relay is energized and no faults are detected, a yellow LED will light up and the output contacts will be switched: 11-12 and 21-22 will open, 11-14 and 21-24 will close. If the relay does not switch, check the LED indicators for active fault.
6. At phase loss or phase sequence fault the relay will trip immediately, ignoring trip delay timer.
7. If the circuit voltage is ≤0,5 Ue, the relay will trip with phase loss.
8. If the circuit voltage is ≥1,5 Ue, the relay will trip with no time delay.

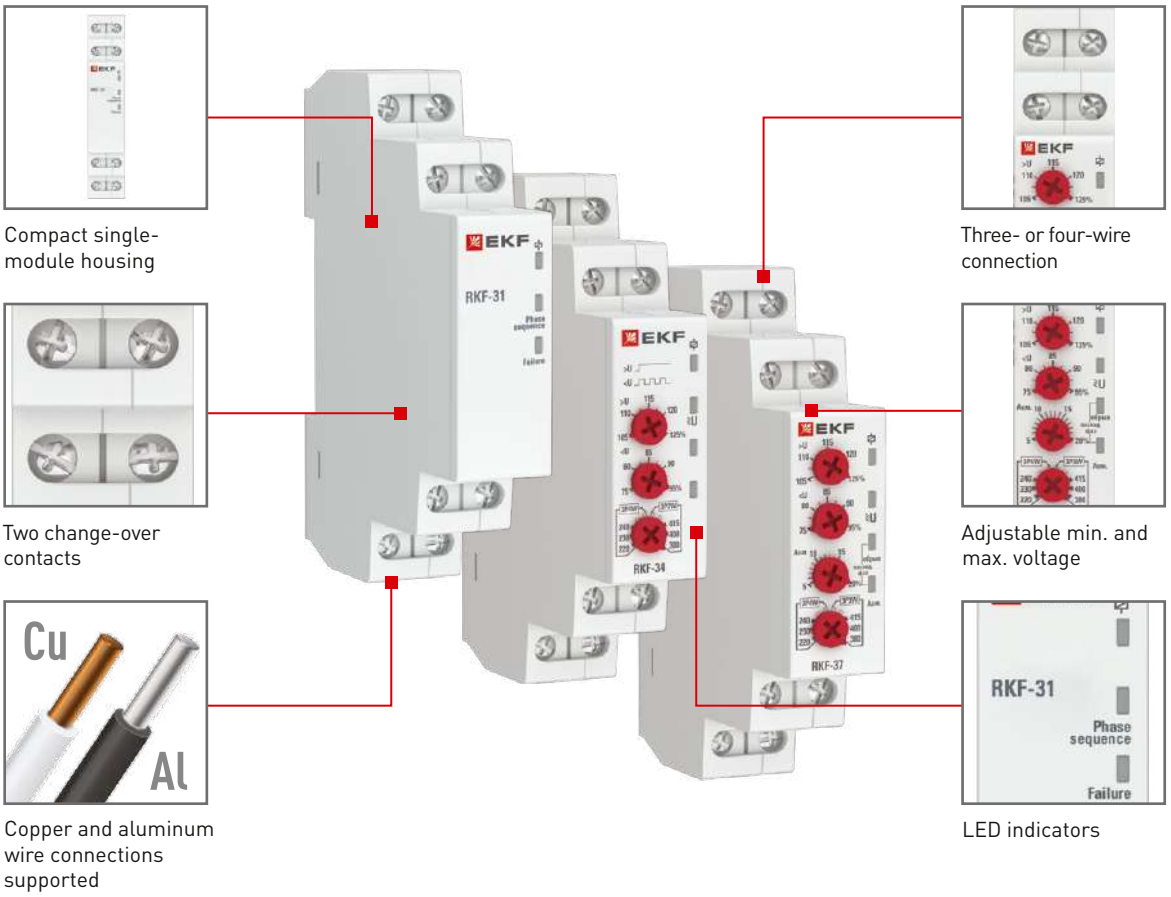
Delivery scope

1. Multifunctional phase monitoring relay RKF-23/24 EKF.

Name	Open neutral detection	Item code
Phase monitoring relay RKF-23 EKF	–	rkf-23
Phase monitoring relay RKF-24 EKF	+	rkf-24

Compact phase monitoring relays RKF-31, RKF-34, RKF-37 EKF

Phase monitoring relays RKF-31, RKF-34, RKF-37 EKF are electromechanical switching devices intended for monitoring voltage in three-phase AC circuits and for tripping in the event of fault, protecting the load. The relays are compact and versatile, they can be easily integrated into three- or four-wire circuits.



APPLICATION

Phase monitoring relays are designed for use in relay automation systems for monitoring of and protection against the following faults:

- phase loss;
- undervoltage with delayed response time;
- overvoltage with delayed response time;
- voltage asymmetry with delayed response time.

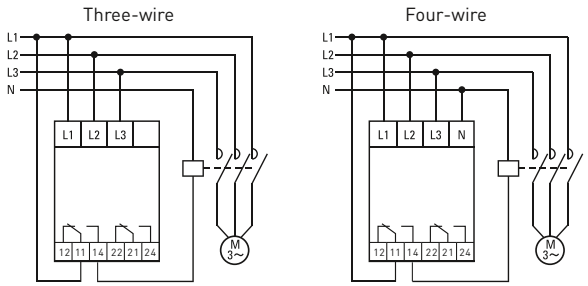
TECHNICAL DATA

Parameters	Values	
Connection	Three-wire	Four-wire
Supply voltage Un, V	380 / 400 / 415	220 / 230 / 240
Operating voltage range, V	266–540	154-312
Rated frequency, Hz	50 / 60	
Overvoltage range	(1,05~1,25)*Un	
Undervoltage range	(0,75~0,95)*Un	
Voltage asymmetry adjustment range, %	Adjust. 5-20; Preset 8	
Overvoltage trip delay	Preset 2s	
Undervoltage trip delay	Preset 2s	
Asymmetry trip delay	Preset 2s	
Voltage hysteresis, V	6	
Asymmetry hysteresis, %	2	
Trip delay at phase loss, phase sequence fault, s	< 0,5	
Trip delay error, %	±10+0,1s	

Parameters	Values
Set-point error, %	1% (full scale)
Rated insulation voltage, V	480
Output contacts	2 C/O
Rated current, A	8 / 250V AC1
Electrical life, cycles	100 000
Mechanical life, cycles	1 000 000
Degree of protection	IP20
Pollution degree	3
Operating temperature, °C	-20 to +55
Conductor cross-section, mm^2	0,5 - 2,5
Tightening torque, N·m	0,5
Max. altitude above sea level, m	2000
Max. relative humidity	⩽ 50% at 40°C (non-condensing)
Storage temperature, °C	-30 to +70
Mounting	DIN rail

Wiring diagrams

Three-wire diagram	Four-wire diagram

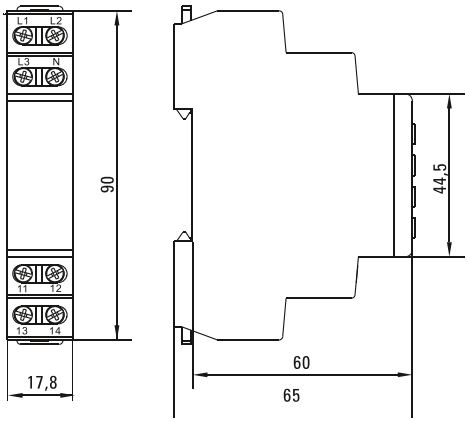


Installation and operation

Installation, connection and set-up shall be performed by qualified personnel.
Make sure the circuit is de-energized before relay installation and connection.
Select the desired voltage and connection type prior to connecting the relay. Do not change the voltage setpoint while the relay is energized.
If there is a fault in the circuit, the output contact of the relay will remain open after the relay is energized.

In the undervoltage event the relay will trip after a user-preset time delay (RKF-34, RKF-37).
If the circuit voltage is ⩽0,5Un, the relay will trip with phase loss fault.
Phase sequence and phase loss faults will trip the relay and light up an associated LED without time delay.

Overall and installation dimensions (mm)



Delivery scope

1. Phase monitoring relay RKF-31, RKF-34, RKF-37 EKF.
2. Technical manual

Name	Overvoltage, U>	Undervoltage, U<	Phase loss	Phase sequence fault	Voltage asymmetry	Item code
Phase monitoring relay RKF-31 EKF	–	–	+	+	–	RKF-31
Phase monitoring relay RKF-34 EKF	+	+	+	–	–	RKF-34
Phase monitoring relay RKF-37 EKF	+	+	+	+	+	RKF-37

Phase monitoring relay RKF-11m EKF

Phase monitoring relay RKF-11m EKF is designed for monitoring electric circuits and protecting electric motors and equipment. The following parameters can be set via adjustment dials on the front panel of the device:

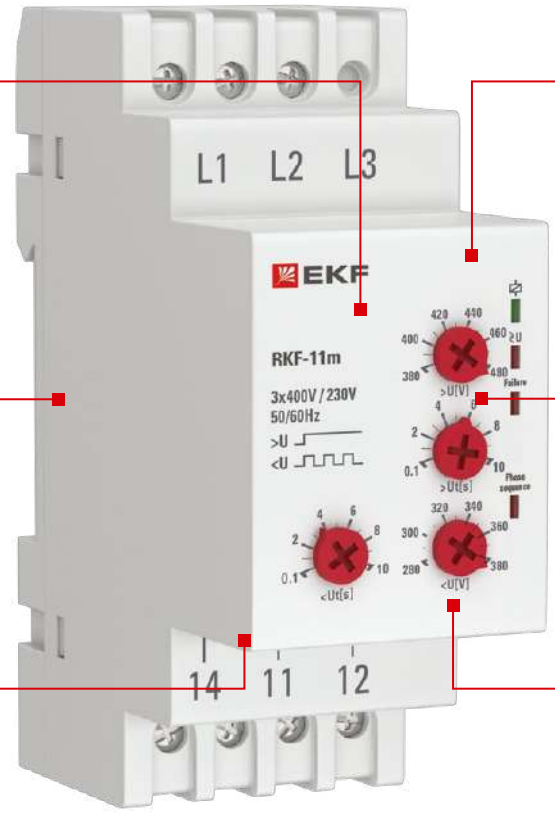
- Overvoltage in the 380-480 V range;
- Undervoltage in the 280-380 V range;
- Overvoltage trip delay in the 0,1-10 s range;
- Undervoltage trip delay in the 0,1-10 s range.

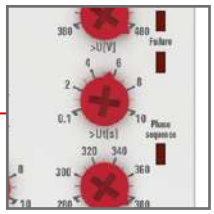
Standard: IEC/EN 60947-5-1

Over- and undervoltage trip delay adjustment

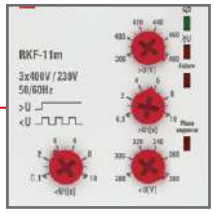
DIN rail mounting clamp

Copper and aluminum wire connections supported

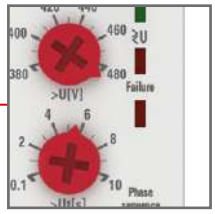




Over- and undervoltage setpoint adjustment



Easy adjustment, multiple settings



Active fault indication

APPLICATION

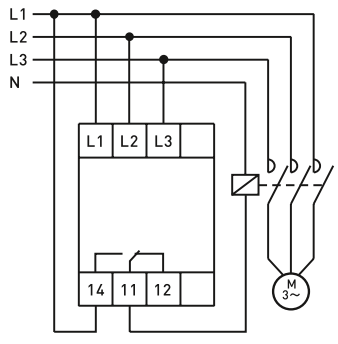
RKF-11m EKF phase monitoring relay is designed for use in relay automation systems for monitoring of and protection against the following faults:

- phase loss;
- undervoltage with delayed response time;
- overvoltage with delayed response time;
- phase sequence.

TECHNICAL DATA

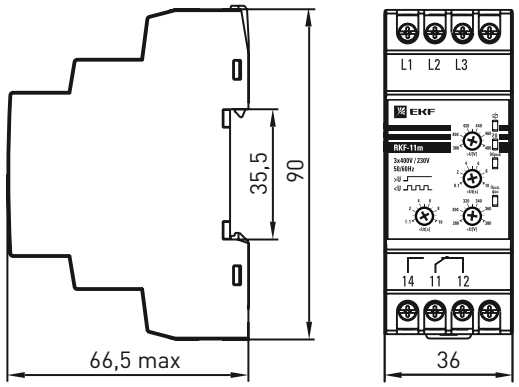
Wiring diagrams

RKF-11m



Parameters	Values
Electrical life, cycles	10^5
Mechanical life, cycles	10^6
Supply voltage, V	280–480
Overvoltage range Umax, V	380–480
Overvoltage trip delay, s	0,1–10
Undervoltage range Umin, V	280–380
Undervoltage trip delay, s	0,1–10
Max. trip time at phase loss or phase sequence fault, s	0,2
Rated contact current, A	8
Max. power consumption, W	2
Operating temperature, °C	-5 to +40
Max. altitude above sea level, m	2000
Max. relative humidity	≤ 50% at 40°C (non-condensing)
Storage temperature, °C	-30 to +70
Mounting	DIN rail

Overall and installation dimensions



Overall and installation dimensions (mm)

1. Install and secure the relay in the intended location.
2. Connect the relay as per wiring diagram.
3. Set the desired voltage setpoints.
4. Set the desired trip delay.
5. After energizing the relay, if no faults are detected, a yellow LED will light up and the output contacts will switch: 11-12 will open and 13-14 will close. If the relay does not switch, check the LED indicators for active fault.
6. At phase loss or phase sequence fault the relay will trip immediately, ignoring trip delay timer.
7. If the circuit voltage is ⩽0,5 Ue, the relay will trip with phase loss.
8. If the circuit voltage is ⩾1,5 Ue, the relay will trip with no time delay.

Delivery scope

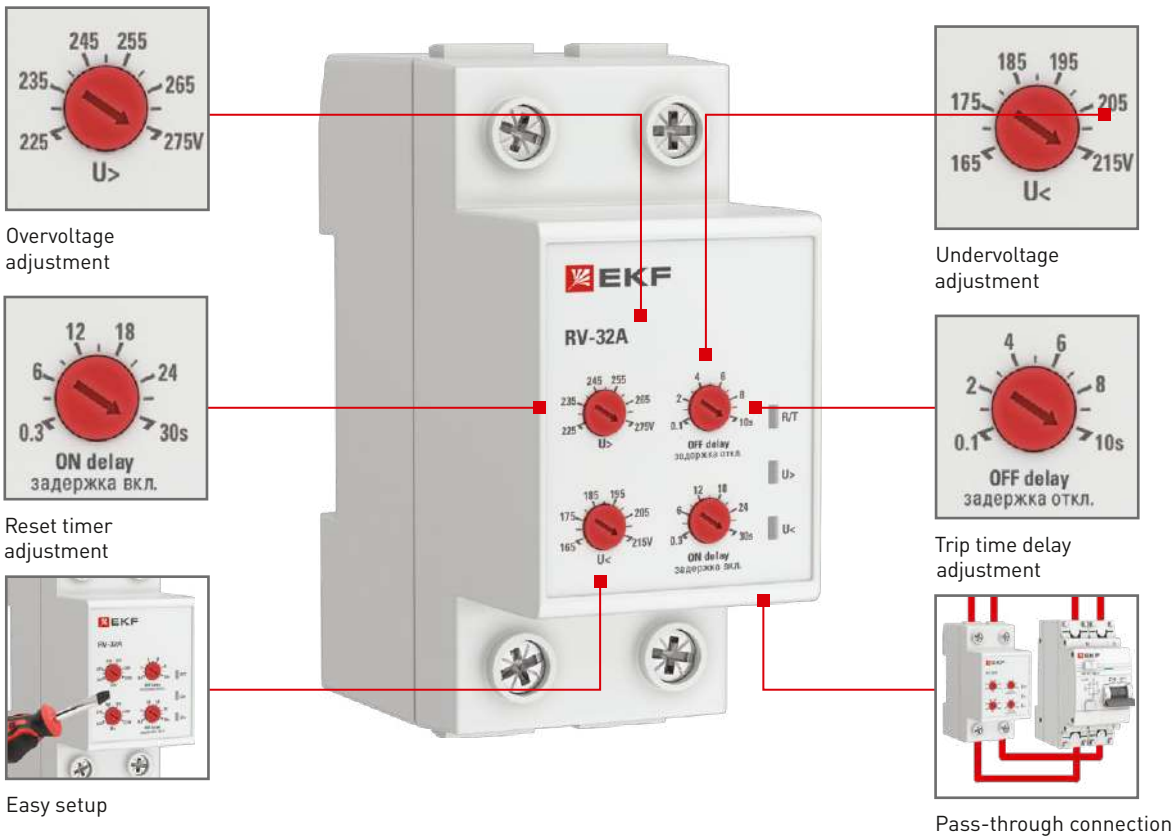
1. Phase monitoring relay RKF-11m EKF

Name	Rated contact current, A	Supply voltage, V	Item code
Phase monitoring relay RKF-11m EKF	5	280–480	rkf-11m

Voltage monitoring relay (1P+N) RV-32A EKF

Voltage monitoring relay (1P+N) RV-32A EKF is a microprocessor-controlled switching device designed for continuous voltage monitoring in single-phase AC networks, to protect electrical installations against voltage variations. The relay is installed into a two-wire circuit directly after the main circuit breaker, protecting the branch circuits. The relay monitors the voltage in a preset range and trips after a preset time delay if the voltage is out of bounds, de-energizing downstream devices. Voltage range and trip time delay can be adjusted using the dials on the front panel of the relay.

Standard: IEC/EN 60947-5-1



APPLICATION

RV-32A EKF voltage monitoring relays are used in administrative, industrial, and residential buildings for protection of single-phase circuits against:

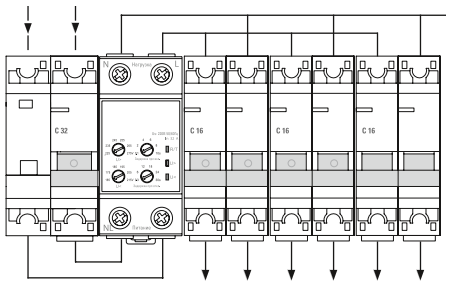
- undervoltage;
- overvoltage;
- loss of neutral.

TECHNICAL DATA

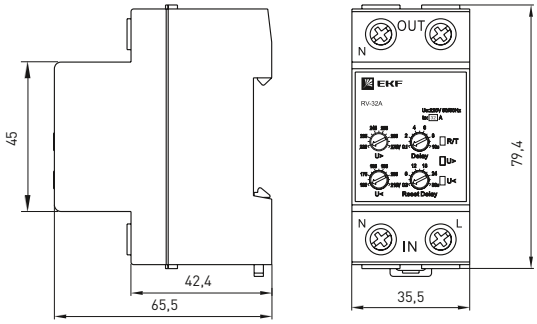
Parameters	Values
Supply voltage Ue, V	230 / 240
Rated frequency, Hz	50
Maximum load current, A	32
Max. total capacity, kVA	7
Overvoltage range, V AC	225–265
Relay resets at	0,97 of the voltage setpoint
Undervoltage range, V AC	165-215
Relay resets at	1,03 of the voltage setpoint
Trip delay range, s	0,1–10
Reset time delay range, s	0,3–30
Voltage measurement accuracy, %	<1 (full scale)
Trip delay accuracy, %	±10
Set-point accuracy, %	1% (full scale)
Rated insulation voltage, V	300
Contacts	1 C/O
Degree of protection	IP20
Pollution degree	3
Electrical life, cycles	100 000
Mechanical life, cycles	1 000 000
Max. altitude above sea level, m	2000
Operating temperature, °C	-5 to +40
Storage temperature °C	-25 to +75
Connection, mm²	Screw terminals, max. conductor cross-section 8
Tightening torque, N·m	2,5
Mounting	35 mm DIN rail

Wiring diagrams

RV-32A



Overall and installation dimensions (mm)



Installation and operation

1. Install and secure the relay in the intended location.
2. Connect the relay as per wiring diagram.
3. Set the desired voltage setpoints.
4. Set the desired trip/reset timing.

Delivery scope

1. Voltage monitoring relay (1P+N) RV-32A EKF.
2. Technical manual

Name	Supply voltage (Ue), V	Tightening torque, N·m	Mounting	Item code
Voltage monitoring relay (1P+N) RV-32A EKF	AC 230	0,5	35 mm DIN rail	rv-32a

Voltage monitoring relay (parallel connection) RV-5A EKF

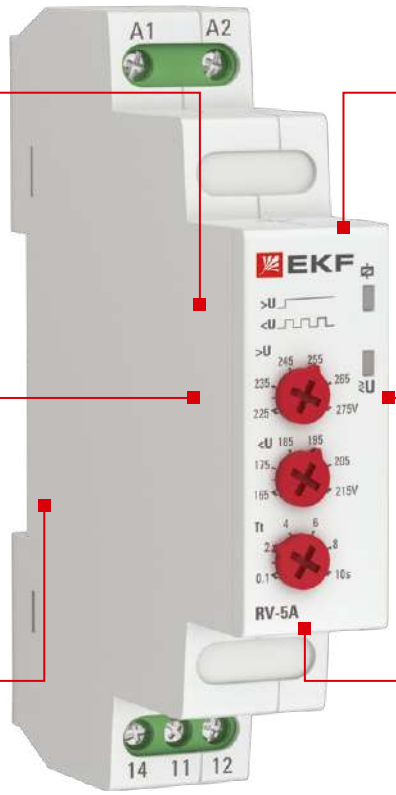
Voltage monitoring relay RV-5A EKF is a microprocessor-controlled switching device designed for continuous voltage monitoring in single-phase AC networks to protect electrical installations against voltage fluctuations.
The relay monitors the voltage in a preset range and trips after a preset time delay if the voltage is out of bounds. Voltage range and trip time delay can be adjusted using the dials on the front panel of the relay. Copper and aluminum wire connections are supported.

Standard: IEC/EN 60947-5-1

Overvoltage setpoint adjustment

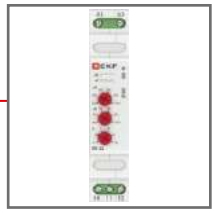
Trip delay time adjustment

DIN rail mounting clamp



Undervoltage setpoint adjustment

Easy setup



18 mm wide

APPLICATION

RV-5A EKF voltage monitoring relays are used in administrative, industrial, and residential buildings for protection of single-phase circuits against:

- undervoltage;
- overvoltage.

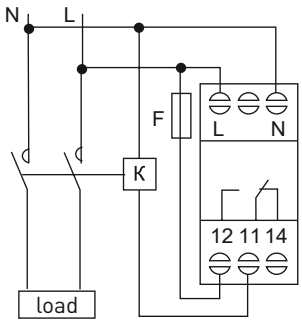
TECHNICAL DATA

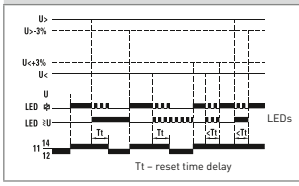
Parameters	Values
Supply voltage (Ue), V	230 / 240
Rated frequency, Hz	50 / 60
Overvoltage range, V AC	225–275
Undervoltage range, V AC	165-215
Hysteresis, %	3
Trip delay range, s	0, 1–10
Voltage measurement accuracy, %	<1 (full scale)
Trip delay accuracy, %	±10
Set-point accuracy, %	1% full scale
Rated insulation voltage, V	460
Contacts	1 C/O
Degree of protection	IP20
Pollution degree	3

Parameters	Values
Electrical life, cycles	100 000
Mechanical life, cycles	1 000 000
Conventional enclosed current	5 A
Utilization category	AC-15
Rated load current, A	8A at 230 V AC1
Max. power consumption, VA	2
Max. altitude above sea level, m	2000
Operating temperature, °C	-5 to +40
Storage temperature °C	-25 to +75
Connection, mm^2	Screw terminals, max. conductor cross-section 2,5
Tightening torque, N·m	0,5
Mounting	35 mm DIN rail

Wiring diagrams

RV-5A



Function diagram	Description
	If the power supply is normal, the contact of the relay (11-12) is closed and the coil of the contactor or another control device will be energized. In the event of a fault, relay contact opens and the load is de-energized. Set the trip delay and voltage setpoints using the dials. After the voltage returns to normal, the relay will automatically energize the load.

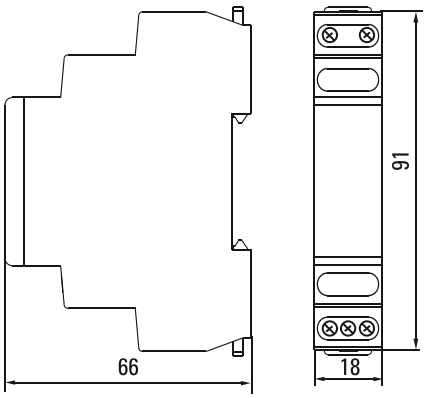
LED indication

Green LED "⏻": relay on – LED is lit; trip delay countdown running – LED is blinking.
Red LED "U⩾": overvoltage – LED is lit; no overvoltage – LED is off.
Red LED «U⩽»: undervoltage – LED is blinking; no undervoltage – LED is off.

Installation and operation

1. Install and secure the relay in the intended location.
2. Connect the relay as per wiring diagram.
3. Set the desired voltage setpoints.
4. Set the desired trip/reset timing.

Overall and installation dimensions (mm)



Delivery scope

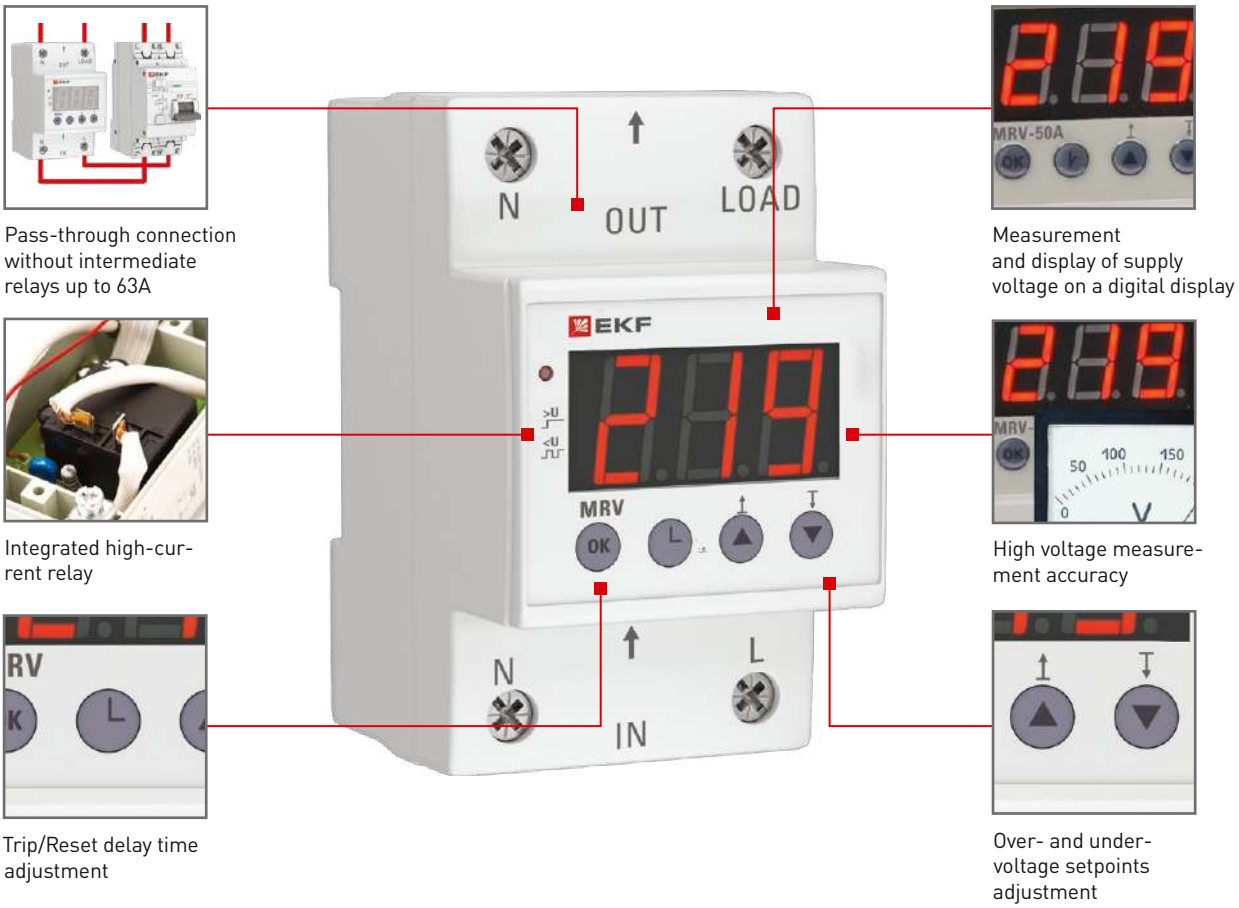
1. Voltage monitoring relay (parallel connection) RV-5A EKF
2. Technical manual

Name	Supply voltage (Ue), V	Tightening torque, N·m	Mounting	Item code
Voltage monitoring relay (parallel connection) RV-5A EKF	AC 230/240	0,5	35 mm DIN rail	rv-5a

Voltage monitoring relays with display MRV EKF

Voltage monitoring relay MRV EKF is a microprocessor-controlled switching device designed for continuous voltage monitoring in single-phase AC networks, to protect electrical installations against voltage variations. The device displays the supply voltage on the numeric LCD. Switching is performed by an electromagnetic relay. Trip setpoints and reset time delay can be set using the buttons on the front panel of the device. Setpoints are saved in non-volatile memory.

Standard: IEC/EN 60947-5-1



Pass-through connection without intermediate relays up to 63A

Integrated high-current relay

Trip/Reset delay time adjustment

Measurement and display of supply voltage on a digital display

High voltage measurement accuracy

Over- and under-voltage setpoints adjustment

APPLICATION

MRV EKF voltage monitoring relays are used in administrative, industrial, and residential buildings for measuring and displaying voltage, as well as for protection of single-phase circuits against:

- undervoltage;
- overvoltage;
- loss of neutral.

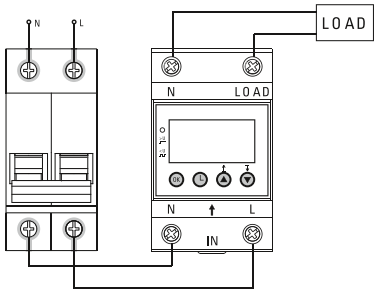
TECHNICAL DATA

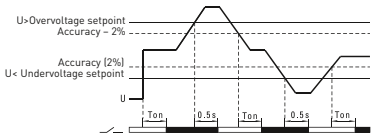
Parameters	Values
Rated supply voltage, V AC	230 / 240
Rated frequency, Hz	50 / 60
Adjustment range over-voltage, V	230~300
Adjustment range under-voltage, V	120~210
Hysteresis, %	2
Overvoltage tripping time, s	<285V: 0,1; ≥285V: 0,02
Time delay adjustment range, s	5~600
Undervoltage tripping time, s	≥120V: 0,5; <120V: <0,1
Voltage measurement error, %	≤1
Rated insulation voltage, V	400
Output contacts	1NO
Degree of protection	IP20

Parameters	Values
Pollution degree	3
Electrical life, cycles	100 000
Mechanical life, cycles	1 000 000
Max. altitude above sea level, m	2000
Max. relative humidity	≤ 50% at 40°C (non-condensing)
Mounting	DIN rail
Operating temperature, °C	-5 to +40
Storage temperature, °C	-40 to +75
Connection	Screw terminals, max. conductor cross-section 4-16 mm^2
Tightening torque, N·m	2,5
Mounting	35 mm DIN rail

Wiring diagrams

MRV

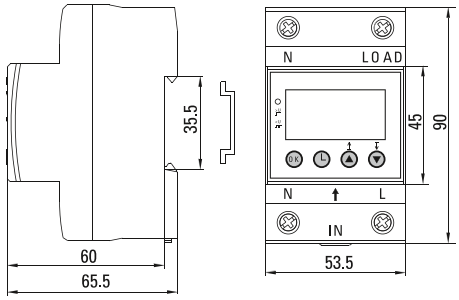


Function diagram	Description
	1. Undervoltage setpoint 120-200 (1V steps, 170V by default) 2. Overvoltage setpoint 210-270 (1V steps, 250V by default) 3. Reset time delay, Ton 5–600s (15s – by default).

Installation and operation

1. Install and secure the relay in the intended location.
2. Connect the conductors to the relay as per wiring diagram.
3. Set the desired voltage setpoints.
4. Set the desired trip/reset timing.

Overall and installation dimensions (mm)



Delivery scope

1. Voltage monitoring relay with display MRV EKF
2. Technical manual

Name	Max. current (10 min), A	Rated current, A	Rated power, kW	Max. conductor cross-section, mm²	Item code
Voltage monitoring relay with display MRV 25A EKF	30	25	5,5	16	mrv-25a
Voltage monitoring relay with display MRV 32A EKF	40	32	7	16	mrv-32a
Voltage monitoring relay with display MRV 40A EKF	50	40	8,8	16	mrv-40a
Voltage monitoring relay with display MRV 50A EKF	60	50	11,0	16	mrv-50a
Voltage monitoring relay with display MRV 63A EKF	80	63	13,9	16	mrv-63a

Voltage & current monitoring relays with display MRVA EKF

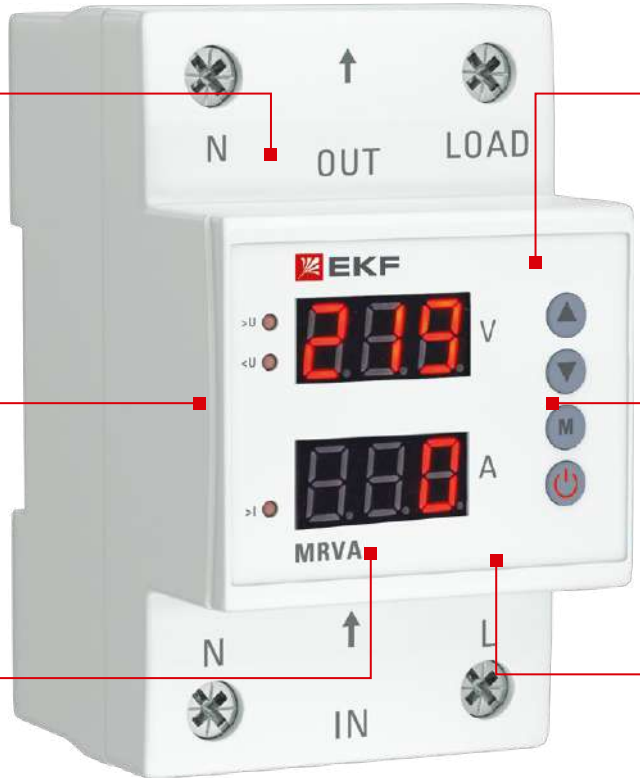
Voltage and current monitoring relay MRVA EKF is a microprocessor-controlled switching device designed for continuous voltage and current monitoring and control in single-phase AC networks. The device measures and displays supply current and voltage on the numeric display. Switching is performed by an electromagnetic relay. Trip setpoints and reset time delay can be set using the buttons on the front panel of the device. Setpoints are saved in non-volatile memory. Copper and aluminum wire connections are supported.

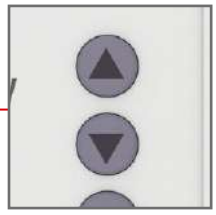
Standard: IEC/EN 60947-5-1

Integrated high-current relay

Active fault display

Voltage and current measurement and display





Over- and undervoltage adjustment

Overcurrent adjustment

Direct connection of the load without intermediate relays up to 63A

APPLICATION

MRVA EKF voltage and current monitoring relays are used in administrative, industrial, and residential buildings for measuring and displaying voltage and amperage, as well a for protection of single-phase circuits against:

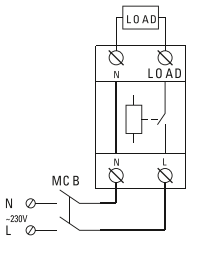
- loss of neutral;
- undervoltage;
- overvoltage;
- overcurrent.

TECHNICAL DATA

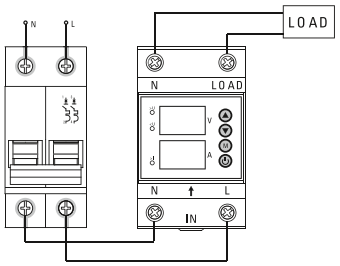
Parameters	Values
Rated supply voltage, V AC	230 / 240
Rated frequency, Hz	50 / 60
Adjustment range over-voltage, V	230–300
Adjustment range under-voltage, V	120–210
Hysteresis, %	2
Overvoltage tripping time, s	<285V: 0,1; ≥285V: 0,02
Time delay adjustment range, s	5–600
Undervoltage tripping time, s	≥120V: 0,5; <120V: <0,1
Voltage measurement error, %	≤1
Rated insulation voltage, V	400
Output contacts	1NO
Degree of protection	IP20

Parameters	Values
Pollution degree	3
Electrical life, cycles	100 000
Mechanical life, cycles	1 000 000
Max. altitude above sea level, m	2000
Max. relative humidity	≤ 50% at 40°C (non-condensing)
Mounting	DIN rail
Operating temperature, °C	-5 to +40
Storage temperature, °C	-40 to +75
Connection	Screw terminals, max. conductor cross-section 4-16 mm²
Tightening torque, N·m	2,5
Mounting	35 mm DIN rail

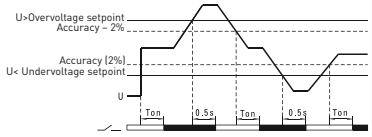
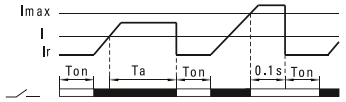
MRVA



Connection logic



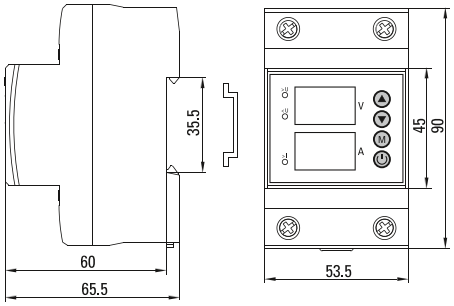
Wiring diagram

Function diagram	Description
	1. Undervoltage setpoint 120-200 (1V steps, 170V by default) 2. Overvoltage setpoint 210-270V (1V steps, 250V by default) 3. Reset time delay, Ton 5–600s (15s – by default).
 Ton – Start time delay Ta – Overcurrent trip time delay	Overcurrent setpoint Is (1A step) 16-In (In – default value). 4. Overcurrent trip delay Ta (1s step) 5-600s. (90s - default value).

Installation and operation

After the device is energized, the numeric display will show supply voltage and start blinking. Blinking display indicates that there is no voltage on the output of the device. If the supply voltage is within the setpoint-limited range, after the reset countdown Ton is finished (15s by default) the relay will energize the load and the display will stop blinking. If the voltage is out of bounds, the relay will remain off until the voltage stabilizes within the setpoint-limited range. If, after the reset, the voltage remains out of bounds, an associated LED will be blinking. If the current is higher than the overcurrent setpoint, the relay will de-energize the load after the overcurrent time delay, and the ">I" LED will light up. After the relay reset time expires, the relay will energize the load. If overcurrent persist after the third reset attempt, the relay will fail safe and display an error. In order to continue operation, eliminate the overcurrent fault and manually reset the relay.

Overall and installation dimensions (mm)



Delivery scope

1. Digital current and voltage monitoring relay with display MRVA EKF
2. Technical manual

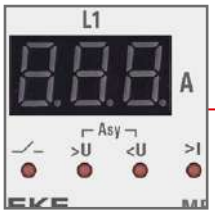
Name	Max. current (10 min), A	Rated current, A	Rated power, kW	Max. conductor cross-section, mm²	Item code
Voltage, current monitoring relay with display MRVA 25A EKF	30	25	5,5	16	mrva-25a
Voltage, current monitoring relay with display MRVA 32A EKF	40	32	7	16	mrva-32a
Voltage, current monitoring relay with display MRVA 40A EKF	50	40	8,8	16	mrva-40a
Voltage, current monitoring relay with display MRVA 50A EKF	60	50	11,0	16	mrva-50a
Voltage, current monitoring relay with display MRVA 63A EKF	80	63	13,9	16	mrva-63a

Three-phase voltage and current monitoring relay with display MRVA 63A EKF

Three-phase voltage and current monitoring relay MRVA 63A EKF is designed to trip and disconnect downstream load if the supply voltage or current is out of bounds. An embedded microcontroller constantly monitors supply voltage and current and outputs them on integrated LCDs. Switching is performed by an electromagnetic relay. Trip setpoints and reset time delay can be set using the buttons on the front panel of the device. Setpoints are saved in non-volatile memory.

Standard: IEC/EN 60947-5-1

Over- and under-voltage setpoints adjustment

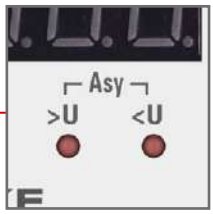


Active fault indication

Measurement and indication of supply voltage and current per phase

Integrated high-current relay

Overcurrent setpoint adjustment



Adjustable 20-99V voltage asymmetry range

APPLICATION

MRVA EKF three-phase voltage and current monitoring relays are used in administrative, industrial, and residential buildings for measuring and displaying voltage and amperage, as well as for protection of three-phase circuits against:

- loss of neutral.
- undervoltage;
- overvoltage;
- overcurrent;
- phase sequence fault;
- asymmetry;
- phase loss.

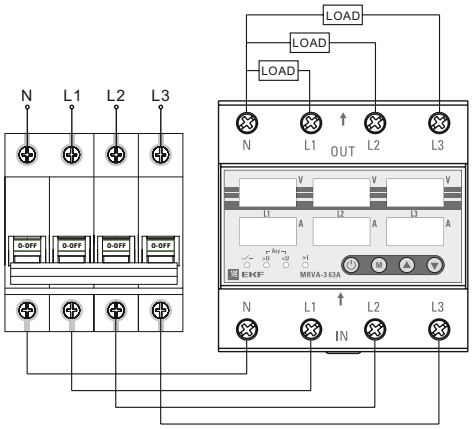
TECHNICAL DATA

Parameters	Values
Rated phase-to-neutral supply voltage Un, V AC	230 / 240
Operating voltage, V	80–400
Rated frequency, Hz	50 / 60
Overvoltage range, V	220–300
Undervoltage range, V	120–210
Overcurrent range, Ia, A	5–63
Asymmetry range, V	20–99
Measurement error, %	2
Undervoltage tripping time, s	<0,5 (120V); <0,1 (>120V)
Overvoltage tripping time, s	<0,1 (Us< Umea< 350V); <0,02 (≥350V)
Asymmetry tripping time, s	10
Overcurrent tripping time, s	5–600 (Is< Imea< 80A); 0,1 (Imea≥80)
Reset time delay, s	5–600
Hysteresis, overvoltage and asymmetry, V	5

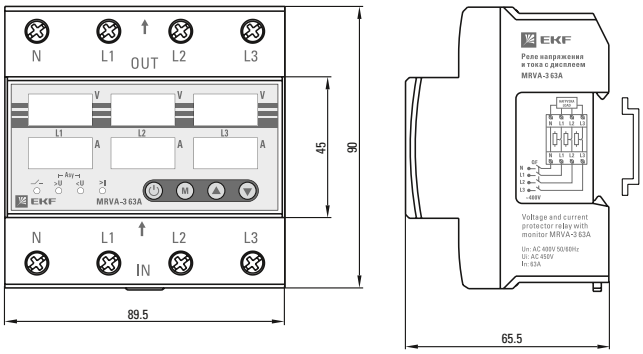
Parameters	Values
Hysteresis, undervoltage, V	3
Voltage measurement error, %	≤1
Rated insulation voltage, V	450
Output contacts	3NO
Degree of protection	IP20
Pollution degree	3
Electrical life, cycles	100 000
Mechanical life, cycles	1 000 000
Max. altitude above sea level, m	2000
Operating temperature, °C	-5 to +40
Max. relative humidity	50% at 40°C (non-condensing)
Storage temperature, °C	-40 to +85
Mounting	DIN rail
Automatic reset attempts	1–20, with manual off

Wiring diagrams

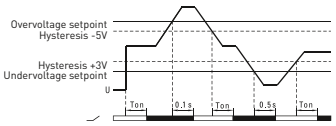
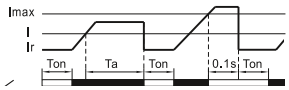
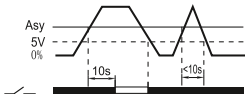
MRVA 63A



Overall and installation dimensions (mm)



Installation and operation

Function diagram	Description
	Overvoltage setpoint 220-300V (1V steps, 250V by default) Undervoltage setpoint 120-210 (1V steps, 170V by default) Reset time delay, Ton 5-600s (1s step, 5s by default)
	Overcurrent setpoint Is 5-63A (1A step, 63A by default) Overcurrent trip delay Ta 5-600s
	Asymmetry setpoint value is set in Volts (1V step, 20-99V, 50V by default)

Delivery scope

1. Three-phase voltage and current monitoring relay with display MRVA 63A EKF
2. Technical manual

Name	Max. current (10 min), A	Rated current, A	Max. conductor cross-section, mm²	Item code
Three-phase voltage and current monitoring relay with display MRVA 63A EKF	80	63	16	MRVA-3-63A

Digital socket voltage monitoring relay MRVs-16 EKF

Digital socket voltage monitoring relay MRVs-16 EKF is designed for protection of the connected load by automatically disconnecting it if the supply voltage is out of bounds. An embedded microcontroller measures the supply voltage and outputs it to the integrated LCD. Switching is performed by an electromagnetic relay. Trip setpoints and reset time delay can be set using the buttons on the front panel of the device. Setpoints are saved in non-volatile memory.

APPLICATION

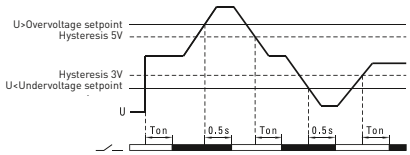
MRVs-16 EKF socket-mounted digital voltage monitoring relays can be used for:
- protection of sensitive equipment and appliances from damage caused by over- or undervoltage at the individual socket level;
- monitoring of power supply quality;
- display of circuit voltage.

TECHNICAL DATA

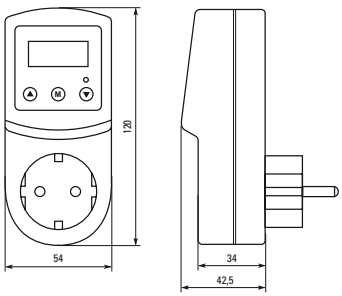
Parameters	Values
Rated supply voltage, V AC	230 / 240
Operating voltage, V AC	100-400
Rated frequency, Hz	50 / 60
Overvoltage range, V	220–280
Undervoltage range, V	160–210
Hysteresis, undervoltage, V	3
Hysteresis, overvoltage, V	5
Undervoltage tripping time, s	0,5
Overvoltage tripping time, s	0,5 (<285V); 0,1 (≥285V); <0,02 (≥380V)
Voltage measurement error, %	≤1
Output contacts	1NO
Degree of protection	IP20
Pollution degree	3
Electrical life, cycles	100 000
Mechanical life, cycles	1 000 000
Max. altitude above sea level, m	2000
Operating temperature, °C	-20 to +55
Max. relative humidity	50% at 40°C (non-condensing)
Storage temperature, °C	-30 to +70
Rated current*, A	16

Installation and operation

After energizing the device, the display will show the countdown to activation. If the supply voltage is within the range, after the countdown is finished (10s by default) the relay will energize the load on and the green "ON" LED will light up. If the voltage is out of bounds, the relay will remain off until the voltage stabilizes within the set range. If the voltage is above the overvoltage setpoint, an "O" symbol will be blinking, if the voltage is below the undervoltage setpoint, a "U" symbol will be blinking.
In order to set the desired setpoints, press and hold the "M" button on the front panel of the devices for 3 seconds.

Function diagram	Description
	Ton – reset time delay, s 1s step Adjustment 5-600s (15s by default)

Overall and installation dimensions (mm)



Delivery scope

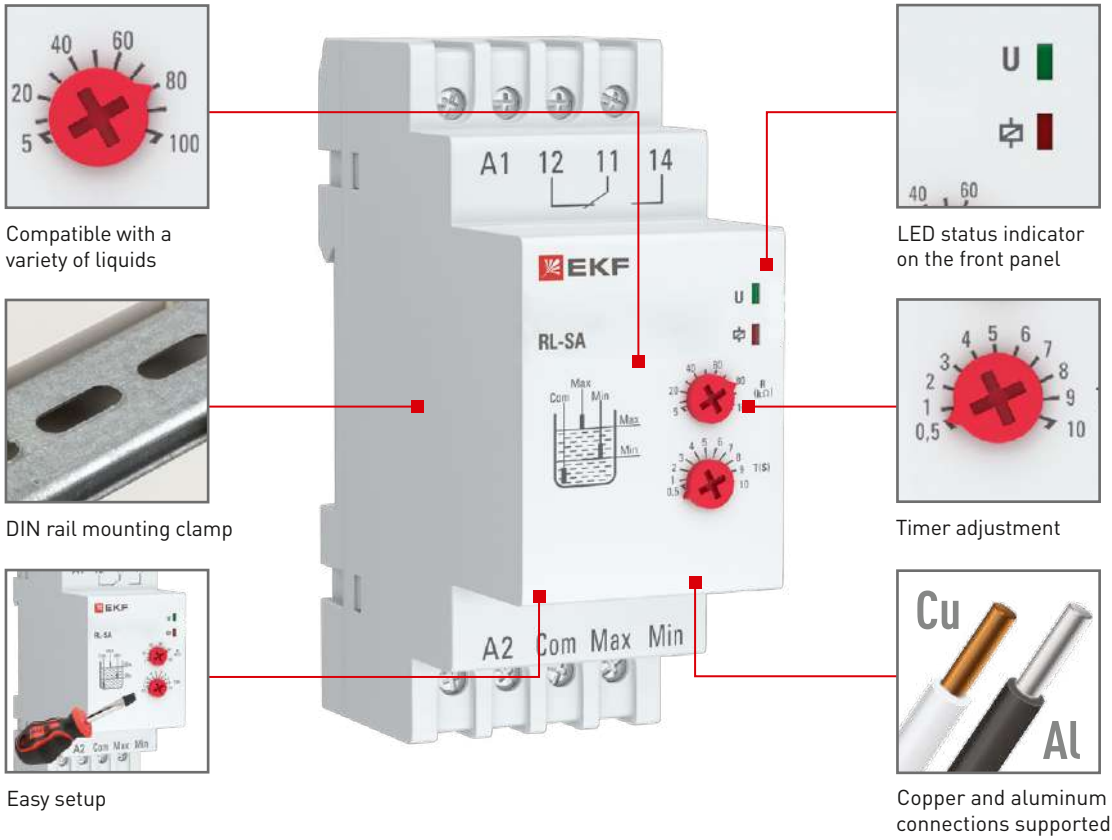
1. Digital voltage monitoring relay MRVs-16
2. Technical manual

Name	Rated current, A	Rated power, kW	Plug/Socket type	Item code
Digital socket voltage monitoring relay MRVs-16 EKF	16	3,5	Schuko	RVF-3-63a

Level monitoring relay (universal, 1 or 2 levels) RL-SA EKF

Level monitoring relay RL-SA EKF is an electronic switching device with an embedded microcontroller, designed to monitor the level of conductive liquids and to control electric pump motors. The relay can be used both for filling and emptying the reservoirs with a delay off timer. The relay can accept control signal from either two or three sensors (see wiring diagrams). **WARNING!** Do not use the relay with flammable or explosive liquids. **WARNING!** Level sensors are not included.

Standard: IEC/EN 60947-5-1



APPLICATION

The relay is used in industrial equipment to control the level of various conductive liquids:

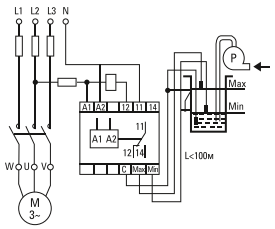
- control of the minimum liquid level;
- control of the maximum liquid level;
- control of switching equipment.

TECHNICAL DATA

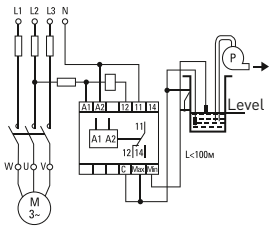
Parameters	Values
Rated voltage, V	230 / 240,, 50-60 Hz
Rated impulse voltage, V AC	380
Power consumption, VA	⩽ 1,5
Sensitivity, kOhm	5 to 100
Set-point accuracy, %	⩽ 5
Repeatability, %	⩽ 0,2
Electrical life, cycles	100 000
Mechanical life, cycles	1 000 000
Conventional thermal current, A	5
Utilization category	AC-15
Contacts	1C/O (one change-over)
Rated load current, A	1 × 1,5 at 230 V
Interference immunity	3 in accordance with IEC 61000-4
Max. altitude above sea level, m	2000
Degree of protection	IP20
Pollution degree	3
Operating temperature, °C	-5 to +40
Storage temperature °C	-25 to +75
Connection	Screw terminals, max. conductor cross-section 2,5 mm²

Wiring diagrams

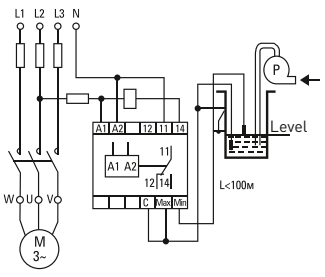
Three contacts (fill)



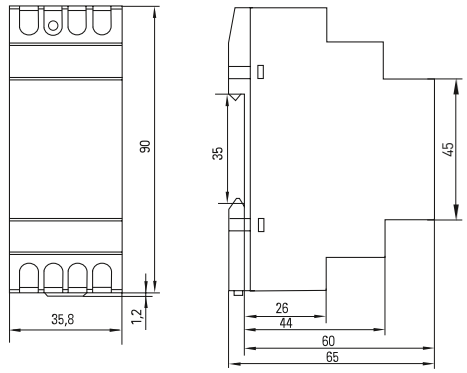
Two contacts (empty)



Two contacts (fill)



Overall and installation dimensions (mm)



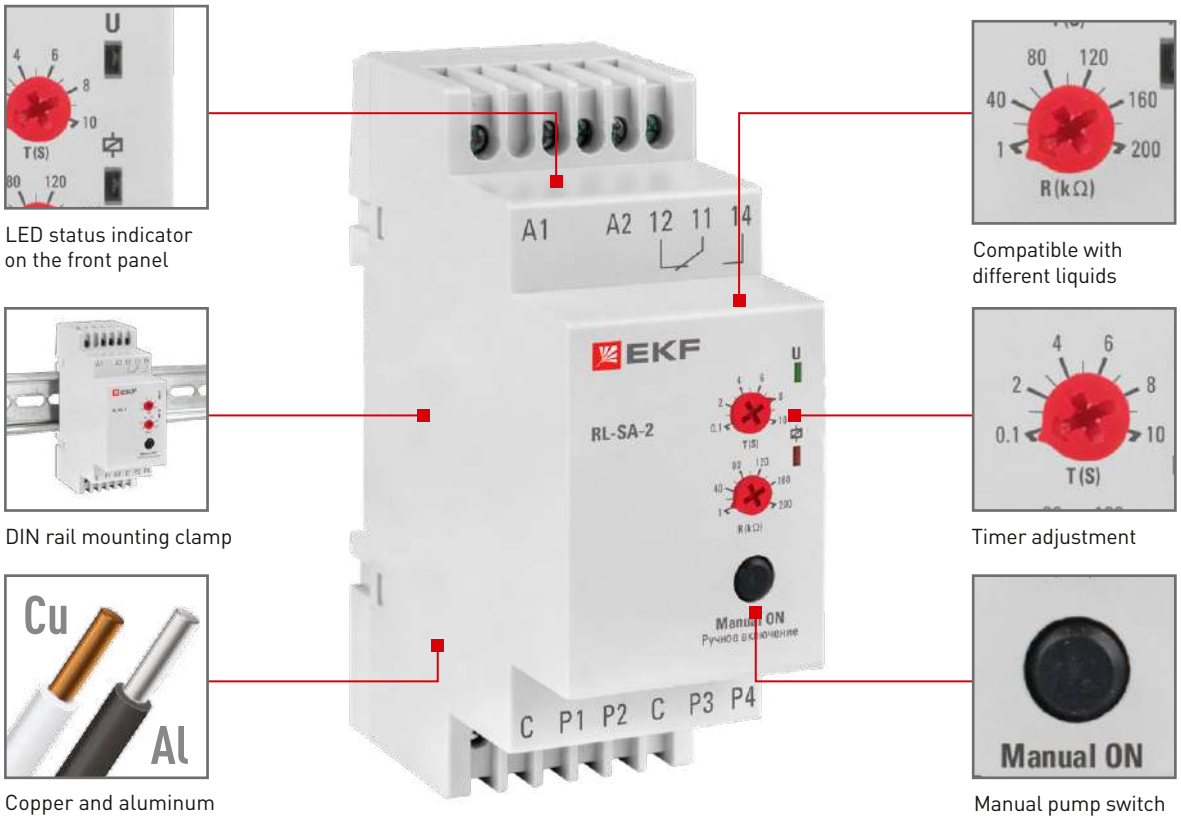
Delivery scope

1. Level monitoring relay (universal, 1 or 2 levels) RL-SA EKF

Name	Tightening torque, N·m	Mounting	Item code
Level monitoring relay (universal, 1 or 2 levels) RL-SA EKF	0,5	35 mm DIN rail	rl-sa

Level monitoring relay for two tanks RL-SA-2 EKF

Level monitoring relay for two tanks RL-SA-2 EKF is an electronic switching device with an embedded microcontroller, designed to monitor the level of conductive liquids and to control electric pump motors in order to fill or drain reservoirs with a delay off timer. The relay can accept control signal from either two or three sensors (see wiring diagrams). **WARNING!** Do not use the relay with flammable or explosive liquids. **WARNING!** Level sensors are not included.



LED status indicator on the front panel

Compatible with different liquids

DIN rail mounting clamp

Timer adjustment

Copper and aluminum wire connections supported

Manual pump switch

APPLICATION

The relay is used in industrial equipment to control the levels of various conductive liquids:
- control of the minimum liquid level;
- control of the maximum liquid level;
- control of switching equipment.

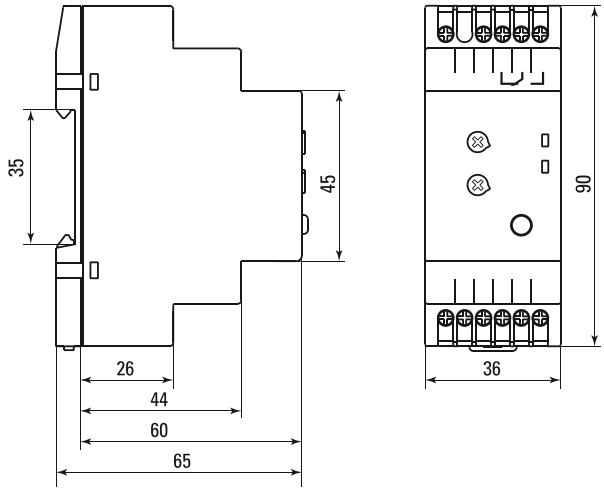
TECHNICAL DATA

Parameters	Values
Rated supply voltage, V AC	230 / 240
Insulation voltage, V	415
Rated frequency, Hz	50 / 60
Power consumption, VA	≤1,5
Sensitivity, kOhm	5-200
Timer adjustment, s	0,1–10
Set-point accuracy, %	≤5
Electrical life, cycles	100 000
Mechanical life, cycles	1 000 000
Max. altitude above sea level, m	2000
Contacts	1 C/O (one change-over)
Rated load current, A	8 (AC1)
Max. altitude above sea level, m	2000
Degree of protection	IP20
Pollution degree	3
Operating temperature, °C	- 25 to +50
Max. relative humidity	≤ 50% at 40°C (non-condensing)
Storage temperature, °C	-30 to +75
Connection	Screw terminals, max. conductor cross-section 2,5 mm²

Installation and operation

Setup
Install and secure the relay in the intended location.
Select one of the two operating modes (two or three sensors), and desired operation type (fill or empty).
Wire the relay as per appropriate wiring diagram (in order to use two sensors, bridge contacts C and P4/P2).
Energize the relay, the LED "U" will light up green. Set the sensitivity.
Connect the sensors, place them within the reservoir/tank and fill it.
Rotate the sensitivity dial until the "中" LED lights up.
Set the desired delay off timer value.

Overall and installation dimensions (mm)



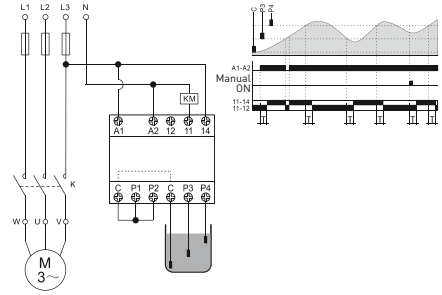
Delivery scope

1. Level monitoring relay for two tanks RL-SA-2 EKF

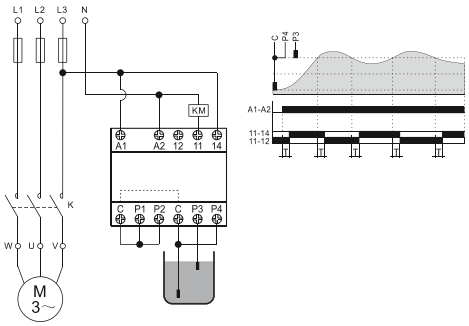
Name	Mounting	Item code
Level monitoring relay for two tanks RL-SA-2 EKF	35 mm DIN rail	rl-sa-2

Wiring diagrams

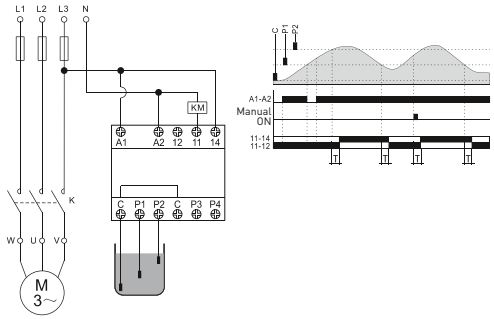
Single tank. Three sensors (fill)



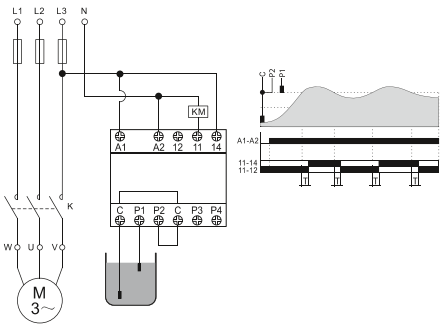
Single tank. Two sensors (fill)



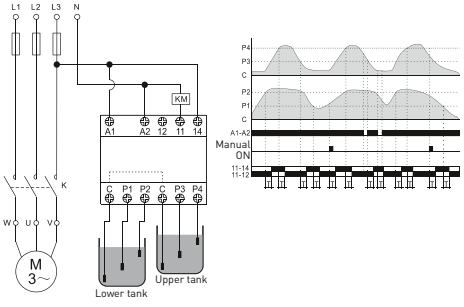
Single tank. Three sensors (empty)



Single tank. Two sensors (empty)



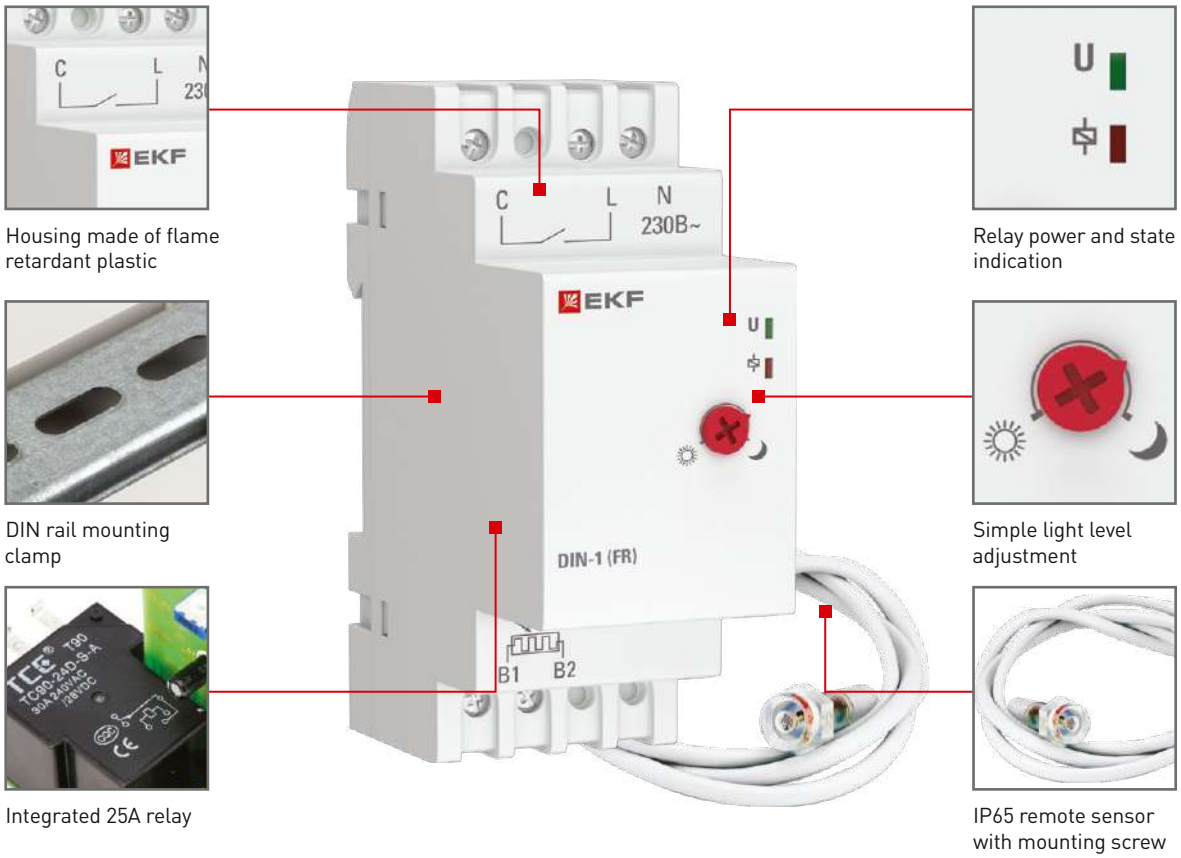
Two tanks. Two sensors (empty)



Twilight relay with remote sensor DIN-1 (FR) EKF

Twilight relay with remote sensor DIN-1 (FR) EKF is an electronic switching device (photo relay) designed to control a lighting circuit, energizing and de-energizing it during sunset and daybreak accordingly, using a remote light sensor as a source of the control signal. Light sensitivity can be adjusted using a dial on the front panel of the device (in the 2 to 100 lux range). Copper and aluminum wire connections are supported.

Standard: IEC/EN 60947-5-1



Housing made of flame retardant plastic

DIN rail mounting clamp

Integrated 25A relay

Relay power and state indication

Simple light level adjustment

IP65 remote sensor with mounting screw

APPLICATION

The twilight relay is used for outdoor lighting (streets, courtyards, squares, etc.) and performs the following functions:

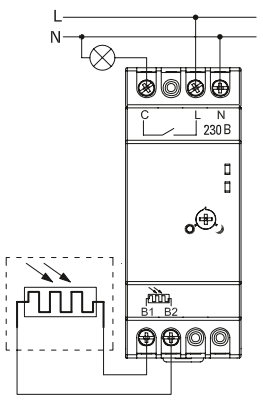
- illumination control;
- lighting control (up to 25 A).

TECHNICAL DATA

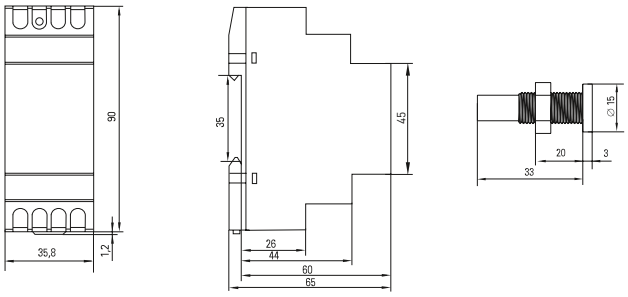
Parameters	Values		
Rated voltage, V	230 / 240		
Rated frequency, Hz	50 / 60		
Maximum load current, A	25		
Switching threshold, lux	2-100 (adjustable)		
Delay on, s	2 - 5		
Delay off, s	10-15		
Recommended total load	Incandescent light	Halogen light	Fluorescent light
Load, W	3000	3000	1300
Degree of protection	IP65 (remote sensor); IP20 (relay housing)		
Hysteresis, lux	1,2		
Operating temperature, °C	-25 to +40		
Sensor	Remote		
Sensor cable length (included), m	2		
Max sensor cable length, m	50 (min. 1 mm² cross-section)		

Wiring diagrams

DIN-1 (FR)



Overall and installation dimensions (mm)



Delivery scope

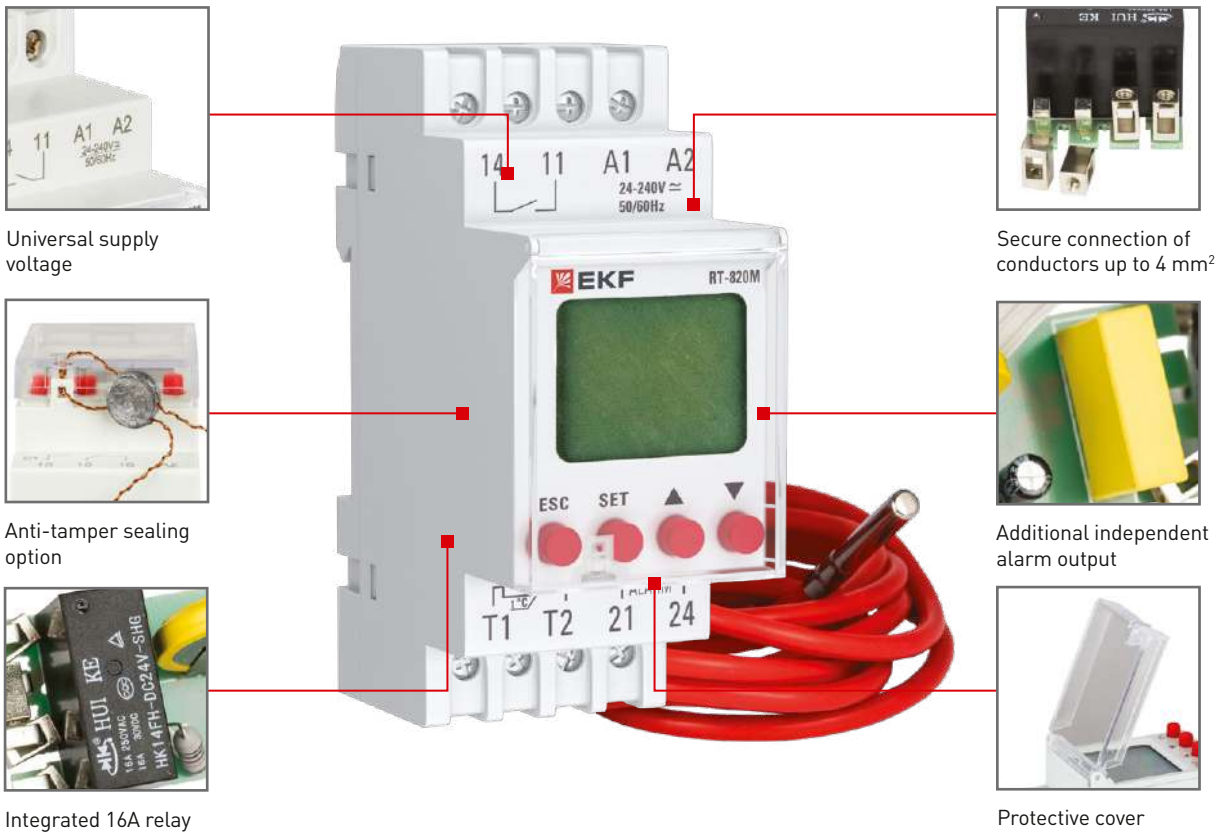
1. Twilight relay with remote sensor DIN-1 (FR) 2-100Lx 25A 3000W EKF
2. Remote light sensor with cable (2m).

Name	Rated current, A	Item code
Twilight relay with remote sensor DIN-1 (FR) 2-100Lx 25A 3000W EKF	25	fr-din-1-25

Temperature monitoring relay with display RT-820M EKF

Temperature monitoring relay RT-820M EKF is a sensing device that controls the connected equipment based on the changes in the ambient temperature in the room where it is installed. The relay is equipped with an LCD that shows primary parameters, including the current temperature. The relay is shipped with a -30 to +130 °C thermocouple and is equipped with an additional alarm contact.

Standards: IEC/EN 60947-1; IEC/EN 60947-5-1



APPLICATION

RT-820M EKF temperature monitoring relay is used in industrial and household applications for underfloor heating, ventilation, control of various heating elements and protection of equipment from overheating. Designed for:

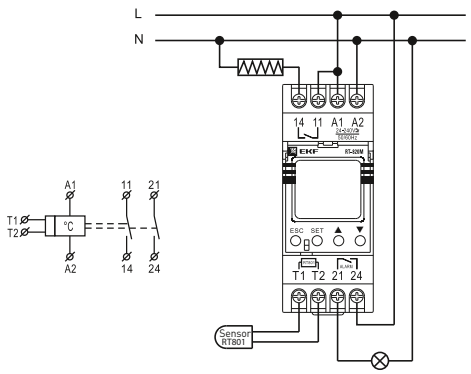
- activation and shutdown of the load when the temperature threshold is reached;
- display of the current temperature value;
- critical temperature alarm signaling;
- direct switching of single-phase load (up to 16 A);
- contactor and starter control.

TECHNICAL DATA

Parameters	Values
Rated voltage Un, V	AC/DC 24-240
Rated frequency, Hz	50 / 60
Rated insulation voltage, V	415
Maximum switching current at 250V, A	16
Utilization category	AC1
Temperature setpoint range, °C	-25 to +130
Hysteresis, °C	1 to 30
Temperature reading adjustment, °C	-9 to +9
Adjustment step, °C	1
Rated current (alarm contact), A	2
Type and number of contacts	1 NO (+ 1 NO alarm)
Switching capacity	4000VA/AC-1, 300W/DC
Max. power consumption, VA	1,5
Electrical life, cycles	10^5
Mechanical life, cycles	10^6
Max. conductor cross-section, mm^2	2,5
Tightening torque, N·m	0,5
Degree of protection, relay	IP20
Degree of protection, sensor	IP65
Max weight, g	200
Rated current of the alarm contact	2A/250V AC-1
Temperature sensor type	KTY 81-210
Sensor name	RT801
Wire insulation material	Silicone
Operating temperature, °C	-20 to +55
Max. altitude above sea level, m	2000
Max. relative humidity at 40°C (non-condensing), %	50
Pollution degree	3
Position in space	Free
Mounting	35mm DIN rail

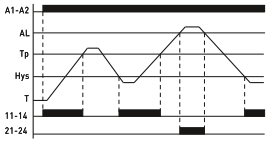
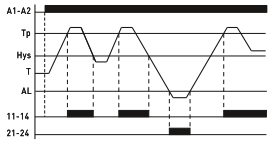
Wiring diagrams

RT-820M

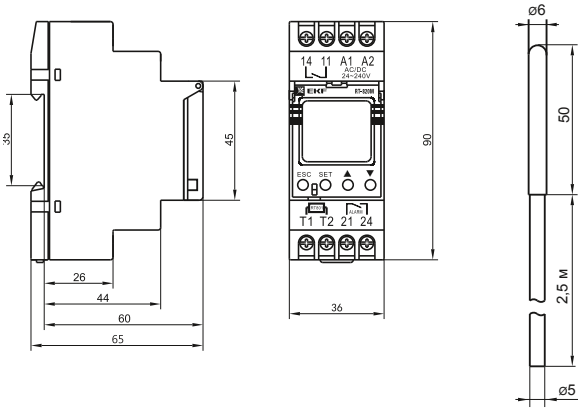


Installation and operation

The device is mounted on a standard 35mm DIN rail.
Install the temperature sensor in the desired medium/location, connect the relay to the sensor and to the power supply as per wiring diagram.
The phase power conductor is connected to terminal A1, the neutral power conductor is connected to terminal A2. A heating element or cooler is connected to terminals 11 (common) and 14. If the power of the connected equipment exceeds the rated switching power of the contacts, the load must be controlled by an additional switching device, e.g. a contactor.

Function diagram	Description
Heating mode 	If the measured temperature T is less than the value of the setpoint Tp minus hysteresis (Hyst), the output contact (11–14) closes. When the temperature rises above the setpoint Tp, the output contact (11-14) opens. If the value of the measured temperature T rises above the alarm value AL, the output contact (21-24) closes.
Cooling mode 	If the measured temperature T is higher than the value of the setpoint Tp, then the output contact (11–14) closes. When the temperature falls below Tp minus hysteresis (Hyst), the output contact (11-14) opens. If the measured temperature T falls below the alarm value AL, the output contact (21-24) closes.

Overall and installation dimensions (mm)



Delivery scope

1. Temperature monitoring relay with display RT-820M EKF
2. Remote temperature sensor

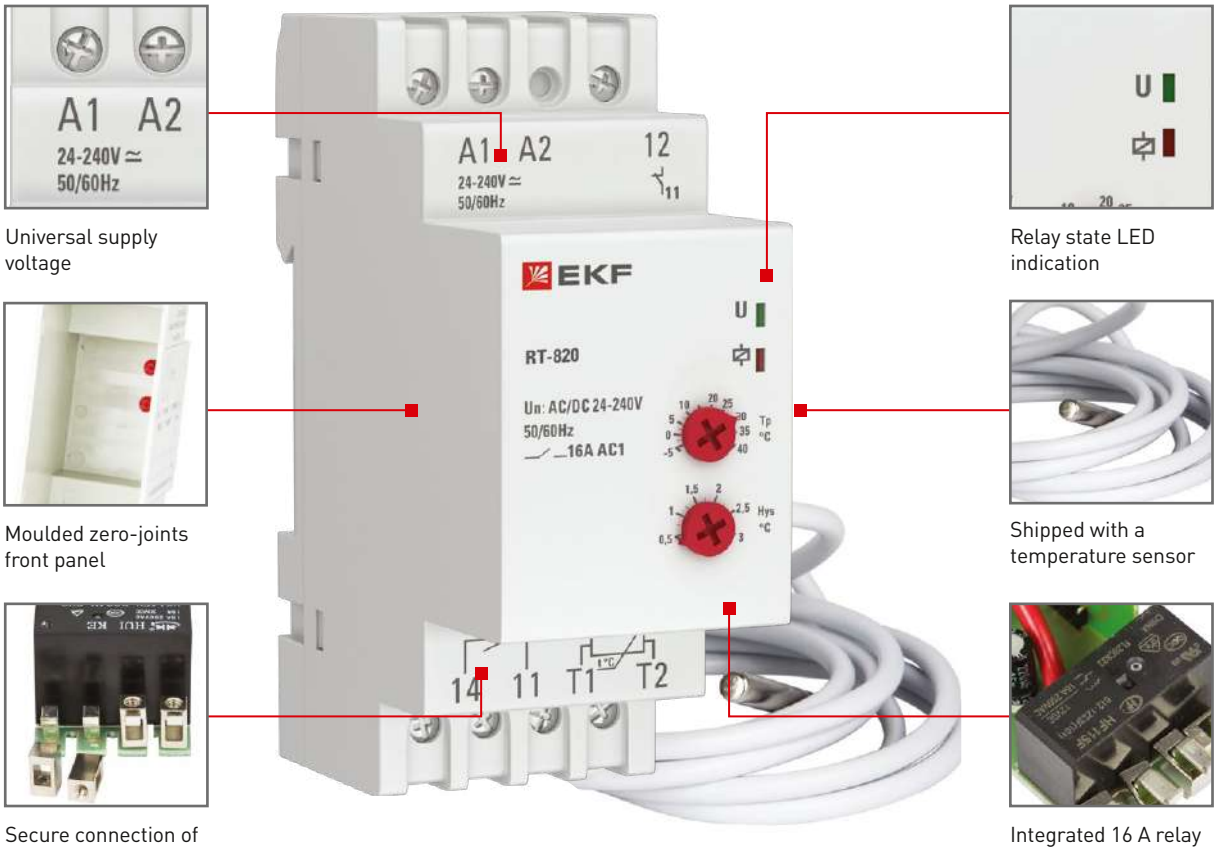
For all available documentation, scan the QR-code on the insert or on the inside of the package.

Name	Supply voltage (Ue), V	Tightening torque, N*m	Mounting	Item code
Temperature monitoring relay with display RT-820M EKF	AC/DC 24-240	0,5	35 mm DIN rail	rt-820m

Temperature monitoring relay RT-820 EKF

Temperature monitoring relay RT-820 EKF is a sensing device that controls the connected equipment based on the changes in the ambient temperature in the room where it is installed. The relay is shipped with a -5 to +40 °C thermocouple. Copper and aluminum wire connections are supported.

Standards: IEC/EN 60947-1; IEC/EN 60947-5-1



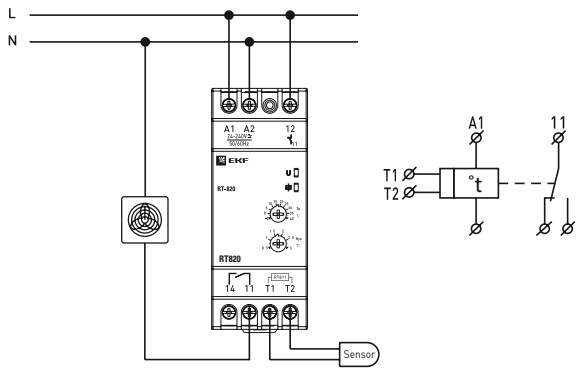
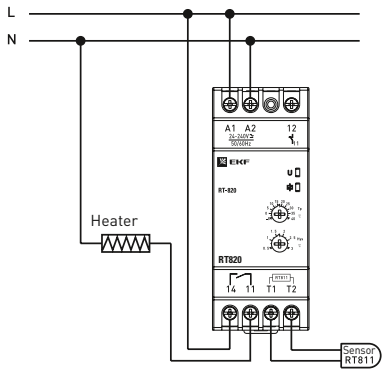
APPLICATION

RT-820 EKF temperature monitoring relay is used in industrial and household applications for underfloor heating, ventilation, control of various heating elements and protection of equipment from overheating. Designed for:

- activation and shutdown of the load when the temperature threshold is reached;
- direct switching of single-phase load (up to 16 A);
- contactor and starter control.

TECHNICAL DATA

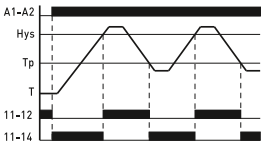
Wiring diagrams

Cooling	Heating
	

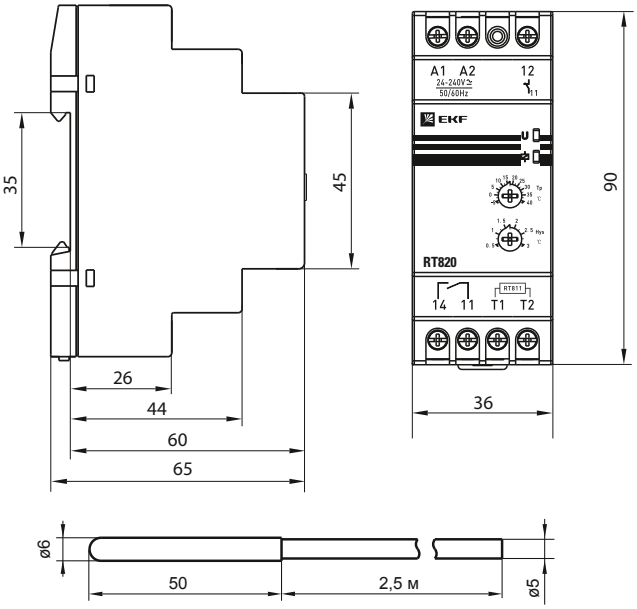
Parameters	Values
Rated voltage Un, V	AC/DC 24-240
Rated frequency, Hz	50 / 60
Rated insulation voltage, V	415
Maximum switching current at 250V, A	16
Utilization category	AC1
Temperature setpoint range, °C	-5 to +40
Hysteresis, °C	-0,5 to +3
Type and number of contacts	1 C/O
Switching capacity	4000VA/AC-1, 300W/DC
Max. power consumption, VA	1,5
Electrical life, cycles	10^5
Mechanical life, cycles	10^6
Max. conductor cross-section, mm²	2,5
Tightening torque, N·m	0,5
Degree of protection, relay	IP20
Degree of protection, sensor	IP65
Max weight, g	200
Temperature sensor type	NTC
Sensor name	RT811
Wire insulation material	High-temperature PVC
Operating temperature, °C	-20 to +55
Max. altitude above sea level, m	2000
Max. relative humidity at 40°C (non-condensing), %	50
Pollution degree	3
Position in space	Free
Mounting	35mm DIN rail

Installation and operation

The device is mounted onto a standard 35mm DIN rail. Connect the relay as per wiring diagram.
The phase power conductor is connected to terminal A1, the neutral power conductor is connected to terminal A2. The heating element is connected to terminals 11 (common) and 14, and the fan is connected to terminals 11 and 12. If the power of the connected equipment exceeds the rated switching power of the contacts, the load must be controlled by an additional switching device, e.g. a contactor.
Use potentiometer dials on the front panel to set the required temperature and hysteresis setpoints.
Connect the external sensor to terminals T1 and T2 and install it in the monitored space. If the supplied cable is not long enough (standard length 2,5 meters), it can be extended, however, the maximum length of the cable must not exceed 10 meters.

Function diagram	Description
	When the supply voltage is applied to terminals A1 and A2, the green "U" LED is illuminated. If the measured temperature T is less than the set value Tp+Hys, the output contact (11-14) is closed. When the temperature rises above the setpoint Tp+Hys, the output contact closes (11–12). If the value of the measured temperature T becomes lower than the set hysteresis value, contacts (11–14) will, once again, close.

Overall and installation dimensions (mm)



Delivery scope

1. Temperature monitoring relay RT-820 EKF.
2. Remote temperature sensor.

Name	Supply voltage (Ue), V	Tightening torque, N·m	Mounting	Item code
Temperature monitoring relay RT-820 EKF	AC/DC 24-240	0,5	35 mm DIN rail	rt-820

Pulse relays RIO EKF

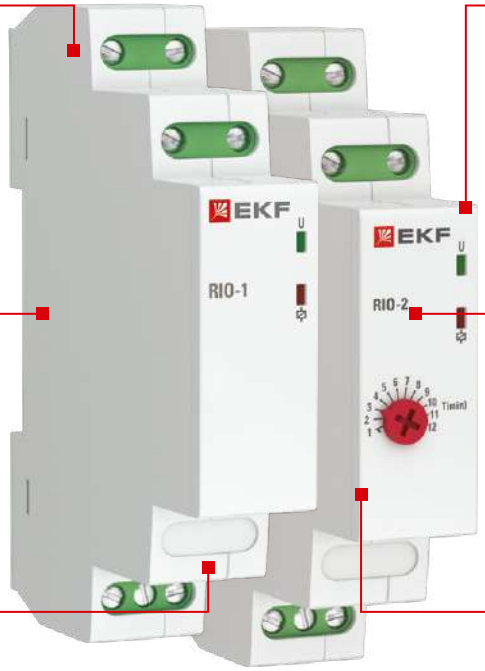
Pulse relays RIO EKF are designed to switch lighting or other electrical equipment over a two-wire network from multiple points using parallel connected momentary switches. This simplifies the control circuit, reduces circuit losses and the amount of laid cable, compared to a circuit with pass-through switches. Pulse relay control circuits are compatible with illuminated switches. Both copper and aluminum wire connections are supported.

Standards: IEC/EN 60947-1; IEC/EN 60947-5-1

Flame-retardant housing

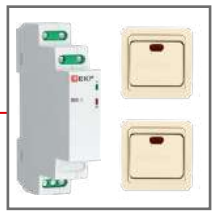
DIN rail mount

Integrated 10 A relay



Power and load status display

Adjustable timer from 1 to 12 minutes



Control over connected load from several locations

APPLICATION

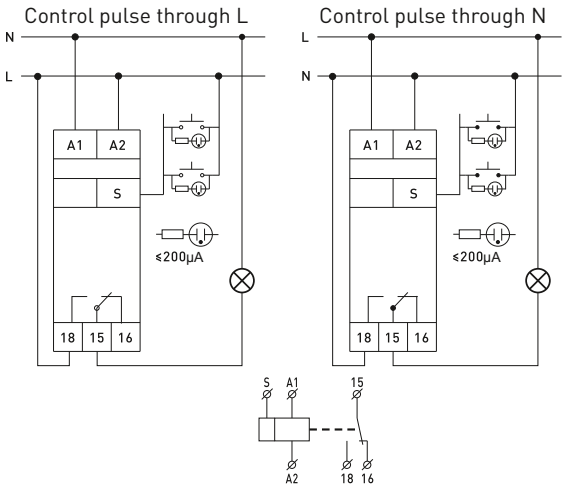
Pulse relays are used in industrial, administrative, and residential buildings:

- to control the lighting in staircases, halls, lobbies, and outdoors;
- to control domestic exhaust fans;
- emergency lighting systems.

TECHNICAL DATA

Wiring diagrams

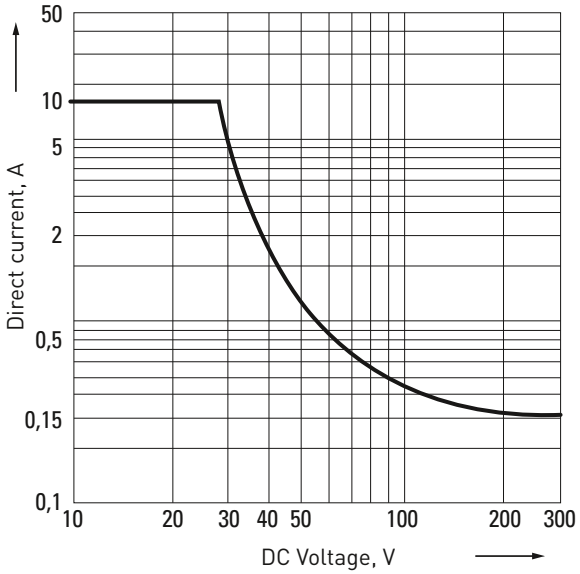
RIO

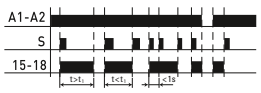


Parameters	Values
Rated supply voltage Un, V AC	230 / 240
Rated frequency, Hz	50 / 60
Rated control circuit voltage, V	230
Rated contact current, (AC-1) A	10
Insulation voltage Ui, V	250
Utilization category	AC1
Type and number of contacts	1 C/O
Control current, mA	≤1
Max. power consumption, VA	0,8
Electrical life, cycles	10^5
Mechanical life, cycles	10^6
Max. conductor cross-section, mm^2	1,5
Tightening torque, N·m	0,5
Degree of protection	IP20
Max weight, g	100
Operating temperature, °C	-5 to +40
Max. altitude above sea level, m	2000
Max. relative humidity at 40°C (non-condensing), %	60
Pollution degree	3
Position in space	Free
Mounting	35mm DIN rail

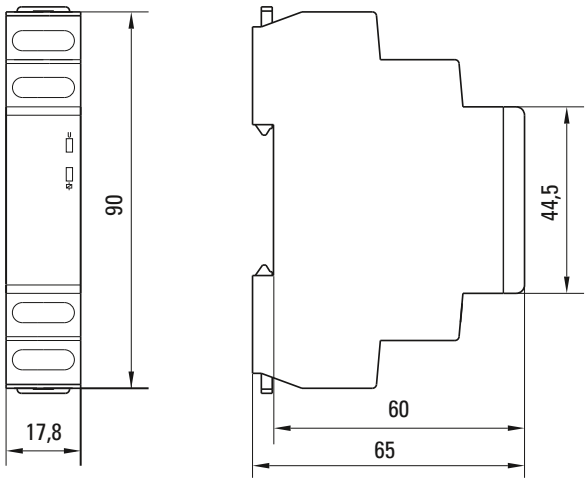
Installation and operation

The product is installed onto 35 mm DIN rail in the distribution enclosure.
To avoid interference, false tripping, or malfunctioning of the relay, do not route the relay power supply wires along with the power wiring. If necessary, use shielded cable. If a large number of relays (10 or more) are installed within the same enclosure, we recommend installing a 0,15–0,33 μF AC275V capacitor between pins A1 and S.
Screw terminals support copper and aluminium conductors with max. cross-section of 1,5 mm^2. Before connecting stranded conductors, terminate them with a cord end terminal or a sleeve using an appropriate crimper.
Pulse relays are compatible only with momentary (non-latching) switches.
Relay does not require any additional maintenance. Tighten screw terminals of the relay once every 6 months.
Switching capacity vs. switching voltage for DC-1 utilization category is specified in the chart below.



Function diagram	Description
RIO-1 	When a momentary switch is closed and the control signal pulse is received, the output contact 15-18 closes and the red LED lights up. When the pulse is repeated, the contact opens and the red LED turns off. The relay does not have a memory function, i.e. when the power is off, contacts 15-18 open and will remain open after the power is back on.
RIO-2 	When a momentary switch is closed and the control signal pulse is received, the output contact 15-18 closes and the red LED lights up. When the pulse is repeated, the contact opens and the red LED turns off. The relay is switched off by pressing the momentary switch or after the integrated timer finishes the countdown. The relay is switched to the continuous mode by pressing the momentary switch twice within a second, until the next pulse (momentary switch activation). The relay has a memory function, i.e. when the power is off, contacts 15-18 open, and after the power is back on, the contacts close.

Overall and installation dimensions (mm)



Delivery scope

1. Pulse relay RIO EKF
2. For all available documentation, scan the QR-code on the insert or on the inside of the package.

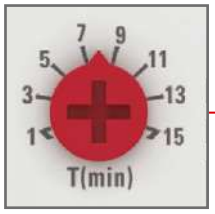
Name	Delay time	Tightening torque, N·m	Item code
Pulse relay RIO-1 EKF	–	0,5	rio-1
Pulse relay with off delay RIO-2 EKF	1-12 min	0,5	rio-2

Pulse relays RIO compact EKF

Pulse relays RIO compact EKF are designed to switch lighting or other electrical equipment over a two-wire network from multiple points using parallel connected momentary switches. This simplifies the control circuit, reduces circuit losses and the amount of laid cable, compared to a circuit with pass-through switches.

Standards: IEC/EN 60947-1; IEC/EN 60947-5-1

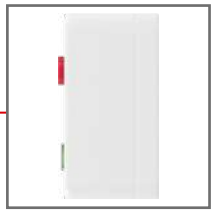
For junction box installation



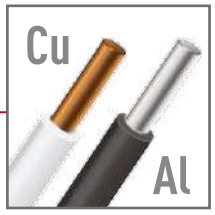
Adjustable timer from 1 to 15 minutes

Integrated 16 A relay

Load control from several locations



Flame retardant plastic housing



Copper and aluminum wire connections supported

APPLICATION

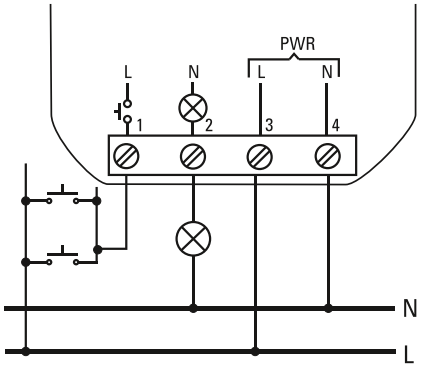
Pulse relays are used in industrial, administrative, and residential buildings:

- to control the lighting in staircases, halls, lobbies, and outdoors;
- to control domestic exhaust fans;
- emergency lighting systems;
- lighting control for areas where a delayed light deactivation is desirable.

TECHNICAL DATA

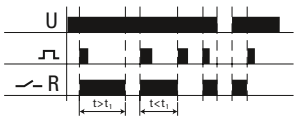
Wiring diagrams

RIO compact

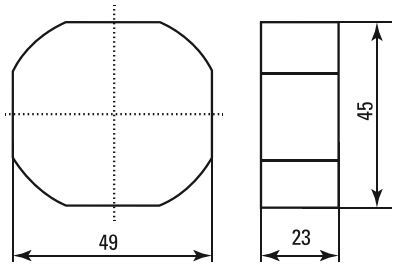


Parameters	Values
Rated supply voltage Un, V AC	230 / 240
Rated frequency, Hz	50 / 60
Rated control circuit voltage, V	230
Insulation voltage Ui, V	250
Utilization category	AC1
Type and number of contacts	1 NO
Control current, mA	≤1
Max. power consumption, VA	0,8
Electrical life, cycles	10^5
Mechanical life, cycles	10^6
Max. conductor cross-section, mm^2	1,5
Tightening torque, N·m	0,5
Degree of protection	IP20
Max weight, g	50
Operating temperature, °C	-5 to +40
Max. altitude above sea level, m	2000
Max. relative humidity at 40°C (non-condensing), %	60
Pollution degree	3
Position in space	Free
Mounting	Junction box

Installation and operation

Function diagram	Description
RIO-1 compact RIO-2 compact 	RIO-1 compact relay does not have a memory function, i.e. when the power is off, contacts open, and will remain open after the power is back on. RIO-2 compact has a memory function, i.e. when the power is off, the contacts open, and after the power is back on, the contacts reclose. Relays can be used with backlit button switches.

Overall and installation dimensions (mm)



Delivery scope

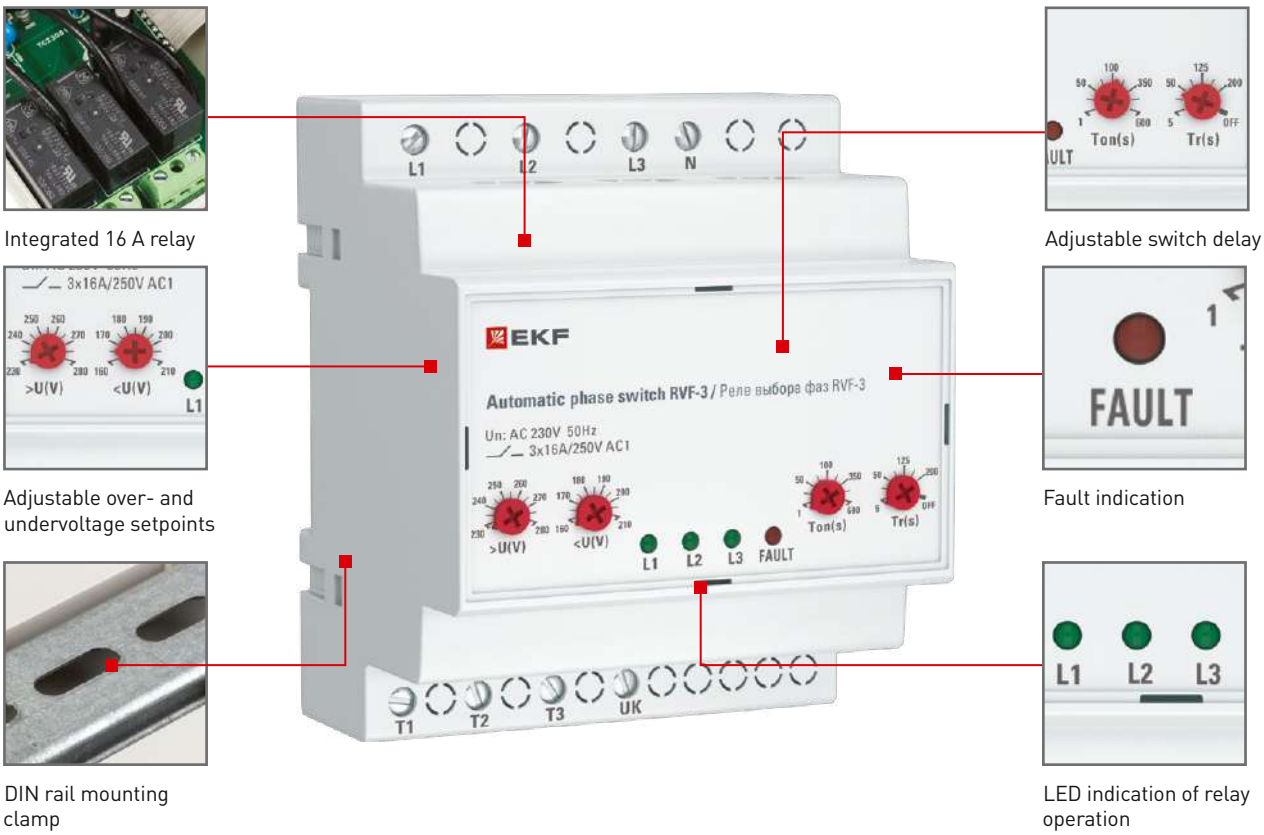
1. Pulse relay RIO compact EKF
2. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Name	Rated contact current, A	Time delay, min	Item code
Pulse relay RIO-1 compact 10A EKF	10	–	rio-1k-10
Pulse relay RIO-2 compact 10A EKF		1–15	rio-2k-10
Pulse relay RIO-1 compact 16A EKF	16	–	rio-1k-16
Pulse relay RIO-2 compact 16A EKF		1–15	rio-2k-16

Automatic phase switch RVF-3 EKF

Automatic phase switch RVF-3 EKF is a relay designed to provide single-phase power to a 230V/50(60) Hz load from a three-phase network. The relay switches the power supply of a single-phase load depending on the availability and quality of the phase voltage on L1, L2 and L3 conductors. The L1 phase conductor is treated as a priority supply. If the voltage on the priority phase is out of bounds, the relay switches the load to another phase. If the voltage on the reserve phases does not correspond to the operating thresholds, then the load is switched off.

Standards: IEC/EN 60947-1; IEC/EN 60947-5-1



APPLICATION

RVF-3 EKF automatic phase switch is used in single-phase power circuits that require increased reliability (telecom equipment racks, lighting, ventilation, etc.) and performs the following functions:

- undervoltage monitoring;
- overvoltage monitoring;
- phase loss monitoring;
- automatic load transfer to available phase.

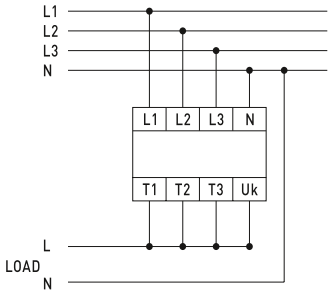
TECHNICAL DATA

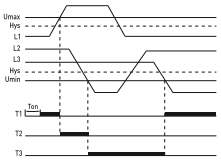
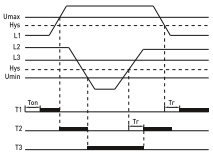
Parameters	Values
Input terminals	N, L1, L2, L3
Rated supply voltage, V	AC 3 × 230(N-L1/L2/L3)
Rated frequency, Hz	50 / 60
Overvoltage setpoint range, V	230–280
Undervoltage setpoint range, V	160–210
Automatic re-closing time delay, s	1–600
Return to priority phase delay, s	5–200
Backup phase switching delay, s	<0,2
Voltage hysteresis, V	6
Voltage measurement error, %	<1
Maximum operating voltage, V	400
Maximum impulse withstand voltage, V	450

Parameters	Values
Maximum switching current, A	16 (AC1)
Pollution degree	3
Electrical life, cycles	10^5
Mechanical life, cycles	10^6
Degree of protection, relay	IP20
Max. altitude above sea level, m	⩽2000
Operating temperature, °C	- 25 to +50
Max. relative humidity	⩽50% at 40°C (non-condensing)
Pollution degree	3
Storage temperature, °C	-25 to +55
Max. conductor cross-section, mm^2	2,5
Tightening torque, N·m	0,5

Wiring diagrams

RVF-3



Function diagram	Description
	Relay operation without delay return to the priority phase
	Relay operation with delay return to the priority phase

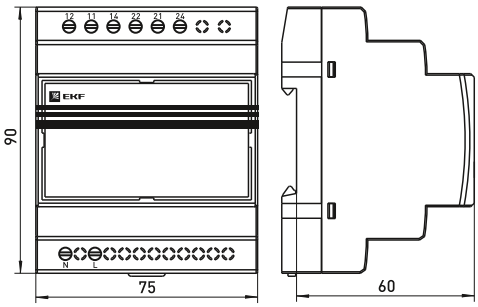
Installation and operation

1. The device is mounted on a standard 35mm DIN rail.
2. Connect the relay as per wiring diagram.
3. If the load current is over 16 A, use contactors rated for the appropriate current.
4. Turn on the power and check the operation of the relay.
5. The output voltage must be constant.

Delivery scope

1. Automatic phase switch RVF-3 EKF.
2. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Overall and installation dimensions (mm)



Name	Supply voltage (Ue), V	Tightening torque, N·m	Mounting	Item code
Automatic phase switch RVF-3 EKF	AC 3 × 230(N-L1/L2/L3)	0,5	35 mm DIN rail	rvf-3

Automatic phase switch with display RVF-3-63A EKF

Automatic phase switch RVF-3-63A EKF is a relay designed to provide single-phase power to a 230V/60(3) Hz load from a three-phase network. An embedded microcontroller measures the supply voltage and outputs it to the integrated digital LCD. The relay switches the power supply of a single-phase load depending on the availability and quality of the phase voltage on L1, L2 and L3 conductors. The L1 phase conductor is treated as a priority supply, the L3 - as the lowest priority supply.

APPLICATION

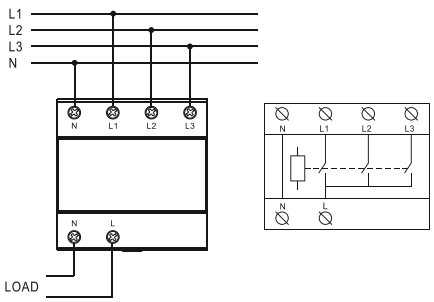
RVF-3-63A EKF automatic phase switch is used in single-phase power circuits that require increased reliability (telecom equipment racks, lighting, ventilation, etc.) and performs the following functions:

- undervoltage monitoring;
- overvoltage monitoring;
- phase loss monitoring;
- automatic load transfer to available phase.

TECHNICAL DATA

Wiring diagrams

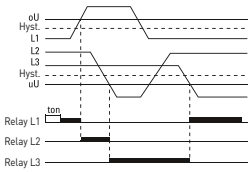
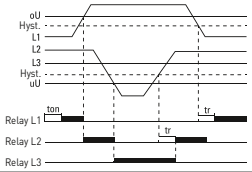
RVF-3



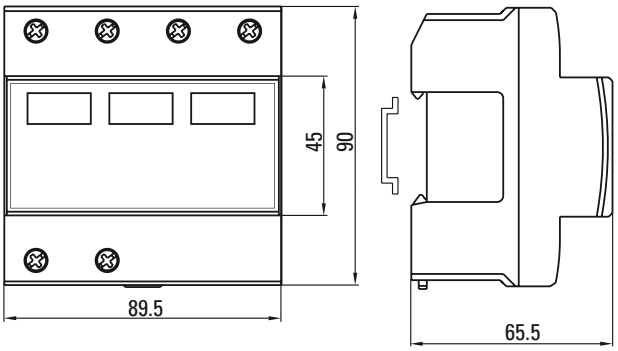
Parameters	Values
Rated supply voltage, V	AC 3 × 230 (N-L1/L2/L3)
Rated frequency, Hz	50 / 60
Backup phase switching delay, s	<0,2
Voltage hysteresis, V	5
Voltage measurement accuracy, %	<2
Maximum operating voltage, V	400
Minimum operating voltage, V	50
Maximum impulse withstand voltage, V	450
Pollution degree	3
Electrical life, cycles	10^5
Mechanical life, cycles	10^6
Degree of protection, relay	IP20
Max. altitude above sea level, m	≤2000
Operating temperature, °C	- 25 to +50
Max. relative humidity	≤50% at 40°C (non-condensing)
Storage temperature, °C	-40 to +55

Installation and operation

Mount the device onto a 35 mm wide DIN rail. Connect the wires as per wiring diagram. The cross section of the wires must correspond to the maximum load current. To protect against short circuits, install a circuit breaker with a tripping current of no more than 63 A upstream of the relay.
When the relay is switched on for the first time or after being de-energized, the display will show the turn-on countdown "ton". After this, one of the relays will switch, and voltage will appear at the output. To manually turn the relay on and off, press the power button.
Indicators L1, L2, L3 on the front panel indicate which phase is currently supplying power. When switching the load between phases, the device monitors the disconnection of the electromechanical relays, and in the event of them "sticking", the error indicator will light up.
Follow the instructions to change the default settings. The buttons are located on the front panel, below the display.

Function diagram	Description
	Relay operation without return to the priority phase. oU - maximum voltage uU - minimum voltage ton - turn-on time delay, s
	Relay operation with delay return to the priority phase (5-200 s): oU - maximum voltage uU - minimum voltage ton – turn-on delay range, s tr – priority phase return delay range, s

Overall and installation dimensions (mm)



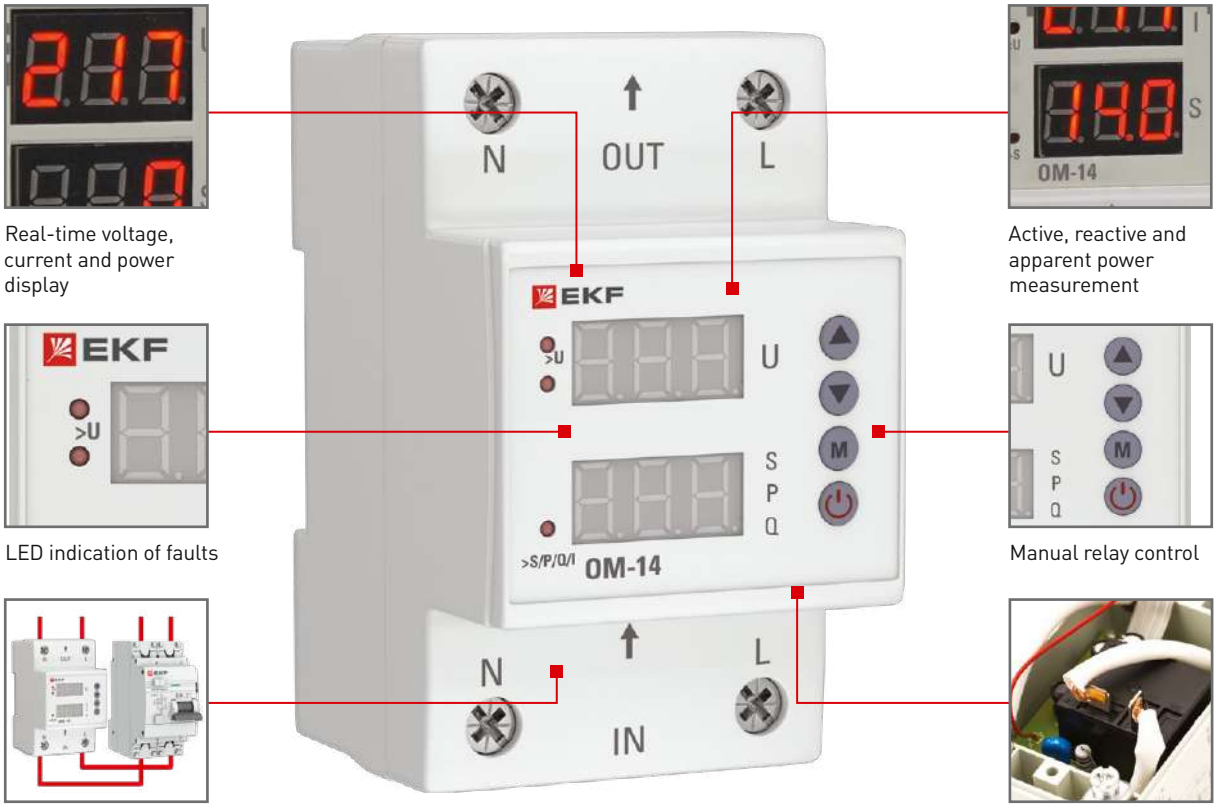
Delivery scope

1. Automatic phase switch with display RVF-3-63A EKF.
2. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Name	Max. current (10 minutes), A	Rated current, A	Rated power, kW	Item code
Automatic phase switch with display RVF-3-63A EKF	80	63	14	RVF-3-63a

Power limiter OM-14 EKF

Power limiter OM-14 EKF is a sensing device that monitors the electrical power consumed by the load (up to 14 kVA/kVAr/kW) and turns off the consumer if the consumption level exceeds the power limit. The power limiter is able to measure not only apparent, but also active and reactive power. Switching is performed by the integrated relay without additional external contactors.



Real-time voltage, current and power display

Active, reactive and apparent power measurement

LED indication of faults

Manual relay control

Load up to 14 kVA

Integrated relay up to 80A

APPLICATION

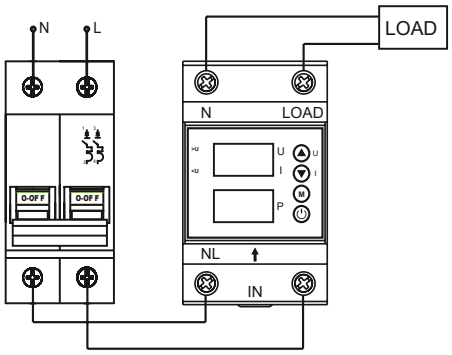
OM-14 EKF power limiter is used in administrative, industrial and residential buildings and performs the following functions:

- overvoltage, undervoltage protection;
- load shedding when the power consumption threshold is exceeded;
- display of voltage, current, and power values.

TECHNICAL DATA

Wiring diagrams

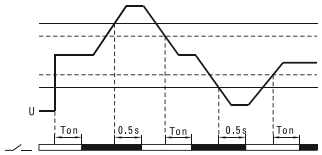
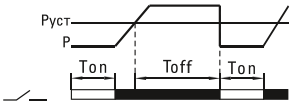
OM-14



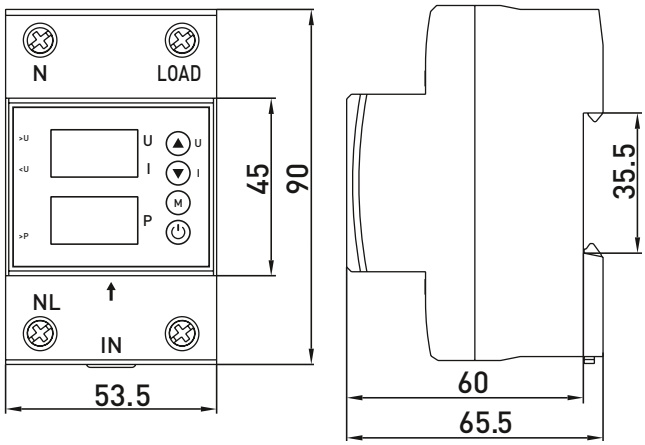
Parameters	Values
Supply voltage Un, V AC	80–320
Rated frequency, Hz	50 / 60
Adjustable power range, kVA	0,1–14,0
Overvoltage range, V	220–280
Undervoltage range, V	120–210
Maximum load current, A	80
Utilization category	AC1
Hysteresis, V	2
Turn-on/reset delay, s	5–300
Switching delay, s	5–600
Overvoltage protection trip delay, s	<285V: 0,1; ≥285V: 0,02
Undervoltage protection trip delay, s	>120V: 0,1; ≤120V: 0,02
Voltage measurement error, %	≤1,5
Current and power measurement error, %	≤3
Number of reclosing cycles	0-20
Rated insulation voltage Ui, V	400
Mechanical life, cycles	10^6
Electrical life, cycles	10^5
Altitude above sea level, m	2000
Operating temperature, °C	-5 to +40
Storage temperature °C	-5 to +55
Degree of protection	IP20

Installation and operation

Connect the wires as per wiring diagram. The cross section of the wires must correspond to the maximum load current. To protect against overload and short circuit, install a circuit breaker before the relay. Circuit breaker tripping current must be in-line with the power limit of the relay. To avoid damaging stranded wire conductors by the terminal screws, use the appropriate cord end terminals. After the device is energized, the numeric display will show supply voltage and start blinking. Blinking display indicates that there is no voltage at the output of the device. If the supply voltage is within the set range, after the Ton time (5 sec. by default) the load will be switched on and the indicator will stop flashing. If the voltage is out of bounds, the load will not be connected to the network until the voltage returns to normal. If, after the reset, the voltage remains out of bounds, an associated error LED will be blinking.

Function diagram	Description
 Ton – Start time delay	When the supply voltage falls out of bounds, the relay switches the load off after 0,1 seconds. When the voltage returns to the setpoint-limited range, taking into account the hysteresis, the relay turns on.
 Ton – start time delay Toff – restart time delay	When power is applied at the relay input, the relay turns on after the turn-on delay time Ton. When the power goes beyond the allowable limits, the relay disconnects the load after the turn-off delay time Toff.

Overall and installation dimensions (mm)



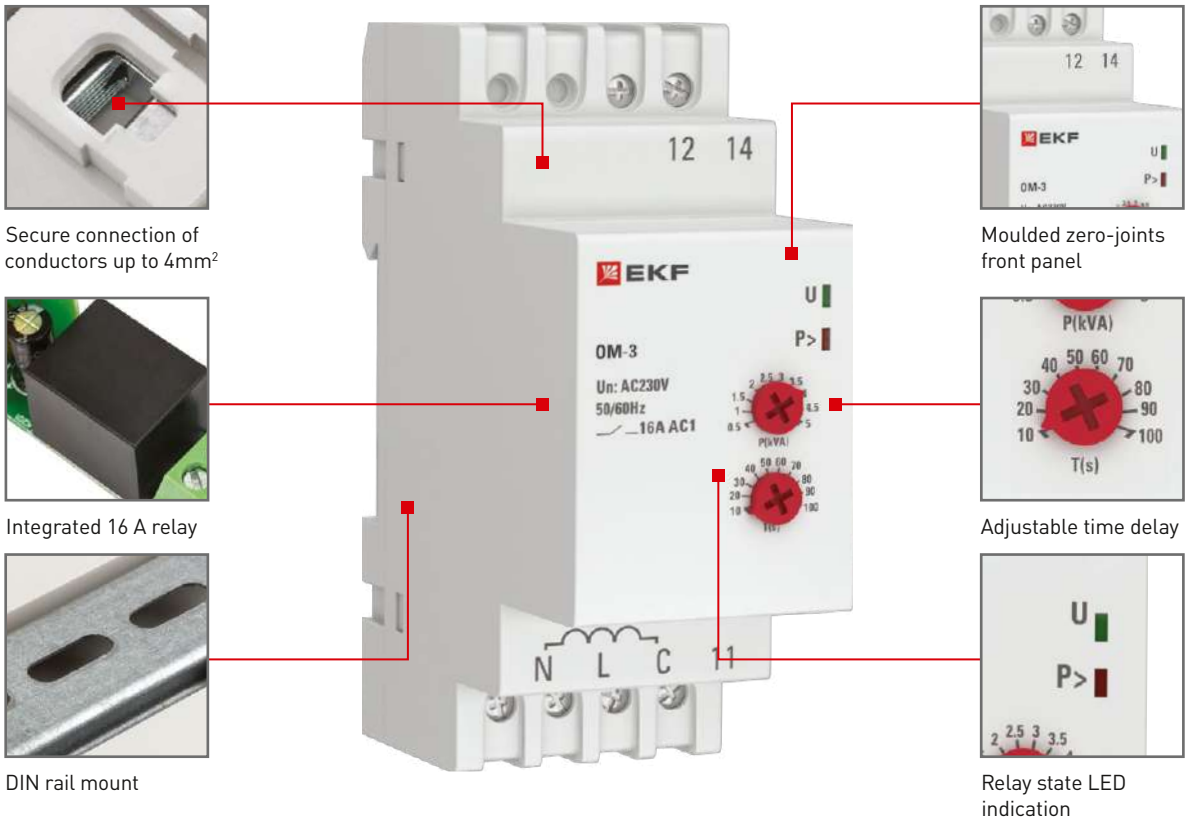
Delivery scope

1. Automatic phase switch with display RVF-3-63A EKF.
2. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Name	Supply voltage	Tightening torque, N·m	Mounting	Item code
Power limiter OM-14 EKF	AC-DC 24-240	0,5	35 mm DIN rail	rel-pl-14

Power limiter OM-3 EKF

Power limiter OM-3 EKF is a sensing device that monitors the electrical power consumed by the load (up to 5 kVA) and turns off the consumer if the consumption level exceeds the power limit. Switching can take place either directly (up to 2 kVA) or via a contactor (up to 5 kVA). Both copper and aluminum wire connections are supported.



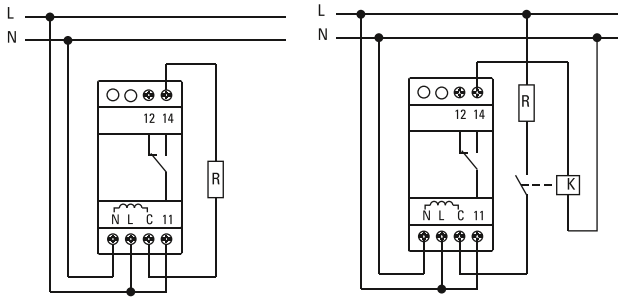
APPLICATION

OM-3 EKF power limiter is designed for power consumption monitoring in single-phase circuits and automatic load shedding in the event of:
- power consumption in excess of the setpoint value;
- downstream short circuit fault;
- detected unauthorized public circuit connection.

TECHNICAL DATA

Wiring diagrams

Load with power consumption less than or equal to 2 kW	Load with a power consumption of more than 2 kW, load control via a contactor



Parameters	Values
Supply voltage, V	230 / 240
Rated frequency, Hz	50 / 60
Maximum load current, A	16
Utilization category	AC1
Hysteresis, %	2
Contacts	1 NO
Power limit range, kVA	0,5 to 5
Measurement error, %	≤10
Shutdown delay, sec.	1,5
Turn-on delay (adjustable), s	10–100
Operating temperature, °C	-20 to +55
Degree of protection	IP20

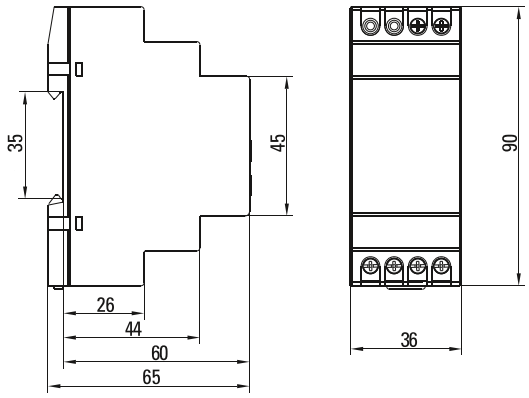
Installation and operation

1. The device is mounted onto a standard 35mm DIN rail.
2. Connect the relay as per wiring diagram.
3. Connect power to terminals N and L.
4. If the power of the connected equipment exceeds the rated switching power of the contacts (2kVA), the load must be controlled by an additional switching device, e.g. a contactor.
5. Use potentiometer dials on the front panel to set the required power limit and reset time delay.
6. Position in space - vertical or horizontal.
7. The device shall be mounted and connected by qualified electrical personnel only.

Delivery scope

1. Power limiter OM-3 EKF.
2. For all available documentation, scan the QR-code on the insert or on the inside of the package.

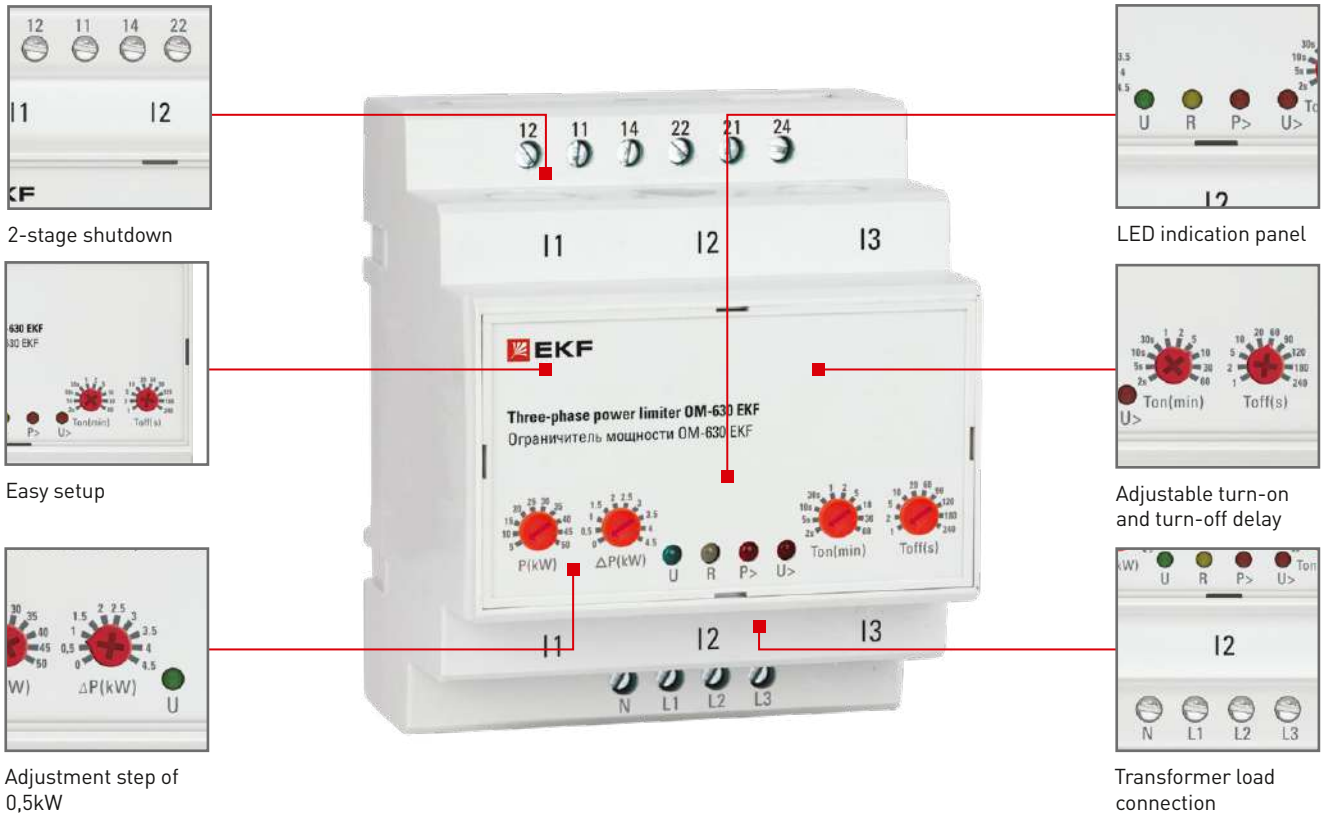
Overall and installation dimensions (mm)



Name	Supply voltage, V	Tightening torque, N·m	Mounting	Item code
Power limiter OM-3 EKF	AC-DC 24-240	0,5	35 mm DIN rail	rel-pl-3

Three-phase power limiter OM-630 EKF

Three-phase power limiter OM-630 EKF is designed for continuous monitoring of the power consumption and disconnecting the load when it exceeds the maximum power limit, as well as for protecting the power circuit from short circuit fault. The power limiter protects consumers (load) from voltage surges that occur in three-phase networks when the neutral is lost. The limiter controls the voltage and the current consumed by the load using an integrated current transformer, calculates the effective power consumption per each phase, sums up the values (Pset=Pa+Pb+ Pc) and when the power value P rises above the set value (P>Pset) disconnects the load for the time set by the operator.



APPLICATION

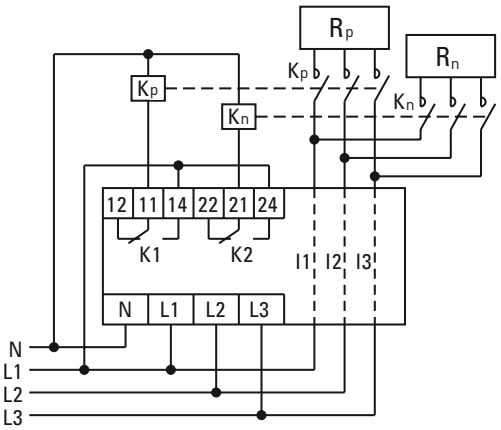
OM-630 EKF power limiter is designed for power consumption monitoring in single-phase circuits and automatic load shedding in the event of:

- power consumption in excess of the setpoint value;
- downstream short circuit fault;
- detected unauthorized public circuit connection.

TECHNICAL DATA

Wiring diagrams

OM-630



Parameters		Values
Supply voltage, V		3x150-450
Rated frequency, Hz		50 / 60
Utilization category		AC-1, AC-3
Monitored power range, kW		5...50
Power setting step, rough, kW		5
Power setting step, fine, kW		0,5
Overload shutdown time delay range (Toff), s		from 1 to 240
Re-closing delay (Ton), s		from 2 to 3600
Tripping time at:	voltage drop below 160 V, s	5
	voltage surge over 260 V, s	0,1
	current overload, s	0,1
Relay contacts current rating, A		2X8
Auxiliary contacts		2 C/O
Measurement error, %	Voltage range 50-300V	≤2
	Current range 3-100A	≤3
Current transformer openings diameter, mm		10,5
Operating temperature, °C		-25 to +50
Degree of protection		IP20

Installation and operation

The load is divided into two groups: priority load Rp, which should preferably stay energized, and non-priority load Rn. In the event of overload, Rn is switched off immediately. If this clears the overload, Rn will stay switched off, and Rp will stay switched on. If the overload persists, Rp turns off after a set time delay Toff. When the total power consumption falls below the maximum power limit, Rp will be switched on after a set time delay of Ton, then, after the same time delay, the load Rn will be switched on as well. Advantages: priority load is not immediately disconnected from the supply, total consumer load can be higher than total available power supply. For proper functioning, Rn should not exceed 25% of the total load.

Installation

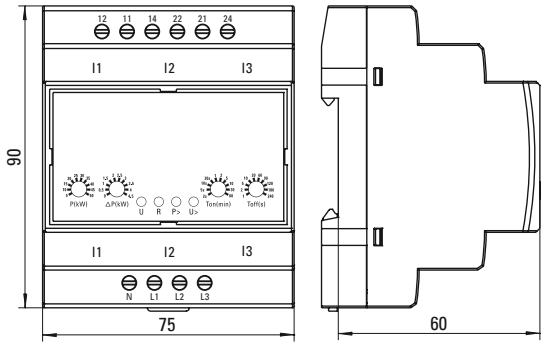
The device shall be mounted and connected by qualified electrical personnel only. The product must be connected to a three-phase network observing all applicable rules and regulations. Make sure that the conductors are not live before beginning the installation.

Connection

- De-energize the supply circuit.
- Connect the neutral wire to terminal N and the phase wires to terminals L1, L2, L3. Connect contactors to terminals 12, 11, 14, 22, 21, 24 as per supplied selected wiring diagram.
- Pass the load power supply wires through the pass-through openings in the housing, the wire from the L1 phase through the leftmost opening and the wire from the L3 phase through the rightmost.

WARNING!
If the power limiter does not measure the power correctly, check if the connection was done correctly: the power supply wire of the phase load connected to terminal L1 must go through the leftmost opening of the housing, the wire from phase L3 - through the rightmost opening.

Overall and installation dimensions (mm)



Delivery scope

1. Three-phase power limiter OM-3 EKF
2. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Name	Mounting	Tightening torque, N · m	Item code
Three-phase power limiter OM-630 EKF	35 mm DIN rail	0,5	rel-pl-630

Power Supplies DR(P) EKF

The DR(P) EKF power supply is a switched-mode power supply that converts 100-240 V AC input voltage into a stabilized DC voltage. The power supply is compact and includes overload and short circuit protection. Both copper and aluminum wire connections are supported.

APPLICATION

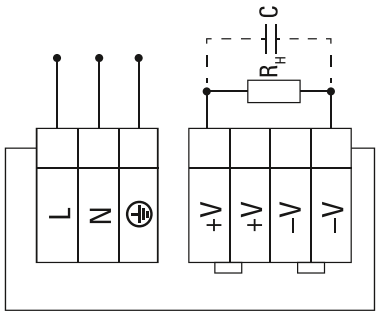
DR(P) EKF power supplies are used for power supply of motors, sensors, controllers and other equipment:

- home automation equipment;
- industrial equipment;
- standby power supply;
- video surveillance equipment;
- security alarm equipment.

TECHNICAL DATA

Wiring diagram

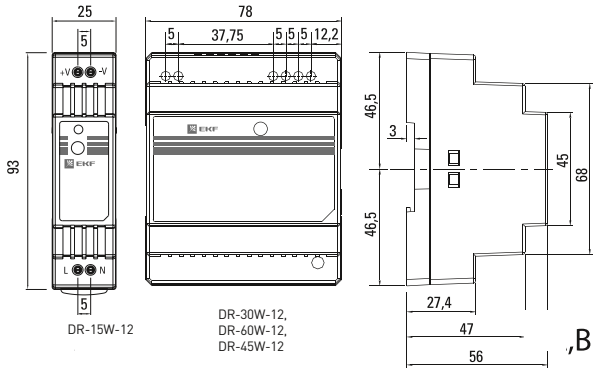
DR(P)



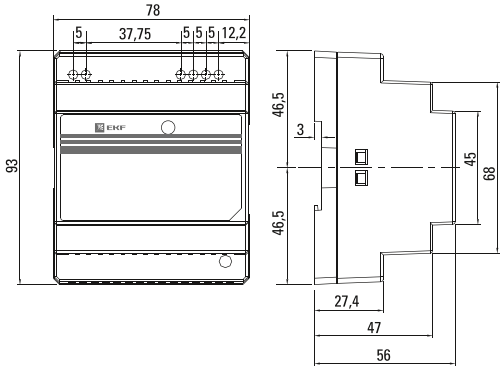
Parameters	Values	
	12 V power supply	24 V power supply
Output		
Rated output voltage, V DC	12	24
Output voltage range, V	10,8–13,2	21,6–26,4
Maximum output voltage error, %	±1,0	
Input		
Input voltage, V AC	85–264 (35–150 W); 180–264 / 90–132 (200–350 W)	
Input frequency, Hz	47–63	
Protection		
Overload trip threshold	(1,1 - 1,4) Imax	
Electrical safety		
Breakdown voltage input/output, kV	3	
Breakdown voltage input/ground, kV	1,5	
Breakdown voltage output/ground, kV	0,5	
Insulation resistance, MOhm	100 at 500 V DC	
Operation environment		
Operating temperature, °C	-20...70	
Vibration	10 - 500 Hz, 5 G 10 min / 1 cycle, 60 min duration, for each axis X, Y, Z	
Other		
Degree of protection (front panel side)	IP20	
Indication, green LED	Constant light - normal operation. Flashing light - protection has been activated	

Overall and installation dimensions (mm)

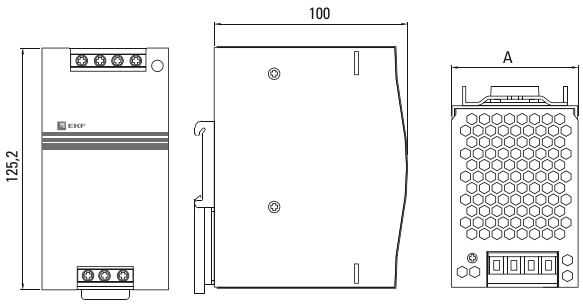
DR-15W



DR-30W, DR-60W, DR-45W



DR-75W, DR-120W, DRP-240W



Name	A, mm
DIN rail power supply 24V DR-75W-24 EKF	55,5
DIN rail power supply 24V DR-120W-24 EKF	65,5
DIN rail power supply 24V DRP-240W-24 EKF	125

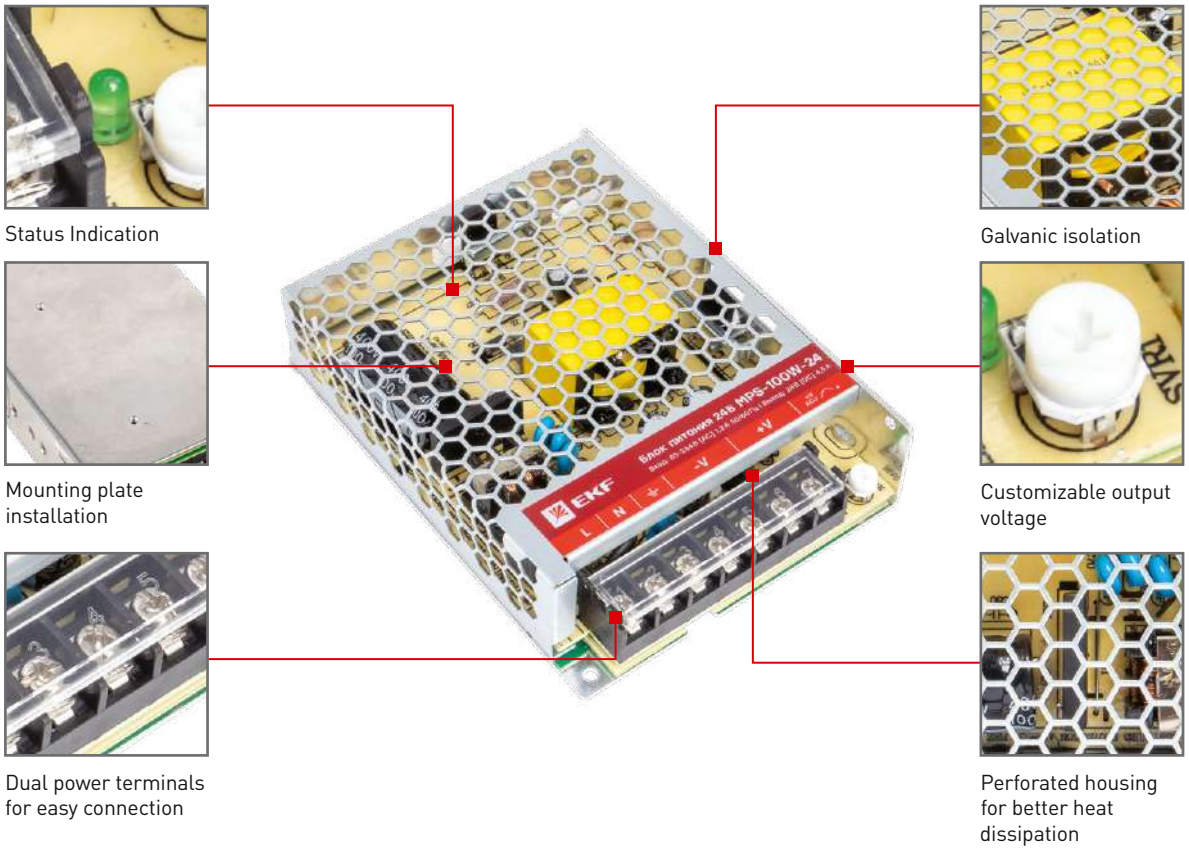
Delivery scope

1. DIN rail power supply 24V DR EKF
2. Technical manual.

Name	Output voltage, V	Output power, W	Rated output current, A	Efficiency	Item code
DIN rail power supply DR EKF	12	15	1.25	84%	dr-15w-12
	24		0,63	85%	dr-15w-24
	12	30	2	81%	dr-30w-12
	24		1,5	83%	dr-30w-24
	12	45	3,5	77%	dr-45w-12
	24		2	80%	dr-45w-24
	12	60	4.5	82%	dr-60w-12
	24		2,5	84%	dr-60w-24
	12	75	6,3	76%	dr-75w-12
	24		3.2	80%	dr-75w-24
	12	120	10	80%	dr-120w-12
	24		5	84%	dr-120w-24
DIN rail power supply DR(P) EKF	24	240	10	84%	drp-240w-24

Enclosed power supplies MPS EKF

Enclosed power supply MPS EKF is a switched-mode power supply that converts input AC voltage into a stabilized DC voltage. The power supply features compact size as well as overload and short circuit protection. Power supply units are installed onto a mounting plate.



APPLICATION

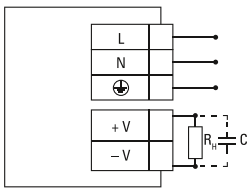
MPS EKF power supplies are used for power supply of motors, sensors, controllers and other equipment:

- home automation equipment;
- industrial equipment;
- standby power supply;
- video surveillance equipment;
- security alarm equipment.

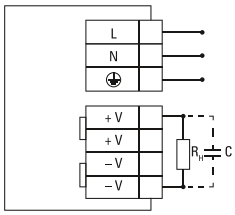
TECHNICAL DATA

Wiring diagrams

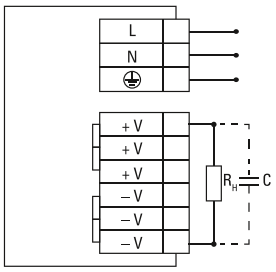
MPS-35W, MPS-50W, MPS-75W



MPS-100W, MPS-150W



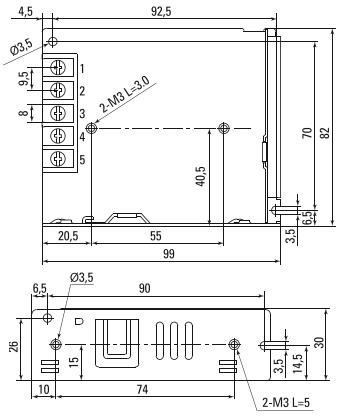
MPS-200W, MPS-350W



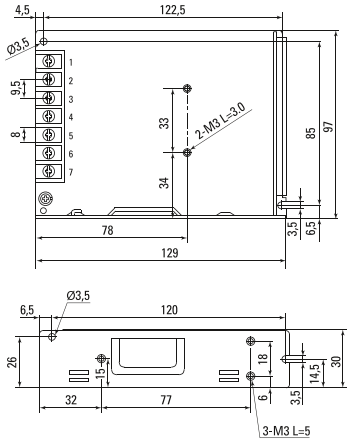
Parameters	Values	
	12 V power supply	24 V power supply
Output		
Rated output voltage, V DC	12	24
Output voltage range, V	10,2–13,8	21,6–26,4
Maximum output voltage error, %	±1,0	
Input		
Input voltage, V AC	85–264 (35–150 W) 180–264 / 90–132 (200–350 W)	
Input frequency, Hz	47–63	
Protection		
Overload trip threshold	(1,1 - 1,4) Imax	
Electrical safety		
Breakdown voltage input/output, kV	1,5	
Breakdown voltage input/ground, kV	1,5	
Breakdown voltage output/ground, kV	0,5	
Insulation resistance, MOhm	100 at 500 V DC	
Operation environment		
Operating temperature, °C	-20...70	
Vibration	10–500 Hz, 5 G 10 min / 1 cycle, 60 min duration, for each axis X, Y, Z	
Other		
Degree of protection (front panel side)	IP20	
Indication, green LED	Constant light – normal operation. Flashing light – protection has been activated	

Overall and installation dimensions (mm)

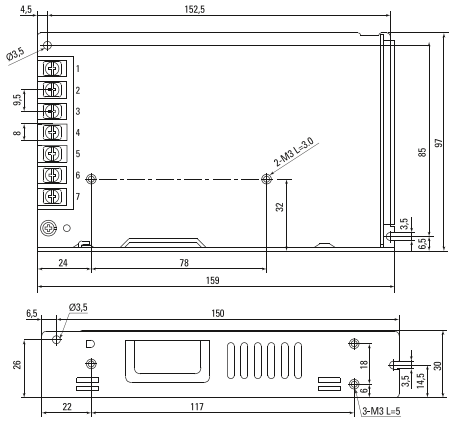
MPS-35W, MPS-50W



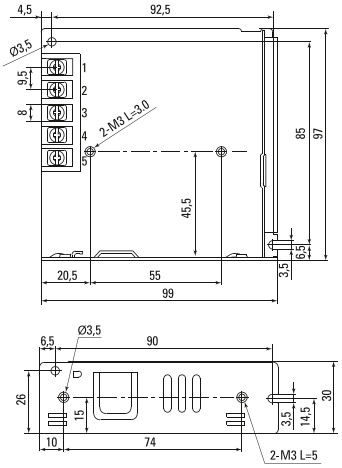
MPS-100W



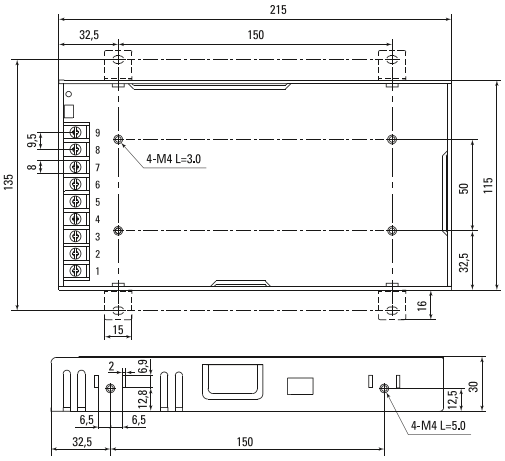
MPS-150W



MPS-75W



MPS-200W, MPS-350W



Delivery scope

1. Enclosed power supply MPS EKF.
2. Technical manual.

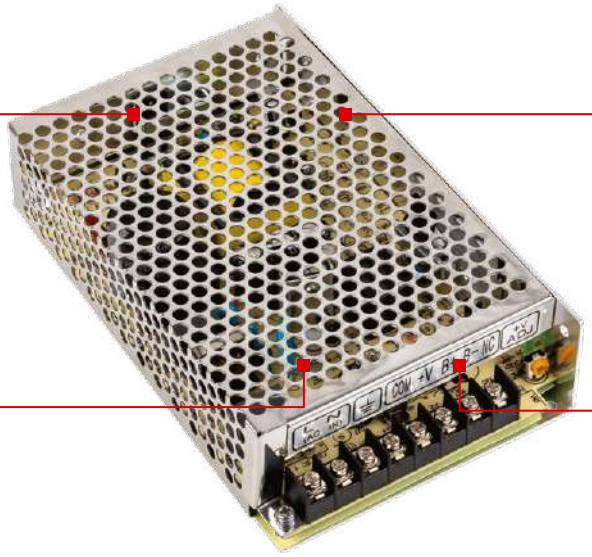
Name	Output voltage, V	Output power, W	Rated output current, A	Efficiency	Item code
Enclosed power supply MPS EKF	12	35	3,0	82%	mps-35w-12
	24		1,5	88%	mps-35w-24
	12	50	4,2	80%	mps-50w-12
	24		2,2	88%	mps-50w-24
	12	75	6	86,5%	mps-75w-12
	24		3,2	89%	mps-75w-24
	12	100	8,5	84,5%	mps-100w-12
	24		4,5	88%	mps-100w-24
	12	150	12,5	85%	mps-150w-12
	24		6,5	89%	mps-150w-24
	12	200	17,0	83%	mps-200w-12
	24		8,8	88%	mps-200w-24
	12	350	29,0	79,5%	mps-350w-12
	24		14,6	85%	mps-350w-24

Power supplies 24V with UPS function MPSu EKF

The 24V power supply with UPS function MPSu EKF is designed to supply stabilized 24 V DC voltage to electronic devices, switching to battery power when necessary. The power supply is a switched-mode power supply with overload, overheating and short circuit protection at the output.

Status Indication

Mounting plate installation



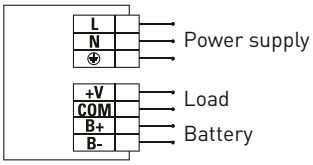
Customizable output voltage

Connection for batteries

Perforated housing for better heat dissipation

TECHNICAL DATA

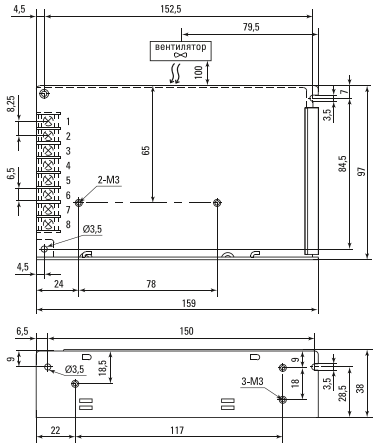
Wiring diagram



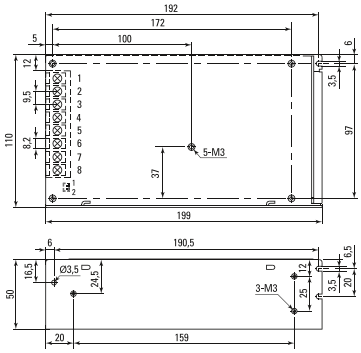
Parameters		Values	
Output	Output voltage range (+V COM), V	23,5–29	
	Rated output voltage (BAT+ BAT-), V	26,5	27,1
	Rated output current (BAT+ BAT-), A	0,16	0,50
	Recommended battery capacity, mAh	2000	5000
	Output voltage time, ms	800	1000
	Battery transfer time, ms	80	100
	Maximum output voltage error, %	1,0	
Input	Input voltage, V AC	88~264	
	Input current, A	1,5	2,0
	Input frequency, Hz	47~63	47~63
	Inrush current, A	40	45
Protection	Overload trip threshold	1,1~1,5	1,1~1,4
	Battery voltage, V	20~22	
Electrical Safety	Breakdown voltage input/output, kV	3,0	
	Breakdown voltage input/ground, kV	2,0	
	Breakdown voltage output/ground, kV	0,5	
Operation environment	Insulation resistance, MOhm	100 at 500 V DC	
	Operating temperature, °C	-10 to +60	
Vibration		10 - 500 Hz, 5 G 10 min / 1 cycle, 60 min duration, for each axis X, Y, Z	
Degree of protection		IP20 (front panel)	
Indication, green LED		Constant light – normal operation. Flashing light – protection has been activated	
Net weight, kg		0,4	0,8

Overall and installation dimensions (mm)

MPSu-55W-24



MPSu-155W-24



Delivery scope

1. Power supply 24V with UPS function MPSu EKF.
2. Technical manual.

Name	Output voltage, V	Output power, W	Rated output current, A	Efficiency	Item code
Power supply 24V with UPS function MPSu	27,6	53,9	1,8	74%	mpsu-55w-24
		151,6	5,0	84%	mpsu-155w-24

Voltage stabilizers Titan F/W EKF

The relay-based AC voltage stabilizer is designed to provide stable single-phase sine wave power that meets the requirements of EN 50160 to industrial loads when the mains power quality is substandard. The stabilizer filters out interference and does not distort the voltage waveform. If the mains voltage is too high or too low, the device equalizes it, enabling continuous operation of the equipment and protecting it from harmful voltage fluctuations.

Wide range of input voltages

Time delay 6/180 s

Transformer overheat protection

Two versions and a broad power range

VDR load protection

Stabilizer status indication

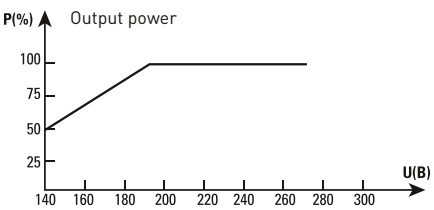
APPLICATION

Voltage stabilizers are widely used in a variety of domestic, commercial and industrial applications:

- maintaining continuous stable output voltage;
- automatic load disconnect in the event of short circuit, critical overvoltage or undervoltage;
- VDR-based pulse interference suppression.

TECHNICAL DATA

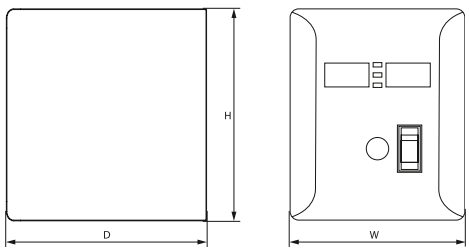
Parameters	Values
Input voltage range, V	140–260
Output voltage, V	220±8%
Mains frequency, Hz	45-65
Efficiency, %	>95
Time delay, s	6/180
Storage temperature, °C	-20 to +40
Operating temperature, °C	-20 to +40
Degree of protection	IP21
Overheat protection	Yes
Overvoltage protection	Yes (lowers the output voltage)
Continuous operation time, h	Unlimited



If the input voltage is within the 190-250 V range, the stabilizer will provide 100% of the maximum rated output power. The maximum power output will change according to the curve.

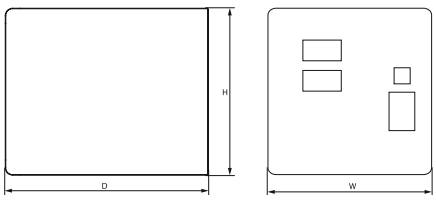
Overall and installation dimensions (mm)

F-500 – F-5000



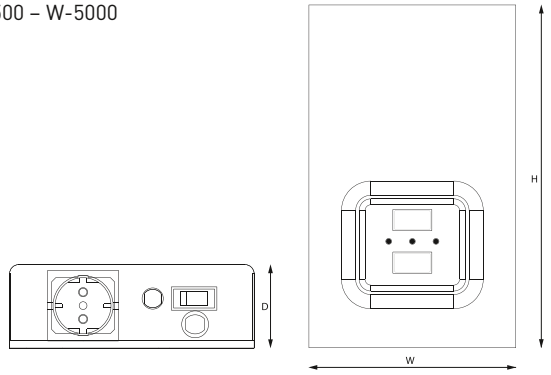
Name	D	H	W
Titan-F-500, Titan-F-1000	237	161	120
Titan-F-1500, Titan-F-2000	263	188	140
Titan-F-3000, Titan-F-5000	310	176	220

F-8000 – F-12000



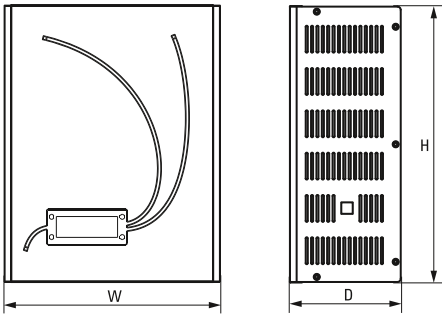
Name	D	H	W
Titan-F-8000	431	318	264
Titan-F-1000			
Titan-F-12000			

W-500 – W-5000



Name	D	H	W
Titan-W-500	69	300	264
Titan-W-3000	89	437	250
Titan-W-5000			

W-8000 - W-12000



Name	D	H	W
Titan-W-8000	165	410	320
Titan-W-10000			
Titan-W-12000			

Installation and operation

WARNING! When the associated circuit breaker is switched on, the output voltage indication appears with an automatic delay of 6 or 180 seconds!

This function is necessary in order for the stabilizer to analyze the mains power quality and enter operational mode. After the timer expires, the output voltage indicator lights up on the display.

To turn the device on, switch the power switch into the "ON" position.

In the event of a power failure:

- turn off the load and the stabilizer;
- wait a few minutes for models lower than 2500 VA, then switch the power switch to the "ON" position;
- For models 3000 VA and above, press the button on the front panel to reboot the device.

Then turn on the load one by one so that their total power does not exceed the rated output power of the stabilizer.

When connecting stabilizers to a three-phase network, the following must be taken into account:

1. Stabilizers must be installed for each phase. Do not leave any of the phases unprotected by voltage stabilizers.
2. The load level for each voltage stabilizer should be approximately the same.
3. Do not connect voltage stabilizers to a three-phase network, if there is a three-phase load.
4. Do not connect voltage stabilizers to a three-phase network, if the voltage difference between the phases (not phase-to-phase) exceeds 20-25%.

In order to extend the life of the stabilizer, replace the cooling fans every three years.

LED indicators

Three LEDs (for 500 VA models)

- When the yellow LED is on and flashing, the voltage stabilizer is in a time delay state.
- When the red LED is on and flashing, the voltage stabilizer is in protection mode.
- When the green LED is on, the power to the device is on and the stabilizer is operating normally.

Time delay function

The time delay function is designed to protect the equipment in the event of frequent power failures. This is especially important for devices with electric motors or compressors. When power is restored, the stabilizer will turn back on after approximately 6 or 180 seconds. The "Delay" indicator lights up when the feature is activated, i.e. the delay button is depressed.

Bypass mode

The Bypass mode enables the supply of power to bypass the voltage stabilizer. In the bypass mode, the stabilizer outputs the same voltage as the input. This feature is available on 3000 VA and 5000 VA models. At the initial startup the ON/OFF and Bypass On/Bypass Off switches must be in off position. Switch the ON/OFF switch on to start the stabilizer. ON/OFF and Bypass On/Bypass Off switches cannot be switched on simultaneously.

Precautions

The ground cable should be correctly sized to the load. All devices connected via the stabilizer must have a ground lead. Ungrounded devices are dangerous to the user and have a high risk of causing control board faults.

In the event of an emergency (damage to the housing, front panel, or any foreign material entering the device), disconnect the stabilizer, remove the plug from the outlet and report to an authorized service center.

Delivery scope

1. Wall-mounted voltage stabilizer Titan EKF
2. Technical manual.

Name	Rated power, VA /W	Output sockets	Item code
Titan-F-500 EKF	500/300	1 x Schuko	stab-f-500
Titan-F-1000EKF	1000/600		stab-f-1000
Titan-F-1500 EKF	1500/900	2 x Schuko	stab-f-1500
Titan-F-2000 EKF	2000/1200		stab-f-2000
Titan-F-3000 EKF	3000/1800	Cable connection	stab-f-3000
Titan-F-5000 EKF	5000/3000		stab-f-5000
Titan-F-8000 EKF	8000/4800		stab-f-8000
Titan-F-10000 EKF	10 000/6000		stab-f-10000
Titan-F-12000 EKF	12 000/7200		stab-f-12000
Titan-W-500 EKF	500/300	1 x Schuko	stab-w-500
Titan-W-3000 EKF	3000/1800	Cable connection	stab-w-3000
Titan-W-5000 EKF	5000/3000		stab-w-5000
Titan-W-8000 EKF	8000/4800		stab-w-8000
Titan-W-10000 EKF	10 000/6000		stab-w-10000
Titan-W-12000 EKF	12 000/7200		stab-w-12000

Uninterruptible power supplies E-Power SSW200 EKF

Line-interactive uninterruptible power supply (UPS) with a rated power of 600 to 3000 VA in freestanding (tower) enclosure. The devices are equipped with a liquid crystal display (LCD) that shows operating parameters, operating mode, and alerts the user of any faults or problems. The UPSes are equipped with an automatic voltage regulator (AVR), that maintains constant output voltage, protecting the connected load from power faults and instabilities. When the input power fails, the UPS switches to battery power. E-Power SSW200 UPSes feature minimal transfer time to battery power. **Devices are not designed to protect equipment with AC motors.**

Microprocessor control

Temperature compensated charging

Built-in interface port for remote monitoring of UPS operating modes

Full synchronization of the output voltage when switching to battery.

APPLICATION

EKF UPS are used to provide emergency backup power to critical equipment in the event of a primary power source failure, until the secondary power source is brought online or the load is gracefully shut down:

- emergency backup power supply;
- over- and undervoltage protection.

TECHNICAL DATA

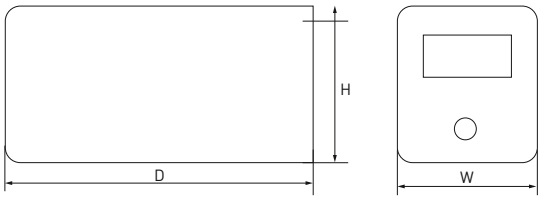
Parameters	Values
Input	
Rated input voltage, V	230
Input voltage range, V	162 – 295
Rated frequency, Hz	50 / 60 (automatic selection)
Input frequency tolerance, %	±10
Output	
Output voltage, V	220 / 230 / 240
Output voltage range	± 10% when operating on mains power ± 1% when running on batteries
Output frequency, Hz	50 / 60 ± 1% (automatic selection)
Output frequency range	± 1% when running on batteries
Output type	Sine wave (in mains mode); Modified sine wave (in battery mode)
Transfer time	Standard < 6 ms, Maximum < 10 ms
Battery type	Sealed maintenance-free lead-acid AGM battery
General characteristics	
Information display	LCD
Sound alarm	Available
Noise level, dB(A)	Less than 40 (at 1 meter)
Operating temperature, °C	0 – 40
Humidity, %	0-90 (non-condensing)

Estimated battery life

Characteristics	Load, %										Item code
	10	20	30	40	50	60	70	80	90	100	
Battery discharge (minutes) at specific load levels	41,7	19,2	10,4	5,2	3,8	2,8	<2	<2	<2	<2	SSW-280
	77,8	32,0	19,0	13,1	9,4	6,8	4,4	<2	<2	<2	SSW-2120
	42,7	20,3	9,6	7,8	4,8	3,7	2,9	2,2	<2	<2	SSW-2150
	43,2	19,2	10,8	6,6	4,4	3,5	2,7	<2	<2	<2	SSW-2200
	42,8	19,1	11,2	7,3	4,8	4,0	3,3	<2	<2	<2	SSW-2300

WARNING! When selecting a UPS, the maximum predicted load should not exceed 75% of the rated UPS power.

Overall and installation dimensions (mm)



Name	D	H	W
E-Power SSW 200 800 VA	280	140	100
E-Power SSW 200 1200 VA	345	170	140
E-Power SSW 200 1500 VA			
E-Power SSW 200 2000 VA	338	225	125
E-Power SSW 200 3000 VA	452	211	157,5

See below for installation and operation instructions p. 326

Name	Rated power, VA	Active power, W	Power output connector type	Built-in battery bank	Housing material	Item code
UPS E-Power SSW200 800 VA	800	480	2 x Schuko	1 x 12 V / 8 Ah	Plastic	SSW-280
UPS E-Power SSW200 1200 VA	1200	720	3 x Schuko	2 x 12 V / 7 Ah		SSW-2120
UPS E-Power SSW200 1500 VA	1500	900		2 x 12 V / 8 Ah		SSW-2150
UPS E-Power SSW200 2000 VA	2000	1200	4 x Schuko	2 x 12 V / 9 Ah	Metal	SSW-2200
UPS E-Power SSW200 3000 VA	3000	1800		4 x 12 V / 9 Ah		SSW-2300

Uninterruptible power supplies E-Power Home EKF

Line-interactive uninterruptible power supply (UPS) with a rated power of 1000 VA in freestanding enclosure. The devices are equipped with LED indicators to display operating modes. The UPSes are equipped with an automatic voltage regulator (AVR) that maintains constant output voltage, protecting the connected load from power faults and instabilities. When the input power fails, the UPS switches to battery power. E-Power Home UPSes feature minimal transfer time to battery power. E-Power Home UPSes are equipped with two types of outlets: surge protection only and surge protector plus battery backup to protect against power outages.

Temperature compensated charging

Microprocessor control

Automatic battery charging when the UPS is off but connected to the mains

Does not cause electromagnetic interference

APPLICATION

EKF UPS are used to provide emergency backup power to critical equipment in the event of a primary power source failure, until the secondary power source is brought online or the load is gracefully shut down:

- emergency backup power supply;
- over- and undervoltage protection.

TECHNICAL DATA

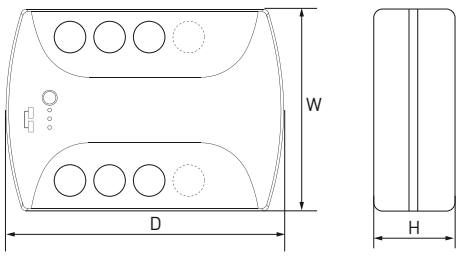
Parameters	Values
Input	
Rated input voltage, V	230
Input voltage range, V	162 – 295
Rated frequency, Hz	50 / 60 (automatic selection)
Input frequency tolerance, %	±10
Output	
Output voltage, V	220 / 230 / 240
Output voltage range	± 10% when operating on mains power ± 1% when running on batteries
Output frequency, Hz	50 / 60 ± 1% (automatic selection)
Output frequency range	± 1% when running on batteries
Output type	Sine wave (in mains mode) Modified sine wave (in battery mode)
Transfer time	Standard < 6 ms, Maximum < 10 ms
Battery type	Sealed maintenance-free lead-acid AGM battery
General characteristics	
Information display	LED indicators
Sound alarm	Available
Noise level, dB(A)	Less than 40 (at 1 meter)
Operating temperature, °C	0 – 40
Humidity, %	0-90 (non-condensing)

Estimated battery life

Model	Battery discharge, minutes									
	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
SSW-800	41,7	19,2	10,4	5,2	3,8	2,8	<2	<2	<2	<2
SSW-1000	77,8	32,0	19,0	13,1	9,4	6,8	4,4	3,6	<2	<2

WARNING! When selecting a UPS, the maximum predicted load should not exceed 75% of the rated UPS power.

Overall and installation dimensions (mm)



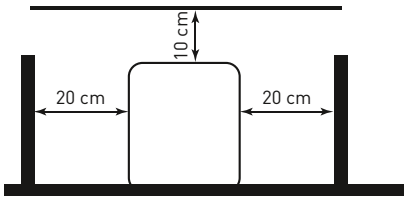
Name	D	H	W
E-Power Home 800 VA	280	94	185
E-Power Home 1000 VA	285	94	205

Name	Rated power, VA	Active power, W	Power output connector type		Built-in battery bank	Item code
			Surge protector / Voltage regulator	Surge protector / Backup power		
UPS E-Power Home 800 VA	800	480	3 x Schuko	3 x Schuko	1 x 12 V / 8 Ah	SSW-800
UPS E-Power Home 1000 VA	1000	600	4 x Schuko	4 x Schuko	1 x 12 V / 9 Ah	SSW-1000

Installation and operation

Choosing a correct location

- The UPS location must ensure adequate ventilation and good distance from sources of water, flammable gases and corrosive liquids.
- For adequate ventilation, install the UPS at a distance from the walls (at least 20 cm). Do not block the air vents.



- The ambient temperature should be between 0°C and 40°C.
- After the UPS is moved from a cold location into a warm room, moisture from the air may condense on it. In this case, let the UPS warm up and dry completely for at least two hours before connecting. Otherwise, it may be an electric shock hazard.
- The power outlet for connecting the UPS should be in an easily accessible spot, in the immediate vicinity of the UPS.
- Use an outlet with a sufficient degree of protection and current-carrying capacity for connecting the UPS to the mains. To ensure electrical safety, the outlet must be properly grounded.

WARNING! Ensure that the UPS is properly grounded when connecting to the mains. Grounding must be performed in accordance with the local rules and regulations concerning electrical installations.

Connecting to the mains

Plug the power cord into an electrical outlet. The UPS will start automatically. After the initial startup, allow sufficient time to fully charge the batteries (up to 8 hours). When the UPS is turned on, the charger turns on automatically and the UPS will operate normally, but the battery life may be minimal.

Connecting the load

Connect your appliances to the outlets located on the top panel of the UPS. Before connecting, turn off the load, then plug the cables into the outlets, and only then turn the load one by one.

WARNING! Laser printers and scanners should only be connected to surge protection outlets. Connecting these devices to UPS outlets may cause the UPS to fail.

Monitoring

The UPS may be monitored on your PC using the integrated USB port. The UPS comes with the necessary cable. Connect one end of the cable to the port on the back panel of the UPS, plug the other end of the cable into your PC and install the software. Using software, you can schedule the UPS to turn on and off, as well as monitor the main parameters of the UPS.

Powering up

Insert the plug into an outlet. Your UPS will start automatically. If the automatic start does not happen, press and hold the "On/Off" button.

Shutting down

To turn the UPS off, press and hold the On/Off button. The UPS will go into standby mode. Pull out the plug from the socket.

Cold start

The UPS can be powered up without connecting it to the mains (cold start). To turn the UPS on or off, press and hold the On/Off button.

Battery mode

When the input power fails, the UPS switches to battery power. In battery mode:

- the UPS beeps every six seconds. The signal will turn off in forty seconds;
- when the battery charge is close to critical, the UPS beeps every two seconds;
- when the batteries are discharged to a critical level, the UPS will emit a continuous sound and automatically turn off after a short delay.

Protection

Deep discharge protection. In battery mode, the UPS constantly monitors the battery voltage. When the voltage drops to a threshold value (about 10 V), the UPS will automatically turn off, protecting the batteries from deep discharge. When the mains power is restored, the UPS will start automatically.

Overcharge protection. In the mains mode, the UPS charges batteries, while the diagnostic system monitors the battery charge level. When the battery is fully charged, the UPS charger shuts down, preventing the batteries from overcharging.

Short circuit protection. In battery mode, the UPS will automatically turn off in the event of a short circuit. In mains mode, the input fuse will trip, then the UPS will switch to battery mode.

Frequency selection

The UPS automatically selects an operating frequency of 50 or 60 Hz depending on the frequency at the UPS input. When running in battery mode, the frequency at the UPS output will be 50 Hz.

Maintenance

Performing the following operations on a regular basis helps keep the UPS up and running, reduces the number of operational failures and increases the life of the equipment:

- make sure that the UPS air vents are not blocked or covered;
- regularly clean the UPS surface from dust;
- check the quality of the input cable and load cable connections;
- make sure that the UPS is not exposed to moisture;
- check the UPS battery life every six months. When the UPS is operational, unplug the UPS power cable from the outlet. The UPS should switch to battery power. Connected load should continue to operate. Plug the power cable back into the outlet and the UPS should revert to normal operation.

Preventive battery maintenance

The UPS is equipped with sealed maintenance-free batteries manufactured using AGM technology. The batteries do not require any maintenance. The standard service life of the batteries is up to 5 years. High battery temperature, poor quality of the mains power (frequent short-term transitions to battery mode) will significantly reduce battery life. If the UPS is not in use, turn on the UPS every three months for 8-10 hours to charge the batteries. When replacing batteries, use a battery pack similar to the one originally installed in your UPS.

Delivery scope

1. Uninterrupted power supply (UPS) unit.
2. Local monitoring cable.
3. Technical manual.

Uninterruptible power supplies E-Power PSW600 EKF

PSW600 are line-interactive uninterruptible power supply (UPS) units in a metal enclosure with a rated power of 500 to 3000 VA. The PSW600 series includes UPS models with built-in battery banks and models connected to an external power bank with a powerful charger, designed for an extended operation. The UPS have LEDs that indicate the UPS operating mode, as well as a monochrome LCD that displays the parameters of the input/output power, load and batteries. The pure sine wave output allows the UPS to support all types of loads, including transformer power supplies and electric motors.

LCD and LED indication of power supply parameters and the UPS operating mode

Protection against overload and short-circuit. Automatic battery charging

Easy to use and reliable design. Automatic UPS diagnostics on start-up

Improved power factor of 0,8 at the output. Wide range of input voltages and frequencies

Extensive remote monitoring and control features

Low noise levels. Temperature controlled fan operation

APPLICATION

EKF UPS are used to provide emergency backup power to critical equipment in the event of a primary power source failure, until the secondary power source is brought online or the load is gracefully shut down:

- emergency backup power supply;
- over- and undervoltage protection.

TECHNICAL DATA

Charge and discharge characteristics of UPS with built-in battery bank

Model	Power, VA / W	Battery capacity	Battery voltage, V	Battery discharge, minutes									
				10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
PSW-610-TB/RTB	1000 / 800	2 × 7 Ah	24	64,9	26,5	15,4	9,7	6,9	4,6	3,6	2,8	2,0	1,0
PSW-615-TB/RTB	1500 / 1200	2 × 9 Ah	24	40,8	18,4	10,5	6,9	4,7	4,0	3,0	2,3	1,5	1,0
PSW-620-TB/RTB	2000 / 1600	3 × 9 Ah	36	47,1	21,4	13,1	8,6	5,6	4,5	3,8	3,1	2,0	1,0
PSW-630-TB/RTB	3000 / 2400	4 × 9 Ah	48	42,8	19,1	11,2	7,3	4,8	4,0	3,3	2,6	1,5	1,0

WARNING! When selecting a UPS, the maximum predicted load should not exceed 75% of the rated UPS power.

Charge and discharge characteristics of UPS with external battery bank

Model	Power, VA / W	Battery voltage, V	Full UPS load						
			10 min	15 min	30 min	1 hour	2 hours	3 hours	4 hours
			Number and capacity of batteries in the battery bank						
PSW-605-T	500 / 400	12	1 x 1 x 17 Ah	1 x 1 x 24 Ah	1 x 1 x 38 Ah	1 x 1 x 65 Ah	1 x 1 x 100 Ah	1 x 1 x 150 Ah	1 x 1 x 200 Ah
PSW-610-T	1000 / 800	24	1 x 2 x 17 Ah	1 x 2 x 24 Ah	1 x 2 x 38 Ah	1 x 2 x 65 Ah	1 x 2 x 120 Ah	1 x 2 x 150 Ah	1 x 2 x 200 Ah
PSW-620-T	2000 / 1600	48	1 x 4 x 17 Ah	1 x 4 x 24 Ah	1 x 4 x 38 Ah	1 x 4 x 65 Ah	1 x 4 x 120 Ah	1 x 4 x 150 Ah	1 x 4 x 200 Ah
PSW-630-T	3000 / 2400	48	1 x 4 x 38 Ah	1 x 4 x 38 Ah	1 x 4 x 65 Ah	1 x 4 x 120 Ah	2 x 4 x 100 Ah	3 x 4 x 100 Ah	4 x 4 x 100 Ah

PSW-610-T 1000VA/800W

Battery capacity	Load, W							
	100	200	300	400	500	600	700	800
	Battery operation time, min							
2 pcs. x 33 Ah	295	128	79	56	43	34	29	24
2 pcs. x 45 Ah	429	186	114	81	62	50	41	35
2 pcs. x 65 Ah	668	290	178	126	96	77	64	55
2 pcs. x 100 Ah	1124	487	299	211	162	130	108	92
2 pcs. x 150 Ah	1728	794	487	344	263	211	176	149

PSW-620-T 2000VA/1600W

Battery capacity	Load, W															
	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
	Battery operation time, min															
4 pcs. x 45 Ah	1065	462	283	200	153	123	102	87	76	67	59	54	49	45	41	38
4 pcs. x 65 Ah	1592	719	441	312	238	191	159	135	117	104	92	83	76	69	64	59
4 pcs. x 75 Ah	1836	855	524	370	283	227	189	161	140	123	110	99	90	82	76	70
4 pcs. x 100 Ah	2448	1224	741	524	400	321	267	227	197	174	155	140	127	116	107	99
4 pcs. x 120 Ah	2938	1469	924	653	499	400	333	283	246	216	193	174	158	144	133	123
4 pcs. x 150 Ah	3672	1836	1224	855	653	524	435	370	321	283	252	227	206	189	174	161

PSW-630-T 3000VA/2400W

Battery capacity	Load, W											
	100	200	300	400	500	600	700	800	900	1000	1100	1200
	Battery operation time, min											
4 pcs. x 65 Ah	1592	719	441	312	238	191	159	135	117	104	92	83
4 pcs. x 90 Ah	2204	1065	653	462	353	283	235	200	174	153	136	123
4 pcs. x 100 Ah	2448	1224	741	524	400	321	267	227	197	174	155	140
4 pcs. x 120 Ah	2938	1469	924	653	499	400	333	283	246	216	193	174
4 pcs. x 150 Ah	3672	1836	1224	855	653	524	435	370	321	283	252	227
4 pcs. x 200 Ah	4896	2448	1632	1224	924	741	616	524	455	400	357	321

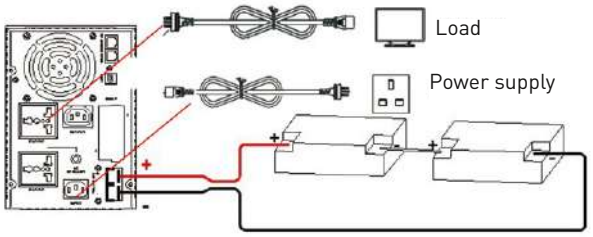
Battery capacity	Load, W											
	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
	Battery operation time, min											
4 pcs. x 65 Ah	76	69	64	59	55	51	48	45	43	40	38	36
4 pcs. x 90 Ah	112	102	94	87	81	76	71	67	63	59	56	54
4 pcs. x 100 Ah	127	116	107	99	92	86	80	76	71	67	64	61
4 pcs. x 120 Ah	158	144	133	123	114	107	100	94	89	84	80	76
4 pcs. x 150 Ah	206	189	174	161	149	140	131	123	116	110	104	99
4 pcs. x 200 Ah	292	267	246	227	211	197	185	174	164	155	147	140

Parameters		Values				
Model		PSW 605	PSW 610	PSW 615	PSW 620	PSW 630
Rated power, VA		500	1000	1500	2000	3000
Active power, W		300	800	1200	1600	2400
Version*		T	T/TB/RTB	TB/RTB	T/TB/RTB	T/TB/RTB
Input voltage, AC						
Input voltage range (bypass)		±10% Uo = 200 / 220 / 230 / 240 V AC				
Input voltage range (stabilization mode), V		145 — 260 for Uo = 200; 165 — 280 for Uo = 220 175 — 290 for Uo = 230; 185 — 300 for Uo = 240				
Input voltage frequency, Hz		50 / 60 ± 5%				
Gen-set compatibility		Available				
Output						
Output voltage range (battery operation), V		200/220/230/240 ± 5% (configurable)				
Output voltage range (mains operation), V		220 (188 – 245), 230 (199 – 254), 240 (210 – 264)				
Output frequency, Hz		50 / 60 ± 0,3 (configurable)				
Output voltage form		Pure sine wave				
Power factor		0,8				
Inverter efficiency, %		75	80		85	
Energy saving mode		When the load is less than 3% (by default) transfer within 80 seconds (customizable)				
Zero-load shutdown		When the load is less than 3% (by default), shutdown within 80 seconds (customizable)				
Transfer time, ms		⩽ 10				
Total harmonic distortion of voltage, %		⩽ 5				
Inductive load		Yes				
Capacitive load		Yes				
Resistive load		Yes				
Protection		Overload, inverter short circuit, low battery voltage, overcharge, overheating				
Permissible overload time (mains operation)		110% 120 s; 125% 60 s; 150% 10 s (then - switch to bypass mode)				
Permissible overload time (battery operation)		110% 60 s; 125% 10 s; 150% 5 s (then - shutdown)				
Sound alarm mute		Automatic after 60 seconds or manual				
DC bus						
Rated voltage, V	TB	12	24		36	48
	T				48	
Maximum charge current, A	TB/RTB	–	1			
	T	10	15		20	25
Charging voltage, V		adjustable** 13,6 - 15 (14,1 by default)				
Trickle charge voltage, V		adjustable** 13,2 - 14,6 (13,5 by default)				
Low charge alarm voltage, V		adjustable** 9,6 - 13,0 (10,8 by default)				
Load cut-off voltage, V		adjustable** 9,6 - 11,5 (10,2 by default)				
External interface						
On/Off		Single 0,5 second sound signal				
Low battery voltage		Repeating 0,16 seconds sound signal				
Overload		Sound signal with a duration of 2 seconds and an interval of 0,5 seconds				
Supply voltage out of bounds		Sound signal with a duration of 0,32 seconds and an interval of 0,5 seconds				
Human-machine interface		LCD, LED indicators, audible alarm and notification				
Remote monitoring		RS-232/USB; SNMP network card (optional); AS400 dry contact expansion card (optional)				
General characteristics						
Operating temperature (UPS), °C		0 to 40				
Operating temperature (Battery)***, °C		0 to 25				
Humidity, %		⩽ 93				
Cooling		Fan				

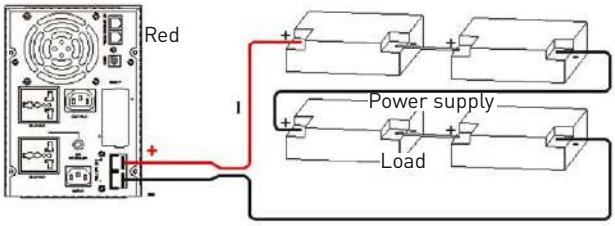
* TB — version in a freestanding tower case with built-in battery bank.
* T — version in a freestanding tower case with an improved charger, designed for operation with an external battery bank.
* RTB — version in a universal rack-mounted or freestanding tower case.
** User-configurable, depending on the battery bank.
*** Recommended temperature range for optimal battery efficiency.

Installation and operation

- UPS must be installed in a well-ventilated location, away from water, flammable and corrosive substances. The minimum distance to the nearest objects must be at least 150 mm.
- Connect the batteries together according to the wiring diagram and connect them to the UPS via a connector (see below for more information).
- Connect the UPS to an electrical outlet (make sure that the outlet is grounded properly).
- For correct operation of the UPS the ambient temperature must remain in the 5 to 40 °C range.
- Before putting the UPS into operation, charge the batteries for approximately 8 hours. The UPS will charge the batteries automatically when the input voltage is present.



Tower case. 1000 VA Battery connection diagram.
DC voltage U = 24 V



Tower case. Battery connection diagram
DC voltage U = 48 V

Monitoring

The UPS may be monitored on your PC using the integrated USB port. The UPS comes with the necessary cable. Connect one end of the cable to the port on the back panel of the UPS, plug the other end of the cable into your PC and install the software. Using software you can schedule the UPS to turn on and off, as well as monitor the main parameters of the UPS.

Control buttons

Buttons	Name	Description
↵ + ◄	ON	Hold down both buttons for 3 seconds to turn on the UPS.
◄ + ►	OFF	Hold down both buttons for 3 seconds to turn off the UPS.
↵ + ►	Mute	In battery mode, hold down the button for 0,5 seconds to mute the sound alarm.
◄ + ►	Test	In mains mode, hold down for 0,5 seconds to test the batteries for 15 seconds.
↵	Confirm	• Press and hold the button for 5 seconds to enter settings mode. • Press and hold the button for 3 seconds to exit the settings mode without saving changes. • In settings mode, press and hold the button for 0,5 seconds to go to the next setting. •In normal mode, press the button twice (0,5 seconds) to rotate the LCD.
◄	Down	• In normal mode, press and hold the button for 0,5 seconds to return to the previous screen. • In settings mode, press and hold the button for 0,5 seconds to decrease the parameter value.
►	Up	• In normal mode, press and hold the button for 0,5 seconds to move to the next screen. Press and hold the button for 2 seconds to enter automatic scrolling mode, press and hold the button for 2 more seconds to exit automatic scrolling mode. • In settings mode, press and hold the button for 0,5 seconds to increase the parameter value.

LED indicators

Icons	Name	Description
∿	Status indicator	A constant green light indicates that the UPS is in mains mode or in battery mode.
▭	Battery indicator	A constant red light indicates that the UPS is in battery mode.
⊘	Bypass	A constant yellow light indicates that the UPS is in bypass mode or in settings mode.
⚠	Fault indicator	A flashing red light indicates that the UPS has malfunctioned (battery fault, mains fault).

LCD icons

Icons	Name	Description
	Overload indicator	Blinks when the load is higher than the nominal
	Alarm indicator	Blinks when the UPS beeps (synchronously)
	Fan	Shows the status of the fans. The fan icon rotates when the fan is running. The fan icon constantly on indicates fan failure
	Fault indicator	The icon blinks in the event of a fault or failure and the UPS beeps
	Battery indicator	The icon blinks when the battery fault is detected

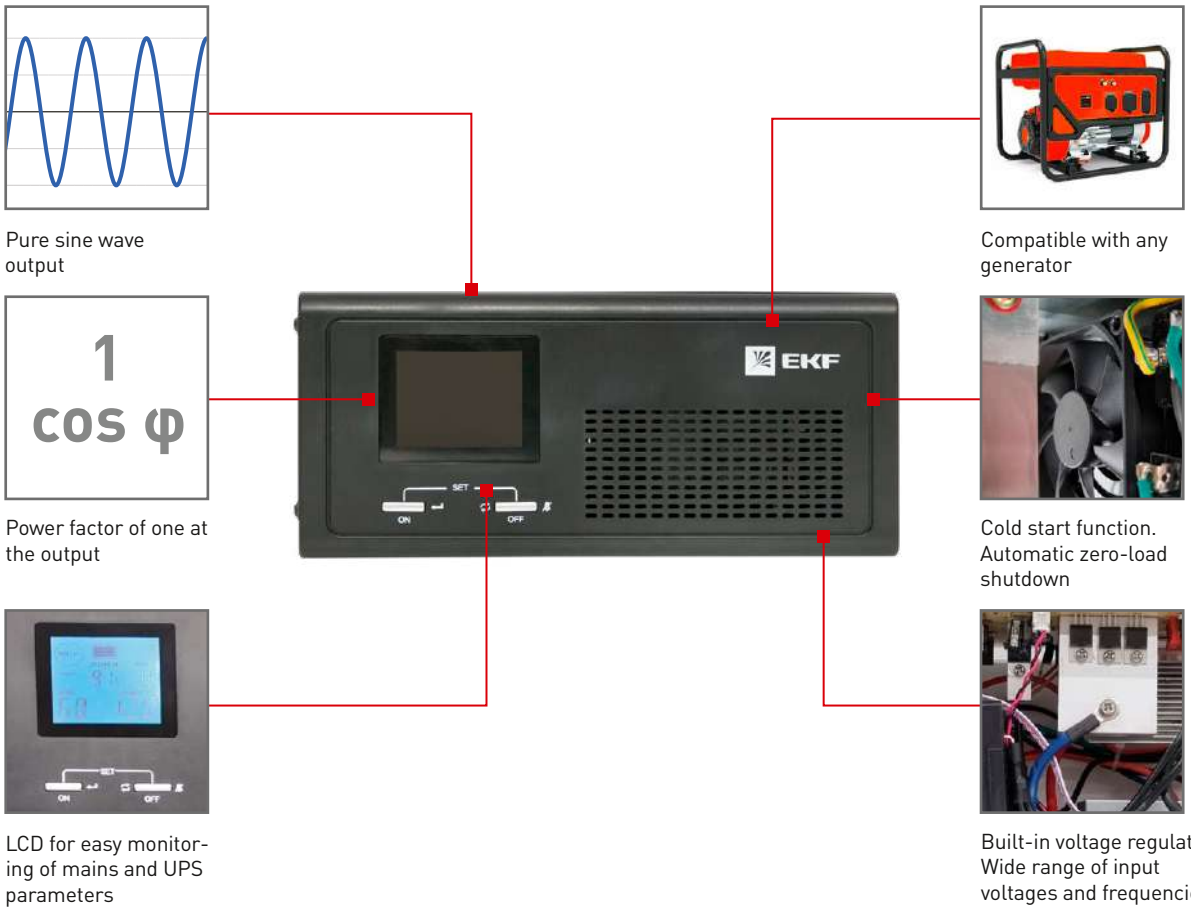
Overall and installation dimensions

Tower						
Model		PSW 605	PSW 610	PSW 615	PSW 620	PSW 630
Overall dimensions, mm (W x D x H)	TB	144 × 345 × 215			144 × 345 × 215	157 × 460 × 221
	T				144 × 410 × 215	190 × 467 × 335
Overall packaging dimensions, mm (W × D × H)	T	236 × 427 × 316			236 × 427 × 316	320 × 592 × 462
	TB				236 × 492 × 316	
Net weight, kg	T	7,0	11,6	14,2	17,8	28,0
	TB	–	12,2		18,5	28,1
Gross weight, kg	T	8,0	12,6	15,2	18,8	30,0
	TB	–	13,2		19,8	30,2
Rack-mounted/Tower						
Overall dimensions, mm (W×D×H)		–	440 × 338 × 88	440 × 410 × 132		
Overall packaging dimensions, mm (W × D × H)		–	611 × 448 × 208	611 × 505 × 235		
Net weight, kg		–	14,6	17,2	21,3	26,7
Gross weight, kg		–	16,8	20,4	24,5	30,5
Rack unit height		–	2U	3U		

Name	Rated power, VA	Active power, W	Built-in battery bank	Item code
With integrated battery bank				
UPS E-Power PSW 600-TB 1000 VA	1000	800	2 x 12 V / 7 Ah	PSW-610-TB
UPS E-Power PSW 600-TB 1500 VA	1500	1200	2 x 12 V / 9 Ah	PSW-615-TB
UPS E-Power PSW 600-TB 2000 VA	2000	1600	3 x 12 V / 9 Ah	PSW-620-TB
UPS E-Power PSW 600-TB 3000 VA	3000	2400	4 x 12 V / 9 Ah	PSW-630-TB
Without integrated battery bank, improved charger				
UPS E-Power PSW 600-T 500VA/400 W	500	400	–	PSW-605-T
UPS E-Power PSW 600-T 1000 VA/800W	1000	800	–	PSW-610-T
UPS E-Power PSW 600-T 2000 VA/1600W	2000	1600	–	PSW-620-T
UPS E-Power PSW 600-T 3000 VA/2400W	3000	2400	–	PSW-630-T

Uninterruptible power supplies E-Power PSW-H EKF

PSW-H and PSW-HW are line-interactive uninterruptible power supplies (UPS) in a freestanding or wall-mounted metal case. The UPS are designed to provide a long battery life and work with external battery banks (sold separately). The UPS are equipped with a built-in voltage regulator and are capable of providing stabilized power to the load in unstable mains power conditions, as well as uninterrupted pure sine wave power when the mains power is down. The pure sine wave output signal in any operating mode enables support of very sensitive loads, including transformer power supplies and electric motors. The UPS are ideal for powering boilers, heating pumps, security and firefighting systems.



APPLICATION

EKF UPS are used to provide emergency backup power to critical equipment in the event of a primary power source failure, until the secondary power source is brought online or the load is gracefully shut down:

- emergency backup power supply;
- over- and undervoltage protection.

TECHNICAL DATA

Charge and discharge characteristics

E-Power PSW-H03/HW03

Battery capacity	Load, W					
	50	100	150	200	250	300
	Battery operation time, min					
1 pc. × 65 Ah	900	450	250	170	130	60
1 pc. × 100 Ah	1440	720	480	300	230	120
1 pc. × 150 Ah	2150	1070	710	530	350	180
1 pc. × 200 Ah	2710	1350	900	680	540	240

E-Power PSW-H06/HW06

Battery capacity	Load, W							
	50	100	150	200	250	350	500	600
	Battery operation time, min							
1 pc. × 65 Ah	900	450	250	170	130	50	45	35
1 pc. × 100 Ah	1440	720	480	300	230	90	75	65
1 pc. × 150 Ah	2150	1070	710	530	350	170	160	90
1 pc. × 200 Ah	2710	1350	900	680	540	400	240	120

E-Power PSW-H10

Battery capacity	Load, W									
	50	100	150	200	250	350	500	600	800	1000
	Battery operation time, min									
1 pc. × 65 Ah	900	450	250	170	130	50	45	35	25	17
1 pc. × 100 Ah	1440	720	480	300	230	90	75	65	42	30
1 pc. × 150 Ah	2150	1070	710	530	350	170	160	90	70	45
1 pc. × 200 Ah	2710	1350	900	680	540	400	240	120	90	60

E-Power PSW-H16

Battery capacity	Load, W				
	250	450	800	1300	1600
	Battery operation time, min				
2 pcs. × 65 Ah	310	150	65	31	15
2 pcs. × 100 Ah	600	260	135	60	30
2 pcs. × 150 Ah	860	470	195	110	120
2 pcs. × 200 Ah	1080	600	315	165	180

E-Power PSW-HW25

Battery capacity	Load, W						
	250	450	800	1300	1600	2000	2500
	Battery operation time, min						
2 pcs. × 65 Ah	310	150	65	31	15	12	10
2 pcs. × 100 Ah	600	260	135	60	30	20	15
2 pcs. × 150 Ah	860	470	195	110	120	60	30
2 pcs. × 200 Ah	1080	600	315	165	180	100	45

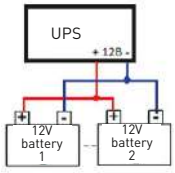
E-Power PSW-HW30

Battery capacity	Load, W								
	250	450	500	800	1300	1600	2000	2500	3500
	Battery operation time, min								
2 pcs. × 65 Ah	310	150	135	65	31	15	12	10	5
2 pcs. × 100 Ah	600	260	240	135	60	30	20	15	12
2 pcs. × 150 Ah	860	470	360	195	110	120	60	30	15
2 pcs. × 200 Ah	1080	600	540	315	165	180	100	45	30

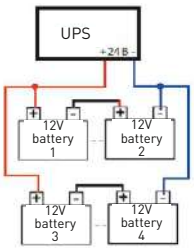
Battery voltage, V	Full UPS load						
	10 min	15 min	30 min	1 hour	2 hours	3 hours	4 hours
	Number and capacity of batteries in the battery bank						
12	1 x 1 x 17 Ah	1 x 1 x 24 Ah	1 x 1 x 38 Ah	1 x 1 x 65 Ah	1 x 1 x 100 Ah	1 x 1 x 150 Ah	1 x 1 x 200 Ah
	1 x 1 x 38 Ah	1 x 1 x 65 Ah	1 x 1 x 65 Ah	2 x (1 x 65 Ah)	1 x 1 x 200 Ah	2 x (1 x 150 Ah)	2 x (1 x 200 Ah)
	1 x 1 x 65 Ah	1 x 1 x 100 Ah	1 x 1 x 120 Ah	1 x 1 x 200 Ah	2 x (1 x 150 Ah)	2 x (1 x 200 Ah)	2 x (1 x 250 Ah)
24	1 x (2 x 38 Ah)	1 x (2 x 65 Ah)	1 x (2 x 100 Ah)	1 x (2 x 150 Ah)	2 x (2 x 150 Ah)	3 x (2 x 120 Ah)	2 x (2 x 200 Ah)
	1 x (2 x 65 Ah)	1 x (2 x 100 Ah)	1 x (2 x 150 Ah)	1 x (2 x 230 Ah)	2 x (2 x 200 Ah)	2 x (2 x 230 Ah)	3 x (2 x 200 Ah)
	1 x (2 x 100 Ah)	1 x (2 x 150 Ah)	2 x (2 x 100 Ah)	2 x (2 x 150 Ah)	3 x (2 x 200 Ah)	4 x (2 x 200 Ah)	4 x (2 x 230 Ah)

WARNING! When selecting a UPS, the maximum predicted load should not exceed 75% of the rated UPS power.

12V connection with 2 batteries



24V connection with 2 (or more) battery banks



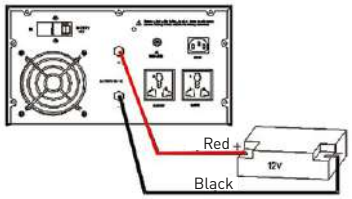
Parameters		Values					
Model		PSW-H05/ PSW-HW05	PSW-H06/PSW-HW06	PSW-H10	PSW-H16	PSW-HW25	PSW-HW30
Rated power, VA		500	600	1000	1600	2500	3500
Active power, W		500	600	1000	1600	2500	3500
Version		H - freestanding/ HW - wall-mounted	H - freestanding/ HW - wall-mounted	Freestanding	Freestanding	Wall-mounted	Wall-mounted
Input, AC							
Input voltage range (stabilization mode), V		150 — 282 for Uo = 220; 156 — 294 for Uo = 230 163 — 307 for Uo = 240					
Input voltage frequency, Hz		50 / 60 ± 5%					
Gen-set compatibility		Yes					
Output							
Output voltage range (battery operation), V		200/220/230/240 ± 5% (configurable)					
Output voltage range (mains operation), V		220: 174 – 242, 230: 182 – 253, 240: 190 – 264					
Output frequency, Hz		50 / 60 ± 0,3 (adjustable)					
Output voltage form		Pure sine wave					
Power factor		1					
Inverter efficiency, %		80					
Energy saving mode		When the load is less than 3% (by default) transfer within 80 seconds (customizable)					
Zero-load shutdown		When the load is less than 3% (by default), shutdown within 80 seconds (customizable)					
Transfer time, ms		⩽ 10					
Total harmonic distortion of voltage, %		⩽ 5					
Inductive load		Yes					
Capacitive load		Yes					
Resistive load		Yes					
Protection		Overload, inverter short circuit, low battery voltage, overcharge, overheating					
Permissible overload time (mains operation)		110% 120s; 125% 60s; 150% 10s (then switch to Bypass mode)					
Permissible overload time (battery operation)		110% 60s; 125% 10s; 150% 5s (then shutdown)					
Sound alarm mute		Automatic after 60 seconds or manual					
DC bus							
Rated voltage, V		12			24		
Charging current, A	Default	10		20, adjustment step: 1 when <10 / 5 when >10			
	Maximum	15	30	40	40	50	60
Charging voltage, V		adjustable** 13,6 - 15 (14,4 by default)					
Trickle charge voltage, V		adjustable** 13,2 - 14,6 (13,7 by default)					
Low charge alarm voltage, V		adjustable** 9,6 - 13,0 (10,8 by default)					
Load cut-off voltage, V		adjustable** 9,6 - 11,5 (10,2 by default)					
External interface							
On/Off		Single 0,5 second sound signal					
Low battery voltage		Repeating 0,16 seconds sound signal					
Overload		Sound signal with a duration of 2 seconds and an interval of 0,5 seconds					
Supply voltage out of bounds		Sound signal with a duration of 0,32 seconds and an interval of 0,5 seconds					
Human-machine interface		LCD display & sound notification					
General characteristics							
Recommended operating temperature (UPS), °C		0 to 40					
Recommended operating temperature (Battery), °C		0 to 25					
Humidity, %		⩽ 93					
Cooling		Fan					

Installation and operation

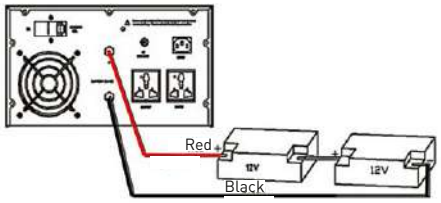
- UPS must be installed in a well-ventilated location, away from water, flammable and corrosive substances. The minimum distance to the nearest objects must be at least 150 mm.
- Connect the UPS to an electrical outlet (make sure that the outlet is grounded properly).
- The UPS will charge batteries automatically when the input voltage is present.

Use battery cables to connect the batteries into a bank in series. Measure the voltage of the assembled battery bank. Compare the measured value with the data on the back of the UPS near the battery bank connector and make sure that the assembled battery bank matches your UPS model.

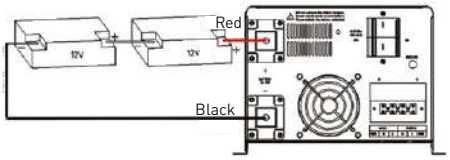
The UPS is equipped with an alarm to indicate incorrect battery bank connection. In the event of a polarity error, the UPS will emit an alarm sound.



Battery connection diagram, U=12V. PSW-H 300-1000W



Battery connection diagram, U=24V. PSW-H 1600W

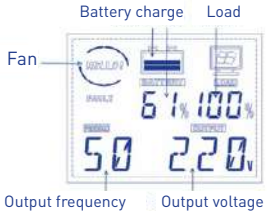


Battery connection diagram, U=24V. PSW-H 2500-3500W

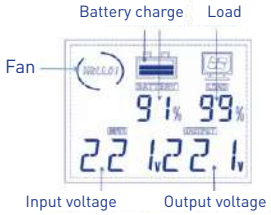
Recommended cable cross-section for connecting the battery to the UPS

Name	Cable cross-section
PSW-H 2500W	35 mm²
PSW-H 3500W	50 mm²

LCD interface



Display in battery mode



Display in normal mode

Overall and installation dimensions

Characteristics	PSW-H05/ PSW-HW05	PSW-H06/ PSW-HW06	PSW-H10	PSW-H16	PSW-HW25	PSW-HW30
Freestanding (H)						
Overall dimensions, mm (W×D×H)	280 × 258 × 120		293 × 280 × 160		–	
Overall packaging dimensions, mm (W × D × H)	330 × 352 × 200		370 × 355 × 235		–	
Net weight, kg	8,0	10,9	14,0	18,5	–	–
Gross weight, kg	9,0	11,9	15,0	19,5	–	–
Wall-mounted (HW)						
Overall dimensions, mm (W×D×H)	400 × 210 × 127		–		302 × 479 × 209	
Overall packaging dimensions, mm (W × D × H)	490 × 290 × 195		–		353 × 582 × 28	
Net weight, kg	7,4	11,0	–	–	32,0	36,0
Gross weight, kg	8,4	12,0	–	–	34,0	38,0

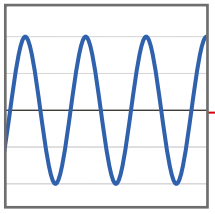
Name	Rated power, VA	Active power, W	Battery voltage, V	Item code
Freestanding				
UPS E-Power PSW-H 300 VA	300	300	12	PSW-H03
UPS E-Power PSW-H 600 VA	600	600		PSW-H06
UPS E-Power PSW-H 1000 VA	1000	1000		PSW-H10
UPS E-Power PSW-H 1600 VA	1600	1600	24	PSW-H16
Wall-mounted				
UPS E-Power PSW-HW 300 VA	300	300	12	PSW-HW03
UPS E-Power PSW-HW 600 VA	600	600		PSW-HW06
UPS E-Power PSW-HW 2500 VA	2500	2500	24	PSW-HW25
UPS E-Power PSW-HW 3500 VA	3500	3500		PSW-HW30

Uninterruptible power supplies E-Power SW900PRO-RT/RTB EKF

SW 900PRO-RT are single-phase double-conversion (on-line) uninterruptible power supplies in a universal Rack Tower (RT) case, which enables their use both as a freestanding unit as well as mounted in 19-inch racks and cabinets. There are six models in this product line, ranging from 1 to 3 kVA. SW 900PRO-RT are available in two versions: standard version — with built-in batteries for lower battery life, and a version without built-in batteries with a more powerful charger and a connector for external battery banks. Double-conversion UPS operate as follows: at the UPS input, the AC is first converted to DC. The UPS inverter then converts DC voltage to AC voltage at the output. The AC voltage parameters are under constant microprocessor control and are maintained with a high level of accuracy. This ensures that the UPS output voltage is independent of the external power grid characteristics and provides a high degree of protection for critical load.

Automatic restart at mains power restoration after low battery shutdown

Universal case that can be used as a freestanding or 19-inch rack mounted unit



True double conversion, always pure sine wave output. Minimal THDv at the output

Sound alarm (battery operation, error, UPS malfunction)

Low level of electromagnetic interference with the mains. Input power factor higher than 0,98. High efficiency - up to 90%, over 98% in ECO-mode

Large LCD showing input and output parameters, operating temperatures, load levels and battery charge

APPLICATION

EKF UPS are used to provide emergency backup power to critical equipment in the event of a primary power source failure, until the secondary power source is brought online or the load is gracefully shut down:

- emergency backup power supply;
- over- and undervoltage protection.

TECHNICAL DATA

See below for charge and discharge characteristics on p. 338

Parameters	Values					
Model	SW900Pro-RTB* 1000 VA	SW900Pro-RT* 1000 VA	SW900Pro-RTB 2000 VA	SW900Pro-RT 2000 VA	SW900Pro-RTB 3000 VA	SW900Pro-RT 3000 VA
Total capacity, kVA	1		2		3	
Active power, W	900		1800		2700	
Input, AC						
Rated input voltage, V AC	208/220/230/240, 1P + N + Gnd					
Input voltage range, V	110 ~ 300 at < 50% load; 176 ~ 280 at > 50% load					
Input frequency range, Hz	40 ~ 70					
Power factor	>0,99					
Bypass voltage range	-25% ~ +15% Uin					

Parameters		Values					
Output							
Rated voltage, V		208/220/230/240 1P + N+ Gnd, user-configurable					
Rated frequency, Hz		50 / 60 ±0,1 automatic detection					
Output voltage range		±1%					
Power factor		0,9					
Total harmonic distortion (THDi)		Less than 2% (100% linear load); Less than 5% (100% nonlinear load)					
Inverter overload capacity		105% ~ 125% — switching to bypass after 1 minute. 125% ~ 150% — switching to bypass after 30 seconds. Over 150% — switching to bypass after 300 ms					
Crest factor		3:1					
Transfer time (mains/batteries), ms		0					
Transfer time (normal mode/bypass), ms		<4					
Inverter efficiency, %	Mains power	90		91		92	
	Battery power	85		86		87	
	ECO mode	95		96		97	
Batteries							
Type		Maintenance-free lead-acid, AGM technology					
Voltage, V DC		36		72		96	
Built-in batteries (for RTB models)		3 pcs. × 7 Ah		6 pcs. × 7 Ah		8 pcs. × 9 Ah	
Charging current, A		1	6	1	6	1	6
Charging voltage, V		40,7 ± 0,6	40,7 ± 0,6	81,3 ± 1,2	81,3 ± 1,2	108,4 ± 1,6	108,4 ± 1,6
Connectors and connections							
External power connector		IEC 320 C14			IEC 320 C20		
Number of load connectors		6	6	8	8	8	8
Load connector type		C13	C13	C13	C13	C13	C13
Additional battery bank connection		Yes	–	Yes	–	Yes	–
Inverter efficiency							
Mains power, %		> 90		> 91		> 92	
Battery power, %		> 85		> 86		> 87	
ECO mode, %		> 95		> 96		> 97	
Alarm							
Non-critical fault		Sound signal once every 4 seconds.					
Low battery level		Sound signal once every second.					
Overload		Sound signal 2 times per second.					
UPS malfunction		Continuous beep.					
General characteristics							
Monitoring		RS-232 port, USB port (standard), AS400 or SNMP (optional)					
Human-machine interface		LCD, LED indicators, audible alarm and notification					
Protection		Overheating, overload, short-circuit, deep battery discharge					
Degree of protection		IP20					
Altitude above sea level		Up to 1000 m. Over 1000 m, the nominal UPS capacity is reduced by 1% for every 100 m					
Operating temperature, °C		0–40					
Humidity, %		0-90 (non-condensing)					
Noise level, dB(A)		Less than 50 (at 1 meter)					

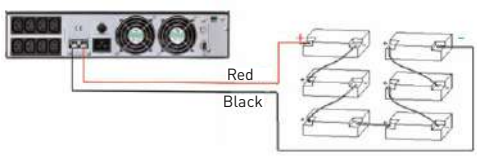
Installation and operation

- UPS must be installed in a well-ventilated location, away from water, flammable and corrosive substances. The minimum distance to the nearest objects must be at least 150 mm.
- Connect the UPS to an electrical outlet (make sure that the outlet is grounded properly).
- For correct operation of the UPS the ambient temperature must remain in the 5 to 40 °C range.
- Before putting the UPS into operation, charge the batteries for approximately 8 hours. The UPS will charge the batteries automatically when the input voltage is present.

For UPS with internal batteries (RTB models), only one external battery bank, with a set of batteries similar to the built-in batteries can be connected. The connection is made by the cable that comes with the battery bank. The manufacturer recommends connecting the additional battery bank only to a special connector located on the back of the UPS.

For uninterruptible power supplies with an extended battery life (RT models), connect a bank (string) of batteries, connected in series, using the cable included in the UPS package.

Connect the batteries together according to the diagram and connect them to the UPS via a connector.



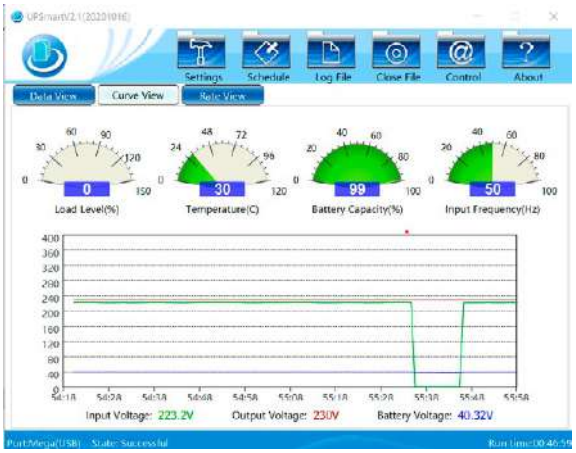
Connecting an external battery bank to a 2 kVA UPS.

Recommended cable cross-section for connecting the battery to the UPS

Model	DC bus voltage, V	Number of 12 V batteries in the string	Recommended wire size for connecting batteries
SW910Pro-RT 1kVA	36	3	4 mm²
SW920Pro-RT 2kVA	72	6	4 mm²
SW930Pro-RT 3kVA	96	8	4 mm²

Monitoring

Extensive remote monitoring and control features.
Programmable start-up: automatic self-diagnostics, soft shutdown at low battery, scheduled shutdown and reboot, event log, error log.

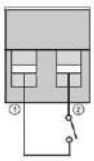


Communication interfaces

The user can monitor the operation of the UPS on the computer via the RS232 or USB interface. The UPS comes with the necessary cables.

Emergency Power Off (EPO) port (optional)

EPO (Emergency Power Off) is an emergency load shutdown port. The EPO ensures immediate shutdown of all equipment connected to the UPS. The port is located on the back of the UPS.



In normal operation, pin 1 and pin 2 of the port are closed. In an emergency, when it is necessary to quickly turn off the power to the load, break the connection between contacts 1 and 2 by pulling the plug from the EPO port.

Additional monitoring tools

The UPS has an additional intelligent slot for installing an SNM remote monitoring board or an AS 400 dry contacts card. These expansion cards are hot-swappable. Follow these steps:
1. Unscrew the mounting screws and remove the slot cover.
2. Insert the card (SNMP card, AS400 dry contact card, or RS485 card) along the guides.
3. Replace the mounting screws.

Control buttons

Buttons	Function
Powering up	Press and hold both buttons until you hear a beep to turn on the UPS
Shutting down	Press and hold both buttons until you hear a beep to turn off the UPS
Test/Mute	Press and hold both buttons for more than 1 second until the beep: • in normal mode — start self-diagnostics; • in battery mode or upon error — mute alarm
Settings	In normal mode: • press and hold for more than 2 seconds until the beep sound to enter the settings mode. In settings mode: • press the button for 0,5 to 2 seconds to adjust the parameter; • press and hold the button for over 2 seconds to exit the settings mode.
Toggle buttons View parameters, select parameters	In normal mode: • press the ◀ or ▶ buttons to scroll between the displayed parameters; • press and hold the ▶ button for more than 2 seconds until the beep to automatically scroll between the displayed parameters with a delay of 2 seconds. In settings mode: • press and hold the ◀ or ▶ button for 1,5 to 2 seconds to select a setting
◀	• In normal mode, press and hold the button for 0,5 seconds to return to the previous screen. •In settings mode, press and hold the button for 0,5 seconds to decrease the parameter value.
▶	• In normal mode, press and hold the button for 0,5 seconds to move to the next screen. Press and hold the button for 2 seconds to enter automatic scrolling mode, press and hold the button for 2 more seconds to exit automatic scrolling mode. •In settings mode, press and hold the button for 0,5 seconds to increase the parameter value.

LED inidicators

Icons	Name	Description
	Status indicator	A constant green light indicates that the UPS is in mains mode or in battery mode.
	Battery indicator	A constant red light indicates that the UPS is in battery mode.
	Bypass	A constant yellow light indicates that the UPS is in bypass mode or in setting mode.
	Fault indicator	A flashing red light indicates that the UPS has malfunctioned (battery fault, mains fault).

LCD interface

Icons	Name	Description
	Overload indicator	Flashes if the load is higher than nominal
	Alarm indicator	Blinks when the UPS beeps (synchronously)
	Fan	Shows the status of the fans. The fan icon rotates when the fan is running. The fan icon constantly on indicates fan failure
	Fault indicator	The icon blinks in the event of a fault or failure and the UPS beeps
	Battery indicator	The icon blinks when the battery fault is detected

Overall and installation dimensions

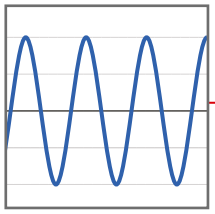
Parameters	SW900 Pro-RTB 1kVA	SW900 Pro-RT 1kVA	SW900 Pro-RTB 2kVA	SW900 Pro-RT 2kVA	SW900 Pro-RTB 3kVA	SW900 Pro-RT 3kVA
UPS dimensions (W×D×H), mm	144 × 336 × 214			191 × 418 × 332		
Net weight, kg	9,5	6	18	10,5	22,5	11
Packaged dimensions (W×D×H), mm	232 × 420 × 318			318 × 533 × 471		
Gross weight, kg	10,5	7	19,5	12	24	12,5

Name	Rated power, VA	Active power, W	Built-in battery bank	Item code
With built-in batteries				
UPS E-Power SW900Pro 1000 VA	1000	900	3 x 12 V x 7 Ah	SW910Pro-RTB
UPS E-Power SW900Pro 2000 VA	2000	1800	6 x 12 V x 7 Ah	SW920Pro-RTB
UPS E-Power SW900Pro 3000 VA (two rack units: UPS unit; battery unit)	3000	2700	8 x 12 V x 7 Ah	SW930Pro-RTB
No battery bank, improved charger				
UPS E-Power SW900Pro 1000 VA	1000	900	–	SW910Pro-RT
UPS E-Power SW900Pro 2000 VA	2000	1800	–	SW920Pro-RT
UPS E-Power SW900Pro-RT 3000 VA	3000	2700	–	SW930Pro-RT

Uninterruptible power supplies E-Power SW900PRO-T/TB EKF

SW 900PRO are double-conversion (on-line) single-phase uninterruptible power supplies in a freestanding case. There are six models in this product line, ranging from 1 to 3 kVA. They are available in two versions: standard version – with built-in batteries for lower battery life, and the one without built-in batteries with a more powerful charger and a connector for external battery banks. Double-conversion UPS operates as follows: at the UPS input, the AC is first converted to DC. The UPS inverter then converts DC voltage to AC voltage at the output. The AC voltage parameters are under constant microprocessor control and are maintained with a high level of accuracy. This ensures that the UPS output voltage is independent of the external power grid characteristics and provides a high degree of protection for critical load.

Automatic self-diagnostics at startup. Customizable output voltage and battery discharge level



True double conversion, always pure sine wave output. Minimal THDv at the output

Can operate as a frequency converter. High output power factor of 0,9

High energy efficiency. Energy-saving technology. Up to 95% efficiency in ECO-mode

Digital control of the rectifier, inverter, and charger. Smart battery management

Noise filtering, output overload and short circuit protection, surge protection, overheating protection

APPLICATION

EKF UPS are used to provide emergency backup power to critical equipment in the event of a primary power source failure, until the secondary power source is brought online or the load is gracefully shut down:

- emergency backup power supply;
- over- and undervoltage protection.

TECHNICAL DATA

Charge and discharge characteristics

Model	Power, VA / W	Battery capacity, Ah	Number of batteries	Battery voltage, V DC	Discharge/charge (min) under load									
						10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
SW910Pro-RTB	1000/900	7	1x(3x12V)	36	Discharge, min	62,9	32,3	20,0	14,7	11,1	8,6	6,7	4,9	4,3	3,7
SW910Pro-TB					Charge, min	5,3	4,4	3,9	3,7	3,3	3,1	2,8	2,4	2,3	2,2
SW920Pro-RTB	2000/1800	7	1x(6x12V)	72	Discharge, min	75,0	36,9	23,2	16,2	12,0	9,1	7,2	5,3	4,5	3,8
SW920Pro-TB					Charge, min	5,6	4,6	4,1	3,8	3,5	3,1	2,9	2,5	2,3	2,3
SW930Pro-RTB	3000/2700	7	1x(8x12V)	96	Discharge, min	68,8	33,0	19,9	14,1	10,0	7,9	5,7	4,5	3,8	3,1
SW930Pro-TB					Charge, min	5,5	4,4	3,9	3,6	3,2	3,0	2,6	2,3	2,3	2,1

SW910Pro-RT, SW910Pro-T 1000VA/900W

Battery voltage, V	Battery capacity, Ah	Number of batteries	Load, W									
			90	180	270	360	450	540	630	720	810	900
			Battery operation time, min									
36	26	1x(3x12V)	454	197	121	86	65	53	44	37	32	29
	40	1x(3x12V)	673	330	203	143	132	108	73	62	54	48
	65	1x(3x12V)	1200	564	360	257	197	158	131	112	97	86
	100*	1x(3x12V)	1800	998	552	414	330	265	220	188	163	143
	150*	1x(3x12V)	2855	1566	834	624	498	414	354	312	265	234

SW920Pro-RT, SW920Pro-T 2000VA/1800W

Battery voltage, V	Battery capacity, Ah	Number of batteries	Load, W									
			180	360	540	720	900	1080	1260	1440	1620	1800
			Battery operation time, min									
72	26	1x(6x12V)	454	197	121	86	65	53	44	37	32	29
	40	1x(6x12V)	763	330	203	143	110	88	73	62	54	48
	65	1x(6x12V)	1358	540	360	257	197	158	131	112	97	86
	100*	1x(6x12V)	2088	990	602	414	330	265	220	188	163	143
	150*	1x(6x12V)	3130	1500	990	705	539	433	354	306	265	234

SW930Pro-RT, SW930Pro-T 3000VA/2700W

Battery voltage, V	Battery capacity, Ah	Number of batteries	Load, W									
			180	360	540	720	900	1080	1260	1440	1620	1800
			Battery operation time, min									
96	26	1x(8x12V)	384	171	105	74	57	46	38	32	28	25
	40	1x(8x12V)	612	287	176	125	95	77	64	54	47	42
	65	1x(8x12V)	1150	515	316	223	171	137	114	97	83	74
	100*	1x(8x12V)	1765	850	531	375	287	230	190	163	141	125
	150*	1x(8x12V)	2650	1302	866	612	468	375	310	265	230	203

Parameters		Values					
Model		SW910Pro-TB 1kVA	SW910Pro-T 1kVA	SW920Pro-TB 2kVA	SW920Pro-T 2kVA	SW930Pro-TB 3kVA	SW930Pro-T 3kVA
Total capacity, kVA		1		2		3	
Active power, W		900		1800		2700	
Input, AC							
Rated input voltage, V AC		208/220/230/240, 1P + N + Gnd					
Input voltage range, V		110 ~ 300 at < 50% load 176 ~ 280 at > 50% load					
Input frequency range, Hz		40 ~ 70					
Power factor		>0,99					
Bypass voltage range		-25% ~ +15% Uin					
Output							
Rated voltage, V		208/220/230/240 1P + N + Gnd, user-configurable					
Rated frequency, Hz		50 / 60 ±0,1 automatic detection					
Output voltage range, %		±1					
Power factor		0,9					
Total harmonic distortion (THDi)		Less than 2% (100% linear load). Less than 5% (100% nonlinear load)					
Inverter overload capacity		105% ~ 125% - switching to bypass after 1 minute. 125% ~ 150% — switching to bypass after 30 seconds. Over 150% — switching to bypass after 300 ms					
Crest factor		3:1					
Transfer time (mains/batteries), ms		0					
Transfer time (normal mode/bypass), ms		<4					
Inverter efficiency, %	Mains power	90		91		92	
	Battery power	85		86		87	
	ECO mode	95		96		97	
Batteries							
Type		Maintenance-free lead-acid, AGM technology					
Voltage, V DC		36		72		96	
Built-in batteries (for TB models)		3 pcs. × 7 Ah	–	6 pcs. × 7 Ah	–	8 pcs. × 7 Ah	–
Charging current, A		1	6	1	6	1	6
Charging voltage, V		40,7 ± 0,6	40,7 ± 0,6	81,3 ± 1,2	81,3 ± 1,2	108,4 ± 1,6	108,4 ± 1,6

WARNING! When selecting a UPS, the maximum predicted load should not exceed 75% of the rated UPS power.

* The time to full charge is more than 10 hours.

Parameters	Values					
Connectors and connections						
External power connector	IEC 320 C14			IEC 320 C20		
Number of load connectors	2 (2 battery powered)			4 (4 battery powered)		
Load connector type	Schuko CEE 7 (EURO socket)					
Additional battery bank connection	Yes	–	Yes	–	Yes	–
Inverter efficiency						
Mains power, %	> 90		> 91		> 92	
Battery power, %	> 85		> 86		> 87	
ECO mode, %	> 95		> 96		> 97	
Alarm						
Non-critical fault	Sound signal once every 4 seconds.					
Low battery level	Sound signal once per second					
Overload	Sound signal 2 times per second					
UPS malfunction	Continuous sound signal					
General characteristics						
Monitoring	RS-232 port, USB port (standard), AS400 or SNMP (optional)					
Human-machine interface	LCD, LED indicators, audible alarm and notification					
Protection	Overheating, overload, short-circuit, deep battery discharge					
Degree of protection	IP20					
Max altitude	Up to 1000 m above sea level. Over 1000 m, the nominal UPS capacity is reduced by 1% for every 100 m					
Operating temperature, °C	0 - 40					
Humidity, %	0-90 (non-condensing)					
Noise level, dB(A)	Less than 50 (at 1 meter)					

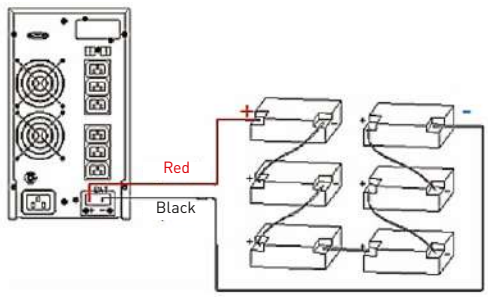
Installation and operation

- UPS must be installed in a well-ventilated location, away from water, flammable and corrosive substances. The minimum distance to the nearest objects must be at least 150 mm.
- Connect the UPS to an electrical outlet (make sure that the outlet is grounded properly).
- For correct operation of the UPS the ambient temperature must remain in the 5 to 40 °C range.
- Before putting the UPS into operation, charge the batteries for approximately 8 hours. The UPS will charge the batteries automatically when the input voltage is present.

For UPS with internal batteries (TB models), only one external battery bank with a set of batteries similar to the built-in batteries can be connected. The connection is made by the cable that comes with the battery bank. The manufacturer recommends connecting the additional battery bank only to a special connector located on the back of the UPS.

For uninterruptible power supplies with an extended battery life (T models), connect a bank (string) of batteries, connected in series, using the cable included in the UPS package.

Connect the batteries together according to the diagram and connect them to the UPS via a connector.

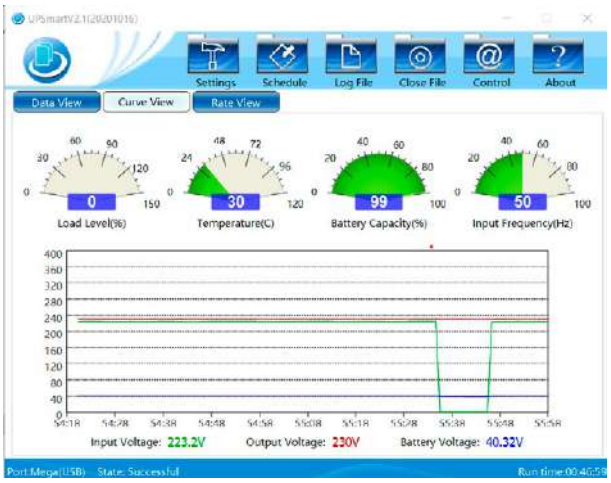


Connecting an external battery bank to a 2 kVA UPS

Model	DC bus voltage, V	Number of 12 V batteries in the string	Recommended wire size for connecting batteries, mm²
SW910Pro-T 1kVA	36	3	4
SW920Pro-T 2kVA	72	6	4
SW930Pro-T 3kVA	96	8	4

Monitoring

Extensive remote monitoring and control features.
Programmable start-up: automatic self-diagnostics, soft shutdown at low battery, scheduled shutdown and reboot, event log, error log.

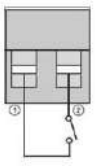


Communication interfaces

The user can monitor the operation of the UPS on the computer via the RS232 or USB interface. The UPS comes with the necessary cables and a software CD.

Emergency Power Off (EPO) port (optional)

EPO (Emergency Power Off) is an emergency load shutdown port. The EPO ensures immediate shutdown of all equipment connected to the UPS. The port is located on the back of the UPS.



In normal operation, pin 1 and pin 2 of the port are closed. In an emergency, when it is necessary to quickly turn off the power to the load, break the connection between contacts 1 and 2 by pulling the plug from the EPO port.

Additional monitoring tools

The UPS has an additional intelligent slot for installing an SNM remote monitoring board or an AS 400 dry contacts card. These expansion cards are hot-swappable. Follow these steps:
1. Unscrew the mounting screws and remove the slot cover.
2. Insert the card (SNMP card, AS400 dry contact card, or RS485 card) along the guides.
3. Replace the mounting screws.

LED indicators

Icons	Name	Description
	Status indicator	A constant green light indicates that the UPS is in mains mode or in battery mode.
	Battery indicator	A constant red light indicates that the UPS is in battery mode.
	Bypass	A constant yellow light indicates that the UPS is in bypass mode or in settings mode.
	Fault indicator	A flashing red light indicates that the UPS has malfunctioned (battery fault, mains fault).

LCD interface

Icons	Name	Description
	Overload indicator	Flashes if the load is higher than nominal
	Alarm indicator	Blinks when the UPS beeps (synchronously)
	Fan	Shows the status of the fans. The fan icon rotates when the fan is running. The fan icon constantly on indicates fan failure
	Fault indicator	The icon blinks in the event of a fault or failure and the UPS beeps
	Battery indicator	The icon blinks when the battery fault is detected

Control buttons

Buttons	Function
Powering up +	Press and hold both buttons until you hear a beep to turn on the UPS
Shutting down +	Press and hold both buttons until you hear a beep to turn off the UPS
Test/Mute +	Press and hold both buttons for more than 1 second until the beep: • in normal mode — start self-diagnostics; • mute the sound in battery mode or in case of error
Settings	In normal mode: • press and hold for more than 2 seconds until the beep sound to enter the settings mode In settings mode: • press the button for 0,5 to 2 seconds to adjust the parameter; • press and hold the button for over 2 seconds to exit from the settings mode.
Toggle buttons View parameters, select parameters	In normal mode: • press the ◄ or ► buttons to scroll between the displayed parameters; • press and hold the ► button for more than 2 seconds until the beep to automatically scroll between the displayed parameters with a delay of 2 seconds. In settings mode: • press and hold the ◄ or ► button for 1,5 to 2 seconds to select a setting
◄	• In normal mode, press and hold the button for 0,5 seconds to return to the previous screen. •In settings mode, press and hold the button for 0,5 seconds to decrease the parameter value.
►	• In normal mode, press and hold the button for 0,5 seconds to move to the next screen. Press and hold the button for 2 seconds to enter automatic scrolling mode, press and hold the button for 2 more seconds to exit automatic scrolling mode. •In settings mode, press and hold the button for 0,5 seconds to increase the parameter value.

Overall and installation dimensions

Parameters	SW900 Pro-RTB 1kVA	SW900 Pro-RT 1kVA	SW900 Pro-RTB 2kVA	SW900 Pro-RT 2kVA	SW900 Pro-RTB 3kVA	SW900 Pro-RT 3kVA
UPS dimensions (W×D×H), mm	144 × 336 × 214			191 × 418 × 332		
Net weight, kg	12,8	6	18	10,5	22,5	11
Packaged dimensions (W×D×H), mm	232 × 420 × 318			318 × 533 × 471		
Net weight, kg	14	7	19,5	12	24	12,5

Name	Rated power, VA	Active power, W	Built-in battery bank	Item code
With built-in batteries				
UPS E-Power SW900Pro 1000 VA	1000	900	3 x 12 V x 7 Ah	SW910Pro-TB
UPS E-Power SW900Pro 2000 VA	2000	1800	6 x 12 V x 7 Ah	SW920Pro-TB
UPS E-Power SW900Pro 3000 VA	3000	2700	8 x 12 V x 7 Ah	SW930Pro-TB
No battery bank, improved charger				
UPS E-Power SW900Pro 1000 VA	1000	900	–	SW910Pro-T
UPS E-Power SW900Pro 2000 VA	2000	1800	–	SW920Pro-T
UPS E-Power SW900Pro 3000 VA	3000	2700	–	SW930Pro-T

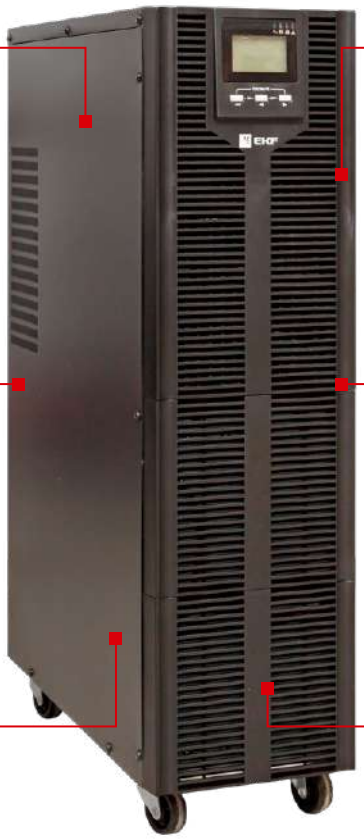
Uninterruptible power supplies E-Power SW900G4 6000-1000 VA EKF

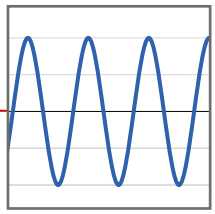
A new generation of uninterruptible power supply (UPS) with improved performance and an input and output power factor of 1. The UPS utilizes double conversion design. The output voltage parameters are constantly monitored and maintained with high level of accuracy thanks to a microprocessor-based control. The output voltage of the UPS does not depend on the quality of the mains power, which ensures a high degree of critical load protection. The UPS product range has two available cases: a freestanding tower case (T) and a universal case (RT). The universal case can be used as a freestanding or rack-mounted unit. UPS are available in two versions: with built-in batteries (RTB/TB) and with an improved charger and a connector for external battery bank (RT/T). The nominal power of the models is 6000 VA/6000 W and 10000 VA/10000W. UPS with an improved charger can use 192, 204 and 240 V battery banks, which represents 16, 18 or 20 battery strings with a nominal voltage of 12V. The units support parallel operation of up to four UPSes per single load, which makes it possible to build reliable power supply systems with an increased level of redundancy.

Input power factor greater than 0,99. Low level of electro-magnetic interference

Automatic three-stage battery charging with a self-test function maximizes battery life

Short circuit and overload protection at both input and output. Overheating protection





Double conversion, pure sine wave at the output. Minimal THDv at the output

Digital control of the rectifier, inverter, and charger. Energy-saving technology

Automatic self-diagnostics, soft shutdown at low battery level, scheduled shutdown and reboot, event log, error log

APPLICATION

EKF UPS are used to provide emergency backup power to critical equipment in the event of a primary power source failure, until the secondary power source is brought online or the load is gracefully shut down:

- emergency backup power supply;
- over- and undervoltage protection.

TECHNICAL DATA

See below for charge and discharge characteristics p. 346

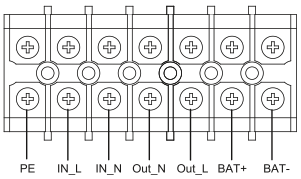
Parameters	Values							
Model	SW960G4-T	SW960G4-T-B	SW901G4-T	SW910G4-T-B	SW960G4-RT	SW960G4-RT-B	SW901G4-RT	SW901G4-RT-B
Rated power, VA	6000		10 000		6000		10 000	
Active power, W	6000		10 000		6000		10 000	
Input								
Rated input voltage, V AC	208/220/230/240 1P + N+ Gnd							
Input voltage range, V	110 ~ 288 at 0% to 50% load; 176 ~ 288 at 100% load; linear dependence at the lower limit in the 110 ~ 176 range when the load changes from 50% to 100%							
Rated frequency, Hz	50 / 60 (automatic detection)							
Input frequency range, Hz	40 — 60 (at a frequency of 50) 50 — 70 (at a frequency of 60)							
Input power factor	Higher than 0,99							
Input protection against short circuit	Circuit breaker				--			
Bypass voltage, V	--				220/230; 1P + N+ Gnd			
Bypass voltage range, %	--				-40 to +20 configurable			
Output								
Output voltage, V	220/230/240 1P+N+Gnd (configurable)							
Maximum output voltage error, %	±1							
Output frequency, Hz	50/60 (synchronized with the input frequency)							
Output frequency error, % (battery mode)	±0,1							
Output type	Pure sine wave							
Output power factor	1,0							
Output THDv	Less than 1% (linear load) Less than 4% (nonlinear load)							
Transfer time, ms	0							
Overload capacity	101% ~ 110% — 10 min; 111% ~ 125% — 1 min; 126% ~ 150% - 30 s							
Efficiency	over 95% in normal mode, over 98% in ECO-mode							
Crest factor	3:1							
Batteries								
Rated DC bus voltage, V	192 for TB models 192/204/216/228/240 for T models (configurable)				192 for RTB models 192/204/216/228/240 for RT models (configurable)			
Built-in battery bank	--	16 x 12 V x 7 Ah	--	16 x 12 V x 9 Ah	–	16 x 12 V x 7 Ah	–	16 x 12 V x 9 Ah
Battery type	Sealed maintenance-free lead-acid AGM battery							
Battery charger	TB models: 1A, T models: up to 5A (configurable)				RTB models: 1A, RT models: up to 5A (configurable)			
Charging time	Depends on connected battery capacity and charger settings							
Management and functions								
Information display	LCD display showing the parameters of the bypass, input and output circuits, temperature, load level, battery level							
Operating mode display	LED indicators							
Monitoring	RS-232, USB							
Monitoring options	SNMP adapter, AS400 dry contact card							
General characteristics								
Number of outputs	1 (1 battery powered)				–			
Output connector type	Terminal block							
Noise level, dB(A)	Less than 58 dB (at 1 meter)							
Operating temperature, °C	0 – 40							
Humidity, %	0-90 (non-condensing)							
Dimensions (WxDxH)	191 × 495 × 350 (T) 191 × 495 × 711 (TB)				440 × 88 × 580 (RT) 440 × 176 × 660 (RTB)			
Color	Black							
Net weight, kg	14,5	53	16,5	62	12	58	14	63

Installation and operation

- UPS must be installed in a well-ventilated location, away from water, flammable and corrosive substances. The minimum distance to the nearest objects must be at least 150 mm.
- Connect the UPS to an electrical outlet (make sure that the outlet is grounded properly).
- For correct operation of the UPS the ambient temperature must remain in the 0 to 40 °C range.
- To connect the UPS, provide input and output cables (not included). For models using external battery banks (T), also provide a cable for connecting external battery bank. Use the following recommended input and output cable cross-sections.

Model	Cable cross-section, mm²				
	Input	Output	Battery	Neutral	Ground
6 kVA TB/RTB	6	6	6	6	6
6 kVA T/RT	6	6	6	6	6
10 kVA TB/RTB	10	10	10	10	10
10 kVA T/RT	10	10	10	10	10

- For uninterruptible power supplies with longer battery life (T models), the recommended number of external battery banks is up to 6 EBBRT banks and up to 3 EBBT banks.
- The figure below shows a diagram for connecting an uninterruptible power supply to the mains and a diagram for connecting the load to a single-phase UPS: 1-phase input, 1 -phase output.
- A terminal block is used to connect to the mains and to the load. Connection cables are not included in the package and must be purchased separately by the user.



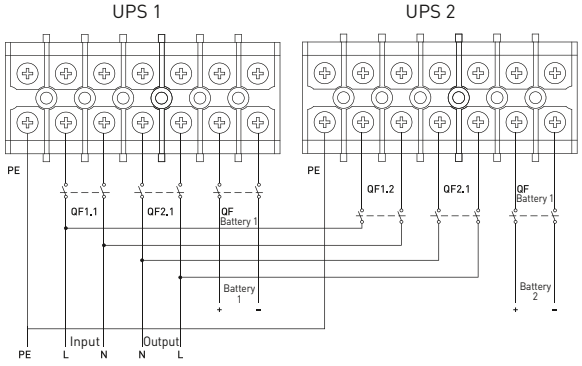
UPS terminal block 1:1 connection

PE – protective earth (ground) wire;
IN_L – input live wire;
IN_N – input neutral wire;
Out_N – output neutral wire;
Out_L – output live wire;
BAT+ – positive wire for the external battery bank;
BAT- – negative wire for the external battery bank;

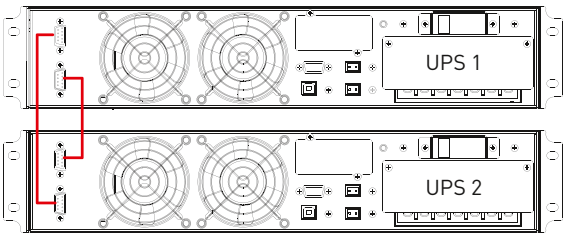
Parallel UPS connection

For parallel operation, the UPS must have parallel boards installed (optional).

- Up to 4 UPSes of the same power can be connected in parallel.
- Each UPS must have its own unique ID number.
- For UPS management, they must be interconnected with standard cables.
- Control cables must not exceed 3 m in length.
- The recommended length of UPS load power cables should not exceed 20 m.
- The difference in length between the input and output cables of each UPS must not exceed 10%.
- Each UPS must have its own battery bank.

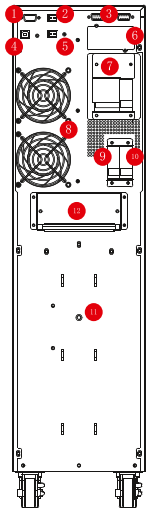


Parallel UPS 1:1 connection

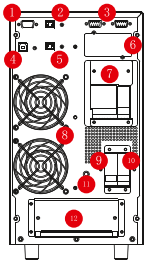


Connecting communication cables to two UPSes

UPS back panel

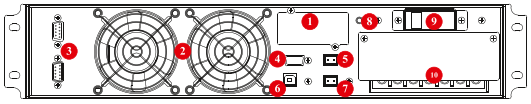


Model TB

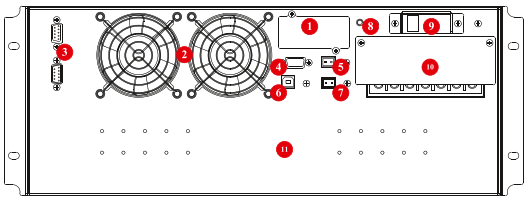


Model T

1 - RS232 port
2 - Emergency Power Off (EPO)
3 - parallel operation extension board (optional)
4 - USB port (optional)
5 - battery temperature compensation sensor port (optional)
6 - expansion card slot
7 - manual bypass or a battery breaker mounting spot
8 - cooling fans
9 - static bypass input breaker
10 - input circuit breaker
11 - ground connection
12 - power cable terminals



SW900G4-RT-6/10kVA (1:1)

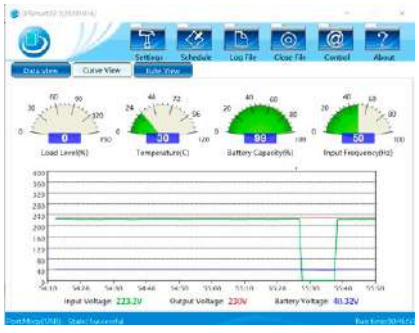


SW900G4-RTB-6/10 kVA (1:1)

1 - expansion card slot
2 - cooling fans
3 - parallel operation extension board (optional)
4 - RS232 port
5 - Emergency Power Off (EPO)
6 - USB port
7 - battery temperature compensation sensor port (optional)
8 - ground connection
9 - static bypass input breaker
10 - power cable terminals
11 — battery compartment

Monitoring

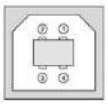
Extensive remote control and monitoring capabilities
Programmable start-up: automatic self-diagnostics, soft shutdown at low battery, scheduled shutdown and reboot, event log, error log.



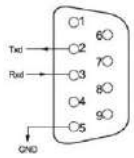
Communication interfaces

The user can monitor the operation of the UPS on the computer via the RS232 or USB communication port. The UPS comes with the necessary cables and a software CD.

USB port

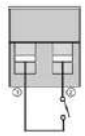
Contacts		Description
1		+ 5V
2		Data +
3		Data –
4		Ground

RS232 port (COM-port)

Contacts		Description
1		Not used
2		Send
3		Receive
4		Not used
5		Ground
6–9		Not used

Emergency Power Off (EPO) port (optional)

EPO (Emergency Power Off) is an emergency load shutdown port. The EPO ensures immediate shutdown of all equipment connected to the UPS.



In normal operation, pin 1 and pin 2 of the port are closed. In an emergency, when it is necessary to quickly turn off the power to the load, break the connection between contacts 1 and 2 by pulling the plug from the EPO port.

Additional monitoring tools

The UPS has an additional intelligent slot for installing an SNM remote monitoring board or an AS 400 dry contacts card. These expansion cards are hot-swappable. Perform the following steps in sequence:

1. Unscrew the mounting screws and remove the slot cover.
2. Insert the card (SNMP card, AS400 dry contact card, or RS485 card) along the guides.
3. Replace the mounting screws.

LED indicators

Icons	Name	Description
	Status indicator	A constant green light indicates that the UPS is in mains mode or in battery mode.
	Battery indicator	A constant red light indicates that the UPS is in battery mode.
	Bypass	A constant yellow light indicates that the UPS is in bypass mode or in setting mode.
	Fault indicator	A flashing red light indicates that the UPS has malfunctioned (battery fault, mains fault).

Control buttons

Buttons	Function
Powering up +	Hold down both buttons for 3 seconds to turn on the UPS.
Shutting down +	Hold down both buttons for 3 seconds to turn off the UPS.
Test/Mute +	In battery mode, hold down the button for 0,5 seconds to mute the sound alarm. In mains mode, hold down for 0,5 seconds to test the batteries for 15 seconds.
Settings	Press and hold the button for 5 seconds to enter settings mode. Press and hold the button for 3 seconds to exit from settings mode without saving changes. In settings mode, press and hold the button for 0,5 seconds to go to the next setting. In normal mode, press the button twice (0,5 seconds) to rotate the LCD.
◄	In normal mode, press and hold the button for 0,5 seconds to return to the previous screen. In settings mode, press and hold the button for 0,5 seconds to decrease the parameter value.
►	In normal mode, press and hold the button for 0,5 seconds to move to the next screen. Press and hold the button for 2 seconds to enter automatic scrolling mode, press and hold the button for 2 more seconds to exit automatic scrolling mode. In settings mode, press and hold the button for 0,5 seconds to increase the parameter value.

LCD interface

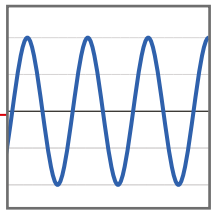
Icons	Name	Description
	Overload indicator	Blinks when the load is higher than the nominal
	Alarm indicator	Blinks when the UPS beeps (synchronously)
	Fan	Shows the status of the fans. The fan icon rotates when the fan is running. The fan icon constantly on indicates fan failure
	Fault indicator	The icon blinks in the event of a fault or failure and the UPS beeps
	Battery indicator	The icon blinks when the battery fault is detected

Name	Case type	Built-in battery bank	Item code
With built-in batteries			
Dual Conversion Uninterruptible Power Supply E-Power SW900G4 6 kVA/6 kW freestanding, 1-phase, 230V, with 16 x 12V 7 Ah battery	Tower	16 x 12V x 7 Ah	SW960G4-T-B
Dual Conversion Uninterruptible Power Supply E-Power SW900G4 10 kVA/10 kW freestanding, 1-phase, 230V, with 16 x 12V 9 Ah battery		16 x 12V x 9 Ah	SW910G4-T-B
Dual Conversion Uninterruptible Power Supply E-Power SW900G4 10 kVA/10 kW rack-mounted, 1-phase, 230V, with 16 x 12V 9 Ah battery	Universal RT	16 x 12V x 9 Ah	SW901G4-RT-B
Dual Conversion Uninterruptible Power Supply E-Power SW900G4 6 kVA/6 kW rack-mounted, 1-phase, 230V, with 16 x 12V 7 Ah battery		16 x 12V x 7 Ah	SW960G4-RT-B
No battery bank, improved charger			
Dual Conversion Uninterruptible Power Supply E-Power SW900G4 6 kVA/6 kW freestanding, 1-phase, 230V, no battery	Tower	–	SW960G4-T
Dual Conversion Uninterruptible Power Supply E-Power SW900G4 10 kVA/10 kW freestanding, 1-phase, 230V, no battery		–	SW901G4-T
Dual Conversion Uninterruptible Power Supply E-Power SW900G4 6 kVA/6 kW rack-mounted, 1-phase, 230V, no battery	Universal RT	–	SW960G4-RT
Dual Conversion Uninterruptible Power Supply E-Power SW900G4 10 kVA/10 kW rack-mounted, 1-phase, 230V, no battery		–	SW901G4-RT

Uninterruptible power supplies E-Power SW900G4 10000-1000 VA 3P to 1P EKF

A new generation of uninterruptible power supply with improved performance and an input and output power factor of 1. The UPS has three phases at the input and single phase at the output with double-conversion. The output voltage parameters are constantly monitored and maintained with high level of accuracy thanks to a microprocessor-based control. The output voltage of the UPS does not depend on the quality of the mains power, which ensures a high degree of critical load protection. The UPS product range has two available cases: a freestanding tower case (T) and a universal case (RT). The universal case can be used as a freestanding or rack-mounted unit. UPS are available in two versions: with built-in batteries (RTB/TB) and with an improved charger and a connector for external battery bank (RT/T). The nominal power of the UPS models is 10 kVA/10 kW, 15 kVA/15 kW, 20 kVA/20 kW. UPS with an improved charger can utilize 192, 204 and 240 V battery banks, which represents 16, 18 or 20 battery string with a nominal voltage of 12V. The units support parallel operation of up to four UPSes per single load, which makes it possible to build reliable power supply systems with an increased level of redundancy.

3 to 1-phase operation. Input power factor higher than 0,99. Low level of electromagnetic interference



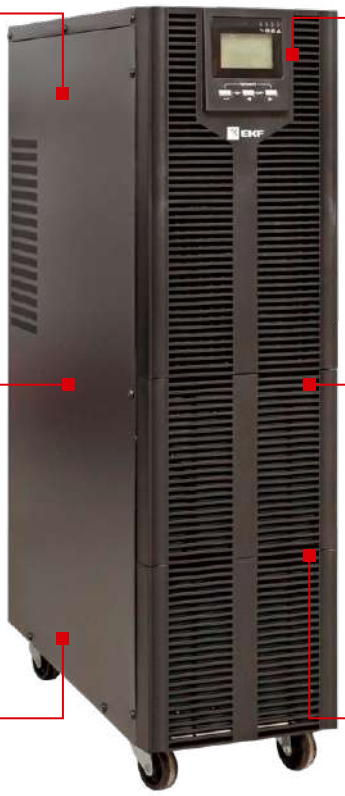
Double conversion, pure sine wave at the output. Minimal THDv at the output

Automatic three-stage battery charging with a self-test function maximizes battery life

Digital control of the rectifier, inverter, and charger. Energy-saving technology

Automatic self-diagnostics, soft shutdown at low battery level, scheduled shutdown and reboot, event log, error log

Short circuit and overload protection at both input and output. Overheating protection



APPLICATION

EKF UPS are used to provide emergency backup power to critical equipment in the event of a primary power source failure, until the secondary power source is brought online or the load is gracefully shut down:

- emergency backup power supply;
- over- and undervoltage protection.

TECHNICAL DATA

Charge and discharge characteristics

Number of SW900G4-EBBT-329 external battery banks	UPS	Load, kW									
		1	2	3	4	5	6	7	8	9	10
		Battery operation time, min									
Built-in 16 x 12 V x 7 Ah	SW900G4-T-B 6kW	60	25	16	10	6	/	/	/	/	/
Built-in 16 x 12 V x 9 Ah	SW900G4-T-B 10kW						/	/	/	/	/
1	SW900G4-T-B 6kW	240	120	60	40	28	23	/	/	/	/
	SW900G4-T-B 10kW							20	18	16	15
2*	SW900G4-T-B 6kW	393,6	166	150	72	55	44	/	/	/	/
	SW900G4-T-B 10kW							37	28	25	22

* The time to full charge is more than 10 hours.

External battery bank capacity, Ah 12V × 18 pcs.	UPS	Load, kW									
		1	2	3	4	5	6	7	8	9	10
		Battery operation time, min									
26	SW900G4-T/RT 6kW	240	104	64	44	34	27	/	/	/	/
	SW900G4-T/RT 10kW							23	19	17	15
33	SW900G4-T/RT 6kW	312	135	83	59	45	36	/	/	/	/
	SW900G4-T/RT 10kW							30	26	22	20
45	SW900G4-T/RT 6kW	453	197	121	85	65	53	/	/	/	/
	SW900G4-T/RT 10kW							44	37	32	29
55	SW900G4-T/RT 6kW	577	250	154	109	83	67	/	/	/	/
	SW900G4-T/RT 10kW							56	47	41	36
65	SW900G4-T/RT 6kW	706	306	188	133	102	82	/	/	/	/
	SW900G4-T/RT 10kW							68	58	50	44
75	SW900G4-T/RT 6kW	839	364	223	158	121	97	/	/	/	/
	SW900G4-T/RT 10kW							81	69	60	55
80*	SW900G4-T/RT 6kW	907	393	241	171	130	105	/	/	/	/
	SW900G4-T/RT 10kW							87	74	64	57
90*	SW900G4-T/RT 6kW	1045	453	278	197	150	121	/	/	/	/
	SW900G4-T/RT 10kW							100	85	74	65
100*	SW900G4-T/RT 6kW	1206	514	316	223	171	137	/	/	/	/
	SW900G4-T/RT 10kW							114	97	84	74
120*	SW900G4-T/RT 6kW	1447	641	393	278	212	171	/	/	/	/
	SW900G4-T/RT 10kW							142	121	105	92
Number of external battery banks SW900G4-EBBT-409	UPS										
1	SW900G4-T 6kW	175	76	47	33	26	21	/	/	/	/
	SW900G4-T 10kW							17	15	13	11
2	SW900G4-T 6kW	403	157	97	68	52	47	/	/	/	/
	SW900G4-T 10kW							35	30	26	23
3	SW900G4-T 6kW	658	256	157	111	85	76	/	/	/	/
	SW900G4-T 10kW							57	49	42	37
4*	SW900G4-T 6kW	930	363	223	157	120	107	/	/	/	/
	SW900G4-T 10kW							80	68	59	52
5*	SW900G4-T 6kW	1232	475	291	206	157	141	/	/	/	/
	SW900G4-T 10kW							105	89	78	68
6*	SW900G4-T 6kW	1169,4	584,4	389,4	292,2	233,4	194,4	/	/	/	/
	SW900G4-T 10kW	1478	591	363	256	196	175	131	111	97	85
Number of SW900G4-EBBRT-169 external battery banks	UPS										
Built-in 16 x 12 V x 7 Ah	SW900G4-RT-B 6kW	60	25	16	10	6	/	/	/	/	/
Built-in 16 x 12 V x 9 Ah	SW900G4-RT-B 10kW						/	/	/	/	/
1	SW900G4-RT-B 6kW	180	60	30	24	20	16	/	/	/	/
	SW900G4-RT-B 10kW							13	10	8	7
2	SW900G4-RT-B 6kW	240	120	60	40	28	23	/	/	/	/
	SW900G4-RT-B 10kW							20	18	16	15
3*	SW900G4-RT-B 6kW	360	180	110	60	42	30	/	/	/	/
	SW900G4-RT-B 10kW							26	23	21	20
4*	SW900G4-RT-B 6kW	393,6	210	150	72	55	44	/	/	/	/
	SW900G4-RT-B 10kW							37	28	25	22
Number of SW900G4-EBBRT-169 external battery banks	UPS										
1	SW900G4-RT 6kW	60	25	16	10	6	/	/	/	/	/
	SW900G4-RT 10kW						/	/	/	/	/
2	SW900G4-RT 6kW	180	60	30	24	20	16	/	/	/	/
	SW900G4-RT 10kW							13	10	8	7
3	SW900G4-RT 6kW	240	120	60	40	28	23	/	/	/	/
	SW900G4-RT 10kW							20	18	16	15
4	SW900G4-RT 6kW	360	180	82	60	42	30	/	/	/	/
	SW900G4-RT 10kW							26	23	21	20
5	SW900G4-RT 6kW	393,6	210	107	72	55	44	/	/	/	/
	SW900G4-RT 10kW							37	28	25	22
6	SW900G4-RT 6kW	502	218	120	85	65	58	/	/	/	/
	SW900G4-RT 10kW							44	37	32	29
7*	SW900G4-RT 6kW	605	250	145	161	78	70	/	/	/	/
	SW900G4-RT 10kW							52	45	39	34
8*	SW900G4-RT 6kW	711	308	180	120	92	82	/	/	/	/
	SW900G4-RT 10kW							61	52	46	40
Number of SW900G4-EBBT-329 external battery banks	UPS										
1	SW900G4-T 6kW	180	60	30	24	20	16	/	/	/	/
	SW900G4-T 10kW							13	10	8	7
2	SW900G4-T 6kW	360	180	110	60	42	30	/	/	/	/
	SW900G4-T 10kW							26	23	21	20
3	SW900G4-T 6kW	502	196	120	85	65	58	/	/	/	/
	SW900G4-T 10kW							44	37	32	29
4*	SW900G4-T 6kW	711	277	170	120	92	82	/	/	/	/
	SW900G4-T 10kW							61	52	46	40
5*	SW900G4-T 6kW	930	363	223	157	120	107	/	/	/	/
	SW900G4-T 10kW							80	68	59	52
6*	SW900G4-T 6kW	1159	452	277	196	150	134	/	/	/	/
	SW900G4-T 10kW							100	85	74	65

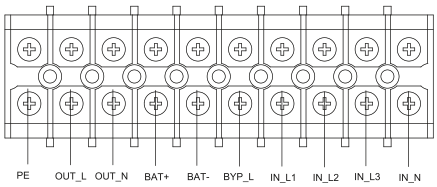
* The time to full charge is more than 10 hours.

Installation and operation

- UPS must be installed in a well-ventilated location, away from water, flammable and corrosive substances. The minimum distance to the nearest objects must be at least 150 mm.
- Connect the UPS to an electrical outlet (make sure that the outlet is grounded properly).
- For correct operation of the UPS the ambient temperature must remain in the 0 to 40 °C range.
- To connect the UPS, provide input and output cables (not included). For models using external battery banks (T), also provide a cable for connecting external battery bank. Use the following recommended input and output cable cross-sections.

Model	Cable cross-section, mm²				
	Input	Output	Battery	Neutral	Ground
6 kVA TB/RTB	6	6	6	6	6
6 kVA T/RT	6	6	6	6	6
10 kVA TB/RTB	10	10	10	10	10
10 kVA T/RT	10	10	10	10	10

- For uninterruptible power supplies with longer battery life (T models), the recommended number of external battery banks is up to 6 EBBRT banks and up to 3 EBBT banks.
- The figure below shows a diagram for connecting an uninterruptible power supply to the mains and a diagram for connecting the load to a single-phase UPS: 3-phase input, 1-phase output.
- A terminal block is used to connect to the mains and to the load. Connection cables are not included in the package and must be purchased separately by the user.



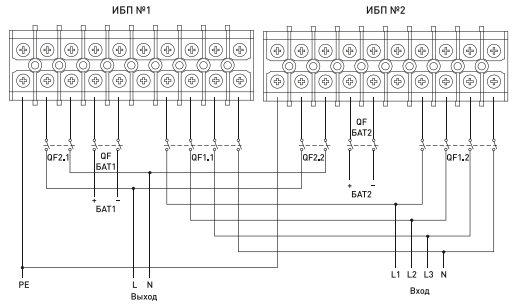
UPS terminal block 3:1 connection

PE - protective earth (ground) wire;
IN_L1, IN_L2, IN_L3 — phase wires of the power supply network;
IN_N — neutral power supply wire;
Out_N — output neutral wire;
Out_L — output live wire;
BAT+ — positive wire for the external battery bank;
BAT- — negative wire for the external battery bank;
BYP_L — bypass power cable.

Parallel UPS connection

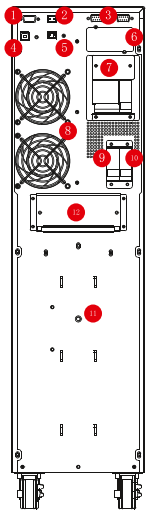
For parallel operation, the UPS must have parallel boards installed (optional).

- Up to 4 UPSes of the same power can be connected in parallel.
- Each UPS must have its own unique ID number.
- For UPS management, they must be interconnected with standard cables.
- Control cables must not exceed 3 m in length.
- The recommended length of UPS load power cables should not exceed 20 m.
- The difference in length between the input and output cables of each UPS must not exceed 10%.
- Each UPS must have its own battery bank.

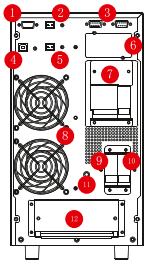


3:1 UPS parallel connection

UPS back panel

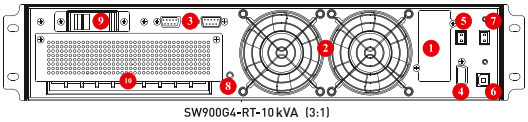


1 - RS232 port
2 - Emergency Power Off (EPO)
3 - parallel operation extension board (optional)
4 - USB port (optional)
5 - battery temperature compensation sensor port (optional)
6 - expansion card slot
7 - manual bypass or a battery breaker mounting spot

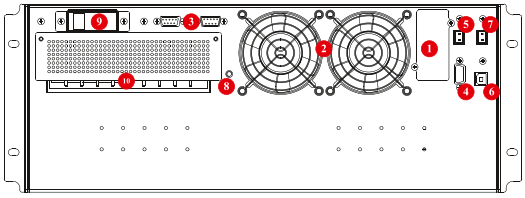


8 - cooling fans
9 - static bypass input breaker
10 - input circuit breaker
11 - ground connection
12 - power cable terminals

Model TB Model T



SW900G4-RT-10 kVA (3:1)

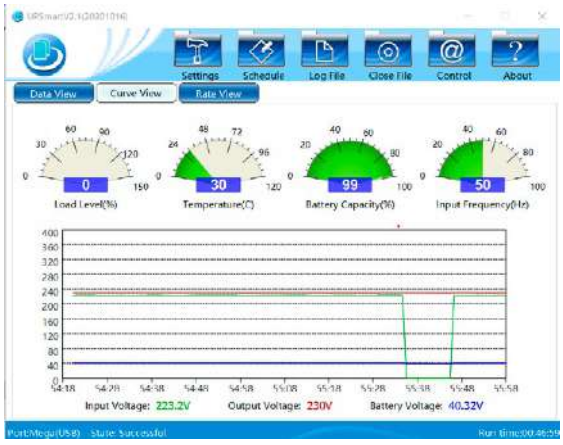


SW900G4-RTB-10 kVA (3:1)

1 - expansion card slot
2 - cooling fans
3 - parallel operation extension board (optional)
4 - RS232 port
5 - Emergency Power Off (EPO)
6 - USB port
7 - battery temperature compensation sensor port (optional)
8 - ground connection
9 - static bypass input breaker
10 - power cable terminals
11 — battery compartment

Monitoring

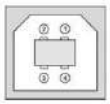
Extensive remote control and monitoring capabilities
Programmable start-up: automatic self-diagnostics, soft shutdown at low battery, scheduled shutdown and reboot, event log, error log.



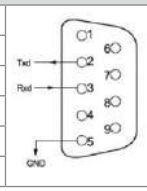
Communication interfaces

The user can monitor the operation of the UPS on the computer via the RS232 or USB communication port. The UPS comes with the necessary cables.

USB port

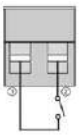
Contacts		Description
1		+ 5V
2		Data +
3		Data –
4		Ground

RS232 port (COM-port)

Contacts		Description
1		Not used
2		Send
3		Receive
4		Not used
5		Ground
6–9		Not used

Emergency Power Off (EPO) port (optional)

EPO (Emergency Power Off) is an emergency load shutdown port. The EPO ensures immediate shutdown of all equipment connected to the UPS.



In normal operation, pin 1 and pin 2 of the port are closed. In an emergency, when it is necessary to quickly turn off the power to the load, break the connection between contacts 1 and 2 by pulling the plug from the EPO port.

Additional monitoring tools

The UPS has an additional intelligent slot for installing an SNM remote monitoring board or an AS 400 dry contacts card. These expansion cards are hot-swappable. Perform the following steps in sequence:

1. Unscrew the mounting screws and remove the slot cover.
2. Insert the card (SNMP card, AS400 dry contact card, or RS485 card) along the guides.
3. Replace the mounting screws.

Control buttons

Buttons	Function
Powering up + ◄	Hold down both buttons for 3 seconds to turn on the UPS.
Shutting down ◄ + ►	Hold down both buttons for 3 seconds to turn off the UPS.
Test/Mute ↵ + ►	In battery mode, hold down for 0,5 seconds to mute the sound. In mains mode, hold down for 0,5 seconds for a 15-second battery test.
Settings ↵	Press and hold the button for 5 seconds to enter settings mode. Press and hold the button for 3 seconds to exit from settings mode without saving changes. In settings mode, press and hold the button for 0,5 seconds to go to the next setting. In normal mode, press the button twice (0,5 seconds) to rotate the LCD.
◄	In normal mode, press and hold the button for 0,5 seconds to return to the previous screen. In settings mode, press and hold the button for 0,5 seconds to decrease the parameter value.
►	In normal mode, press and hold the button for 0,5 seconds to move to the next screen. Press and hold the button for 2 seconds to enter automatic scrolling mode, press and hold the button for 2 more seconds to exit automatic scrolling mode. In settings mode, press and hold the button for 0,5 seconds to increase the parameter value.

LED indicators

Icons	Name	Description
∿	Status indicator	A constant green light indicates that the UPS is in mains mode or in battery mode.
+ –	Battery indicator	A constant red light indicates that the UPS is in battery mode.
⊘	Bypass	A constant yellow light indicates that the UPS is in bypass mode or in setting mode.
⚠	Fault indicator	A flashing red light indicates that the UPS has malfunctioned (battery fault, mains fault).

Name	Case type	Built-in battery bank	Item code
With built-in batteries			
Dual Conversion Uninterruptible Power Supply E-Power SW900G4 10 kVA/10 kW freestanding, 3 to 1-phase, 380/230V, with 16 x 12V 7 Ah battery	Tower	16 x 12V x 9 Ah	SW910G4-T-B31
Dual Conversion Uninterruptible Power Supply E-Power SW900G4 10000 VA rack-mounted, 3 to 1-phase, 380/230V, with 16 x 12V 7 Ah battery	Universal RT	16 x 12V x 9 Ah	SW901G4-RT-B-31
No battery bank, improved charger			
Dual Conversion Uninterruptible Power Supply E-Power SW900G4-T 10 kVA/10 kW freestanding, 3 to 1-phase, 380/230V, no battery	Tower	–	SW901G4-T-31
Dual Conversion Uninterruptible Power Supply E-Power SW900G4-T 20 kVA/20 kW freestanding, 3 to 1-phase, 380/230V, no battery		–	SW902G4-T-31
Dual Conversion Uninterruptible Power Supply E-Power SW900G4 10000 VA rack-mounted, 3 to 1-phase, 380/230V, no battery	Universal RT	–	SW901G4-RT31
Dual Conversion Uninterruptible Power Supply E-Power SW900G4 20000 VA rack-mounted, 3 to 1-phase, 380/230V, no battery		–	SW902G4-RT-31

External battery banks for E-Power SW900PRO and E-Power SW900G4 uninterruptible power supplies

The external battery bank is designed to increase the battery operation time of the E-Power SW900PRO and E-Power SW900G4 UPS.

TECHNICAL DATA

Parameters	Values									
	SW900G4-EBBRT-169	SW900G4-EBBRT-167	SW900G4-EBBT-409	SW900G4-EBBT-329	SW900PRO-EBBRT-73	SW900PRO-EBBRT-78	SW900PRO-EBBRT-96	SW900PRO-EBBT-73	SW900PRO-EBBT-96	SW900PRO-EBBT-98
Voltage, V	192	192	240	192	36	96	72	36	72	96
Number of batteries, pcs.	16	16	2 × 20	2 × 16	3	8	6	3	6	8
Battery capacity, Ah	9	7	2 × 9	2 × 9	7	7	7	7	7	7
Dimensions (H×W×D), mm	470 × 318 × 595		941 × 310 × 685		88 × 440 × 465			330 × 195 × 470		
Weight, kg	48	45	109	90	12	15	18	12	18	16

Picture	Name	Built-in battery bank	Item code
External battery banks for SW900PRO			
	Battery bank SW910PRO-RT 3×7 Ah	3 x 12 V x 7 Ah	SW900PRO-EBBRT-73
	Battery bank SW920PRO-RT 6×9 Ah	6 x 12V x 7 Ah	SW900PRO-EBBRT-96
	Battery bank SW930PRO-RT 8×7 Ah	8 x 12V x 7 Ah	SW900PRO-EBBRT-78
	Battery bank SW930PRO-T 3×7 Ah	3 x 12 V x 7 Ah	SW900PRO-EBBT-73
	Battery bank SW920PRO-T 6×9 Ah	6 x 12V x 7 Ah	SW900PRO-EBBT-96
	Battery bank SW920PRO-T 8×9 Ah	8 x 12V x 7 Ah	SW900PRO-EBBT-98
External battery banks for SW900G4			
	Battery bank SW900G4-T 40x9 Ah	40 x 12V x 9 Ah	SW900G4-EBBT-409
	Battery bank SW900G4-TB/T 32x9 Ah	32 x 12V x 9 Ah	SW900G4-EBBT-329
	Battery bank SW900G4-RT 16x9 Ah	16 x 12V x 9 Ah	SW900G4-EBBRT-169
	Battery bank SW960G4-RT 16x7 Ah	16 x 12V x 7 Ah	SW900G4-EBBRT-167

SNMP adapter EKF

An SNMP adapter is a device that allows you to connect a UPS to local (global) Ethernet network. The adapter supports SNMP data exchange and enables remote monitoring of UPS via the Internet using a web browser.

TECHNICAL DATA

Parameters	Values
Interface	RJ45, RS485-RJ45, RS232-RJ45
Network interface, Mbps	10/100
SNMP MIB	RFC1628
Network protocols	TCP/IP, UDP, SNMP, SNTP, HTTP, SMTP, DHCP, DNS, FTP, ARP, ICMP, etc.
Supply voltage Ue, V	9-28
Power consumption, W	1,5 max.
Access security	Based on IP filtering, user ID and password

Picture	Name	Dimensions HxWxD, mm	Item code
	WEB/SNMP card for UPS	81 × 10 × 42	SNMP

AS400 Dry Contact Card EKF

The AS400 card is designed to convert internal UPS signals into "dry contact" interface signals with galvanic isolation. The card provides the transmission of alarm signals from the UPS, as well as information about the operating mode of the UPS. In addition, the card features an emergency power-off that operates in parallel with the main EPO interface on the back of the UPS.

Parameters	Values
Interface	RS232
Output	5 digital
Input	1 digital
Specifications	30 V DC / 2 A, 125 V AC /0,5 A
Supply voltage Ue, V	9-28
Power consumption, W	1,5 max.
Access security	Based on IP filtering, user ID and password

Internal DIP switch

Switch		Description	Action
1	2	Remote control signals	00: remote on/off 01: remote on 10: remote off 11: remote on/off
3		Button type	0: touch 1: self-locking
4	5	User type	00: multifunctional 01: EA checksum protocol

Contact pinout

Pin	Contact function	Description	Input/ Output	Action
1	UPS malfunction	Internal UPS error	Output	PIN 1 - to - PIN 5 - closed
2	Failure	UPS error - low battery charge, mains voltage out of bounds	Output	PIN 2 - to - PIN 5 - closed
3	Ground	–	Input	–
4	Remote control	–	Input	PIN 4 - to - PIN 3 - closed
5	Non-selective	–	Input	–
6	Bypass mode	Multiple error scenarios; mutually exclusive signal with Pin 8 in bypass mode	Output	PIN 6 - to - PIN 5 - closed
7	Low battery charge / voltage	Low battery charge / voltage	Output	PIN 7 - to - PIN 5 - closed
8	Multiple UPS operation scenarios	Normal UPS operation, mutually exclusive signal with Pin 6 in bypass mode	Output	PIN 8 - to - PIN 5 — closed
9	Input mains voltage out of bounds	Input mains voltage out of bounds	Output	PIN 8 - to - PIN 5 — closed

Picture	Name	Dimensions (H×W×D), mm	Item code
	Dry contact card for UPS	81 × 10 × 42	AS400

Modular push buttons, pilot lights & selector switches EKF

EKF pilot lights, push buttons and selector switches are intended for management and control of plant and equipment to be used in 50/60 Hz AC circuits up to 660 V and in DC circuits up to 440 V. They can be installed, e.g., in lead-in distributors, automatic transfer switches, motor control centers etc.

Standard: IEC/EN 60947-5-1

Versatile design. Can be taken apart for fast assembly

22 & 16 mm coupling dimensions

Auxiliary open & close contacts options

Quick and easy lamp replacement

Wide range of lights of various colors, shapes, light sources & lenses, materials & designs

Wide range of buttons & switches of various colors, contact number & types, switching mechanisms, materials & design

APPLICATION

Push buttons, pilot lights & selector switches are ubiquitous control and signalling devices, used in electrical panels, enclosures, wired control staiton enclosures for:

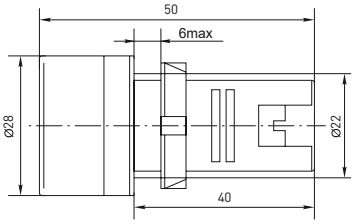
- manual control (switching) of electrical equipment;
- light signaling & alarm.

TECHNICAL DATA

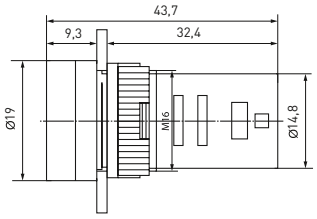
Parameters	Values									
	Altrenating current (AC)					Direct current (DC)				
Rated voltage, V	660	400	230	110	48	440	230	110	48	24
Rated current, A:										
Utilization category AC-12	2,5	4,5	7,5	10	10	–	–	–	–	–
Utilization category AC-15	1,5	2,5	4,5	6	6	–	–	–	–	–
Utilization category DC-12	–	–	–	–	–	0,6	1,3	2,5	5	10
Utilization category DC-15	–	–	–	–	–	0,1	0,3	0,6	1,3	2,5
Rated insulation voltage Ui, V	660									
Mechanical endurance, O-C cycles, x10^4	Key switches and stay put/turn to release buttons – 10. Other models – 60									
Mounting hole diameter Ø, mm	22									
Operating temperature, °C	from -10 to +50									

Overall and installation dimensions (mm)

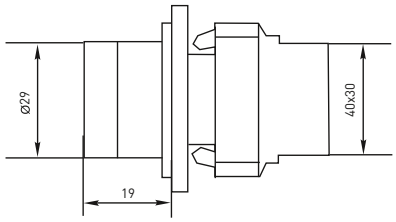
Pilot lights
AD16-22HS
ED16-22



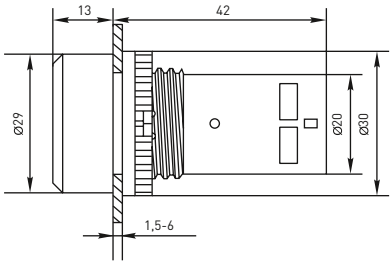
Pilot lights AD16-16S



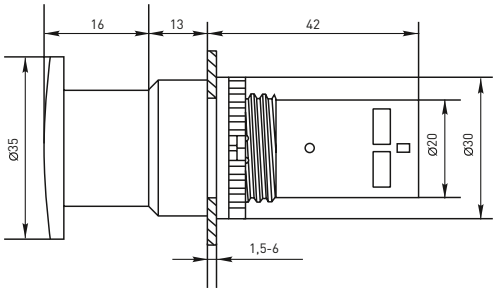
Pilot lights BV



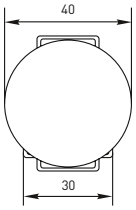
Push buttons
SW2C-11
SW2C-10D

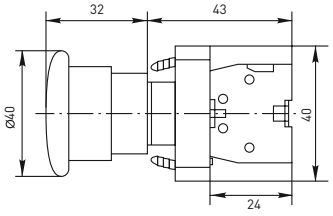


Push buttons
SW2C-MD
SW2C-11MZ

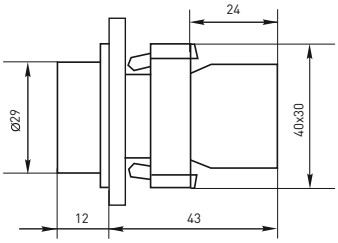


Push buttons
BS542, BC42

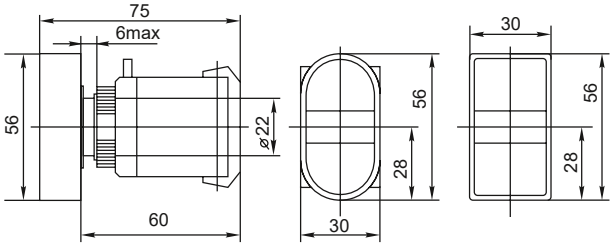




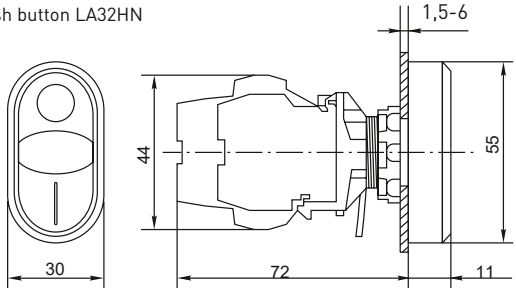
Push buttons
BA



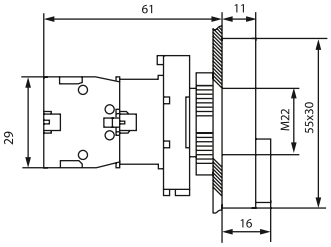
Push buttons APBB-22N, AS-22N



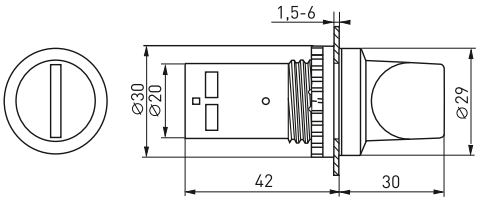
Push button LA32HN



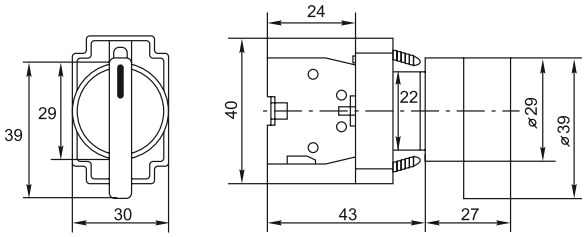
Push button LAY5-BW8465



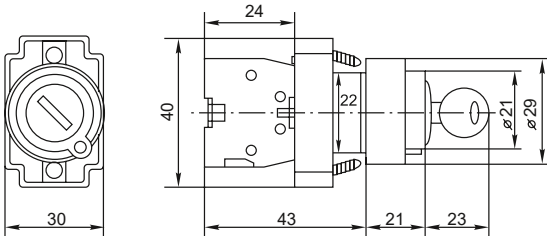
Switches SW2C-11X/2, SW2C-20X/3



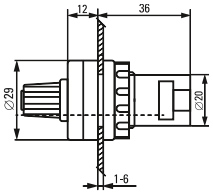
Selector switches BJ21 2P, BJ33 3P, BD21 2P, BD33 3P



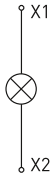
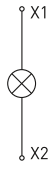
Selector switches BG21 2P, BG3 3P, BG61 2P, BG73 3P



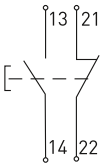
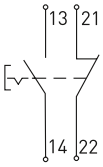
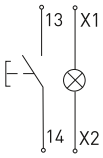
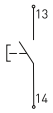
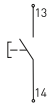
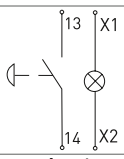
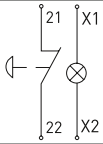
Potentiometer

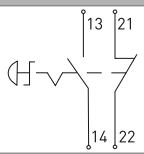
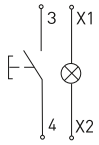
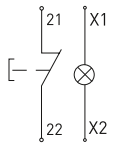
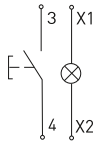
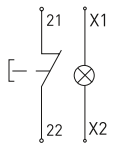
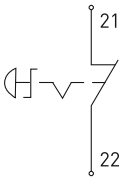
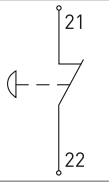
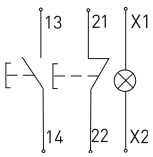


Pilot lights

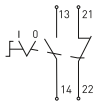
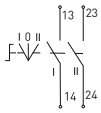
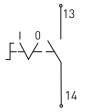
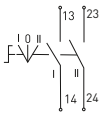
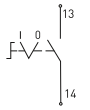
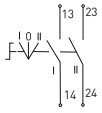
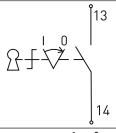
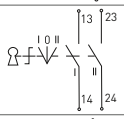
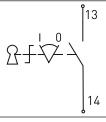
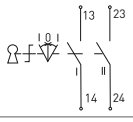
Picture	Name	Wiring diagram	Degree of protection	Color	Rated voltage, V	Item code
Plastic one-piece housing. Flat light lens. 22m.	LED Pilot light AD16-22HS EKF		IP54	White	230	ledm-ad16-w
					12	ledm-ad16-w-12
					24	ledm-ad16-w-24
					400	ledm-ad16-w-400
				Yellow	230	ledm-ad16-o
					12	ledm-ad16-y-12
					24	ledm-ad16-o-24
					400	ledm-ad16-o-400
				Green	230	ledm-ad16-g
					12	ledm-ad16-g-12
					24	ledm-ad16-g-24
					400	ledm-ad16-g-400
				Red	230	ledm-ad16-r
					12	ledm-ad16-r-12
					24	ledm-ad16-r-24
					400	ledm-ad16-r-400
				Blue	230	ledm-ad16-b
					12	ledm-ad16-b-12
					24	ledm-ad16-b-24
					400	ledm-ad16-b-400
			IP65	White	230	ledm-ad16-w-65
					24	ledm-ad16-w-24-65
				Yellow	230	ledm-ad16-y-65
					24	ledm-ad16-y-24-65
				Green	230	ledm-ad16-g-65
					24	ledm-ad16-g-24-65
				Red	230	ledm-ad16-r-65
					24	ledm-ad16-r-24-65
				Blue	230	ledm-ad16-b-65
					24	ledm-ad16-b-24-65
Plastic housing. Flat lens. 16 mm	LED Pilot light AD16-16HS EKF		P54	White	230	ledm-ad16-16-w
					24	ledm-ad16-24-w
				Red	230	ledm-ad16-16-r
					24	ledm-ad16-24-r
				Yellow	230	ledm-ad16-16-y
					24	ledm-ad16-24-y
				Blue	230	ledm-ad16-16-b
					24	ledm-ad16-24-b
				Green	230	ledm-ad16-16-g
					24	ledm-ad16-24-g
Plastic housing, LED 80-85 dB	Buzzer ED16-22BM 24V EKF		IP40	Black	24	ed16-22bm-24
					230	ed16-22bm
				Red	24	ed16-22bms-24
					230	ed16-22bms
Plastic one-piece housing	Voltage indicator pilot light ED16-22 EKF		IP54	Yellow	70-500	ed16-22vd-y
				Green		ed16-22vd-g
				Red		ed16-22vd-r
Metal housing. Cylindrical light lens. Can be taken apart.	Pilot light BV65 EKF		IP54	Yellow	230	xb2-bv65
					24	xb2-bv65-24
				Green	230	xb2-bv63
					24	xb2-bv63-24
				Red	230	xb2-bv64
					24	xb2-bv64-24
				Blue	230	xb2-bv66
					24	xb2-bv66-24
Plastic one-piece housing, digital indication of current and voltage	Current and voltage indicator pilot light ED16-22AVD 100A with current transformer EKF		IP54	Yellow	70-500	ed16-22avd-y
				Green		ed16-22avd-g
				Red		ed16-22avd-r
Plastic one-piece housing, digital indication of temperature	Temperature indicator pilot light white ED16-22C EKF		IP54	White	230	ed16-22c-w

Push buttons

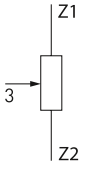
Picture	Name	Wiring diagram	Degree of protection	Color	Rated voltage, V	Item code
Spring return, one-piece, NO+NC, non-illuminated	Push button SW2C-11S EKF		IP54	Black	230	sw2c-11s
				Yellow		sw2c-11s-y
				Green		sw2c-11s-g
				Red		sw2c-11s-r
				Blue		sw2c-11s-b
Stay put, one piece, NO+NC, non-illuminated	Push button SW2C-11F EKF		IP54	Green	230	sw2c-11f-g
				Red		sw2c-11f-r
				Yellow		sw2c-11f-y
				Black		sw2c-11f
Stay put, one piece, NO+NC, non-illuminated	Illuminated push button SW2C-10D EKF		IP54	Yellow	230	sw2c-md-y
					24	sw2c-md-y-24
				Green	230	sw2c-md-g
					24	sw2c-md-g-24
				Red	230	sw2c-md-r
					24	s w2c-md-r-24
				Blue	230	sw2c-md-b
					24	sw2c-md-b-24
Spring return, NO, non-illuminated, can be taken apart	Push button BA EKF		IP40	Red	230	xb2-ba41
				Yellow		xb2-ba51
				Green		xb2-ba31
				Blue		xb2-ba61
				Black		xb2-ba21
Spring return, NC, non-illuminated, can be taken apart				Red		xb2-ba42
Spring return, NO, non-illuminated, can be taken apart			IP65	Red	230	xb2-b41-65
				Yellow		xb2-ba51-65
				Green		xb2-ba31-35
				Blue		xb2-ba61-65
				Black		xb2-ba21-65
Spring return, NC, non-illuminated, can be taken apart				Red		xb2-ba42-65
Spring return, one-piece, NO, illuminated (neon light)	Illuminated mushroom head push button SW2C-MD EKF		IP54	Green	230	sw2c-md-gg
					24	sw2c-md-gg-24
Spring return, one-piece, NC, illuminated (neon light)				Red	230	sw2c-md-rr
					24	sw2c-md-rr-24

Picture	Name	Wiring diagram	Degree of protection	Color	Rated voltage, V	Item code
Turn to release, one-piece, NO+NC, non-illuminated	Mushroom head push button SW2C-11MZ EKF		IP40	Red	230	sw2c-mz-r
Spring return, can be taken apart, NO, illuminated (LED)	Illuminated push button BA EKF		IP40	White	230	xb2-bw21-230
					24	xb2-bw21-24
				Yellow	230	xb2-bw51-230
					24	xb2-bw51-24
				Green	230	xb2-bw31-230
					24	xb2-bw31-24
				Blue	230	xb2-bw61-230
					24	xb2-bw61-24
Spring return, can be taken apart, NC, illuminated (LED)				Red	230	xb2-bw42-230
					24	xb2-bw42-24
Spring return, can be taken apart, NO, illuminated (LED)			IP65	Yellow	230	xb2-bw51-230-65
					24	xb2-bw51-24-65
				Green	230	xb2-bw31-230-65
					24	xb2-bw31-24-65
				Blue	230	xb2-bw61-230-65
					24	xb2-bw61-24-65
Spring return, can be taken apart, NC, illuminated (LED)				Red	230	xb2-bw42-230-65
					24	xb2-bw42-24-65
Turn to release, can be taken apart, NC, non-illuminated	Mushroom head push button BS542 EKF		IP40	Red	230	xb2-bs542
			IP65			xb2-bs542-65
Spring return, NC, non-illuminated, can be taken apart	Mushroom head push button BC42 EKF		IP40	Red	230	xb2-bc42
			IP65			xb2-bc2-65
Spring return, oval, can be taken apart, NO+NC, illuminated (neon lamp)	Push button APBB-22N "Start-Stop" oval-shaped NO+NC EKF		IP40	Red-green	230	pbn-apbb-o
					24	pbn-apbb-o-24
Spring return, rectangular, can be taken apart, NO+NC, illuminated (neon lamp)	Push button AS-22N "Start-Stop" rectangular NO+NC EKF		IP40	Red-green	230	pbn-as-rec
					24	pbn-as-rec-24
Spring return, oval, can be taken apart, NO+NC, illuminated (LED)	Illuminated push button LA32HND "Start-Stop" NO+NC EKF		IP40	Red-green	230	la32hnd
					24	la32hnd-24
Spring return, rectangular, can be taken apart, NO+NC, illuminated (LED	Push button LAY5-BW8465 "I-O" rectangular 230V NO+NC EKF		IP40	Red-green	230	pbn-bw8465

Selector switches

Picture	Name	Wiring diagram	Degree of protection	Color	Rated voltage, V	Item code
Two positions, NO+NC, one-piece, non-illuminated	Selector switch head SW2C-11X/2 2P NO+NC EKF		IP54	Black	230	sw2c-11x/2
Three positions, 2NO, one-piece, non-illuminated	Selector switch head SW2C-20X/3 3P 2NO EKF					sw2c-20x/3
Two positions, long handle, NO, can be taken apart, non-illuminated	Selector switch head BJ21 2P long handle NO EKF		IP40		230	xb2-bj21
Three positions, long handle, 2NO, can be taken apart, non-illuminated	Selector switch head BJ33 3P long handle 2NO EKF					xb2-bj33
Two positions, short handle, NO, can be taken apart, non-illuminated	Selector switch head BD21 2P short handle NO EKF		IP40	Black	230	xb2-bd21
			IP65			xb2-bd21-65
Three positions, short handle, 2NO, can be taken apart, non-illuminated	Selector switch head BD33 3P short handle 2NO EKF		IP40			xb2-bd33
			IP65			xb2-bd33-65
Two positions, key switch, no return, NO, can be taken apart, non-illuminated	Key selector switch head BG21 2P non spring return NO EKF		IP40	Black	230	xb2-bg21
Three positions, key switch, no return, 2NO, can be taken apart, non-illuminated	Key selector switch head BG33 3P non spring return NO EKF					xb2-bg33
Two positions, key switch, spring return, NO, can be taken apart, non-illuminated	Key selector switch head BG61 2P spring return NO EKF					xb2-bg61
Three positions, key switch, spring return, 2NO, can be taken apart, non-illuminated	Key selector switch head BG73 3P spring return 2NO EKF					xb2-bg73

Potentiometers

Picture	Name	Wiring diagram	Degree of protection	Color	Rated voltage, V	Item code
Plastic one-piece housing, 5 kOhm	Potentiometer EKF		IP65	Black	24	PT22-05K
Plastic one-piece housing, 10 kOhm						PT22-10K

Accessories for EKF push buttons and selector switches

Connection of accessories

Name	Accessories
Pilot light ENS-22 EKF	Replacement neon lamp BA9S / Text plate holder LH 10×25 mm / Text plate holder LH 20×25 mm
LED pilot light AD16-22HS EKF	Replacement neon lamp BA9S / Text plate holder LH 10×25 mm / Text plate holder LH 20×25 mm
Pilot light BV65 EKF	Replaceable neon lamp BA9S / Auxiliary contact XB-2 NC red / Auxiliary contact XB-2 NO green / Text plate holder LH 10×25 mm / Text plate holder LH 20×25 mm
Illuminated push button SW2C-10D EKF	Replacement neon lamp BA9S / Text plate holder LH 10×25 mm / Text plate holder LH 20×25 mm
Illuminated mushroom head push button SW2C-MD EKF	Replacement neon lamp BA9S / Text plate holder LH 10×25 mm / Text plate holder LH 20×25 mm
Push button BA EKF	Auxiliary contact XB-2 NC red / Auxiliary contact XB-2 NO green / Text plate holder LH 10×25 mm / Text plate holder LH 20×25 mm
Mushroom head push button BS542 EKF	Auxiliary contact XB-2 NC red / Auxiliary contact XB-2 NO green / Text plate holder LH 10×25 mm / Text plate holder LH 20×25 mm
Mushroom head push button BC42 EKF	Auxiliary contact XB-2 NC red / Auxiliary contact XB-2 NO green / Text plate holder LH 10×25 mm / Text plate holder LH 20×25 mm
Mushroom head push button AEA-22 EKF	Auxiliary contact for pilot light NC burgundy / Auxiliary contact for pilot light NO black / Text plate holder LH 10×25 mm / Text plate holder LH 20×25 mm
Mushroom head push button AE-22 EKF	Auxiliary contact for pilot light NC burgundy / Auxiliary contact for pilot light NO black / Text plate holder LH 10×25 mm / Text plate holder LH 20×25 mm
Mushroom head push button AELA-22 EKF	Replacement neon lamp BA9S / Auxiliary contact for pilot light NC burgundy / Auxiliary contact for pilot light NO black / Text plate holder LH 10×25 mm / Text plate holder LH 20×25 mm
Push button APBB-22N "Start-Stop" oval-shaped NO+NC EKF	Replacement neon lamp BA9S / Auxiliary contact for pilot light NC burgundy / Auxiliary contact for pilot light NO black / Text plate holder LH 10×25 mm / Text plate holder LH 20×25 mm
Illuminated push button LA32HN red-green "Start-Stop" NO+NC EKF	Replacement neon lamp BA9S / Text plate holder LH 10×25 mm / Text plate holder LH 20×25 mm
Selector switch head BJ EKF	Auxiliary contact XB-2 NC red / Auxiliary contact XB-2 NO green / Text plate holder LH 10×25 mm / Text plate holder LH 20×25 mm /
Selector switch head BD EKF	Auxiliary contact XB-2 NC red / Auxiliary contact XB-2 NO green / Text plate holder LH 10×25 mm / Text plate holder LH 20×25 mm
Selector switch head BG EKF	Auxiliary contact XB-2 NC red / Auxiliary contact XB-2 NO green / Text plate holder LH 10×25 mm / Text plate holder LH 20×25 mm
Selector switch head ANC-22 EKF	Replacement neon lamp BA9S / Auxiliary contact for pilot light NC burgundy / Auxiliary contact for pilot light NO black / Text plate holder LH 10×25 mm / Text plate holder LH 20×25 mm
Illuminated selector switch head ANLC-22 EKF	Replacement neon lamp BA9S / Auxiliary contact for pilot light NC burgundy / Auxiliary contact for pilot light NO black / Text plate holder LH 10×25 mm / Text plate holder LH 20×25 mm

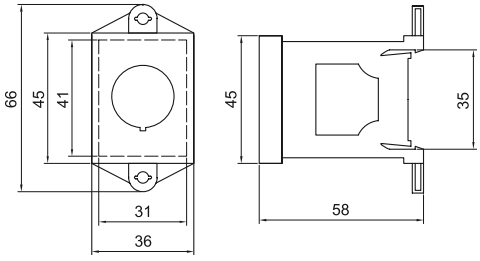
TECHNICAL DATA

Wiring diagrams

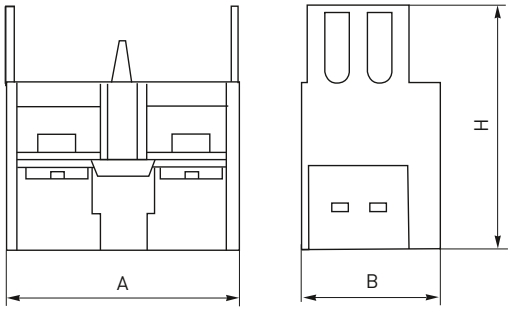
Aux. contact XB-2 NC red and aux. contact NC burgundy	Aux. contact XB-2 NO green and aux. contact NO black

Overall and installation dimensions (mm)

DIN rail mount adapter

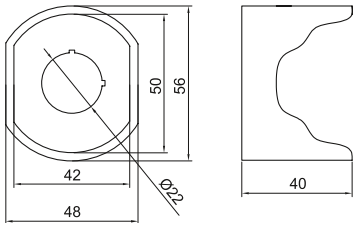


Auxiliary contact NC

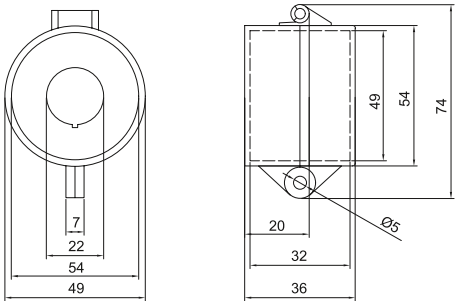


Characteristics	Dimensions, mm		
	A	B	H
NC Burgundy	30	18,5	31
NO Black	30	18,5	31
XB-2 NC Red	40	15	24
XB-2 NO Green	40	15	24

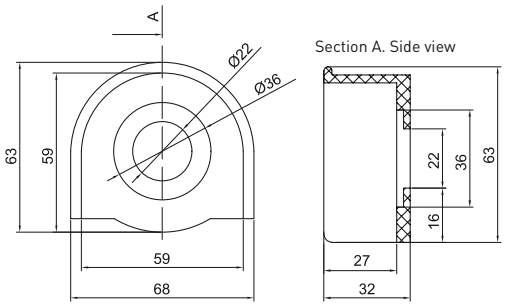
U-shaped protective casing for emergency stop push buttons



Protective casing with sealing cap for push buttons

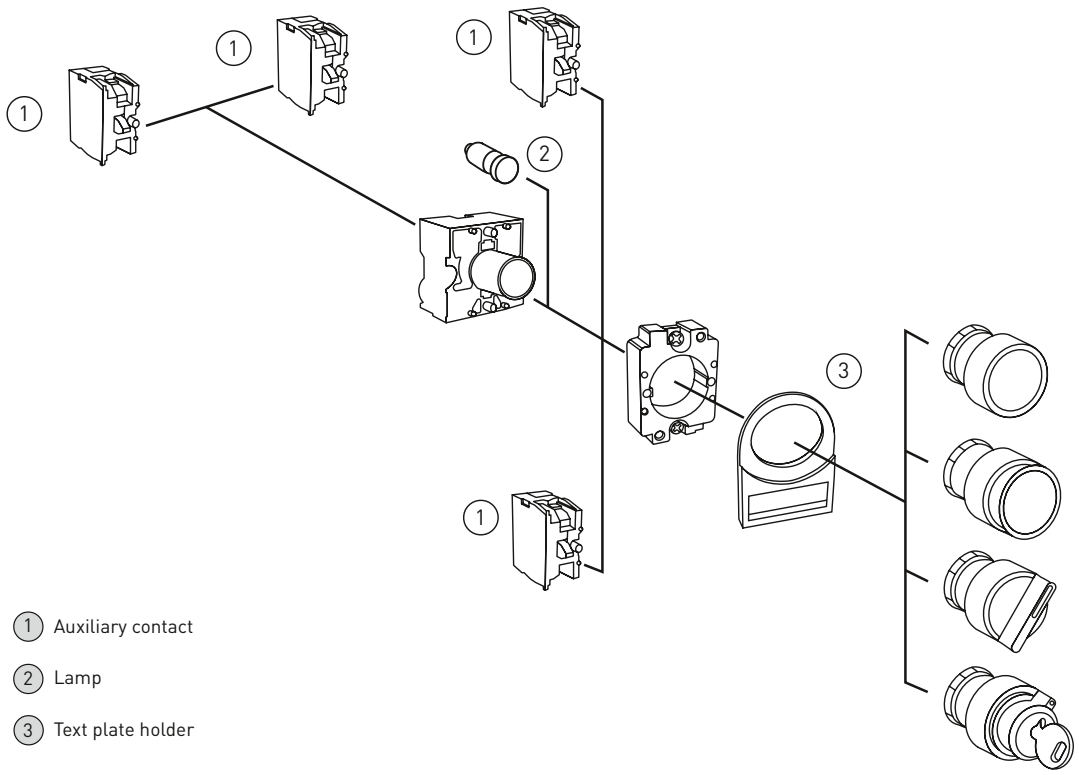


C-shaped protective casing for emergency stop push buttons



Installation and operation

Assembly diagram of BA, BJ, BG, BD, BV, BS542, BC42 with a metal base.



1 Auxiliary contact

2 Lamp

3 Text plate holder

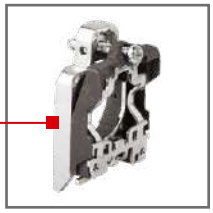
Picture	Name	Options	Color	Rated voltage, V	Item code
	Replacement neon lamp BA9S EKF	Neon light	White	220	la-220
				380	la-380
				24	la-24
	Replacement LED lamp BA9S EKF	LED	White	230	BA9SA/W-220V
				24	BA9SA/W-24V
	Auxiliary contact XB-2 NC red EKF	Normally closed	Red	–	pbn-xb-2-nc
	Auxiliary contact XB-2 NO green EKF	Normally open	Green		pbn-xb-2-no
	Auxiliary contact for pilot light NC burgundy EKF	Normally closed	Burgundy		pbn-01-r
	Auxiliary contact for pilot light NO black EKF	Normally open	Black		pbn-02-b

Picture	Name	Options	Color	Item code
	Text plate holder LH (10x25mm) EKF	Window size: 10 × 25mm	Black	lh-10-25
	Text plate holder LH (20x25mm) EKF	Window size: 20 × 25mm	Black	lh-20-25
	Silicone cap for push buttons SW2C EKF	–	White	pe-22a
	Silicone cap for push buttons APBB EKF			pe-22b
	Silicone cap for push buttons AS EKF			pe-22f
	Hole cap 22mm EKF	Plastic, 22 mm	Grey	pb-22
	DIN rail mount adapter EKF	Mounting hole diameter 22 mm	White	adp-22
	Contact clamping module XB2 EKF	For push buttons BA, mushroom head push buttons BC & BS	Black	pbn-fix
	Protective casing with sealing cap for push buttons EKF	Mounting hole diameter 22 mm	Yellow	scep-1
	C-shaped protective casing for emergency stop push buttons EKF	Mounting hole diameter 22 mm	Yellow	scep-c
	U-shaped protective casing for emergency stop push buttons EKF	Mounting hole diameter 22 mm	Yellow	scep-p

Modular push buttons, pilot lights and selector switches XB4 EKF

Modular push buttons, pilot lights and selector switches XB4 EKF consist of three parts: a head and auxiliary contacts connected to a metal mounting base. You can assemble the device perfectly fitted to your application. A variety of colors and mechanisms meet all kinds of demands for switchboard and control panel layouts. Accessories include replacement lamps with a base for installation in buttons and switches with illumination options.

Button head design independent from voltage and contact types



Metal mounting base for installing components

Up to three accessories in a row

Easy mounting with a single screw

Easy assembly/ disassembly of accessories

Options to add extra contacts

APPLICATION

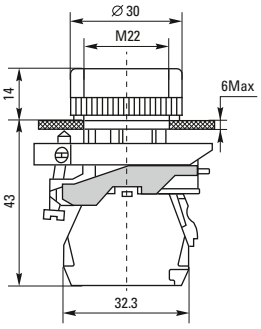
The XB4 series of push buttons, pilot lights & selector switches are ubiquitous control and signalling devices, used in electrical panels, enclosures, wired control station enclosures for:
- manual control (switching) of electrical equipment;
- light signaling & alarm.

TECHNICAL DATA

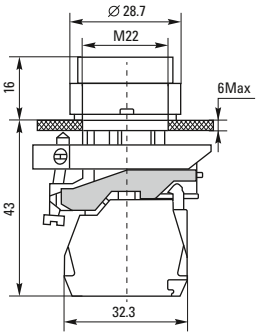
Parameters	Values
Operating temperature, °C	from -25 to +70
Storage temperature, °C	from –40 to +70
Humidity, % RH	Max. 90 (non-condensing)
Altitude above sea level, m	<2000
Lamp operating voltage range	0,85 Un ≤ U ≤ 1,1Un
Lamp service life, hours	>30 000
Lamp type	LED (Light-emitting diode)
Rated thermal resistance current (auxiliary contacts), A	8
AC frequency, Hz	50 - 60
Utilization category AC-12	Ue: 380V/250V, Ie=4,5A
Utilization category DC-13	Ue: 220V/110V, Ie=0,6A

Overall and installation dimensions (mm)

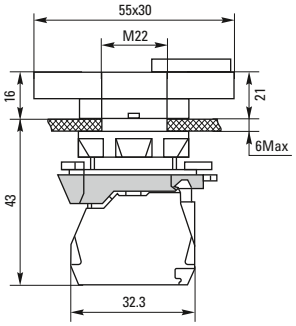
Lamp lens XB4BV6



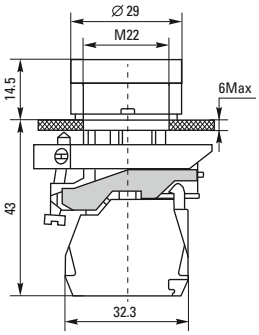
Push buttons XB4BL



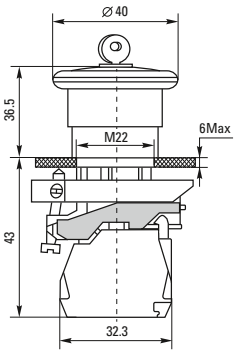
Push buttons XB4BL & XB4BW



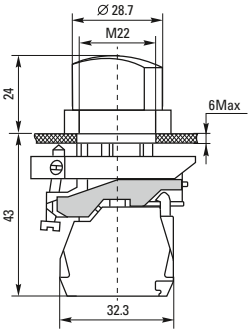
Push buttons XB4BW3



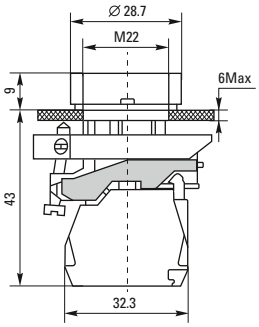
Push buttons XB4BA1



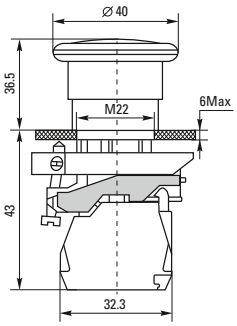
Selector switches XB4BD



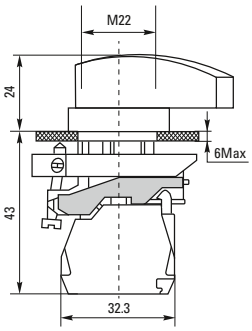
Push buttons XB4BA



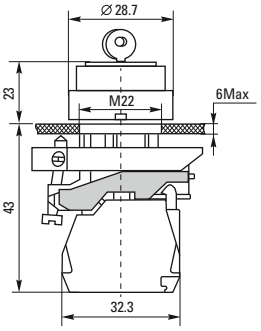
Push buttons XB4BC, XB-4BTC, XB4BS, XB4BGL

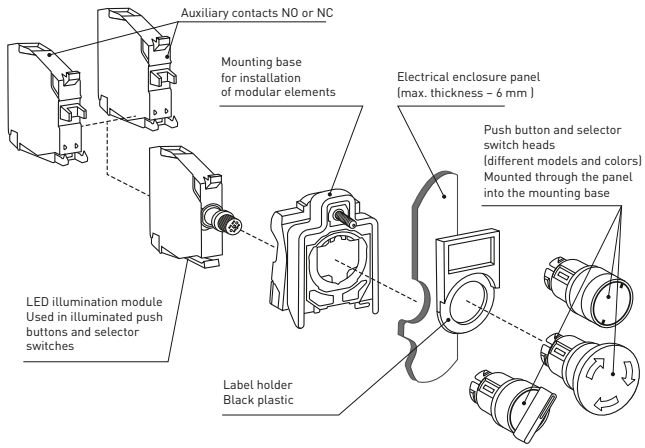


Selector switches XB4BJ



Key selector switches XB4BG





Delivery scope

1. Device – 1 pc.
2. Technical manual - 1 pc. per group package

Push buttons

Picture	Name	Mechanism	Degree of protection	Illumination	Color	Item code
	Head for illuminated push button XB4 start/stop flat spring return EKF	Spring return, illuminated	IP40	Available	Red-green	XB4BL84
	Head for illuminated push button XB4 start/stop protruding stop spring return EKF				Red-green	XB4BW84

Push buttons

Picture	Name	Mechanism	Degree of protection	Illumination	Color	Item code
	Head for non-illuminated push button XB4 protruding spring return EKF	Spring return, non-illuminated	IP54	N/A	Yellow	XB4BL-Y
					Green	XB4BL-G
					Red	XB4BL-R
					Blue	XB4BL-B
					Black	XB4BL-BL
	Head for non-illuminated push button XB4 flat spring return EKF				Yellow	XB4BA-Y
					Green	XB4BA-G
					Red	XB4BA-R
					Blue	XB4BA-B
					Black	XB4BA-BL
	Head for non-illuminated push button XB4 flat spring return EKF	Spring return, illuminated		Available	Yellow	XB4BW-Y
					Green	XB4BW-G
					Red	XB4BW-R
					Blue	XB4BW-B
	Head for non-illuminated push button XB4 mushroom spring return EKF	Spring return, non-illuminated	IP54	N/A	Red	XB4BC-R
					Green	XB4BC-G
					Yellow	XB4BC-Y
	Head for non-illuminated push button XB4 red mushroom stay put EKF	Stay put non-illuminated			Red	XB4BTCF-R
	Head for non-illuminated push button XB4 red mushroom stay put EKF	Turn to release, stay put, non-illuminated			Red	XB4BSF-R
	Head for non-illuminated push button XB4 red mushroom turn to release stay put EKF	Key, turn to release, stay put	IP40		Red	XB4BA1F-R

Lamp lenses

Picture	Name	Degree of protection	Color	Item code
	Lamp lens XB4 EKF	IP54	Yellow	XB4BV6-Y
			Green	XB4BV6-G
			Red	XB4BV6-R
			Blue	XB4BV6-B
			White	XB4BV6-W

Selector switches

Picture	Name	Mechanism	Number of positions	Degree of protection	Color	Item code
	Head for non-illuminated selector switch XB4 short handle EKF	Spring return	2	IP54	Black	XB4BD2
			3			XB4BD3
		Stay put	2			XB4BD2F
			3			XB4BD3F
	Head for non-illuminated selector switch XB4 long handle EKF	Spring return	2			XB4BJ2
			3			XB4BJ3
		Stay put	2			XB4BJ2F
			3			XB4BJ3F
	Key selector switch head XB4 EKF	Spring return	2			XB4BG2
			3			XB4BG3
		Stay put	2			XB4BG2F
			3			XB4BG3F

Selector switches

Picture	Name	Mechanism	Number of positions	Degree of protection	Illumination	Color	Item code
	Head for illuminated selector switch XB4 spring return short handle EKF	Spring return	2	IP54	Available	Yellow	XB4BD2L-Y
			3				XB4BD3L-Y
		Stay put	2				XB4BD2FL-Y
			3				XB4BD3FL-Y
	Head for illuminated selector switch XB4 spring return short handle EKF	Spring return	2			Green	XB4BD2L-G
			3				XB4BD3L-G
		Stay put	2				XB4BD2FL-G
			3				XB4BD3FL-G
	Head for illuminated selector switch XB4 spring return short handle EKF	Spring return	2			Red	XB4BD2L-R
			3				XB4BD3L-R
		Stay put	2				XB4BD2FL-R
			3				XB4BD3FL-R
	Head for illuminated selector switch XB4 spring return short handle EKF	Spring return	2			Blue	XB4BD2L-B
			3				XB4BD3L-B
		Stay put	2				XB4BD2FL-B
			3				XB4BD3FL-B

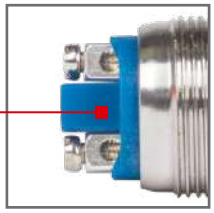
Accessories

Picture	Mechanism	Color	Voltage, V	Item code
	Base for control equipment XB4 metal EKF	–	–	XB4BZ01
	Replacement lamp with base XB4 EKF	White	24	XB4-ESL-W
			230	XB4-EML-W
			400	XB4-ELL-W
		Yellow	24	XB4-ESL-Y
			230	XB4-EML-Y
			400	XB4-ELL-Y
		Green	24	XB4-ESL-G
			230	XB4-EML-G
			400	XB4-ELL-G
		Red	24	XB4-ESL-R
			230	XB4-EML-R
			400	XB4-ELL-R
		Blue	24	XB4-ESL-B
			230	XB4-EML-B
			400	XB4-ELL-B
	Auxiliary contact NO EKF	Black/green	AC-12: Ue: 380V/250V, Ie=4,5A DC-13: Ue: 220V/110V, Ie=0,6A	XB4-BE101
	Auxiliary contact NC EKF	Black/red	AC-12: Ue: 380V/250V, Ie=4,5A DC-13: Ue: 220V/110V, Ie=0,6A	XB4-BE102

Pilot lights and push buttons S-Pro67 EKF

Pilot lights and push buttons S-Pro67 are made of AISI 304 stainless steel to be used for operational control of process equipment and for status indication in electrical circuits. Used in 50/60 Hz circuits with AC voltage of up to 660 V and DC voltage of up to 440 V, these IP67 pilot lights and push buttons are mounted into 19 mm hole.

IP67 rating



Silver plated contacts

AISI 304 stainless steel body

Adapter for quick & safe push button connection

APPLICATION

S-Pro67 EKF pilot lights and push buttons can be utilized in applications warranting a high degree corrosion resistance and ingress protection:

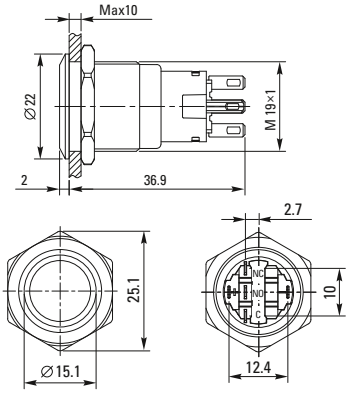
- industrial and manufacturing facilities;
- food processing industry;
- outdoor installations.

TECHNICAL DATA

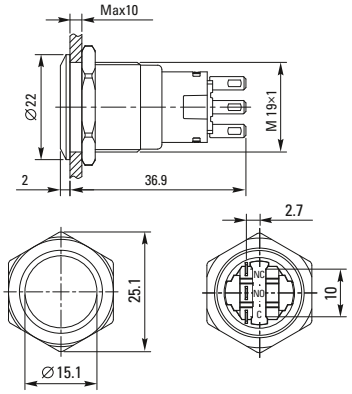
Parameters	Values									
	Alternating current (AC) 50 / 60 Hz					Direct current (DC)				
Rated operating voltage, V	660	380	230	110	48	440	230	110	48	24
Rated operating current, A	1	1,5	3	6	6	0,2	0,5	1	2	3
Mechanical endurance, cycles	>200 000									
Mounting hole diameter, mm	19									
Operating temperature, °C	from –20 to +55									

Overall and installation dimensions (mm)

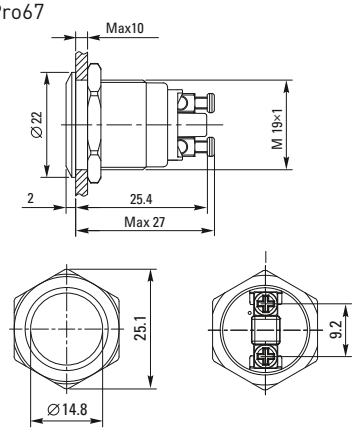
Illuminated push buttons S-Pro67



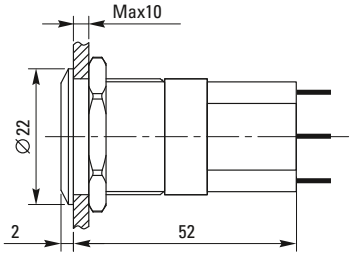
Non-illuminated push buttons S-Pro67



Lamp lens S-Pro67



Push button S-Pro67 with adapter installed



Delivery scope

1. Device – 1 pc.
2. Technical manual - 1 pc. per group package

Pilot lights

Picture	Name	Degree of protection	Color	Supply voltage, V	Item code
	Pilot light S-Pro67 19 mm EKF	IP67	Red	230 AC	s-pro67-311
			Green		s-pro67-321
			Orange		s-pro67-331
			Blue		s-pro67-341
			White		s-pro67-351
			Red	24 DC	s-pro67-312
			Green		s-pro67-322
			Orange		s-pro67-332
			Blue		s-pro67-342
			White		s-pro67-352

Push buttons

Picture	Name	Options	Degree of protection	LED indicator		Item code
				Color	Voltage, V	
	Illuminated push button S-Pro67 19 mm EKF	Spring return, illuminated, 1 C/O	IP67	Red	230 AC	s-pro67-111
				Green		s-pro67-121
				Orange		s-pro67-131
				Blue		s-pro67-141
				White		s-pro67-151
				Red	24 DC	s-pro67-112
				Green		s-pro67-122
				Orange		s-pro67-132
				Blue		s-pro67-142
				White		s-pro67-152
		Stay put, illuminated, 1 C/O		Red	230 AC	s-pro67-211
				Green		s-pro67-221
				Orange		s-pro67-231
				Blue		s-pro67-241
				White		s-pro67-251
				Red	24 DC	s-pro67-212
				Green		s-pro67-222
				Orange		s-pro67-232
				Blue		s-pro67-242
				White		s-pro67-252
	Non-illuminated push button S-Pro67 19mm EKF	Spring return, non-illuminated, 1 C/O	IP67	–	–	s-pro67-100
		Stay put, non-illuminated, 1 C/O				s-pro67-200

Picture	Name	Options	Wire length, mm	Item code
	Button adapter S-Pro67 EKF	For illuminated push buttons, 5 contacts	140	s-pro67-400
		For non-illuminated push buttons, 3 contacts		s-pro67-401

Cam switches PK EKF

Cam switches PK EKF are mechanical switching devices designed for 50/60Hz AC circuits with rated voltage up to 415 V. Higher silver content in the contacts provides lower transient resistance and higher immunity to environmental exposure.
Cam switches are available in several versions:

- PK-1 is a standard cam switch with different wiring options and number of poles;
- PK-2 is a three-phase cam switch with improved contact group (switch disconnector);
- PK-3 is a three-phase cam switch in an IP54 protective box (switch disconnector).

PK-1 and PK-2 switches are front-mounted to be installed on the front panel of distribution enclosures, control panels, etc.
PK-3 switches are rear-mounted onto the mounting plate.

APPLICATION

EKF PK cam switches are designed for switching power and control circuits under load and switching between circuits:

- in distribution panels;
- in control enclosures and test stands;
- in control stations;
- in welding equipment, etc.

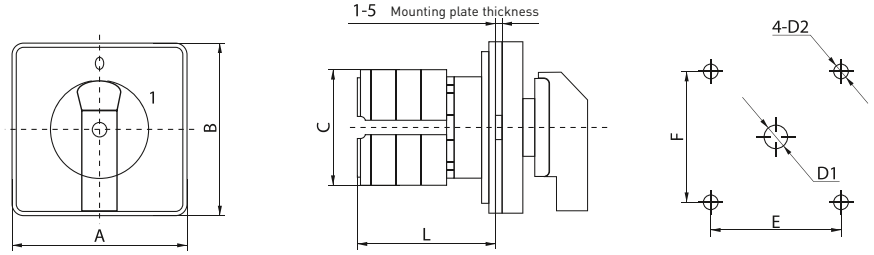
TECHNICAL DATA

Parameters		Values		
		PK-1	PK-2	PK-3
Degree of protection	On the front panel side	IP20	IP20	IP54
	From the contact side	IP00	IP00	
Rated insulation voltage Ui, V		690		
Rated operating voltage Ue, V		415		
Min. mechanical endurance, cycles		100 000		
Min. electrical endurance, cycles		30 000		
Operating temperature, °C		from -25 to +50		
Altitude above sea level, m		max. 2000		

Parameters	Values											
Conventional thermal current Ith, A	10		16		25		32		40		63	
Rated operating voltage Ue, V	230/240	400/415	230/240	400/415	230/240	400/415	230/240	400/415	230/240	400/415	230/240	400/415
PK-1 and PK-3 models												
Rated current Ie, A												
AC-21A, AC-22A	10		16		25		32		40		63	
AC-23A	7,5		12		22		30		37,5		57	
AC-2	7,5		12		22		30		37,5		57	
AC-3	5,5		8,8		15		22		27,5		36	
AC-4	1,75		2,8		6,5		11		13,8		15	
AC-15	2,5	1,5	4	3,2	8	5	14	6	17,5	7,5	–	–
Rated power, kW												
AC-23A	3/0,8	5/1,7	3,7/2,5	7,5/3,7	5,5/3	11/5,5	7,5/4	15/7,5	9,6/5	19/9,6	15/10	30/18,5
AC-2	2,5	3,7	4	7,5	5,5	11	7,5	15	9,6	19	18,5	30
AC-3	1,5	2,2	3/2,2	5,5/3	4/3	7,5/3,7	5,5/4	11/5,5	7,5/5	15/7,5	11/6	18,5/11
AC-4	0,37	0,55	0,55/0,75	1,5/1,5	1,5/1,1	3/2,2	2,7/1,5	5,5/3	4/2	7,5/4	5,5/2,4	7,5/4
PK-2 models												
Rated current Ie, A												
AC-21A, AC-22A	16		25		40		63		100		63	
AC-23A	15		22		30		43		70		57	
AC-3	11,7		15		22		36		57		57	
Rated power, kW												
AC-23A	4	7,5	5,5	11	7,5	15	11	22	22	37	15/10	30/18,5
AC-3	3	5,5	4	7,5	7,5	11	11	18,5	18,5	30	18,5	30

Overall and installation dimensions (mm)

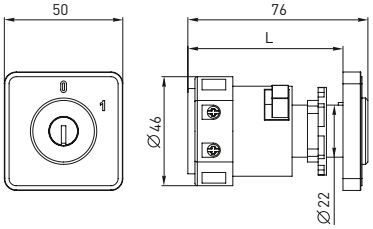
Cam switches PK-1



Name	Item code	Dimensions, mm							
			B	L	C	E	F	D1	D2
PK-1-11 10A 1P "0-1"	pk-1-11-10	48	48	30	43	36	36	8,5	4,5
PK-1-11 25A 1P "0-1"	pk-1-11-25	48	48	35	45,2	36	36	8,5	
PK-1-12 10A 2P "0-1"	pk-1-12-10	48	48	30	43	36	36	8,5	
PK-1-12 25A 2P "0-1"	pk-1-12-25	48	48	35	45,2	36	36	8,5	
PK-1-13 10A 3P "0-1"	pk-1-13-10	48	48	38	43	36	36	8,5	
PK-1-13 25A 3P "0-1"	pk-1-13-25	48	48	48	45,2	36	36	8,5	
PK-1-13 32A 3P "0-1"	pk-1-13-32	64	64	55	58	48	48	10	
PK-1-13 63A 3P "0-1"	pk-1-13-63	64	64	55	66	48	48	10	
PK-1-14 10A 4P "0-1"	pk-1-14-10	48	48	38	43	36	36	8,5	
PK-1-14 25A 4P "0-1"	pk-1-14-25	48	48	48	45,2	36	36	8,5	
PK-1-21 10A 1P "1-0-2"	pk-1-21-10	48	48	30	43	36	36	8,5	
PK-1-21 25A 1P "1-0-2"	pk-1-21-25	48	48	35	45,2	36	36	8,5	
PK-1-22 10A 2P "1-0-2"	pk-1-22-10	48	48	38	43	36	36	8,5	
PK-1-22 25A 2P "1-0-2"	pk-1-22-25	48	48	48	45,2	36	36	8,5	
PK-1-23 10A 3P "1-0-2"	pk-1-23-10	48	48	36	43	36	36	8,5	
PK-1-23 25A 3P "1-0-2"	pk-1-23-25	48	48	60	45,2	36	36	8,5	
PK-1-23 32A 3P "1-0-2"	pk-1-23-32	64	64	68	48	48	48	10	
PK-1-23 63A 3P "1-0-2"	pk-1-23-63	64	64	65	66	48	48	10	
PK-1-24 10A 4P "1-0-2"	pk-1-24-10	48	48	54	43	36	36	8,5	
PK-1-24 25A 4P "1-0-2"	pk-1-24-25	48	48	73	45,2	36	36	8,5	
PK-1-31 10A 1P "1-2"	pk-1-31-10	48	48	30	43	36	36	8,5	
PK-1-31 25A 1P "1-2"	pk-1-31-25	48	48	35	45,2	36	36	8,5	
PK-1-41 10A 1P "1-0-2"	pk-1-41-10	48	48	30	43	36	36	8,5	
PK-1-41 25A 1P "1-0-2"	pk-1-41-25	48	48	35	45,2	36	36	8,5	
PK-1-42 10A 2P "1-0-2"	pk-1-42-10	48	48	38	43	36	36	8,5	
PK-1-42 25A 2P "1-0-2"	pk-1-42-25	48	48	48	45,2	36	36	8,5	
PK-1-43 10A 3P "1-0-2"	pk-1-43-10	48	48	46	43	36	36	8,5	
PK-1-43 25A 3P "1-0-2"	pk-1-43-25	48	48	60	45,2	36	36	8,5	
PK-1-43 32A 3P "1-0-2"	pk-1-43-32	64	64	68	48	48	48	10	
PK-1-43 63A 3P "1-0-2"	pk-1-43-63	64	64	65	66	48	48	10	

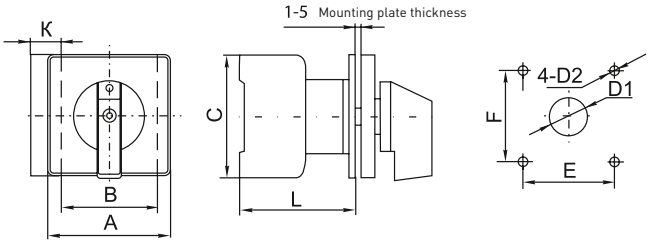
Name	Item code	Dimensions, mm							
		A	B	L	C	E	F	D1	D2
PK-1-51 10A 1P "1-2"	pk-1-51-10	48	48	30	43	36	36	8,5	4,5
PK-1-51 25A 1P "1-2"	pk-1-51-25	48	48	35	45,2	36	36	8,5	
PK-1-52 10A 2P "1-2"	pk-1-52-10	48	48	38	43	36	36	8,5	
PK-1-52 25A 2P "1-2"	pk-1-52-25	48	48	48	45,2	36	36	8,5	
PK-1-53 10A 3P "1-2"	pk-1-53-10	48	48	46	43	36	36	8,5	
PK-1-53 25A 3P "1-2"	pk-1-53-25	48	48	60	45,2	36	36	8,5	
PK-1-53 32A 3P "1-2"	pk-1-53-32	64	64	68	48	48	48	10	
PK-1-53 63A 3P "1-2"	pk-1-53-63	64	64	65	66	48	48	10	
PK-1-64 10A for voltmeter	pk-1-64-10	48	48	46	45,2	36	36	8,5	
PK-1-73 10A for voltmeter (line voltage)	pk-1-73-10	48	48	38	43	36	36	8,5	
PC-1-84 10A for voltmeter (phase voltage)	pk-1-84-10	48	48	38	43	36	36	8,5	
PC-1-94 10A for amperemeter	pk-1-94-10	48	48	38	43	36	36	8,5	
PK-1-101 10A "0-1-2-3"	pk-1-101-10	48	48	38	43	36	36	8,5	
PK-1-101 25A "0-1-2-3"	pk-1-101-25	48	48	48	45,2	36	36	8,5	
PK-1-101 32A "0-1-2-3"	pk-1-101-32	64	64	55	58	48	48	10	
PK-1-102 10A "0-1-2-3"	pk-1-102-10	48	48	38	43	36	36	8,5	
PK-1-102 25A "0-1-2-3"	pk-1-102-25	48	48	48	45,2	36	36	8,5	
PK-1-102 32A "0-1-2-3"	pk-1-102-32	64	64	55	58	48	48	10	
PK-1-103 10A "0-1-2-3"	pk-1-103-10	48	48	63,6	43	36	36	8,5	
PK-1-103 25A "0-1-2-3"	pk-1-103-25	48	48	85,8	45,2	36	36	8,5	
PK-1-103 32A "0-1-2-3"	pk-1-103-32	64	64	93,6	48	48	48	10	
PK-1-121 10A "0-1-2-3"	pk-1-121-10	48	48	38	43	36	36	8,5	
PK-1-121 25A "0-1-2-3"	pk-1-121-25	48	48	48	45,2	36	36	8,5	

Cam switches PK-1 with key



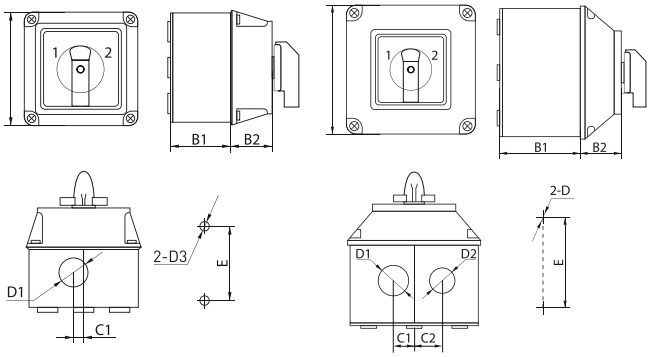
Name	L, mm
PK-1-112 10A "0-1" with key	65,5
PK-1-112 25A "0-1" with key	70,5
PK-1-113 10A "0-1" with key	75,1
PK-1-113 25A "0-1" with key	83,3

Cam switches PK-2



Item code	Dimensions, mm								
	AxA	B	C	K	L	E	F	D1	D2
pk-2-13-16	64 x 64	42	54	13,5	61	48	48	10	4,2
pk-2-13-25									
pk-2-13-40		50	64	16	67				
pk-2-13-63									
pk-2-13-100		70	80	22,5	82				

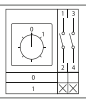
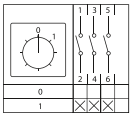
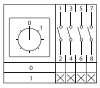
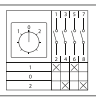
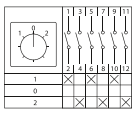
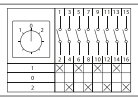
Cam switches PK-3

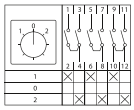
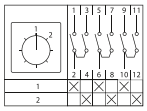
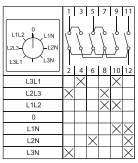
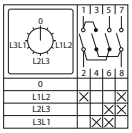
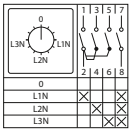
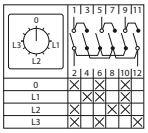


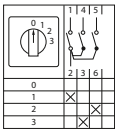
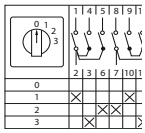
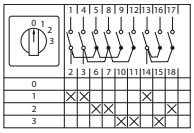
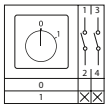
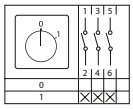
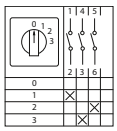
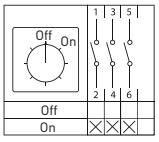
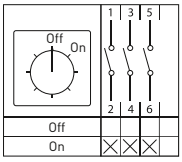
Item code	Dimensions, mm								
	AxA	B1	B2	C1	C2	D1	D2	D3	E
pk-3-13-16	69 x 69	45	25,5	6,5	–	18	–	5	44
pk-3-13-25									
pk-3-13-40	113 x 113	70,5	35,5	18	23,5	27	21		78
pk-3-13-63									

Delivery scope

1. Cam switch PK EKF
2. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Picture	Name	Rated current, A	Wiring diagram	Item code
	Cam switch PK-1-11 10A 1P "0-1" EKF	10		pk-1-11-10
	Cam switch PK-1-11 25A 1P "0-1" EKF	25		pk-1-11-25
	Cam switch PK-1-12 10A 2P "0-1" EKF	10		pk-1-12-10
	Cam switch PK-1-12 25A 2P "0-1" EKF	25		pk-1-12-25
	Cam switch PK-1-13 10A 3P "0-1" EKF	10		pk-1-13-10
	Cam switch PK-1-13 25A 3P "0-1" EKF	25		pk-1-13-25
	Cam switch PK-1-13 32A 3P "0-1" EKF	32		pk-1-13-32
	Cam switch PK-1-13 63A 3P "0-1" EKF	63		pk-1-13-63
	Cam switch PK-1-14 10A 4P "0-1" EKF	10		pk-1-14-10
	Cam switch PK-1-14 25A 4P "0-1" EKF	25		pk-1-14-25
	Cam switch PK-1-21 10A 1P "1-0-2" EKF	10		pk-1-21-10
	Cam switch PK-1-21 25A 1P "1-0-2" EKF	25		pk-1-21-25
	Cam switch PK-1-22 10A 2P "1-0-2" EKF	10		pk-1-22-10
	Cam switch PK-1-22 25A 2P "1-0-2" EKF	25		pk-1-22-25
	Cam switch PK-1-23 10A 3P "1-0-2" EKF	10		pk-1-23-10
	Cam switch PK-1-23 25A 3P "1-0-2" EKF	25		pk-1-23-25
	Cam switch PK-1-23 32A 3P "1-0-2" EKF	32		pk-1-23-32
	Cam switch PK-1-23 63A 3P "1-0-2" EKF	63		pk-1-23-63
	Cam switch PK-1-24 10A 4P "1-0-2" EKF	10		pk-1-24-10
	Cam switch PK-1-24 25A 4P "1-0-2" EKF	25		pk-1-24-25
	Cam switch PK-1-31 10A 1P "1-2" EKF	10		pk-1-31-10
	Cam switch PK-1-31 25A 1P "1-2" EKF	25		pk-1-31-25

Picture	Name	Rated current, A	Wiring diagram	Item code
	Cam switch PK-1-41 10A 1P "1-0-2" EKF	10		pk-1-41-10
	Cam switch PK-1-41 25A 1P "1-0-2" EKF	25		pk-1-41-25
	Cam switch PK-1-42 10A 2P "1-0-2" EKF	10		pk-1-42-10
	Cam switch PK-1-42 25A 2P "1-0-2" EKF	25		pk-1-42-25
	Cam switch PK-1-43 10A 3P "1-0-2" EKF	10		pk-1-43-10
	Cam switch PK-1-43 25A 3P "1-0-2" EKF	25		pk-1-43-25
	Cam switch PK-1-43 32A 3P "1-0-2" EKF	32		pk-1-43-32
	Cam switch PK-1-43 63A 3P "1-0-2" EKF	63		pk-1-43-63
	Cam switch PK-1-51 10A 1P "1-2" EKF	10		pk-1-51-10
	Cam switch PK-1-51 25A 1P "1-2" EKF	25		pk-1-51-25
	Cam switch PK-1-52 10A 2P "1-2" EKF	10		pk-1-52-10
	Cam switch PK-1-52 25A 2P "1-2" EKF	25		pk-1-52-25
	Cam switch PK-1-53 10A 3P "1-2" EKF	10		pk-1-53-10
	Cam switch PK-1-53 25A 3P "1-2" EKF	25		pk-1-53-25
	Cam switch PK-1-53 32A 3P "1-2" EKF	32		pk-1-53-32
	Cam switch PK-1-53 63A 3P "1-2" EKF	63		pk-1-53-63
	Cam switch PK-1-64 10A for voltmeter EKF	10		pk-1-64-10
	Cam switch PK-1-73 10A 3P for voltmeter (line voltage) EKF	10		pk-1-73-10
	Cam switch PK-1-84 10A 4P for voltmeter (phase voltage) EKF	10		pk-1-84-10
	Cam switch PK-1-94 10A 4P for amperemeter EKF	10		pk-1-94-10

Picture	Name	Rated current, A	Wiring diagram	Item code
	Cam switch PK-1-101 10A 1P «0-1-2-3» EKF	10		pk-1-101-10
	Cam switch PK-1-101 25A 1P «0-1-2-3» EKF	25		pk-1-101-25
	Cam switch PK-1-101 32A 1P «0-1-2-3» EKF	32		pk-1-101-32
	Cam switch PK-1-102 10A 2P «0-1-2-3» EKF	10		pk-1-102-10
	Cam switch PK-1-102 25A 2P «0-1-2-3» EKF	25		pk-1-102-25
	Cam switch PK-1-102 32A 2P «0-1-2-3» EKF	32		pk-1-102-32
	Cam switch PK-1-103 10A 3P "0-1-2-3" EKF	10		pk-1-103-10
	Cam switch PK-1-103 25A 3P "0-1-2-3" EKF	25		pk-1-103-25
	Cam switch PK-1-103 32A 3P "0-1-2-3" EKF	32		pk-1-103-32
	Cam switch PK-1-112 10A 2P "0-1" with key EKF	10		pk-1-112-10
	Cam switch PK-1-112 25A 2P "0-1" with key EKF	25		pk-1-112-25
	Cam switch PK-1-113 10A 3P "0-1" with key EKF	10		pk-1-113-10
	Cam switch PK-1-113 25A 3P "0-1" with key EKF	25		pk-1-113-25
	Cam switch PK-1-121 10A 1P «0-1-2-3» EKF	10		pk-1-121-10
	Cam switch PK-1-121 25A 1P «0-1-2-3» EKF	25		pk-1-121-25
	Cam switch PK-2-13 16A 3P "ON-OFF" EKF	16		pk-2-13-16
	Cam switch PK-2-13 25A 3P "ON-OFF" EKF	25		pk-2-13-25
	Cam switch PK-2-13 40A 3P "ON-OFF" EKF	40		pk-2-13-40
	Cam switch PK-2-13 63A 3P "ON-OFF" EKF	63		pk-2-13-63
	Cam switch PK-2-13 100A 3P "ON-OFF" EKF	100		pk-2-13-100
	Cam switch PK-3-13 16A 3P "ON-OFF" IP54 EKF	16		pk-3-13-16
	Cam switch PK-3-13 25A 3P "ON-OFF" IP54 EKF	25		pk-3-13-25
	Cam switch PK-3-13 40A 3P "ON-OFF" IP54 EKF	40		pk-3-13-40
	Cam switch PK-3-13 63A 3P "ON-OFF" IP54 EKF	63		pk-3-13-63
	Protective box up to 25A IP54 EKF	25	For switches with L<49	pk-IP54-25
	Protective box up to 63A IP54 EKF	36	For switches with L<56	pk-IP54-63

Control stations EKF

Control stations EKF are made of high-quality flame-retardant plastic. Options with 1 to 6 push buttons.

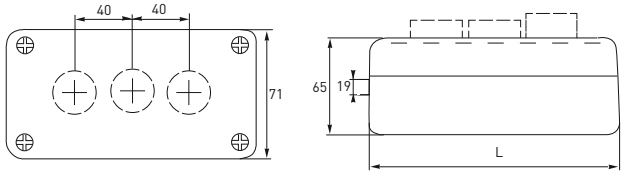
APPLICATION

EKF control stations are used for building custom controls for a wide range of machinery. Control stations are supplied with pre-cut 22 mm apertures that can accept the following control & signaling equipment:

- Push buttons;
- Switches;
- Pilot Lights, etc.

TECHNICAL DATA

Overall and installation dimensions (mm)



Name	Dimensions, mm
	L
Control station KP101 plastic 1 push button EKF	77
Control station KP102 plastic 2 push buttons EKF	112
Control station KP103 plastic 3 push buttons EKF	152
Control station KP104 plastic 4 push buttons EKF	192
Control station KP105 plastic 5 push buttons EKF	232
Control station KP106 plastic 6 push buttons EKF	272

Picture	Name	Materials	Number of push buttons	Degree of protection	Color	Item code
	Control station KP101 plastic 1 push button white EKF	Plastic	1	IP54	White	cpb-101-w
	Control station KP102 plastic 2 push buttons white EKF		2			cpb-102-w
	Control station KP103 plastic 3 push buttons white EKF		3			cpb-103-w
	Control station KP104 plastic 4 push buttons white EKF		4			cpb-104-w
	Control station KP105 plastic 5 push buttons white EKF		5			cpb-105-w
	Control station KP106 plastic 6 push buttons white EKF		6			cpb-106-w
	Control station KP101 plastic 1 push button yellow EKF		1		Yellow	cpb-101-o
	Control station KP102 plastic 2 push buttons yellow EKF		2			cpb-102-o
	Control station KP103 plastic 3 push buttons yellow EKF		3			cpb-103-o
	Control station KP104 plastic 4 push buttons yellow EKF		4			cpb-104-o
	Control station KP105 plastic 5 push buttons yellow EKF		5			cpb-105-o
	Control station KP106 plastic 6 push buttons yellow EKF		6			cpb-106-o

Pendant control stations PKT IP54 EKF

Pendant control stations PKT IP54 EKF are switching devices with spring return buttons and sealed housing made of heat-resistant ABS plastic. A protective gland seals the cable entry, complemented with a sealing gasket between the housing and the panel.

Enhanced ingress protection

Options with 2, 4 & 6 buttons

Flame-retardant housing

Double insulation

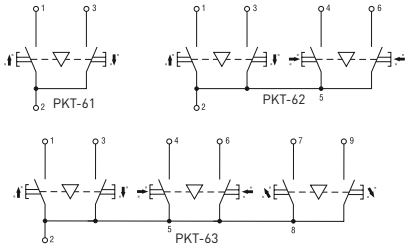
APPLICATION

IP54 pendant control stations act as mobile control assemblies for hoisting and lifting equipment:
- electric chain hoists;
- overhead cranes;
- jib cranes.

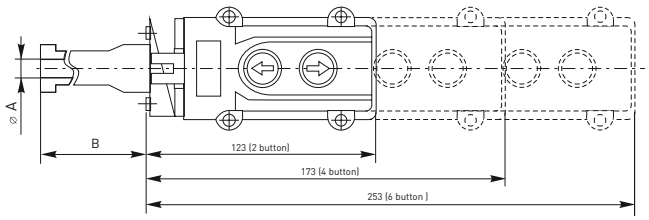
TECHNICAL DATA

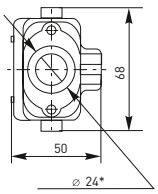
Parameters		Values		
Model		PKT-61	PKT-62	PKT-63
Number of push buttons		2	4	6
Push button functions		Start up ↑	Start up ↑	Start up ↑
		Start down ↓	Start down ↓	Start down ↓
		–	Start right →	Start right →
		–	Start left ←	Start left ←
		–	–	Start forward ↖
		–	–	Start back ↘
Conventional enclosed current Ith, A		5		
Rated operating voltage Ue, V		120; 230; 400		
Rated operating current Ie for utilization category AC-15, A	120	6		
	230	3		
	400	1,5		
Switching capacity under normal load (Cosφ=0,3), A		10Ie/Ie		
Rated insulation voltage Ui, V		500		
Rated short-time withstand current Icw, A		1000		
Short-circuit current protection at Ie, gG fuse, A	6A	10		
	3A	5		
	1,5A	3		
Push button design		Self-return push buttons		
Push button lock		Mechanical lock		
Actuation force, N		30		
Electrical endurance, cycles		10 000		
Mechanical endurance, cycles		30 000		
Degree of protection		IP54		
Cross-section of connected wires, mm²		1,5		
Operating temperature, °C		From -25 to +50		

Wiring diagram



Overall and installation dimensions (mm)





Model	Dimensions, mm	
	A	B
PKT-61	12	100
PKT-62	12	100
PKT-63	16	113

Delivery scope

1. Pendant control station PKT IP54 EKF
2. For all available documentation, scan the QR-code on the insert or on the inside of the package.

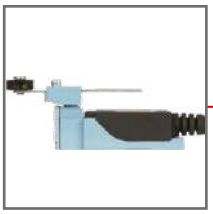
Name	Rated current, A	Voltage, V	IP	Item code
Pendant control station PKT-61 2 push buttons IP54 EKF	5	AC400	54	pkt-61
Pendant control station PKT-62 4 push buttons IP54 EKF				pkt-62
Pendant control station PKT-63 6 push buttons IP54 EKF				pkt-63

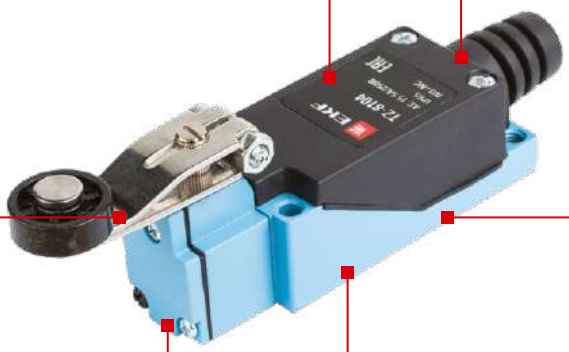
Limit switches TZ-8 EKF

Limit switches TZ-8 EKF are designed for switching 50/60 Hz AC electrical control circuits with voltage up to 660V by control stoppers at defined points of the controlled object route. These compact and accurate limit switches with high dust and moisture resistance can be used in harsh industrial applications.

Instantaneous switching

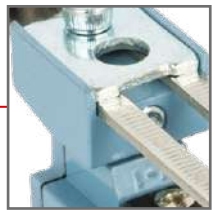
Lever rotation options by 90/180/270 degrees


Compact design



Dust- and water-proof design

Two contact groups (NO, NC)


Aluminum alloy base

APPLICATION

- stationary installations (machines, conveyors, escalators);
- transport and lifting vehicles, actuated by means of control stops;
- alarm systems of electric drives or other electrical devices.

TECHNICAL DATA

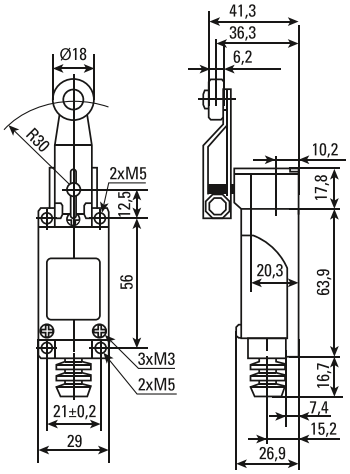
Parameters	Values
Maximum switching current, A	5
Rated operating voltage, V	Up to 660
Rated frequency, Hz	50 / 60
Electrical endurance, cycles	500 000
Contacts	NO+NC
Fixation	Lever self-return
Cross-section of connected wires, mm^2	max. 2,5
Degree of protection	IP65
Operating temperature, °C	-25...+50

Installation and operation

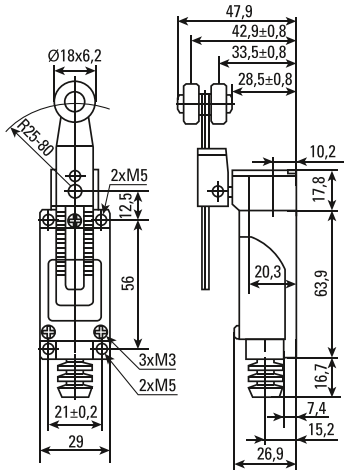
1. Limit switch TZ-8 EKF shall be installed and connected by qualified electrical personnel.
2. WARNING! Make sure the power is off before installation, connection and setup!
3. Install the switch on the base, remove the lid, connect wires through the gland, close the lid. Check that rubber O-rings match the cross-section and grade of the connected cable, tighten all bolted flexible connections.
4. TZ-8 casing protects the switch from ingress of foreign objects, and accidental contact with live parts.

Overall and installation dimensions (mm)

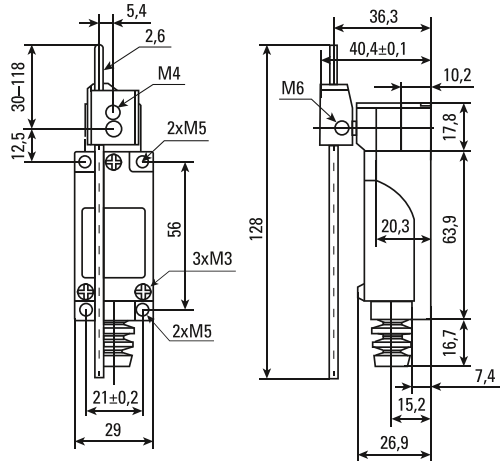
TZ-8104



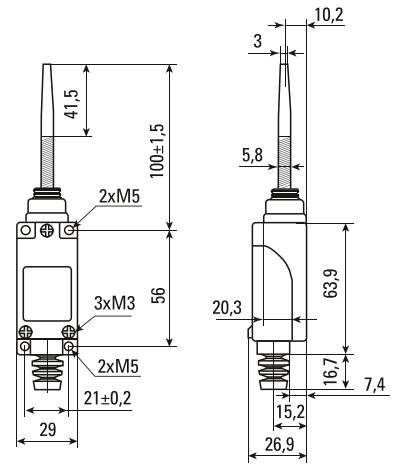
TZ-8108



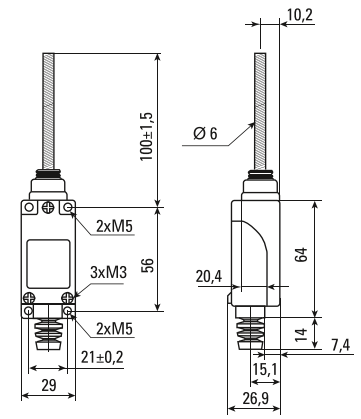
TZ-8107



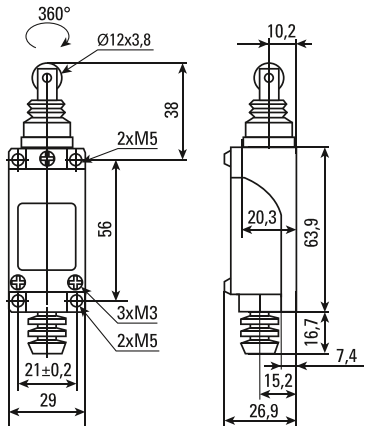
TZ-8166



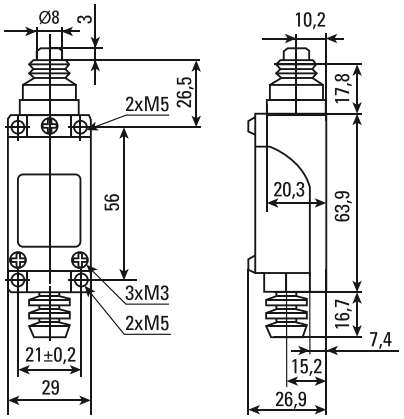
TZ-8167



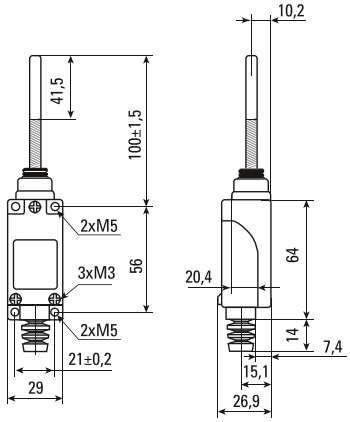
TZ-8112



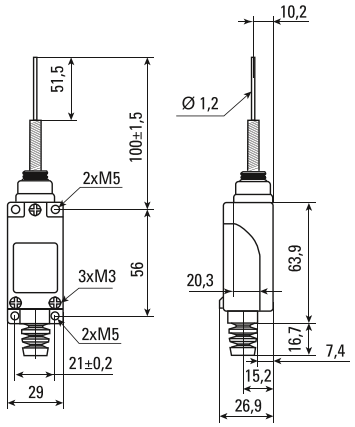
TZ-8111



TZ-8168



TZ-8169



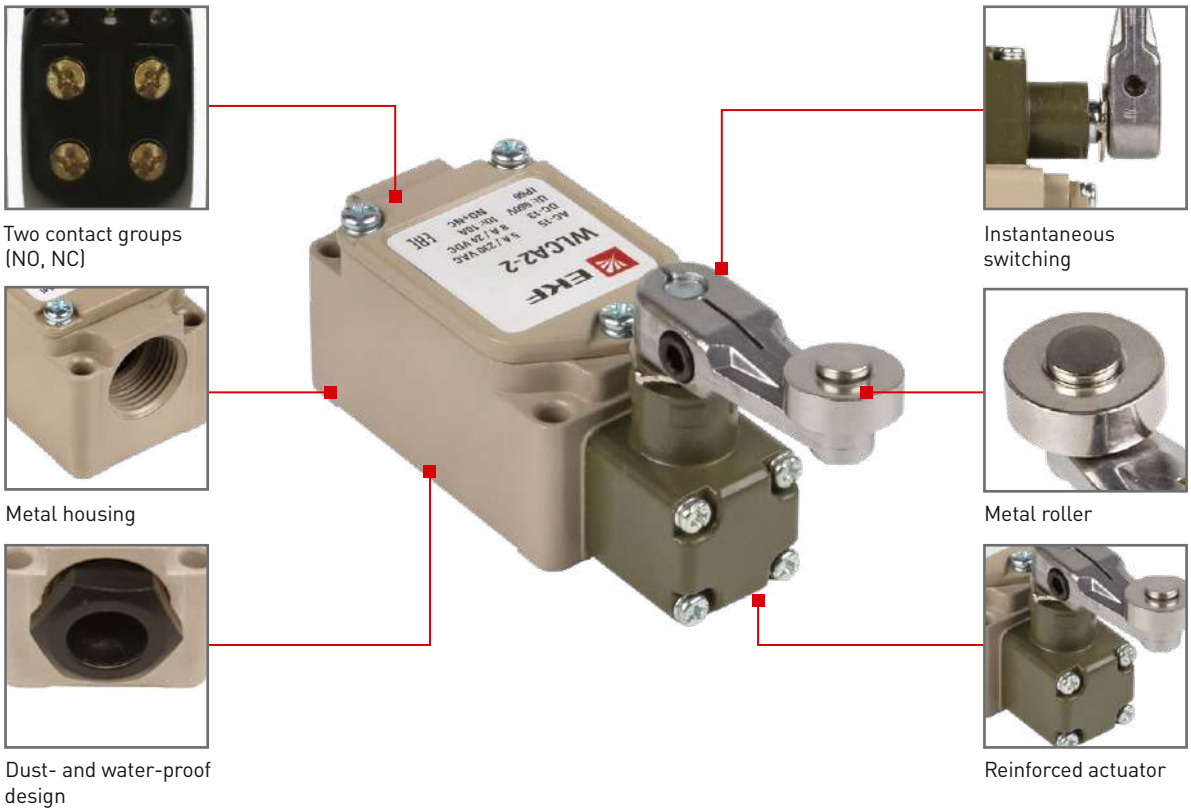
Delivery scope

1. Limit switch TZ-8 EKF
2. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Picture	Name	Actuator type	Actuation position	Item code
	Limit switch TZ-8104 EKF	Lever with roller	20°	tz8104
	Limit switch TZ-8108 EKF	Lever with length adjusted roller	20°	tz8108
	Limit switch TZ-8111 EKF	Plunger	1,5 mm	tz8111
	Limit switch TZ-8112 EKF	Plunger with roller	1,5 mm	tz8112
	Limit switch TZ-8107 EKF	Adjustable length metal rod	20°	tz8107
	Limit switch TZ-8166 EKF	Spring lever with dielectric tip	30 mm	tz8166
	Limit switch TZ-8167 EKF	Spring lever		tz8167
	Limit switch TZ-8168 EKF	Spring lever with metal tip		tz8168
	Limit switch TZ-8169 EKF	Thinned spring lever		tz8169

Limit switches WL EKF

Heavy-duty limit switches WL EKF feature a reinforced IP66 metal housing and can be used in electrical control circuits as a sensor for signalling and controlling the relative positions of device moving parts in space with locking in limit positions.



APPLICATION

- stationary installations (machines, conveyors, escalators);
- transport and lifting vehicles, actuated by means of control stops;
- alarm systems of electric drives or other electrical devices.

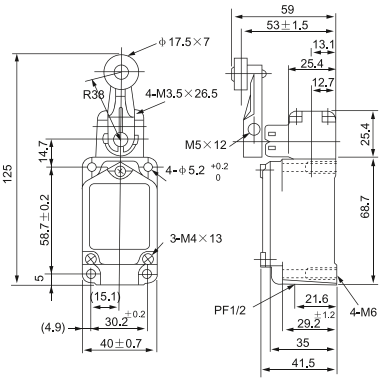
TECHNICAL DATA

Parameters	Values
Rated current In for AC-15, A	10A / 125V AC; 5A / 230/240V AC; 3A / 480V AC
Rated current In for DC-13, A	10A / 12V DC; 8A / 24V DC; 0,5A / 125V DC; 0,3A / 250V DC
Rated insulation voltage Ui, V	660
Rated frequency, Hz	50 / 60
Mechanical endurance, cycles	15 000 000
Electrical endurance, cycles	500 000
Fixation	Lever self-return
Max. cross-section of connected wires, mm^2	2,5
Degree of protection	IP66
Contacts	NO+NC
Operating temperature, °C	from –10 to +80
Net weight, g	275

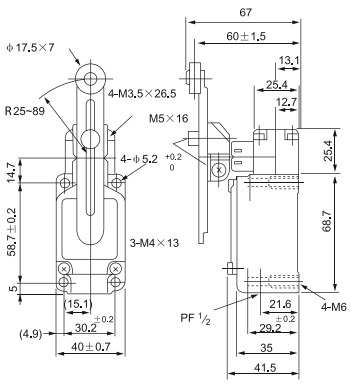
Model	Max. actuation force (OF)	Max. release force (RF)	Rated travel (PT)	Overtravel (OT)	Travel deviation, mm (MD)
WLCA2-2	1360	227	20°	30°	12°
WLCA12-2-Q	1360	227	20°	30°	12°
WLCA32-41	1200	–	55°	35°	–
WLCL	142	28	20°	30°	12°
WLD	2720	910	1,7mm	6,4 mm	1 mm
WLD1	2720	910	1,7mm	5,6 mm	1 mm
WLD2	2720	910	1,7mm	5,6 mm	1 mm
WLD3	2720	910	1,7mm	5,6 mm	1 mm
WLNJ	150	–	28 mm	–	–
WLNJ-30	80	–	28 mm	–	–

Overall and installation dimensions (mm)

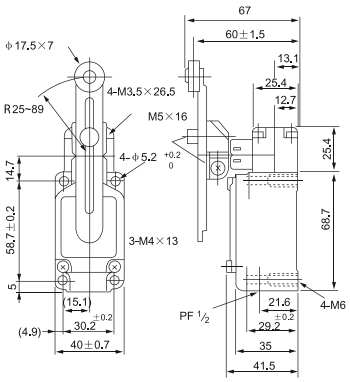
WLCA2-2



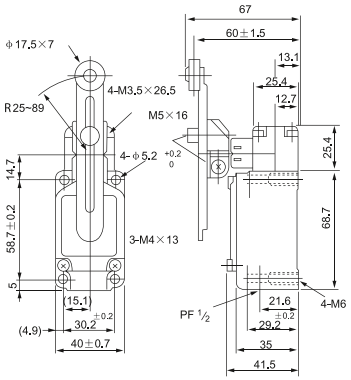
WLCA32-41



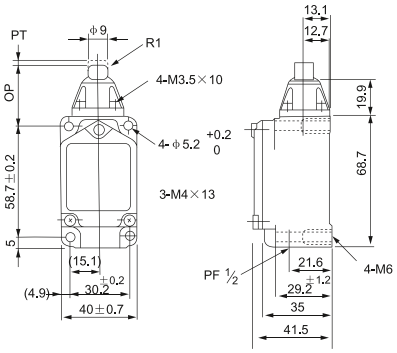
WLCA12-2-Q



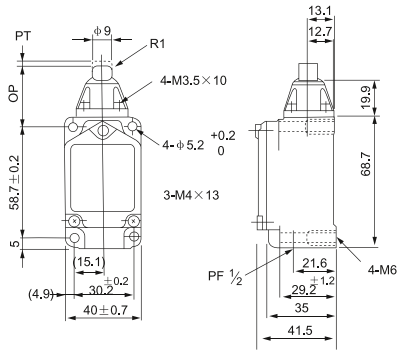
WLCL



WLD



WLD2



Delivery scope

1. Limit switch WL EKF
For all available documentation, scan the QR-code on the insert or on the inside of the package.

Picture	Name	Actuator type	Actuation position	Item code
	Limit switch WLCA2-2 EKF	Lever with roller	20°	LSE-WLCA2-2
	Limit switch WLCA12-2-Q EKF	Lever with length-adjusted roller		LSE-WLCA12-2-Q
	Limit switch WLCA32-41 EKF	Fork lever with double-sided metal rollers	55°	LSE-WLCA32-41
	Limit switch WLCL EKF	Adjustable length metal rod	20°	LSE-WLCL
	Limit switch WLD EKF	Steel push-button plunger	1,7 mm	LSE-WLD
	Limit switch WLD2 EKF	Steel plunger with longitudinal roller		LSE-WLD2

Infrared motion sensors MS EKF

MS infrared motion sensors are designed to save energy through automatic control of lighting and other systems. Sensors react to the movement of people and other objects in the sensor's coverage area; the sensor's operating principle is based on monitoring the level of infrared radiation in the field of view. The EKF product range includes sensors with various installation methods: wall-mounted, ceiling-mounted, surface-mounted, recessed and luminaire-mounted. In addition, some models feature sensor that can be tilted and rotated, enabling them to be used in areas with confined installation space. MS sensors are ideal for covering corridors, entrances, and various walk-through areas. Sensors with a higher degree of protection (IP44) can be used outdoors under an awning. Principle of operation: If something/somebody moves within the sensor's field of view, the built-in electromechanical relay switches the connected load. After this, the load is energized for an adjustable period of time and then turned off. Moreover, the sensors have a light control function. If the illumination in the detection area is higher than the specified level (adjustable in the range from 10 to 2000 lux), the load will not be switched, which enables additional energy savings during the daytime.

Easy wire connection

Sealed cable entries

Connection diagram molded into the sensor housing

Recessed or surface-mount installation

Adjustable sensor tilt and rotation

APPLICATION

EKF infrared motion sensors can be used in a variety of applications:

- Home and commercial security systems – to detect movement and alert the property owner or security company of potential intruders.
- Outdoor lighting systems – to automatically turn lights on when motion is detected and off when no motion is present, providing energy savings and convenience.
- Automatic doors – to detect when a person is approaching and trigger the door to open, providing a hands-free and convenient entry and exit.
- Commercial buildings – to implement energy-saving strategies: e.g automatically turning off lights and adjusting HVAC systems when a space is unoccupied.

TECHNICAL DATA

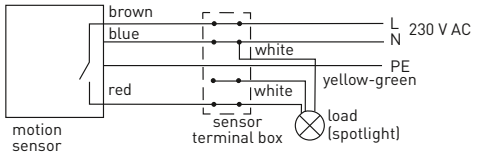
Recommended total load by type, W

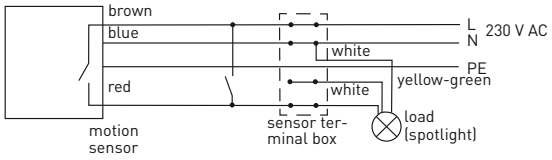
Incandescent lamps	Halogen lamps	LED lights	Compact fluorescent lamps	Luminescent lamps
60	60	60	20	–
500	–	–	–	–
600	600	600	150	300
800	800	800	200	400
1100	1100	1100	270	550
1200	1200	1200	300	600
2000	2000	2000	500	1000

Parameters	Values
Rated voltage, V	220–240
Rated frequency, Hz	50 / 60
Operating temperature, °C	-20 to +50
Max. humidity, %	93
Object movement speed, m/s	0,6...1,5
Power consumption, VA	0,45...1
Illumination sensor threshold, lux (adjustable)	10...2000
Shutdown delay time, sec.	10–420, 10–300 (for MS-E27)

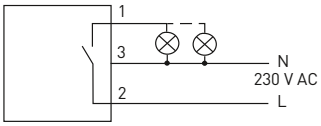
Wiring diagrams

MS-01

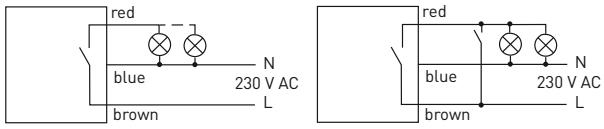




MS-19B



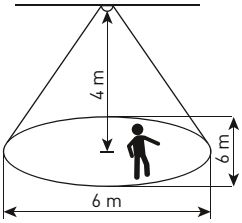
MS-39, MS-16C, MS-48B, MS-118B, MS-20B, MS-21B, MS-28A, MS-40, MS-38, MS-22B



MS-2000

Detection zones

MS-20B, MS-22B, MS-28A



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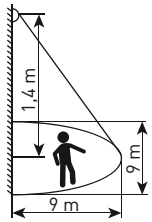
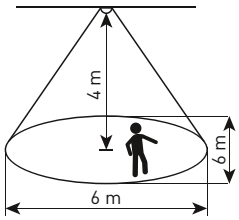
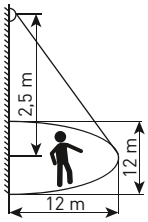


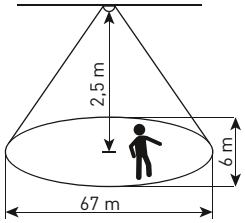
MS-25B



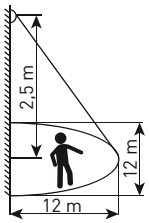
MS-38, MS-40



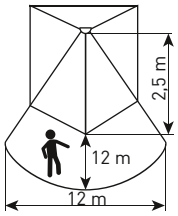
E-27



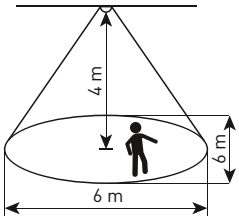
MS-39, MS-16C, MS-118B



MS-48B

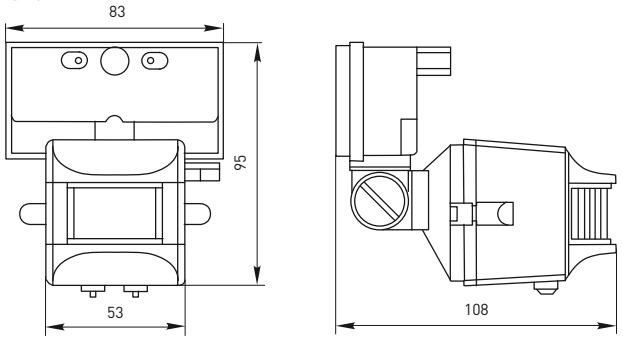


MS-100, MS-200



Overall and installation dimensions

MS-01



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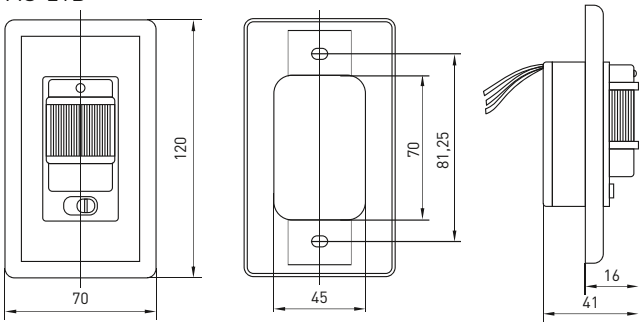

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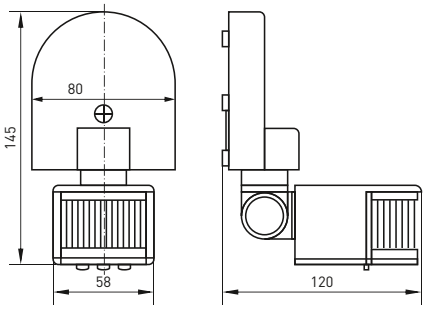

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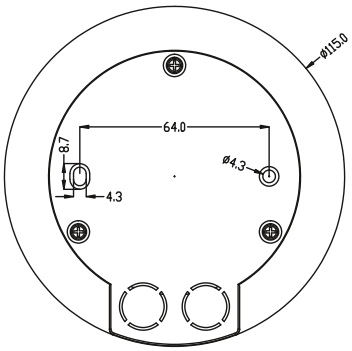
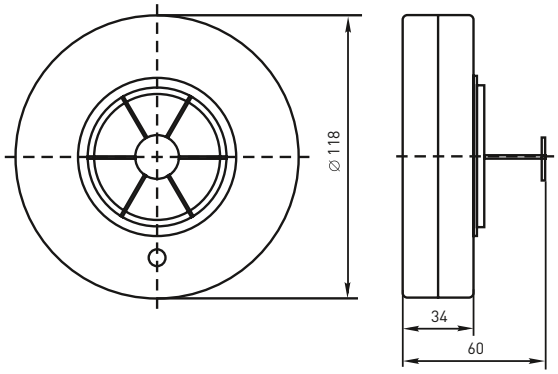


MS-20B, MS28A



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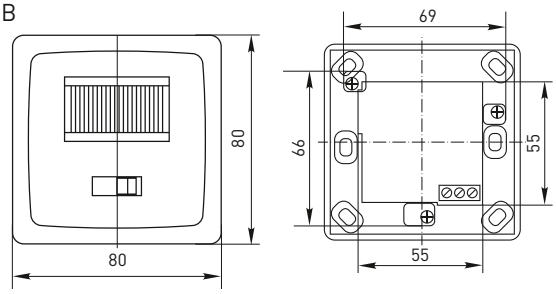

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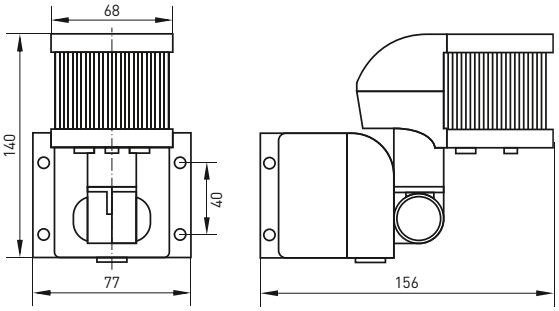

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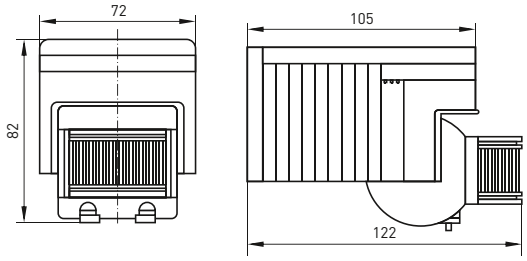
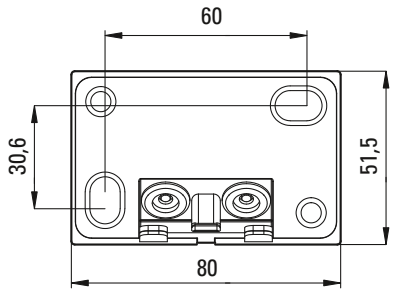
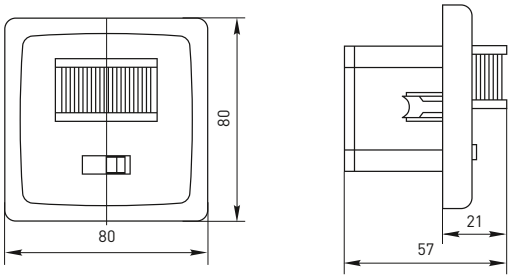


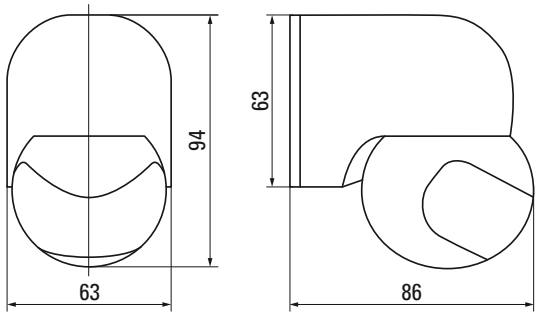
MS-40



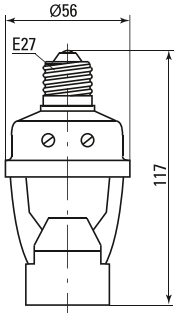
MS-2000



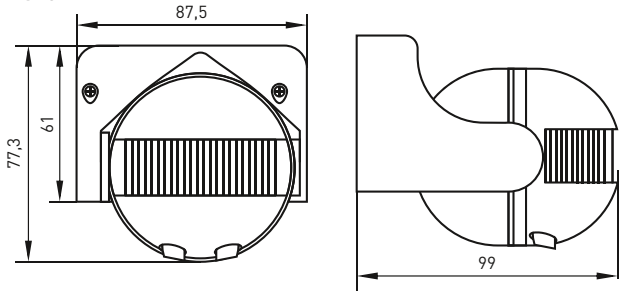
MS-38



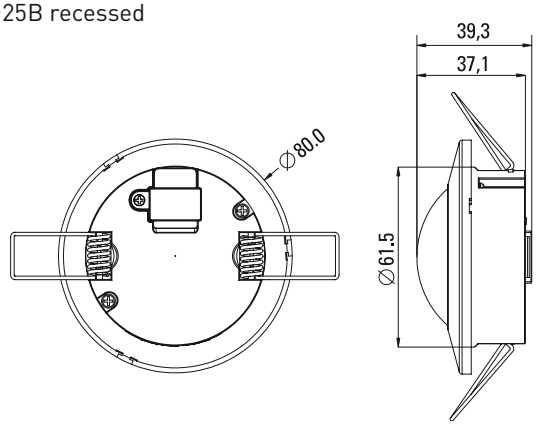
MS-E27



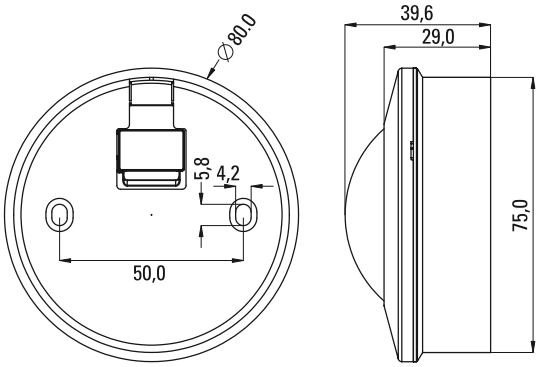
MS-39



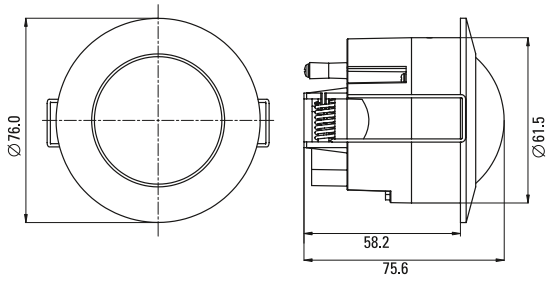
MS-25B recessed



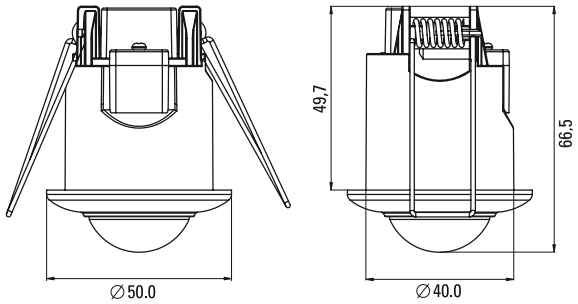
MS-25B surface-mounted



MS-100



MS-200



Delivery scope

1. Motion sensor MS EKF.
2. Mounting kit.
3. Technical manual.

Picture	Name	Mounting type	Maximum load (for incandescent/ LED lamps), W	Field of view	Detection zone diameter*, m	Recommended installation height, m	Degree of protection	Item code
	MS-39 white EKF	Wall-mounted	1200 / 300	180°	12	1,8–3	IP44	dd-ms-39
	MS-39B black EKF							dd-ms-39b
	MS-16C white EKF							dd-ms-16C
	MS-16CB black EKF							dd-ms-16Cb
	MS-40 EKF						IP65	dd-ms-40
	MS-38 EKF		800 / 400	180°	12	1,8–3	IP44	dd-ms-38
	MS-118B EKF		1200 / 300				IP20	dd-ms-118B

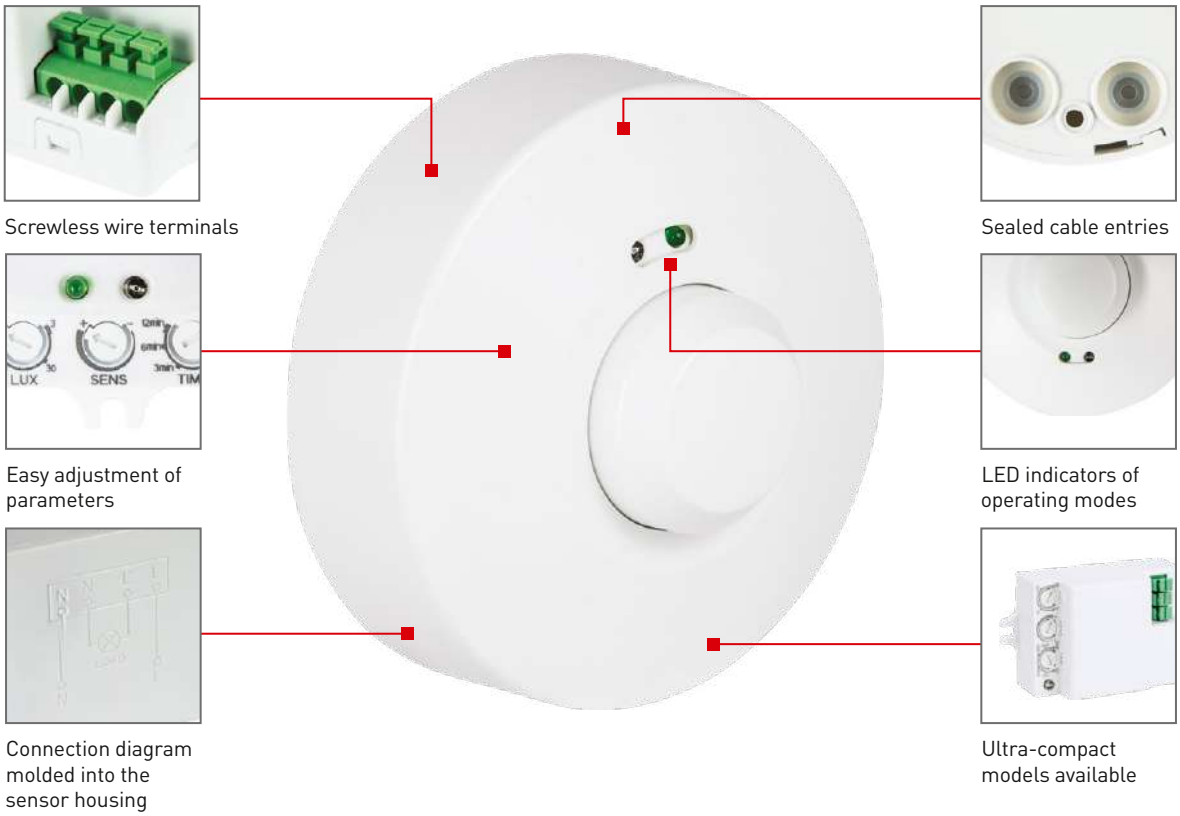
* The detection zone diameter is based on the maximum recommended installation height. If the installation height changes, or if there are obstacles or thermal interference, the diameter of the detection zone may change.

Picture	Name	Mounting type	Maximum load (for incandescent/ LED lamps), W	Field of view	Detection zone diameter*, m	Recommended installation height, m	Degree of protection	Item code
	MS-20B EKF	Overhead surface-mounted	1200 / 300	360°	6	2,2–4	IP20	dd-ms-20B
	MS-28A EKF							dd-ms-28A
	MS-22B EKF		2000 / 1000					dd-ms-22B
	MS-24B EKF		800 / 400					dd-ms-24B
	MS-100 EKF	Recessed overhead	1200 / 300		6	2,2–4	IP20	dd-ms-100
	MS-200 EKF		800 / 400					dd-ms-200
	MS-2000 EKF	Wall-mounted recessed	200 / 100	160°	9	0,8–1,6	IP20	dd-ms-2000
	MS-48B EKF	Corner-mounted	1200 / 300	220°	12	1,8–3	IP44	dd-ms-48B
	MS-E27 EKF	E27 light socket	60	360°	6		IP20	dd-ms-e27

* The detection zone diameter is based on the maximum recommended installation height. If the installation height changes, or if there are obstacles or thermal interference, the diameter of the detection zone may change.

Microwave motion sensors MW EKF

MW microwave motion sensors are designed to save energy through automatic control of lighting and other systems. The sensor reacts to the movement of people and other objects in the sensor's field of view; the sensor operates by emitting high-frequency electromagnetic waves and detecting the resulting echo. Microwave sensors are highly sensitive and can detect movement through thin barriers. The EKF product range includes sensors with various installation methods: wall-mounted, ceiling-mounted, surface-mounted, recessed and luminaire-mounted. MW sensors are ideal for covering corridors, entrances, changing rooms and various walk-through areas. Sensors with a higher degree of protection (IP44) can be used outdoors under an awning.



APPLICATION

EKF microwave motion sensors can be used in a variety of applications:

- Security systems – to detect movement and trigger an alarm if an unauthorized person enters a secured area.
- Automatic door openers – to detect the presence of a person and trigger the door to open.
- HVAC systems in industrial and commercial facilities – to detect human presence and adjust lighting and climate control systems to optimize energy usage.
- Smart home automation systems – to trigger lighting, security and HVAC systems based on human presence detection.

Parameters	Values
Rated voltage, V	220–240
Rated frequency, Hz	50 / 60
Operating temperature, °C	-20 to +40
Max. humidity, %	93
Power consumption, VA	0,9
Illumination sensor threshold, lux (adjustable)	10...2000
Shutdown delay time, sec.	10–900

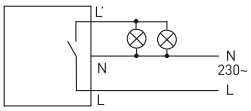
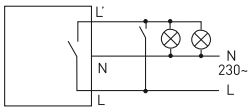
Sensor detection range depending on the type of obstacle

Obstacle type	% range reduction (on average)
Unobstructed	0
Wooden wall/door, 40 mm	-20
Drywall, 5 mm	-50
Glass, 10 mm	-50
Metal, 1 mm	-75
Brick wall, 120 mm	-100 (does not penetrate)

Recommended total load by type, W

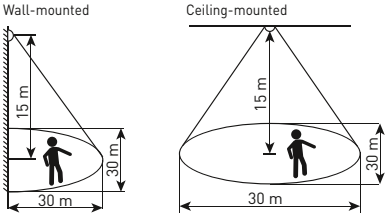
Incandescent lamps	Halogen lamps	LED lights	Compact fluorescent lamps	Luminescent lamps
60	60	60	20	–
500	–	–	–	–
600	600	600	150	300
800	800	800	200	400
1100	1100	1100	270	550
1200	1200	1200	300	600
2000	2000	2000	500	1000

Wiring diagrams

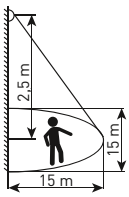
MW-700	MW-701, MW-702, MW-703, MW-704, MW-705
	

Detection zones

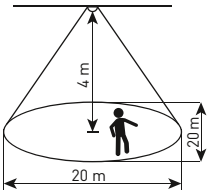
MW-707



MW-702, MW-704



MW-700, MW-703, MW-705, MW-706



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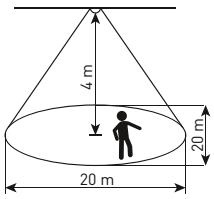
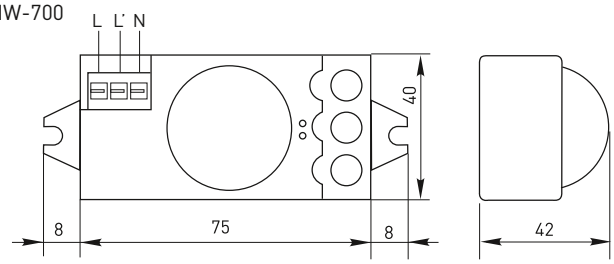
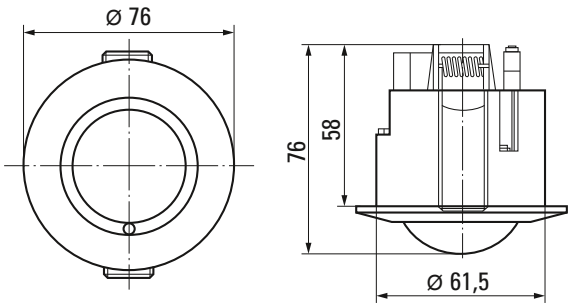


Overall and installation dimensions

MW-700



MW-701



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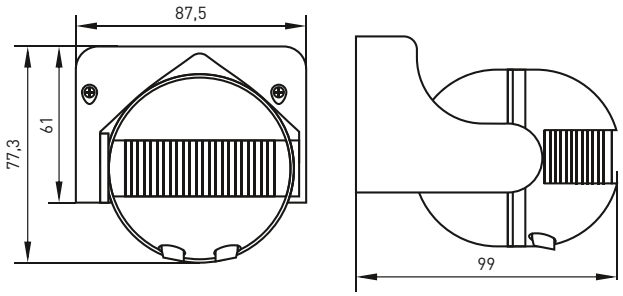

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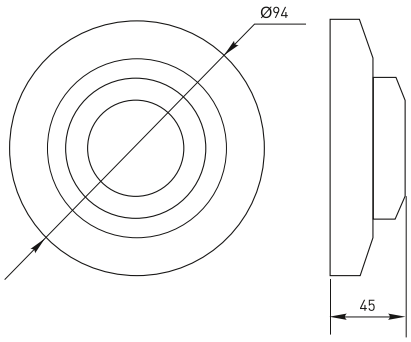

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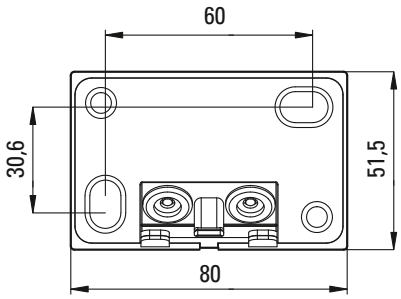

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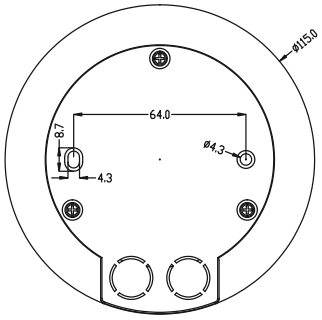
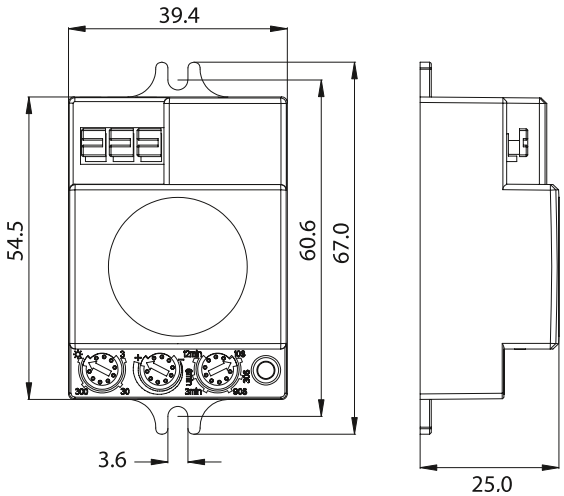
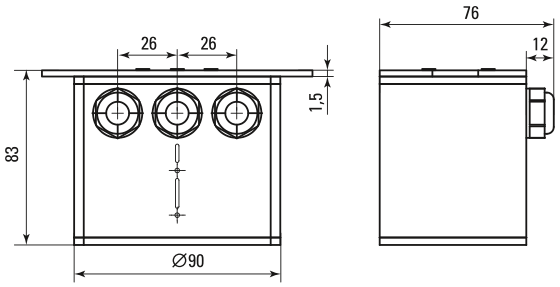


MW-706

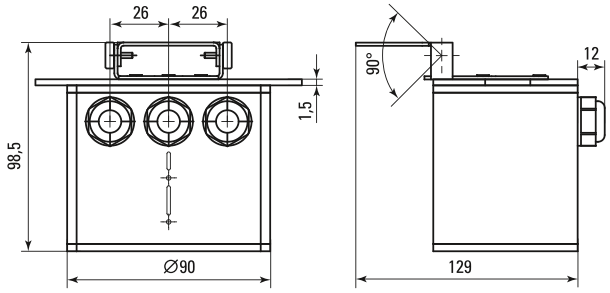


MW-707

Ceiling-mounted



Wall-mounted



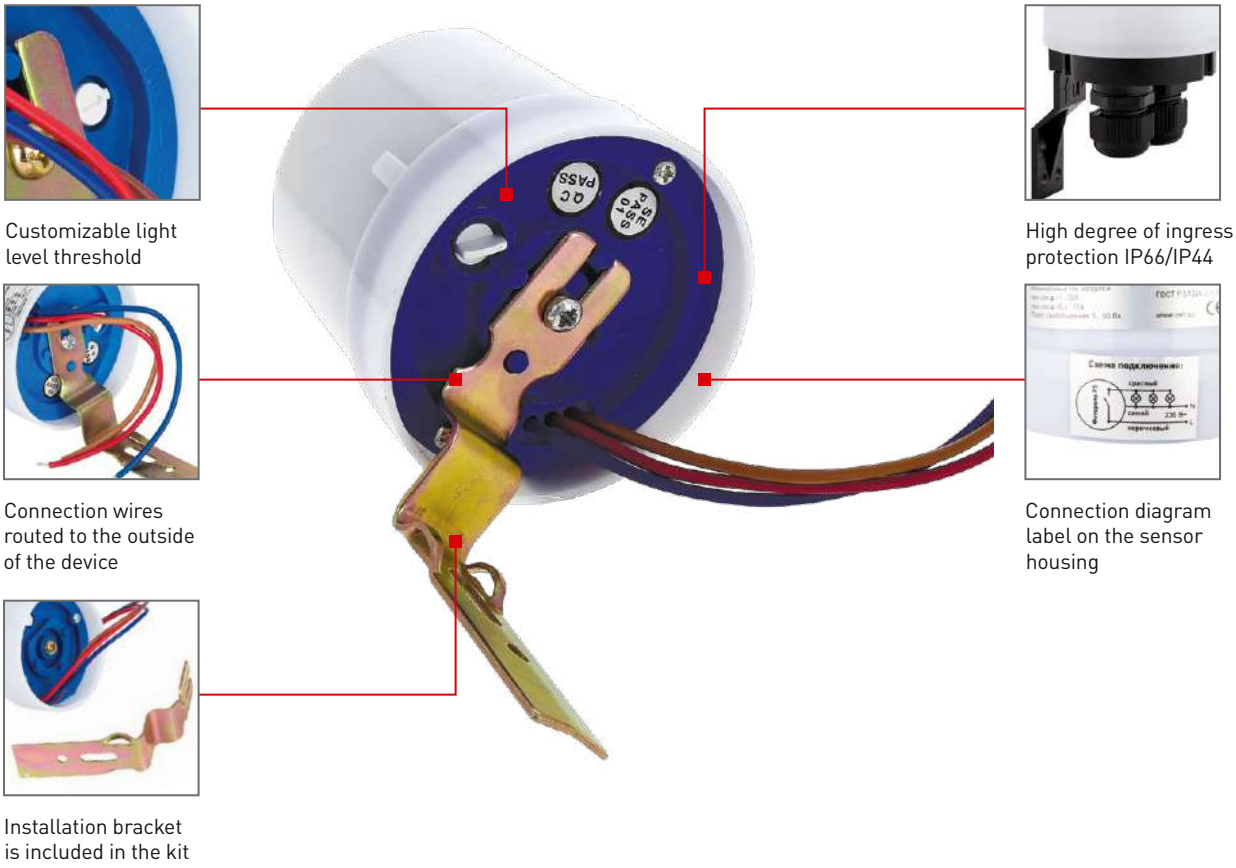
Delivery scope

1. Motion sensor MS EKF.
2. Mounting kit.
3. Technical manual.

Picture	Name	Mounting type	Maximum load (for incandescent/ LED lamps), W	Field of view	Detection zone diameter*, m	Recommended installation height, m	Degree of protection	Item code
	MW-700 EKF	Universal (luminaire, ceiling, wall)	1200 / 300	180/ 360°	20	1,5 – 3,5	IP20	dd-mw-700
	MW-706 EKF							dd-mw-706
	MW-702 EKF	Surface-mounted, wall		180°	10		IP54	dd-mw-702
	MW-704 EKF	Surface-mounted, wall					IP65	dd-mw-704
	MW-703 EKF	Surface-mounted, ceiling		360°	20		IP20	dd-mw-703
	MW-705 EKF		2000 / 1000					dd-mw-705
	MW-701 EKF	Ceiling-mounted, recessed	1200 / 300					dd-mw-701
	MW-707 EKF high installation	Universal (ceiling, wall)	2000 / 1000		30	4 – 15	IP65	dd-mw-707

Twilight relays PS EKF

PS twilight relays are designed to control lighting or other loads depending on the light levels. Typically, twilight relays are used in street lighting control systems to turn on advertising signs and shop window lighting. The twilight relay switches the load at the moment of sunset/sunrise, the exact moment of switching can be customized 5 - 50 lux (except for the PS-1 relay). Twilight relays can support direct connection of loads up to 20 A; higher current load must be connected via a contactor. Twilight relay is installed on a mounting plate, included in the kit.



APPLICATION

EKF twilight relays are commonly used in outdoor lighting applications such as:

- Street lighting systems – to automatically switch on the lights when the ambient light level decreases at dusk, and switch them off when the light level increases at dawn.
- Parking lot and building perimeter lighting systems – to control the outdoor lights, ensuring they are activated during low-light conditions for security and safety purposes.

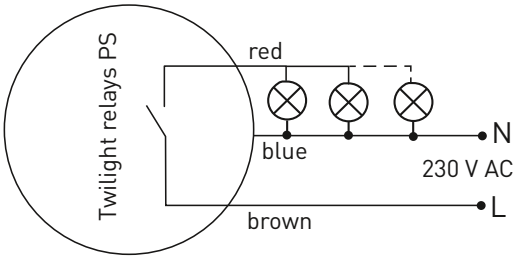
TECHNICAL DATA

Recommended total load by type, W

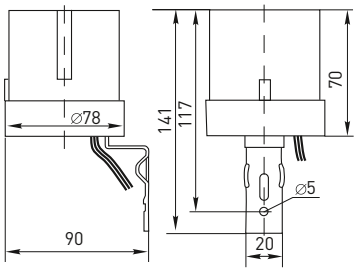
Relay contact current, A	Incandescent lamps	Halogen lamps	LED lights	Compact fluorescent lamps	Luminescent lamps
1	100	100	100	60	–
6	750	750	750	188	375
10	1300	1300	1300	320	630
25	3125	3125	3125	785	1545

Parameters		Values				
		PS-1	PS-2	PS-3	PS-4	PS-5
Rated voltage, V		220-240				
Rated frequency, Hz		50 / 60				
Rated load current, A	at PF = 1	6	10	20	10	15
	at PF = 0,6	4	6	12	6	9
Max. load, W		1400	2200	4400	2200	3300
Operating temperature, °C		-25 to +50				
Power consumption in standby mode, W		0,25				
Power consumption in operation, W		6,6				
Shutdown delay time, sec.		10–900				

Wiring diagram



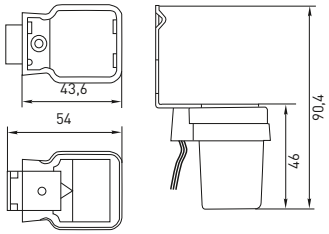
Mounted base-down



fr-ps-2-10

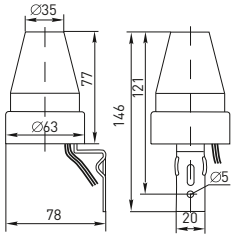
Overall and installation dimensions

Mounted base-up



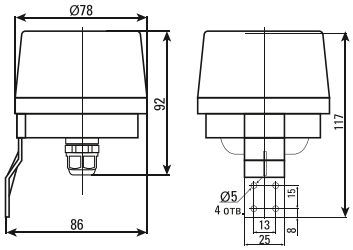
fr-ps-1-6

Mounted base-down



fr-ps-2-10

Mounted base-down



fr-ps-4-10 and fr-ps-5-15

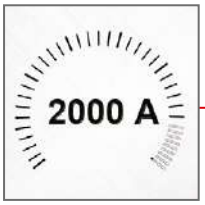
Picture	Name	Maximum load at PF=1, A/W	Switching threshold, lux	Degree of protection	Item code
	PS-1 EKF	6 / 1350	<10 (on) >40 (off)	IP44	fr-ps-1-6
	PS-2 EKF	10 / 2200	5 – 15	IP44	fr-ps-2-10
	PS-3 EKF	20 / 4400	<10 – 50 (on) >50 – 100 (off)	IP44	fr-ps-3-20
	PS-4 EKF	10 / 2200	10 – 50	IP66	fr-ps-4-10
	PS-5 EKF	15 / 3300	10 – 50	IP66	fr-ps-5-15

Metering & Measurement

Analogue ammeters and voltmeters EKF

Analogue ammeters and voltmeters EKF are designed to measure current and voltage in AC electrical circuits. The devices are intended to be used indoors, in electrical enclosures and electrical installations of industrial, residential, public buildings and structures. Ammeters and voltmeters are mounted on the front panel of a distribution enclosure (through a square or a round cutout). Dimensions of the instrument faceplates: 72 × 72, 80 × 80, and 96 × 96 mm.

Standard: IEC/EN 60051-1, IEC/EN 60051-2, IEC/EN 60051-9



Measurement range up to 2000

Flame retardant plastic housing

Square and round cutout options

Magnetically shielded internals

Complete mounting kit included

Zero-point adjustment

APPLICATION

EKF analogue voltmeters and ammeters are used in various industrial, commercial and residential applications where precise measurement and monitoring of voltage and current is required:

- Testing and maintenance of electrical equipment and machinery
- Monitoring electrical systems in power plants and substations
- Calibration and testing of electronic and electrical instruments
- General electrical inspections and measurements in residential and commercial buildings.

TECHNICAL DATA

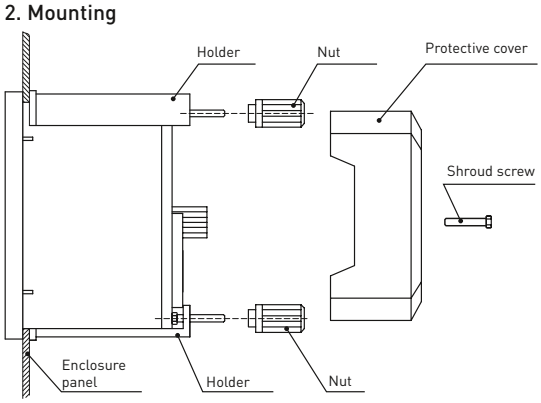
Parameters	Values	
	AMA-961, AMA-721, VMA-961, VMA-721	AMA-801, VMA-801
Mounting type	Front panel, square cutout	Front panel, round cutout
Accuracy class	1,5	2,5
Rated operating voltage, V max.		
For ammeters	400	
For voltmeters	500	
Min. insulation resistance, MOhm		
Under normal conditions (temperature 20 ± 5 °C, relative humidity 60 ± 15%)	40	
Under high humidity (temperature 20 ± 5 °C, relative humidity 95%)	5	
At 45 ± 5 °C and relative humidity up to 80%	2	
Operating principle	Electromagnetic	
Long-term overload (max. two hours)	120% of the end value of the measuring range	
Electromagnetic compatibility, immunity and emissions (IEC 61326)	Class B equipment	
Mean time between failures, hours	65 000	
Average service life, years	12	
Verification interval, years	2	

Installation and operation

1. Installation

Ammeters are connected to the mains in series, voltmeters in parallel. Ammeters for measuring currents above 5 A must be connected to the circuit via current transformers with a rated secondary current of 5 A and an accuracy class of 0,5.

2. Mounting



AMA-721, AMA-961, VMA-721, VMA-961. Before installation, make a square cutout of the required size in the front panel of the enclosure. The instrument is installed onto the front panel of the enclosure using plastic holders. After connecting the instruments to the circuit, cover their terminals with a protective shroud.
AMA-801, VMA-801. Before installation, make a round cutout of the required size and four holes for fasteners in the front panel of the enclosure. The instruments are installed using the included mounting hardware. The device housing has screw terminals for connecting the ammeter to the measuring circuit and mounting screws for installing the device onto the front panel of the enclosure. To correctly connect the ammeter to the power supply, please observe the polarity markings on the housing. "+" is positive and "-" is negative terminal. Before using the analogue ammeter, set its pointer to zero using a small calibration screw, use a precision screwdriver to turn the screw.

3. Design

Measuring instruments utilize the moving iron design with a fixed coil and a moving ferromagnetic core with the arrow pointer rigidly fixed on the axis of rotation of the core, non-linear scale (for ammeters), linear scale (for voltmeters) and an adjustable zero.

4. Operating principle

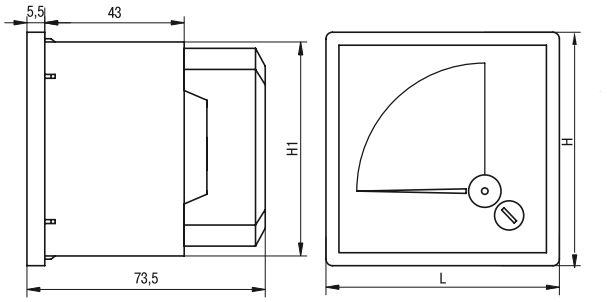
The principle of operation of the devices is based on the interaction of the magnetic field in a fixed coil with a moving ferromagnetic core. When the measured current flows through the fixed coil, the magnetic field created in the coil applies torque to the moving ferromagnetic core which rotates, deflecting the pointer to an angle, proportional to the strength of the current. The moving part of the instruments is air damped. The instrument zero point can be adjusted using the calibration screw on the front panel.

Delivery scope

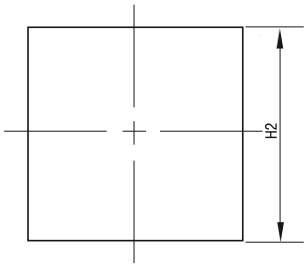
1. Device (ammeter or voltmeter) EKF. Mounting kit.
2. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Overall and installation dimensions

AMA-721, AMA-961, VMA-721, VMA-961

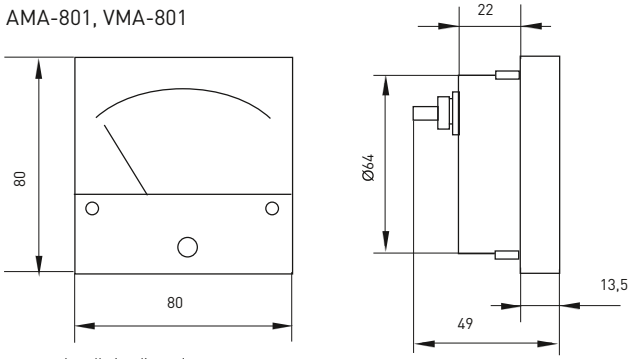


Installation dimensions (cutout size)



Name	H, mm	H1, mm	H2, mm
AMA-721, VMA-721	72	66	68
AMA-961, VMA-961	96	90	92

AMA-801, VMA-801



Installation dimensions (cutout size)

Picture	Name	Accuracy class	Connection type	Front panel size, mm	Item code
	Analogue ammeter AMA-721 panel mount (72x72) square cut 10A direct connection EKF	1,5	Direct	72 × 72	ama-721-10
	Analogue ammeter AMA-721 panel mount (72x72) square cut 50A direct connection EKF				ama-721-50
	Analogue ammeter AMA-721 panel mount (72x72) square cut 100A transformer connection EKF		Transformer		ama-721-100
	Analogue ammeter AMA-721 panel mount (72x72) square cut 150A transformer connection EKF				ama-721-150
	Analogue ammeter AMA-721 panel mount (72x72) square cut 200A transformer connection EKF				ama-721-200
	Analogue ammeter AMA-721 panel mount (72x72) square cut 300A transformer connection EKF	1,5	Transformer	72 × 72	ama-721-300
	Analogue ammeter AMA-721 panel mount (72x72) square cut 400A transformer connection EKF				ama-721-400
	Analogue ammeter AMA-721 panel mount (72x72) square cut 600A transformer connection EKF				ama-721-600
	Analogue ammeter AMA-721 panel mount (72x72) square cut 1000A transformer connection EKF				ama-721-1000
	Analogue ammeter AMA-721 panel mount (72x72) square cut 1500A transformer connection EKF				ama-721-1500
	Analogue ammeter AMA-721 panel mount (72x72) square cut 2000A transformer connection EKF				ama-721-2000

Picture	Name	Accuracy class	Connection type	Front panel size, mm	Item code
	Analogue voltmeter VMA-721 panel mount (72x72) square cut 300V direct connection EKF	1,5	Direct	72 × 72	vma-721-300
	Analogue voltmeter VMA-721 panel mount (72x72) square cut 500V direct connection EKF				vma-721-500
	Analogue ammeter AMA-961 panel mount (96x96) square cut 10A direct connection EKF			96 × 96	ama-961-10
	Analogue ammeter AMA-961 panel mount (96x96) square cut 50A direct connection EKF				ama-961-50
	Analogue ammeter AMA-961 panel mount (96x96) square cut 100A transformer connection EKF		Transformer		ama-961-100
	Analogue ammeter AMA-961 panel mount (96x96) square cut 150A transformer connection EKF				ama-961-150
	Analogue ammeter AMA-961 panel mount (96x96) square cut 200A transformer connection EKF				am-a961-200
	Analogue ammeter AMA-961 panel mount (96x96) square cut 300A transformer connection EKF				ama-961-300
	Analogue ammeter AMA-961 panel mount (96x96) square cut 400A transformer connection EKF				ama-961-400
	Analogue ammeter AMA-961 panel mount (96x96) square cut 600A transformer connection EKF				ama-961-600
	Analogue ammeter AMA-961 panel mount (96x96) square cut 1000A transformer connection EKF				ama-961-1000
	Analogue ammeter AMA-961 panel mount (96x96) square cut 1500A transformer connection EKF				ama-961-1500
	Analogue ammeter AMA-961 panel mount (96x96) square cut 2000A transformer connection EKF				ama-961-2000
	Analogue voltmeter VMA-961 panel mount (96x96) square cut 300V direct connection EKF		Direct		vma-961-300
	Analogue voltmeter VMA-961 panel mount (96x96) square cut 500V direct connection EKF				vma-961-500
	Analogue ammeter AMA-801 panel mount (80x80) round cut 10A direct connection EKF	2,5		80 × 80	ama-801-10
	Analogue ammeter AMA-801 panel mount (80x80) round cut 50A direct connection EKF				ama-801-50
	Analogue ammeter AMA-801 panel mount (80x80) round cut 100A transformer connection EKF		Transformer		ama-801-100
	Analogue ammeter AMA-801 panel mount (80x80) round cut 200A transformer connection EKF				ama-801-200
	Analogue ammeter AMA-801 panel mount (80x80) round cut 300A transformer connection EKF				ama-801-300
	Analogue ammeter AMA-801 panel mount (80x80) round cut 400A transformer connection EKF				ama-801-400
	Analogue ammeter AMA-801 panel mount (80x80) round cut 600A transformer connection EKF				ama-801-600
	Analogue ammeter AMA-801 panel mount (80x80) round cut 1000A transformer connection EKF				ama-801-1000
	Analogue ammeter AMA-801 panel mount (80x80) round cut 1500A transformer connection EKF				ama-801-1500
	Analogue voltmeter VMA-801 panel mount (80x80) round cut 300V direct connection EKF		Direct		vma-801-300
	Analogue voltmeter VMA-801 panel mount (80x80) round cut 500V direct connection EKF				vma-801-500

Digital ammeters and voltmeters EKF

Digital ammeters and voltmeters EKF are designed to measure current and voltage in single-phase and three-phase electrical AC circuits. The devices are intended to be used indoors, in electrical enclosures and electrical installations of industrial, residential, public buildings and structures. Ammeters and voltmeters can be connected either directly or via a transformer. The measuring range of transformer-connected instruments depends only on the rating of the measuring transformer. Microprocessor control enables accuracy class of 0,5 – several times higher than that of analogue ammeters and voltmeters.

Standard: IEC/EN 61010-1, IEC/EN 61000-2-11, IEC/EN 60068-2-30

Flame retardant plastic housing

Easy installation

Extended period between mandatory verifications

Can be set up to work with any measuring transformer

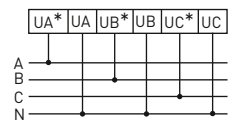
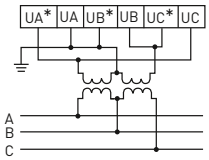
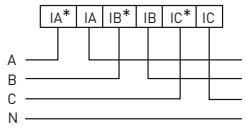
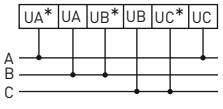
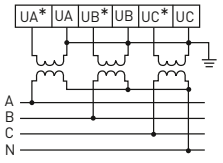
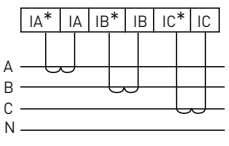
APPLICATION

EKF digital voltmeters and ammeters are preferred in many applications due to their higher accuracy and reliability:

- Industrial automation and control systems.
- Laboratory testing and research.
- Electrical and electronic equipment maintenance and repair.
- Power distribution and transmission systems.
- Telecommunications and networking equipment.
- Home and commercial electrical inspections and troubleshooting.

TECHNICAL DATA

Wiring diagrams

For AC voltmeter at U≤500 V for phase-to-ground voltage measurement	For AC voltmeter at U>500 V for phase-to-phase voltage measurement (via two voltage transformers)
	
For AC ammeter at I≤5 A	**For AC voltmeter at U≤500 V phase-to-phase voltage measurement**
	
For AC voltmeter at U>500 V for phase-to-ground voltage measurement (via three voltage transformers)	**For AC ammeter at I>5 A (via current transformer)**
	

Parameters	Values	
	AD-721s, VD-721s, AD-961s, VD-961s	AD-723s, VD-723s, AD-963s, VD-963s
Rated operating voltage for ammeters, V max.	400	
Rated operating voltage for voltmeters, V max.	500	
AC frequency, Hz	45–65	
Instrument power supply, V/Hz	230 ± 10% / 50-60	
Sampling frequency	1 time/s	3 times/s
Accuracy class	0,5	
Connection type	Direct / Transformer	
Max. power consumption, VA	When measuring current - 0,5; When measuring voltage - 1	When measuring current - 6,5; When measuring voltage - 8
Instrument power consumption, VA max.	3	
Minimum measured current, A	0,001	
Minimum measured voltage, V	1	
Minimum measured current, A	50 000	
Maximum measured voltage, V	320 000	
Measurement range, direct connection	0 - 5 A (for ammeters) 0 - 500 V (for voltmeters)	
Measurement range, transformer connection	6 A - 50 kA (for ammeters) 501 V - 320 kV (for voltmeters)	
Number of display digits	4	3 × 4 (three four-digit displays)
Permissible short-term overload on the measurement input	2x (for 30 s)	
Permissible long-term overload on the measurement input	1,2x	
Operating temperature, °C	-10 to 50	
Degree of protection	IP52 (front panel side) IP20 (terminal side)	
Mean time before failure, hours	110 000	
Average service life, years	10	

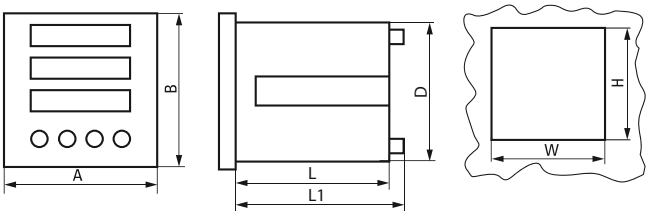
Installation and operation

The devices have an input, an analog-to-digital converter (ADC), a microcontroller that processes the input signal, one or three four-digit LED indicators, and a power supply.
The devices feature a plastic housing designed for panel mounting.
Installation, wiring and set-up may only be carried out by qualified electrical personnel.
The instruments are installed in the square shaped front panel cutout using clips with no additional tools required. Ammeters are connected to the mains in series, voltmeters – in parallel. Before installation, make a necessary cutout (W x H) in the front panel of the enclosure.

Programmable functions

AD-721
Zero point adjustment. Transformer ratio selection for current transformers (CTs).
VD-961
Output display precision selection (number of decimal places). Upper measurement limit selection.
AD-723
Transformer ratio selection for current transformers (CTs). Input filter setting (instrument response time).
VD-963
Transformer ratio selection for voltage transformers (VTs). Input filter setting (instrument response time).

Overall and installation dimensions



Device model	Front panel, mm		Enclosure panel cutout, mm		Housing dimensions, mm		
	A	B	W	H	L	D	L1
AD-721s, VD-721s, AD-723s, VD-723s	72	72	68	68	51	67	65
AD-961s, VD-961s, AD-963s, VD-963s	96	96	92	92	51	91	65

Delivery scope

1. Device (ammeter or voltmeter) EKF.
2. Mounting kit.
3. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Picture	Name	Accuracy class	Connection type	Front panel size, mm	Item code
	Digital ammeter AD-721 panel mount (72x72) 1-phase EKF	0,5	Transformer	72 × 72	ad-721
	Digital ammeter AD-961 panel mount (96x96) 1-phase EKF			96 × 96	ad-961
	Digital voltmeter VD-721 panel mount (72x72) 1-phase EKF		Direct / Transformer	72 × 72	vd-721
	Digital voltmeter VD-961 panel mount (96x96) 1-phase EKF			96 × 96	vd-961
	Digital ammeter AD-723 panel mount (72x72) 3-phase EKF		Transformer	72 × 72	ad-723
	Digital ammeter AD-963 panel mount (96x96) 3-phase EKF			96 × 96	ad-963
	Digital voltmeter VD-723 panel mount (72x72) 3-phase EKF		Direct / Transformer	72 × 72	vd-723
	Digital voltmeter VD-963 panel mount (96x96) 3-phase EKF			96 × 96	vd-963

DIN rail digital ammeters and voltmeters

Digital ammeters and voltmeters EKF are designed to measure current and voltage in single-phase and three-phase electrical AC circuits. The devices are intended to be used indoors, in electrical enclosures and electrical installations of industrial, residential, public buildings and structures. Ammeters and voltmeters can be connected either directly or via a transformer. The measuring range of transformer-connected instruments depends only on the rating of the measuring transformer. Microprocessor control enables accuracy class of 0,5 – several times higher than that of analogue ammeters and voltmeters.

Standard: IEC 61010-1, IEC 61000-2-11, IEC 60068-2-30

Can be set up to work with any measuring transformer

Easy DIN rail mount

Extended period between mandatory verifications. Accuracy class 0,5

Flame retardant plastic housing

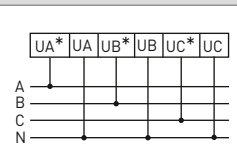
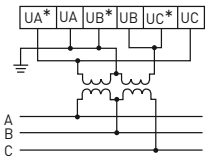
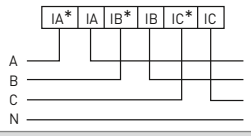
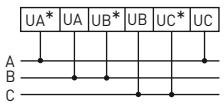
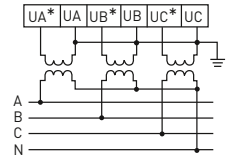
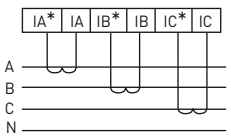
APPLICATION

EKF DIN rail digital voltmeters and ammeters are commonly used in industrial and commercial settings where space-saving, easy installation, and precise measurement and monitoring of electrical parameters are required:

- Control panels and electrical distribution enclosures.
- Automation and process control systems.
- Electrical equipment monitoring.

TECHNICAL DATA

Wiring diagrams

For AC voltmeter at U≤500 V to measure phase-to-ground voltage	For AC voltmeter at U>500 V for phase-to-phase voltage measurement (via two voltage transformers)
	
For AC ammeter at I≤5 A	For AC voltmeter at U≤500 V phase-to-phase voltage measurement
	
For AC voltmeter at U>500 V for phase-to-ground voltage measurement (via three voltage transformers)	For AC ammeter at I>5 A (via current transformer)
	

Parameters	Values	
	AD-G31, VD-G31	AD-G33, VD-G33
Rated operating voltage for ammeters, V max.	400	
Rated operating voltage for voltmeters, V max.	500	
AC frequency, Hz	45-65	
Instrument power supply, V/Hz	230 ± 10% / 50-60	
Sampling frequency	1 time/s	3 times/s
Accuracy class	0,5	
Connection type	Direct / Transformer	
Max. power consumption, VA	For current measurement – 0,5; for voltage measurement – 1	For current measurement – 6,5; for voltage measurement – 8
Instrument power consumption, VA max.	3	
Minimum measured current, A	0,001	
Minimum measured voltage, V	1	
Minimum measured current, A	50 000	
Maximum measured voltage, V	320 000	
Measurement range, direct connection	0 - 5 A (for ammeters) 0 - 500 V (for voltmeters)	
Range of measurement for transformer connection	0 A - 50 kA (for ammeters) 0 V - 320 kV (for voltmeters)	
Number of display digits	4	3 × 4 (three four-digit displays)
Permissible short-term overload on the measurement input	2x (for 30 s)	
Permissible long-term overload on the measurement input	1, 2x	
Operating temperature, °C	-10 to 50	
Degree of protection	IP20	
Mean time before failure, hours	110 000	
Average service life, years	10	

Installation and operation

The devices have an input, an analog-to-digital converter (ADC), a microcontroller that processes the input signal, one or three four-digit LED indicators, and a power supply.
The devices feature a plastic housing designed for panel mounting.
Installation, wiring and set-up may only be carried out by qualified electrical personnel.
The instruments are installed in the square shaped front panel cutout using clips with no additional tools required. Ammeters are connected to the mains in series, voltmeters - in parallel. Before installation, make a necessary cutout (W x H) in the front panel of the enclosure.

Programmable functions

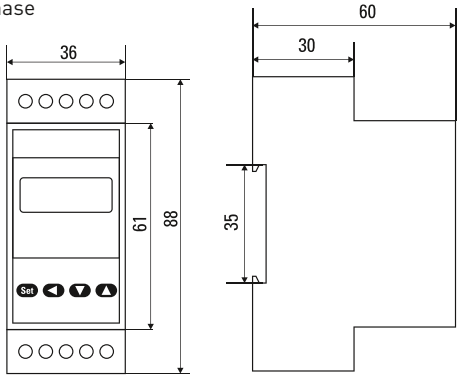
AD-G31
Zero point adjustment.
Transformer ratio selection for current transformers (CTs).
AD-G33
Output display precision selection (number of decimal places).
Upper measurement limit selection.
VD-G31
Transformer ratio selection for current transformers (CTs).
Input filter setting (instrument response time).
VD-G33
Transformer ratio selection for voltage transformers (VTs).
Input filter setting (instrument response time).

Delivery scope

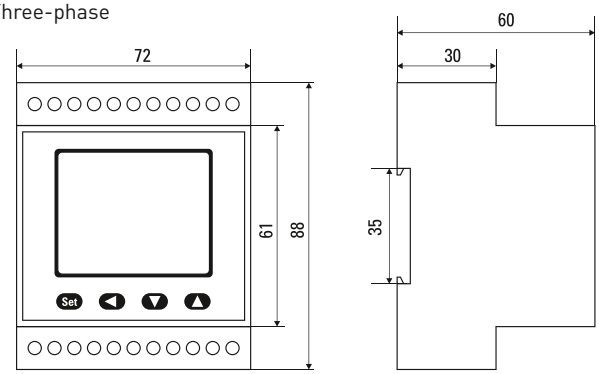
1. Device (ammeter or voltmeter).
2. Technical manual.

Overall and installation dimensions

Single-phase



Three-phase



Picture	Name	Accuracy class	Connection type	Number of phases	Mounting type	Item code
	Digital ammeter AD-G31 DIN rail 1-phase EKF	0,5	Transformer	Single-phase	DIN rail	ad-g31
	Digital ammeter AD-G33 DIN rail 3-phase EKF			Three-phase		ad-g33
	Digital voltmeter VD-G31 DIN rail 1-phase EKF		Transformer / Direct	Single-phase		vd-g31
	Digital voltmeter VD-G33 DIN rail 3-phase EKF			Three-phase		vd-g33

Analogue ammeters with replacement scales

Analogue ammeters AMA-721 and AMA-961 with replacement scales are designed to measure current in electrical AC circuits. Verification interval: two years.

Standard: IEC 60051-1, IEC 60051-2, IEC 60051-9

Flame retardant plastic housing

Range of measurement up to 5000 A

Zero-point adjustment

Wide range of replacement scales for quick selection of the required range. Magnetically shielded internals

APPLICATION

- Industrial machinery monitoring, e.g. motors, pumps, and compressors.
- Power distribution systems, measuring current flowing through electrical transformers, switchgear, and distribution lines.
- Battery charging and monitoring, allowing for efficient management of battery life and performance.
- Electric vehicle charging stations, ensuring safe and optimal charging for the vehicle's battery.
- Renewable energy systems, providing real-time measurements of the current flowing from the energy source to the electrical load.

TECHNICAL DATA

Wiring diagrams

Parameters	Values
Mounting type	Front panel, square cutout
Accuracy class	1,5
Rated operating voltage, V max.	400
Min. insulation resistance, MOhm	
Under normal conditions (temperature 20 ± 5°C, relative humidity 60 ± 15%)	40
In humid conditions (temperature 20 ± 5 °C, relative humidity 95%)	5
At 45 ± 5 °C and relative humidity up to 80%	2
Operating principle	Electromagnetic
Long-term overload (max. two hours)	120% of the end value of the measuring range
Electromagnetic compatibility, immunity and emissions (IEC 61326)	Class B equipment
Mean time between failures, hours	65 000
Average service life, years	12
Verification interval, years	2

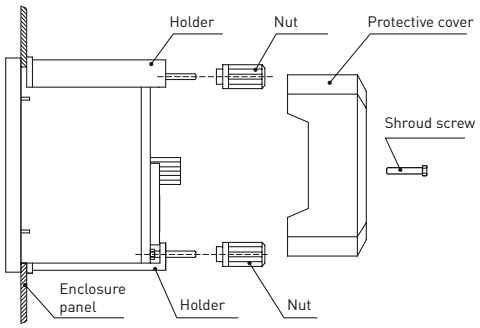
Installation and operation

Installation

Ammeters are connected to the circuit in series. Ammeters for measuring currents above 5 A must be connected to the circuit via current transformers with a rated secondary current of 5 A and an accuracy class of 0,5.

Mounting

Before installation, a square cutout of the required size must be made in the front panel of the enclosure. The instrument is installed onto the front panel of the enclosure using plastic holders. After connecting the instruments to the circuit, its terminals are covered with a protective shroud.



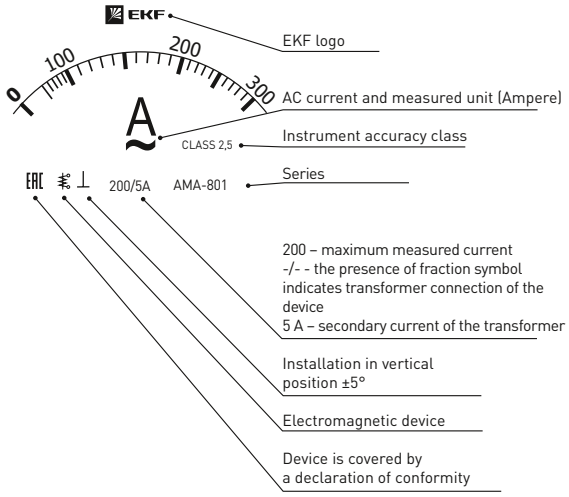
Design

Measuring instruments utilize the moving iron design with a fixed coil and a moving ferromagnetic core with the arrow pointer rigidly fixed on the axis of the core rotation, non-linear scale and an adjustable zero.

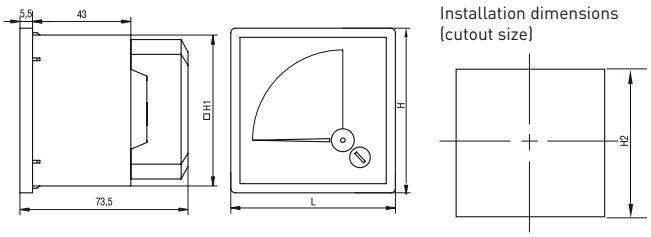
Operating principle

The principle of operation of the devices is based on the interaction of the magnetic field in a fixed coil with a moving ferromagnetic core. When the measured current flows through the fixed coil, the magnetic field created in the coil applies torque to the moving ferromagnetic core which rotates, deflecting the pointer to an angle, proportional to the strength of the current. The moving part of the instruments is air damped. The instrument zero point can be adjusted using the calibration screw on the front panel.

Instrument scale legend



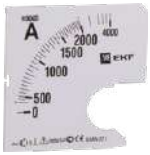
Overall and installation dimensions

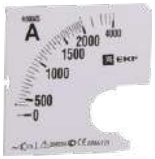


Name	Front panel size, mm	H, mm	L, mm	H1, mm	H2, mm
AMA-721	72 × 72	72	72	66	68
AMA-961	96 × 96	96	96	90	92

Delivery scope

1. Analogue ammeter AMA-721/AMA-961 with replacement scales EKF.
2. Mounting kit.
3. Technical manual.

Picture	Name	Item code
72 × 72		
	Replacement scale for A721 10/5A-1,5 EKF	s-a721-10
	Replacement scale for A721 100/5A-1,5 EKF	s-a721-100
	Replacement scale for A721 1000/5A-1,5 EKF	s-a721-1000
	Replacement scale for A721 1200/5A-1,5 EKF	s-a721-1200
	Replacement scale for A721 125/5A-1,5 EKF	s-a721-125
	Replacement scale for A721 15/5A-1,5 EKF	s-a721-15
	Replacement scale for A721 150/5A-1,5 EKF	s-a721-150
	Replacement scale for A721 1500/5A-1,5 EKF	s-a721-1500
	Replacement scale for A721 1600/5A-1,5 EKF	s-a721-1600
	Replacement scale for A721 20/5A-1,5 EKF	s-a721-20
	Replacement scale for A721 200/5A-1,5 EKF	s-a721-200
	Replacement scale for A721 2000/5A-1,5 EKF	s-a721-2000
	Replacement scale for A721 25/5A-1,5 EKF	s-a721-25
	Replacement scale for A721 250/5A-1,5 EKF	s-a721-250
	Replacement scale for A721 2500/5A-1,5 EKF	s-a721-2500
	Replacement scale for A721 30/5A-1,5 EKF	s-a721-30
	Replacement scale for A721 300/5A-1,5 EKF	s-a721-300
	Replacement scale for A721 3000/5A-1,5 EKF	s-a721-3000
	Replacement scale for A721 40/5A-1,5 EKF	s-a721-40
	Replacement scale for A721 400/5A-1,5 EKF	s-a721-400
	Replacement scale for A721 4000/5A-1,5 EKF	s-a721-4000
	Replacement scale for A721 5/5A-1,5 EKF	s-a721-5
	Replacement scale for A721 50/5A-1,5 EKF	s-a721-50
	Replacement scale for A721 500/5A-1,5 EKF	s-a721-500
	Replacement scale for A721 5000/5A-1,5 EKF	s-a721-5000
	Replacement scale for A721 60/5A-1,5 EKF	s-a721-60
	Replacement scale for A721 600/5A-1,5 EKF	s-a721-600
	Replacement scale for A721 75/5A-1,5 EKF	s-a721-75
	Replacement scale for A721 750/5A-1,5 EKF	s-a721-750
	Replacement scale for A721 80/5A-1,5 EKF	s-a721-80
	Replacement scale for A721 800/5A-1,5 EKF	s-a721-800

Picture	Name	Item code
96 × 96		
	Replacement scale for A961 10/5A-1,5 EKF	s-a961-10
	Replacement scale for A961 100/5A-1,5 EKF	s-a961-100
	Replacement scale for A961 1000/5A-1,5 EKF	s-a961-1000
	Replacement scale for A961 1200/5A-1,5 EKF	s-a961-1200
	Replacement scale for A961 125/5A-1,5 EKF	s-a961-125
	Replacement scale for A961 15/5A-1,5 EKF	s-a961-15
	Replacement scale for A961 150/5A-1,5 EKF	s-a961-150
	Replacement scale for A961 1500/5A-1,5 EKF	s-a961-1500
	Replacement scale for A961 1600/5A-1,5 EKF	s-a961-1600
	Replacement scale for A961 20/5A-1,5 EKF	s-a961-20
	Replacement scale for A961 200/5A-1,5 EKF	s-a961-200
	Replacement scale for A961 2000/5A-1,5 EKF	s-a961-2000
	Replacement scale for A961 25/5A-1,5 EKF	s-a961-25
	Replacement scale for A961 250/5A-1,5 EKF	s-a961-250
	Replacement scale for A961 2500/5A-1,5 EKF	s-a961-2500
	Replacement scale for A961 30/5A-1,5 EKF	s-a961-30
	Replacement scale for A961 300/5A-1,5 EKF	s-a961-300
	Replacement scale for A961 3000/5A-1,5 EKF	s-a961-3000
	Replacement scale for A961 40/5A-1,5 EKF	s-a961-40
	Replacement scale for A961 400/5A-1,5 EKF	s-a961-400
	Replacement scale for A961 4000/5A-1,5 EKF	s-a961-4000
	Replacement scale for A961 5/5A-1,5 EKF	s-a961-5
	Replacement scale for A961 50/5A-1,5 EKF	s-a961-50
	Replacement scale for A961 500/5A-1,5 EKF	s-a961-500
	Replacement scale for A961 5000/5A-1,5 EKF	s-a961-5000
	Replacement scale for A961 60/5A-1,5 EKF	s-a961-60
	Replacement scale for A961 600/5A-1,5 EKF	s-a961-600
	Replacement scale for A961 75/5A-1,5 EKF	s-a961-75
	Replacement scale for A961 750/5A-1,5 EKF	s-a961-750
	Replacement scale for A961 80/5A-1,5 EKF	s-a961-80
	Replacement scale for A961 800/5A-1,5 EKF	s-a961-800

Multifunctional meters

Multifunctional meters are digital programmable devices designed for measuring the parameters of three-phase three- or four-wire circuits with symmetrical and asymmetrical loads, direct display of measured values and their digital transmission. The devices enable control, analysis and optimization of electrical equipment, systems and industrial networks.

Easy installation and maintenance

Can be used with any current transformer

Intuitive menu

Remote data acquisition, parameter programming and recording, extended verification period. Harmonics up to the 51st order

APPLICATION

- Control and monitoring of energy consumption in residential, commercial, and industrial buildings.
- Analysis and optimization of power quality in electrical distribution systems.
- Measurement and management of electrical parameters in renewable energy systems such as solar or wind power plants.
- Monitoring of energy usage and efficiency in data centers and other critical infrastructure facilities.
- Evaluation and verification of billing and power supply reliability in utility companies

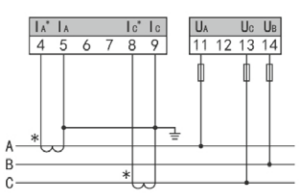
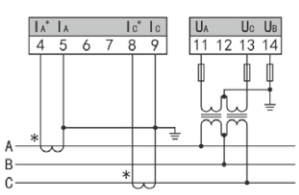
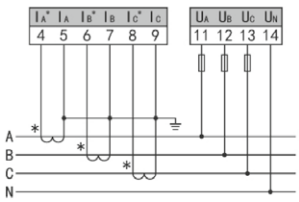
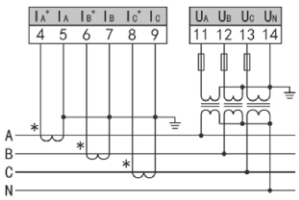
Measured parameters

Function	Symbol	Accuracy	Range	Display range
SME				
Voltage	U	0,5	10–380 V	0–999,9 kV
Current	I	0,5	0–5 A	0–99,99 kA
Active power	P	0,5	0–5,7 kW	0–9999 MW
Reactive power	Q	0,5	0–5,7 kvar	0–9999 Mvar
Complex power	S	0,5	0–5,7 kVA	0–9999 MVA
Power factor	PF	0,5	0–1,00	0–1,000
Frequency	F	±0,01 Hz	45–60 Hz	45,00–65,00 Hz
Active energy	EP	0,5 S	–	0–99 999 999 MW·h
Reactive energy	EQ	2	–	0–99 999 999 Mvar·h
Limit value	–	0,5	–	–
Power consumption	–	0,5	–	–
SMH, G33H				
Voltage	U	0,2	10–380 V	0–999,9 kV
Current	I	0,2	0–5 A	0–99,99 kA
Active power	P	0,5	0–5,7 kW	0–9999 MW
Reactive power	Q	0,5	0–5,7 kvar	0–9999 Mvar
Complex power	S	0,5	0–5,7	0–9999 MVA
Power factor	PF	0,5	0–k1V,A00	0–1,000
Frequency	F	±0,01 Hz	45–60 Hz	45,00–65,00 Hz
Active energy	EP	0,5S	–	0–99 999 999 MW·h
Reactive energy	EQ	0,5S	–	0–99 999 999 Mvar·h
Total harmonic voltage distortion	THDu	Class A	51st	0–99,99 %
Total harmonic current distortion	THDi	Class A	51st	0–99,99 %
Subharmonic content, voltage	THDu	Class A	51st	0–99,99 %
Subharmonic content, current	THDi	Class A	51st	0–99,99 %
Voltage unbalance	Uunb	Class B	–	–
Current unbalance	Iunb	Class B	–	–
Voltage sequence component	–	0,5	–	–
Voltage phase angle	–	±0,1°	–	–
Current sequence component	–	0,5	–	–
Current phase angle	–	±0,1°	–	–
Limit values	–	0,5	–	–
Power consumption	–	0,5	–	–

TECHNICAL DATA

Wiring diagrams

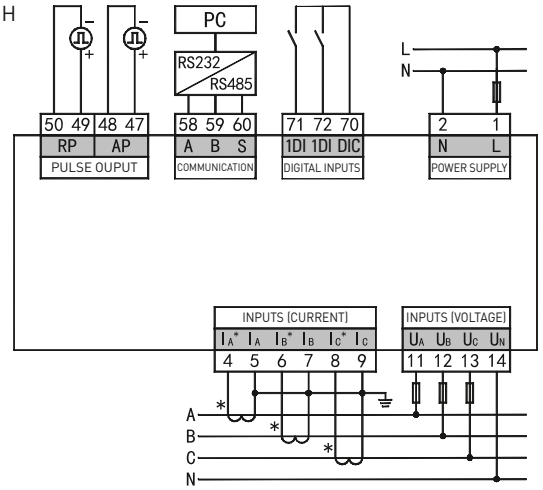
SMH, SME, G33H

3 phases and 3 wires, 2 current transformers, no voltage transformer	3 phases and 3 wires, 2 current transformers, 2 voltage transformers	3 phases and 4 wires, 3 current transformers, no voltage transformer	For AC voltmeter at U≤500 V phase-to-phase voltage measurement
			

Parameters		Values		
		SMH	SME	G33H
Operating conditions	Operating temperature, °C	from -25 to +70	from -40 to +70	from -25 to +70
	Storage temperature, °C	from -30 to +80	from -40 to +85	from -30 to +80
	Max. relative humidity, %	⩽ 95 (non-condensing)		
	Altitude above sea level, m	⩽ 2500		
	Environmental conditions	No corrosive gases		
	Degree of protection	Front panel - IP64, rear enclosure - IP20		
	Impedance	Resistance between signal terminal, power supply terminal, output terminal and housing > 100 MOhm		
Display type		LCD		
Power supply	Range	20 - 300 V AC/DC		
	Power consumption, VA	⩽5		
	Rated insulation voltage, kV	⩾2		
Input voltage	Range, V	230 / 400 (steady-state, by a factor of 1,2)	100 / 380 (steady-state, by a factor of 1,2)	230 / 400 (steady-state, by a factor of 1,2)
	Resolution, V	0,1		
	Impedance, MOhm / phase	⩾ 1,7		
	Power consumption, VA / phase	⩽ 0,1		
	Overvoltage	Momentary, 2x / 10 sec		
	Frequency, Hz	45-65		
Input current	Range	5 A / 1 A (steady-state, by a factor of 1,2)		
	Resolution, mA	1		
	Impedance, MOhm / phase	⩽ 20		
	Power consumption, VA/Phase	⩽ 0,2		
	Overcurrent	Momentary, 10x / 5 sec		
Pulse output	Pulse width	80 ms ± 20 %		
	Maximum signal output voltage, V	35		
	Maximum signal output current, mA	10		
	Pulse frequency, Hz	⩽ 10		
	Output function	Active energy import, reactive energy import		
Digital input	Closed circuit detection	Built-in 15 V DC power supply, resistance across terminals: closed ⩽ 10 kOhm, open ⩾ 15 kOhm	–	Built-in 15 V DC power supply, resistance across terminals: closed ⩽ 10 kOhm, open ⩾ 15 kOhm
	Insulation level	2000 V AC (1 min)	–	2000 V AC (1 min)
Communication channel	Physical interface	RS-485		
	Communication rate, kbit/s	Up to 9,6		
	Communication protocol	Modbus-RTU		
	Insulation level	2000 V AC (1 min)		
Real time clock (RTC)	Accuracy, s/day	⩽ 0,5	–	⩽ 0,5
Electromagnetic compatibility	Electrostatic discharge immunity	IEC 61000-4-2		
	Electromagnetic field immunity	IEC 61000-4-3		
	Electrical fast transient/burst immunity	IEC 61000-4-4		
	Surge immunity	IEC 61000-4-5		
	Immunity to conducted disturbances, induced by radio-frequency fields	IEC 61000-4-6		
	Power frequency magnetic field immunity	IEC 61000-4-8		
	Voltage dips, short interruptions and voltage variations immunity	IEC 61000-4-11		

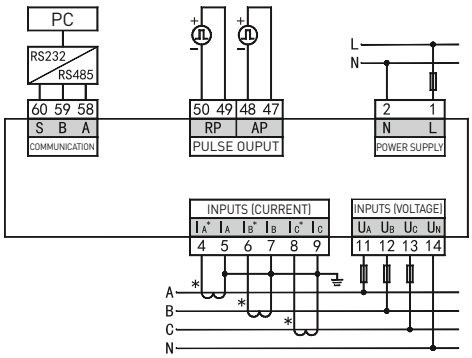
Terminal legend

SMH



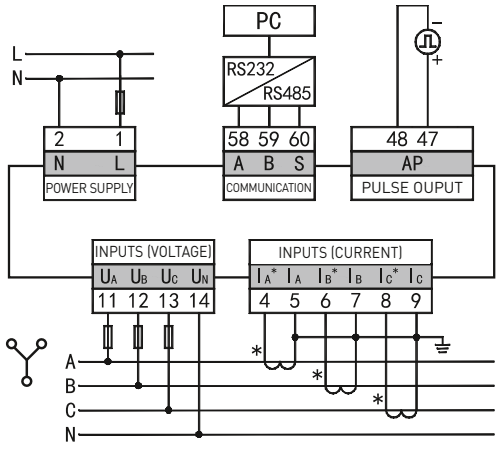
Parameters	Terminal number	Description
Power supply	1, 2	Alternating current, direct current: 80–270 V
Current terminals	4, 5, 6, 7, 8, 9	Three-phase current input
Voltage terminals	11, 12, 13, 14	Three-phase voltage input
Pulse outputs	47, 48, 49, 50	Active / reactive power output pulse
RS-485	58, 59, 60	A, B, G
Digital output	70–72	2 digital outputs, 70 - common

SME

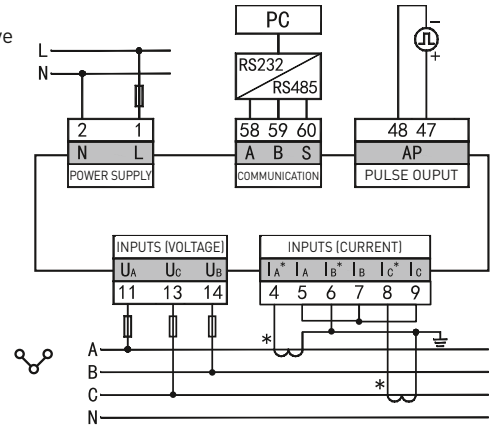


Parameters	Terminal number	Description
Power supply	1, 2	Alternating current, direct current: 80 - 270 V
Current terminals	4, 5, 6, 7, 8, 9	Three-phase current input
Voltage terminals	11, 12, 13, 14	Three-phase voltage input
Pulse outputs	47, 48, 49, 50	Active / reactive power output pulse
RS-485	58, 59, 60	A, B and G

G33H
Full Wye

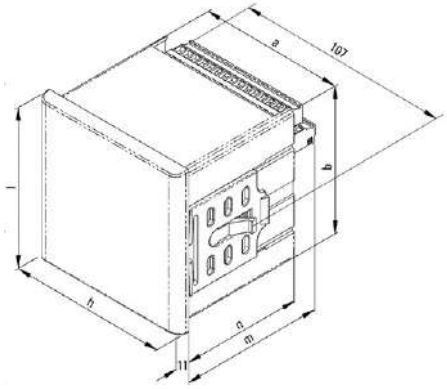


G33H
Partial Wye



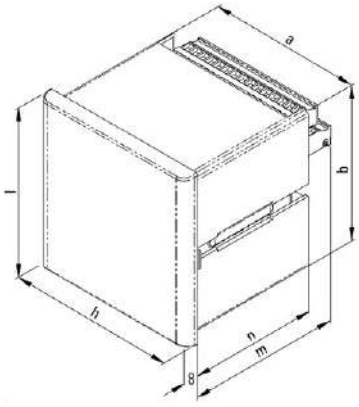
Overall and installation dimensions

SMH



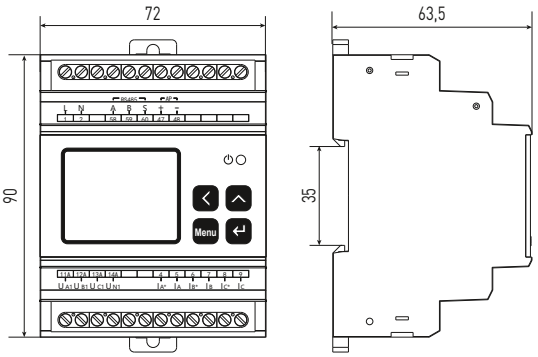
Instrument panel l × h, mm	Installation dimensions a × b, mm	Panel cutout, mm	Total length, mm	
			n	m
96 × 96	90 × 90	91 × 91	75	96

SME



Instrument panel l × h, mm	Installation dimensions a × b, mm	Panel cutout, mm	Total length, mm	
			n	m
96 × 96	90 × 90	91 × 91	75	96

G33H



Installation and operation

The devices have: input, digital inputs/outputs (when an expansion module is connected), RS-485 interface via ModBus-RTU protocol.
The devices feature a plastic housing designed for DIN rail mounting.
Installation, wiring and set-up must be carried out by qualified electrical personnel.
The devices are connected to the power network via current transformers and voltage transformers. Connect only via current transformers with input voltage signal up to 220V.

Delivery scope

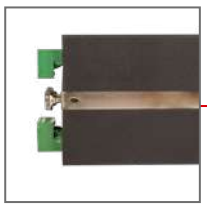
1. Digital multifunctional meter
2. Mounting kit.
3. Technical manual.

Picture	Name	Accuracy class	Display	Connection type	Front panel size, mm	Item code
	Digital multifunctional meter SM-H with LCD	0,5S	LCD	Transformer	96 × 96	sm-963h
	Digital multifunctional meter SM-E with LED display		Light-emitting diode (LED)			sm-963e
	Digital multifunctional meter SM-G33H with LCD DIN rail		LCD		DIN rail	sm-g33h

Multifunctional meters EKF

Digital multifunctional meters SM-B-96 and SM-B-72 EKF are a new generation of intelligent measuring devices, designed to measure the parameters of three-phase three- or four-wire electrical networks and digital transmission of the received data, control and alarm if monitored parameters exceed specified limits. Devices support the Modbus-RTU communication protocol.

Standards: IEC 62053-22:2003, IEC 62053-23:2003, GB/T13850-1998, IEC 61010-1, IEC 61000-2-11, IEC 60068-2-30



Easy, quick and convenient installation on the front panel of the electrical enclosure

High accuracy of measurement, measurement of distorted signals

Each measured parameter can be transmitted over the network to the master device over the RS-485 via Modbus-RTU protocol, at the speed of 1200 - 19200 bit/s

Customizable transformation ratio

APPLICATION

- Control and monitoring of energy consumption in residential, commercial, and industrial buildings.
- Analysis and optimization of power quality in electrical distribution systems.
- Measurement and management of electrical parameters in renewable energy systems such as solar or wind power plants.
- Monitoring of energy usage and efficiency in data centers and other critical infrastructure facilities.
- Evaluation and verification of billing and power supply reliability in utility companies.

Measured parameters

Function	Symbol	Accuracy	Range with direct connection	Range with transformer connection
Voltage	U	0,5	10–380 V	0–999,9 kV
Current	I	0,5	0–5 A	0–99,99 kA
Active power	P	0,5	0–5,7 kW	0–9999 MW
Reactive power	Q	0,5	0–5,7 kvar	0–9999 Mvar
Complex power	S	0,5	0–5,7 kVA	0–9999 MVA
Power factor	PF	0,5	0–1,00	0–1,000
Frequency	F	±0,01 Hz	45–60 Hz	45,00–65,00 Hz
Active energy	EP	1	–	0–99 999 999 MW·h
Reactive energy	EQ	2	–	0–99 999 999 Mvar·h

TECHNICAL DATA

Parameters		Values
Measurement error		
Current / Voltage		±0,5%
Active / Reactive / Complex power		±0,5%
Frequency		±0,1 Hz
Power factor		±0,1
Active energy		Accuracy class: 1
Reactive energy		Accuracy class: 2
Power supply		
Range		85–264 V AC/DC
Power consumption		≤5 VA
Input parameters		
Grid connection		Three-phase three-wire, three-phase four-wire
Voltage	Range	AC 57,7V, 100V, 230V, 400V
	Power consumption per each phase	≤ 1 VA / phase
	Impedance	> 1 mOhm / phase
Current	Range	1 A / 5 A (steady-state, by a factor of 1,2)
	Impedance	≤ 20 mOhm / phase
Frequency		45 - 60 Hz
Communication channel		
Physical interface		RS-485
Communication protocol		Modbus-RTU
Communication rate, bit/s		1200, 2400, 4800, 9600, 19200
Safety		
Overvoltage	At the input	≥2kV 50 Hz for 1 min
	At the output	≥2kV 50 Hz for 1 min
Insulation resistance		20 MOhm
Heat and fire resistance		Terminals: 960°C, housing: 650°C, time: 30 seconds
Electromagnetic compatibility		
Electrostatic discharge immunity		±8 kV
Resistance to voltage surges (momentary)		±1 kV
Electromagnetic field immunity		80–1000 MHz, 10 V/m
Operating conditions		
Operating temperature, °C		-10 to 55
Storage temperature, °C		-25 to 70
Relative humidity		≤85 %, non condensing
Max. altitude above sea level, m		≤2500
Environmental conditions		No corrosive gases
Degree of protection		Front panel - IP54, rear enclosure - IP20

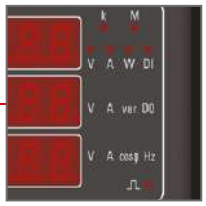
Picture	Name	Accuracy class	Display type	Connection type	Front panel size, mm	Item code
	Digital multifunctional meter SM-B-96 panel mount 96x96 EKF	0,5S	LCD	Transformer	96 × 96	sm-963b
	Digital multifunctional meter SM-B-72 panel mount 72x72 EKF		LCD		72 × 72	sm-723b

Digital multifunctional meters EKF

Digital multifunctional meters DMC and DMCr EKF -are the latest iteration of digital programmable devices for low-voltage distribution systems. They are designed for measuring the parameters of three-phase three- or four-wire circuits with symmetrical and asymmetrical loads, direct display of measured values and their digital transmission. The devices enable control, analysis and optimization of energy equipment, systems and industrial networks.

Compact size, affordable and efficient

Easy, quick and convenient installation on the front panel of the electrical enclosure



User-selectable display values

Each measured parameter can be transmitted over the network to the master device over the RS-485 via Modbus-RTU protocol (for DMC-963r)

APPLICATION

- Control and monitoring of energy consumption in residential, commercial, and industrial buildings.
- Analysis and optimization of power quality in electrical distribution systems.
- Measurement and management of electrical parameters in renewable energy systems such as solar or wind power plants.
- Monitoring of energy usage and efficiency in data centers and other critical infrastructure facilities.
- Evaluation and verification of billing and power supply reliability in utility companies.

Measured parameters

Function	Symbol	Accuracy	Range with direct connection	Range with transformer connection
Voltage	U	0,5	10–380 V	0–999,9 kV
Current	I	0,5	0–5 A	0–99,99 kA
Active power	P	0,5	0–5,7 kW	0–9999 MW
Reactive power	Q	0,5	0–5,7 kvar	0–9999 Mvar
Complex power	S	0,5	0–5,7 kVA	0–9999 MVA
Power factor	PF	0,5	0–1,00	0–1,000
Frequency	F	±0,01 Hz	45–60 Hz	45,00–65,00 Hz
Active energy	EP	1	–	0–99 999 999 MW·h
Reactive energy	EQ	2	–	0–99 999 999 Mvar·h

TECHNICAL DATA

Parameters	Values
Measurement error	
Current / Voltage	±0,5%
Active / Reactive / Complex power	±0,5%
Frequency	±0,1 Hz
Power factor	±0,1

Parameters		Values
Active energy		Accuracy class: 1
Reactive energy		Accuracy class: 2
Power supply		
Range		230 V AC; 90–270 V AC/DC
Power consumption		≤5 VA
Input parameters		
Grid connection		Three-phase three-wire, three-phase four-wire
Voltage	Range	AC 57,7V, 100V, 230V, 380V
	Power consumption per each phase	≤ 0,3 VA / phase
	Impedance	> 20 mOhm / phase
Current	Range	5 A / 1 A (steady-state, by a factor of 1,2)
	Impedance	≤ 20 mOhm / phase
Frequency		45–60 Hz
Communication channel		
Physical interface		RS-485 (DMCr only)
Communication protocol		Modbus-RTU
Communication rate, bit/s		1200, 2400, 4800, 9600, 19200
Safety		
Overvoltage	At the input	≥2kV 50 Hz for 1 min
	At the output	≥2kV 50 Hz for 1 min
Insulation resistance		20 MOhm
Heat and fire resistance		Terminals: 960°C, housing: 650°C, time: 30 seconds
Electromagnetic compatibility		
Electrostatic discharge immunity		±8 kV
Resistance to voltage surges (momentary)		±1 kV
Electromagnetic field immunity		80–1000 MHz, 10 V/m
Operating conditions		
Operating temperature, °C		-10 to 55
Storage temperature, °C		-25 to 70
Relative humidity		≤85 %, non condensing
Max. altitude above sea level, m		≤2500
Environmental conditions		No corrosive gases
Degree of protection		Front panel - IP54, rear enclosure - IP20

Picture	Name	Accuracy class	Connection type	RS-485	Front panel size, mm	Item code
	Digital multifunctional meter DMC panel mount (96x96) EKF	Active energy: 1,0	Transformer	N/A	96 × 96	DMC-963
	Digital multifunctional meter DMC-R panel mount 96x96 square cut RS-485 EKF	Reactive energy: 2,0		Available		DMC-963r

Current transformers TTE, TTE-A EKF

Current transformers TTE and TTE-A EKF are current-sensing units designed to transform and transmit current to metering, protective, automation, alarm, and control equipment in 50/60 Hz AC circuits with the rated voltage of up to 0,66 kV. They can be installed in incoming switchgear, in conjunction with electricity meters. The product range incorporates the transformers with an integrated busbar section (TTE-A) or an aperture to accommodate busbar or cable (TTE-30, TTE-40, TTE-60, TTE-85, TTE-100, TTE-125).

Secondary leads with a transparent safety cover

The design of the transformer aperture accommodates busbars and cables of different cross-sections

The transformer housing is not intended to be open and is additionally protected by an anti-tamper sticker to prevent access to the secondary winding.

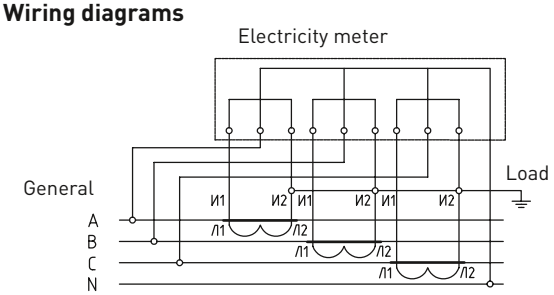
An integrated tinned copper busbar of the TTE-A models enables connection to both aluminium and copper busbars

APPLICATION

- Energy metering and billing in residential and commercial buildings.
- Monitoring and protection of electrical equipment in substations and industrial plants.
- Power quality monitoring and analysis to detect voltage sags, swells, harmonics, and transients.
- Fault detection and coordination of protective devices in electrical distribution systems.
- Renewable energy generation monitoring and control to maximize efficiency and ensure grid compliance.

TECHNICAL DATA

Wiring diagrams

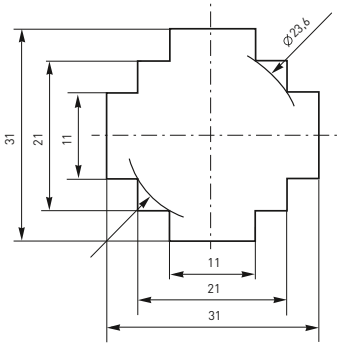


Accuracy class	Primary current, % of rated	Ratio error			Burden, % of rated
		Current, %	Phase displacement, min		
0,5	5	±1,5	±90'	±2,7 crad	25–100
	20	±0,75	±45'	±1,35 crad	
	100–120	±0,5	±30'	±0,9 crad	
0,5S	1	±1,5	±90'	±2,7 crad	
	5	±0,75	±45'	±1,35 crad	
	20	±0,5	±30'	±0,9 crad	
	100-120	±0,5	±30'	±0,9 crad	

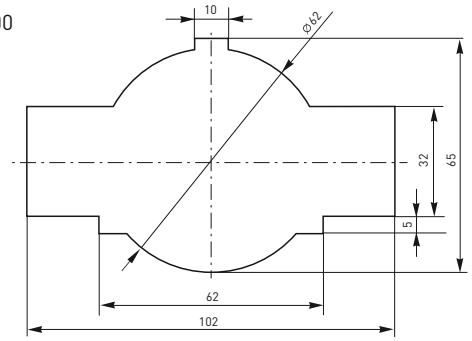
Parameters	Values						
	TTE-A	TTE-30	TTE-40	TTE-60	TTE-85	TTE-100	TTE-125
Rated voltage Un, kV	0,66						
Maximum operating voltage, kV	0,72						
Rated frequency, Hz	50 / 60						
Rated primary	5, 10, 15, 20, 25, 30, 40, 50, 60, 75, 80, 100, 120, 125, 150, 200, 250, 300, 400, 500, 600, 750, 800, 1000	100, 150, 200, 250, 300, 400	300, 400, 500, 600	300, 400, 500, 600, 750, 800, 1000	750, 800, 1000, 1200, 1500	800, 1000, 1200, 1500, 1600, 2000, 2250, 2500, 3000	1500, 1600, 2000, 2250, 2500, 3000, 4000, 5000
Rated secondary current Isr, A	5						
Burden rating Ssr at power factor=0,8, VA	5, 10, 15, 20, 25, 30						
Accuracy class	0,5; 0,5S						
Transformer ratio calculation	nr=Ipr/Isr						
Security factor, FS	5						
One-minute test voltage, kV	3						
Max weight, kg	0,6	0,6	0,6	0,6	1,02	1,16	2,2

Overall and installation dimensions

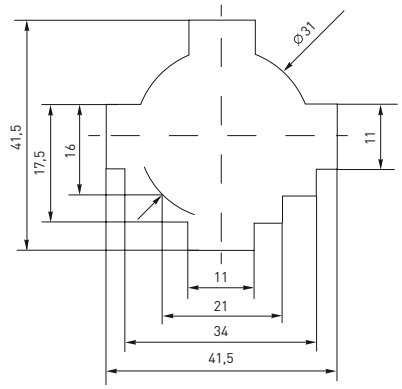
TTE-30



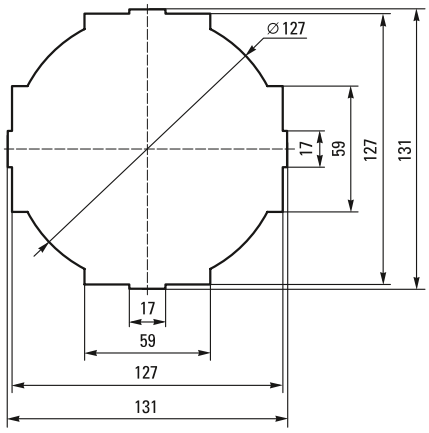
TTE-100



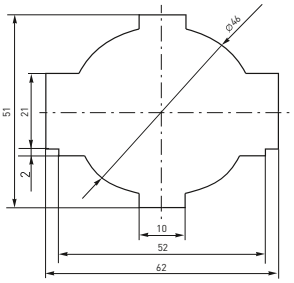
TTE-40



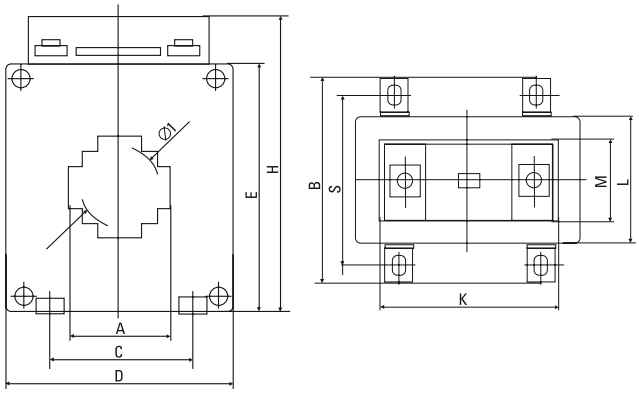
TTE-125 (big housing)



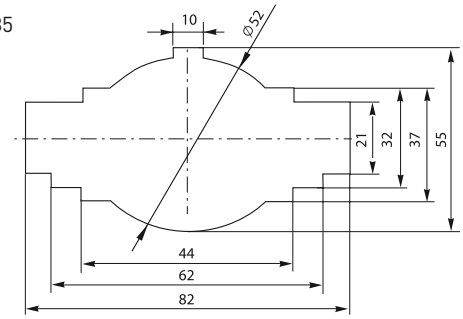
TTE-60



TTE

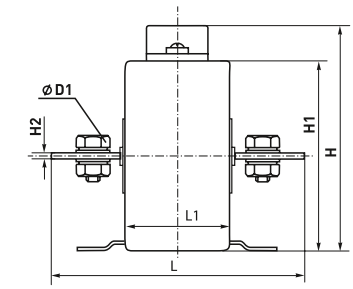


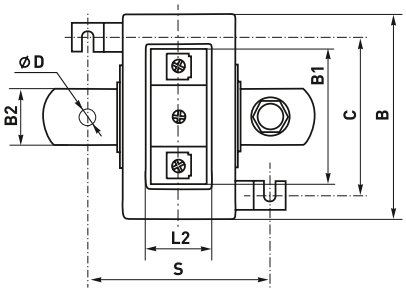
TTE-85



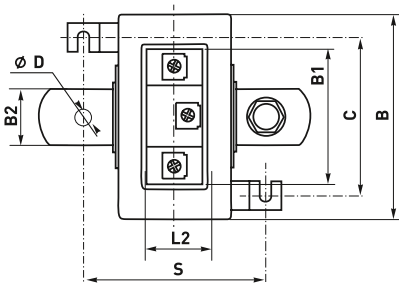
Name	Overall dimensions, mm										
	A	B	C	D	E	H	I	K	L	M	S
TTE-30	31	71	45	75	82	98	23,6	60	42	32	60
TTE-40	41	71	45	75	82	98	31	60	42	32	60
TTE-60	62	71	50	101	111	127	46	60	42	32	60
TTE-85	82	71	62	128	145	161	52	60	42	32	60
TTE-100	102	73	78,5	144	136	152	62	60	45	32	60
TTE-125 big housing	127	72	130	190	205	220	127	60	43	32	61

TTE-A





TTE-A



TTE-A with voltage terminal

Name	Dimensions, mm												
	B	B1	B2	H	H1	H2	L	L1	L2	C	S	D	D1
TTE-A from 5/5 A to 300/5A	87	62	25	103	87	3	120	48	34	57	60	8,5	M8 x 16
TTE-A from 400/5 A to 500/5A	87	62	40	103	87	3	118	48	34	57	60	8,5	M8 x 20
TTE-A from 600/5 A to 1000/5A	87	62	40	103	87	5	118	48	34	57	60	8,5	M8 x 25
TTE-A 5/5A to 300/5A with voltage terminal	83	64	25	103	87	3	120	48	41	57	60	8,5	M8 x 16
TTE-A 400/5A to 600/5A with voltage terminal	83	64	25	103	87	4	118	48	41	57	60	8,5	M8 x 20
TTE-A 600/5A to 1000/5A with voltage terminal	83	64	25	103	87	6	118	48	41	57	60	8,5	M8 x 25

Model	TTE-A	TTE-30	TTE-40	TTE-60	TTE-85	TTE-100	TTE-125
Max. busbar dimensions, mm	–	30 × 10	40 × 10	60 × 20	80 × 20 60 × 30	100 × 30	122 × 30 125 × 58 (big housing)
Maximum cable diameter, mm	–	20	30	45	50	60	60 125 (big housing)

Installation and operation

Transformers are supplied in two variants - TTE 30 - 125B for installation onto a cable/busbar, and TTE-A with an integrated busbar section as a primary winding. Transformers are supplied in individual packages.

Delivery scope

1. Current transformer – 1 pc.;
2. Holding brackets for installation onto a mounting panel – 4 pcs.;
3. Busbar mounting bolts – 2 pcs.;
4. Mounting bracket – 1 pc.;
5. Plastic bolt caps – 2 pcs.;
6. Package box – 1 pc.

Picture	Name	Rated primary current, A	Rated secondary burden, VA	Item code	
				Accuracy class	
				0,5	0,5 S
	TTE 30-150/5 A EKF	150	5	tte-30-150	tte-30-150-0.5 S
	TTE 30-200/5 A EKF	200		tte-30-200	tte-30-200-0.5 S
	TTE 30-250/5 A EKF	250		tte-30-250	tte-30-250-0.5 S
	TTE 30-300/5 A EKF	300		tte-30-300	tte-30-300-0.5 S
	TTE 40-300/5 A EKF	300		tte-40-300	tte-40-300-0.5S
	TTE 40-400/5 A EKF	400		tte-40-400	tte-40-400-0.5S
	TTE 40-500/5 A EKF	500		tte-40-500	tte-40-500-0.5S
	TTE 40-600/5 A EKF	600		tte-40-600	tte-40-600-0.5S
	TTE 60-300/5 A EKF	300		tte-60-300	tte-60-300-0.5 S
	TTE 60-400/5 A EKF	400		tte-60-400	tte-60-400-0.5 S
	TTE 60-500/5 A EKF	500		tte-60-500	tte-60-500-0.5 S
	TTE 60-600/5 A EKF	600		tte-60-600	tte-60-600-0.5 S
	TTE 60-750/5 A EKF	750		tte-60-750	tte-60-750-0.5 S
	TTE 60-800/5 A EKF	800		tte-60-800	tte-60-800-0.5 S
	TTE 60-1000/5 A EKF	1000		tte-60-1000	tte-60-1000-0.5 S
	TTE 85-750/5 A EKF	750		tte-85-750	tte-85-750-0.5 S
	TTE 85-800/5 A EKF	800		tte-85-800	tte-85-800-0.5 S
	TTE 85-1000/5 A EKF	1000		tte-85-1000	tte-85-1000-0.5 S
	TTE 85-1200/5 A EKF	1200	10	tte-85-1200	tte-85-1200-0.5 S
	TTE 85-1500/5 A EKF	1500		tte-85-1500	tte-85-1500-0.5 S

Picture	Name	Rated primary current, A	Rated secondary burden, VA	Item code	
				Accuracy class	
				0,5	0,5 S
	TTE 100-800/5 A EKF	800	10	tte-100-800	tte-100-800-0.5 S
	TTE 100-1000/5 A EKF	1000		tte-100-1000	tte-100-1000-0.5 S
	TTE 100-1200/5 A EKF	1200		tte-100-1200	tte-100-1200-0.5 S
	TTE 100-1500/5 A EKF	1500		tte-100-1500	tte-100-1500-0.5 S
	TTE 100-1600/5 A EKF	1600		tte-100-1600	tte-100-1600-0.5 S
	TTE 100-2000/5 A EKF	2000		tte-100-2000	tte-100-2000-0.5 S
	TTE 100-2250/5 A EKF	2250	15	tte-100-2250	tte-100-2250-0.5 S
	TTE 100-2500/5 A EKF	2500		tte-100-2500	tte-100-2500-0.5 S
	TTE 100-3000/5 A EKF	3000		tte-100-3000	tte-100-3000-0.5 S
	TTE-125-1500/5A big housing EKF	1500	10	tte-125B-1500	tte-125B-1500-0.5S
	TTE-125-2000/5A big housing EKF	2000	20	tte-125B-2000	tte-125B-2000-0.5S
	TTE-125-2500/5A big housing EKF	2500		tte-125B-2500	tte-125B-2500-0.5S
	TTE-125-3000/5A big housing EKF	3000	25	tte-125B-3000	tte-125B-3000-0.5S
	TTE-125-4000/5A big housing EKF	4000	30	tte-125B-4000	tte-125B-4000-0.5S
	TTE-125-5000/5A big housing EKF	5000		tte-125B-5000	tte-125B-5000-0.5S
	TTE-A EKF -5/5 A EKF	5	5	tte-a-5	tte-a-5-0.5 S
	TTE-A EKF -10/5 A EKF	10		tte-a-10	tte-a-10-0.5 S
	TTE-A EKF -15/5 A EKF	15		tte-a-15	tte-a-15-0.5 S
	TTE-A EKF -20/5 A EKF	20		tte-a-20	tte-a-20-0.5 S
	TTE-A EKF -25/5 A EKF	25		tte-a-25	tte-a-25-0.5 S
	TTE-A EKF -30/5 A EKF	30		tte-a-30	tte-a-30-0.5 S
	TTE-A EKF -40/5 A EKF	40		tte-a-40	tte-a-40-0.5 S
	TTE-A EKF -50/5 A EKF	50		tte-a-50	tte-a-50-0.5 S
	TTE-A EKF -60/5 A EKF	60		tte-a-60	tte-a-60-0.5 S
	TTE-A EKF -75/5 A EKF	75		tte-a-75	tte-a-75-0.5 S
	TTE-A EKF -80/5 A EKF	80		tte-a-80	tte-a-80-0.5 S
	TTE-A EKF -100/5 A EKF	100		tte-a-100	tte-a-100-0.5 S
	TTE-A EKF -120/5 A EKF	120		tte-a-120	tte-a-120-0.5 S
	TTE-A EKF -125/5 A EKF	125		tte-a-125	tte-a-125-0.5 S
	TTE-A EKF -150/5 A EKF	150		tte-a-150	tte-a-150-0.5 S
	TTE-A EKF -200/5 A EKF	200		tte-a-200	tte-a-200-0.5 S
	TTE-A EKF -250/5 A EKF	250		tte-a-250	tte-a-250-0.5 S
	TTE-A EKF -300/5 A EKF	300		tte-a-300	tte-a-300-0.5 S
	TTE-A EKF -400/5 A EKF	400		tte-a-400	tte-a-400-0.5 S
	TTE-A EKF -500/5 A EKF	500		tte-a-500	tte-a-500-0.5 S
	TTE-A EKF -600/5 A EKF	600		tte-a-600	tte-a-600-0.5 S
	TTE-A EKF -750/5 A EKF	750		tte-a-750	–
	TTE-A EKF -800/5 A EKF	800	10	tte-a-800	tte-a-800-0.5 S
	TTE-A EKF -1000/5 A EKF	1000		tte-a-1000	tte-a-1000-0.5 S
	TTE-A-100 with voltage terminal EKF	100	5	tte-S-100	tte-S-100-0.5S
	TTE-A-150 with voltage terminal EKF	150		tte-S-150	tte-S-150-0.5S
	TTE-A-200 with voltage terminal EKF	200		tte-S-200	tte-S-200-0.5S
	TTE-A-250 with voltage terminal EKF	250		tte-S-250	tte-S-250-0.5S
	TTE-A-300 with voltage terminal EKF	300		tte-S-300	tte-S-300-0.5S
	TTE-A-400 with voltage terminal EKF	400		tte-S-400	tte-S-400-0.5S
	TTE-A-500 with voltage terminal EKF	500		tte-S-500	tte-S-500-0.5S
	TTE-A-600 with voltage terminal EKF	600		tte-S-600	tte-S-600-0.5S
	TTE-A-750 with voltage terminal EKF	750		tte-S-750	tte-S-750-0.5S
	TTE-A-800 with voltage terminal EKF	800	10	tte-S-800	tte-S-800-0.5S
	TTE-A-1000 with voltage terminal EKF	1000		tte-S-1000	tte-S-1000-0.5S

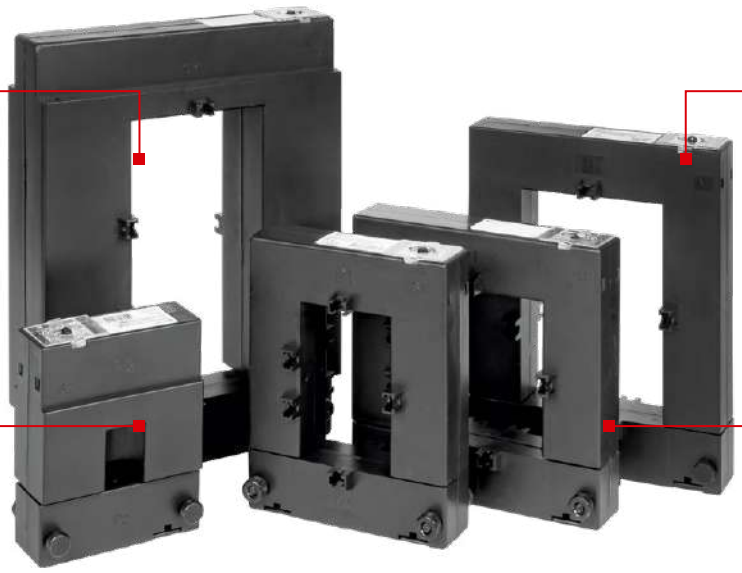
Split core current transformers TTE-R EKF

Current transformers TTE-R 0,66 kV are the current-sensing units designed to transform and transmit current to metering, protective, automation, alarm, and control equipment in 50/60 Hz AC circuits. Accuracy class 0,5 transformers are suitable for energy consumption measurement and metering. TTE-R transformers have a split core design , enabling quick and easy installation without breaking the circuit or disconnecting the wires.

5 to 7 times faster installation with no need to disassemble the circuit

Transparent safety cover for secondary terminals

Rated primary current of 150 to 3000 A



Flame retardant plastic housing

APPLICATION

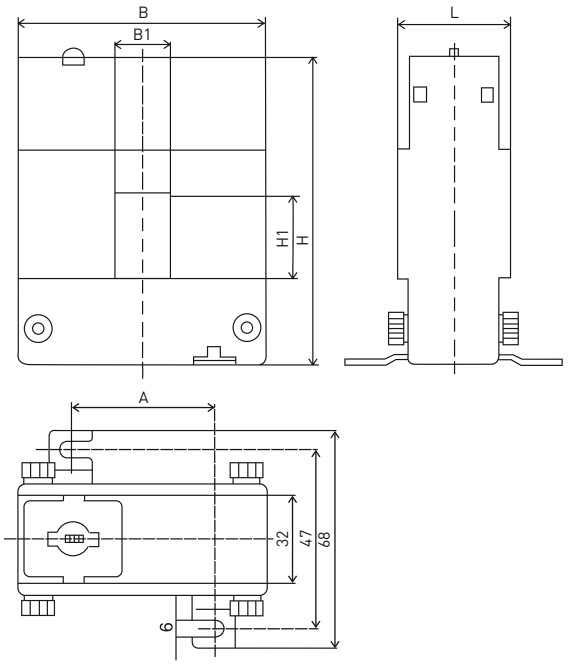
- Energy metering and billing in residential and commercial buildings.
- Monitoring and protection of electrical equipment in substations and industrial plants.
- Power quality monitoring and analysis to detect voltage sags, swells, harmonics, and transients.
- Fault detection and coordination of protective devices in electrical distribution systems.
- Renewable energy generation monitoring and control to maximize efficiency and ensure grid compliance.

TECHNICAL DATA

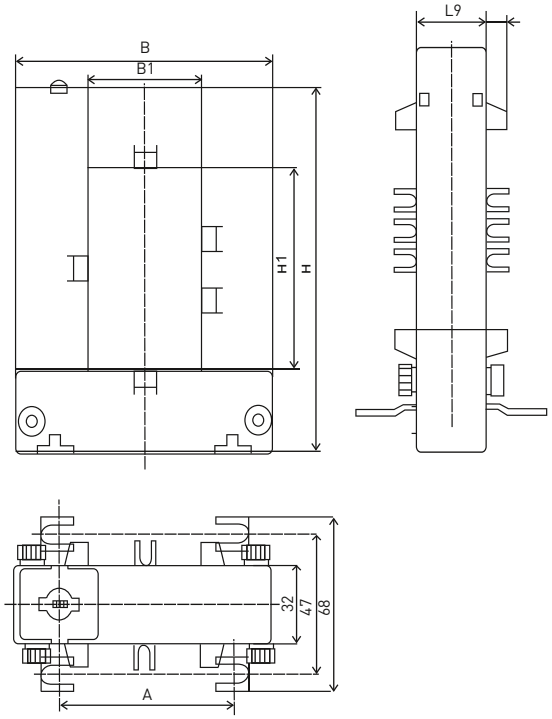
Parameters	Transformer model				
	TTE-R 23	TTE-R 58	TTE-R 88	TTE-R 812	TTE-R 816
Rated voltage Un, kV	0,66				
Maximum operating voltage, kV	0,72				
Rated frequency, Hz	50 / 60				
Rated primary current Ipr, A	150, 250, 300, 400	250, 300, 400, 500, 600	400, 500, 600, 800, 1000	1000, 1250, 1500	1000, 1500, 2000, 2500, 3000
Rated secondary current Isr, A	5				
Burden rating Ssr at power factor=0,8, VA	2,5–5		3,5–7,5	7,5–10	7,5–25
Accuracy class	0,5				
Transformer ratio calculation	nr=Ipr/Isr				
Security factor, FS	5				
One-minute test voltage at 50 Hz, kV	3				
Max weight, kg	0,75	0,9	1,2	1,6	4,3

Overall and installation dimensions

TTE-R 23



TTE-R 58, TTE-R 88, TTE-R 812, TTE-R 816



Name	Dimensions, mm						Max. weight, kg
	A	B	B1	H	H1	L	
TTE-R 23	51	89	20	111	30	40	0,75
TTE-R 58	78	114	50	145	80	32	0,9
TTE-R 88	108	144	80	145	80	32	1,05
TTE-R 812	108	144	80	185	120	32	1,25
TTE-R 816	120	184	72	245	147	52	4,3

Delivery scope

1. Current transformer – 1 pc.;
2. Holding brackets for installation onto a mounting panel – 4 pcs.;
3. Busbar mounting bolts – 6 pcs.;
4. Nuts – 6 pcs.;
5. Plastic bolt caps – 6 pcs.;
6. Package box – 1 pc.

Name	Rated burden, VA	Rated primary current, A	Accuracy class	Item code
TTE-R 23 150/5A accuracy class 0,5 2,5VA EKF	2,5	150	0,5	tte-r-23-150
TTE-R 23 250/5A accuracy class 0,5 2,5VA EKF		250		tte-r-23-250
TTE-R 23 300/5A accuracy class 0,5 5VA EKF	5	300		tte-r-23-300
TTE-R 23 400/5A accuracy class 0,5 5VA EKF		400		tte-r-23-400
TTE-R 58 250/5A accuracy class 0,5 2,5VA EKF	2,5	250		tte-r-58-250
TTE-R 58 300/5A accuracy class 0,5 3,75VA EKF	3,75	300		tte-r-58-300
TTE-R 58 400/5A accuracy class 0,5 5VA EKF	5	400		tte-r-58-400
TTE-R 58 500/5A accuracy class 0,5 5VA EKF		500		tte-r-58-500
TTE-R 58 600/5A accuracy class 0,5 5VA EKF		600		tte-r-58-600
TTE-R 88 400/5A accuracy class 0,5 3,75VA EKF	3,75	400		tte-r-88-400
TTE-R 88 500/5A accuracy class 0,5 5VA EKF	5	500		tte-r-88-500
TTE-R 88 600/5A accuracy class 0,5 5VA EKF		600		tte-r-88-600
TTE-R 88 800/5A accuracy class 0,5 5VA EKF		800		tte-r-88-800
TTE-R 88 1000/5A accuracy class 0,5 7,5VA EKF	7,5	1000		tte-r-88-1000
TTE-R 812 1000/5A accuracy class 0,5 7,5VA EKF	7,5	1000		tte-r-812-1000
TTE-R 812 1250/5A accuracy class 0,5 7,5VA EKF		1250		tte-r-812-1250
TTE-R 812 1500/5A accuracy class 0,5 10VA EKF	10	1500		tte-r-812-1500
TTE-R 816 1000/5A accuracy class 0,5 7,5VA EKF	7,5	1000		tte-r-816-1000
TTE-R 816 1500/5A accuracy class 0,5 10VA EKF	10	1500		tte-r-816-1500
TTE-R 816 2000/5A accuracy class 0,5 15VA EKF	15	2000		tte-r-816-2000
TTE-R 816 2500/5A accuracy class 0,5 20VA EKF	20	2500		tte-r-816-2500
TTE-R 816 3000/5A accuracy class 0,5 25VA EKF	25	3000		tte-r-816-3000

Power Factor Correction

Low voltage capacitor banks UKRM(a) EKF

Low voltage capacitor bank (automatic) is a device that influences the reactive component of the apparent power, supplied by the mains to the load. By reducing the reactive component, the capacitor bank decreases the load on the mains and the power transformer. This results in increased transmission efficiency and decreased line losses. This effect is achieved through the use of compensating devices - three-phase PFC capacitors controlled by a regulator that constantly monitors the state of the circuit.

APPLICATION

- Residential Power Optimization: reduction of power losses and a smooth energy flow for enhanced efficiency and reduced utility bills.
- Industrial Power Factor Correction: an effective solution for low power factor issues, improving electrical efficiency, and reducing penalties or additional costs associated with low power factors.
- Commercial Facilities and Office Spaces: reduction in reactive power consumption for optimal energy utilization, leading to lower electricity bills and enhanced performance for lighting systems, HVAC units, and other electrical equipment commonly found in commercial settings.
- Agricultural Applications: improved power factor and reduced electricity consumption of irrigation and feed pumps, ventilation systems, process machinery for increased productivity and reduced operational costs.
- Telecommunications Infrastructure: reliable and consistent power supply to support uninterrupted communication networks, ensuing stable voltage supply, improving power quality and minimizing voltage fluctuations.

TECHNICAL DATA

Parameters	Values
Rated reactive power, kvar	10 – 900
Rated voltage, V	400
Network frequency, Hz	50
Number of phases	3
Switching device at the input	Available
Electrical protection for each step	Available
Rated capacitor power, kvar	5 ... 50
Capacitance tolerance, %	from -5 to +10*
Voltage harmonic distortion level	<2%
Maximum overvoltage	1,1 · Un (up to 8 hours daily)
Instrument current transformer	N/A
External CT transformation ratio	5/5...10000/5
Degree of protection (IEC 60529)	IP 31/54
Ambient temperature, °C	From - 5 to + 35
Enclosure color	RAL 7035
Temperature monitoring	Available

* For a 50 kvar capacitor bank, the capacitance tolerance is ±10%

Installation and operation

Rated operational conditions:
a) max. altitude above sea level 2000 m;
b) max. relative humidity up to 95%;
c) no sharp impacts or vibration;
d) non-explosive environment, no corrosive gases or vapors in concentrations damaging to metal and insulation.

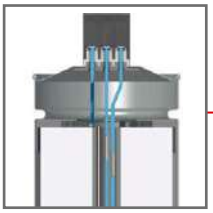
Delivery scope

1. Low-voltage capacitor bank UKRM(a), pre-assembled to selected configuration- 1 pc.
2. Technical manual - 1 pc.
3. Front panel key - 2 pcs.

Name	Reactive power*, kvar	Capacitor step, kvar	Item code
Low voltage capacitor bank UKRM(a)-0,4-10-5 IP31 EKF	10	5	ukrm-0,4-10-5-pro
Low voltage capacitor bank UKRM(a)-0,4-15-2,5 IP31 EKF	15	2,5	ukrm-0,4-15-2,5-pro
Low voltage capacitor bank UKRM(a)-0,4-15-5 IP31 EKF	15	5	ukrm-0,4-15-5-pro
Low voltage capacitor bank UKRM(a)-0,4-20-5 IP31 EKF	20	5	ukrm-0,4-20-5-pro
Low voltage capacitor bank UKRM(a)-0,4-25-5 IP31 EKF	25	5	ukrm-0,4-25-5-pro
Low voltage capacitor bank UKRM(a)-0,4-30-5 IP31 EKF	30	5	ukrm-0,4-30-5-pro
Low voltage capacitor bank UKRM(a)-0,4-35-5 IP31 EKF	35	5	ukrm-0,4-35-5-pro
Low voltage capacitor bank UKRM(a)-0,4-40-5 IP31 EKF	40	5	ukrm-0,4-40-5-pro
Low voltage capacitor bank UKRM(a)-0,4-40-10 IP31 EKF	40	10	ukrm-0,4-40-10-pro
Low voltage capacitor bank UKRM(a)-0,4-50-10 IP31 EKF	50	10	ukrm-0,4-50-10-pro
Low voltage capacitor bank UKRM(a)-0,4-50-12,5 IP31 EKF	50	12,5	ukrm-0,4-50-12,5-pro
Low voltage capacitor bank UKRM(a)-0,4-60-10 IP31 EKF	60	10	ukrm-0,4-60-10-pro
Low voltage capacitor bank UKRM(a)-0,4-70-10 IP31 EKF	70	10	ukrm-0,4-70-10-pro
Low voltage capacitor bank UKRM(a)-0,4-75-15 IP31 EKF	75	15	ukrm-0,4-75-15-pro
Low voltage capacitor bank UKRM(a)-0,4-75-25 IP31 EKF	75	25	ukrm-0,4-75-25-pro
Low voltage capacitor bank UKRM(a)-0,4-80-20 IP31 EKF	80	20	ukrm-0,4-80-20-pro
Low voltage capacitor bank UKRM(a)-0,4-87,5-12,5 IP31 EKF	87,5	12,5	ukrm-0,4-87,5-12,5-pro
Low voltage capacitor bank UKRM(a)-0,4-95-15 IP31 EKF	90	15	ukrm-0,4-90-15-pro
Low voltage capacitor bank UKRM(a)-0,4-100-12,5 IP31 EKF	100	12,5	ukrm-0,4-100-12,5-pro
Low voltage capacitor bank UKRM(a)-0,4-100-20 IP31 EKF	100	20	ukrm-0,4-100-20-pro
Low voltage capacitor bank UKRM(a)-0,4-100-25 IP31 EKF	100	25	ukrm-0,4-100-25-pro
Low voltage capacitor bank UKRM(a)-0,4-112-12,5 IP31 EKF	112,5	12,5	ukrm-0,4-112,5-12,5-pro
Low voltage capacitor bank UKRM(a)-0,4-125-25 IP31 EKF	125	25	ukrm-0,4-125-25-pro
Low voltage capacitor bank UKRM(a)-0,4-150-25 IP31 EKF	150	25	ukrm-0,4-150-25-pro
Low voltage capacitor bank UKRM(a)-0,4-175-25 IP31 EKF	175	25	ukrm-0,4-175-25-pro
Low voltage capacitor bank UKRM(a)-0,4-200-25 IP31 EKF	200	25	ukrm-0,4-200-25-pro
Low voltage capacitor bank UKRM(a)-0,4-200-50 IP31 EKF	200	50	ukrm-0,4-200-50-pro
Low voltage capacitor bank UKRM(a)-0,4-225-25 IP31 EKF	225	25	ukrm-0,4-225-25-pro
Low voltage capacitor bank UKRM(a)-0,4-250-50 IP31 EKF	250	50	ukrm-0,4-250-50-pro
Low voltage capacitor bank UKRM(a)-0,4-275-25 IP31 EKF	275	25	ukrm-0,4-275-25-pro
Low voltage capacitor bank UKRM(a)-0,4-300-25 IP31 EKF	300	25	ukrm-0,4-300-25-pro
Low voltage capacitor bank UKRM(a)-0,4-300-50 IP31 EKF	300	50	ukrm-0,4-350-50-pro
Low voltage capacitor bank UKRM(a)-0,4-400-50 IP31 EKF	400	50	ukrm-0,4-400-50-pro
Low voltage capacitor bank UKRM(a)-0,4-450-75 IP31 EKF	450	75	ukrm-0,4-450-75-pro
Low voltage capacitor bank UKRM(a)-0,4-500-50 IP31 EKF	500	50	ukrm-0,4-500-50-pro
Low voltage capacitor bank UKRM(a)-0,4-550-50 IP31 EKF	550	50	ukrm-0,4-550-50-pro
Low voltage capacitor bank UKRM(a)-0,4-600-50 IP31 EKF	600	50	ukrm-0,4-600-50-pro
Low voltage capacitor bank UKRM(a)-0,4-600-75 IP31 EKF	600	75	ukrm-0,4-600-75-pro
Low voltage capacitor bank UKRM(a)-0,4-675-75 IP31 EKF	675	75	ukrm-0,4-675-75-pro
Low voltage capacitor bank UKRM(a)-0,4-750-75 IP31 EKF	750	75	ukrm-0,4-750-75-pro
Low voltage capacitor bank UKRM(a)-0,4-825-75 IP31 EKF	825	75	ukrm-0,4-825-75-pro
Low voltage capacitor bank UKRM(a)-0,4-900-75 IP31 EKF	900	75	ukrm-0,4-900-75-pro

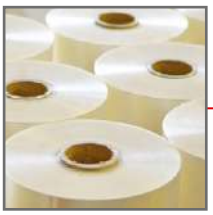
Capacitor KPS EKF PRO

KPS EKF PRO capacitors are designed for static and dynamic power factor correction in AC circuits. Low-voltage three-phase PFC capacitors KPS EKF PRO are three delta-connected capacitors in a single housing. The capacitors are manufactured using metallized self-healing polypropylene film with a low loss factor, providing high performance characteristics. Three metallized film capacitors are installed in a cylindrical aluminum housing and filled with inert gas, improving their cooling and heat dissipation and extending the service life of the capacitor. To protect the capacitors they are equipped with a high pressure disconnector. All KPS EKF PRO three-phase capacitors utilize discharge resistors to improve their safety. A plastic-shrouded terminal block enables safe and easy connection of leads to the capacitor. Both copper and aluminum wire connections are supported.



Safety: integrated high-pressure disconnector

Convenient and safe connection: plastic-shrouded terminal block



Extended service life due to metallized self-healing polypropylene film design

Safety: bleeder resistor

Extended service life due to aluminum housing and filling gas

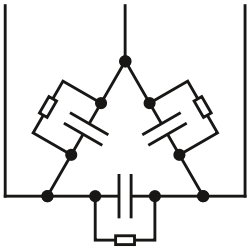
Easy mounting: threaded bottom pin

APPLICATION

- Industrial facilities: Power factor correction capacitors can be used in industrial facilities to improve power factor and reduce the amount of reactive power demand. This helps to avoid penalties for low power factor and can result in significant energy savings.
- Commercial buildings: Power factor correction capacitors can be installed in commercial buildings to improve power factor and reduce the overall demand on the electrical system. This can result in lower energy costs and increased efficiency.
- Data centers: Data centers typically have high power demands and can benefit from power factor correction capacitors. By improving power factor, data centers can reduce energy consumption, operate more efficiently, and potentially avoid costly penalties for low power factor.
- Renewable energy systems: Power factor correction capacitors can be used in renewable energy systems, such as wind farms or solar power plants, to improve power quality. These capacitors help to stabilize voltage levels and reduce line losses, enhancing the overall performance and efficiency of the renewable energy systems.
- Residential buildings: Power factor correction capacitors can also be applied in residential buildings. By improving power factor, these capacitors help to reduce the reactive power demand, leading to reduced energy consumption and lower electricity bills for homeowners.

TECHNICAL DATA

Wiring diagram



Permissible overvoltages	
Overvoltage factor to nominal	Maximum period
1,10 × Un	8 hours / day
1,15 × Un	30 min / day
1,20 × Un	5 min (200x)
1,30 × Un	1 min (200x)

Parameters	Values
Certificates	EN IEC 60831, VDE 0560-46/47, EN IEC 61921
Rated voltage, V	400–525
Rated reactive power, kvar	5–50
Capacitance tolerance, %	-5 / +10
Max. permissible current	1.5 x I_n continuous
Max. inrush current	300 x I_n
Capacitor losses, W/kvar	~0,4
Bleeder resistors	Built-in 50V / 1 min (75V / 3 min. for capacitors up to 30 kvar)
Assessed mean life	> 130 000 hours under operating conditions
Degree of protection	IP30 (IP54 for selected custom models)
Max. relative air humidity, %	95
Cooling	Natural Air / Forced Air
Max. altitude above sea level, m	4000
Mounting position	Not defined
Housing	Aluminum
Dielectric system	Dry, metallized polypropylene
Impregnant / Filler	Inert gas N_2 or semi-liquid resin (50 kvar)
Protective device	Pressure disconnector
Terminal block	Double sided – 6 screw terminals
Total harmonic distortion KU,%	≤2
Mean service life, hours	130 000
Temperature category, °C	-40/D

Design

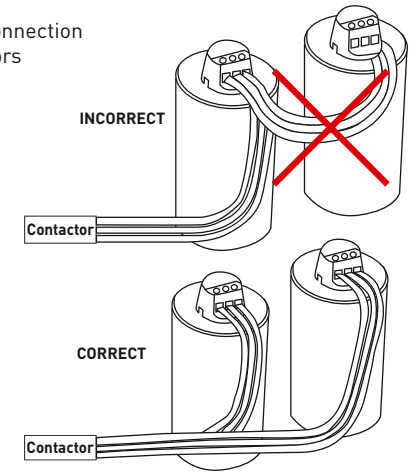
Power factor correction capacitors are manufactured using metallized film technology with self-healing properties and extremely low dielectric losses. The capacitors are filled with inert gas (N_2) or semi-solid polymer filling for 50 kvar. The filling is non-toxic and environmentally friendly. Three-phase capacitors consist of three capacitive elements connected in a delta configuration.
The capacitor housing is protected from rupture by a high pressure disconnector. The correct operation of the disconnector is only ensured if the operating conditions (voltage, current, temperature, correct installation and maintenance) are met. Failure to comply with or exceeding the limits of operating conditions may result in rupture of the capacitor housing or an explosion and fire.
All capacitors have built-in bleeder resistors, which are necessary to reduce the voltage at the capacitor terminals to safe values.

Installation

Before installation, please ensure that the capacitor ratings match those specified in the relevant project and purchase order. For cable connections to terminals the following torque values must be observed (unless other values are specified for individual parts of the equipment): M5 – screw terminal (2 N·m), M7 – screw terminal (5 N·m), M12 Al – grounding screw (5 N·m). The minimum distance between capacitors installed in a capacitor bank must be at least 50 mm. All electrical connections and capacitors should be visually inspected after the unit has been in operation for a few days. Before turning on the equipment, check the correct connection and operation of all protective devices on the de-energized equipment.

Use gG fuses. The fuse voltage rating must be at least the next higher line voltage, and the fuses must be able to withstand 1,6 times the maximum capacitor current.
Before installing the capacitor, check that:
1) the capacitor size and type meets the intended use requirements;
2) there is no visible damage.
The method for parallel connection of capacitors is shown on the corresponding figure.

Parallel connection of capacitors



Operation

WARNING!
Never carry out any work on charged capacitors. When the capacitor is disconnected from the supply, it will remain charged to the level of the supply voltage. By shorting the capacitor terminals or touching them, you can create a life-threatening emergency due to intense discharge of the capacitor. Before touching the capacitor (even if it is equipped with bleeder resistors), its terminals should be shorted and grounded. Installation should only be carried out by qualified personnel.
Capacitors must be operated at altitudes up to 2000 m above sea level at ambient temperatures within the temperature range shown in the table below. The cooling air temperature should not exceed the average ambient temperature values indicated in the table by more than 5 °C.

Temperature rating of capacitors

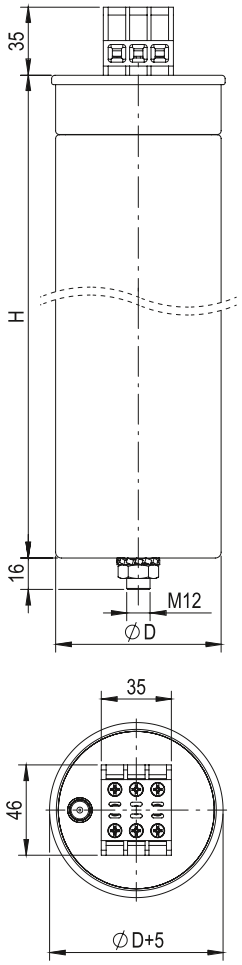
Temperature category	Ambient air temperature, °C		
	Maximum	Highest average for the period	
	1 hr	24 hrs	1 year
A	40	30	20
B	45	35	25
C	50	40	30
D	55	45	35

The design of three-phase capacitors provides for automatic overpressure shutoff. Pressure excess may occur due to a fault inside the condenser. When the terminal box cover flexes outward due to overpressure, the internal connections are opened and the capacitor is disconnected from the network.

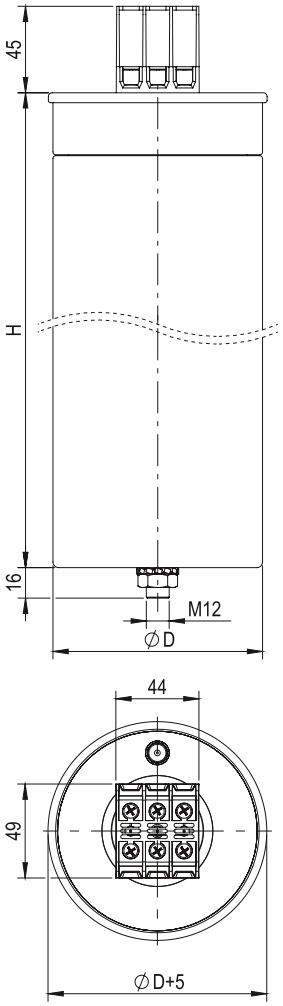
Pressure disconnector action

Overall and installation dimensions

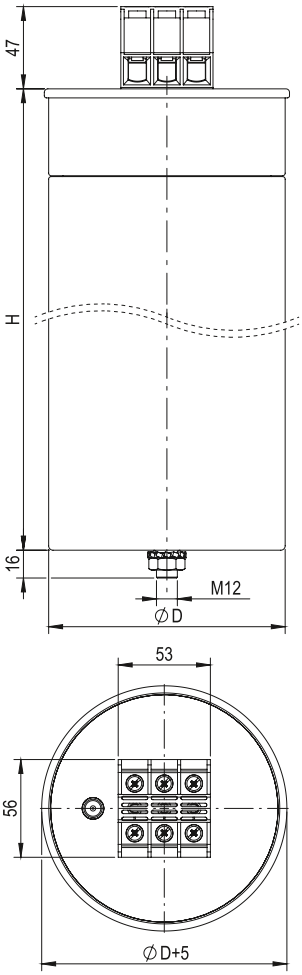
Capacitors 5 – 12,5 kvar



Capacitors 15–30 kvar



Capacitors 40–50 kvar



Name	Nominal power Qn, kvar	Rated current In, A	Rated voltage Un, V	Capacitance, μF	Dimensions, mm	Item code
Capacitor KPS-0,4-5-3 EKF PRO	5	7,2	400	3 × 33,2	85 × 175	kps-0,4-5-3-pro
	4,5	6,8	380			
Capacitor KPS-0,4-10-3 EKF PRO	10	14,4	400	3 × 66,3	85 × 245	kps-0,4-10-3-pro
	9	13,7	380			
Capacitor KPS-0,4-12,5-3 EKF PRO	12,5	18	400	3 × 82,9	85 × 245	kps-0,4-12,5-3-pro
	11,3	17,2	380			
Capacitor KPS-0,4-15-3 EKF PRO	15	21,7	400	3 × 99,5	110 × 245	kps-0,4-15-3-pro
	13,5	20,5	380			
Capacitor KPS-0,4-20-3 EKF PRO	20	28,9	400	3 × 133	110 × 245	kps-0,4-20-3-pro
	18,1	27,5	380			
Capacitor KPS-0,4-25-3 EKF PRO	25	36,1	400	3 × 166	110 × 245	kps-0,4-25-3-pro
	22,6	27,5	380			
Capacitor KPS-0,4-30-3 EKF PRO	30	43,3	400	3 × 199	110 × 245	kps-0,4-30-3-pro
	27,1	41,2	380			
Capacitor KPS-0,4-40-3 EKF PRO	40	57,8	400	3 × 265	136 × 261	kps-0,4-40-3-pro
	36,2	55,2	380			
Capacitor KPS-0,4-50-3 EKF PRO	50	72,6	400	3 × 332	136 × 261	kps-0,4-50-3-pro
	45,1	68,6	380			

Reactive power regulators VARko EKF

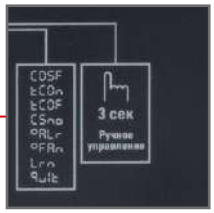
Reactive power regulators VARko EKF monitor the power factor of the circuit and switch the banks of PFC capacitors to maintain the optimal power factor. When switching capacitors, the regulator first selects for capacitors with lowest time in operation, increasing the service life of the entire low voltage capacitor bank.

Momentary power factor value display

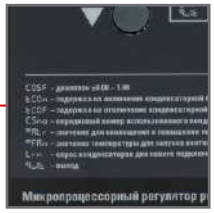
Easy setup using front panel buttons

6 to 12 steps

Control of the cooling fan inside the unit enclosure



Manual customization and adjustment



Automatic step identification and switching

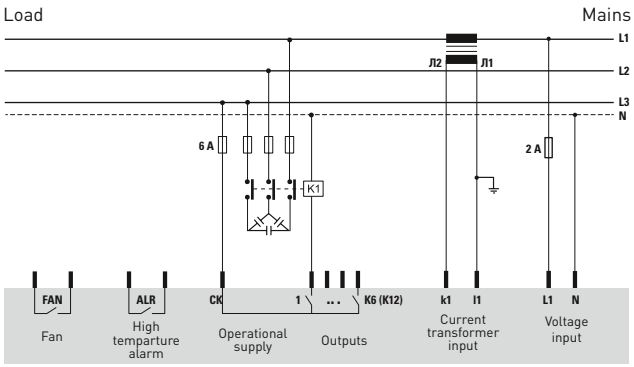
APPLICATION

Reactive power regulators can be deployed in various applications, including industrial and commercial settings, where multiple loads with different reactive power requirements are present. They can also be used in power transmission and distribution systems to optimize power transfer and maintain voltage stability. They are utilized in capacitor banks to manage reactive power and to ensure efficient and reliable operation by maintaining a balanced power factor and minimizing power quality issues.

TECHNICAL DATA

Parameters	Values	
	Varko-106a	Varko-112a
Supply voltage, V	184...253 AC	
Power consumption, VA	10	
Target power factor	0,7 - 1	
Measurement voltage	Same as supply voltage	
Current transformation ratio, A	5/5...10000/5	
Secondary winding current range, A	0,1 - 6	
Switching step adjustment	Automatic or manual	
Number of output relays	6	12
Load capacity of output relays	AC 240 V / 3 A; DC 110 V / 0,3 A	
Switching time / correction speed, sec.	3...120	
Dimensions, mm · front panel · installation depth · cutout	 144 × 144 32 140 × 140	
Operating temperature, °C	-5 ... +50	
Relative air humidity, %	15 - 95	
Certification	IEC 61000-3-12; IEC 61000-3-3	

Wiring diagrams



Delivery scope

1. Reactive power regulator VARko-106A (112A) – 1 pc.
2. Technical manual – 1 pc.
3. Regulator mounting kit – 1 pc.

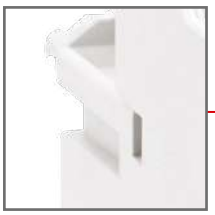
Name	Number of output relays	Dimensions, mm			Item code
		front panel	installation depth	cutout	
Reactive power regulator Varko-106a EKF	6	144*144	32	140*140	varko-106a-pro
Reactive power regulator Varko-112a EKF	12				varko-112a-pro

Capacitor contactors KMEK EKF

Capacitor contactors KMEK EKF are specialized two-stage contactor for switching capacitors in low voltage capacitor bank installations. KMEK EKF contactors consist of a housing, two rows of fixed contacts, and moving contacts inside the moving part of a magnetic circuit. Charging resistors are connected to the first row of contacts. The fixed part of the magnetic circuit is secured in the KMEK housing. A spring keeps the contacts from closing. When voltage is applied to the control coil, a magnetic field appears in the magnetic system of the contactor, which, overcoming the resistance of the spring, closes the magnetic system and first closes the upper group of contacts and after 0,1–0,2 seconds – the second power group of contacts. This way, the inrush current of the capacitors is mitigated by resistors. When the control coil is de-energized, the spring opens the contacts. Both copper and aluminum wire connections are supported.

Hemispherical, spring-loaded self-positioning movable contacts. Bridge contact for faster arc extinguishing

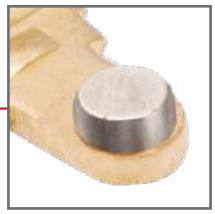
An additional group of contacts with charging resistors reduces inrush currents and increases switching wear resistance



Flame-retardant plastic housing. High electrical endurance. DIN rail & mounting plate options

With high-grade electrical steel core, the coil keeps contacts securely energized at rated voltage. Rubber dampers reduce operation noise

Plate-type terminals for secure wire connection



Silver-alloy contact pads for lower contact transients and increased durability

APPLICATION

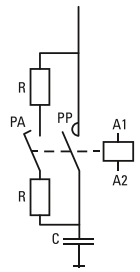
Capacitor contactors are used in reactive power correction systems to control the connection and disconnection of capacitor banks to the circuit. Capacitor banks are used to generate reactive power, which compensates for the reactive components of the load in the system. However, the connection and disconnection of capacitor banks need to be carefully controlled to avoid transient overvoltages and inrush currents. Capacitor contactors act as switching devices that automatically connect or disconnect the capacitor banks based on the power factor and voltage of the electrical system. They are typically controlled by reactive power regulators, which monitor the power factor and activate the contactors when corrective action is required. By effectively controlling the connection and disconnection of capacitor banks, capacitor contactors ensure the reactive power correction system operates optimally, minimizing reactive power losses and improving the overall efficiency of the electrical system.

TECHNICAL DATA

Parameters		ctrk-s-25-12,5 (230/400)	ctrk-s-32-16 (230/400)	ctrk-s-43-20 (230/400)	ctrk-s-63-25 (230/400)	ctrk-s-95-40 (230/400)	ctrk-s-110-50 (230/400)
Rated operating current, A	230 V	10,3	12,6	16,6	16,6	33	41,5
	400 V	18,1	21,7	28,9	28,9	58	72,3
Rated reactive power, kvar	230 V	4,1	5	6,6	8,3	12,1	16,5
	400 V	12,5	16	20	25	40	50
Rated voltage, V		230 / 400					
Frequency, Hz		50					
Number of poles		3P					

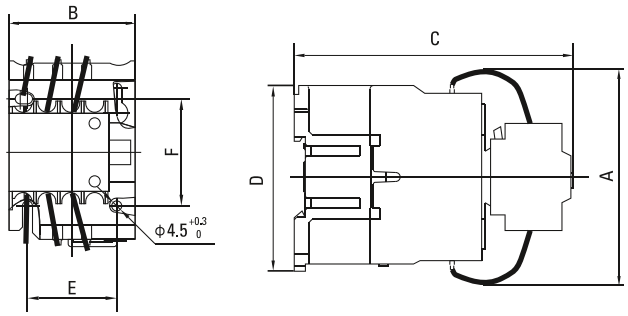
Parameters		ctrk-s-25-12,5 (230/400)	ctrk-s-32-16 (230/400)	ctrk-s-43-20 (230/400)	ctrk-s-63-25 (230/400)	ctrk-s-95-40 (230/400)	ctrk-s-110-50 (230/400)
Rated insulation voltage, V		500					690
Inrush current		20xIe					
Electrical life, thousand cycles		100					20
Mechanical life, million cycles		1					3
Control circuit characteristics							
Turn-on 85-110%, turn-off 20-75% of rated control circuit voltage							
Max. coil power consumption, VA	ON	70	110		220		660
	HOLD	8	11		20		85,5
Rated control circuit voltage, V		230 / 400 50 Hz					
Auxiliary contacts		1NO + 1NC	2NO + 1NC				
Characteristics of auxiliary contacts		AC-15 360 VA DC-13 33W					
Degree of protection		IP20					
Operating temperature, °C		-25... +55					
Power circuit conductors, mm^2	stranded wire	1,5 – 6	2,5 – 6	6 – 16	10 – 25	16 – 35	16 – 35
	solid wire	2,5 – 6	4 – 10	10 – 25	16 – 35	25 – 50	25 – 50
Power circuit tightening torque, N·m		2,5	5	5	5	9	9
Control circuit conductor, mm^2	stranded wire	1 – 4					
	solid wire	1 – 4					
Control circuit tightening torque, N·m		1,5					

Wiring diagrams

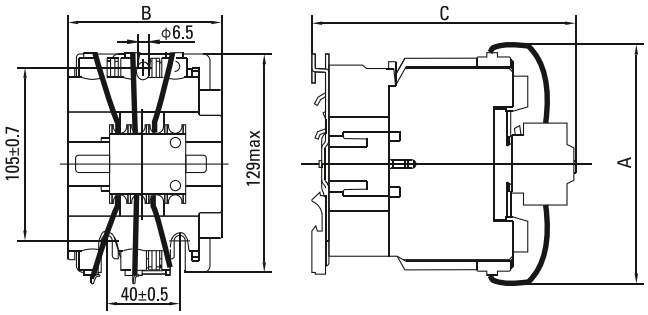


Overall and installation dimensions

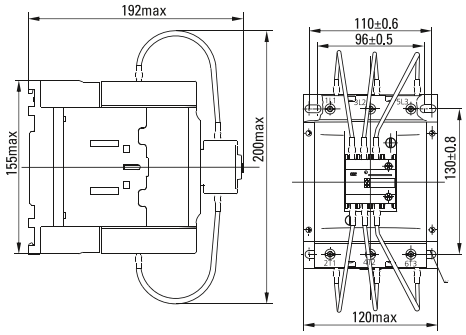
12,5 – 20 kvar



25 – 40 kvar



50 kvar



Item code	A	B	C	D	E	F
ctrk-s-25-12,5-XXX	80	47	124	76	34 / 35	50 / 60
ctrk-s-32-16-XXX	90	58	132	86	40	48
ctrk-s-43-20-XXX	90	58	136	86	40	48
ctrk-s-63-25-XXX	132	79	150	–	–	–
ctrk-s-95-40-XXX	135	87	158	–	–	–
ctrk-s-110-50-XXX	200	120	192	155	–	–

Both copper and aluminum wire connections are supported.

Delivery scope

1. Capacitor contactor KMEK EKF
2. Technical manual.

Name	Rated reactive power, kvar		Rated operating current, A		Rated voltage of control coil Uc, V	Item code
	230 V	400 V	230 V	400 V		
Capacitor contactor KMEK 12,5kvar 230V 1NO+1NC EKF	4,1	12,5	10,3	18,1	230	ctrk-s-25-12,5-230
Capacitor contactor KMEK 12,5kvar 400V 1NO+1NC EKF					400	ctrk-s-25-12,5-400
Capacitor contactor KMEK 16kvar 230V 2NO+1NC EKF	5	16	12,6	21,7	230	ctrk-s-32-16-230
Capacitor contactor KMEK 16kvar 400V 2NO+1NC EKF					400	ctrk-s-32-16-400
Capacitor contactor KMEK 20kvar 230V 2NO+1NC EKF	6,6	20	16,6	28,9	230	ctrk-s-43-20-230
Capacitor contactor KMEK 20kvar 400V 2NO+1NC EKF					400	ctrk-s-43-20-400
Capacitor contactor KMEK 25kvar 230V 2NO+1NC EKF	8,3	25	16,6	28,9	230	ctrk-s-63-25-230
Capacitor contactor KMEK 25kvar 400V 2NO+1NC EKF					400	ctrk-s-63-25-400
Capacitor contactor KMEK 40kvar 230V 2NO+1NC EKF	12,1	40	33	58	230	ctrk-s-95-40-230
Capacitor contactor KMEK 40kvar 400V 2NO+1NC EKF					400	ctrk-s-95-40-400
Capacitor contactor KMEK 50kvar 230V 2NO+1NC EKF	16,5	50	41,5	72,3	230	ctrk-s-110-50-230
Capacitor contactor KMEK 50kvar 400V 2NO+1NC EKF					400	ctrk-s-110-50-400

Capacitor contactors KMEK AVERES EKF

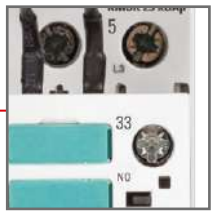
Capacitor contactors KMEK AVERES EKF are specialized two-stage contactor for switching capacitors in low voltage capacitor bank installations. KMEK AVERES EKF contactors consist of a housing, two rows of fixed contacts, and moving contacts inside the moving part of a magnetic circuit. Charging resistors are connected to the first row of contacts. The fixed part of the magnetic circuit is secured in the KMEK housing. A spring keeps the contacts from closing. When voltage is applied to the control coil, a magnetic field appears in the magnetic system of the contactor, which, overcoming the resistance of the spring, closes the magnetic system and first closes the upper group of contacts and after 0,1–0,2 secondsseconds – the second power group of contacts. This way, the inrush current of the capacitors is mitigated by resistors. When the control coil is de-energized, the spring opens the contacts. Both copper and aluminum wire connections are supported.

High quality electrical steel core enabling the coil to securely hold the contacts closed at rated coil voltage

Silver alloy contact pads for lower transient resistance and extended mechanical life

An additional group of contacts with charging resistors reduces inrush currents and increases switching wear resistance

Hemispherical, spring-loaded self-positioning movable contacts.



Heat-resistant plastic housing and moving contact supports

Housing and moving contact supports made of heat-resistant plastic

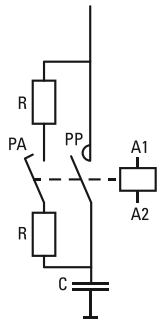
APPLICATION

Capacitor contactors are used in reactive power correction systems to control the connection and disconnection of capacitor banks to the circuit. Capacitor banks are used to generate reactive power, which compensates for the reactive components of the load in the system. However, the connection and disconnection of capacitor banks need to be carefully controlled to avoid transient overvoltages and inrush currents. Capacitor contactors act as switching devices that automatically connect or disconnect the capacitor banks based on the power factor and voltage of the electrical system. They are typically controlled by reactive power regulators, which monitor the power factor and activate the contactors when corrective action is required. By effectively controlling the connection and disconnection of capacitor banks, capacitor contactors ensure the reactive power correction system operates optimally, minimizing reactive power losses and improving the overall efficiency of the electrical system.

TECHNICAL DATA

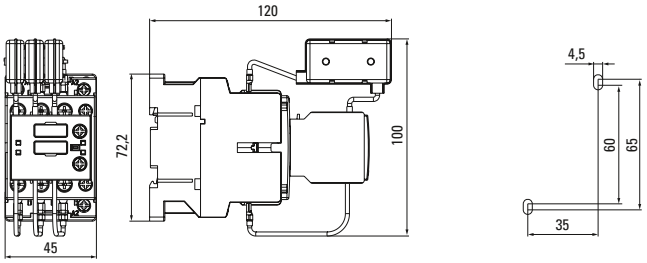
Parameters		KMEK 10	KMEK 12	KMEK 15	KMEK 20	KMEK 25	KMEK 30	KMEK 40	KMEK 50	KMEK 75
Rated reactive power, kvar	230 V 400–440 V 660–690 V	5 10 15	6,7 15,5 18	8,5 15 22	11 20 30	14 25 35	20 30 40	25 40 58	29 50 70	38 75 105
Rated operating current Ie / AC-6b at 400 V, A		14	18	22	29	36	44	58	72	108
Rated operating current Ith at 400V, A		25	25	30	40	60	60	85	100	150
Peak current		I≤200Ie					I≤200Ie			
Rated insulation voltage Ui, V		690					690	1000		
Rated impulse withstand voltage Uimp, kV		8					8			
Degree of protection		IP20					IP20			
Fuse sizes: main circuit gL/gG, A auxiliary circuit, A		25 16	35 16	50 16	60 16	63 16	80 16	100 16	125 16	160 16
Switching frequency, per hour		240			120		120	100		
Electrical life, cycles		250 000		175 000		125 000	125 000			100 000

Wiring diagrams

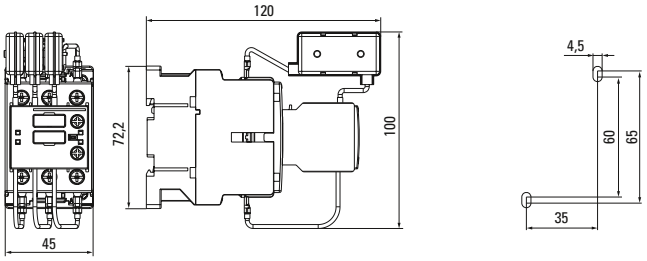


Overall and installation dimensions

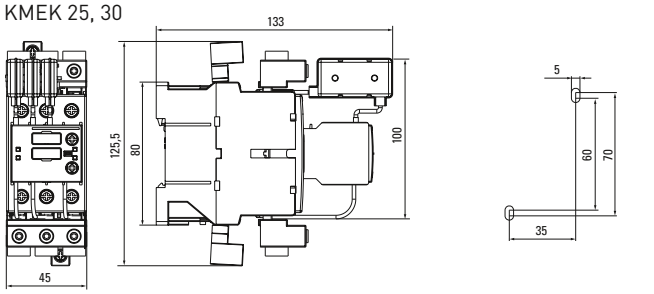
KMEK 10–15



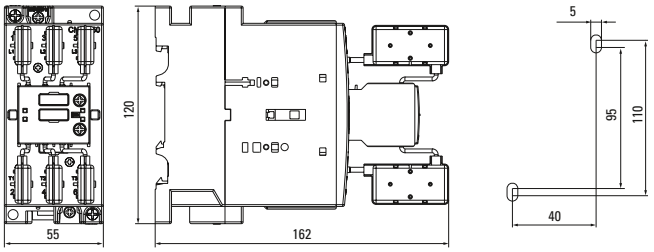
KMEK 20



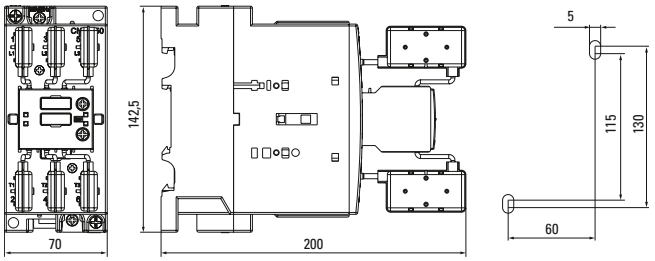
KMEK 25, 30



KMEK 40, 60



KMEK 75



Both copper and aluminum wire connections are supported.

Delivery scope

1. Capacitor contactor AVERES EKF
2. Technical manual.

Name	Rated reactive power, kvar		Rated operating current Ith at 400V, A	Rated operating current Ie/AC-6b at 400V, A	Rated voltage of control coil Uc, V	Item code
	230 V	400 V				
Capacitor contactor KMEK 10kvar 230V 1NO+1NC AVERES EKF	5	10	25	14	230	ctrk-s-14-10-230-av
Capacitor contactor KMEK 12,5kvar 230V 1NO+1NC AVERES EKF	6,7	15,5	25	18		ctrk-s-18-12,5-230-av
Capacitor contactor KMEK 15kvar 230V 1NO+1NC AVERES EKF	8,5	15	30	22		ctrk-s-22-15-230-av
Capacitor contactor KMEK 20kvar 230V 1NO AVERES EKF	11	20	40	29		ctrk-s-29-20-230-av
Capacitor contactor KMEK 25kvar 230V 1NO AVERES EKF	14	25	60	36		ctrk-s-36-25-230-av
Capacitor contactor KMEK 30kvar 230V 1NO AVERES EKF	20	30	60	44		ctrk-s-44-30-230-av
Capacitor contactor KMEK 40kvar 230V 1NO AVERES EKF	25	40	85	58		ctrk-s-58-40-230-av
Capacitor contactor KMEK 50kvar 230V 1NO AVERES EKF	29	50	100	72		ctrk-s-72-50-230-av
Capacitor contactor KMEK 70kvar 230V 1NO AVERES EKF	38	75	150	108		ctrk-s-108-75-230-av

Distribution Enclosures

Wall/flush-mounted plastic distribution enclosures IP41 PROXIMA EKF

Wall/flush-mounted plastic distribution enclosures IP41 PROXIMA EKF are designed to house and protect modular DIN rail products: miniature circuit breakers, residual current devices, timers, electricity meters etc. Made of heavy-duty ABS plastic, these enclosures can be used in residential, public and commercial buildings. With the door opened upwards, the enclosures can be installed anywhere regardless of the adjacent walls.

Knockout cable entries

Wide range of sizes and versions

N & PE bars in the kit

Upward-opened doors

APPLICATION

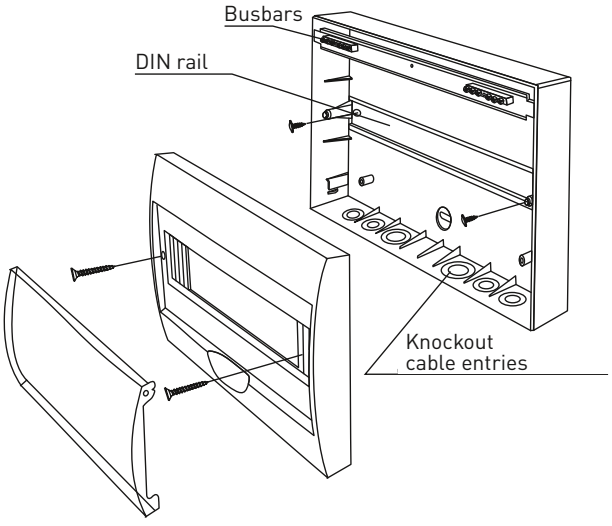
Electrical distribution enclosures are used in residential and commercial real estate:
- installation & protection of modular and low-voltage equipment from environmental factors and tampering.
- lead-in & distribution.
- protection of power & control circuits.

TECHNICAL DATA

Parameters	Values
Housing material	ABS plastic
Degree of protection by IEC 60529	IP41

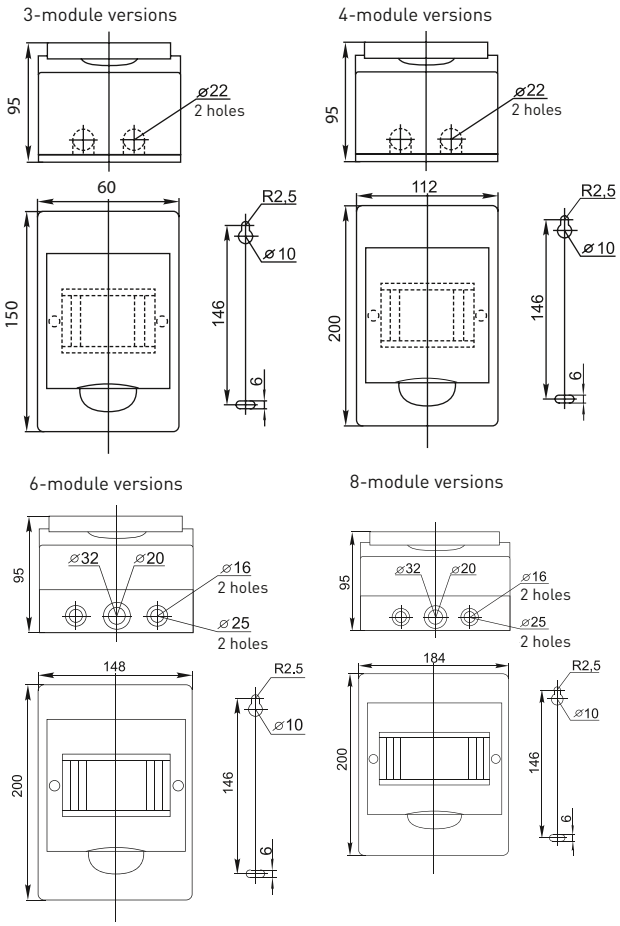
Installation and operation

Installation procedure:

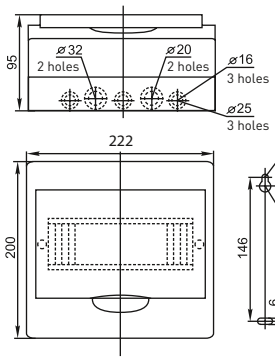


Overall and installation dimensions (mm)

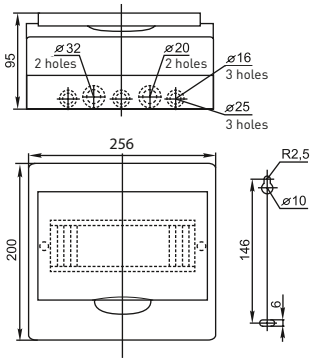
Wall-mounted plastic distribution enclosures



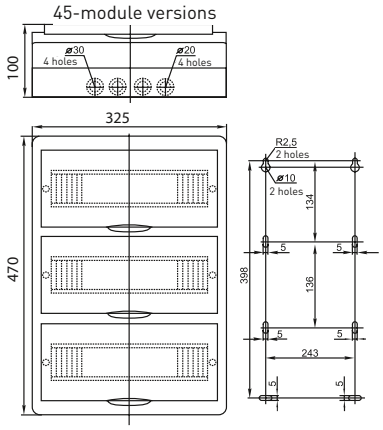
10-module versions



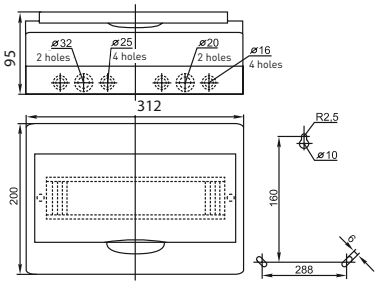
12-module versions



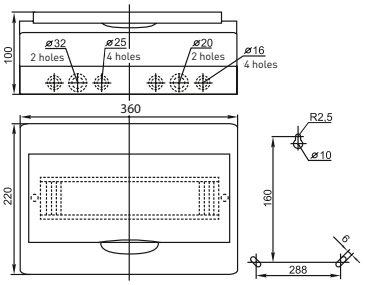
45-module versions



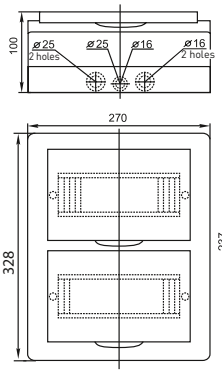
15-module versions



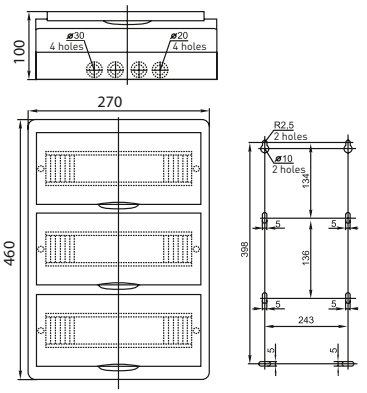
18-module versions



24-module versions

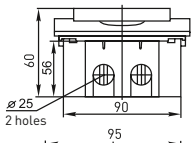


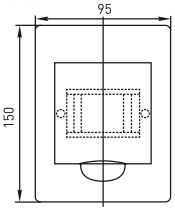
36-module versions



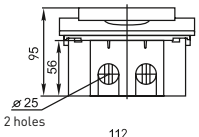
Flush-mounted plastic distribution enclosures

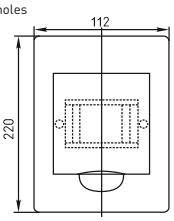
3-module versions



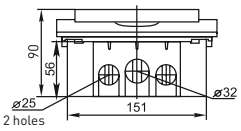


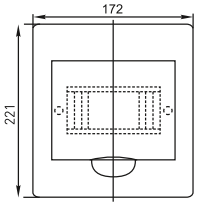
4-module versions



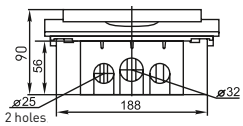


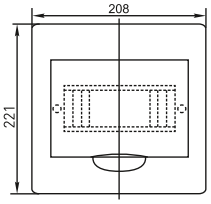
6-module versions



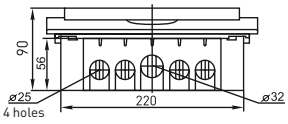


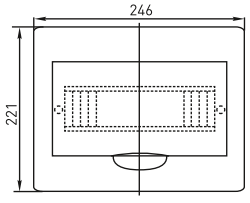
8-module versions



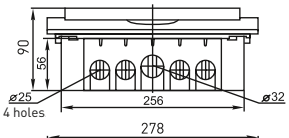


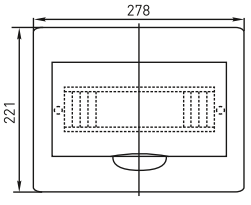
10-module versions



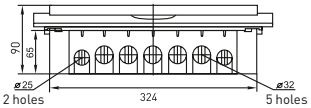


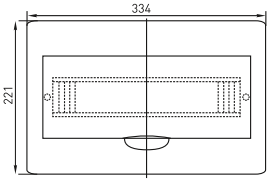
12-module versions



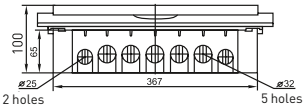


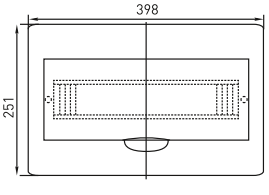
15-module versions



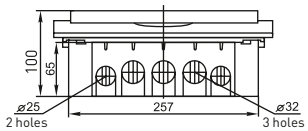


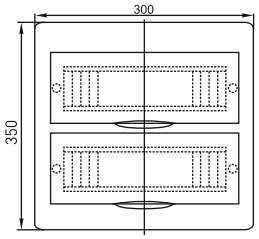
18-module versions



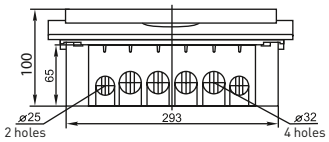


24-module versions

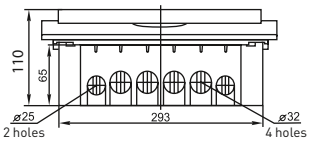


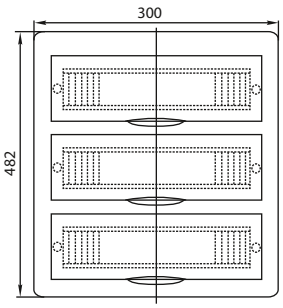


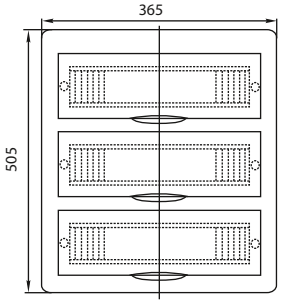
36-module versions



45-module versions







Name	Installation dimensions (H x W x D), mm
Flush-mounted plastic distribution enclosure 3 IP41 PROXIMA EKF	142 × 60 × 90
Flush-mounted plastic distribution enclosure 4 IP41 PROXIMA EKF	210 × 124 × 65
Flush-mounted plastic distribution enclosure 6 IP41 PROXIMA EKF	210 × 162 × 65
Flush-mounted plastic distribution enclosure 8 IP41 PROXIMA EKF	210 × 195 × 65
Flush-mounted plastic distribution enclosure 10 IP41 PROXIMA EKF	215 × 235 × 65
Flush-mounted plastic distribution enclosure 12 IP41 PROXIMA EKF	210 × 265 × 65
Flush-mounted plastic distribution enclosure 15 IP41 PROXIMA EKF	210 × 324 × 65
Flush-mounted plastic distribution enclosure 18 IP41 PROXIMA EKF	233 × 375 × 75
Flush-mounted plastic distribution enclosure 24 IP41 PROXIMA EKF	320 × 267 × 75
Flush-mounted plastic distribution enclosure 36 IP41 PROXIMA EKF	450 × 270 × 75
Flush-mounted plastic distribution enclosure 45 IP41 PROXIMA EKF	470 × 325 × 85

Delivery scope

1. Distribution enclosure PROXIMA EKF
2. N & PE busbars
3. DIN rail.

Name	Dimensions (H x W x D), mm	Installation dimensions (H x W x D), mm	Max. number of modules	N / PE busbars	Number of DIN rails	Item code
Wall-mounted models						
Wall-mounted plastic distribution enclosure 3 IP41 PROXIMA EKF	150 × 60 × 95	–	3	–	1	pb40-n-3
Wall-mounted plastic distribution enclosure 4 IP41 PROXIMA EKF	200 × 112 × 95	–	4	1 bar x 4 holes	1	pb40-n-4
Wall-mounted plastic distribution enclosure 6 IP41 PROXIMA EKF	200 × 148 × 95	–	6	2 bars x 3 holes	1	pb40-n-6
Wall-mounted plastic distribution enclosure 8 IP41 PROXIMA EKF	200 × 184 × 95	–	8	2 bars x 4 holes	1	pb40-n-8
Wall-mounted plastic distribution enclosure 10 IP41 PROXIMA EKF	200 × 222 × 95	–	10	2 bars x 5 holes	1	pb40-n-10
Wall-mounted plastic distribution enclosure 12 IP41 PROXIMA EKF	200 × 256 × 95	–	12	2 bars x 6 holes	1	pb40-n-12
Wall-mounted plastic distribution enclosure 15 IP41 PROXIMA EKF	200 × 312 × 95	–	15	2 bars x 8 holes	1	pb40-n-15
Wall-mounted plastic distribution enclosure 18 IP41 PROXIMA EKF	220 × 360 × 100	–	18	1 bar x 8 holes; 1 bar x 10 holes	1	pb40-n-18
Wall-mounted plastic distribution enclosure 24 IP41 PROXIMA EKF	328 × 270 × 100	–	24	4 bars x 6 holes	2	pb40-n-24
Wall-mounted plastic distribution enclosure 36 IP41 PROXIMA EKF	460 × 270 × 100	–	36	2 bars x 8 holes; 2 bars x 10 holes	3	pb40-n-36
Wall-mounted plastic distribution enclosure 45 IP41 PROXIMA EKF	470 × 325 × 100	–	45	2 bars x 10 holes; 2 bars x 12 holes	3	pb40-n-45
Flush-mounted models						
Flush-mounted plastic distribution enclosure 3 IP41 PROXIMA EKF	150 × 60 × 95	142 × 60 × 90	3	–	1	Pb40-v-3
Flush-mounted plastic distribution enclosure 4 IP41 PROXIMA EKF	220 × 112 × 95	210 × 124 × 65	4	1 bar x 4 holes	1	pb40-v-4
Flush-mounted plastic distribution enclosure 6 IP41 PROXIMA EKF	221 × 172 × 90	210 × 162 × 65	6	2 bars x 3 holes	1	pb40-v-6
Flush-mounted plastic distribution enclosure 8 IP41 PROXIMA EKF	221 × 208 × 90	210 × 195 × 65	8	2 bars x 4 holes	1	pb40-v-8
Flush-mounted plastic distribution enclosure 10 IP41 PROXIMA EKF	221 × 246 × 90	215 × 235 × 65	10	2 bars x 5 holes	1	pb40-v-10
Flush-mounted plastic distribution enclosure 12 IP41 PROXIMA EKF	221 × 278 × 90	210 × 265 × 65	12	2 bars x 6 holes	1	pb40-v-12
Flush-mounted plastic distribution enclosure 15 IP41 PROXIMA EKF	221 × 334 × 90	210 × 324 × 65	15	2 bars x 8 holes	1	pb40-v-15
Flush-mounted plastic distribution enclosure 18 IP41 PROXIMA EKF	251 × 398 × 100	233 × 375 × 75	18	1 bar x 8 holes; 1 bar x 10 holes	1	pb40-v-18
Flush-mounted plastic distribution enclosure 24 IP41 PROXIMA EKF	350 × 300 × 100	320 × 267 × 75	24	4 bars x 6 holes	2	pb40-v-24
Flush-mounted plastic distribution enclosure 36 IP41 PROXIMA EKF	482 × 300 × 100	450 × 270 × 75	36	2 bars x 8 holes; 2 bars x 10 holes	3	pb40-v-36
Flush-mounted plastic distribution enclosure 45 IP41 PROXIMA EKF	505 × 365 × 110	470 × 325 × 85	45	2 bars x 10 holes; 2 bars x 12 holes	3	pb40-v-45

Wall-mounted sealed plastic distribution enclosures IP65 PROXIMA EKF

Plastic distribution enclosures IP65 PROXIMA EKF are designed for electricity distribution, protection against overload and short-circuit currents, and can enclose various DIN rail modular devices. With enhanced ingress protection (IP65) and made of heavy-duty ABS-plastic, these enclosures can be used in highly dusted and humid rooms, garages, industrial premises, basements, car washes, and warehouses. With the door opened upwards, enclosures can be installed anywhere regardless of the adjacent walls.

N & PE bars in the kit

Anti-tamper sealing options

Knock-out cable entries

Membrane cable glands

DIN rail spacing and height adjustment*

Removable frames with DIN rails*

*For 36- & 54-module versions

APPLICATION

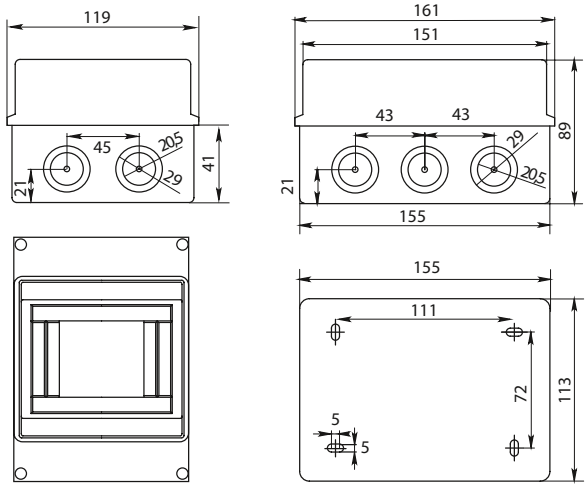
Electrical distribution enclosures are used in residential and commercial real estate:
- installation and protection of modular and low-voltage equipment from environmental factors and tampering.
- lead-in & distribution.
- protection of power & control circuits.

TECHNICAL DATA

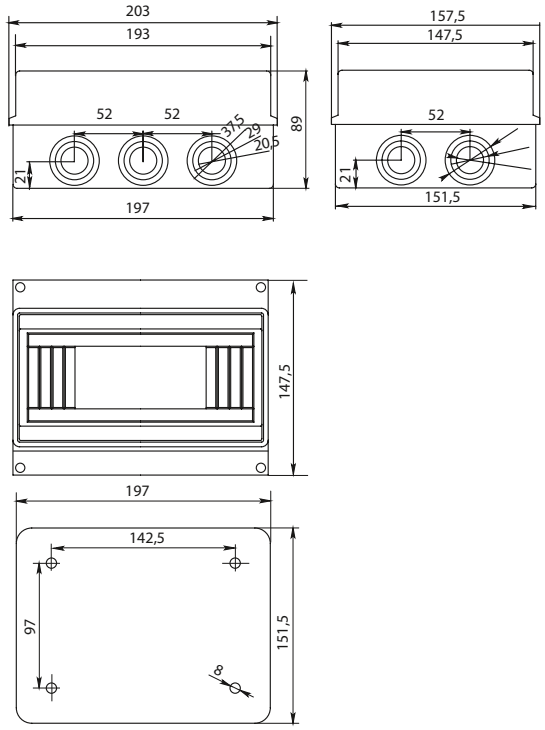
Parameters	Values
Housing material	ABS plastic
Housing color	White
Door color	Smoky
Cable entry	Top, bottom, left, right
Mounting type	Wall-mounted
Degree of protection by IEC 60529	IP65

Overall and installation dimensions (mm)

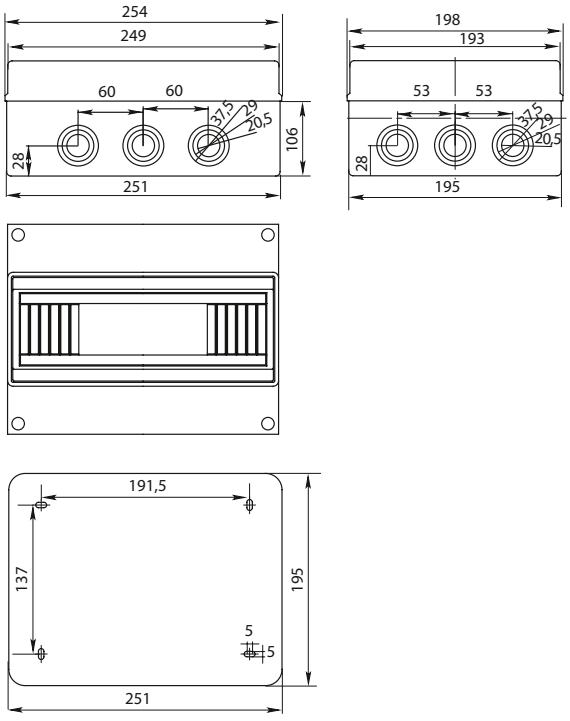
5-module version



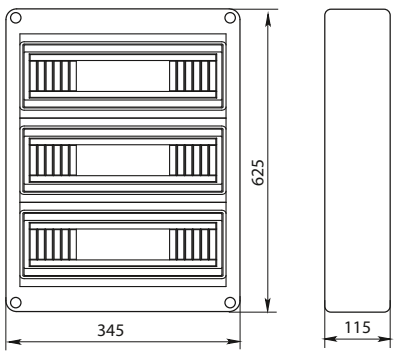
8-module version



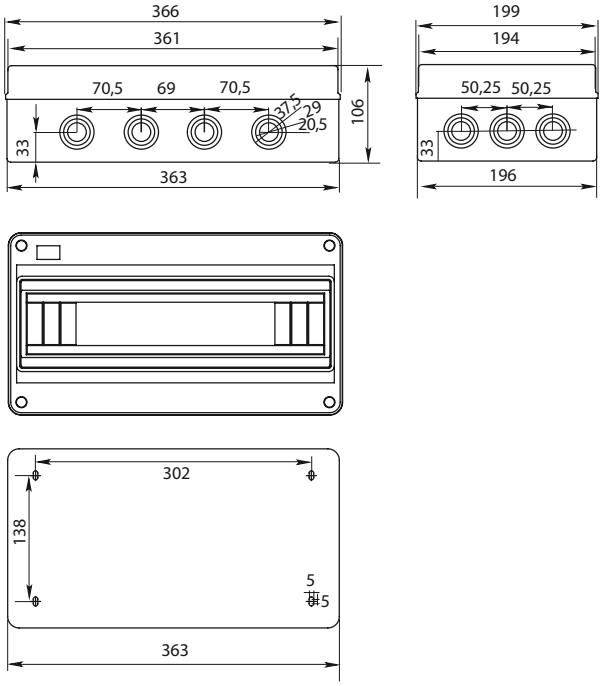
12-module version



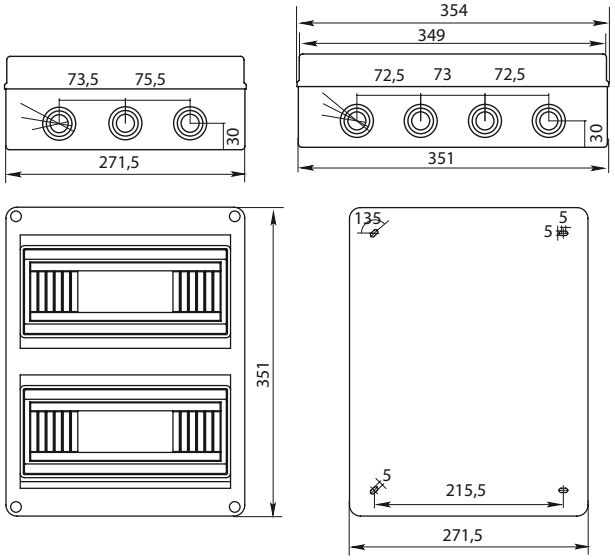
36-module version



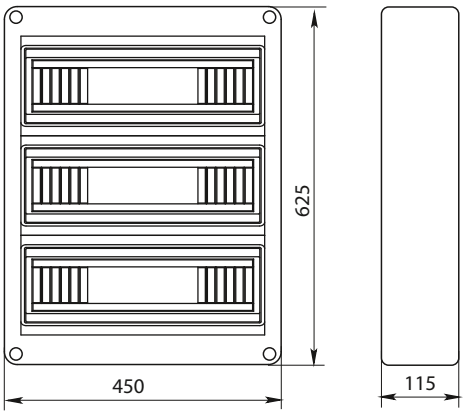
18-module version



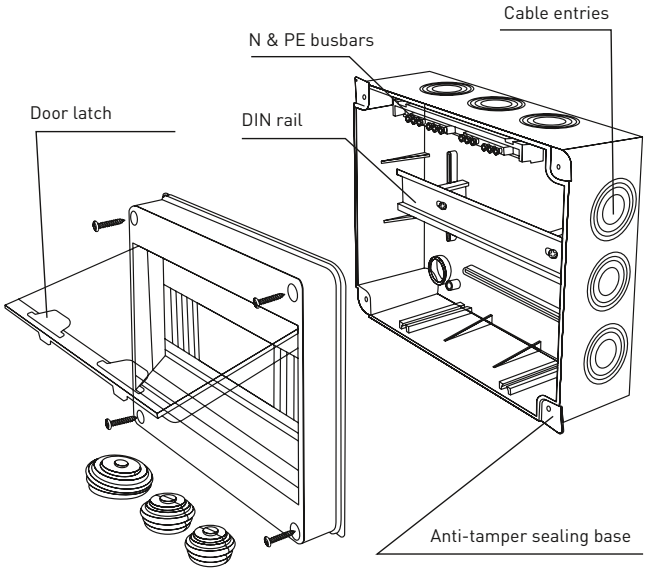
24-module version



54-module version



Installation procedure:



Delivery scope

1. Distribution enclosure IP65 PROXIMA EKF
2. DIN rail
3. N & PE busbars
4. Marking plate
5. Mounting kit
6. Cable glands.

Name	Dimensions (H x W x D), mm	Max. number of modules	N / PE busbars	Number of DIN rails	Item code
Wall-mounted sealed plastic distribution enclosure 5 IP65 PROXIMA EKF	155 × 119 × 89	5	2 bars x 3 holes	1	pb65-n-pg-5
Wall-mounted sealed plastic distribution enclosure 8 IP65 PROXIMA EKF	147,5 × 203 × 89	8	2 bars x 4 holes		pb65-n-pg-8
Wall-mounted sealed plastic distribution enclosure 12 IP65 PROXIMA EKF	198 × 254 × 106	12	2 bars x 6 holes		pb65-n-pg-12
Wall-mounted sealed plastic distribution enclosure 18 IP65 PROXIMA EKF	199 × 366 × 106	18	2 bars x 4 holes 2 holes x 5 holes		pb65-n-pg-18
Wall-mounted sealed plastic distribution enclosure 24 IP65 PROXIMA EKF	354 × 271,5 × 109	24	4 bars x 6 holes	2	pb65-n-pg-24
Wall-mounted sealed plastic distribution enclosure 36 IP65 PROXIMA EKF	625 × 345 × 155	36	4 bars x 9 holes	3	pb65-n-pg-36m
Wall-mounted sealed plastic distribution enclosure 54 IP65 PROXIMA EKF	625 × 450 × 155	54	2 bars x 13 holes 2 bars x 14 holes	3	pb65-n-pg-54m

Flush-mounted plastic distribution enclosures Nova IP40 EKF

Nova enclosures are designed for assembly of power, low-voltage and combined distribution switchboards. Nova enclosures contain DIN rails for installation of modular devices, and a mounting plate for antenna splitters, Wi-Fi routers, patch panels and other low-voltage devices. The enclosures can be flushed in concrete and brick walls, as well as in gypsum plasterboard. Enclosure doors are ordered separately to fit the required size and optional materials - plastic, metal, or peforated metal sheet.

Pre-assembled frame with DIN rails

Adjustable depth of door mounting

Comb strip for securing incoming cables. Cable gland plates

Socket in the kit for combined models

APPLICATION

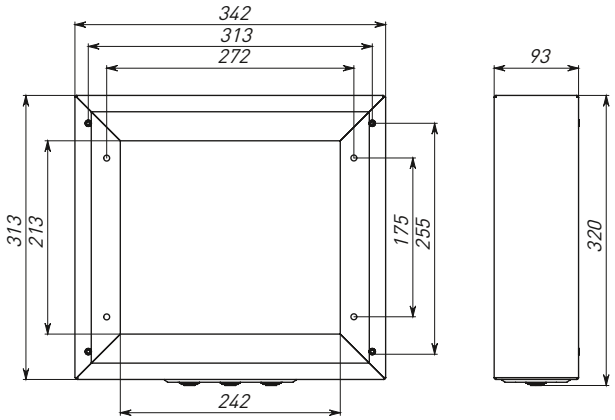
Electrical distribution enclosures are used in residential and commercial real estate:
- installation & protection of modular and low-voltage equipment from environmental factors and tampering.
- lead-in & distribution.
- protection of power & control circuits.

TECHNICAL DATA

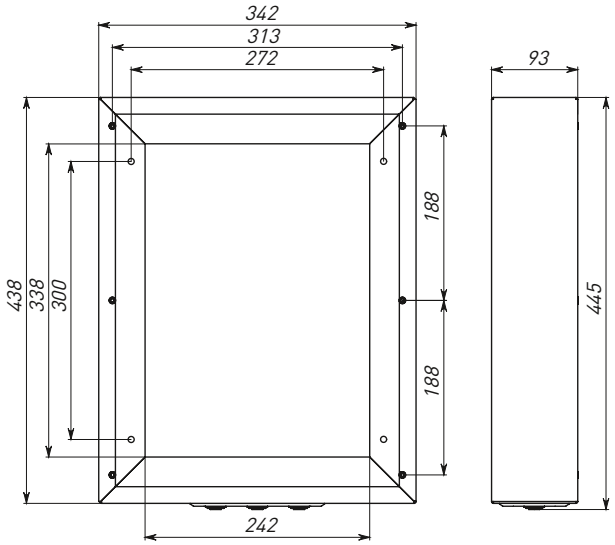
Parameters	nv-pbase-12	nv-pbase-24	nv-pbase-36	nv-pbase-48	nv-pbase-60	nv-mbase-2	nv-mbase-3	nv-mbase-4	nv-mbase-5	nv-cbase-1+2	nv-cbase-2+2	nv-cbase-3+1	nv-cbase-2+1
Rated current, A	63												
Max. number of modules	12+2	24+4	36+6	48+8	60+10	–	–	–	–	12+2	24+4	36+6	24+4
Mounting plates	–	–	–	–	–	1 × (172 × 250) +1 × (110 × 250)	1 × (172 × 250) +2(110 × 250)	1 × (172 × 250) +3 × (110 × 250)	1 × (172 × 250) +4 × (110 × 250)	2 × (110 × 250)	2 × (110 × 250)	1 × (170 × 250)	3 × (110 × 250)
Number of bars	6+6 N 15 PE	7+7+8 N 20 PE	8+8+10 N 26 PE	8+8+8+8 N 30 PE	10+10+8 N 30 PE	–	–	–	–	6+6 N 15 PE	7+7+8 N 20 PE	8+8+10 N 26 PE	7+7+8 N 20 PE
Housing material	Plastic												
Impact resistance	IK08												
Housing and door color	RAL-9003 (white)												
Mounting type	Flush-mounted												
Operating temperature, °C	-25 to +60												
Housing size	1	2	3	4	5	2	3	4	5	3	4	5	5
Net weight, kg	1,1	1,5	1,9	2,4	2,9	1,5	1,9	2,4	3	1,3	1,7	2,2	2,7
Degree of protection by IEC 60529	IP40												
Door type (ordered separately):													
Plastic	+	+	+			+	+			+	+		
Metal	+	+	+	+	+	+	+	+	+	+	+	+	+
Perforated metal		+	+	+	+	+	+	+	+	+	+	+	+

Overall and installation dimensions (mm)

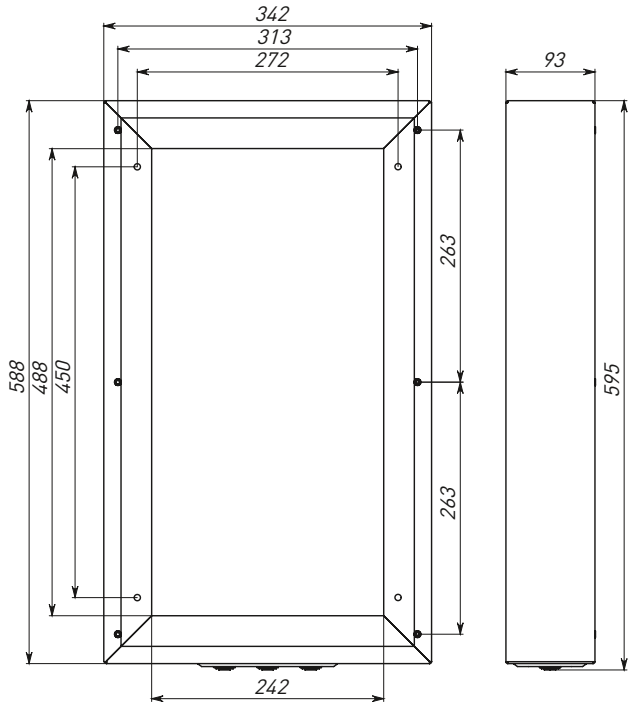
Nova 1



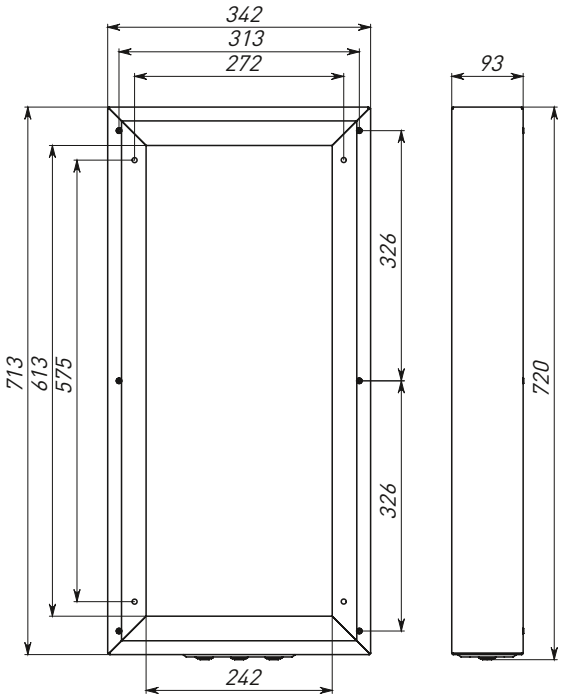
Nova 2



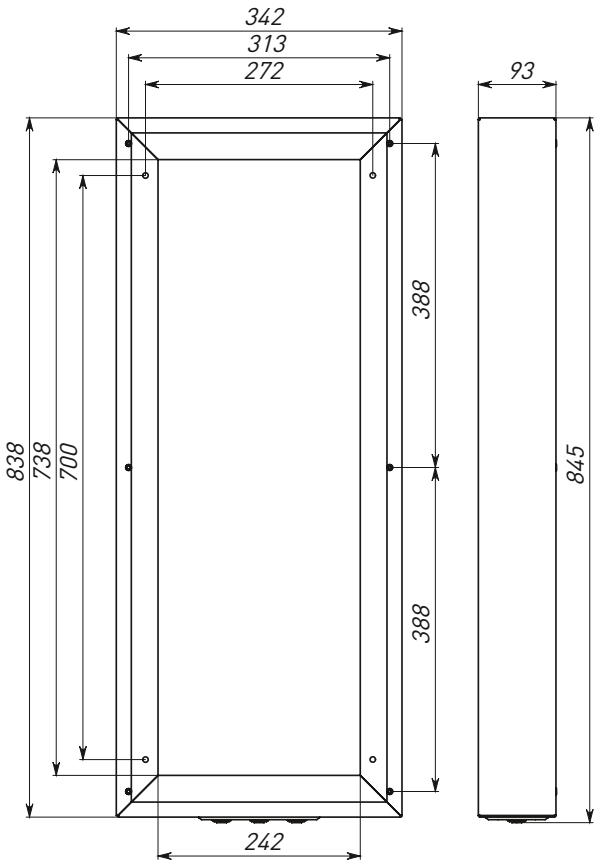
Nova 3



Nova 4

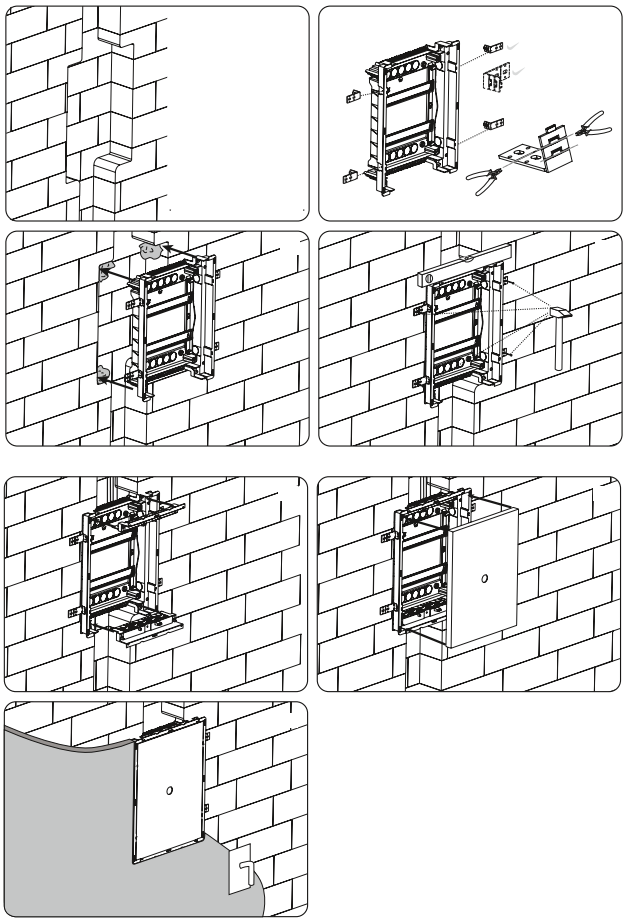


Nova 5

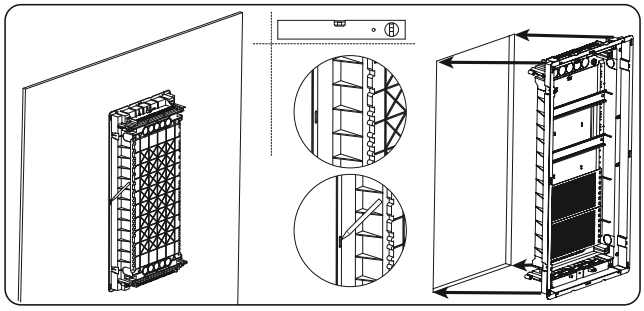


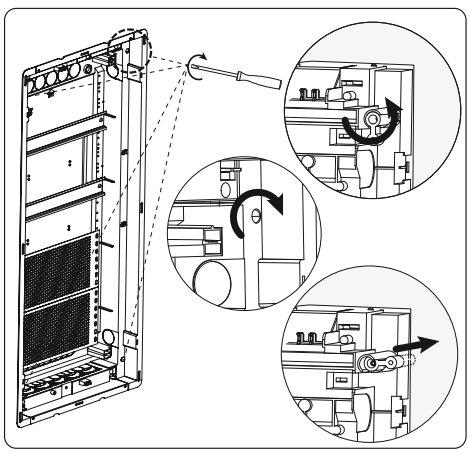
Installation and operation

1. Mounting into solid walls (concrete, brick, block).

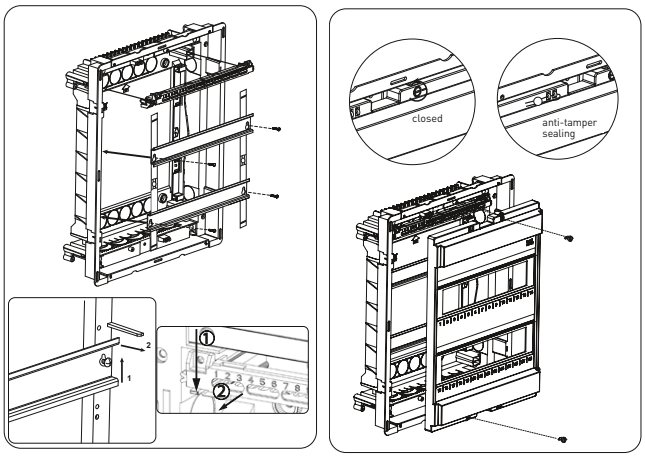


2. Mounting into plasterboard.

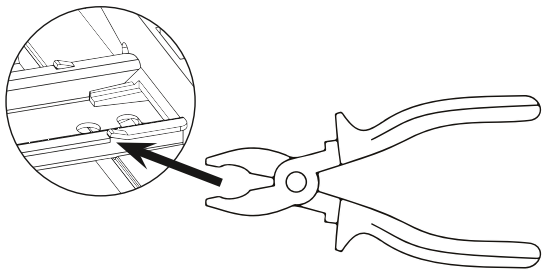




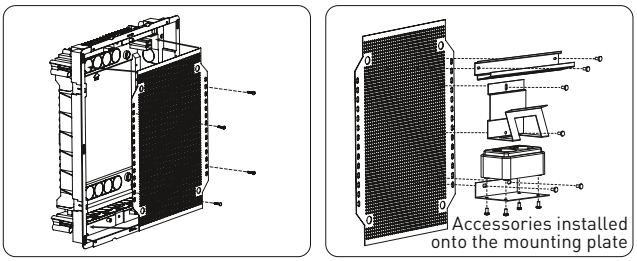
3. Equipment installation in enclosures.
Equipment installation in the power distribution enclosure

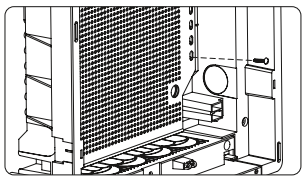


To install additional modules at the DIN rail sides, bend the slots.

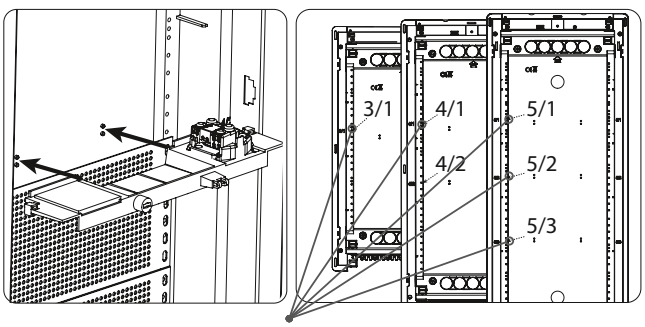


Installation of a mounting plate and accessories in the low-voltage or combined distribution enclosure.

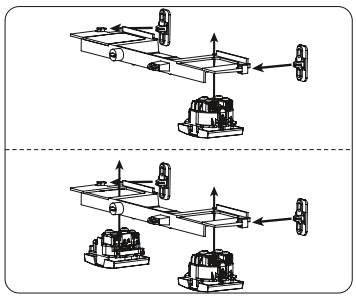




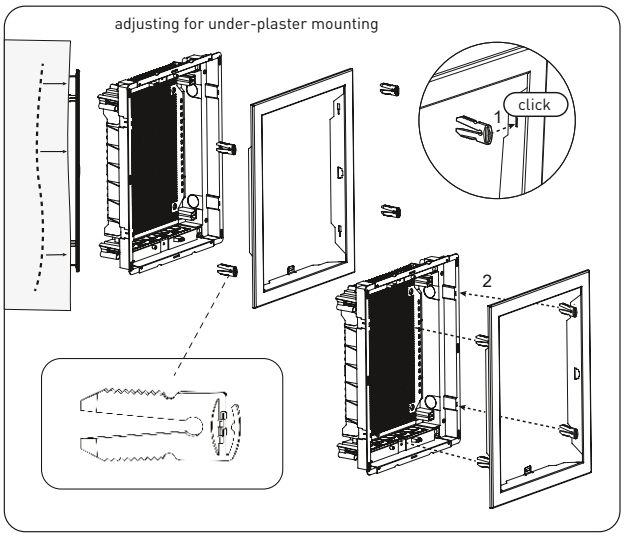
Installation of partition and additional modular socket (ordered separately) in the combined enclosure.



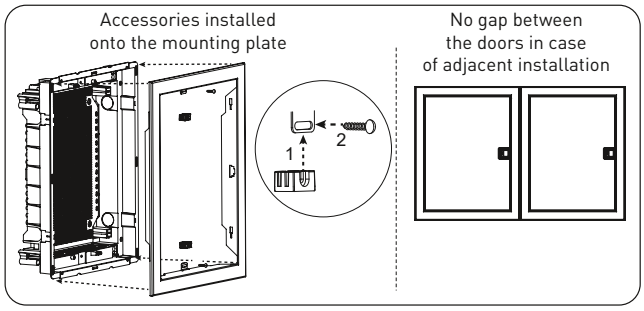
Partition installation



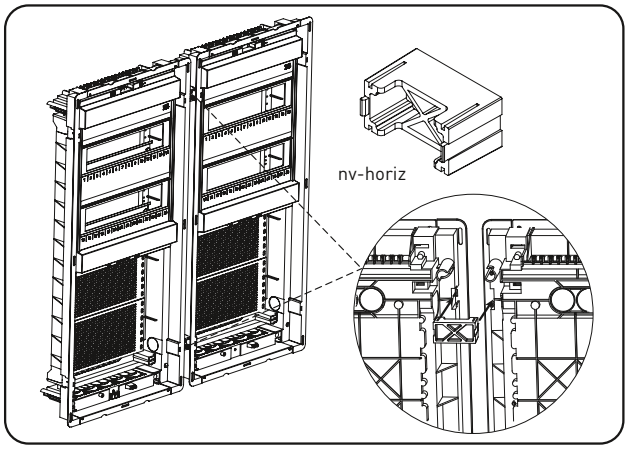
4. Door installation
Mounting of the door frame with 4 latches, adjustable depth to fit the base.



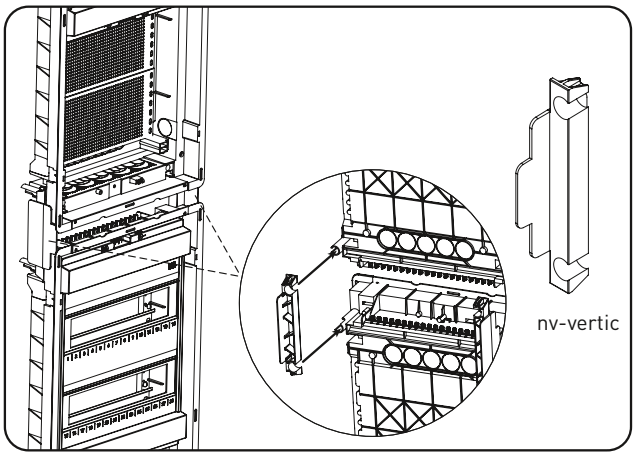
Extra door securing with 2-point fastening (with the metal doors only).



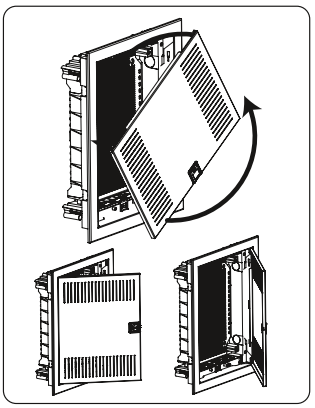
5. Interconnection of enclosures
Horizontal connection kit. Item code: nv-horiz.



Vertical connection kit. Item code: nv-vertic.



Both right- and left side options of the door installation



Delivery scope

Power distribution enclosure

1. Base with DIN rails, connecting bars N/PE, protective faceplates and 2 removable gland plates - 1 pc.
2. Mounting plates – 4 pcs.
3. Mounting kit for hollow walls – 1 pc.
4. Faceplate fasteners – 2 pcs.
5. Blanking plate for 6 modules – 1 pc.
6. Modular sticker – 1 pc.

Low-voltage distribution enclosure

1. Base with mounting plates and two removable gland plates – 1 pc.
2. Mounting plates – 4 pcs.
3. Mounting kit for hollow walls – 1 pc.

Combined distribution enclosure

1. Base with DIN rails, connecting bars N/PE, protective faceplate and 2 removable gland plates - 1 pc.
2. Mounting plates – 4 pcs.
3. Mounting kit for hollow walls – 1 pc.
4. Faceplate fasteners – 2 pcs.
5. Partition with fastener and modular socket - 1 pc.
6. Blanking plate for 6 modules – 1 pc.
7. Modular sticker – 1 pc.

Plastic door

1. Door with frame – 1 pc.
2. Door latch – 4 pcs.

Metal door

1. Door with frame – 1 pc.
2. Door latch – 4 pcs.
3. Door two-point fasteners – 2 pcs.

Picture	Name	Dimensions (H x W x D), mm	Installation dimensions (H x W x D), mm	Item code
	Metal door for distribution enclosure Nova size 1 IP40 EKF	317 × 346 × 7	–	nv-door-m-1
	Metal door for distribution enclosure Nova size 2 IP40 EKF	442 × 346 × 7	–	nv-door-m-2
	Metal door for distribution enclosure Nova size 3 IP40 EKF	592 × 346 × 7	–	nv-door-m-3
	Metal door for distribution enclosure Nova size 4 IP40 EKF	717 × 346 × 7	–	nv-door-m-4
	Metal door for distribution enclosure Nova size 5 IP40 EKF	842 × 346 × 7	–	nv-door-m-5
	Perforated metal door for distribution enclosure Nova size 2 IP40 EKF	442 × 346 × 7	–	nv-door-pm-2
	Perforated metal door for distribution enclosure Nova size 3 IP40 EKF	592 × 346 × 7	–	nv-door-pm-3
	Perforated metal door for distribution enclosure Nova size 4 IP40 EKF	717 × 346 × 7	–	nv-door-pm-4
	Perforated metal door for distribution enclosure Nova size 5 IP40 EKF	842 × 346 × 7	–	nv-door-pm-5
	Plastic door for distribution enclosure Nova size 1 IP40 EKF	317 × 346 × 7	–	nv-door-p-1
	Plastic door for distribution enclosure Nova size 2 IP40 EKF	442 × 346 × 7	–	nv-door-p-2
	Plastic door for distribution enclosure Nova size 3 IP40 EKF	592 × 346 × 7	–	nv-door-p-3
	Base for power distribution enclosure Nova (DIN rails) 12 modules size 1 IP40 EKF	317 × 346 × 92	272 × 311 × 90	nv-pbase-12
	Base for power distribution enclosure Nova (DIN rails) 24 modules size 2 IP40 EKF	442 × 346 × 92	401 × 311 × 90	nv-pbase-24
	Base for power distribution enclosure Nova (DIN rails) 36 modules size 3 IP40 EKF	592 × 346 × 92	555 × 311 × 90	nv-pbase-36
	Base for power distribution enclosure Nova (DIN rails) 48 modules size 4 IP40 EKF	717 × 346 × 92	677 × 311 × 90	nv-pbase-48
	Base for power distribution enclosure Nova (DIN rails) 60 modules size 5 IP40 EKF	842 × 346 × 92	799 × 311 × 90	nv-pbase-60
	Base for low-voltage enclosure Nova (mounting plate) size 2 IP40 EKF	442 × 346 × 92	401 × 311 × 90	nv-mbase-2
	Base for low-voltage enclosure Nova (mounting plate) size 3 IP40 EKF	592 × 346 × 92	555 × 311 × 90	nv-mbase-3
	Base for low-voltage enclosure Nova (mounting plate) size 4 IP40 EKF	717 × 346 × 92	677 × 311 × 90	nv-mbase-4
	Base for low-voltage enclosure Nova (mounting plate) size 5 IP40 EKF	842 × 346 × 92	799 × 311 × 90	nv-mbase-5
	Base for combined distribution enclosure Nova (1 DIN rail + 2 mounting plates) size 3 IP40 EKF	592 × 346 × 92	555 × 311 × 90	nv-cbase-1+2
	Base for combined distribution enclosure Nova (2 DIN rails + 2 mounting plates) size 4 IP40 EKF	717 × 346 × 92	677 × 311 × 90	nv-cbase-2+2
	Base for combined distribution enclosure Nova (2 DIN rails + 3 mounting plates) size 5 IP40 EKF	842 × 346 × 92	799 × 311 × 90	nv-cbase-2+3
	Base for combined distribution enclosure Nova (3 DIN rails + 1 mounting plate) size 5 IP40 EKF	842 × 346 × 92	799 × 311 × 90	nv-cbase-3+1
	Wi-Fi router holder Nova EKF	–	–	nv-h-wifi
	Double socket holder Nova EKF	–	–	nv-h-socket
	Blanking plate for protective panels, 12 modules for distribution enclosure Nova EKF	–	–	nv-cover
	Lock with key for nv-p & nv-m Nova EKF	–	–	nv-lock
	Vertical connection kit for distribution enclosure Nova EKF	–	–	nv-vertic
	Horizontal connection kit for distribution enclosure Nova EKF	–	–	nv-horiz
	Modular socket 16A for distribution enclosure Nova EKF	–	–	nv-socket
	Patch panel for 12 modules RJ45 for distribution enclosure Nova EKF	–	–	nv-pp12

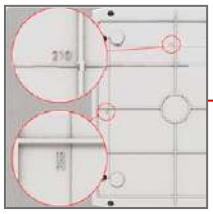
Picture	Name	Dimensions (H x W x D), mm	Installation dimensions (H x W x D), mm	Item code
	Flush-mounted power distribution enclosure Nova 12 modules, plastic door IP40 EKF	325 × 354 × 95	272 × 311 × 90	nv-pb-pd-1
	Flush-mounted power distribution enclosure Nova 24 modules, plastic door IP40 EKF	457 × 354 × 95	401 × 311 × 90	nv-pb-pd-2
	Flush-mounted power distribution enclosure Nova 36 modules, plastic door IP40 EKF	600 × 354 × 95	555 × 311 × 90	nv-pb-pd-3
	Flush-mounted power distribution enclosure Nova 48 modules, metal door IP40 EKF	677 × 354 × 95	677 × 311 × 90	nv-pb-md-4
	Flush-mounted power distribution enclosure Nova 60 modules, metal door IP40 EKF	857 × 354 × 95	799 × 311 × 90	nv-pb-md-5
	Flush-mounted low-voltage distribution enclosure Nova size 2, plastic door IP40 EKF	457 × 354 × 95	401 × 311 × 90	nv-mb-pd-2
	Flush-mounted low-voltage distribution enclosure Nova size 3, plastic door IP40 EKF	600 × 354 × 95	555 × 311 × 90	nv-mb-pd-3
	Busbar holder N/PE (without busbars) for distribution enclosure Nova EKF	-	-	nv-bh-1
	Double busbar holder N/PE (without busbars) for distribution enclosure Nova EKF	–	–	nv-bh-2
	Case for wall-mounted distribution enclosure Nova size 1 EKF	320 × 342 × 93	–	nv-cover-1
	Case for wall-mounted distribution enclosure Nova size 2 EKF	445 × 342 × 93	–	nv-cover-2
	Case for wall-mounted distribution enclosure Nova size 3 EKF	595 × 342 × 93	–	nv-cover-3
	Case for wall-mounted distribution enclosure Nova size 4 EKF	720 × 342 × 93	–	nv-cover-4
	Case for wall-mounted distribution enclosure Nova size 5 EKF	845 × 342 × 93	–	nv-cover-5

Plastic distribution enclosures Unix65 EKF

Plastic distribution enclosures Unix65 are designed for electricity distribution, protection against overload and short-circuit currents, and can enclose various DIN rail modular devices. With an IP65 protection degree, Unix65 can be used in highly dusted and humid rooms, garages, industrial premises, basements, car washes, warehouses, and even outdoors. These enclosures are made of heavy-duty and tamperproof plastic.

Left-/right-side options of door installation

Anti-tamper sealing available



Mounting dimensions marked on the housing

Marking for cable entries printed on the housing

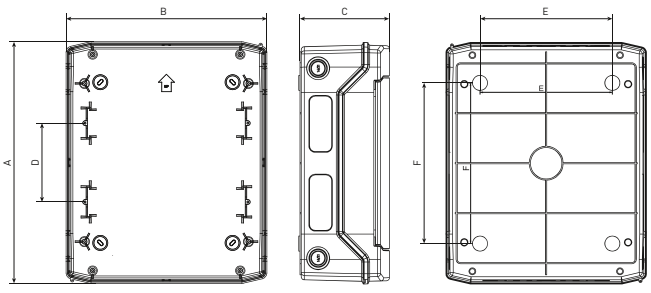
APPLICATION

Electrical distribution enclosures are used in residential and commercial real estate:
- installation & protection of modular and low-voltage equipment from environmental factors and tampering.
- lead-in & distribution.
- protection of power & control circuits.

TECHNICAL DATA

Parameters	ux65-4-n	ux65-8-n	ux65-12-n	ux65-18-n	ux65-24-n	ux65-36-n	ux65-48-n
Rated current, A	125						
Max. number of modules	4	8	12	18	24	36	48
Number of rows	1	1	1	1	2	3	4
Number of busbars	4 N; 4 PE	8 N; 8 PE	10 N; 10 PE	7+8 N; 15 PE	10+10 N; 20 PE	8+8+8 N; 26 PE	8+10+10 N; 30 PE
Housing material	Plastic						
Impact resistance	IK08						
Housing color	RAL-7035 (grey)						
Mounting type	Outdoor						
Net weight, kg	0,5	0,7	1,4	1,7	1,9	2,4	3,2
Degree of protection by IEC 60529	IP65						
Operation temperature, °C	from –25 to +60						

Overall and installation dimensions

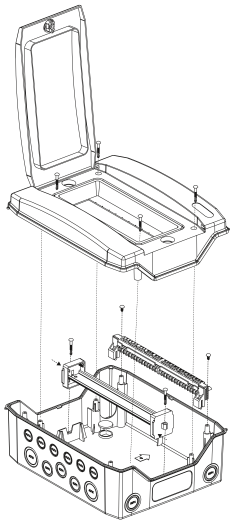


Installation and operation

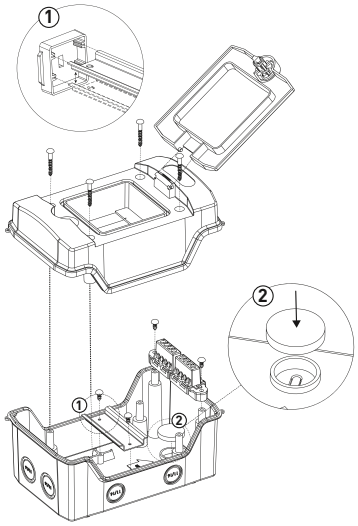
Distribution enclosures must be installed and connected by qualified electrical personnel.

Do not operate distribution enclosures in explosive environment, containing conductive dust or chemically hazardous substances. Distribution enclosures are supplied with a protective front panel to prevent free access to live parts.

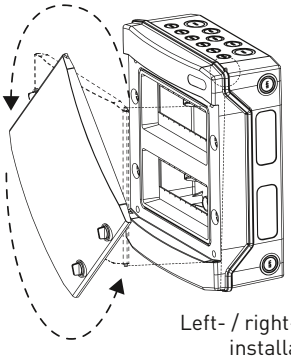
1. Install required electrical devices onto the DIN rail.
2. Connect internal electrical components.
3. Install the enclosure in the operation space and secure it through the holes provided.
4. Install the sealing caps (in the kit) into the fastening points inside the enclosure to ensure tightness.
5. To maintain the specified degree of enclosure protection, use IP65 waterproof cable glands (ordered separately). Before installing cable glands, use a special tool to open the pre-fabricated holes on the enclosure to maintain the IP65 rating.
6. Make sure input conductors are de-energized, and connect them as intended.
7. Fit the front panel and tighten the screws.
8. Stick the marking label under the modular devices.



Installation of DIN rail, busbar support and front panel



DIN rail installation options (1); end cap installation to ensure IP65 (2).



Left- / right-side door installation

Delivery scope

1. Technical manual – 1 pc.
2. Distribution enclosure Unix65 EKF – 1 pc.
3. Set of DIN rails - 1 pc. /2 pcs. / 3 pcs. (by number of modules)
4. Set of N & PE busbars – 1 pc.
5. Modular stickers – 1 set
6. Mounting kit – 1 pc.
7. Lock with key for distribution enclosure Unix65 EKF (item code ux65-lock) – ordered separately

Picture	Name	Dimensions, mm						Item code
		A	B	C	D	E	F	
	Wall-mounted plastic distribution enclosure Unix65 4 modules (155x119x89) IP65 EKF	201	128	120	–	–	140	ux65-4-n
	Wall-mounted plastic distribution enclosure Unix65 8 modules (210x202x120) IP65 EKF	201	202	120	–	100	140	ux65-8-n
	Wall-mounted plastic distribution enclosure Unix65 12 modules (259x319x144) IP65 EKF	259	319	144	–	210	130	ux65-12-n
	Wall-mounted plastic distribution enclosure Unix65 18 modules (259x428x144) IP65 EKF	259	428	144	–	259	130	ux65-18-n
	Wall-mounted plastic distribution enclosure Unix65 24 modules (384x319x144) IP65 EKF	384	319	144	125	210	255	ux65-24-n
	Wall-mounted plastic distribution enclosure Unix65 36 modules (535x319x144) IP65 EKF	535	319	144	125	210	380	ux65-36-n
	Wall-mounted plastic distribution enclosure Unix65 48 modules (664x319x144) IP65 EKF	664	319	144	125	210	505	ux65-48-n
	Lock with key for plastic distribution enclosure Unix65 EKF	–	–	–	–	–	–	ux65-lock

Plastic distribution enclosures Unix IP40 EKF

Plastic enclosures Unix are designed for assembling power, low-voltage and combined switchboards. Unix enclosures serve to contain DIN rail modular devices; and antenna splitters, Wi-Fi routers, patch panels and other low-voltage devices installed onto mounting plate.

Two door options:
- tinted transparent
- white blank

Metal lock with key option

Front panel easily connected to the base

Wide range of sizes and versions

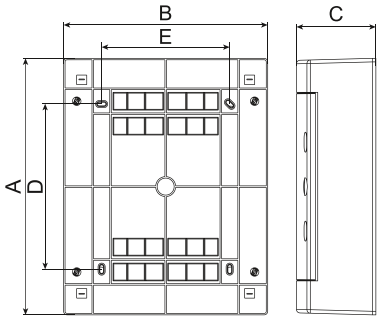
APPLICATION

Electrical distribution enclosures are used in residential and commercial real estate:
- installation & protection of modular and low-voltage equipment from environmental factors and tampering.
- lead-in & distribution.
- protection of power & control circuits.

TECHNICAL DATA

Parameters	Values
Rated current, A	63
Housing material	Plastic
Impact resistance	IK07
Housing color	White
Mounting type	Wall-mounted
Operation temperature, °C	from –25 to +60
Degree of protection by IEC 60529	IP40

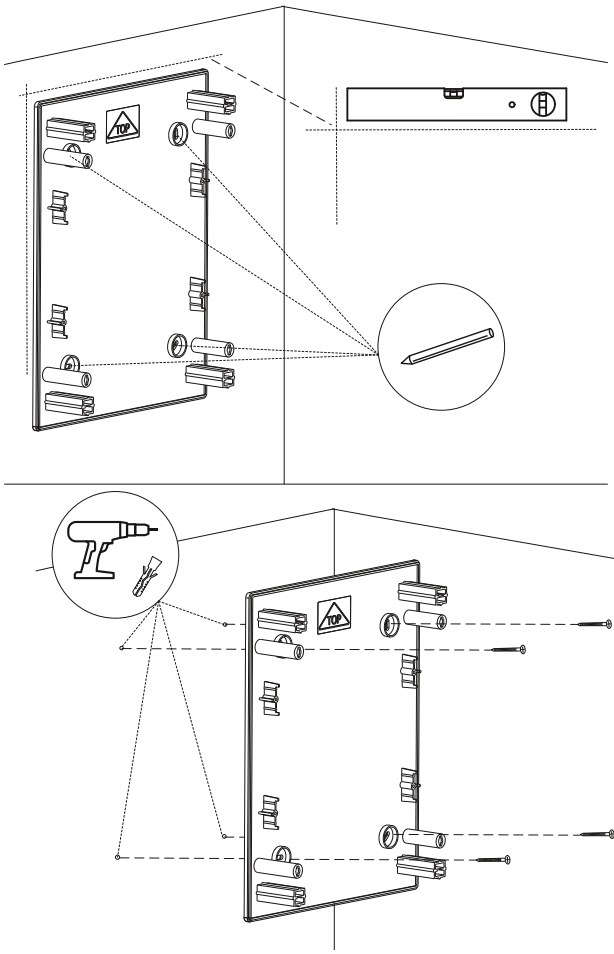
Overall and installation dimensions



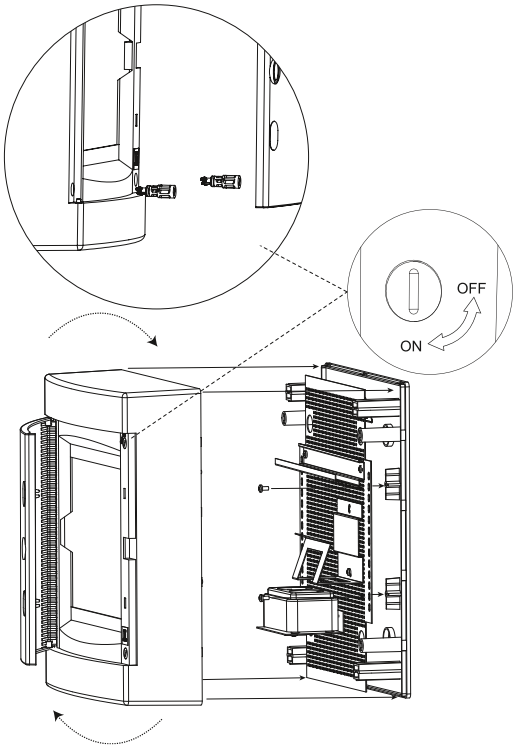
Item code	A mm	B mm	C mm	D mm	E mm
ux-2x12-n, ux-2x12-nw, ux-2m-n, ux-2m-nw	361	287	112	232	180
ux-3x12-n, ux-3x12-nw, ux-3m-n, ux-3m-nw	485	287	112	357	180
ux-4x12-n, ux-4x12-nw, ux-4m-n, ux-4m-nw, ux-2x12+1m-n, ux-2x12+1m-nw	652	287	112	482	180
ux-2x18-n, ux-2x18-nw, ux-2m-n-xl, ux-2m-nw-xl	361	396	112	232	289
ux-3x18-n, ux-3x18-nw, ux-3m-n-xl, ux-3m-nw-xl	526	396	112	357	289
ux-4x18-n, ux-4x18-nw, ux-4m-n-xl, ux-4m-nw-xl / ux-2x18+1m-n, ux-2x18+1m-nw	651	396	112	482	289
ux-1x24-n, ux-1x24-nw	236	503	112	107	396

Installation and operation

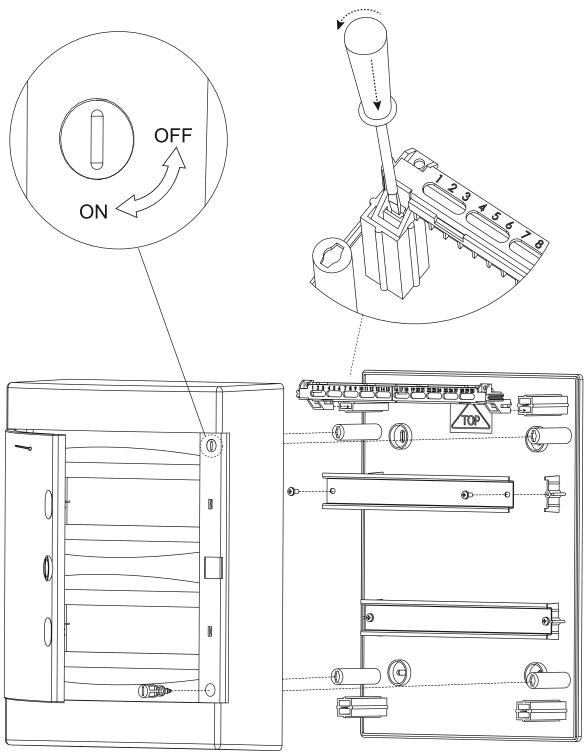
1. External mounting

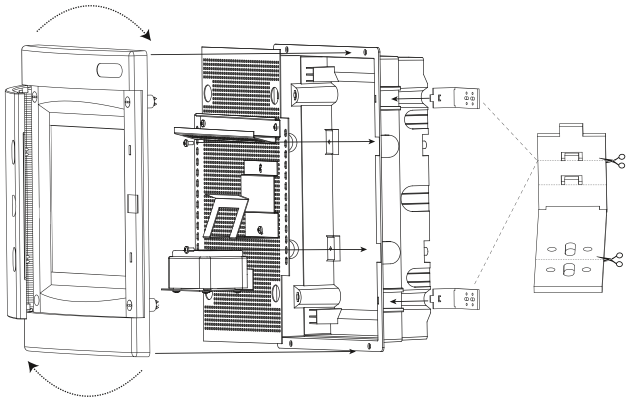


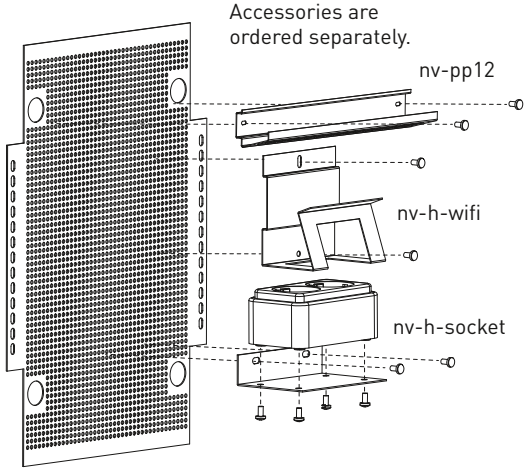
2. Internal mounting



3. Power distribution enclosure







Delivery scope

Wall-mounted distribution enclosure Unix IP40 EKF
1. Base - 1 pc.
2. Protective (front) plate - 1pc.
3. Pre-installed DIN rails - 1; 2; 3; or 4 pcs. (depends on version)
4. Pre-installed case with N & PE bars - 1; 2; 3; or 4 pcs. (depends on version)
5. Wall mounting kit – 1 pc.

Wall-mounted low-voltage distribution enclosure Unix IP40 EKF
1. Base - 1 pc.
2. Protective (front) plate - 1pc.
3. Perforated mounting plate – 1 pc.
4. Wall mounting kit – 1 pc.

Wall-mounted combined enclosure Unix IP40 EKF
1. Base - 1 pc.
2. Protective (front) plate - 1pc.
3. Pre-installed DIN rails - 1; 2; 3; or 4 pcs. (depends on version)
4. Protective (front) plate - 1pc.
5. Pre-installed case with N & PE bars - 1; 2; 3; or 4 pcs. (depends on version)
6. Wall mounting kit – 1 pc.

Picture	Name	Max. number of modules	Number of N/PE busbars	Mounting plates, pcs.	Door color	Outer dimensions, mm	Item code
	Wall-mounted distribution enclosure Unix transparent door 1x24 modules IP40 EKF	24	7+7+8 / 15	–	Tinted transparent	236 × 503 × 112	ux-1x24-n
	Wall-mounted distribution enclosure Unix white door 1x24 modules IP40 EKF	24	7+7+8 / 15	–	White blank	236 × 503 × 112	ux-1x24-nw
	Wall-mounted distribution enclosure Unix transparent door 2x12 modules IP40 EKF	24	7+7+8 / 15	–	Tinted transparent	361 × 287 × 112	ux-2x12-n
	Wall-mounted distribution enclosure Unix white door 2x12 modules IP40 EKF	24	7+7+8 / 15	–	White blank	361 × 287 × 112	ux-2x12-nw
	Wall-mounted distribution enclosure Unix transparent door 2x18 modules IP40 EKF	36	8+4+4+10 / 26	–	Tinted transparent	361 × 396 × 112	ux-2x18-n
	Wall-mounted distribution enclosure Unix white door 2x18 modules IP40 EKF	36	8+4+4+10 / 26	–	White blank	361 × 396 × 112	ux-2x18-nw
	Wall-mounted distribution enclosure Unix transparent door 3x12 modules IP40 EKF	36	8+4+4+10 / 26	–	Tinted transparent	485 × 287 × 112	ux-3x12-n
	Wall-mounted distribution enclosure Unix white door 3x12 modules IP40 EKF	36	8+4+4+10 / 26	–	White blank	485 × 287 × 112	ux-3x12-nw
	Wall-mounted distribution enclosure Unix transparent door 4x12 modules IP40 EKF	48	8+8+8+8 / 30	–	Tinted transparent	653 × 287 × 112	ux-4x12-n
	Wall-mounted distribution enclosure Unix white door 4x12 modules IP40 EKF	48	8+8+8+8 / 30	–	White blank	653 × 287 × 112	ux-4x12-nw
	Wall-mounted distribution enclosure Unix transparent door 3x18 modules IP40 EKF	54	10+10+10+10 / 30	–	Tinted transparent	526 × 396 × 112	ux-3x18-n
	Wall-mounted distribution enclosure Unix white door 3x18 modules IP40 EKF	54	10+10+10+10 / 30	–	White blank	526 × 396 × 112	ux-3x18-nw
	Wall-mounted distribution enclosure Unix transparent door 4x18 modules IP40 EKF	72	13+13+13+13 / 30+30	–	Tinted transparent	651 × 396 × 112	ux-4x18-n
	Wall-mounted distribution enclosure Unix transparent door 4x18 modules IP40 EKF	72	13+13+13+13 / 30+30	–	White blank	651 × 396 × 112	ux-4x18-nw
	Wall-mounted low-voltage distribution enclosure Unix transparent door size 2 IP40 EKF	-	-	1	Tinted transparent	361 × 287 × 112	ux-2m-n
	Wall-mounted low-voltage distribution enclosure Unix white door size 2 IP40 EKF	-	-	1	White blank	361 × 287 × 112	ux-2m-nw
	Wall-mounted low-voltage distribution enclosure Unix transparent door size 2 wide IP40 EKF	-	-	1	Tinted transparent	361 × 396 × 112	ux-2m-n-xl
	Wall-mounted low-voltage distribution enclosure Unix white door size 2 wide IP40 EKF	-	-	1	White blank	361 × 396 × 112	ux-2m-nw-xl
	Wall-mounted low-voltage distribution enclosure Unix transparent door size 3 IP40 EKF	-	-	1	Tinted transparent	485 × 287 × 112	ux-3m-n
	Wall-mounted low-voltage distribution enclosure Unix white door size 3 IP40 EKF	-	-	1	White blank	485 × 287 × 112	ux-3m-nw
	Wall-mounted low-voltage distribution enclosure Unix transparent door size 3 wide IP40 EKF	–	–	1	Tinted transparent	526 × 396 × 112	ux-3m-n-xl
	Wall-mounted low-voltage distribution enclosure Unix white door size 3 wide IP40 EKF	–	–	1	White blank	526 × 396 × 112	ux-3m-nw-xl
	Wall-mounted low-voltage distribution enclosure Unix transparent door size 4 IP40 EKF	–	–	1	Tinted transparent	653 × 287 × 112	ux-4m-n
	Wall-mounted low-voltage distribution enclosure Unix white door size 4 IP40 EKF	–	–	1	White blank	653 × 287 × 112	ux-4m-nw
	Wall-mounted low-voltage distribution enclosure Unix transparent door size 4 wide IP40 EKF	–	–	1	Tinted transparent	651 × 396 × 112	ux-4m-n-xl
	Wall-mounted low-voltage distribution enclosure Unix white door size 4 wide IP40 EKF	–	–	1	White blank	651 × 396 × 112	ux-4m-nw-xl
	Wall-mounted combined enclosure Unix (2 DIN rails x 12 + 1 mounting plate) transparent door size 4 IP40 EKF	24	7+7+8 / 15	1	Tinted transparent	653 × 287 × 112	ux-2x12+1m-n
	Wall-mounted combined enclosure Unix (2 DIN rails x 12 + 1 mounting plate) white door size 4 IP40 EKF	24	7+7+8 / 15	1	White blank	653 × 287 × 112	ux-2x12+1m-nw
	Wall-mounted combined enclosure Unix (2 DIN rails x 18 + 1 mounting plate) transparent door size 4 IP40 EKF	36	8+4+4+10 / 26	1	Tinted transparent	651 × 396 × 112	ux-2x18+1m-n
	Wall-mounted combined enclosure Unix (2 DIN rails x 18 + 1 mounting plate) white door size 4 IP40 EKF	36	8+4+4+10 / 26	1	White blank	651 × 396 × 112	ux-2x18+1m-nw

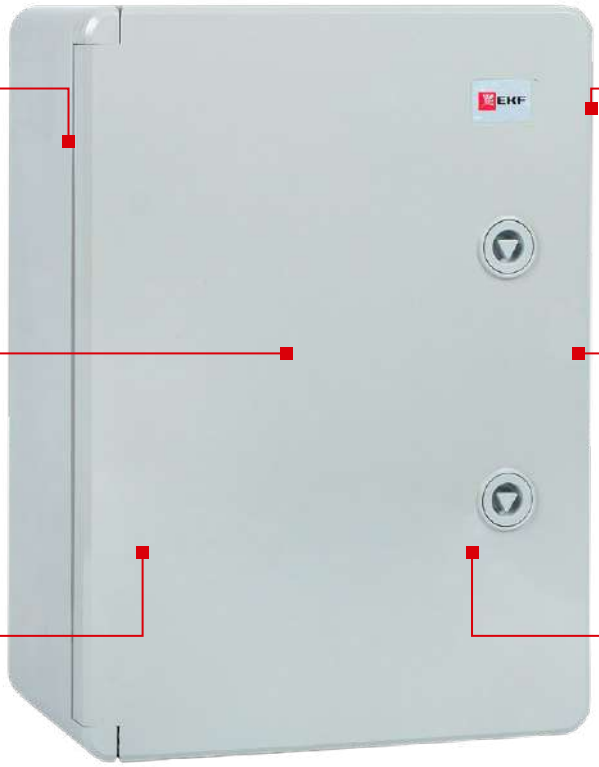
Plastic enclosures with mounting plate IP65 PROXIMA EKF

Wall-mounted plastic enclosures with mounting plate IP65 PROXIMA EKF are designed for installing modular and power electrical equipment for assembly of distribution switchboards, automation and control cabinets. The enclosures are made of high-impact ABS plastic to reliably protect installed equipment. High degree of ingress protection (IP65) ensures safe operation of the equipment within the enclosure.

4 mm thick housing

Transparent door option

ABS plastic



Metal hinges

IP65 rating. Stiffening plates

Extended range of operating temperatures: from -45°C to 80 °C

APPLICATION

Electrical distribution enclosures are used in residential and commercial real estate:
- installation & protection of modular and low-voltage equipment from environmental factors and tampering.
- lead-in & distribution.
- protection of power & control circuits.

TECHNICAL DATA

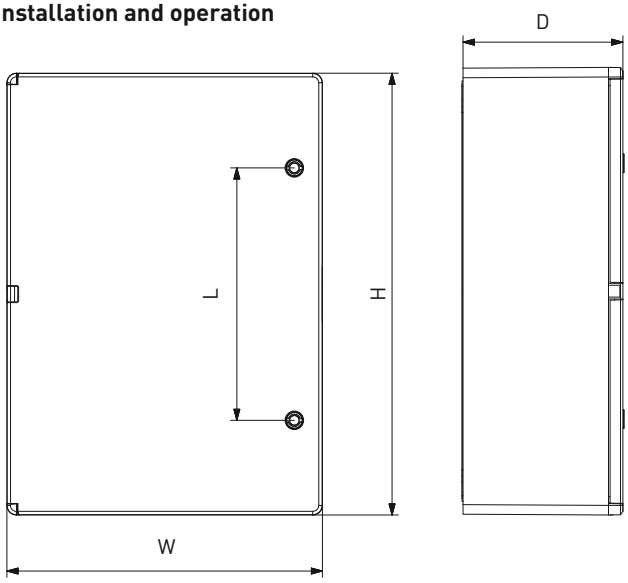
Parameters		Values
Mounting type		Wall-mounted
Material	Frame	ABS plastic
	Door	ABS plastic; polycarbonate (for transparent models)
	Mounting plate	Galvanized steel 0,8-1,2 mm
Sealing		Polyurethane
Impact resistance		IK10
Number of locks		2 pcs. (1 pc. – for 300x200x130 model; 3 pcs. – for 800x600x260 model)
Color		RAL-7035 (grey)
Lock		Twist, triangle
Degree of protection by IEC 60529		IP65

Installation and operation

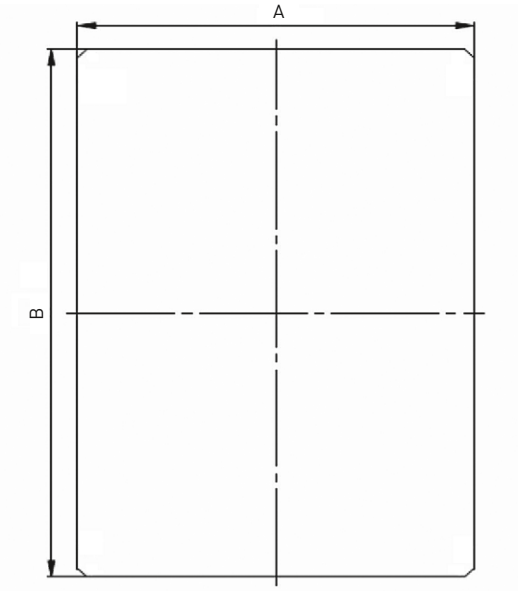
1. Do not operate distribution enclosures in explosive environment, containing conductive dust or chemically hazardous substances.
2. Removable mounting plate facilitates equipment installation.
3. For easier wall mounting, the rear panel features pre-drilled mounting holes and a mounting kit is included.

Installation procedure:
1. Install devices onto their operation point.
2. Install the pre-assembled module in the enclosure.
3. Use the fastening kit to mount the enclosure to the wall.

Installation and operation



Mounting plate



Dimensions, mm	A, mm	B, mm	Thickness, mm
300x200x130	142	248	1
350x250x150	192	297	1
400x300x170	240	346	1
400x300x220	240	346	1
500x350x190	288	445	1
500x400x180	340	445	1
500x400x240	337	445	1
600x400x200	340	547	1
700x500x250	440	647	1
800x600x260	545	736	1,2

Delivery scope

1. Enclosure
2. Key
3. Mounting kit
4. Lock and protective pad
5. Technical manual

Picture	Name	Dimensions				Number of locks	Item code
		H, mm	W, mm	D, mm	L, mm		
	Plastic enclosure with mounting plate (300x200x130) IP65 PROXIMA EKF	300	200	130	–	1	PB65MP001
	Plastic enclosure with mounting plate (350x250x150) IP65 PROXIMA EKF	350	250	150	120	2	PB65MP002
	Plastic enclosure with mounting plate (400x300x170) IP65 PROXIMA EKF	400	300	170	180	2	PB65MP003
	Plastic enclosure with mounting plate (400x300x200) IP65 PROXIMA EKF	400	300	220	180	2	PB65MP004
	Plastic enclosure with mounting plate (500x350x190) IP65 PROXIMA EKF	500	350	190	256	2	PB65MP005
	Plastic enclosure with mounting plate (500x400x180) IP65 PROXIMA EKF	500	400	180	250	2	PB65MP006
	Plastic enclosure with mounting plate (500x400x240) IP65 PROXIMA EKF	500	400	240	250	2	PB65MP007
	Plastic enclosure with mounting plate (600x400x200) IP65 PROXIMA EKF	600	400	200	340	2	PB65MP008
	Plastic enclosure with mounting plate (700x500x250) IP65 PROXIMA EKF	700	500	250	400	2	PB65MP009
	Plastic enclosure with mounting plate (800x600x260) IP65 PROXIMA EKF	800	600	260	227*	3	PB65MP010
	Plastic enclosure with mounting plate, transparent door (300x200x130) IP65 PROXIMA EKF	300	200	130	–	1	PBT65MP001
	Plastic enclosure with mounting plate, transparent door (350x250x150) IP65 PROXIMA EKF	350	250	150	120	2	PBT65MP002
	Plastic enclosure with mounting plate, transparent door (400x300x170) IP65 PROXIMA EKF	400	300	170	180	2	PBT65MP003
	Plastic enclosure with mounting plate, transparent door (400x300x220) IP65 PROXIMA EKF	400	300	220	180	2	PBT65MP004
	Plastic enclosure with mounting plate, transparent door (500x350x190) IP65 PROXIMA EKF	500	350	190	256	2	PBT65MP005
	Plastic enclosure with mounting plate, transparent door (500x400x180) IP65 PROXIMA EKF	500	400	180	250	2	PBT65MP006
	Plastic enclosure with mounting plate, transparent door (500x400x240) IP65 PROXIMA EKF	500	400	240	250	2	PBT65MP007
	Plastic enclosure with mounting plate, transparent door (600x400x200) IP65 PROXIMA EKF	600	400	200	340	2	PBT65MP008
	Plastic enclosure with mounting plate, transparent door (700x500x250) IP65 PROXIMA EKF	700	500	250	400	2	PBT65MP009
	Plastic enclosure with mounting plate, transparent door (800x600x260) IP65 PROXIMA EKF	800	600	260	227*	3	PBT65MP010

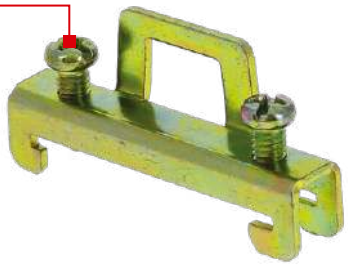
* between two closest locks

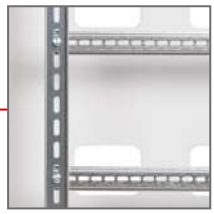
Distribution Enclosure Components & Electrical Installation Products

DIN rails, brackets and clamps

DIN rails are designed for mounting modular equipment in distribution enclosures. Clamps are used to secure modular equipment on DIN rails. DIN rail mounting brackets enable a rail to be indented from the mounting plate to route wires behind the DIN rail. With brackets for DIN rail angle installation, terminal clamps can be mounted at an angle for easier wire routing and connection.

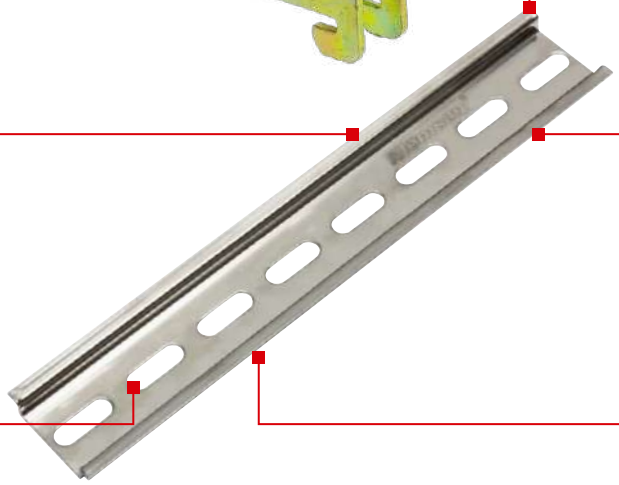
Clamps for secure fastening of modular devices and meters to DIN rails



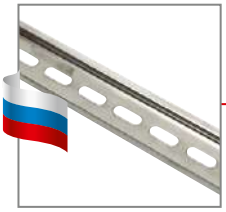


Perforations for easy DIN rail mounting

Corrosion-resistant galvanized coating



Individual UPS for piece ordering



Made in Russia

Reinforced 15mm-high 1,5 mm DIN rail

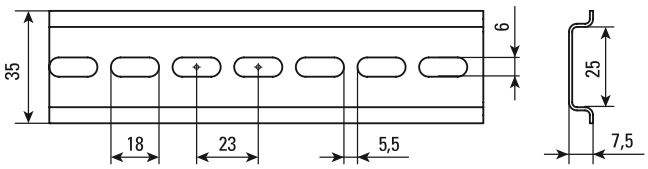
DIN rails EKF

DIN rails are used to mount and support electrical components within electrical distribution enclosures and control panels.

TECHNICAL DATA

Parameters	Values
Material	Perforated galvanized steel
Width, mm	35
Height, mm	7,5
Thickness, mm	0,8

Overall and installation dimensions



Name	DIN rail length, mm	Number of modules	Min. quantity in a pack, pcs.	Item code
Perforated DIN rail 75mm EKF	75	4	100	adr-7.5
Perforated DIN rail 100mm EKF	100	5	100	adr-10
Perforated DIN rail 110mm EKF	110	6	100	adr-11
Perforated DIN rail 125mm EKF	125	7	100	adr-12.5
Perforated DIN rail 130mm EKF	130	7	100	adr-13
Perforated DIN rail 200mm EKF	200	11	100	adr-20
Perforated DIN rail 225mm EKF	225	12	100	adr-22.5
Perforated DIN rail 300mm EKF	300	16	100	adr-30

Name	DIN rail length, mm	Number of modules	Min. quantity in a pack, pcs.	Item code
Perforated DIN rail 500mm EKF	500	27	100	adr-50
Perforated DIN rail 800mm EKF	800	44	100	adr-80
Perforated DIN rail 1000mm EKF	1000	55	100	adr-1.0
Perforated DIN rail 1400mm EKF	1400	77	100	adr-1.4
Perforated DIN rail 2000mm EKF	2000	111	50	adr-2.0
Perforated DIN rail with individual UPC code 100mm EKF	100	5	1	adr-10-x
Perforated DIN rail with individual UPC code 200mm EKF	200	11	1	adr-20-x
Perforated DIN rail with individual UPC code 300mm EKF	300	16	1	adr-30-x
Perforated DIN rail with individual UPC code 500mm EKF	500	27	1	adr-50-x

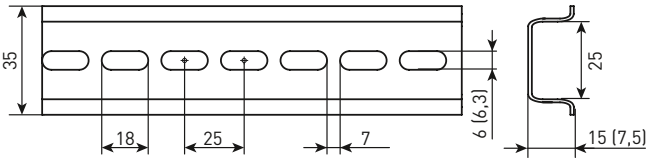
Perforated DIN rails

DIN rails are used to mount and support electrical components within electrical distribution enclosures and control panels. Perforation and increased profile height facilitate installation and maintenance.

TECHNICAL DATA

Parameters	Values	
	Reinforced 1,5mm DIN rail	1mm DIN rail
Materials	Perforated galvanized steel	
Width, mm	35	
Height, mm	15	7,5
Thickness, mm	1,5	1

Overall and installation dimensions



Dimensions listed in parenthesis are for perforated DIN rail 35 x 7,5 x 1 mm

Name	DIN rail length, mm	Number of modules	Min. quantity in a pack, pcs.	Item code
35 × 15 × 1,5 mm				
Perforated DIN rail 1,5mm reinforced 35x15x225mm EKF	225	12	50	tdr-22.5
Perforated DIN rail 1,5mm reinforced 35x15x1000mm EKF	1000	55	10	tdr-1.0
Perforated DIN rail 1,5mm reinforced 35x15x2000mm EKF	2000	111	10	tdr-2.0
35 × 7,5 × 1 mm				
Perforated DIN rail 1mm 300mm EKF	300	16	10	adr1-3
Perforated DIN rail 1mm 1000mm EKF	1000	55	10	adr1-10
Perforated DIN rail 1mm 2000mm EKF	2000	111	10	adr1-20

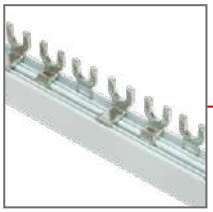
DIN rail clamps EKF

Clamps are used to secure modular equipment and terminal clamps on DIN rails.

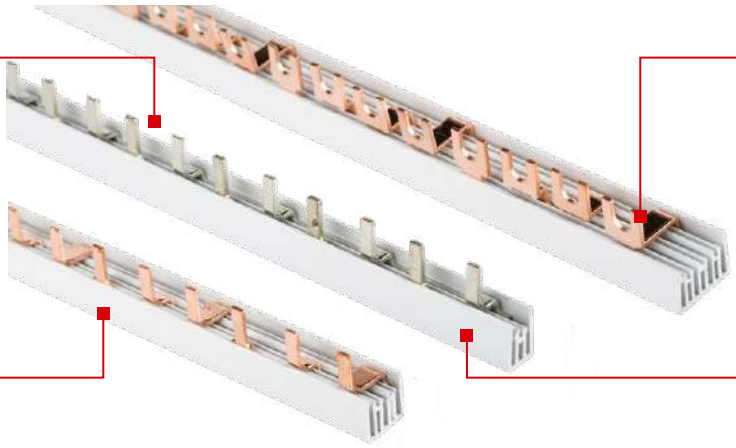
Picture	Name	Number of bolts	Item code
	DIN rail clamp HDW-201 2 screws EKF	2	ahdw-201
	DIN rail clamp HDW-211 1 screw EKF	1	ahdw-211
	DIN rail plastic clamp EW 1 screw EKF	1	ahdw-ew

Fork- and pin-type busbars EKF

Busbars are copper plates (100 A busbars are made of tinned copper), secured in a flame-retardant dielectric housing, used to connect various types of wires in distribution enclosures. EKF busbars are available in two versions: fork and pin types for rated currents of 63 and 100 A, in one-, two-, three- and four-pole models.



Tinned 100 A busbars are compatible with aluminum wires



Electrolytic tough-pitch copper (Cu-ETP)

Pin- and fork-type busbars are compatible via respective clamp

All critical information is thermal printed on busbars

APPLICATION

Pin and fork busbars are designed to provide secure and reliable connections for electrical conductors in industrial and commercial electrical systems where a high degree of reliability and ease of maintenance is required, e.g. power distribution systems, switchgear, and motor control centers.

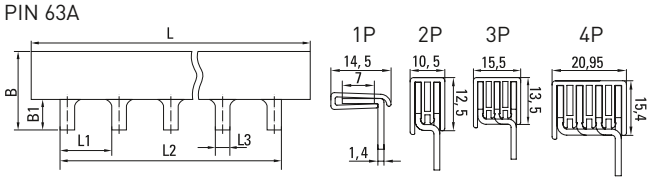
TECHNICAL DATA

Parameters		Values
Poles		1, 2, 3, 4
Rated voltage, V		230/400
Rated impulse withstand voltage Uimp, V		4000
Rated current In, A*		63, 100
Min.** short-term withstand current Icw, A	63 A pitch 17,8 mm	12 000
	100 A pitch 17,8 mm	15 000
	100 A pitch 27 mm	17 000

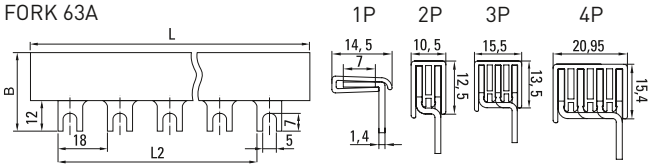
*Depending on the type. **For 1 sec.

Overall and installation dimensions

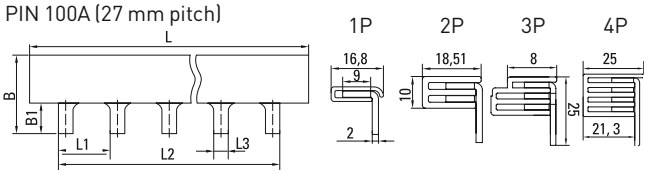
PIN 63A



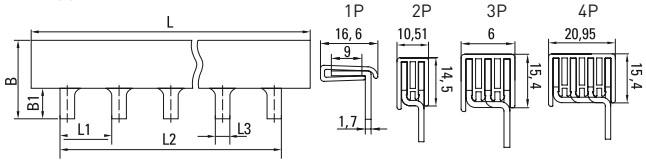
FORK 63A



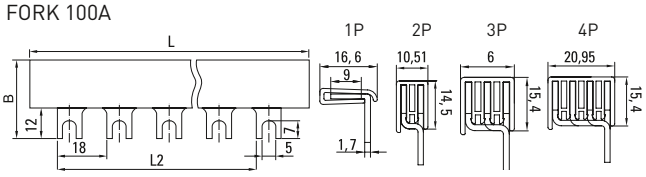
PIN 100A (27 mm pitch)



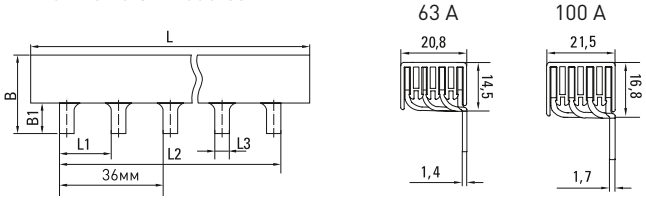
PIN 100A

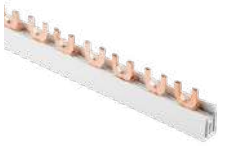
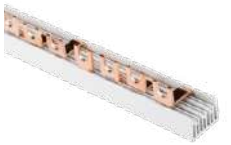
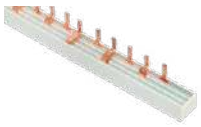


FORK 100A



PIN for RCBO 54 modules



Picture	Name	Rated current, A	Max. number of connected devices, pcs.	Dimensions, mm						Item code
				L	L1	L2	L3	B	B1	
	1-phase pin-type busbar EKF	63	12	220	17,8	200	4	14,5	10,5	pin-01-63-12
	3-phase pin-type busbar EKF					205		25	11,5	pin-03-63-12
	1-phase pin-type busbar EKF		54	1000		948		14,5	10,5	pin-01-63
	2-phase pin-type busbar EKF							23,7	11,5	pin-02-63
	3-phase pin-type busbar EKF							25	11,5	pin-03-63
	4-phase pin-type busbar EKF		56	1016		985		26	11	pin-04-63
	1-phase fork-type busbar EKF		54	1000		963	12	15,5	11,5	fork-01-63
	2-phase fork-type busbar EKF					960		23,7	15	fork-02-63
	3-phase fork-type busbar EKF					958		25	11,5	fork-03-63
	4-phase fork-type busbar EKF		56	1016		990		26	11	fork-04-63
	1-phase pin-type busbar EKF	100	54	1000	17,8	948	4	14,5	10,5	pin-01-100
	2-phase pin-type busbar EKF							25,7	11,5	pin-02-100
	3-phase pin-type busbar EKF							27	11,5	pin-03-100
	4-phase pin-type busbar EKF		56	1016		990		28	11	pin-04-100
	1-phase pin-type busbar 36x27mm EKF		36	1000	27	950	8	14,5	10,5	pin-01-100m
	2-phase pin-type busbar 36x27mm EKF							20	11,5	pin-02-100m
	3-phase pin-type busbar 36x27mm EKF							25,9	12	pin-03-100m
	4-phase pin-type busbar 36x27mm EKF			1016				30,5	13	pin-04-100m
	1-phase fork-type busbar EKF		54	1000	17,8	963	12	15,5	11,5	fork-01-100
	2-phase fork-type busbar EKF					960		25,7	11,5	fork-02-100
	3-phase fork-type busbar EKF					958		26,8	11,5	fork-03-100
	4-phase fork-type busbar EKF		56	1016		990		28	13	fork-04-100
	Pin-type busbar 63A 54 modules for RCBO (L1N L2N L3N) EKF	63	54	1016	17,8	943,4	3,8	27,5	14,5	pin-03n-63
	Pin-type busbar 100A 54 modules for RCBO (L1N L2N L3N) EKF	100						30	16,8	pin-03n-100

Picture	Name	Number per pack	Item code
	End cap for 1-phase busbar EKF	50	zh-1f
	End cap for 2-phase busbar EKF		zh-2f
	End cap for 3-phase busbar EKF		zh-3f
	End cap for 4-phase busbar EKF		zh-4f

Clamps for conjoint link-up with pin-type busbars EKF

Clamps are designed for connection of copper power supply wires to EKF pin-type busbars.

Flame retardant housing

CuZn37 brass conductive part

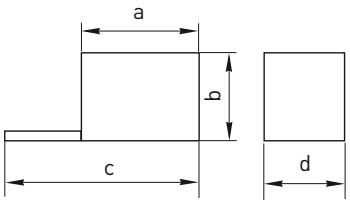
APPLICATION

EKF clamps are commonly used in electrical distribution systems, switchgear, and control panels to facilitate safe connection of conductors to the pin-type busbars.

TECHNICAL DATA

Parameters	Values		
	ck-s	ck-f	ck-u-r
Connection	Lateral	Front	Lateral/Front
Wire cross-section, mm²	6-25		
Rated current, A	100		
Rated operating voltage, V	400		
Insulation breakdown voltage, kV	1		
Tightening torque, N·m	4–5		

Overall and installation dimensions

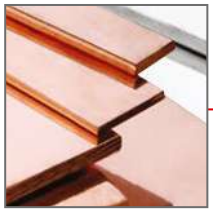


Item code	Dimensions, mm			
	a	b	c	d
ck-s / ck-s-r	13	18	34,5	13
ck-f / ck-f-r	17,5	17	32	13
ck-u-r	16	20,5	46	18

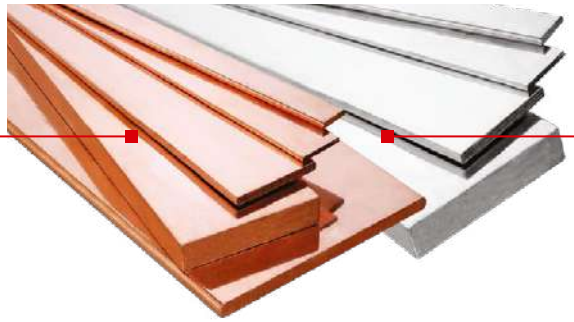
Picture	Name	Item code	
		100-pcs pack	20-pcs pack
	Clamp for conjoint link-up with pin-type busbar lateral-connected EKF	ck-s	ck-s-r
	Clamp for conjoint link-up with pin-type busbar front-connected EKF	ck-f	ck-f-r
	Clamp for conjoint link-up with pin-type busbar multidirection-connected EKF	-	ck-u-r

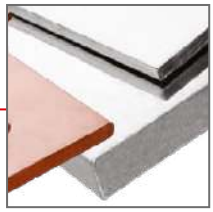
Copper and aluminum electrical busbars EKF

Electrical busbars are designed for power distribution, connection of protective devices and busbar bridging.



Space-saving





Aluminium and copper versions

APPLICATION

Busbars are commonly found in switchboards, distribution boards, substation equipment, and other power distribution systems.

TECHNICAL DATA

Continuous withstand current for rectangular busbars

Item code	Dimensions, mm	Copper busbars				Item code	Aluminum busbars			
			2	3	4		1	2	3	4
SM-3x15	15 × 3	210	–	–	–	SA-3x15	165	–	–	–
SM-3x20	20 × 3	275	–	–	–	SA-3x20	215	–	–	–
SM-4x40	40 × 4	625	- /1090	–	–	SA-4x40	480	- /855	–	–
SM-5x40	40 × 5	700/705**	- /1250	–	–	SA-5x40	540/545	- /965	–	–
SM-5x50	50 × 5	860/870	- /1525	- /1895	–	SA-5x50	665/670	- /1180	- /1470	–
SM-6x50	50 × 6	955/960	- /1700	- /2145	–	SA-5x60	740/745	- /1315	- /1655	–
SM-6x60	60 × 6	1125/1145	1740/1990	2240/2495	–	SA-6x60	870/880	1350/1555	1720/1940	–
SM-6x80	80 × 6	1480/1510	2110/2630	2720/3220	–	SA-6x80	1150/1170	1630/2055	2100/2460	–
SM-8X60	60 × 8	1320/1345	2160/2485	2790/3020	–	SA-8x60	1025/1040	1680/1840	2180/2330	–
SM-8x80	80 × 8	1690/1755	2620/3095	3370/3850	–	SA-8x80	1320/1355	2040/2400	2620/2975	–
SM-8x100	100 × 8	2080/2180	3060/3810	3930/4690	–	SA-8x100	1625/1690	2390/2945	3050/3620	–
SM-10x60	60 × 10	1475/1525	2560/2725	3300/3530	–	SA-10x60	1155/1180	2010/2110	2650/2720	–
SM-10x80	80 × 10	1900/1990	3100/3510	3990/4450	–	SA-10x80	1480/1540	2410/2735	3100/3440	–
SM-10x100	100 × 10	2310/2470	3610/4325	4650/5385	5300/6060	SA-10x100	1820/1910	2860/3350	3650/4160	4150/4400
SM-10x120	120 × 10	2650/2950	4100/5000	5200/6250	5900/6800	SA-10x120	2070/2300	3200/3900	4100/4860	4650/5200

* Number per pole or phase
** The first value is AC, the second is DC.

Copper busbars

Name	Item code
Copper busbar M1T 10x100x4000mm EKF	SM-10x100
Copper busbar M1T 10x120x4000mm EKF	SM-10x120
Copper busbar M1T 10x20x4000mm EKF	SM-10x20
Copper busbar M1T 10x30x4000mm EKF	SM-10x30
Copper busbar M1T 10x50x4000mm EKF	SM-10x50
Copper busbar M1T 10x60x4000mm EKF	SM-10x60
Copper busbar M1T 10x80x4000mm EKF	SM-10x80
Copper busbar M1T 3x15x4000mm EKF	SM-3x15
Copper busbar M1T 3x16x4000mm EKF	SM-3x16
Copper busbar M1T 3x20x4000mm EKF	SM-3x20
Copper busbar M1T 3x25x4000mm EKF	SM-3x25
Copper busbar M1T 3x30x4000mm EKF	SM-3x30
Copper busbar M1T 3x40x4000mm EKF	SM-3x40
Copper busbar M1T 4x20x4000mm EKF	SM-4x20
Copper busbar M1T 4x25x4000mm EKF	SM-4x25
Copper busbar M1T 4x30x4000mm EKF	SM-4x35
Copper busbar M1T 4x40x4000mm EKF	SM-4x40
Copper busbar M1T 5x20x4000mm EKF	SM-5x20
Copper busbar M1T 5x25x4000mm EKF	SM-5x25
Copper busbar M1T 5x30x4000mm EKF	SM-5x30
Copper busbar M1T 5x40x4000mm EKF	SM-5x40
Copper busbar M1T 5x50x4000mm EKF	SM-5x50
Copper busbar M1T 6x50x4000mm EKF	SM-6x50
Copper busbar M1T 6x60x4000mm EKF	SM-6x60
Copper busbar M1T 8x80x4000mm EKF	SM-8x80

Aluminum busbars

Name	Item code
Aluminum busbar AD31T 10x100x4000mm EKF	SA-10x100
Aluminum busbar AD31T 10x120x4000mm EKF	SA-10x120
Aluminum busbar AD31T 10x60x4000mm EKF	SA-10x60
Aluminum busbar AD31T 3x15x4000mm EKF	SA-3x15
Aluminum busbar AD31T 3x20x4000mm EKF	SA-3x20
Aluminum busbar AD31T 3x25x4000mm EKF	SA-3x25
Aluminum busbar AD31T 3x30x4000mm EKF	SA-3x30
Aluminum busbar AD31T 4x30x4000mm EKF	SA-4x30
Aluminum busbar AD31T 4x40x4000mm EKF	SA-4x40
Aluminum busbar AD31T 5x25x4000mm EKF	SA-5x25
Aluminum busbar AD31T 5x40x4000mm EKF	SA-5x40
Aluminum busbar AD31T 5x50x4000mm EKF	SA-5x50
Aluminum busbar AD31T 5x60x4000mm EKF	SA-5x60
Aluminum busbar AD31T 6x30x4000mm EKF	SA-6x30
Aluminum busbar AD31T 6x40x4000mm EKF	SA-6x40
Aluminum busbar AD31T 6x50x4000mm EKF	SA-6x50
Aluminum busbar AD31T 6x60x4000mm EKF	SA-6x60
Aluminum busbar AD31T 6x80x4000mm EKF	SA-6x80
Aluminum busbar AD31T 8x100x4000mm EKF	SA-8x100
Aluminum busbar AD31T 8x60x4000mm EKF	SA-8x60
Aluminum busbar AD31T 8x80x4000mm EKF	SA-8x80

Insulated flexible copper busbars EKF

Insulated flexible copper busbars EKF are designed for power distribution and connection of protection devices.

Reduced wiring complexity

Space-saving

APPLICATION

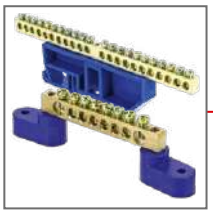
Busbars are commonly found in switchboards, distribution boards, substation equipment, and other power distribution systems.

Name	Item code
Insulated flexible copper busbar 2x15,5x0,8 EKF	SMG-3
Insulated flexible copper busbar 4x15,5x0,8 EKF	SMG-5
Insulated flexible copper busbar 2x20x1 EKF	SMG-6
Insulated flexible copper busbar 3x20x1 EKF	SMG-7
Insulated flexible copper busbar 2x24x1 EKF	SMG-8
Insulated flexible copper busbar 6x15,5x0,8 EKF	SMG-9
Insulated flexible copper busbar 10x15,5x0,8 EKF	SMG-10
Insulated flexible copper busbar 4x20x1 EKF	SMG-11
Insulated flexible copper busbar 5x20x1 EKF	SMG-12
Insulated flexible copper busbar 6x20x1 EKF	SMG-13
Insulated flexible copper busbar 3x24x1 EKF	SMG-14
Insulated flexible copper busbar 4x24x1 EKF	SMG-15
Insulated flexible copper busbar 2x32x1 EKF	SMG-16
Insulated flexible copper busbar 3x32x1 EKF	SMG-17
Insulated flexible copper busbar 2x40x1 EKF	SMG-18
Insulated flexible copper busbar 5x24x1 EKF	SMG-19
Insulated flexible copper busbar 6x24x1 EKF	SMG-20
Insulated flexible copper busbar 4x32x1 EKF	SMG-21
Insulated flexible copper busbar 3x40x1 EKF	SMG-22
Insulated flexible copper busbar 4x40x1 EKF	SMG-23
Insulated flexible copper busbar 3x50x1 EKF	SMG-24
Insulated flexible copper busbar 10x20x1 EKF	SMG-25
Insulated flexible copper busbar 8x24x1 EKF	SMG-26
Insulated flexible copper busbar 5x32x1 EKF	SMG-27
Insulated flexible copper busbar 6x32x1 EKF	SMG-28
Insulated flexible copper busbar 5x40x1 EKF	SMG-29
Insulated flexible copper busbar 4x50x1 EKF	SMG-30

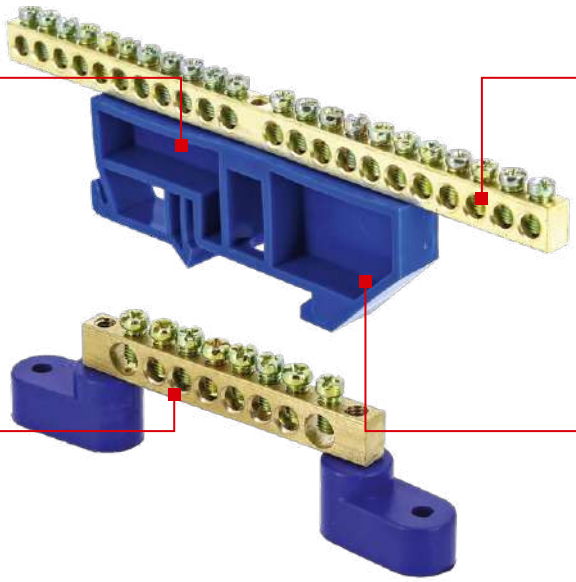
Name	Item code
Insulated flexible copper busbar 3x63x1 EKF	SMG-31
Insulated flexible copper busbar 10x24x1 EKF	SMG-32
Insulated flexible copper busbar 8x32x1 EKF	SMG-33
Insulated flexible copper busbar 6x40x1 EKF	SMG-34
Insulated flexible copper busbar 5x50x1 EKF	SMG-35
Insulated flexible copper busbar 4x63x1 EKF	SMG-36
Insulated flexible copper busbar 3x80x1 EKF	SMG-37
Insulated flexible copper busbar 10x32x1 EKF	SMG-38
Insulated flexible copper busbar 8x40x1 EKF	SMG-39
Insulated flexible copper busbar 10x40x1 EKF	SMG-40
Insulated flexible copper busbar 6x50x1 EKF	SMG-41
Insulated flexible copper busbar 8x50x1 EKF	SMG-42
Insulated flexible copper busbar 5x63x1 EKF	SMG-43
Insulated flexible copper busbar 6x63x1 EKF	SMG-44
Insulated flexible copper busbar 4x80x1 EKF	SMG-45
Insulated flexible copper busbar 5x80x1 EKF	SMG-46
Insulated flexible copper busbar 4x100x1 EKF	SMG-47
Insulated flexible copper busbar 10x50x1 EKF	SMG-48
Insulated flexible copper busbar 8x63x1 EKF	SMG-49
Insulated flexible copper busbar 6x80x1 EKF	SMG-50
Insulated flexible copper busbar 5x100x1 EKF	SMG-51
Insulated flexible copper busbar 6x100x1 EKF	SMG-52
Insulated flexible copper busbar 10x63x1 EKF	SMG-53
Insulated flexible copper busbar 8x80x1 EKF	SMG-54
Insulated flexible copper busbar 10x80x1 EKF	SMG-55
Insulated flexible copper busbar 8x100x1 EKF	SMG-56
Insulated flexible copper busbar 10x100x1 EKF	SMG-57
Insulated flexible copper busbar 12x100x1 EKF	SMG-58
Insulated flexible copper busbar 10x120x1 EKF	SMG-59
Insulated flexible copper busbar 12x120x1 EKF	SMG-60

Brass neutral busbars EKF

Neutral busbars are designed to connect neutral conductors (N busbar) and protective earthing conductor (PE busbar). The brass neutral busbars are installed on insulators (in the kit).



Wide selection of busbar sizes for perfect compatibility. Flame retardant plastic insulators



Contact part material: high-grade brass. Nickel-plated steel clamp screws

Rounded screw contact part prevents wires from shearing when tightened

Individual sticker option

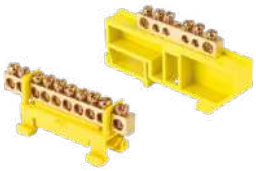
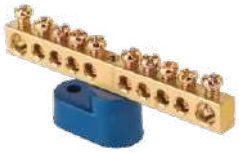
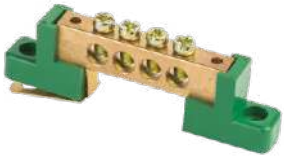
APPLICATION

- Distribution enclosures, switchgears, and control panels
- Electrical equipment and appliances.

Picture	Name	Mounting type	Number of holes	Item code (6 × 9 mm)	Item code (8 × 12 mm)
	PEN busbar	Side-fixed	4	sn0-63-04-k	sn0-125-4-k
			6	sn0-63-06-k	sn0-125-6-k
			8	sn0-63-08-k*	sn0-125-8-k
			10	sn0-63-10-k	sn0-125-10-k
			12	sn0-63-12-k	sn0-125-12-k
			14	sn0-63-14-k*	sn0-125-14-k*
			16	sn0-63-16-k	sn0-125-16-k
			18	sn0-63-18-k	sn0-125-18-k
			20	sn0-63-20-k	sn0-125-20-k
			22	sn0-63-22-k	sn0-125-22-k
			24	sn0-63-24-k	sn0-125-24-k
		Center-fixed	4	sn0-63-04*	sn0-125-4-c
			6	sn0-63-06*	sn0-125-6-c
			8	sn0-63-08*	sn0-125-8-c
			10	sn0-63-10*	sn0-125-10-c
			12	sn0-63-12*	sn0-125-12-c
			14	sn0-63-14*	sn0-125-14-c*
			16	sn0-63-16	sn0-125-16-c
			18	sn0-63-18	sn0-125-18-c
			20	sn0-63-20*	sn0-125-20-c
			22	sn0-63-22	sn0-125-22-c
			24	sn0-63-24	sn0-125-24-c

Picture	Name	Mounting type	Number of holes	Insulator color	Item code (6 × 9 mm)	Item code (8 × 12 mm)
	N busbar	DIN rail	4	Blue	sn0-63-04-d	sn0-125-4-d
			6		sn0-63-06-d*	sn0-125-6-d*
	N busbar / N busbar rack-type		8		sn0-63-08-d* / sn0-63-8-sb*	sn0-125-8-d*
			10		sn0-63-10-d* / sn0-63-10-sb*	sn0-125-10-d*
			12		sn0-63-12-d* / sn0-63-12-sb*	sn0-125-12-d*
			14		sn0-63-14-d / sn0-63-14-sb*	sn0-125-14-d

* SKU with "-r" in the item code can be ordered with individual UPS code.

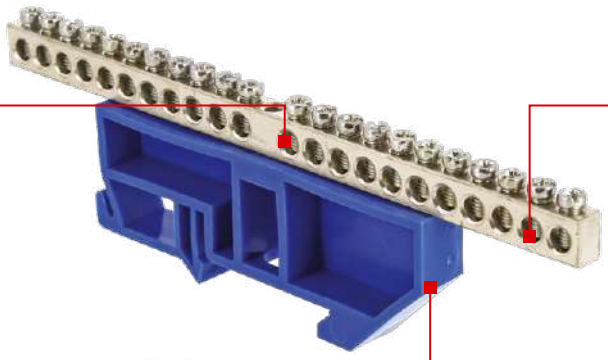
Picture	Name	Mounting type	Number of holes	Insulator color	Item code (6 × 9 mm)	Item code (8 × 12 mm)
	N busbar	DIN rail	16	Blue	sn0-63-16-d	–
			18		sn0-63-18-d	–
			20		sn0-63-20-d	–
			22		sn0-63-22-d	–
					sn0-63-24-d	–
	N busbar / PE busbar rack-type	DIN rail	4	Yellow	sn0-63-04-dz	–
			6		sn0-63-06-dz*	–
			8		sn0-63-08-dz* / sn0-63-8-sy	–
			10		sn0-63-10-dz* / sn0-63-10-sy	–
			12		sn0-63-12-dz* / sn0-63-12-sy	–
			14		sn0-63-14-dz / sn0-63-14-sy	–
	N busbar	1 angle insulator	4	Blue	sn0-63-04-1	–
			6		sn0-63-06-1	–
			8		sn0-63-08-1	–
			10		sn0-63-10-1	–
			12		sn0-63-12-1	–
					sn0-63-14-1	–
	N busbar	2 angle insulators	4		sn0-2-63-04	sn0-125-04-2
			6		sn0-2-63-06	sn0-125-06-2
			8		sn0-63-08-2*	sn0-125-08-2
			10		sn0-2-63-10	sn0-125-10-2
			12		sn0-63-12-2	sn0-125-12-2
			14		sn0-63-14-2*	sn0-125-14-2
			16		sn0-2-63-16	sn0-125-16-2
			18		sn0-2-63-18	sn0-125-18-2
			20		sn0-2-63-20	sn0-125-20-2
	PE Busbar with contact plate		4	Green	sn0-63-04-2-pe	sn0-125-04-2-pe
			6		sn0-63-06-2-pe	sn0-125-06-2-pe
			8		sn0-63-08-2-pe	sn0-125-08-2-pe
			10		sn0-63-10-2-pe	sn0-125-10-2-pe
			12		sn0-63-12-2-pe	sn0-125-12-2-pe
			14		sn0-63-14-2-pe	sn0-125-14-2-pe
			16		sn0-63-16-2-pe	sn0-125-16-2-pe
	N busbar, nylon housing	DIN rail	6	Blue	sn0-63-06-dn	sn0-125-6-dn*
			8		sn0-63-08-dn	sn0-125-8-dn*
			10		sn0-63-10-dn	sn0-125-10-dn*
			12		sn0-63-12-dn	sn0-125-12-dn*
			14		–	sn0-125-14-dn
			16		–	sn0-125-16-dn
	PE busbar, nylon housing		6	Yellow	–	sn0-125-6-dpe
			8		–	sn0-125-8-dpe
			10		–	sn0-125-10-dpe
			12		–	sn0-125-12-dpe
			14		–	sn0-125-14-dpe
			16		–	sn0-125-16-dpe
	N busbar, insulated housing		8	Blue	sn0-63-8-ib	–
			10		sn0-63-10-ib	–
			12		sn0-63-12-ib	–
	PE busbar, insulated housing		8	Green	sn0-63-8-ig*	–
			10		sn0-63-10-ig	–
			12		sn0-63-12-ig*	–
	L (phase) busbar, insulated housing		8	Grey	sn0-63-8-is	–
			10		sn0-63-10-is	–
			12		sn0-63-12-is	–

* SKU with "-r" in the item code can be ordered with individual UPS code.

Galvanized neutral busbars EKF

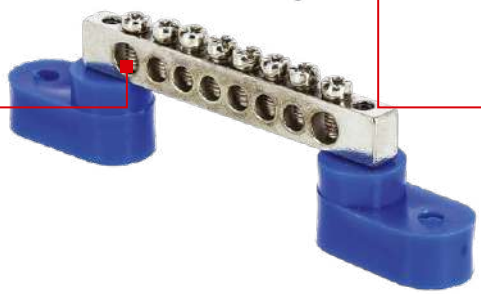
Neutral busbars are designed to connect neutral conductors (N busbar) and protective earthing conductor (PE busbar). The galvanized neutral busbars are installed on insulators (in the kit).

Rounded screw prevents wire shearing. Flame retardant plastic insulators



Galvanized steel clamp screws. Galvanized brass contact group

Galvanized coating for simultaneous connection of copper and aluminum wires



Wide selection of busbar sizes for perfect compatibility

APPLICATION

- Distribution enclosures, switchgears, and control panels
- Electrical equipment and appliances.

Picture	Name	Mounting type	Number of holes	Insulator color	Item code (6 × 9 mm)
	PEN busbar	Center-fixed	6	–	sn1-63-06
			8		sn1-63-08
			10		sn1-63-10
			12		sn1-63-12
			14		sn1-63-14
			20		sn1-63-20
			24		sn1-63-24
		Side-fixed	6		sn1-63-06-k
			8		sn1-63-08-k
			10		sn1-63-10-k
			12		sn1-63-12-k
			14		sn1-63-14-k
			16		sn1-63-16-k
			24		sn1-63-24-k
	N busbar	DIN rail	6	Blue	sn1-63-06-d
			8		sn1-63-08-d
			10		sn1-63-10-d
			12		sn1-63-12-d
			14		sn1-63-14-d
			20		sn1-63-20-d
			24		sn1-63-24-d
		1 angle insulator	8		sn1-63-08-1
			10		sn1-63-10-1
			12		sn1-63-12-1
			14		sn1-63-14-1
		2 angle insulators	6		sn1-63-06-2
			8		sn1-63-08-2
			10		sn1-63-10-2
			12		sn1-63-12-2
			14		sn1-63-14-2
			20		sn1-63-20-2
			24		sn1-63-24-2

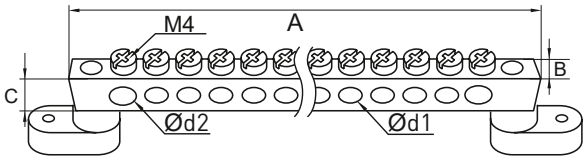
TECHNICAL DATA

Overall and installation dimensions

Parameters	Values	
	6 × 9	8 × 12
Rated current In, A	100	125
Degree of protection	IP00, IP20*	
Diameter of holes, mm; and cross-section of connected wires, mm²	Ø 4,5 x 1,5–6 Ø 6 x 2,5–16	Ø 5,2 x 1,5–10 Ø 7,5 x 6–25
Screw tightening torque, N·m	1,2	2
Operating temperature, °C	From –40 to +50 (brass) From –50 to +60 (zinc)	
Max. average relative humidity, %	90	

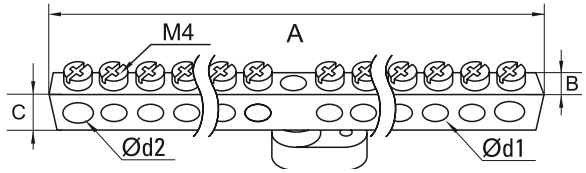
* depending on product size

Busbar with two angle insulators



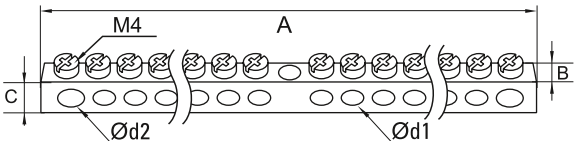
Item code		A	B	C	Ød1	Ød2
Brass	Galvanized brass					
6 x 9 busbar						
sn0-2-63-04	–	42	6	9	4,5	6
sn0-2-63-06	sn1-63-06-2	54				
sn0-63-08-2	sn1-63-08-2	66				
sn0-2-63-10	sn1-63-10-2	78				
sn0-63-12-2	sn1-63-12-2	90				
sn0-63-14-2	sn1-63-14-2	102				
sn0-2-63-16	–	114				
sn0-2-63-18	–	126				
sn0-2-63-20	sn1-63-20-2	138				
–	sn1-63-24-2	150				
–	–	162				
8 x 12 busbar						
sn0-125-04-2	–	49	8	12	5,2	7,5
sn0-125-06-2	–	63				
sn0-125-08-2	–	77				
sn0-125-10-2	–	91				
sn0-125-12-2	–	105				
sn0-125-14-2	–	119				
sn0-125-16-2	–	133				
sn0-125-18-2	–	147				
sn0-125-20-2	–	161				

Busbar with one angle insulator



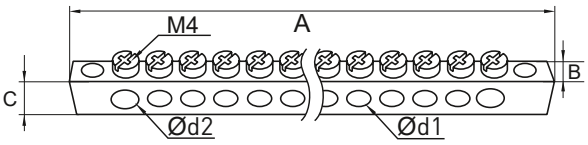
Item code		A	B	C	Ød1	Ød2
Brass	Galvanized brass					
6 x 9 busbar						
sn0-63-04-1	–	38	6	9	4,5	6
sn0-63-06-1	–	51				
sn0-63-08-1	sn1-63-08-1	64				
sn0-63-10-1	sn1-63-10-1	77				
sn0-63-12-1	sn1-63-12-1	90				
sn0-63-14-1	sn1-63-14-1	103				

Busbar without insulator, center-fixed



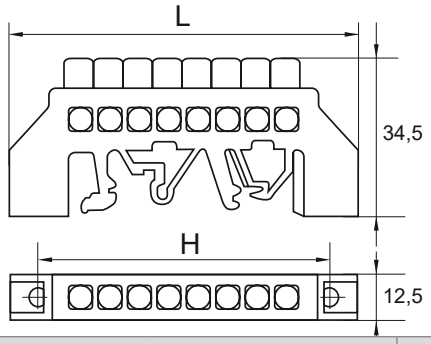
Item code		A	B	C	Ød1	Ød2
Brass	Galvanized brass					
6 x 9 busbar						
sn0-63-04	–	38	6	9	4,5	6
sn0-63-06	sn1-63-06	51				
sn0-63-08	sn1-63-08	64				
sn0-63-10	sn1-63-10	77				
sn0-63-12	sn1-63-12	90				
sn0-63-14	sn1-63-14	103				
sn0-63-16	–	116				
sn0-63-18	–	129				
sn0-63-20	sn1-63-20	142				
sn0-63-22	–	155				
sn0-63-24	sn1-63-24	168				
8 x 12 busbar						
sn0-125-4-c	–	42	8	12	5,2	7,5
sn0-125-6-c	–	57				
sn0-125-8-c	–	72				
sn0-125-10-c	–	87				
sn0-125-12-c	–	102				
sn0-125-14-c	–	117				
sn0-125-16-c	–	132				
sn0-125-18-c	–	147				
sn0-125-20-c	–	162				
sn0-125-22-c	–	177				
sn0-125-24-c	–	192				

Busbar without insulator, side-fixed



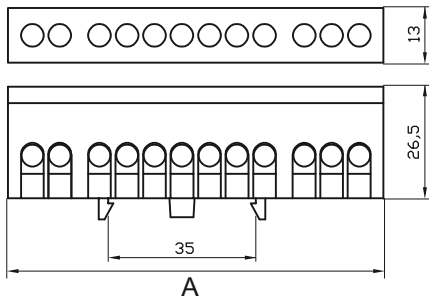
Item code		A	B	C	Ød1	Ød2
Brass	Galvanized brass					
6 x 9 busbar						
sn0-63-04-k	–	42	6	9	4,5	6
sn0-63-06-k	–	54				
sn0-63-08-k	sn1-63-08-k	66				
sn0-63-10-k	sn1-63-10-k	78				
sn0-63-12-k	sn1-63-12-k	90				
sn0-63-14-k	sn1-63-14-k	102				
sn0-63-16-k	sn1-63-16-k	114				
sn0-63-18-k	–	126				
sn0-63-20-k	–	138				
sn0-63-22-k	–	150				
sn0-63-24-k	sn1-63-24-k	162				
8 x 12 busbar						
sn0-125-4-k	–	49	8	12	5,2	7,5
sn0-125-6-k	–	63				
sn0-125-8-k	–	77				
sn0-125-10-k	–	91				
sn0-125-12-k	–	105				
sn0-125-14-k	–	119				
sn0-125-16-k	–	133				
sn0-125-18-k	–	147				
sn0-125-20-k	–	161				
sn0-125-22-k	–	175				
sn0-125-24-k	–	189				

Busbar, nylon housing



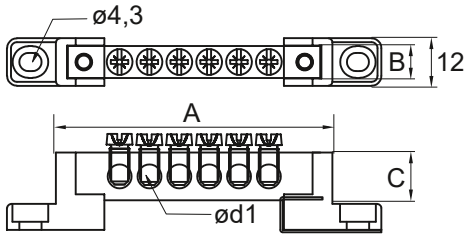
Item code		L	H
Yellow insulator	Blue insulator		
6 x 9 busbar			
–	sn0-63-06-dn	57,5	47,5
–	sn0-63-08-dn	78,2	66
–	sn0-63-10-dn	89	79
–	sn0-63-12-dn	102	92
8 x 12 busbar			
sn0-125-6-dpe	sn0-125-6-dn	78	66
sn0-125-8-dpe	sn0-125-8-dn	95	83
sn0-125-10-dpe	sn0-125-10-dn	116	92
sn0-125-12-dpe	sn0-125-12-dn	127	114
sn0-125-14-dpe	sn0-125-14-dn	144	132
sn0-125-16-dpe	sn0-125-16-dn	163	151

Busbar, insulated housing



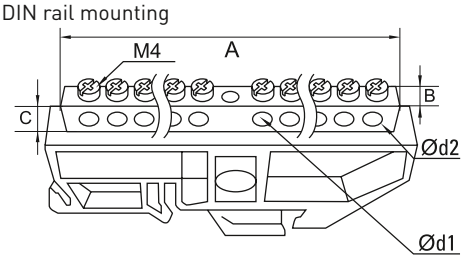
Item code			A	Brass busbar dimensions		
Grey insulator	Blue insulator	Green insulator		B	C	Ød1
6 x 9 busbar						
sn0-63-8-is	sn0-63-8-ib	sn0-63-8-ig	60	6	9	5,2
sn0-63-10-is	sn0-63-10-ib	sn0-63-10-ig	76			
sn0-63-12-is	sn0-63-12-ib	sn0-63-12-ig	89			

Busbar with contact plate



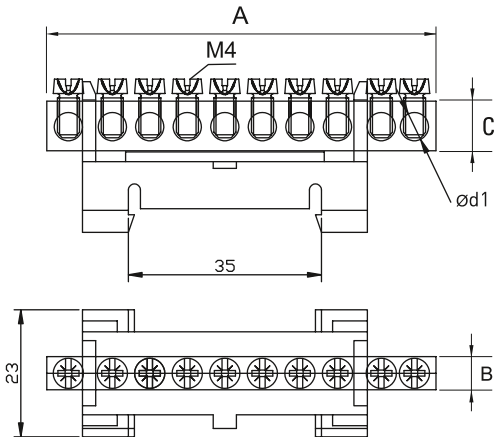
Item code	A	B	C	Ød1
Brass				
6 x 9 busbar				
sn0-63-04-2-pe	47	6	9	5,2
sn0-63-06-2-pe	59			
sn0-63-08-2-pe	67			
sn0-63-10-2-pe	83			
sn0-63-12-2-pe	91			
sn0-63-14-2-pe	103			
sn0-63-16-2-pe	119			
8 x 12 busbar				
sn0-125-04-2-pe	54	8	12	6,5
sn0-125-06-2-pe	68			
sn0-125-08-2-pe	77			
sn0-125-10-2-pe	91			
sn0-125-12-2-pe	105			
sn0-125-14-2-pe	119			
sn0-125-16-2-pe	138			

Busbar, DIN rail mounting



Item code			A	B	C	Ød1	Ød2
Brass (blue)	Brass (yellow)	Galvanized brass					
6 x 9 busbar							
sn0-63-04-d	sn0-63-04-dz	–	34	6	9	4,5	6
sn0-63-06-d	sn0-63-06-dz	sn1-63-06-d	45				
sn0-63-08-d	sn0-63-08-dz	sn1-63-08-d	58				
sn0-63-10-d	sn0-63-10-dz	sn1-63-10-d	70				
sn0-63-12-d	sn0-63-12-dz	sn1-63-12-d	82				
sn0-63-14-d	sn0-63-14-dz	sn1-63-14-d	95				
sn0-63-16-d	–	–	114				
sn0-63-18-d	–	–	126				
sn0-63-20-d	–	sn1-63-20-d	132				
sn0-63-22-d	–	–	143				
sn0-63-24-d	–	sn1-63-24-d	157				
8 x 12 busbar							
sn0-125-4-d	–	–	42	8	12	5,2	7,5
sn0-125-6-d	–	–	57				
sn0-125-8-d	–	–	72				
sn0-125-10-d	–	–	87				
sn0-125-12-d	–	–	102				
sn0-125-14-d	–	–	117				

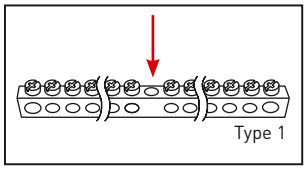
Busbar with insulator, Rack type

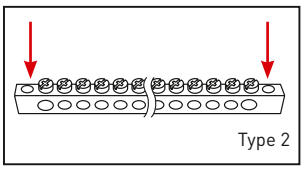


Item code		A	B	C	Ød1
blue insulator	yellow insulator				
6 x 9 busbar					
sn0-63-8-sb	sn0-63-8-sy	52	6	9	5,2
sn0-63-10-sb	sn0-63-10-sy	71			
sn0-63-12-sb	sn0-63-12-sy	84			
sn0-63-14-sb	sn0-63-14-sy	97			

Installation and operation

1. The busbars are mounted to the surface either through the busbar insulators, or directly to the enclosure panel (if used for earthing).
2. The busbars are secured through a hole in the center (type 1) or holes on both sides (type 2).
3. Before connecting stranded copper wires to the busbar, terminate them with sleeve ferrules.





Screw distribution blocks EKF

Screw distribution blocks EKF are used in electrical distribution enclosures to connect neutral (N) and protective earthing (PE) conductors, and can serve as phase conductors. You can connect an additional busbar to the 160A distribution block via the upper pole - just remove the top plastic partition.

Front cover protects from direct contact with live parts

Additional busbar for 160A distribution block available

DIN rail and mounting plate options. Flame retardant plastic housing

Electrical brass contact part. Busbar is safely secured in the block

APPLICATION

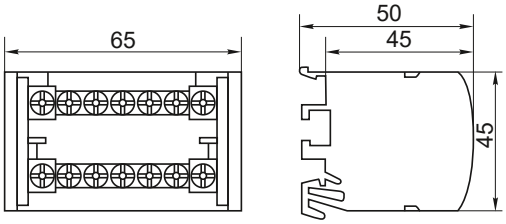
- Distribution enclosures, switchgears, and control panels
- Electrical equipment and appliances.

TECHNICAL DATA

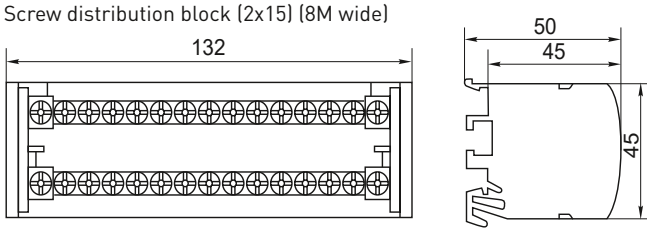
Parameters	Values							
	2 × 7	2 × 11	2 × 15	4 × 7	4 × 11	4 × 15	4 × 12	1 × 14
Rated voltage, V	400						690	–
Rated current, A	100	125	125	100	125	125	160	160
Rated peak withstand current Ipk, kA	20						35	
Cross-section of connected terminated wires, mm²	1,5–6 6–16	1,5–6 6–16 10–16	1,5–6 6–16 10–16	1,5–6 6–16	1,5–6 6–16 10–16	1,5–6 6–16 10–16	1,5–6 1,5–16 10–25 10–50	1.5–16 10–25
Cross-section of connected non-terminated wires, mm²	2,5–6 10–25	2,5–6 10–25 10–35	2,5–6 10–25 10–35	2,5–6 10–25	2,5–6 10–25 10–35	2,5–6 10–25 10–35	2,5–6 2,5–16 10–25 10–50	2.5–16 10–35
Degree of protection	IP20							
Tightening torque, N·m	3						Input – 10 Outputs – 3	3

Overall and installation dimensions

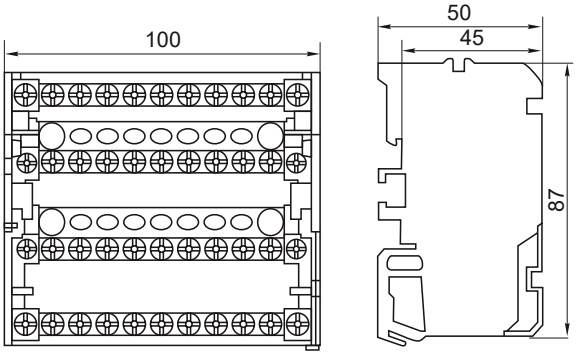
Screw distribution block (2x7) (4M wide)



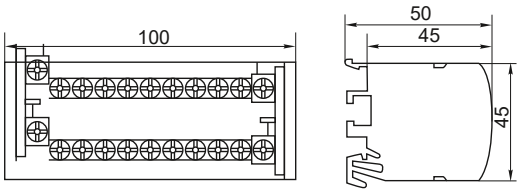
Screw distribution block (2x15) (8M wide)



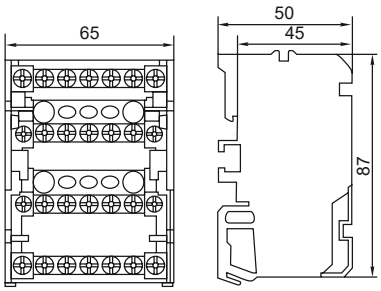
Screw distribution block (4x11) (6M wide)



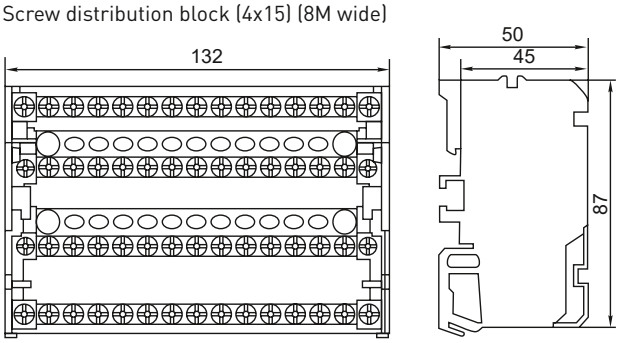
Screw distribution block (2x11) (6M wide)



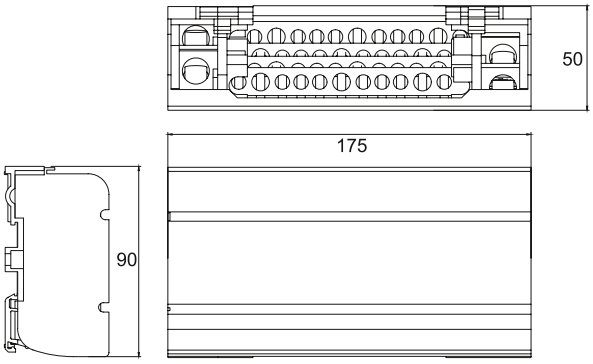
Screw distribution block (4x7) (4M wide)



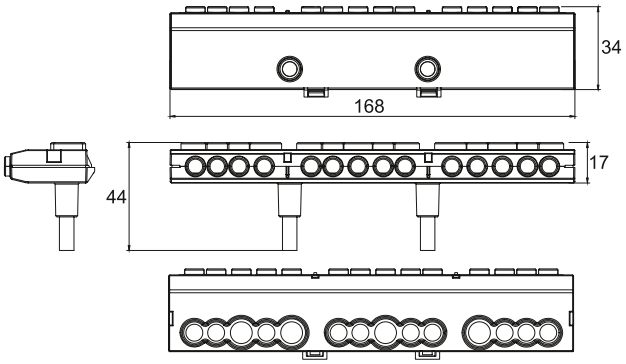
Screw distribution block (4x15) (8M wide)



Distribution block 160A 4 × 12



Additional busbar (14 holes) for distribution block (cross module) 160A



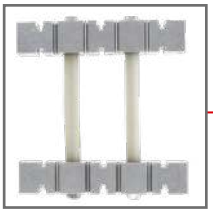
Installation and operation

Before connecting stranded copper wires to the distribution block, terminate them with sleeve ferrules.

Picture	Name	Number (pcs.) and diameter of holes (mm) in one busbar	Item code
	Screw distribution block (2x7) EKF	5 × Ø5,5; 2 × Ø7,5	sn0-2x7
	Screw distribution block (2x11) EKF	7 × Ø5,5; 2 × Ø7,5; 2 × Ø9,0	sn0-2x11
	Screw distribution block (2x15) EKF	11 × Ø5,5; 2 × Ø7,5; 2 × Ø9,0	sn0-2x15
	Screw distribution block (4x7) EKF	5 × Ø5,5; 2 × Ø7,5	sn0-4x7
	Screw distribution block (4x11) EKF	7 × Ø5,5; 2 × Ø7,5; 2 × Ø9,0	sn0-4x11
	Screw distribution block (4x15) EKF	11 × Ø5,5; 1 × Ø7,5; 3 × Ø9,0	sn0-4x15
	Distribution block (cross module) 160A (4x12) EKF	1 × Ø12; 3 × Ø8.5; 7 × Ø7.2; 1 × Ø5.5	db-160-4x12
	Additional busbar (14 holes) for distribution block (cross module) 160A EKF	4 × Ø8.5; 10 × Ø7.2	eb-160-14

Busbar insulator bridge-type EKF

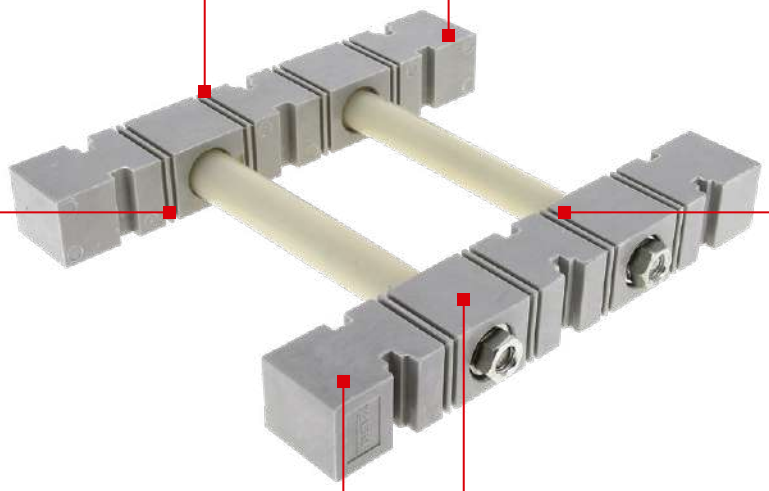
Busbar insulators bridge-type EKF are designed for installation and securing of electrical copper or aluminum busbars in distribution enclosures, for arranging and securing main busbars and their vertical branches. Three-phase insulators can secure busbars of three size versions: 5 and 10 mm on the one side and 8 mm on the other side.

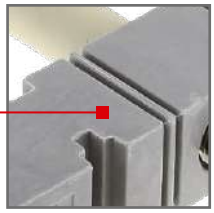


Secure and easy mounting

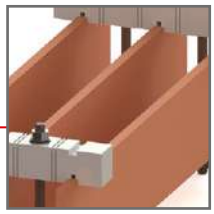
Three or two busbar sizes connected simultaneously

Complete kit for busbar system: insulators, studs, silicone insulating sleeves and metalware

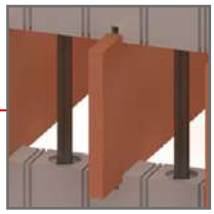




Impact resistant materials



Vertically installed busbars for better cooling



WIth adjustable distance between insulators, busbars up to 100 mm wide can be used

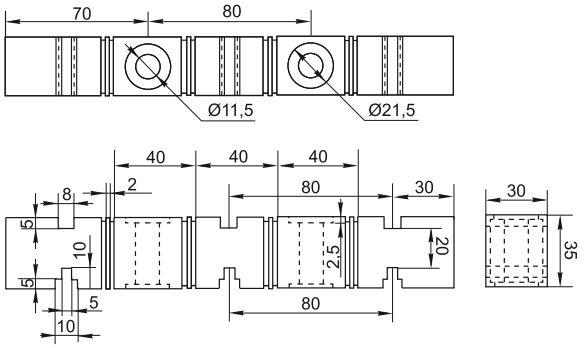
APPLICATION

Busbar insulators are commonly used in distribution enclosures and switchgears.

TECHNICAL DATA

Parameters	Values
Height of connected busbars, mm	40–100
Width of connected busbars, mm	5; 8;10
Standard busbar cross-section, mm	5 x 40; 5 x 40; 5 x 60; 5 x 100; 8 x 80; 8 x 100; 10 x 50; 10 x 50; 10 x 60; 10 x 80; 10 x100
Distance between busbars, mm	80
Mechanical shear breaking force, kN	Min. 20
Maximum current, A	2000 (through copper busbar)
Rated operating voltage, V	1000
Rated withstand voltage, kV	3,5
Rated impulse withstand voltage Uimp, kV	9
Tightening torque, N·m	20
Weight of insulator kit, kg	0,65
Operating temperature, °C	from -40 to +130

Overall and installation dimensions



Delivery scope

1. Bus insulator bridge-type EKF – 2 pcs.
2. Interconnecting stud – 2 pcs.
3. Silicone insulating sleeve – 2 pcs.
4. Metalware: nut – 4 pcs., washer – 4 pcs.
5. Technical manual.

Name	Max. operating current, A	Item code
Busbar insulator bridge-type 3F 1610S EKF	2000	plc-br-3p-1610

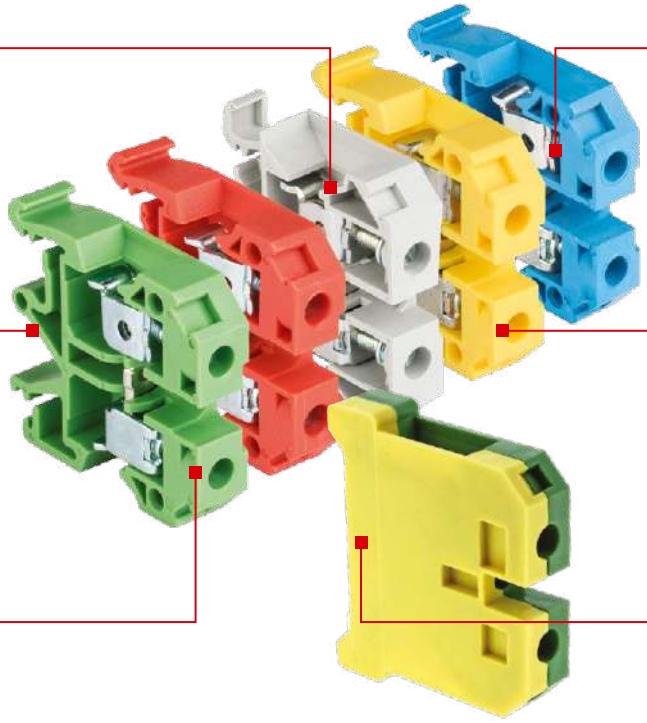
Terminal blocks JXB EKF

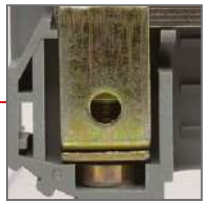
Terminal blocks JXB and EK-JXB EKF are mounted onto DIN rails in distribution enclosures for easy and safe wire connection of different cross-sections used for various applications. The wire is clamped with a screw. EKF terminal blocks are used in 50/60 Hz AC circuits.

Clamping plate for wire securing

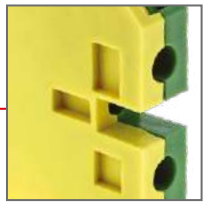
Quick and easy clamping onto DIN rail

Wide range of cross-sections (1–95 mm²), and colors





Anodized steel conductive plate



High-quality polyamide housing does not dry out or crack

DIN rail grounding for EK-JXB terminals. Secured with a central screw

APPLICATION

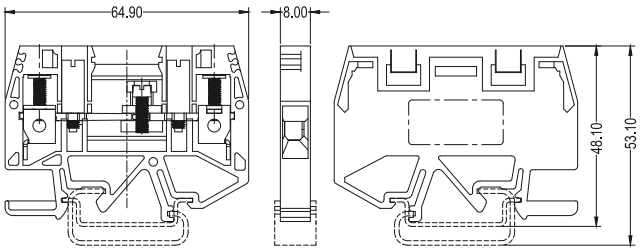
Terminal blocks are widely used in industrial control systems, electrical distribution panels and process equipment.

TECHNICAL DATA

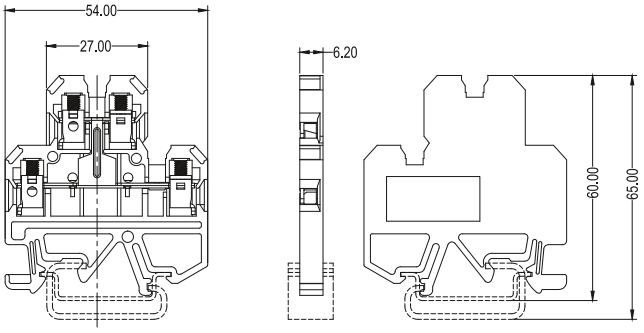
Parameters	Values
Protection degree per IEC 60529	IP20
Housing material	Polyamide 6.6
Contact material	Anodized steel
Mounting type	DIN rail, standard 35mm profile
	DIN rail, G 32mm profile
Connection	Screw
Operating temperature, °C	From -40 to +80
Number of contact sockets per level	2

Overall and installation dimensions

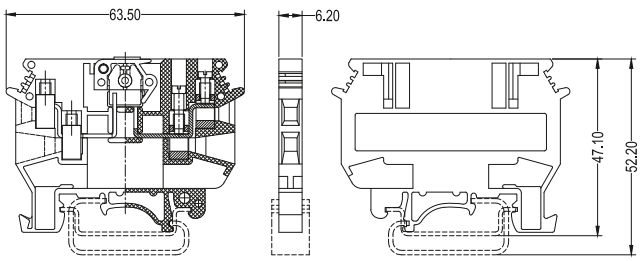
JXB-6S1/35

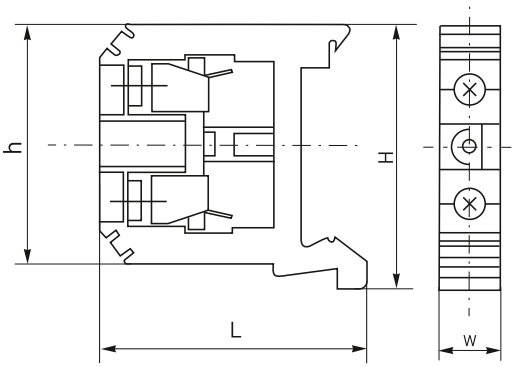


JXB-4/35, JXB-4/35L



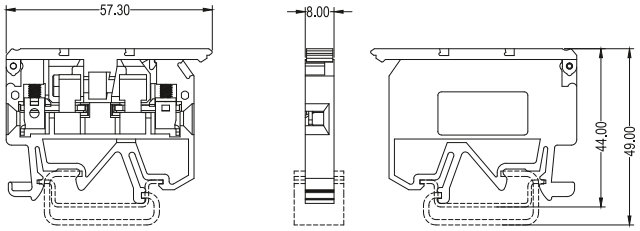
JXB-2-4/35K



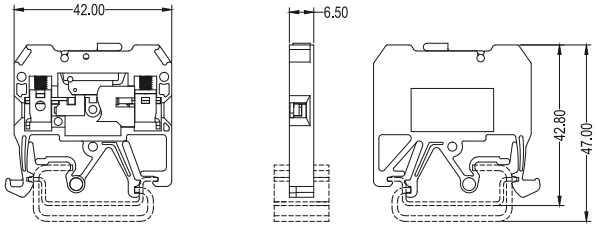


Name	Dimensions, mm			
	L	H	h	W
JXB-2,5/35	40,5	40,7	39	6,5
JXB-4/35	45	42	40	6,5
JXB-6/35	45	42	40	8
JXB-10/35	45	42	40	10
JXB-16/35	51,5	50	50	12
JXB-35/35	62	59	59	18
JXB-70/35	78	75	75	22
JXB-95/35	91	89	83,5	26
EK-JXB-2,5	39	57	39	6,2
EK-JXB-4	47	57	40,5	7
EK-JXB-6	47	58	40,5	8
EK-JXB-10	47	57	40,5	10
EK-JXB-16	51	57	50,5	12
EK-JXB-35	60	58,5	58,5	18
EK-JXB-70	81	75,5	75,5	22

JXB-2-4/35RD



JXB-4/35K



Delivery scope

1. JXB terminal block (50/40/10 pieces per pack).
2. Set of markers.
3. Side cover for EK-JXB terminal blocks.

Picture	Name	Cross-section, mm²	Rated AC voltage, V	Rated current, A	Cross-section of stranded wire, mm²	Stripping length, mm	Tightening torque, N·m	Color	Number of levels	PE connection	Item code
	Terminal block JXB-2.5/35 EKF	2,5	800	25	1–2,5	10	0,4	Grey	1	N/A	plc-jxb-2.4/35gy
	Terminal block JXB-4/35 EKF	4		35	2–4	10	0,5				plc-jxb-4/35gy
	Terminal block JXB-6/35 EKF	6		50	4–6	12	0,8				plc-jxb-6/35gy
	Terminal block JXB-10/35 EKF	10		70	6–10	12	1,2				plc-jxb-10/35gy
	Terminal block JXB-16/35 EKF	16		90	10–16	14	1,2				plc-jxb-16/35gy
	Terminal block JXB-35/35 EKF	35		125	16–35	18	2,5				plc-jxb-35/35gy
	Terminal block JXB-70/35 EKF	70		250	35–70	25	6 - 10				plc-jxb-70/35gy
	Terminal block JXB-95/35 EKF	95		330	50–95	25	6 - 10				plc-jxb-95/35gy
	Terminal block EK-JXB-2,5 ground EKF	2,5		–	1–2,5	10	0,4	Yellow-green		Available	plc-ek-2.5/25
	Terminal block EK-JXB-4 ground EKF	4		–	2,5–4	10	0,5				plc-ek-4/32
	Terminal block EK-JXB-6 ground EKF	6		–	4–6	12	0,8				plc-ek-6/40
	Terminal block EK-JXB-10 ground EKF	10		–	6–10	12	1,2				plc-ek-10/63
	Terminal block EK-JXB-16 ground EKF	16		–	10–16	14	1,2				plc-ek-16/80
	Terminal block EK-JXB-35 ground EKF	35		–	16–35	18	2,5				plc-ek-35/125
	Terminal block EK-JXB-70 ground EKF	70		–	35–70	25	6 - 10				plc-ek-70/200

Picture	Name	Cross-section, mm²	Rated AC voltage, V	Rated current, A	Cross-section of stranded wire, mm²	Stripping length, mm	Tightening torque, N·m	Color	Number of levels	PE connection	Item code
	Terminal block JXB-2.5/35 EKF	2,5	800	25	1–2,5	10	0,4	Yellow	1	N/A	plc-jxb-2.5/35y
	Terminal block JXB-4/35 EKF	4		35	2–4	10	0,5				plc-jxb-4/35y
	Terminal block JXB-6/35 EKF	6		50	4–6	12	0,8				plc-jxb-6/35y
	Terminal block JXB-10/35 EKF	10		70	6–10	12	1,2				plc-jxb-10/35y
	Terminal block JXB-16/35 EKF	16		90	10–16	14	1,2				plc-jxb-16/35y
	Terminal block JXB-2.5/35 EKF	2,5		25	1–2,5	10	0,4	Green			plc-jxb-2.5/35gn
	Terminal block JXB-4/35 EKF	4		35	2–4	10	0,5				plc-jxb-4/35gn
	Terminal block JXB-6/35 EKF	6		50	4–6	12	0,8				plc-jxb-6/35gn
	Terminal block JXB-10/35 EKF	10		70	6–10	12	1,2				plc-jxb-10/35gn
	Terminal block JXB-16/35 EKF	16		90	10–16	14	1,2				plc-jxb-16/35gn
	Terminal block JXB-2.5/35 EKF	2,5		25	1–2,5	10	0,4	Red			plc-jxb-2.5/35r
	Terminal block JXB-4/35 EKF	4		35	2–4	10	0,5				plc-jxb-4/35r
	Terminal block JXB-6/35 EKF	6		50	4–6	12	0,8				plc-jxb-6/35r
	Terminal block JXB-10/35 EKF	10		70	6–10	12	1,2				plc-jxb-10/35r
	Terminal block JXB-16/35 EKF	16		90	10–16	14	1,2				plc-jxb-16/35r
	Terminal block JXB-2.5/35 EKF	2,5		25	1–2,5	10	0,4	Blue			plc-jxb-2.5/35b
	Terminal block JXB-4/35 EKF	4		35	2–4	10	0,5				plc-jxb-4/35b
	Terminal block JXB-6/35 EKF	6		50	4–6	12	0,8				plc-jxb-6/35b
	Terminal block JXB-10/35 EKF	10		70	6–10	12	1,2				plc-jxb-10/35b
	Terminal block JXB-16/35 EKF	16		90	10–16	14	1,2				plc-jxb-16/35b
	Terminal block JXB-35/35 EKF	35		125	16–35	18	2,5				plc-jxb-35/35b
	Terminal block JXB-70/35 EKF	70		250	35–70	25	6 - 10				plc-jxb-70/35b
	Terminal block JXB-95/35 EKF	95		330	50–95	25	6 - 10				plc-jxb-95/35 b

JXB special terminal blocks

JXB blocks for fuse links feature common 5x20mm fuses and can be used both in DC and AC circuits. Measuring terminal blocks type K with knife disconnect enable measurements in the circuit. Circuit must be switched only when voltage is disconnected. Knife disconnect terminal blocks feature a bright orange plastic base and are 90° opened. Measuring terminal blocks JXB-6S1 with a movable module, used as a switch, can withstand the maximum operating current through the contact plate. Use a slotted screwdriver to remove the screw and move the sliding part freely to ensure visible disconnection. Each block side has a test socket used to form a test connection with no need to stop system for measurements.

Picture	Name	Cross-section, mm²	Rated AC voltage, V	Rated current, A	Cross-section of stranded wire, mm²	Stripping length, mm	Tightening torque, N·m	Color	Number of levels	Item code
	Double terminal block JXB-4/35 grey EKF	4	500	32	0,2–4	10	0,5	Grey	2	plc-jxb-2-4/35gy
	Double terminal block JXB-4/35 type L with bridge grey EKF			32	0,2–4	10	0,5			plc-jxb-2-4/35Lgy
	Terminal block JXB-4/35RD for fuse link 5x20mm grey EKF			0,5-20*	0,2–4	10	0,5		1	plc-jxb-4/35RDgy
	Terminal block JXB-4/35 type K grey EKF		400	16	0,2–4	10	0,5			plc-jxb-4/35K
	Terminal block JXB-2-4/35 type K 4 outputs grey EKF		500	16	0,2–4	10	0,5		1	plc-jxb-2-4/35Kgy
	Measuring terminal block JXB-6S1/35 grey EKF	6		41	0,5–6	12	0,8		1	plc-jxb-6S1/35gy

* Depends on the fuse rating.

Accessories compatibility table

Name	Color	Item code			
		End cover	Bridge 2PIN	Bridge 3PIN	Bridge 10PIN
Terminal block JXB-2,5/35 EKF	Grey	sak-2.5-35	plc-per-2PIN-2,5	plc-per-3PIN-2,5	plc-per-10PIN-2,5
Terminal block JXB-4/35 EKF		sak-4-35	plc-per-2PIN-4	plc-per-3PIN-4	plc-per-10PIN-4
Terminal block JXB-6/35 EKF		sak-4-35	plc-per-2PIN-6	plc-per-3PIN-6	plc-per-6PIN-6
Terminal block JXB-10/35 EKF		sak-4-35	plc-per-2PIN-10	plc-per-3PIN-10	plc-per-10PIN-10
Terminal block JXB-16/35 EKF		sak-16-35	plc-per-2PIN-16	plc-per-3PIN-16	plc-per-10PIN-16
Terminal block JXB-35/35 EKF		sak-35-35	plc-per-2PIN-35	plc-per-3PIN-35	plc-per-10PIN-35
Terminal block JXB-70/35 EKF		sak-70-35	–	–	–
Terminal block JXB-2,5/35 EKF	Yellow	sak-2.5-35	plc-per-2PIN-2,5	plc-per-3PIN-2,5	plc-per-10PIN-2,5
Terminal block JXB-4/35 EKF		sak-4-35	plc-per-2PIN-4	plc-per-3PIN-4	plc-per-10PIN-4
Terminal block JXB-6/35 EKF		sak-4-35	plc-per-2PIN-6	plc-per-3PIN-6	plc-per-6PIN-6
Terminal block JXB-10/35 EKF		sak-4-35	plc-per-2PIN-10	plc-per-3PIN-10	plc-per-10PIN-10
Terminal block JXB-16/35 EKF		sak-16-35	plc-per-2PIN-16	plc-per-3PIN-16	plc-per-10PIN-16
Terminal block JXB-2,5/35 EKF	Green	sak-2.5-35	plc-per-2PIN-2,5	plc-per-3PIN-2,5	plc-per-10PIN-2,5
Terminal block JXB-4/35 EKF		sak-4-35	plc-per-2PIN-4	plc-per-3PIN-4	plc-per-10PIN-4
Terminal block JXB-6/35 EKF		sak-4-35	plc-per-2PIN-6	plc-per-3PIN-6	plc-per-6PIN-6
Terminal block JXB-10/35 EKF		sak-4-35	plc-per-2PIN-10	plc-per-3PIN-10	plc-per-10PIN-10
Terminal block JXB-16/35 EKF		sak-16-35	plc-per-2PIN-16	plc-per-3PIN-16	plc-per-10PIN-16
Terminal block JXB-2,5/35 EKF	Red	sak-2.5-35	plc-per-2PIN-2,5	plc-per-3PIN-2,5	plc-per-10PIN-2,5
Terminal block JXB-4/35 EKF		sak-4-35	plc-per-2PIN-4	plc-per-3PIN-4	plc-per-10PIN-4
Terminal block JXB-6/35 EKF		sak-4-35	plc-per-2PIN-6	plc-per-3PIN-6	plc-per-6PIN-6
Terminal block JXB-10/35 EKF		sak-4-35	plc-per-2PIN-10	plc-per-3PIN-10	plc-per-10PIN-10
Terminal block JXB-16/35 EKF		sak-16-35	plc-per-2PIN-16	plc-per-3PIN-16	plc-per-10PIN-16
Terminal block JXB-2,5/35 EKF	Blue	sak-2.5-35b	plc-per-2PIN-2,5	plc-per-3PIN-2,5	plc-per-10PIN-2,5
Terminal block JXB-4/35 EKF		sak-4-35b	plc-per-2PIN-4	plc-per-3PIN-4	plc-per-10PIN-4
Terminal block JXB-6/35 EKF		sak-4-35b	plc-per-2PIN-6	plc-per-3PIN-6	plc-per-6PIN-6
Terminal block JXB-10/35 EKF		sak-4-35b	plc-per-2PIN-10	plc-per-3PIN-10	plc-per-10PIN-10
Terminal block JXB-16/35 EKF		sak-16-35b	plc-per-2PIN-16	plc-per-3PIN-16	plc-per-10PIN-16
Terminal block JXB-35/35 EKF		sak-35-35b	plc-per-2PIN-35	plc-per-3PIN-35	plc-per-10PIN-35
Terminal block JXB-70/35 EKF		sak-70-35b	–	–	–
Double terminal block JXB-4/35 grey EKF	Grey	sak-2-4-35	–	–	–
Double terminal block JXB-4/35 type L with bridge EKF		sak-2-4-35	–	–	–
Terminal block JXB-4/35RD for fuse link 5x20mm EKF		sak-4-35RD	–	–	–
Terminal block JXB-4/35 type K EKF		sak-4/35Kgy	–	–	–
Terminal block JXB-2-4/35 type K 4 outputs EKF		sak-2-4-35K	–	–	–
Measuring terminal block JXB-6S1/35 EKF		sak-6S1-35	–	–	–

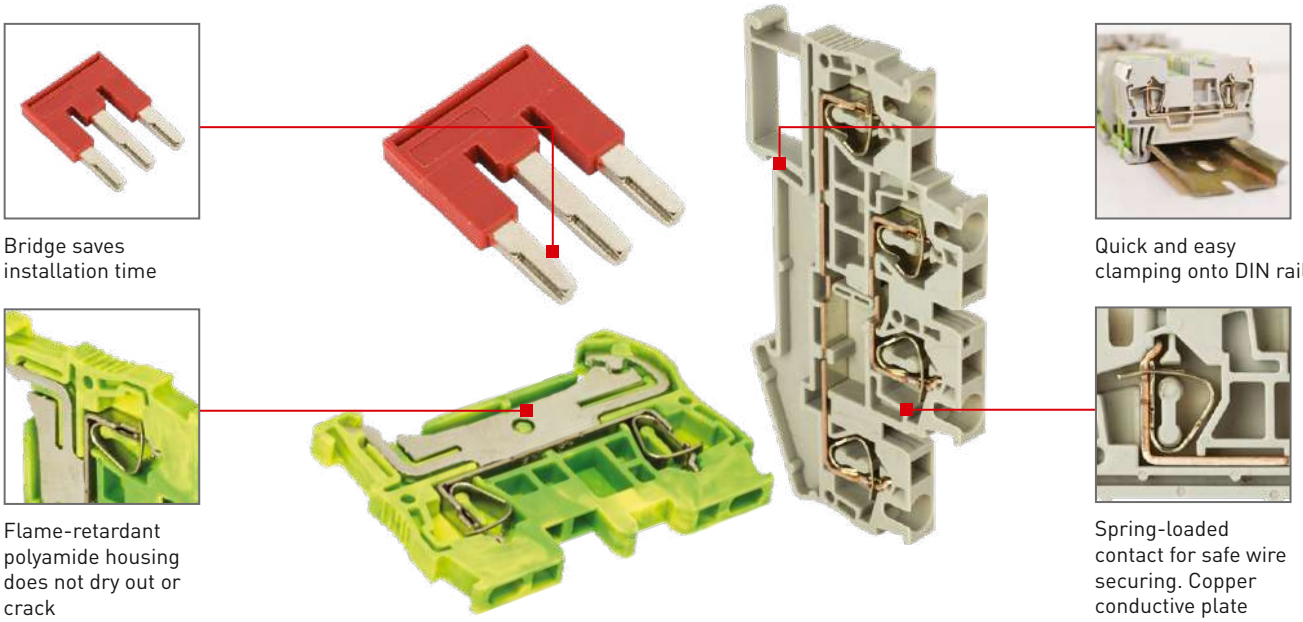
Accessories for EKF terminal blocks

Picture	Name	Item code
	Markers for terminal block JXB without numbers (500 pcs.) EKF	dek-35-0
	Markers for terminal block JXB with numbers 1-10 (100 pcs.) EKF	dek-35-1-10
	Markers for terminal block JXB with numbers 1-50 (100 pcs.) EKF	dek-35-1-50
	Markers for terminal block JXB with characters "A, B, C, N, PE" (100 pcs.) EKF	dek-35-A-PE
	Markers for terminal block JXB with characters "L1, L2, L3, N, PE" (100 pcs.) EKF	dek-35-L-1-3

Picture	Name	Item code
	Marking holder for terminal block EKF	ahdw-2-38
	DIN rail clamp HDW-211 1 screw EKF	ahdw-211
	DIN rail clamp HDW-201 2 screws EKF	ahdw-201
	DIN rail plastic clamp EW 1 screw EKF	ahdw-ew
	DIN rail screw stopper EKF	eb-01-18

Spring-clamp terminal blocks JXB-ST EKF

Spring-clamp terminal blocks JXB-ST EKF are installed onto 35 mm DIN rails in electrical enclosures for connecting and branching phase, neutral and grounding conductors of various cross-sections. Spring-loaded contacts enable screwless wire connection - just push in the spring on the terminal top with a screwdriver and insert the wire. JXB-ST are designed for use in 50/60 Hz AC electrical circuits with voltage up to 800 V.



Bridge saves installation time

Quick and easy clamping onto DIN rail

Flame-retardant polyamide housing does not dry out or crack

Spring-loaded contact for safe wire securing. Copper conductive plate

APPLICATION

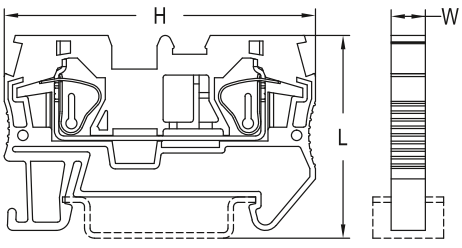
Terminal blocks are widely used in industrial control systems, electrical distribution panels and process equipment.

TECHNICAL DATA

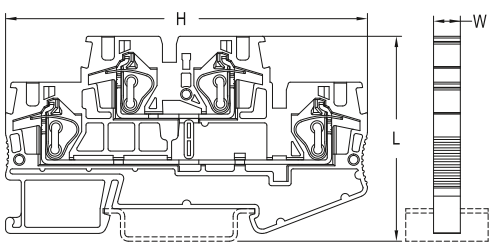
Parameters	Values
Rated AC voltage, V	800
Degree of protection per IEC 60529	IP20
Housing material	Polyamide 6.6
Contact part material	Copper
Mounting type	DIN rail, standard 35mm profile
Connection type	Spring
Operating temperature, °C	From -40 to +80

Overall and installation dimensions

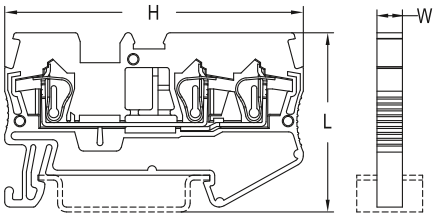
JXB-ST, 2 outputs



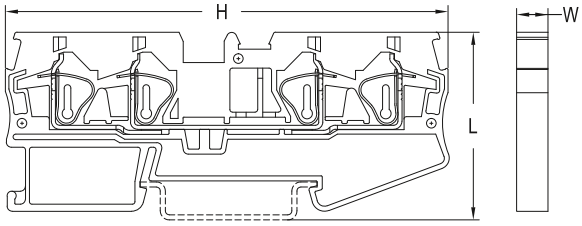
Double JXB-ST



JXB-ST 3, outputs



JXB-ST, 4 outputs



Name	Dimensions, mm		
	L	H	W
JXB-ST-1,5 / JXB-ST-1,5 ground	36,9	48,9	4,2
JXB-ST-2,5 / JXB-ST-2,5 ground	36,9	48,9	5,2
JXB-ST-4 / JXB-ST-4 ground	36,9	56,4	6,2
JXB-ST-6 / JXB-ST-6 ground	44,2	70,3	8,2
JXB-ST-1,5 3 outputs / JXB-ST-1,5 3 outputs ground	36,5	60,8	4,2
JXB-ST-2,5 3 outputs / JXB-ST-2,5 3 outputs ground	36,5	60,8	5,2
Double JXB-ST-1.5	47,5	67,5	4,2
Double JXB-ST-2,5	49,2	67,5	5,2
Double JXB-ST-4	47,5	83,5	6,2
JXB-ST-1.5 4 outputs	36,5	72,6	4,2
JXB-ST-2,5 4 outputs	36,5	72,6	5,2
JXB-ST-4 4 outputs	36,5	87,5	6,2

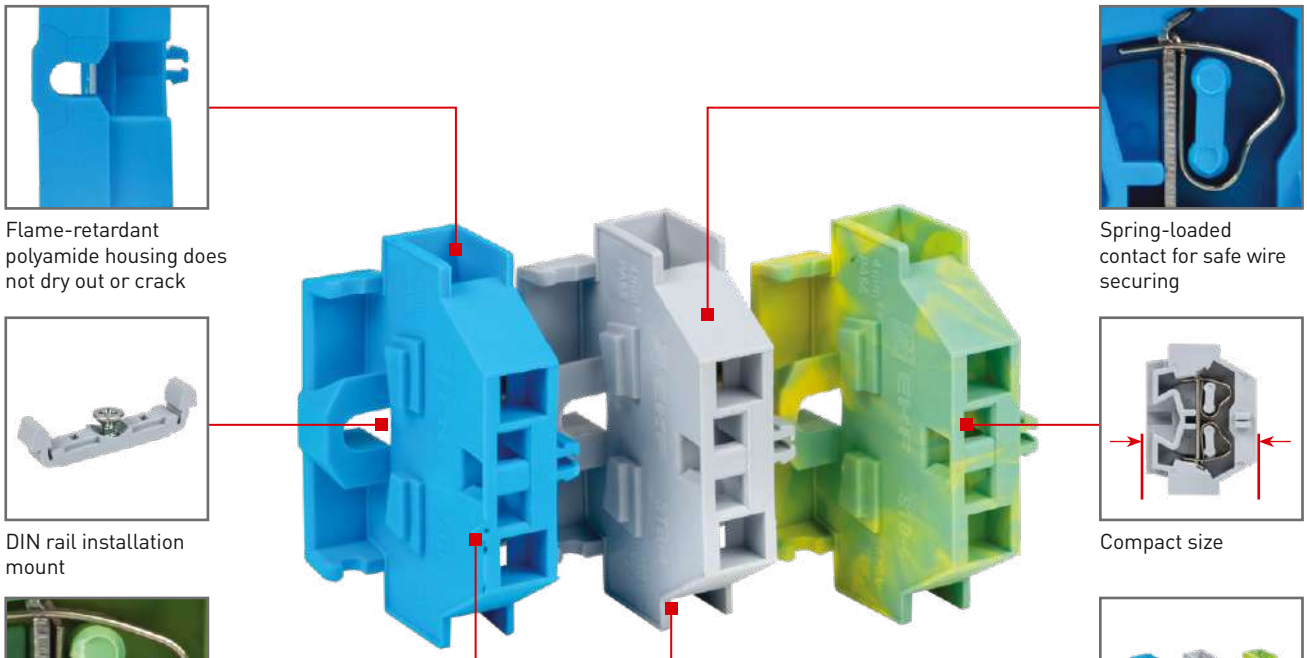
Picture	Name	Cross-section, mm²	Rated current, A	Cross-section of solid wire, mm²	Cross-section of stranded wire, mm²	Stripping length, mm	Number of levels	Color	PE connection	Number of contact sockets	Item code
	Terminal block (spring clamp) JXB-ST-1.5 17,5A EKF	1,5	17,5	0,14–2,5	0,14–1,5	10	1	Grey	N/A	2	plc-jxb-st-1.5
	Terminal block (spring clamp) JXB-ST-2.5 31A EKF	2,5	31	0,2–4	0,2–2,5	10					plc-jxb-st-2.5
	Terminal block (spring clamp) JXB-ST-4 41A EKF	4	41	0,5–6	0,5–4	12					plc-jxb-st-4
	Terminal block (spring clamp) JXB-ST-6 57A EKF	6	57	0,5–10	0,5–6	13					plc-jxb-st-6
	Terminal block (spring clamp) JXB-ST-1.5 17,5A EKF	1,5	17,5	0,14–2,5	0,14–1,5	10	1	Blue	N/A	2	plc-jxb-st-1.5 blue
	Terminal block (spring clamp) JXB-ST-2.5 31A EKF	2,5	31	0,2–4	0,2–2,5	10					plc-jxb-st-2.5 blue
	Terminal block (spring clamp) JXB-ST-4 41A EKF	4	41	0,5–6	0,5–4	12					plc-jxb-st-4 blue
	Terminal block (spring clamp) JXB-ST-6 57A EKF	6	57	0,5–10	0,5–6	13					plc-jxb-st-6
	Terminal block (spring clamp) JXB-ST-1.5 ground EKF	1,5	–	0,14-2,5	0,14-1,5	10	1	Yellow-green	Available	2	plc-jxb-st-1.5-pen
	Terminal block (spring clamp) JXB-ST-2.5 ground EKF	2,5	–	0,2-4	0,2-2,5	10					plc-jxb-st-2.5-pen
	Terminal block (spring clamp) JXB-ST-4 ground EKF	4	–	0,5-6	0,5-4	12					plc-jxb-st-4-pen
	Terminal block (spring clamp) JXB-ST-6 ground EKF	6	–	0,5-10	0,5-6	13					plc-jxb-st-6-pen
	Terminal block (spring clamp) JXB-ST-1.5 17,5A 3 outputs grey EKF	1,5	17,5	0,14-2,5	0,14-1,5	10		Grey	N/A	3	plc-jxb-st-1.5-3
	Terminal block (spring clamp) JXB-ST-2.5 31A 3 outputs grey EKF	2,5	31	0,2-4	0,2-2,5	10					plc-jxb-st-2.5-3
	Terminal block (spring clamp) JXB-ST-1.5 3 outputs ground EKF	1,5	–	0,14-2,5	0,14-1,5	10		Yellow-green	Available		plc-jxb-st-1.5-3-pen
	Terminal block (spring clamp) JXB-ST-2.5 3 outputs ground EKF	2,5	–	0,2-4	0,2-2,5	10					plc-jxb-st-2.5-3-pen
	Terminal block (spring clamp) double JXB-ST-1.5 17,5A grey EKF	1,5	17,5	0,14-2,5	0,14-1,5	10	2	Grey	N/A	2	plc-jxb-st-1.5-4-2
	Terminal block (spring clamp) double JXB-ST-2.5 17,5A EKF	2,5	31	0,2-4	0,2-2,5	10					plc-jxb-st-2.5-4-2
	Terminal block (spring clamp) double JXB-ST-4 32A EKF	4	41	0,5-6	0,5-4	12					plc-jxb-st-4-4-2
	Terminal block (spring clamp) JXB-ST-1.5 17.5A 4 outputs EKF	1,5	17,5	0,14-2,5	0,14-1,5	10	1	Grey	N/A	4	plc-jxb-st-1.5-4
	Terminal block (spring clamp) JXB-ST-2.5 31A 4 outputs EKF	2,5	31	0,2-4	0,2-2,5	10					plc-jxb-st-2.5-4
	Terminal block (spring clamp) JXB-ST-4 41A 4 outputs EKF	4	41	0,5-6	0,5-4	12					plc-jxb-st-4-4

Accessories compatibility chart

Name	Color	Item code														
		End cover	Bridge 2PIN (red)	Bridge 3PIN (red)	Markers without numbers (500 pcs.)	Markers with numbers 1–50 (100 pcs.)	Markers with numbers 50–100 (100 pcs.)	Markers with numbers 100–150 (100 pcs.)	Markers with numbers 150–200 (100 pcs.)	Markers with characters A, B, C, N, PE (100 pcs.)	Markers with characters L1, L2, L3, N, PE (100 pcs.)	Marking holder for terminal block	DIN rail clamp, 1 screw	DIN rail clamp, 2 screws	Plastic DIN rail clamp, 1 screw
JXB-ST-1,5	Grey	sak-st-1.5/2.5	plc-per-st-2PIN-1.5	plc-per-st-3PIN-1.5	zb-st-1.5-0	zb-st-1.5-1-50	zb-st-1.5-50-100	zb-st-1.5-100-150	zb-st-1.5-150-200	zb-st-1.5-A-PE	zb-st-1.5-L-1-3	ahdw-2-38	ahdw-211	ahdw-201	ahdw-ew
JXB-ST-2,5			plc-per-st-2PIN-2.5	plc-per-st-3PIN-2.5	zb-st-2.5-0	zb-st-2.5-1-50	zb-st-2.5-50-100	zb-st-2.5-100-150	zb-st-2.5-150-200	zb-st-2.5-A-PE	zb-st-2.5-L-1-3				
JXB-ST-4		sak-st-4	plc-per-st-2PIN-4	plc-per-st-3PIN-4	zb-st-4-0	zb-st-4-1-50	zb-st-4-50-100	zb-st-4-100-150	zb-st-4-150-200	zb-st-4-A-PE	zb-st-4-L-1-3				
JXB-ST-6		sak-st-6	–		zb-st-6-0	zb-st-6-1-50	zb-st-6-50-100	zb-st-6-100-150	zb-st-6-150-200	zb-st-6-A-PE	zb-st-6-L-1-3				
JXB-ST-1,5	Blue	sak-st-1.5/2.5-blue	plc-per-st-2PIN-1.5	plc-per-st-3PIN-1.5	zb-st-1.5-0	zb-st-1.5-1-50	zb-st-1.5-50-100	zb-st-1.5-100-150	zb-st-1.5-150-200	zb-st-1.5-A-PE	zb-st-1.5-L-1-3				
JXB-ST-2,5			plc-per-st-2PIN-2.5	plc-per-st-3PIN-2.5	zb-st-2.5-0	zb-st-2.5-1-50	zb-st-2.5-50-100	zb-st-2.5-100-150	zb-st-2.5-150-200	zb-st-2.5-A-PE	zb-st-2.5-L-1-3				
JXB-ST-4		sak-st-4-blue	plc-per-st-2PIN-4	plc-per-st-3PIN-4	zb-st-4-0	zb-st-4-1-50	zb-st-4-50-100	zb-st-4-100-150	zb-st-4-150-200	zb-st-4-A-PE	zb-st-4-L-1-3				
JXB-ST-6		sak-st-6-blue	–		zb-st-6-0	zb-st-6-1-50	zb-st-6-50-100	zb-st-6-100-150	zb-st-6-150-200	zb-st-6-A-PE	zb-st-6-L-1-3				
JXB-ST-1,5 ground	Yellow-green	sak-st-1.5/2.5-pen	plc-per-st-2PIN-1.5	plc-per-st-3PIN-1.5	zb-st-1.5-0	zb-st-1.5-1-50	zb-st-1.5-50-100	zb-st-1.5-100-150	zb-st-1.5-150-200	zb-st-1.5-A-PE	zb-st-1.5-L-1-3				
JXB-ST-2,5 ground			plc-per-st-2PIN-2.5	plc-per-st-3PIN-2.5	zb-st-2.5-0	zb-st-2.5-1-50	zb-st-2.5-50-100	zb-st-2.5-100-150	zb-st-2.5-150-200	zb-st-2.5-A-PE	zb-st-2.5-L-1-3				
JXB-ST-4 ground		sak-st-4-pen	plc-per-st-2PIN-4	plc-per-st-3PIN-4	zb-st-4-0	zb-st-4-1-50	zb-st-4-50-100	zb-st-4-100-150	zb-st-4-150-200	zb-st-4-A-PE	zb-st-4-L-1-3				
JXB-ST-6 ground		sak-st-6-pen	–		zb-st-6-0	zb-st-6-1-50	zb-st-6-50-100	zb-st-6-100-150	zb-st-6-150-200	zb-st-6-A-PE	zb-st-6-L-1-3				
JXB-ST-1,5 3 outputs	Grey	sak-st-1.5/2.5-3	plc-per-st-2PIN-1.5	plc-per-st-3PIN-1.5	zb-st-1.5-0	zb-st-1.5-1-50	zb-st-1.5-50-100	zb-st-1.5-100-150	zb-st-1.5-150-200	zb-st-1.5-A-PE	zb-st-1.5-L-1-3				
JXB-ST-2,5 3 outputs			plc-per-st-2PIN-2.5	plc-per-st-3PIN-2.5	zb-st-2.5-0	zb-st-2.5-1-50	zb-st-2.5-50-100	zb-st-2.5-100-150	zb-st-2.5-150-200	zb-st-2.5-A-PE	zb-st-2.5-L-1-3				
JXB-ST-1,5 ground 3 outputs	Yellow-green	sak-st-1.5/2.5-3-pen	plc-per-st-2PIN-1.5	plc-per-st-3PIN-1.5	zb-st-1.5-0	zb-st-1.5-1-50	zb-st-1.5-50-100	zb-st-1.5-100-150	zb-st-1.5-150-200	zb-st-1.5-A-PE	zb-st-1.5-L-1-3				
JXB-ST-2,5 ground 3 outputs			plc-per-st-2PIN-2.5	plc-per-st-3PIN-2.5	zb-st-2.5-0	zb-st-2.5-1-50	zb-st-2.5-50-100	zb-st-2.5-100-150	zb-st-2.5-150-200	zb-st-2.5-A-PE	zb-st-2.5-L-1-3				
JXB-ST-1,5	Grey	sak-st-1.5/2.5-4-2	plc-per-st-2PIN-1.5	plc-per-st-3PIN-1.5	zb-st-1.5-0	zb-st-1.5-1-50	zb-st-1.5-50-100	zb-st-1.5-100-150	zb-st-1.5-150-200	zb-st-1.5-A-PE	zb-st-1.5-L-1-3				
JXB-ST-2,5 double			plc-per-st-2PIN-2.5	plc-per-st-3PIN-2.5	zb-st-2.5-0	zb-st-2.5-1-50	zb-st-2.5-50-100	zb-st-2.5-100-150	zb-st-2.5-150-200	zb-st-2.5-A-PE	zb-st-2.5-L-1-3				
JXB-ST-4		sak-st-4-4-2	plc-per-st-2PIN-4	plc-per-st-3PIN-4	zb-st-4-0	zb-st-4-1-50	zb-st-4-50-100	zb-st-4-100-150	zb-st-4-150-200	zb-st-4-A-PE	zb-st-4-L-1-3				
JXB-ST-1,5 4 outputs	Grey	sak-st-1.5/2.5-4	plc-per-st-2PIN-1.5	plc-per-st-3PIN-1.5	zb-st-1.5-0	zb-st-1.5-1-50	zb-st-1.5-50-100	zb-st-1.5-100-150	zb-st-1.5-150-200	zb-st-1.5-A-PE	zb-st-1.5-L-1-3				
JXB-ST-2,5 4 outputs			plc-per-st-2PIN-2.5	plc-per-st-3PIN-2.5	zb-st-2.5-0	zb-st-2.5-1-50	zb-st-2.5-50-100	zb-st-2.5-100-150	zb-st-2.5-150-200	zb-st-2.5-A-PE	zb-st-2.5-L-1-3				
JXB-ST-4 4 outputs		sak-st-4-4	plc-per-st-2PIN-4	plc-per-st-3PIN-4	zb-st-4-0	zb-st-4-1-50	zb-st-4-50-100	zb-st-4-100-150	zb-st-4-150-200	zb-st-4-A-PE	zb-st-4-L-1-3				

Mini terminals STB EKF

Mini terminals STB EKF are designed for connecting and branching phase, neutral and grounding wires of various cross-sections. With compact design, STB terminals can be used in limited space. To connect wires, push the spring in the terminal side with a screwdriver. Mini terminals are complemented with side covers and DIN-rail mounting clips.



Flame-retardant polyamide housing does not dry out or crack

Spring-loaded contact for safe wire securing

DIN rail installation mount

Compact size

Tinned copper conductive plate

Interconnection options

APPLICATION

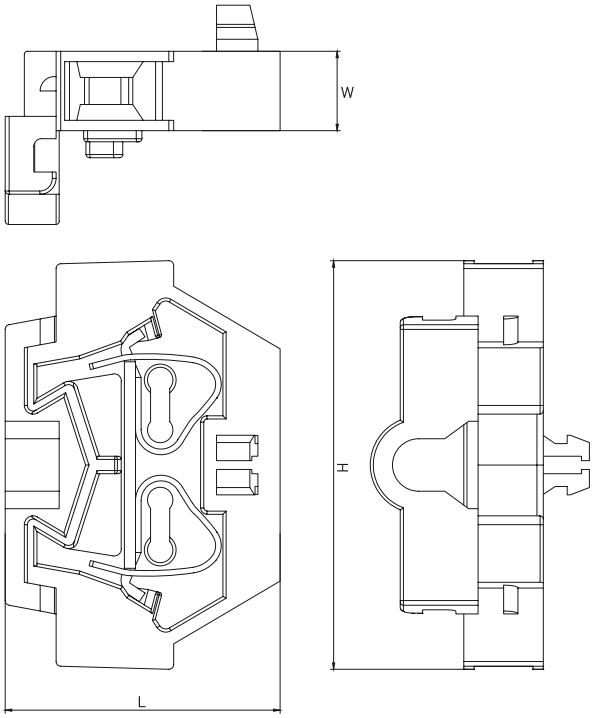
Terminals are widely used in industrial control systems, electrical distribution panels and process equipment.

TECHNICAL DATA

Parameters	Values
Degree of protection, IEC 60529	IP20
Housing material	Polyamide 6.6
Contact part material	Tinned copper
Mounting type	Mounting plate
Connection type	Spring
Operating temperature, °C	From -40 to +75
Number of contact sockets per level	2
Number of levels	1

Overall and installation dimensions

Name	Dimensions, mm		
	H	L	W
STB-1.5	25	17	5
STB-2.5	28	18	6
STB-4	33,4	23	7



Picture	Name	Cross-section, mm²	Rated AC voltage, V	Rated current, A	Stripping length, mm	Color	Item code
	Mini terminal STB-1.5 18A (200 pcs.) EKF	0.1–1,5	400	18	8	Grey	stb-m-1.5-gray
	Mini terminal STB-2.5 24A (200 pcs.) EKF	0.1–2,5	500	24	8		stb-m-2.5-gray
	Mini terminal STB-4 32A (200 pcs.) EKF	0.1–4	630	32	9		stb-m-4-gray
	Mini terminal STB-1.5 18A (200 pcs.) EKF	0.1–1,5	400	18	8	Blue	stb-m-1.5-blue
	Mini terminal STB-2.5 24A (200 pcs.) EKF	0.1–2,5	500	24	8		stb-m-2.5-blue
	Mini terminal STB-4 32A (200 pcs.) EKF	0.1–4	630	32	9		stb-m-4-blue
	Mini terminal STB-1.5 18A (200 pcs.) EKF	0.1–1,5	400	18	8	Yellow-green	stb-m-1.5-y-green
	Mini terminal STB-2.5 24A (200 pcs.) EKF	0.1–2,5	500	24	8		stb-m-2.5-y-green
	Mini terminal STB-4 32A (200 pcs.) EKF	0.1–4	630	32	9		stb-m-4-y-green

Picture	Name	Color	Terminal cross-section, mm²	Item code
	End cover for mini terminal STB-1.5 (200 pcs.) EKF	Black	1,5	ep-stb-m-1.5-black
	End cover for mini terminal STB-2.5 (200 pcs.) EKF		2,5	ep-stb-m-2.5-black
	End cover for mini terminal STB-4 (200 pcs.) EKF		4	ep-stb-m-4-black
	DIN rail installation mount for mini-terminals STB (200 pcs.) EKF	Grey	1,5 2,5 4	mf-stb-m

Power distribution blocks KBR EKF

Power distribution blocks KBR are designed to facilitate power distribution in enclosures, serving as adapter to connect a large cross-section wire to several small cross-section wires, and to arrange earth bars.

35mm DIN rail and mounting plate options. Flame retardant PA66 housing

Housing side rails enable block connection into a single multi-pole structure

Tinned copper power parts. Copper and aluminum wires supported

Transparent front panel prevents contact with live parts

APPLICATION

- Electrical distribution panels, motor control centers, switchgears.
- Industrial machinery, and various types of electrical equipment.

TECHNICAL DATA

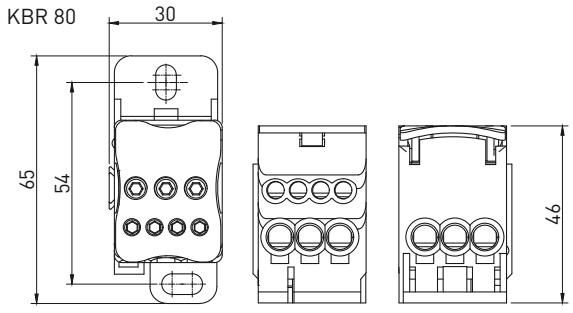
Parameters	Values
Rated voltage, V	690
Rated frequency, Hz	50–60
Rated current, A	80–500
Degree of protection	IP20
Operating temperature, °C	From -40 to +105
Cross-section of connected wires, mm^2	2,5–185

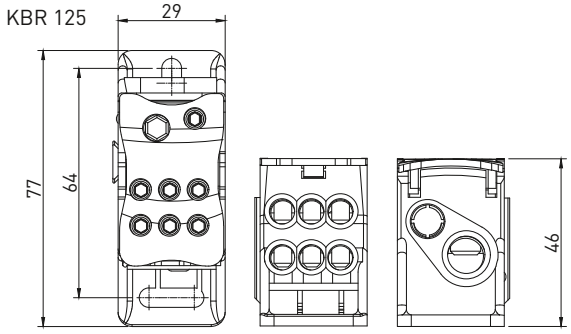
Screw size	Wire cross-section, mm^2	Number of inputs	Tightening torque, N·m	Item code
M6	2,5–16	3	3,5	plc-kbr80
M5	2,5–6	4	1,2	
M10	10–35	1	8,5	plc-kbr125
M6	2,5–16	7	3,5	
M10	10–70	1	8,5	plc-kbr160
M6	2,5–16	7	3,5	
M16	35–120	1	19	plc-kbr250
M10	6–35	2	8,5	
M8	2,5–16	5	4,4	
M6	2,5–10	4	3,5	
M16	95–185	1	25	plc-kbr400
M10	6–35	2	8,5	
M8	2,5–16	5	4,4	
M6	2,5–10	4	3,5	
M10	Flat busbar, 24×8		8,5	plc-kbr500
M10	6–35	2	8,5	
M8	2,5–16	5	4,4	
M6	2,5–10	4	3,5	
M10	10–70	3	8,5	kbr3-175
M6	2,5–16	18	4,4	

Installation and operation

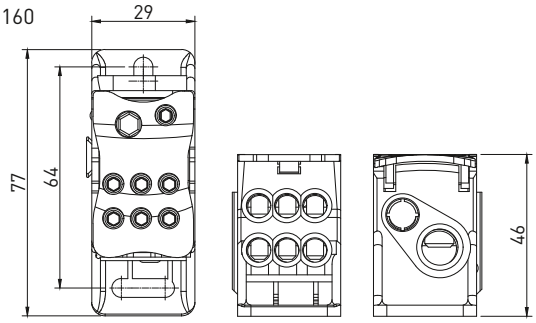
1. Install the block onto a DIN rail, or onto a mounting plate with two screws.
2. No cover opening is required for routine tightening of the cable securing bolts.

Overall and installation dimensions

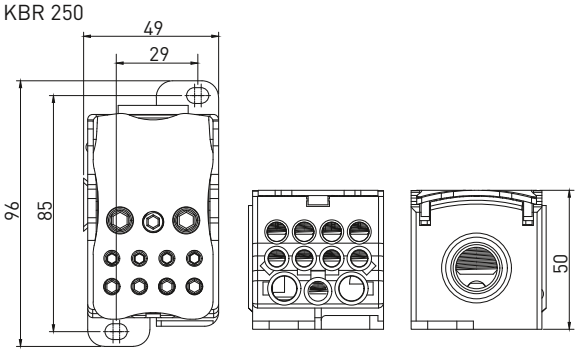




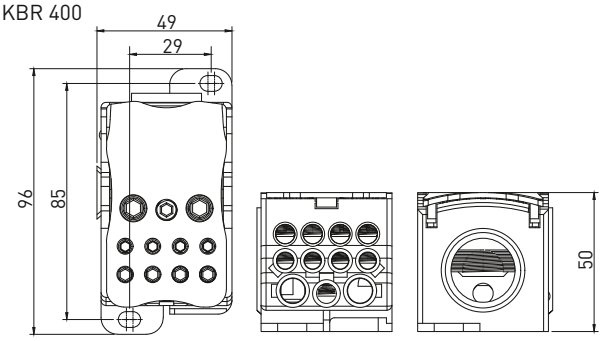
KBR 160



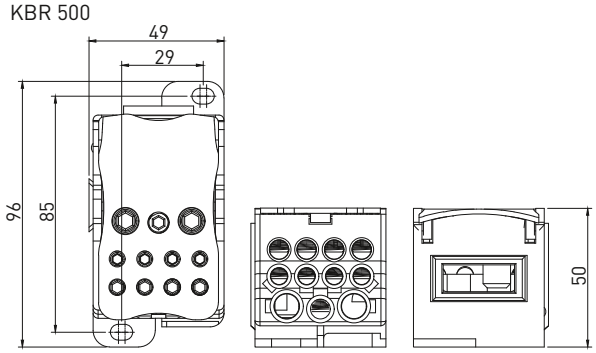
KBR 250



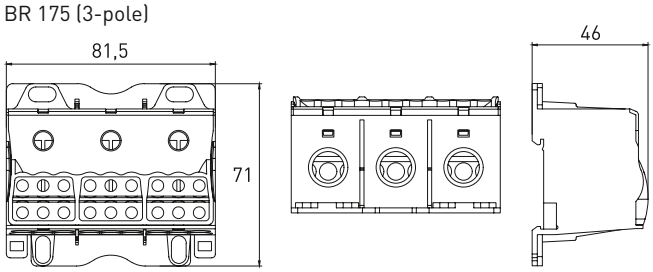
KBR 400



KBR 500



BR 175 (3-pole)



Delivery scope

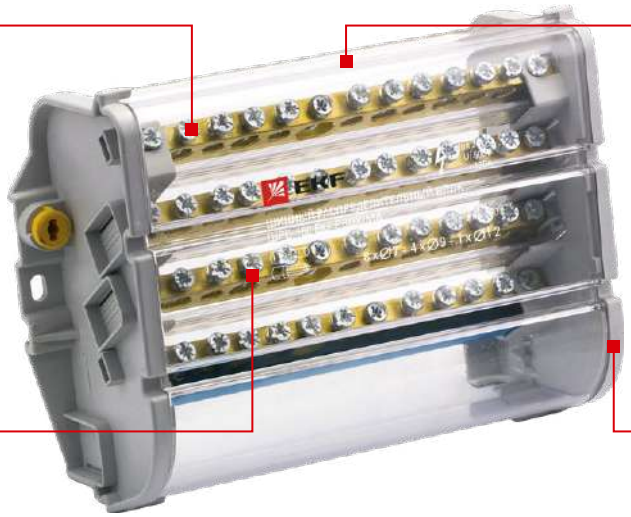
1. Power distribution block KBR.
2. Marking stickers.
3. Technical manual.

Picture	Name	Input contacts, mm²	Output contacts, mm²	Rated voltage, V	Rated current, A	Item code
	Power distribution block KBR DIN rail/mounting plate 80A EKF	1 × 16	2 × 16 4 × 6	690	80	plc-kbr80
	Power distribution block KBR DIN rail/mounting plate 125A EKF	1 × 35 1 × 16	6 × 16		125	plc-kbr125
	Power distribution block KBR DIN rail/mounting plate 160A EKF	1 × 70 1 × 16	6 × 16		160	plc-kbr160
	Power distribution block KBR DIN rail/mounting plate 250A EKF	1 × 120	5 × 16 2 × 35 4 × 10		250	plc-kbr250
	Power distribution block KBR DIN rail/mounting plate 400A EKF	1 × 185	5 × 16 2 × 35 4 × 10		400	plc-kbr400
	Power distribution block KBR DIN rail/mounting plate 500A EKF	Flat busbar, 15–24 mm wide; 2–8 mm thick	2 × 35 5 × 16 4 × 10		500	plc-kbr500
	Power distribution block KBR 3-pole 175A EKF	3 × 70	18 × 16		175	kbr3-175

Multi-stage distribution blocks EKF

Multi-stage distribution blocks EKF are used as terminal clamps to arrange structured cable systems in distribution enclosures, can be mounted both onto a DIN rail or mounting plate. Depending on the block type, contacts can be either brass or copper. The distribution blocks feature non-flammable PA66 housing and galvanized steel screws.

Full range of rated currents from 160 to 400 A. Galvanized steel screws included in the kit



Transparent screen protects users from accidental contact with live parts

Up to 52 connection points for wires of various diameters

DIN rail insulator available in 160, 200, 250 A blocks

APPLICATION

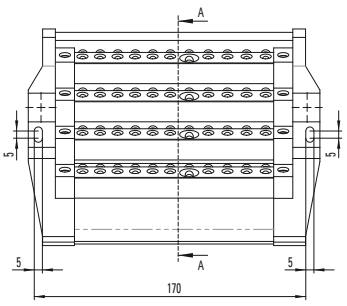
- Electrical distribution panels, motor control centers, switchgears
- Industrial machinery, and various types of electrical equipment.

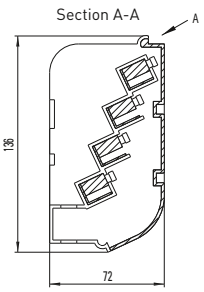
TECHNICAL DATA

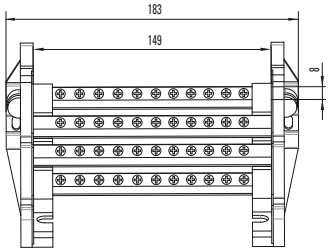
Parameters	Values			
	plc-shrb-160	plc shrb-200	plc shrb-250	plc shrb-400
Rated voltage, V	400			
Rated insulation voltage, V	500			
Rated peak withstand current Ipk, kA	20			
Rated current, A	160	200	250	400
Number of poles	4			
Busbar connection (number x diameter of screws)	8 × Ø7 + 4 × Ø9 + 1 × Ø12	1 × M8 + 10 × M6	1 × M8 + 10 × M6	1 × M8 + 9 × M6
Degree of protection: IEC 60529	IP20			
Operating temperature, °C	From - 40 to + 50			
Contact part material	Brass	Copper	Copper	Copper
Housing material	Flame retardant PA66			
Screw material	Galvanized brass			

Overall and installation dimensions

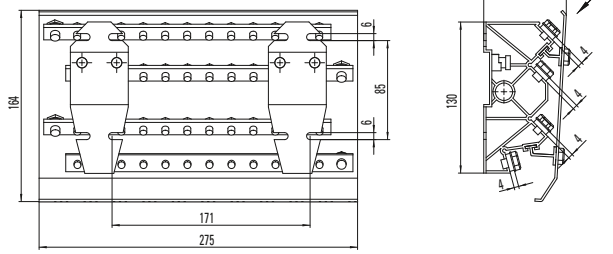
Distribution block 160

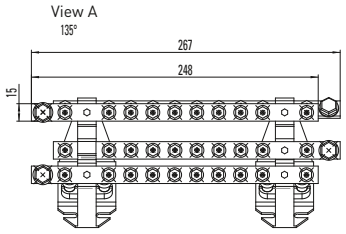




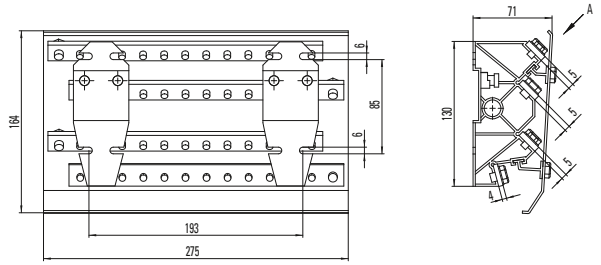


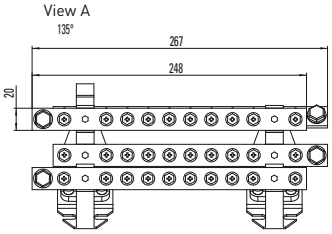
Distribution block 200



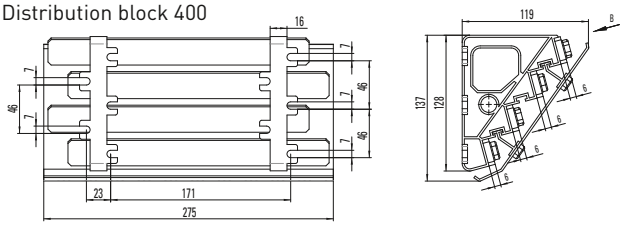


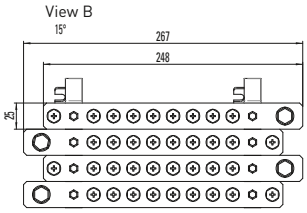
Distribution block 250





Distribution block 400





Delivery scope

1. Multi-stage distribution blocks EKF.
2. Fastener for protective screen (for 200, 250, & 400 A models).
3. Screws set (for 200, 250, & 400 A models).
4. Technical manual.

Picture	Name	Number of poles	Number of screws connected per busbar (diameter)	Rated current, A	Item code
	Multi-stage distribution block 160 EKF	4	8 × Ø7 + 4 × Ø9 + 1 × Ø12	160	plc-shrb-160
	Multi-stage distribution block 200 EKF		1 × M8 + 10 × M6	200	plc-shrb-200
	Multi-stage distribution block 250 EKF		1 × M8 + 10 × M6	250	plc-shrb-250
	Multi-stage distribution block 400 EKF		1 × M8 + 9 × M6	400	plc-shrb-400

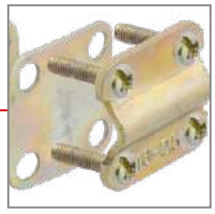
Branching clamps StreamLine EKF

Branching clamps are designed for branching of copper and aluminum wires from the main power line to distribute electrical power to secondary circuits or loads at rated voltage up to 660 V. Wire shall be preliminary stripped of insulation, but not cut.

Anodized steel contact part

Fast & easy conductor connection. Wire branch connection with no need to cut main conductor

Individual sticker option



Contact pads, matching cable size, tightened with bolts/screws. Copper and aluminum wires supported

APPLICATION

- Street lighting.
- Residential electrical distribution.
- Industrial power distribution networks.

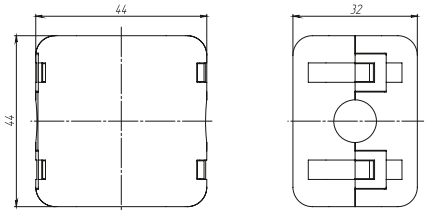
TECHNICAL DATA

Parameters	Values
Rated voltage, V	660
Rated frequency, Hz	50 / 60
Housing material	Flame-retardant polypropylene
Contact part material	Anodized steel
Contact part coating	–
Degree of protection*	IP20

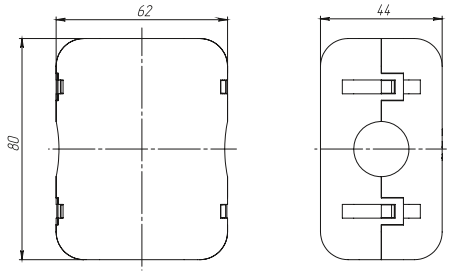
* Provided the housing cover is latched.

Overall and installation dimensions

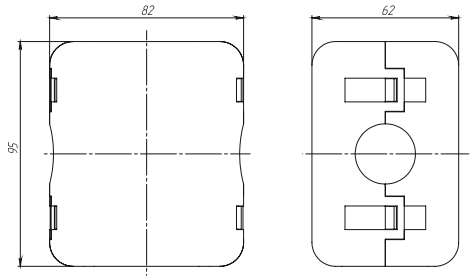
y731m, y733m, y734m, y739m



y859m



y870m, y871m, y872m

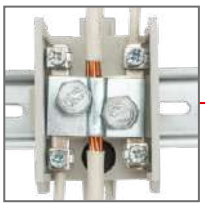


Name	Main conductor cross-section, mm²	Branch conductor cross-section, mm²	Item code
Branching clamp U731M StreamLine	4–10	1,5–10	y731m*
Branching clamp U733M StreamLine	16–35	1,5–10	y733m*
Branching clamp U734M StreamLine	16–35	16–25	y734m*
Branching clamp U739M StreamLine	4–10	1,5–2,5	y739m*
Branching clamp U859M StreamLine+	50–70	4–35	y859m
Branching clamp U870M StreamLine+	95–150	16–50	y870m
Branching clamp U871M StreamLine+	95–150	50–95	y871m
Branching clamp U872M StreamLine+	95–150	95–120	y872m

* SKU with "-r" in the item code can be ordered with individual sticker.

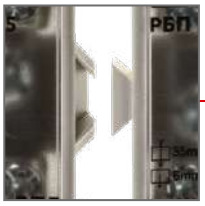
Branch terminal blocks RBP EKF

Branch terminal blocks are designed for branching of copper and aluminum wires from the main power line to distribute electrical power to secondary circuits or loads at rated voltage up to 660 V. Wire shall be preliminary stripped of insulation, but not cut. Up to four branches can be connected.



Panel and DIN rail mounting options

Electrolytic tin plated brass base. Copper and aluminum wires supported



Secure interconnection

Flame retardant polycarbonate housing

APPLICATION

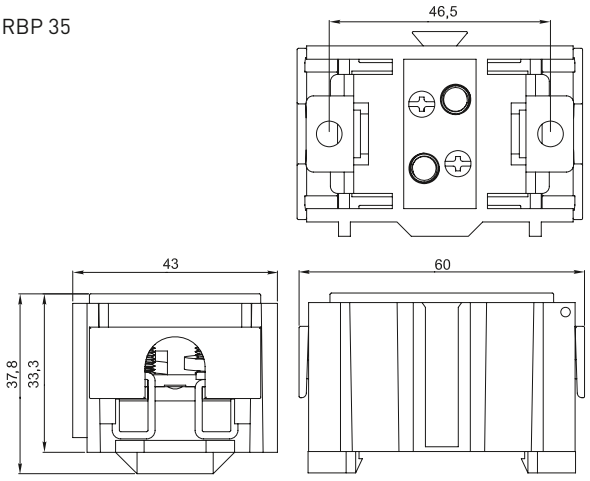
- Street lighting
- Residential electrical distribution
- Industrial power distribution networks.

TECHNICAL DATA

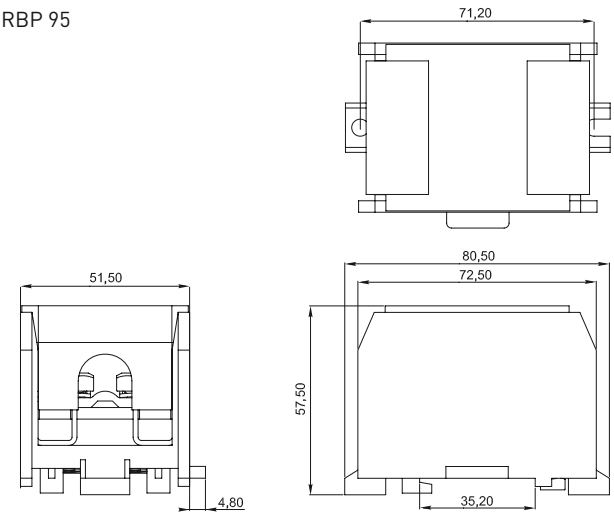
Parameters	Values	
	RBP-35-50	RBP-95-100
Rated voltage, V	660	
Rated frequency, Hz	50 / 60	
Tightening torque, N·m	2,0 (M5 screw), 2,5 (M6 screw)	2,5 (M7 screw), 3,5 (M8 screw)
Operating temperature, °C	-40...+70	
Degree of protection: IEC 60529	IP20	
Breakdown voltage, V	8	
Insulation resistance, MOhm	> 1000 at 1000 V DC	
Relative humidity, %	5–95	

Overall and installation dimensions

RBP 35



RBP 95



Name	Rated current of main/branch conductor, A	Main conductor cross-section, mm²	Branch conductor cross-section, mm²	Item code
Branch terminal block RBP 35 125/50A EKF	125/50	4–35	1,5–6	RBP-35-50
Branch terminal block RBP 95 232/100A EKF	232/100	16–95	6–16	RBP-95-100

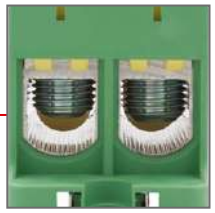
Power input terminal KSV EKF

Power input terminals KSV EKF are designed to connect copper and aluminum lead-in wires. Both solid and stranded wires with 2,5-240mm^2 cross-section, as well as ferrules are supported. The terminal is secured to the DIN rail with a retainer. To connect a wire to the terminal, loosen the hexagonal screw, insert the conductor into the hole and tighten the screw.

Ribbed internal surface prevents wires from falling out

All critical info is specified in the product sticker

Tinned aluminum power part is compatible both with aluminum and copper wires



Secure conductor fastening with steel screw

35 mm DIN rail or panel mounting options

Central partition prevents wires from falling inside the terminal

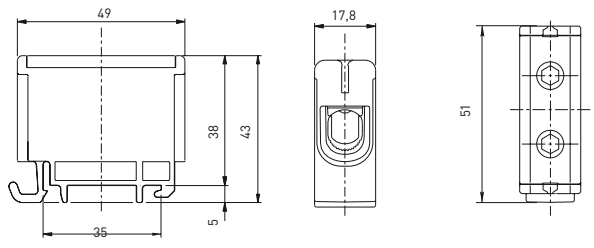
APPLICATION

Terminals are widely used in industrial control systems, electrical distribution panels and process equipment.

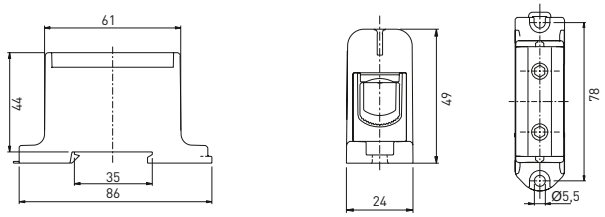
TECHNICAL DATA

Overall and installation dimensions

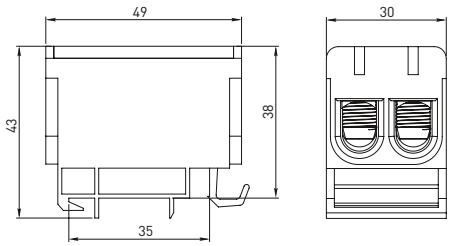
One-pole 2,5-50 terminal



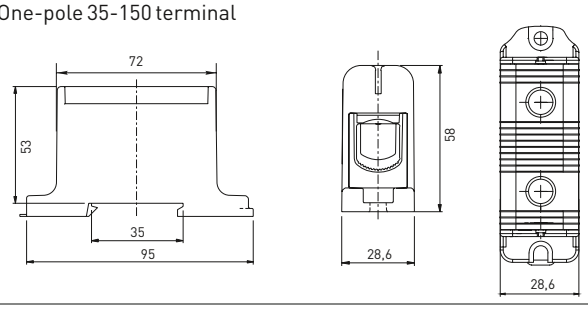
One-pole 16-95 terminal



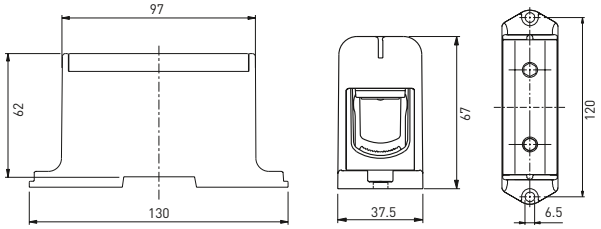
Two-pole 2,5-50 terminal



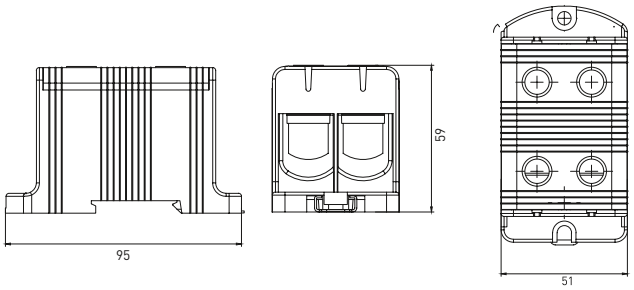
One-pole 35-150 terminal



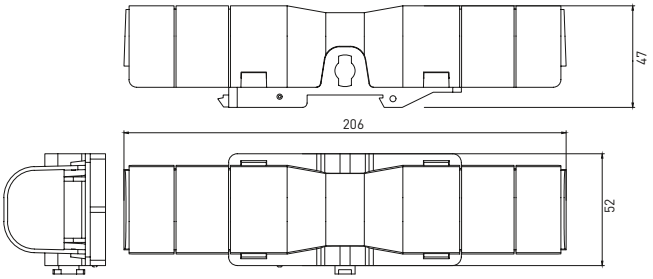
One-pole 35-240 terminal



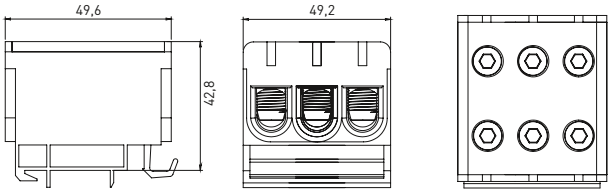
Two-pole 35-150 terminal



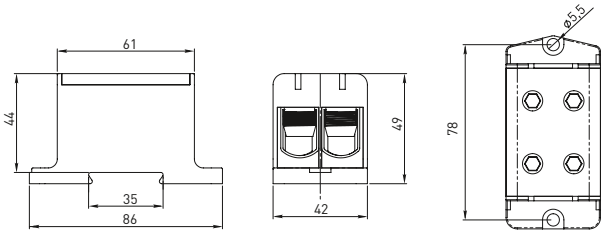
One-pole 10-120 terminal



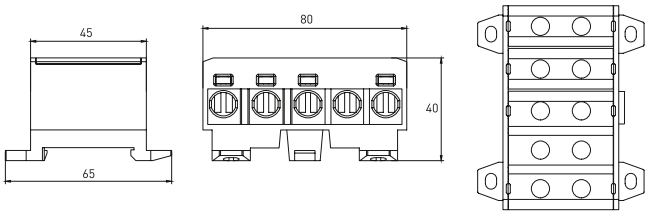
Three-pole 2,5-50 terminal



Two-pole 16-95 terminal



Five-pole 2,5-35 terminal



Mounting	One-pole terminals					Two-pole terminals			Three-pole terminals	Five-pole terminals
	16-50	16-95	35-150	35-240	KSVb 10-120	16-50	16-95	35-150	16-50	2,5-50
	DIN rail	DIN rail, mounting plate	DIN rail, mounting plate	Mounting plate	DIN rail	DIN rail	DIN rail, mounting plate	DIN rail, mounting plate	DIN rail	DIN rail, mounting plate

Tightening torque, N · m

Screw size	Maximum wire cross-section, mm²	Screw tightening torque, N · m	One-pole terminals	Two-pole terminals	Three-pole terminals	Five-pole terminals
M8	35	6	–	–	–	kvs5-2.5-35
M10	50	4,5	plc-kvs-16-50-y-green plc-kvs-16-50-gray plc-kvs-16-50-blue	plc-kvs2-16-50-y-green plc-kvs2-16-50-grey plc-kvs2-16-50-blue	plc-kvs3-16-50-grey	–
M14	95	5,6	plc-kvs-16-95-y-green plc-kvs-16-95-gray plc-kvs-16-95-blue	plc-kvs2-16-95-grey plc-kvs2-16-95-y-green plc-kvs2-16-95-blue	–	–
M18	150	5,6	plc-kvs-35-150-y-green plc-kvs-35-150-gray plc-kvs-35-150-blue	kvs2-35-150-grey kvs2-35-150-blue kvs2-35-150-y-green	–	–
M20	240	5,6	plc-kvs-35-240-y-green plc-kvs-35-240-gray plc-kvs-35-240-blue	–	–	–

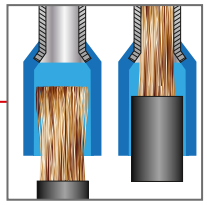
Picture	Name	Parameters				Item code
		Wire cross-section, mm²	Operating voltage at 50/60Hz, V	Rated operating current, A	Protection degree	
One-pole terminals						
	KSV 2,5-50 EKF	Cu: 2,5–50 Al: 6–50	800	Cu: 160 A Al: 145 A	IP20	plc-kvs-16-50-y-green plc-kvs-16-50-gray plc-kvs-16-50-blue

Picture	Name	Parameters				Item code
		Wire cross-section, mm²	Operating voltage at 50/60Hz, V	Rated operating current, A	Protection degree	
	KSV 16-95 EKF	16–95	800	Cu: 245 A Al: 220 A	IP20	plc-kvs-16-95-y-green plc-kvs-16-95-gray plc-kvs-16-95-blue
	KSV 35-150 EKF	35–150		Cu: 320 A Al: 290 A		plc-kvs-35-150-y-green plc-kvs-35-150-gray plc-kvs-35-150-blue
	KSV 35-240 EKF	35–240		Cu: 425 A Al: 380 A		plc-kvs-35-240-y-green plc-kvs-35-240-gray plc-kvs-35-240-blue
	KSVb 10-120 EKF	10–120	690	250 A	IP10	kvs-b-120
Two-pole terminals						
	KSV 2,5-50 EKF	Cu: 2,5–50 Al: 6–50	800	Cu: 160 A Al: 145 A	IP20	plc-kvs2-16-50-y-green plc-kvs2-16-50-grey plc-kvs2-16-50-blue
	KSV 16-95 EKF	16–95		Cu: 245 A Al: 220 A		plc-kvs2-16-95-grey plc-kvs2-16-95-y-green plc-kvs2-16-95-lue
	KSV 35-150 EKF	35–150		Cu: 320 A Al: 290 A		kvs2-35-150-grey kvs2-35-150-blue kvs2-35-150-y-green
Three-pole terminals						
	KSV 2,5-50 EKF	Cu: 2,5–50 Al: 6–50	800	Cu: 160 A Al: 145 A	IP20	plc-kvs3-16-50-grey
	KSV 2,5-35 (3P+N+PE) EKF	2,5–35		Cu: 135 A Al: 120 A		kvs5-2.5-35

Insulated cord end terminals E & TE EKF

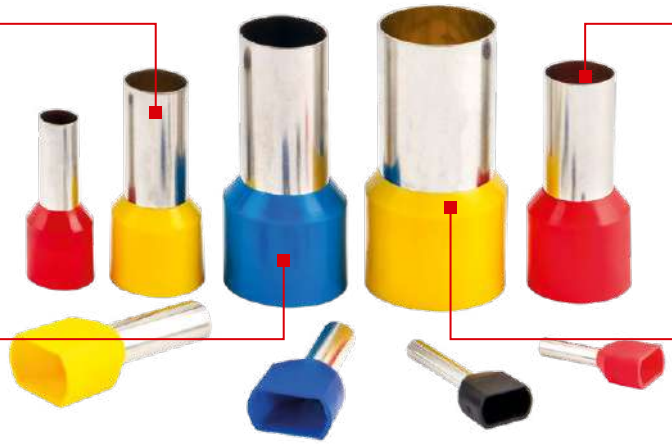
Insulated cord end terminals (E & TE types) EKF are designed for termination of stranded wires by crimping and securing in a terminal. A cord end terminal consists of conductive ferrule and polypropylene insulation cuff. With the Easy Entry design, you can easily fit the conductor into the cord end terminal.

Ferrule material: Electrolytic tin-plated Cu-ETP Copper



Easy Entry

DIN complying colors. Insulation material: flame-retardant polypropylene



Socket-shaped insulating cuff for easy termination of stranded copper wires

APPLICATION

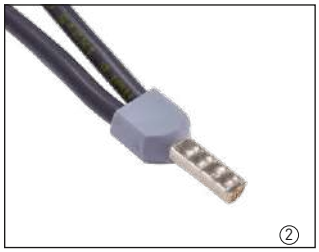
- Control panels & electrical enclosures
- Industrial machinery & equipment
- Power distribution & building wiring

TECHNICAL DATA

Parameters	Values
Insulation material	Flame-retardant polypropylene
Contact part material	Cu-ETP Copper
Coating	Electrolytic tin plating
Operating temperature, °C	From -40 to +105

Installation and operation

It takes a few seconds to terminate wires:
1. Insert stripped end(s)* of the stranded wire into the ferrule.
2. Crimp the ferrule with a designated tool. Contact part of the stranded wire crimped with the ferrule produces a single solid piece, while the insulating cuff seals the conductor insulation.

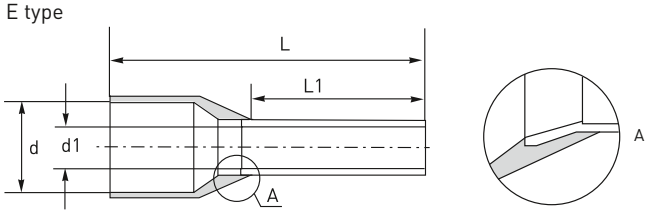


If required, shorten the crimped ferrule to fit into the electrical equipment terminal.
With the polyamide insulating cuff, cord end terminals can be used under extended temperature range.

* For TE cord end terminals designed for simultaneous crimping of two conductors, depending on the product size.

Overall and installation dimensions

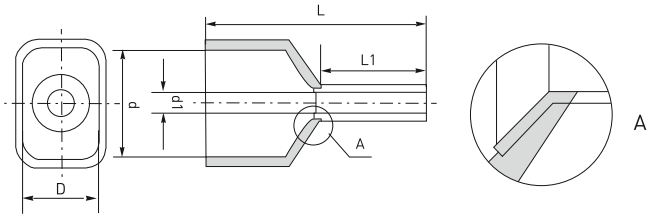
E type



Name	Dimensions, mm			
	L1	L	d	d1
Insulated cord end terminal E 0,25-8	8	13	1,7	0,8
Insulated cord end terminal E 0,34-8	8	13	1,7	0,8
Insulated cord end terminal E 0,5-8	8	14	2,6	1
Insulated cord end terminal E 0,5-10	10	16		
Insulated cord end terminal E 0,75-8	8	14	2,8	1,2
Insulated cord end terminal E 0,75-12	12	18		
Insulated cord end terminal E 1,0-8	8	14	3	1,4
Insulated cord end terminal E 1,0-12	12	18		
Insulated cord end terminal E 1,5-8	8	14,5	3,5	1,7
Insulated cord end terminal E 1,5-12	12	18,5		
Insulated cord end terminal E 1,5-18	18	24,5		

Name	Dimensions, mm			
	L1	L	d	d1
Insulated cord end terminal E 2,5-8	8	15,5	4,0	2,3
Insulated cord end terminal E 2,5-12	12	19,5		
Insulated cord end terminal E 2,5-18	18	25,5		
Insulated cord end terminal E 4,0-9	9	16,5	4,5	2,8
Insulated cord end terminal E 4,0-12	12	19,5		
Insulated cord end terminal E 4,0-18	18	25,5		
Insulated cord end terminal E 6,0-12	12	22	6	3,5
Insulated cord end terminal E 6,0-18	18	28		
Insulated cord end terminal E 6,0-24	24	34		
Insulated cord end terminal E 10,0-12	12	22	7,6	4,5
Insulated cord end terminal E 10,0-18	18	28		
Insulated cord end terminal E 10,0-24	24	34		
Insulated cord end terminal E 16,0-12	12	22	8,7	5,8
Insulated cord end terminal E 16,0-18	18	28		
Insulated cord end terminal E 25,0-16	16	28	11	7,5
Insulated cord end terminal E 35,0-16	16	30	12,5	8,3
Insulated cord end terminal E 50,0-20	20	36	15	10,3
Insulated cord end terminal E 70,0-20	20	37	16	13,5
Insulated cord end terminal E 95-25	25	44	18	14,5
Insulated cord end terminal E 120-27	27	47,6	20,3	16,5
Insulated cord end terminal E 150-27	27	53	23,4	19,6

TE type



Name	Dimensions, mm				
	L1	L	D	d	d1
Insulated cord end terminal TE 0,5-8	8	15	2,8	4,9	1,5
Insulated cord end terminal TE 0,5-10	10	17			
Insulated cord end terminal TE 0,75-8	8	15	2,9	5,2	1,8
Insulated cord end terminal TE 0,75-10	10	17			
Insulated cord end terminal TE 1,0-8	8	16	3,5	5,7	2
Insulated cord end terminal TE 1,0-10	10	18			
Insulated cord end terminal TE 1,5-8	8	15,5	3,9	6,5	2,3
Insulated cord end terminal TE 1,5-12	12	19,5			
Insulated cord end terminal TE 2,5-10	10	18	4,6	8	2,9
Insulated cord end terminal TE 2,5-13	13	21			
Insulated cord end terminal TE 4-12	12	23	4,9	8,8	3,8
Insulated cord end terminal TE 6,0-14	14	26	6,3	9,3	4,9
Insulated cord end terminal TE 6,0-18	18	30	6,3	9,3	4,9
Insulated cord end terminal TE 10,0-14	14	26,5	7,9	12,8	6,5
Insulated cord end terminal TE 16,0-14	14	32	11,6	19,3	8,3

E type

Picture	Name	Color	Wire cross-section, mm²	Ferrule length, mm	Item code
	Insulated cord end terminal E 0,25-8 (50 pcs.) EKF	Blue	0,25	8	nhvi-0.25-8
	Insulated cord end terminal E 0,34-8 (50 pcs.) EKF	Turquoise	0,34	8	nhvi-0.34-8
	Insulated cord end terminal E 0,5-8 (50 pcs.) EKF	White	0,5	8	nhvi-0.5-8
	Insulated cord end terminal E 0,5-10 (50 pcs.) EKF		0,5	10	nhvi-0.5-10
	Insulated cord end terminal E 0,75-8 (50 pcs.) EKF	Grey	0,75	8	nhvi-0.75-8
	Insulated cord end terminal E 0,75-12 (50 pcs.) EKF			12	nhvi-0.75-12
	Insulated cord end terminal E 1,0-8 (50 pcs.) EKF	Red	1	8	nhvi-1.0-8
	Insulated cord end terminal E 1,0-12 (50 pcs.) EKF			12	nhvi-1.0-12
	Insulated cord end terminal E 1,5-8 (50 pcs.) EKF	Black	1,5	8	nhvi-1.5-8
	Insulated cord end terminal E 1,5-12 (50 pcs.) EKF			12	nhvi-1.5-12
	Insulated cord end terminal E 1,5-18 (50 pcs.) EKF			18	nhvi-1.5-18
	Insulated cord end terminal E 2,5-8 (50 pcs.) EKF	Blue	2,5	8	nhvi-2.5-8
	Insulated cord end terminal E 2,5-12 (50 pcs.) EKF			12	nhvi-2.5-12
	Insulated cord end terminal E 2,5-18 (50 pcs.) EKF			18	nhvi-2.5-18

Picture	Name	Color	Wire cross-section, mm²	Ferrule length, mm	Item code
	Insulated cord end terminal E 4,0-9 (50 pcs.) EKF	Grey	4	9	nhvi-4.0-9
	Insulated cord end terminal E 4,0-12 (50 pcs.) EKF			12	nhvi-4.0-12
	Insulated cord end terminal E 4,0-18 (50 pcs.) EKF			18	nhvi-4.0-18
	Insulated cord end terminal E 6,0-12 (50 pcs.) EKF	Yellow	6	12	nhvi-6.0-12
	Insulated cord end terminal E 6,0-18 (50 pcs.) EKF			18	nhvi-6.0-18
	Insulated cord end terminal E 6,0-24 (50 pcs.) EKF			24	nhvi-6.0-24
	Insulated cord end terminal E 10,0-12 (50 pcs.) EKF	Red	10	12	nhvi-10.0-12
	Insulated cord end terminal E 10,0-18 (50 pcs.) EKF			18	nhvi-10.0-18
	Insulated cord end terminal E 10,0-24 (50 pcs.) EKF			24	nhvi-10.0-24
	Insulated cord end terminal E 16,0-12 (50 pcs.) EKF	Blue	16	12	nhvi-16,0-12
	Insulated cord end terminal E 16,0-18 (50 pcs.) EKF		16	18	nhvi-16-18
	Insulated cord end terminal E 25,0-16 (50 pcs.) EKF	Yellow	25	16	nhvi-25.0-16
	Insulated cord end terminal E 35,0-16 (50 pcs.) EKF	Red	35	16	nhvi-35.0-16
	Insulated cord end terminal E 50,0-20 (50 pcs.) EKF	Blue	50	20	nhvi-50.0-20
	Insulated cord end terminal E 70,0-20 (50 pcs.) EKF	Yellow	70	20	nhvi-70.0-20
	Insulated cord end terminal E 95-25 (50 pcs.) EKF	Red	95	25	nhvi-95.0-25
	Insulated cord end terminal E 120-27 (50 pcs.) EKF	Blue	120	27	nhvi-120.0-27
	Insulated cord end terminal E 150-27 (50 pcs.) EKF	Yellow	150	27	nhvi-150.0-27

TE type

Picture	Name	Color	Wire cross-section, mm²	Ferrule length, mm	Item code
	Insulated cord end terminal TE 0,5-8 (50 pcs.) EKF	White	2 × 0,5	8	nhvi2-0.5-8
	Insulated cord end terminal TE 0,5-10 (50 pcs.) EKF			10	nhvi2-0.5-10
	Insulated cord end terminal TE 0,75-8 (50 pcs.) EKF	Grey	2 × 0,75	8	nhvi2-0.75-8
	Insulated cord end terminal TE 0,75-10 (50 pcs.) EKF			10	nhvi2-0.75-10
	Insulated cord end terminal TE 1,0-8 (50 pcs.) EKF	Red	2 × 1	8	nhvi2-1.0-8
	Insulated cord end terminal TE 1,0-10 (50 pcs.) EKF			10	nhvi2-1.0-10
	Insulated cord end terminal TE 1,5-8 (50 pcs.) EKF	Black	2 × 1,5	8	nhvi2-1.5-8
	Insulated cord end terminal TE 1,5-12 (50 pcs.) EKF			12	nhvi2-1.5-12
	Insulated cord end terminal TE 2,5-10 (50 pcs.) EKF	Blue	2 × 2,5	10	nhvi2-2.5-10
	Insulated cord end terminal TE 2,5-13 (50 pcs.) EKF			13	nhvi2-2.5-13
	Insulated cord end terminal TE 4-12 (50 pcs.) EKF	Grey	2 × 4	12	nhvi2-4.0-12

Picture	Name	Color	Wire cross-section, mm²	Ferrule length, mm	Item code
	Insulated cord end terminal TE 6,0-14 (50 pcs.) EKF	Yellow	2 × 6	14	nhvi2-6.0-14
	Insulated cord end terminal TE 6,0-18 (50 pcs.) EKF			18	nhvi2-6-18
	Insulated cord end terminal TE 10,0-14 (50 pcs.) EKF	Red	2 × 10	14	nhvi2-10.0-14
	Insulated cord end terminal TE 16,0-14 (50 pcs.) EKF	Blue	2 × 16	14	nhvi2-16.0-14

Sets of insulated cord end terminals

Picture	Name	Type	Color	Wire cross-section, mm²	Quantity, pcs	Item code
	Set of insulated cord end terminals E no.1 (0,5-2,5mm²) EKF	Insulated cord end terminal E 0,5-8	White	0,50	50	nabor-nshvi-1
		Insulated cord end terminal E 0,75-8	Grey	0,75	100	
		Insulated cord end terminal E 1,0-8	Red	1,00	100	
		Insulated cord end terminal E 1,5-8	Black	1,50	100	
		Insulated cord end terminal E 2,5-8	Blue	2,50	50	
	Set of insulated cord end terminals TE no.2 (2x0,5-2x2,5mm²) EKF	Insulated cord end terminal TE 0,5-8	White	2 × 0,5	50	nabor-nshvi-2
		Insulated cord end terminal TE 0,75-8	Grey	2 × 0,75	50	
		Insulated cord end terminal TE 1,0-8	Red	2 × 1,0	50	
		Insulated cord end terminal TE 1,5-8	Black	2 × 1,5	50	
		Insulated cord end terminal TE 2,5-10	Blue	2 × 2,5	50	
	Set of Insulated cord end terminals E no.3 (0,25-1mm²) EKF	Insulated cord end terminal E 0,25-8	Blue	0,25	100	nabor-nshvi-3
		Insulated cord end terminal E 0,34-8	Green	0,34	100	
		Insulated cord end terminal E 0,5-8	White	0,50	100	
		Insulated cord end terminal E 0,75-8	Grey	0,75	100	
		Insulated cord end terminal E 1,0-8	Red	1,00	100	

Picture	Name	Type	Color	Wire cross-section, mm²	Quantity, pcs	Item code
	Set of Insulated cord end terminals E no.4 (4-16mm²) EKF	Insulated cord end terminal E 4-10	Grey	4,00	50	nabor-nshvi-4
		Insulated cord end terminal E 6,0-12	Yellow	6,00	20	
		Insulated cord end terminal E 10,0-12	Red	10,00	20	
		Insulated cord end terminal E 16,0-12	Blue	16,00	10	
	Set of Insulated cord end terminals E no.5 (0,5-6mm²; 2x0,5–2,5 mm²) EKF	Insulated cord end terminal E 0,5-8	White	0,50	100	nabor-nshvi-5
		Insulated cord end terminal E 0,75-8	Grey	0,75	100	
		Insulated cord end terminal E 1,0-8	Red	1,00	100	
		Insulated cord end terminal E 1,5-8	Black	1,50	100	
		Insulated cord end terminal E 2,5-8	Blue	2,50	100	
		Insulated cord end terminal E 4,0-9	Grey	4,00	50	
		Insulated cord end terminal E 6,0-12	Yellow	6,00	25	
		Insulated cord end terminal TE 0,5-8	White	2 × 0,5	50	
		Insulated cord end terminal TE 0,75-8	Grey	2 × 0,75	50	
		Insulated cord end terminal TE 1,0-8	Red	2 × 1,0	50	
		Insulated cord end terminal TE 1,5-8	Black	2 × 1,5	25	
		Insulated cord end terminal TE 2,5-10	Blue	2 × 2,5	25	

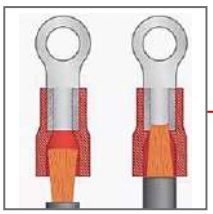
Insulated ring & fork terminals EKF

Insulated ring (RV) and fork (SV) terminals EKF are designed for termination of stranded copper wires to be used in electrical assemblies with screw contact connections. Ring terminals are used for fixed connections to electrical equipment. Fork terminals are best-suited for prompt wire recrossings, as they do not require complete connection dismantling.

Standard: IEC 60998-2-1

Insulation material: self-extinguishing V-0 PVC

Ferrule material: electrolytic tin-plated Cu-ETP Copper



Easy Entry Socket-shaped insulating cuff for easy termination of stranded copper wires

Wire termination over insulating cuff

APPLICATION

- Control panels & electrical enclosures
- Industrial machinery & equipment
- Power distribution & building wiring

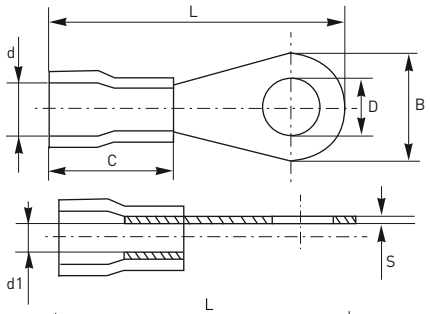
TECHNICAL DATA

Parameters	Values
Insulation material	Self-extinguishing PVC
Flammability class by UL 94	V-0
Contact part material	Cu-ETP Copper
Coating	Electrolytic tin plating
Operating temperature, °C	From -40 to +80
Cross-section of connected wires, mm²	From 0,25 to 6,0*
Threaded hole	M3 – M6*

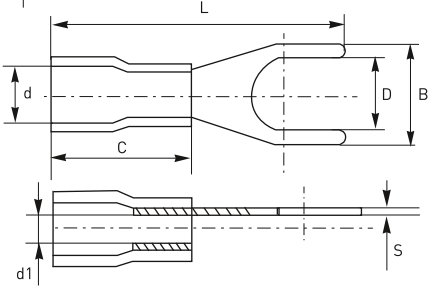
*depending on device size

Overall and installation dimensions

RV



SV



Installation and operation

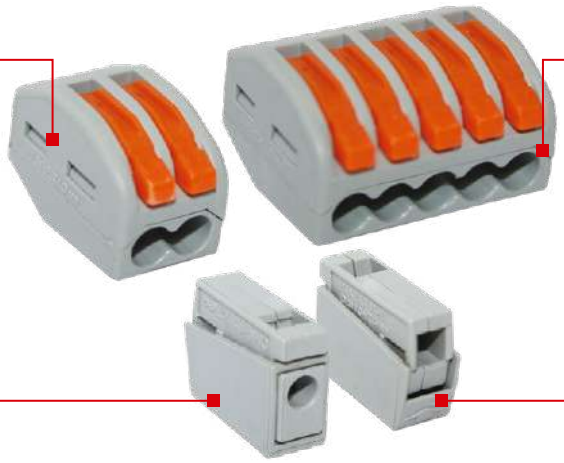
1. Strip required length of wire insulation. Do not damage wire strands. Stripping length depends on cord end terminal crimping length. Twist strands slightly to shape the wire for easier insertion into the cord end terminal.
2. Select cord end terminal size to match wire cross-section.
3. Select contact part design by ferrule type and operating conditions. Do not use fork terminals for applications under vibration or in moving parts.
4. Use crimping pliers with ratchet mechanism to lock reverse stroke during crimping.
5. Install crimping dies so that the side with the least cross-section is at the outer end of the jaws.
6. Stripped core end shall be clearly visible and positioned in line with the ferrule crimping part or protruding by max. 1 mm, not penetrating into the connection contact area. Check that separate strands do not bend inside the insulating cuff. Insulating cuff shall overlap wire insulation.
7. When crimping with double-indent dies (core and insulation crimping), position the ferrule in the dies so that each end crimps the respective wire part. Insert the ferrule from labeled side. Align the ferrule with the seam upwards. To select the correct crimping profile, match color and number coding on the dies with the insulating cuff color.
8. Crimp until dies fully close. After crimping, check the insulating cuff integrity and connection mechanical strength. Wire shall not move in the ferrule.

Picture	Name	Color	Dimensions, mm							Wire cross-section, mm²	Item code
			D	B	L	C	S	d	d1		
	Insulated ring terminal RV 1,5-3 (50 pcs.) EKF	Red	3,3	5,7	17,8	10	0,8	4	1,7	0,5 –1,5	nki-1.25-3n
	Insulated ring terminal RV 1,5-4 (50 pcs.) EKF		4,2	6,7	19,8	10	0,8	4	1,7		nki-1.25-4n
	Insulated ring terminal RV 1,5-5 (50 pcs.) EKF		5,3	8	21,4	10	0,8	4	1,7		nki-1.25-5n
	Insulated ring terminal RV 1,5-6 (50 pcs.) EKF		6,4	11,6	27,2	10	0,8	4	1,7		nki-1.25-6n
	Insulated ring terminal RV 2,5-3 (50 pcs.) EKF	Blue	3,2	8,5	17,8	10	0,8	4,5	2,3	1,0 – 2,5	nki-2-3n
	Insulated ring terminal RV 2,5-4 (50 pcs.) EKF		4,2	6,7	20,7	10	0,8	4,5	2,3		nki-2-4n
	Insulated ring terminal RV 2,5-5 (50 pcs.) EKF		5,2	9,5	22,4	10	0,8	4,5	2,3		nki-2-5n
	Insulated ring terminal RV 2,5-6 (50 pcs.) EKF		6,3	12	27,2	10	0,8	4,5	2,3		nki-2-6n
	Insulated ring terminal RV 6,0-4 (50 pcs.) EKF	Yellow	4,2	7,2	22,1	13,5	1	6,3	3,4	2,0–6,0	nki-5.5-4n
	Insulated ring terminal RV 6,0-5 (50 pcs.) EKF		5,2	9,5	26,7	13,5	1	6,3	3,4		nki-5.5-5n
	Insulated ring terminal RV 6,0-6 (50 pcs.) EKF		6,5	12	30,2	13,5	1	6,3	3,4		nki-5.5-6n
	Insulated ring terminal RV 6,0-8 (50 pcs.) EKF		8,3	15	33,7	13,5	1	6,3	3,4		nki-5.5-8n
	Insulated fork terminal SV 1,5-3 (50 pcs.) EKF	Red	3,7	5,8	21	10	0,8	4	1,7	0,5–1,5	nvi-1.25-3n
	Insulated fork terminal SV 1,5-4 (50 pcs.) EKF		4,3	7,2	21	10	0,8	4	1,7		nvi-1.25-4n
	Insulated fork terminal SV 1,5-5 (50 pcs.) EKF		5,3	8	21	10	0,8	4	1,7		nvi-1.25-5n
	Insulated fork terminal SV 2,5-4 (50 pcs.) EKF	Blue	4,3	7,2	21	10	0,8	4,5	2,3	1,0–2,5	nvi-2-4n
	Insulated fork terminal SV 2,5-5 (50 pcs.) EKF		5,3	8	21	10	0,8	4,5	2,3		nvi-2-5n
	Insulated fork terminal SV 2,5-6 (50 pcs.) EKF		6,4	10,7	21	10	0,8	4,5	2,3		nvi-2-6n
	Insulated fork terminal SV 6,0-4 (50 pcs.) EKF	Yellow	4,3	8,2	26,3	13,5	1	6,3	3,4	2,5–6,0	nvi-5.5-4n
	Insulated fork terminal SV 6,0-5 (50 pcs.) EKF		5,3	9	26,3	13,5	1	6,3	3,4		nvi-5.5-5n
	Insulated fork terminal SV 6,0-6 (50 pcs.) EKF		6,4	12	31,2	13,5	1	6,3	3,4		nvi-5.5-6n

Quick spring terminals SMK 222 & 224 reusable EKF

Terminals SMK are designed for repeated connection and branching of solid and stranded copper (SMK 222) and aluminium (SMK 224) wires in 50/60Hz AC circuits up to 415 V.

Contact part made of medical-grade stainless steel with copper plates



Secure and easy mounting. SMK 224 supports both copper & aluminium wires

Flame retardant plastic housing

Voltage test window

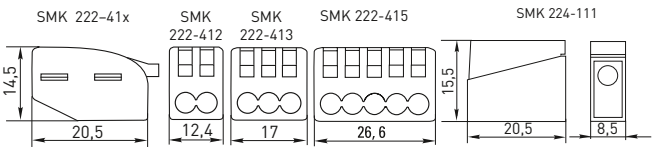
APPLICATION

Quick-spring terminals are utilized in a diverse range of electrical and electronic applications where rapid and simple wire connections are required.

TECHNICAL DATA

Parameters	Values	
	SMK 222-412, 413, 415	SMK 224-111
Maximum current, A	24/32	24
Rated voltage, V	240 / 415	
Cross-sections of solid / stranded wires, mm²	0,08–2,5 / 0,08–4,0	1,0–2,5 / 0,5–2,5
Housing material	Flame-retardant plastic	
Contact part	Copper	
Contact paste	None	
Color	Grey / orange	Grey

Overall and installation dimensions



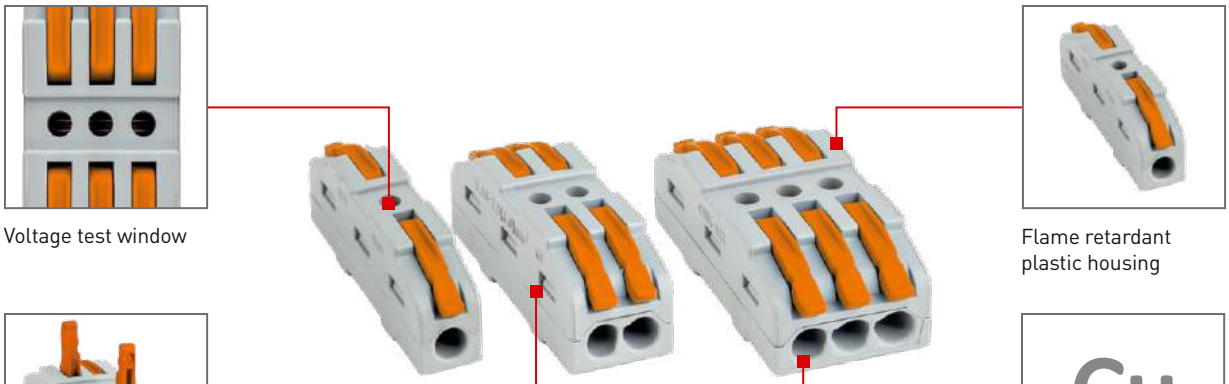
Installation and operation

- Strip wire insulation. With a recess on the back, you can easily measure the required size.
- Push up the terminal lever. Insert the wire up to max.
- Pull the lever down. The contact part will compress the wire, preventing disconnecting.

Picture	Name	Number of connected wires	Conductors	Item code
	Quick spring terminal SMK 222-412 with lever 2 holes EKF	2	Copper solid and stranded wires 0,08-2,5 mm² /0,08–4,0 mm²	plc-smk-412
	Quick spring terminal SMK 222-413 with lever 3 holes EKF	3		plc-smk-413
	Quick spring terminal SMK 222-415 with lever 5 holes EKF	5		plc-smk-415
	Quick spring terminal SMK 224-111 through-passage for 1 conductor EKF	2	Copper and aluminium wires: round holes for solid wires 1,0–2,5 mm² and square holes for solid and stranded wires 0,5–2,5 mm²	plc-smk-111

Quick spring terminals SMK 222 through-passage reusable EKF

Through-passage terminals SMK 222 are designed for repeated connection of solid and stranded copper wires in 50/60Hz AC circuits up to 400V.



Voltage test window

Flame retardant plastic housing

Reusable design

Copper contact plate

APPLICATION

Quick-spring terminals are utilized in a diverse range of electrical and electronic applications where rapid and simple wire connections are required.

TECHNICAL DATA

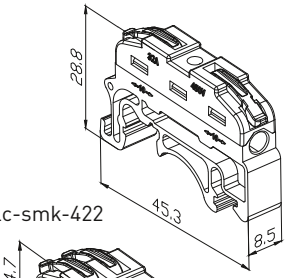
Parameters	Values
Maximum current, A	32
Rated voltage, V	240
Cross-sections of solid / stranded wires, mm²	0,08–2,5 / 0,08–4,0
Housing material	Self-extinguishing polyamide
Contact part	Copper

Installation and operation

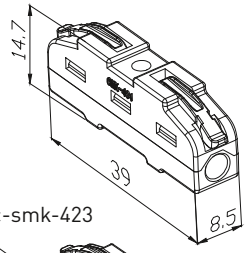
• Strip wire insulation. With a recess on the back, you can easily measure the required size.
• Push up the terminal lever. Insert the wire up to max.
• Pull the lever down. The contact part will compress the wire, preventing disconnecting.

Overall and installation dimensions

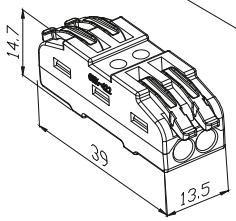
plc-smk-421-din



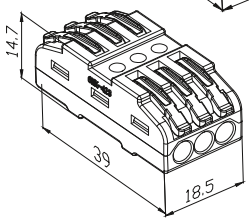
plc-smk-421



plc-smk-422



plc-smk-423

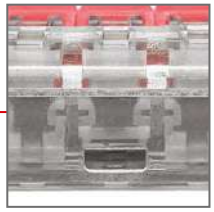


Picture	Name	Number of connected wires (holes)	Max. current, A	Conductors	Item code
	Quick spring terminal SMK 222-421 DIN rail through-passage 1 pole 0,08-4mm² (25 pcs.) EKF	2	32	Copper wires: solid - 0,08-2,5 mm², stranded - 0,08–4,0 mm²	plc-smk-421-din
	Quick spring terminal SMK 222-421 through-passage 1 pole 0,08-4mm² (25 pcs.) EKF	2			plc-smk-421
	Quick spring terminal SMK 222-422 through-passage 2 poles 0,08-4mm² (25 pcs.) EKF	4			plc-smk-422
	Quick spring terminal SMK 222-423 through-passage 3 poles 0,08-4mm² (25 pcs.) EKF	6			plc-smk-423
	Quick spring terminal SMK 222-424 4 outputs 0,08-4mm² EKF	6			plc-smk-422-4
	Quick spring terminal SMK 222-426 6 outputs 0,08-4mm² EKF	8			plc-smk-422-6

Quick spring terminals 221 reusable compact EKF

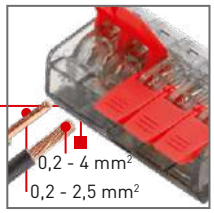
Terminals SMK 221 EKF incorporate improved features of SMK 222 terminal. These terminals are designed for connection and branching of solid and stranded wires with max. 4 mm² cross-section in AC circuits up to 415 V. High-strength SMK 221 terminals are virtually impossible to break, can be used several times, and withstand wide range of temperatures from -40 to +105 °C. With new reliable SMK-221 terminals, electricians and craftsmen can easily route any wiring.

Smaller size by 30% compared to SMK 222. Transparent housing for visual control of wire insertion



Voltage test window

Specifications labeled on the housing



Compatible with 0,2-4mm² wires

APPLICATION

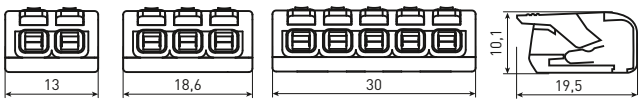
Quick-spring terminals are utilized in a diverse range of electrical and electronic applications where rapid and simple wire connections are required.

TECHNICAL DATA

Parameters	Values
Maximum current, A	32
Rated voltage, V	240 / 415
Cross-sections of solid / stranded wires, mm²	0,08–2,5 / 0,08–4,0
Housing material	Flame-retardant plastic
Contact part	Tinned electrical copper
Contact paste	None

Overall and installation dimensions

SMK 221-412 SMK 221-413 SMK 221-415 SMK 221–41x



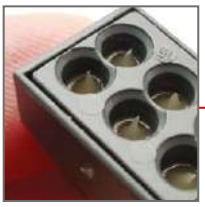
Installation and operation

- Strip wire insulation. With a recess on the terminal back, you can easily measure the required size.
- Push up the terminal lever. Insert the wire up to max.
- Pull the lever down. The contact part will compress the wire, preventing disconnecting.

Picture	Name	Number of connected wires (holes)	Conductors	Item code
	Quick spring terminal SMK 221-412 2 holes 0,2-4,0mm² (100 pcs.) EKF	2	Stranded wires - 0,2-4 mm², solid wires - 0,2-2,5 mm²	plc-smk-221-412
	Quick spring terminal SMK 221-413 3 holes 0,2-4,0mm² (100 pcs.) EKF	3		plc-smk-221-413
	Quick spring terminal SMK 221-415 5 holes 0,2-4,0mm² (50 pcs.) EKF	5		plc-smk-221-415

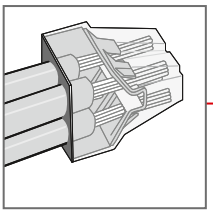
Quick spring terminals SMK 773 with paste EKF

Terminals SMK with paste are designed for connection and branching of solid copper and aluminium wires and stranded copper wires in 50/60Hz AC circuits up to 400V. Terminals are used in junction boxes. These user-friendly terminals with antirust-coated spring-loaded steel plates and individual port for each conductor enable screwless connection. Contact paste removes oxide film from aluminum wires and protects them from re-oxidation.

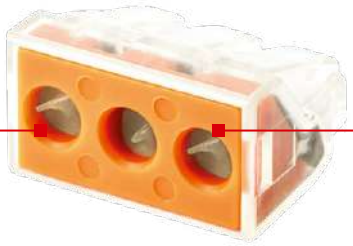


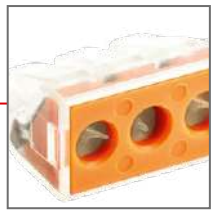
Contact paste minimizes electrical power loss and protects conductors from oxidation

Extended range of SMK terminals for 1-6 mm² cross-sections. Copper and aluminum wires supported



Easy and quick installation without screws





Flame retardant plastic housing

APPLICATION

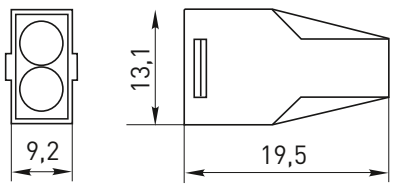
Quick-spring terminals are utilized in a diverse range of electrical and electronic applications where rapid and simple wire connections are required.

TECHNICAL DATA

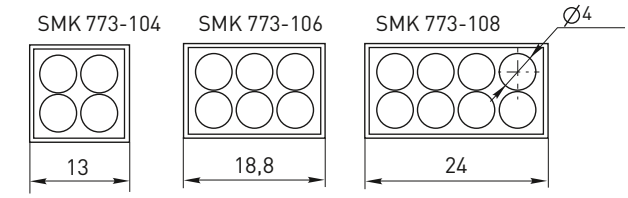
Parameters	Values
Maximum current, A	24 / 42
Cross-section, mm²	1,0–2,5 / 2,5–6,0
Housing material	Flame-retardant plastic
Contact part	Anti-corrosive coated steel
Contact paste	With paste
Color	Transparent with black/orange insert

Overall and installation dimensions (mm)

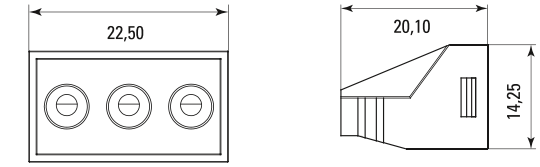
SMK 773-102



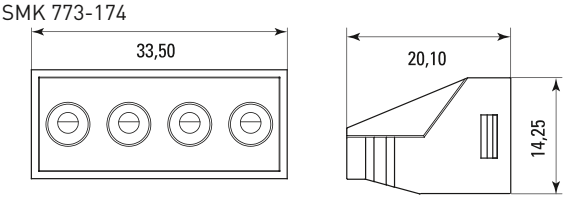
SMK 773-104 SMK 773-106 SMK 773-108



SMK 773-173



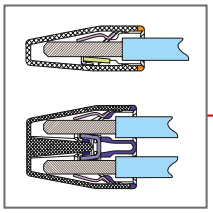
SMK 773-174



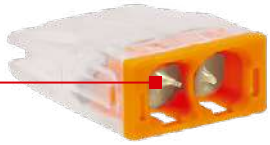
Picture	Name	Number of connected wires (holes)	Item code
	Quick spring terminal SMK 773-102 2 holes 1,0-2,5mm² (100 pcs.) EKF	2	plc-smk-102
	Quick spring terminal SMK 773-104 4 holes 1,0-2,5mm² (100 pcs.) EKF	4	plc-smk-104
	Quick spring terminal SMK 773-106 6 holes 1,0-2,5mm² (50 pcs.) EKF	6	plc-smk-106
	Quick spring terminal SMK 773-108 8 holes 1,0-2,5mm² (50 pcs.) EKF	8	plc-smk-108
	Quick spring terminal SMK 773-173 (with paste) 3 holes 2,5-6,0mm² (50 pcs.) EKF	3	plc-smk-773-173
	Quick spring terminal SMK 773-174 (with paste) 4 holes 2,5-6,0mm² (50 pcs.) EKF	4	plc-smk-773-174

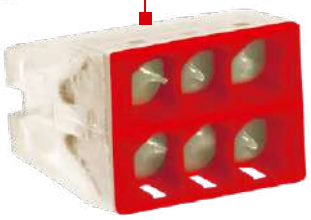
Quick spring terminals 2273 compact with paste EKF

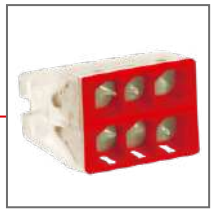
Terminals SMK 2273 with paste are designed for connection and branching of solid copper and aluminium wires and terminated stranded copper wires in 50/60Hz AC circuits up to 400V and are used in junction boxes. Contact paste removes oxide film from aluminum wires and protects them from re-oxidation.



Easy and quick installation without screws. Copper and aluminum wires supported

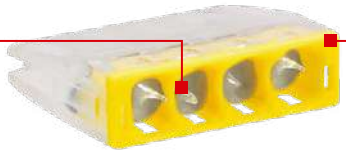


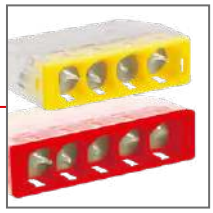




Smaller size compared to other SMK terminals. Flame retardant plastic housing

Contact paste minimizes electrical power loss and protects conductors from oxidation





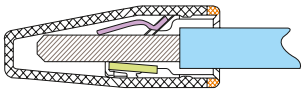
Terminals are color-coded to indicate their capacity

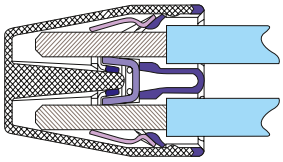
APPLICATION

Quick-spring terminals are utilized in a diverse range of electrical and electronic applications where rapid and simple wire connections are required.

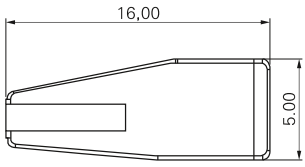
TECHNICAL DATA

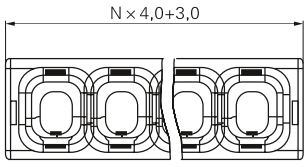
Parameters	Values
Maximum current, A	24
Cross-section, mm^2	0,75–2,5
Housing material	Flame-retardant plastic
Contact part	Tinned copper

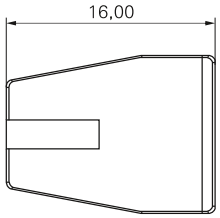


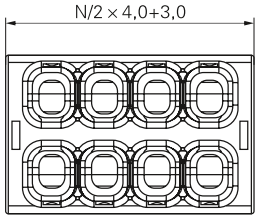


Overall and installation dimensions (mm)









Picture	Name	Number of connected wires (holes)	Color	Item code
	Quick spring terminal SMK 2273-242 (with paste) 2 holes 0,5-2,5mm^2 (100 pcs.) EKF	2	Orange	plc-smk-2273-242
	Quick spring terminal SMK 2273-243 (with paste) 3 holes 0,5-2,5mm^2 (100 pcs.) EKF	3	Grey	plc-smk-2273-243
	Quick spring terminal SMK 2273-244 (with paste) 4 holes 0,5-2,5mm^2 (100 pcs.) EKF	4	Yellow	plc-smk-2273-244
	Quick spring terminal SMK 2273-245 (with paste) 5 holes 0,5-2,5mm^2 (100 pcs.) EKF	5	Red	plc-smk-2273-245
	Quick spring terminal SMK 2273-246 (with paste) 6 holes 0,5-2,5mm^2 (50 pcs.) EKF	6	Red	plc-smk-2273-246
	Quick spring terminal SMK 2273-248 (with paste) 8 holes 0,5-2,5mm^2 (50 pcs.) EKF	8	Grey	plc-smk-2273-248

Twist-on connectors SIZ EKF

Twist-on connectors SIZ EKF are designed for bonding wires and cables into a single bundle, and insulating copper and aluminum wires. The wires are drawn into the connector's metal insert and squeezed together inside it. While the flame-retardant PVC cap serves as insulation, a tapered coiled metal insert threads onto the wires and holds them securely. Twist-on connectors are used for residential and industrial building power wiring. Quick to install, these connectors ensure reliable wire connection and insulation, and allow easy subsequent removal for future modifications with no risk to damage wires.

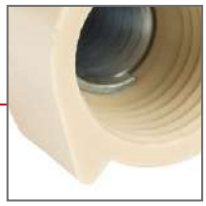
Twisting bit in the kit

SIZ-L winged design assures better grip, leverage and torque while twisting wires in the connectors

Twisted wires fully insulated

Galvanized steel spring

Tapered coiled insert securely holds twisted wires inside the connector



Impact-and environment-resistant plastic cap

APPLICATION

Twist-on connectors are widely used in both residential and commercial settings for a variety of applications:

- Light fixtures, electrical outlets and switches
- Junction boxes and electrical panels

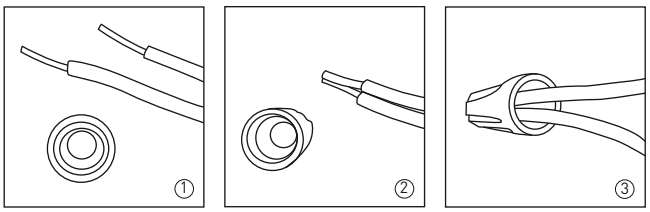
TECHNICAL DATA

Parameters	Values
Material	Flame retardant molded PVC
Operating temperature, °C	-25 to +105

Installation and operation

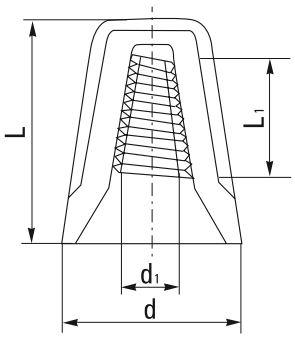
Easy installation

- No special tools required.
- Strip and twist wire ends.
- Twist wires together and onto the connector clockwise.

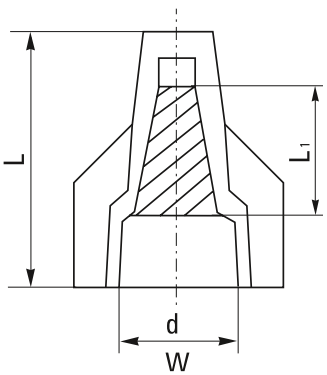


Overall and installation dimensions (mm)

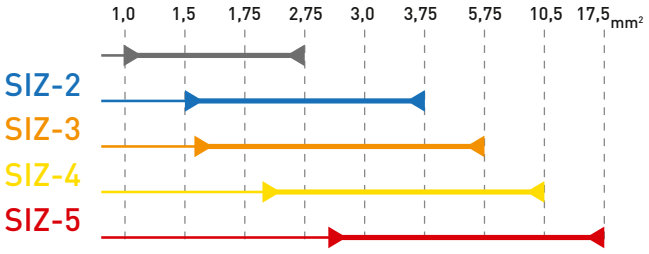
SIZ



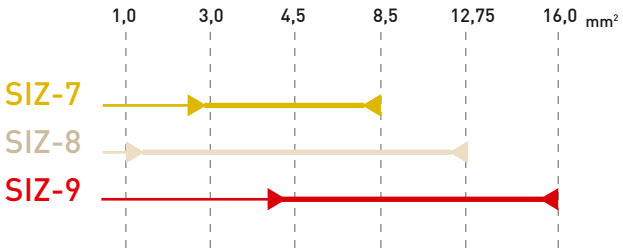
SIZ-L



Total cross-section of twisted wires in the SIZ connector, mm²



Total cross-section of twisted wires in the SIZ-L connector, mm²



Picture	Type	Name	Total cross-section, mm²		Dimensions, mm				Color	Voltage, V	Item code	
			min	max	L	L1	d	d1				
	SIZ-1	Twist-on connector SIZ-1 1-2,75mm2 EKF	1	2,75	15.5	7.5	8.5	2.5	Grey	400	plc-cc-3	plc-cc-3-b*
	SIZ-2	Twist-on connector SIZ-2 1-3,75mm2 EKF	1	3,75	17	9	10	3	Blue	400	plc-cc-4	plc-cc-4-b*
	SIZ-3	Twist-on connector SIZ-3 1,5-5,75mm2 EKF	1,5	5,75	21.5	10	12.3	4.2	Orange	690	plc-cc-5	plc-cc-5-b*
	SIZ-4	Twist-on connector SIZ-4 1,75-10,5mm2 EKF	1,75	10,5	23	12	14	4.5	Yellow	690	plc-cc-6	plc-cc-6-b*
	SIZ-5	Twist-on connector SIZ-5 3-17mm2 EKF	3	17	26	15	16	6	Red	690	plc-cc-8	plc-cc-8-b*
	SIZ-L 7	Twist-on connector SIZ-L 7 3-8,5mm2 EKF	3	8,5	24,5	17	8	–	Yellow	690	plc-cl-7	–
	SIZ-L 8	Twist-on connector SIZ-L 8 1-12,75mm2 EKF	1	12,75	27,5	18	9	–	Grey	690	plc-cl-8	–
	SIZ-L 11	Twist-on connector SIZ-L 11 4,5-16mm2 EKF	4,5	16	31	23	11	–	Red	690	plc-cl-11	–

*Blister package with twisting bit

Sets

Picture	Name	Type	Cross-section of connected wires, mm²		Color	Voltage, V	Quantity, pcs	Item code
			min	max				
	Set of twist-on connectors EKF	SIZ-1	1	2,75	Grey	400	40	plc-cc-n
		SIZ-2	1	3,75	Blue	400	40	
		SIZ-3	1,5	5,75	Orange	690	50	
		SIZ-4	1,75	10,5	Yellow	690	15	
		SIZ-5	3	17	Red	690	10	
		Twisting bit for SIZ-1 - SIZ-4 connectors	–		Black	–	1	
		Twisting bit for SIZ-5 connectors	–		Black	–	1	

Waterproof cable glands PG EKF

Waterproof cable glands PG EKF are installed in wire entry points in distribution enclosures to protect wires from mechanical damage and to ensure dust & moisture ingress protection of the entries. The glands comprise a locking nut, housing, tooth-type coupling, cap nut, cable gland and neoprene gasket. Used in composite enclosures (panels, cabinets, junction boxes, etc.) to ensure P54 rating.

Additional locking teeth

Metric thread

Improved sheath protection (IP54). PP body resistant to weather exposure

Made in Russia. Extended service life

APPLICATION

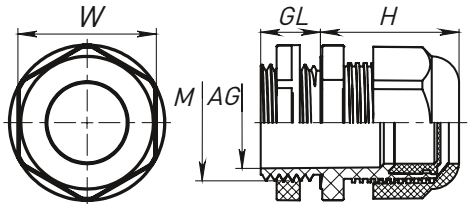
Waterproof cable glands are used to securely attach and seal cables to electrical equipment or enclosures, while providing protection against moisture, dust, and other environmental elements:

- Outdoor lighting and fixtures.
- Electrical enclosures, control panels, junction boxes, and distribution boards.
- Industrial machinery and equipment.

TECHNICAL DATA

Parameters	Values
Degree of protection per IEC 60529	IP54
Operating temperature, °C	From -40 to +80
Material	PP
Color	Grey, black (PG with flexible inlet)
Hot-wire based test under IEC 60695-2-11	750 °C

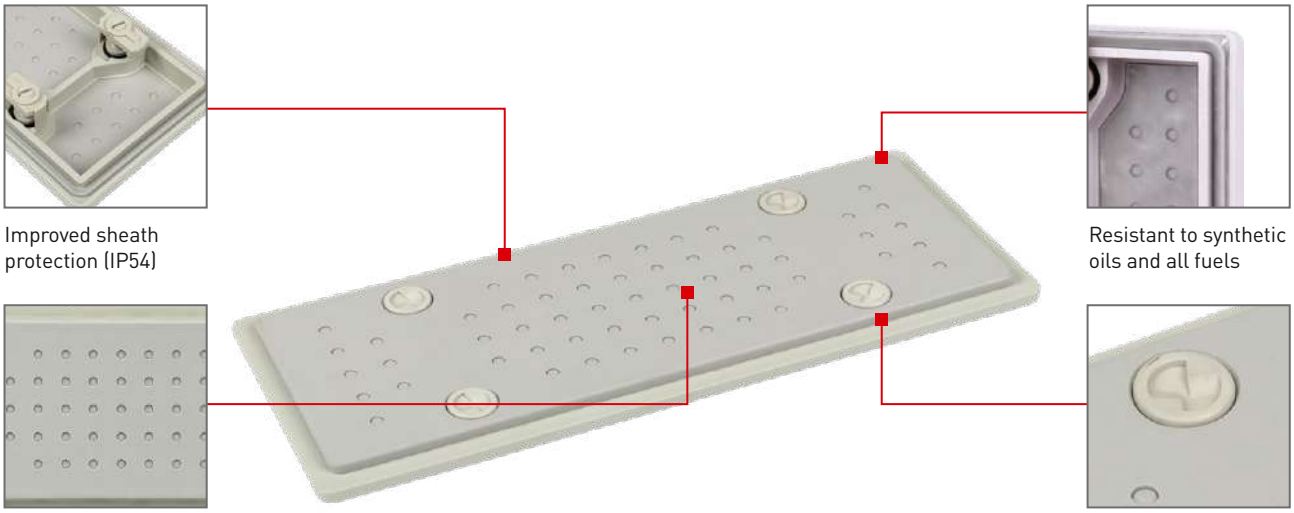
Overall and installation dimensions



Picture	Name	Cable diameter, mm	W (wrench), mm	Metric thread pitch, mm	AG, mm	M, mm	GL, mm	H, mm	Number of glands per pack					
									Item code	Pcs.	Item code	Pcs.	Item code	Pcs.
	Waterproof cable gland PG7 EKF	3–6,5	16/18	1,25	7	11	8	22	plc-pg-7-4-r	4	plc-pg-7-r	20	plc-pg-7	100
	Waterproof cable gland PG9 EKF	4–8	19/21	1,5	9	15	8	26	plc-pg-9-4-r	4	plc-pg-9-r	20	plc-pg-9	100
	Waterproof cable gland PG11 EKF	5–10	22/24	1,5	11	18	8	27	plc-pg-11-4-r	4	plc-pg-11-r	20	plc-pg-11	100
	Waterproof cable gland PG13,5 EKF	6–12	24/27	1,5	13.5	20	9	28	plc-pg-13.5-2-r	2	plc-pg-13.5-r	20	plc-pg-13.5	100
	Waterproof cable gland PG16 EKF	10–14	24	1,5	15,8	20	10,5	23,5	plc-pg-16-2-r	2	plc-pg-16-r	20	plc-pg-16	200
	Waterproof cable gland PG19 EKF	12–15	26	1,5	18,5	22	10,8	25	plc-pg-19-2-r	2	plc-pg-19-r	20	plc-pg-19	200
	Waterproof cable gland PG21 EKF	13–18	32	1,5	22,3	27	11,3	30,5	plc-pg-21-2-r	2	plc-pg-21-r	20	plc-pg-21	200
	Waterproof cable gland PG25 EKF	16–21	35/37	1,5	25,5	30	10,5	35,5	plc-pg-25-2-r	2	plc-pg-25-r	20	plc-pg-25	100
	Waterproof cable gland PG29 EKF	18–25	45	1,5	29	36	15,5	42,5	plc-pg-29-2-r	2	plc-pg-29-r	20	plc-pg-29	50
	Waterproof cable gland PG36 EKF	22–32	51/57	1,5	36	46	14	48	plc-pg-36-1-r	1	–	–	plc-pg-36	20
	Waterproof cable gland PG42 EKF	32–38	59/65	1,5	42	53	14	49	plc-pg-42-1-r	1	–	–	plc-pg-42	20
	Waterproof cable gland PG48 EKF	37–44	65/70	1,5	48	59	14	50	plc-pg-48-1-r	1	–	–	plc-pg-48	20

Membrane gland plates IP54 EKF

The membrane gland plate consists of a plastic body, a rubber membrane and mounting brackets with O-rings. The gland plates are used in electrical distribution enclosures for arrangement of sealed conductor entry with IP54 rating.



Improved sheath protection (IP54)

Resistant to synthetic oils and all fuels

Options for different cross-section wires

Extended service life. Tamper-proof screws

APPLICATION

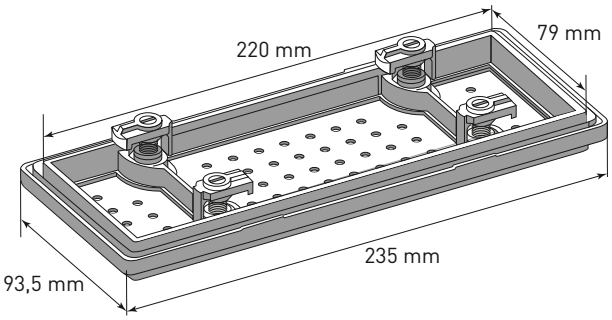
By providing a secure, sealed entry point for cables while maintaining environmental protection, membrane gland plates are essential components in various applications:

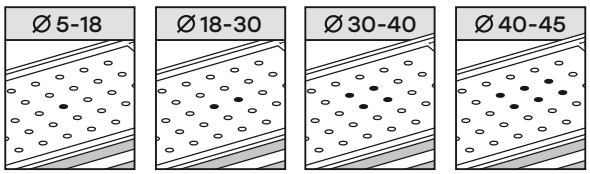
- Industrial control panels and automation equipment.
- Outdoor electrical enclosures: telecommunications, security systems, traffic control equipment.
- HVAC and building automation systems.

TECHNICAL DATA

Parameters	Values
Degree of protection per IEC 60529	IP54
Overall dimensions, mm	235 × 93,5
Dimensions of mounting window, mm	220 × 79 (±1 mm)
Housing material	Plastic
Gasket material	Rubber
Operating temperature, °C	from -5 to +40

Overall and installation dimensions



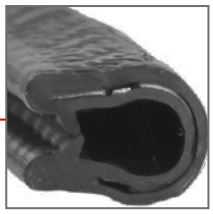


Name	Overall dimensions, mm	Dimensions of mounting window, mm	Membrane holes diameter, mm	Item code
Membrane gland plate IP54 EKF	235 × 93.5	220 × 79 (±1)	4	plc-df-w

Edge protection tape with metal cord 0,75-2mm 10 m EKF

Edge protection tape with metal cord is a perfect solution, protecting conductor insulation from damages, arranging cable entries in distribution enclosures. The tape consists of a plastic polymer and a rigid metal cord.

UV resistant. Plastic polymer easily adapts to cutout edge



Metal cord for easy securing at the cutout edge

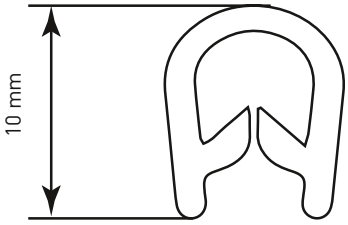
APPLICATION

Edge protection tape is utilized to safeguard the edges of cables and wires from damage, wear, and abrasion in various applications:
- Electrical and wiring installations.
- Industrial machinery and equipment.
- Repair and maintenance.

TECHNICAL DATA

Parameters	Values
Material	PVC, steel
Height, mm	10
Length, m	10
Recommended wall thickness, mm	0,75–2
Operating temperature, °C	from -40 to 80

Overall and installation dimensions



Name	Recommended wall thickness, mm	Item code
Edge protection tape with metal cord 0,75-2mm 10 m EKF	0,75–2	plc-ept-2-10

Polyamide cable braid EKF

Cable braid enables quick and convenient joining of wires inside cable ducts, metal trays and distribution enclosures, protecting wires from damage and chafing and making the whole installation arranged.

Safe and arranged cable routing. Cables protected from chafing and cutting

UV resistant. High flexibility and elasticity

APPLICATION

Cable braid is used to provide protection and shielding for cables and wiring:
- Electrical and electronic equipment.
- Industrial machinery and automation.
- Telecommunications and networking.

TECHNICAL DATA

Parameters	Values
Materials	PA 6,6
Flammability class by UL 94	V-2
Operating temperature, °C	from -55 to 130

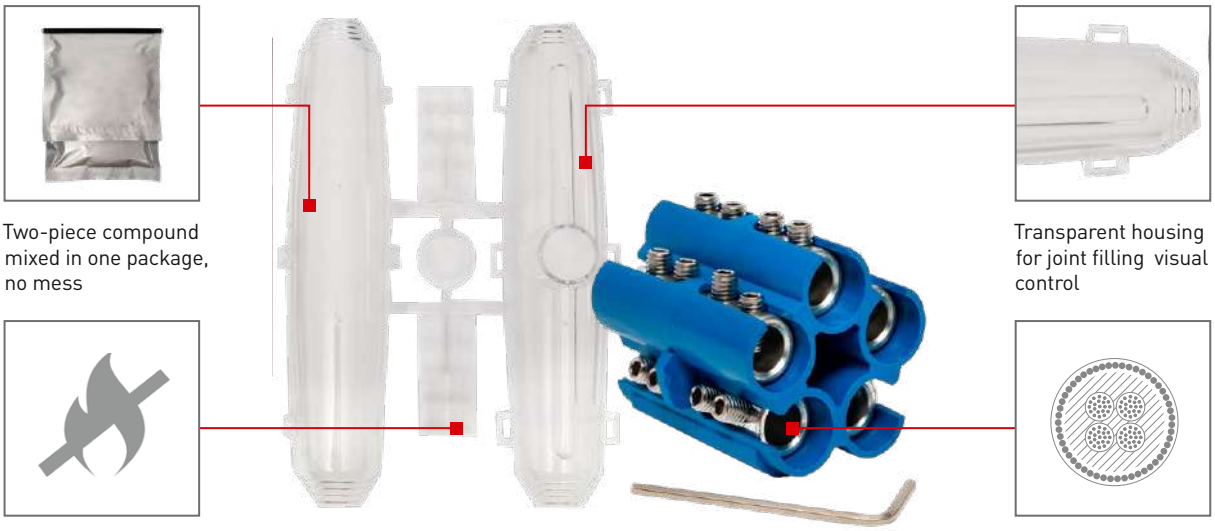
Delivery scope

1. Polyamide cable braid - 50 / 100 m, depending on product type.
2. Box with al hole for easy removal.

Name	Braided diameter, mm	Item code
Polyamide cable braid 10-16mm 100m EKF	10–16	cb-pa-10-16
Polyamide cable braid 12-20mm 100m EKF	12–20	cb-pa-12-20
Polyamide cable braid 15-24mm 10m EKF	15–24	cb-pa-15-24
Polyamide cable braid 20-32mm 50m EKF	20–32	cb-pa-20-32
Polyamide cable braid 25-40mm 50m EKF	25–40	cb-pa-25-40

Resin cable joint kits EKF

Resin joint kits are designed to protect cable and wire connections and can be used in areas restricted for open flame or heat. Unsoldered earthing kits are available for armored cables.



Two-piece compound mixed in one package, no mess

Transparent housing for joint filling visual control

Best-suited for applications restricted for conventional heat shrinking

Options for armored cables

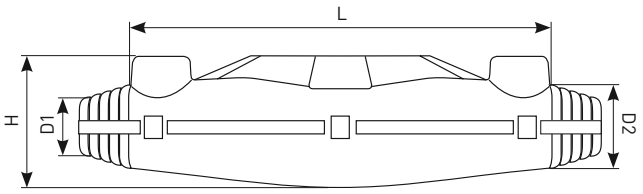
APPLICATION

Resin cable joint kits are used for industrial and commerical applications:
- Power distribution networks
- Underground cable installations
- Telecommunication and data transmission cables

TECHNICAL DATA

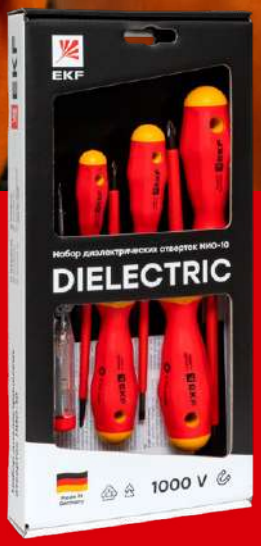
Parameters	Values	
	mks-2 / mks-2-k-b	mks-3 / mks-3-k-b
Degree of protection	IP68	
Operating temperature, °C	From -40 to +80	
Installation temperature, °C	< +10	
Housing material	Polycarbonate	
Compound	Two-piece, epoxy based	
Cross-section of connected wires, mm^2	1,5–6	6–25

Overall and installation dimensions



Item code	L, mm	H, mm	D1, mm	D2, mm
mks-2	190	36	6	28
mks-3	260	48	16	32
mks-2-k-b	190	36	6	28
mks-3-k-b	260	48	16	32

Picture	Name	Cross-section of connected wires, mm^2	Terminal block in the kit	Earthing kit	Item code
	Resin cable joint kit MKS 1,5-6mm^2 EKF	1,5–6,0	–	–	mks-2
	Resin cable joint kit MKS 6-25mm^2 EKF	6,0–25,0	–	–	mks-3
	Resin cable joint kit MKS(B) 1,5-6mm^2 (terminal block) EKF	1,5–6,0	Yes	Yes	mks-2-k-b
	Resin cable joint kit MKS (B) 6-25mm^2 (terminal block) EKF	6,0–25,0	Yes	Yes	mks-3-k-b



Home Electrician

Voltage testers

Voltage testers are ubiquitous devices that are used to detect the presence of voltage and to test the continuity of electrical circuits (light bulbs, fuses, wires, wall plugs, etc.) with both contact and non-contact testers available in the EXPERT EKF product range. Their principle of operation is very simple – to check for voltage, touch a bare conductor with the probe of a voltage tester and the neon lamp or LED will light up if the conductor is live.

Increased battery capacity

Improved sensitivity of non-contact testing method

Electronic components testing (OI-2e)

Sound and light indication (OI-2e)

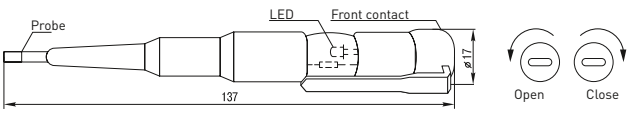
APPLICATION

Voltage testers are commonly used for various safety and diagnostic purposes in electrical work and troubleshooting.

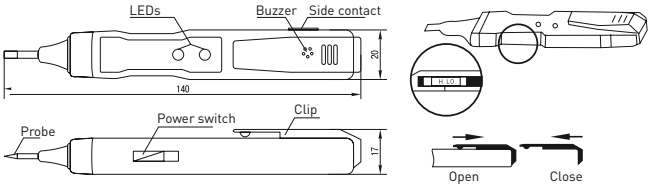
TECHNICAL DATA

Overall dimensions (mm)

OI-1



OI-2e



Picture	Name	Testing	Value	Item code
	Voltage tester OI-1 EXPERT EKF	AC voltage detection, contact method, V	0–250	ST-10
		AC voltage detection, non-contact method, V	70–600	
		DC voltage detection, V DC	250	
		DC circuit continuity and polarity, V DC	1,5–6	
		De-energized circuit resistance, MΩ	0–50	
		High-frequency EMF detection, over mW/cm²	5	
		Frequency, Hz	5–500	
	Voltage tester OI-2e EXPERT EKF	AC voltage detection, contact method, V	70–250	ST-20e
		AC voltage detection, non-contact method, V	70–1000	
		DC voltage detection, V DC	250	
		DC circuit continuity and polarity, V DC	1,2–36	
		De-energized circuit resistance, MΩ	0 = 0–5 L = 0–50 H = 0–100	
		High-frequency EMF detection, over mW/cm²	L = 5 H = 2	
		Frequency, Hz	5–500	
		Battery	LR44	

Screwdrivers

A screwdriver is a most common tool in electrical and mechanical engineering, repair, decoration and household use. This is why EKF is constantly improving the quality and expanding the product range of screwdrivers to satisfy the needs of both DIY enthusiasts and tradesmen.

Soft inserts prevent the hand from slipping, reduce the pressure when gripping, and prevent the formation of calluses

Blued magnetic tip, facilitating vertical use. Chrome-vanadium shank, heat-treated to a hardness of 50-55 HRC

The shape of the handle prevents the screwdriver from rolling off an inclined surface

Ergonomic handle for secure and confident grip. The handle shape enables efficient transmission of torque to work with even the most stubborn stuck screws

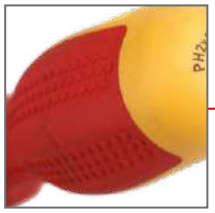
APPLICATION

Screwdrivers are essential hand tools for a wide range of construction, assembly, maintenance, and repair tasks in both professional and DIY settings

Picture	Name	Series	Tip	Figure	Slot size Shank length, mm	Slot width, mm Screw sizes	Item code
	Slotted screwdriver SL3,5x75 mm MASTER EKF	MASTER	Slotted (SL)		3,5 × 75	0,6	sl-3.5-75-mas
	Slotted screwdriver SL4x100 mm MASTER EKF				4 × 100	0,8	sl-4-100-mas
	Slotted screwdriver SL5,5x125 mm MASTER EKF				5,5 × 125	1,0	sl-5.5-125-mas
	Slotted screwdriver SL6,5x150 mm MASTER EKF				6,5 × 150	1,2	sl-6.5-150-mas
	Slotted screwdriver SL6,5x38 mm MASTER EKF				6,5 × 38	1,2	sl-6.5-38-mas
	Slotted screwdriver SL8x150 mm MASTER EKF				8 × 150	1,2	sl-8-150-mas
	Phillips screwdriver PH0x75 mm MASTER EKF		Phillips (PH)		PH0 × 75	M1,6 - M2	ph-0-75-mas
	Phillips screwdriver PH1x100 mm MASTER EKF				PH1 × 100	M2 - M3	ph-1-100-mas
	Phillips screwdriver PH2x100 mm MASTER EKF				PH2 × 100	M3,5 - M5	ph-2-100-mas
	Phillips screwdriver PH3x150 mm MASTER EKF				PH3 × 150	M5,5 - M7	ph-3-150-mas
	Phillips screwdriver PH2x38 mm MASTER EKF				PH2 × 38	M3,5 - M5	ph-2-38-mas
	Pozidriv screwdriver PZ0×75 mm MASTER EKF		Pozidriv (PZ)		PZ0 × 75	M1,6 - M2	pz-0-75-mas
	Pozidriv screwdriver PZ1x100 mm MASTER EKF				PZ1 × 100	M2 - M3	pz-1-100-mas
	Pozidriv screwdriver PZ2x100 mm MASTER EKF				PZ2 × 100	M3,5 - M5	pz-2-100-mas
	Pozidriv screwdriver PZ3x150 mm MASTER EKF				PZ3 × 150	M5,5 - M7	pz-3-150-mas

Insulated screwdrivers

Insulated screwdrivers are suitable for all types of electrical jobs, including live wire work up to 1000 V AC. The wide rage of sizes and head types covers the entire range of screw sizes most common in electrical installations and everyday life. Master and Expert series insulated screwdrivers are manufactured in strict compliance with EN 60900 / IEC 60900 with each screwdriver individually tested by 10 kV discharge.



The handle shape enables efficient transmission of torque to work with even the most stubborn stuck screws

Thermoplastic rubber inserts prevent slippage, reduce required grip force, and prevent calluses

Chrome-vanadium shank, heat-treated to a hardness of 50-55 HRC for MASTER series or 52-58 HRC for Expert series screwdrivers

Blued magnetic tip, facilitating vertical use

APPLICATION

Insulated screwdrivers are essential safety tools for electricians, maintenance technicians, and anyone working with live electricity.

Picture	Name	Series	Tip	Figure	Slot size Shank length, mm	Slot width, mm Screw sizes	Item code
	Insulated slotted screwdriver SL2,5×80 mm 1000V MASTER EKF	MASTER	Slotted (SL)	–	2,5 × 80	0,5	sl-2.5-80-mas-in
	Insulated slotted screwdriver SL4,0×100 mm 1000V MASTER EKF				4 × 100	0,8	sl-4-100-mas-in
	Insulated slotted screwdriver SL5,5x125 mm 1000 V MASTER EKF				5,5 × 125	1,0	sl-5.5-125-mas-in
	Insulated slotted screwdriver SL6,5x150 mm 1000 V MASTER EKF				6,5 × 150	1,2	sl-6.5-150-mas-in
	Insulated Phillips screwdriver PH0x75 mm 1000 V MASTER EKF		Phillips (PH)	+	PH0 × 75	M1,6 - M2	ph-0-75-mas-in
	Insulated Phillips screwdriver PH1×80 mm 1000V MASTER EKF				PH1 × 80	M2 - M3	ph-1-80-mas-in
	Insulated Phillips screwdriver PH2×100 mm 1000V MASTER EKF				PH2 × 100	M3,5 - M5	ph-2-100-mas-in
	Insulated Phillips screwdriver PH3×150 mm 1000V MASTER EKF				PH3 × 150	M5,5 - M7	ph-3-150-mas-in
	Insulated Pozidriv screwdriver PZ1×80 mm 1000V MASTER EKF		Pozidriv (PZ)	+	PZ1 × 80	M2 - M3	pz-1-80-mas-in
	Insulated Pozidriv screwdriver PZ2×100 mm 1000V MASTER EKF				PZ2 × 100	M3,5 - M5	pz-2-100-mas-in
	Insulated slotted screwdriver SL3×75 mm 1000V EXPERT EKF	EXPERT	Slotted (SL)	–	3 × 75	0,5	sl-3-75-exp-in
	Insulated slotted screwdriver SL4×100 mm 1000V EXPERT EKF				4 × 100	0,8	sl-4-100-exp-in
	Insulated slotted screwdriver SL5,5x125 mm 1000V EXPERT EKF				5,5 × 125	1,0	sl-5.5-125-exp-in
	Insulated slotted screwdriver SL6,5×150 mm 1000V EXPERT EKF				6,5 × 150	1,2	sl-6.5-150-exp-in
	Insulated Phillips screwdriver PH0×60 mm 1000V EXPERT EKF		Phillips (PH)	+	PH0 × 60	M1,6 - M2	ph-0-60-exp-in
	Insulated Phillips screwdriver PH1×80 mm 1000V EXPERT EKF				PH1 × 80	M2 - M3	ph-1-80-exp-in
	Insulated Phillips screwdriver PH2×100 mm 1000V EXPERT EKF				PH2 × 100	M3,5 - M5	ph-2-100-exp-in
	Insulated Phillips screwdriver PH3×150 mm 1000V EXPERT EKF				PH3 × 150	M5,5 - M7	ph-3-150-exp-in
	Insulated Pozidriv screwdriver PZ1×80 mm 1000V EXPERT EKF		Pozidriv (PZ)	+	PZ1 × 80	M2 - M3	pz-1-80-exp-in
	Insulated Pozidriv screwdriver PZ2×100 mm 1000V EXPERT EKF				PZ2 × 100	M3,5 - M5	pz-2-100-exp-in

Pliers

Pliers are a large group of tools used in mechanical, electrical, repair and other construction applications. All tools that fit into the pliers category consist of three parts: the working part, the movable swivel joint and the handles. The tools differ in terms of the functions they perform and their ease of use for each specific application.

Expert is a series of tools with improved performance characteristics that undergo additional processing and quality control during manufacturing

High quality materials and excellent ergonomics. Anti-slip stops provide a comfortable grip and the improved leverage for cutting

Working part material: chrome vanadium tool steel. Surface: Master series – matte nickel plating
Expert series – blued, polished

Cutting edges hardened by high-frequency currents:
Master - to HRC 55 to 62
Expert - to HRC 57 to 65

APPLICATION

Pliers are versatile hand tools used for gripping, bending, cutting, and twisting various materials. They are commonly used in construction, automotive repair, electrical work, metalworking, and other applications.

Name	Length, mm	Item code			
		MASTER		EXPERT	
Combination pliers 160 mm	160		pas-160-mas		pas-160-exp
Combination pliers 180 mm	180		pas-180-mas		pas-180-exp
Combination pliers 200 mm	200		pas-200-mas		pas-200-exp
Diagonal cutting pliers 160 mm	160		bo-160-mas		bo-160-exp

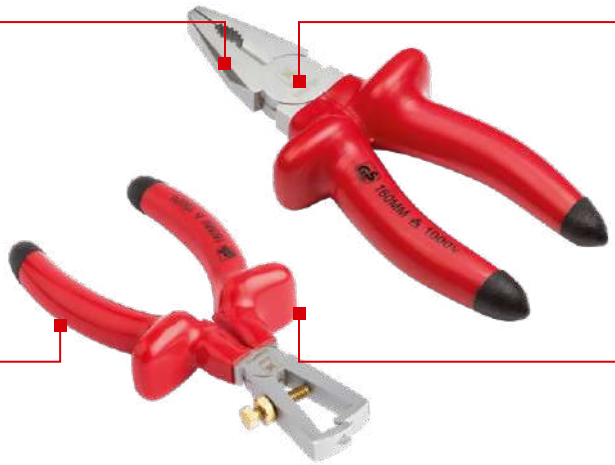
Name	Length, mm	Item code			
		MASTER		EXPERT	
Long nose pliers 160 mm	160		dg-160-mas		dg-160-exp
Long nose pliers 200 mm	200		dg-200-mas		dg-200-exp
Curved long nose pliers 160 mm	160		dgi-160-mas		dgi-160-exp
Curved long nose pliers 200 mm	200		dgi-200-mas		dgi-200-exp
Round nose pliers 160 mm	160		kg-160-mas		kg-160-exp
Cable scissors NK-12	250		nk-12-mas		nk-12y-exp
Cable scissors NK-16			nk-16-mas		nk-16y-exp
Water pump pliers 250 mm			kp-250-mas		kp-250-exp

Insulated pliers MASTER EKF

Insulated pliers are a large group of tools, rated for live work up to 1000 V. Master series insulated pliers have double-layer insulated handles, applied by dipping.

Chrome-vanadium steel. Matte nickel plating for extended tool life and corrosion resistance

Two-layer dipped plastisol insulation (outer – red, inner – yellow). Rated for live work up to 1000 V



Cutting edges hardened by high-frequency currents to HRC 62–65

Stops on the handles prevent sparks from jumping onto the hand and prevent the hand from slipping into the work area

APPLICATION

Insulated pliers are used by electricians, maintenance workers, and anyone else working with live electrical components.

Picture	Name	Length, mm	Item code
	Insulated combination pliers 160 mm 1000V MASTER EKF	160	pas-160-mas-in
	Insulated combination pliers 180 mm 1000V MASTER EKF	180	pas-180-mas-in
	Insulated combination pliers 200 mm 1000V MASTER EKF	200	pas-200-mas-in
	Insulated diagonal cutting pliers 160 mm 1000V MASTER EKF	160	bo-160-mas-in
	Insulated reinforced diagonal cutting pliers 180 mm 1000V MASTER EKF	180	sbo-180-mas-in

Picture	Name	Length, mm	Item code
	Insulated long nose pliers 160 mm 1000V MASTER EKF	160	dg-160-mas-in
	Insulated long nose pliers 200 mm 1000V MASTER EKF	200	dg-200-mas-in
	Insulated curved long nose pliers 160 mm 1000V MASTER EKF	160	dgi-160-mas-in
	Insulated curved long nose pliers 200 mm 1000V MASTER EKF	200	dgi-200-mas-in
	Insulated round nose pliers 160 mm 1000V MASTER EKF	160	kg-160-mas-in
	Insulated wire stripper 160 mm 1000V MASTER EKF		st-160-mas-in
	Insulated cable scissors NKi-12 1000V MASTER EKF		nk-12-mas-in
	Insulated cable scissors NKi-16 1000V MASTER EKF	250	nk-16-mas-in
	Insulated water pump pliers 250 mm 1000V MASTER EKF		nk-250-mas-in

Insulated pliers EXPERT EKF

Insulated pliers are a large group of tools, rated for live work up to 1000 V. Expert series insulated pliers have slip-on insulated handles with anti-slip elements.

Double-layer plastisol insulated handles. Rated for live work up to 1000 V. Complies with IEC 60900 requirements

Stops on the handles prevent sparks from jumping onto the hand and prevent the hand from slipping into the work area

Chrome-vanadium steel. Matte nickel plating for extended tool life and corrosion resistance

Cutting edges hardened by high-frequency currents

APPLICATION Insulated pliers are used by electricians, maintenance workers, and anyone else working with live electrical components.

Picture	Name	Length, mm	Item code
	Insulated combination pliers 160 mm 1000V EXPERT EKF	160	pas-160-exp-in
	Insulated combination pliers 180 mm 1000V EXPERT EKF	180	pas-180-exp-in
	Insulated combination pliers 200 mm 1000V EXPERT EKF	200	pas-200-exp-in
	Insulated diagonal cutting pliers 160 mm 1000V EXPERT EKF	160	bo-160-exp-in

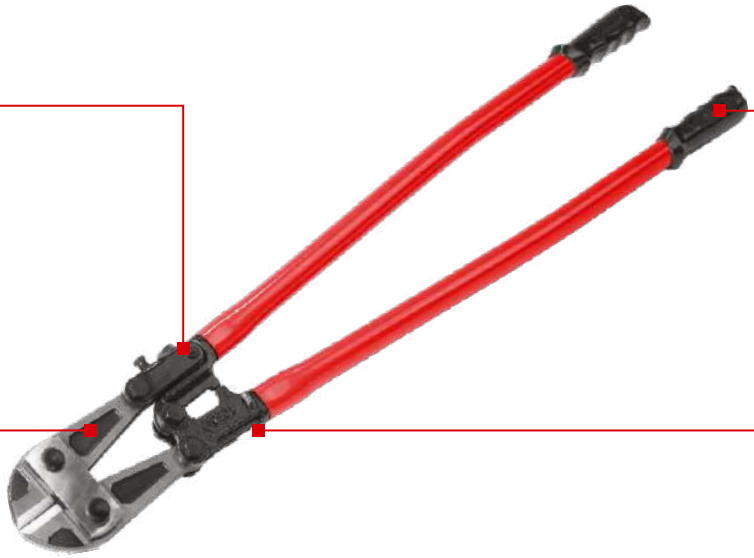
Picture	Name	Length, mm	Item code
	Insulated reinforced diagonal cutting pliers 180 mm 1000V EXPERT EKF	180	sbo-180-exp-in
	Insulated round nose pliers 160 mm 1000V EXPERT EKF	160	dg-160-exp-in
	Insulated long nose pliers 200 mm 1000V EXPERT EKF	200	dg-200-exp-in
	Insulated curved long nose pliers 160 mm 1000V EXPERT EKF	160	dgi-160-exp-in
	Insulated curved long nose pliers 200 mm 1000V EXPERT EKF	200	dgi-200-exp-in
	Insulated round nose pliers 160 mm 1000V EXPERT EKF	160	kg-160-exp-in
	Insulated wire stripper 160 mm 1000V EXPERT EKF		st-160-exp-in
	Insulated cable scissors NKi-12u 1000V EXPERT EKF		nk-12y-exp-in
	Insulated cable scissors NKi-16u 1000V EXPERT EKF	250	nk-16y-exp-in
	Insulated water pump pliers 250 mm 1000V EXPERT EKF		kp-250-exp-in

Bolt cutters MASTER EKF

Bolt cutters are tools for cutting rebar, wires, cables, pipes, studs, bolts and other steel or softer metalware in round, square and hexagonal cross-sections. The force, applied to handles, is multiplied and transferred to the jaws of the tool through a series of levers. This enables the tool to cut through relatively thick metal with little physical effort. Thanks to their dimensions and cutting range, EKF bolt cutters are perfect for installation of metal cable trays.

Adjustable gap between cutting surfaces for easy manual re-sharpening

Patented shape of the cutting head extends useful life of the tool. Zone hardening of the jaws for improved performance



Combination tool steel and rubber/ plastic handles

Double lever design for lower cutting effort

APPLICATION

Bolt cutters are commonly used for industrial, construction, automotive applications, and are the first choice in emergency situations where there is a need to cut through heavy-duty materials quickly and efficiently.

Name	Maximum cutting diameter, mm	Length, mm	Description	Item code
Manual bolt cutter BR-350 MASTER EKF	7	350	For cutting rebar of various diameters, wires, cables, pipes, studs, bolts and other steel or softer metal stock and metalware in round, square and hexagonal cross-sections up to 7 mm in diameter.	br-01
Manual bolt cutter BR-450 MASTER EKF	8	450	For cutting rebar of various diameters, wires, cables, pipes, studs, bolts and other steel or softer metal stock and metalware in round, square and hexagonal cross-sections up to 8 mm in diameter.	br-02
Manual bolt cutter BR-600 MASTER EKF	10	600	For cutting rebar of various diameters, wires, cables, pipes, studs, bolts and other steel or softer metal stock and metalware in round, square and hexagonal cross-sections up to 10 mm in diameter.	br-06

Insulated tool sets

EKF tool sets include the optimal tool selection both for professional electricians and DIY enthusiasts, all packaged in a convenient soft carry case made of modern synthetic water- and dirt-repellent fabric with padded lining. Each tool has a separate compartment, so you won't lose your tools when the job is done. Insulated tools can be safely used for live work up to 1000 V AC. Tool sets contain insulated tools suitable for a wide variety of tasks. Every tool has been individually tested against 10 kV voltage in compliance with the requirements of IEC 60900. Operating temperature: -20 to +70 °C at max. relative humidity of 98%.

Cutting edges hardened by high-frequency currents up to HRC 62. Chrome-vanadium steel

Double-layer plastisol insulated handles. Rated for live work up to 1000 V. Stops on the handles prevent sparks from jumping onto the hand and prevent the hand from slipping into the work area

Flattened stops to prevent the screwdriver from rolling

Soft case, made from modern synthetic water- and stain-repellent fabrics with a soft lining

APPLICATION

Tool sets are used for a variety of tasks and purposes, being essential for DIY, professional work, and general maintenance tasks around the home or workplace. They provide a convenient and organized way to have all the necessary tools for a wide range of projects.

Picture	Name	Description	Item code
	Insulated screwdriver set NIO-03 MASTER EKF	Insulated screwdriver SL4x100 mm 1000 V MASTER EKF – 1 pc. Insulated screwdriver PH1x100 mm 1000 V MASTER EKF – 1 pc. Voltage tester OI-1 EXPERT EKF – 1 pc.	ndo-03
	Insulated screwdriver set NIO-06 MASTER EKF	**Insulated screwdrivers:** SL3×75 mm 1000 V MASTER EKF– 1 pc. SL4×100 mm 1000 V MASTER EKF – 1 pc. SL5,5×125 mm 1000 V MASTER EKF – 1 pc. PH1×100 mm 1000 V MASTER EKF – 1 pc. PH2×100 mm 1000 V MASTER EKF – 1 pc. Voltage tester OI-1 EXPERT EKF – 1 pc. Soft case – 1 pc.	ndo-06
	Insulated screwdriver set NIO-08 MASTER EKF	**Insulated screwdrivers:** SL3×75 mm 1000 V MASTER EKF – 1 pc. SL4×100 mm 1000 V MASTER EKF – 1 pc. SL5,5×125 mm 1000 V MASTER EKF – 1 pc. SL6,5×150 mm 1000 V MASTER EKF – 1 pc. PH0×75 mm 1000 V MASTER EKF – 1 pc. PH1×100 mm 1000 V MASTER EKF – 1 pc. PH2×100 mm 1000 V MASTER EKF – 1 pc. Voltage tester OI-1 EXPERT EKF – 1 pc. Soft case – 1 pc.	ndo-08

Picture	Name	Description	Item code
	Insulated tool set NII-02 MASTER EKF	**Insulated tools:** Cable scissors NKi-12 1000 V MASTER EKF – 1 pc. Combination pliers 180 mm 1000 V MASTER EKF– 1 pc. Round nose pliers 160 mm 1000V MASTER EKF - 1 pc. Soft case - 1 pc.	ndi-02
	Insulated tool set NII-03 MASTER EKF	**Insulated tools:** Diagonal cutting pliers 160 mm 1000 V EKF MASER – 1 pc. Combination pliers 160 mm 1000 V EKF MASER – 1 pc. Long nose pliers 160 mm 1000 V MASTER EKF – 1 pc. Soft case – 1 pc.	ndi-03
	Insulated tool set NII-09 MASTER EKF	**Insulated tools:** Combination pliers 180 mm 1000 V MASTER EKF – 1 pc. Diagonal cutting pliers 160 mm 1000 V MASTER EKF – 1 pc. **Insulated screwdrivers**: Screwdriver SL4×100 mm 1000 V MASTER EKF – 1 pc. Screwdriver SL5,5×125 mm 1000 V MASTER EKF – 1 pc. Screwdriver PH1×80 mm 1000 V MASTER EKF – 1 pc. Screwdriver PH2×100 mm 1000 V MASTER EKF – 1 pc. Voltage tester OI-1 EKF – 1 pc. Soft case – 1 pc.	ndi-09
	Insulated tool set NII-19 MASTER EKF	**Insulated tools:** Combination pliers 180 mm 1000 V MASTER EKF – 1 pc. Diagonal cutting pliers 160 mm 1000 V MASTER EKF – 1 pc. Long nose pliers 160 mm 1000 V MASTER EKF – 1 pc. **Insulated screwdrivers**: Screwdriver SL2,5×80 mm 1000 V MASTER EKF – 1 pc. Screwdriver SL4×100 mm 1000 V MASTER EKF – 1 pc. Screwdriver SL5,5×125 mm 1000 V MASTER EKF – 1 pc. Screwdriver PH1×80 mm 1000 V MASTER EKF – 1 pc. Screwdriver PH2×100 mm 1000 V MASTER EKF – 1 pc. Voltage tester OI-1 EXPERT EKF – 1 pc. Soft case – 1 pc.	ndi-19
	Insulated tool set NII-01 EXPERT EKF	**Insulated screwdrivers**: Screwdriver SL2,5×80 mm 1000 V EXPERT EKF – 1 pc. Screwdriver SL4×100 mm 1000 V EXPERT EKF – 1 pc. Screwdriver SL5,5×125 mm 1000 V EXPERT EKF – 1 pc. Screwdriver PH1×80 mm 1000 V EXPERT EKF – 1 pc. Screwdriver PH2×100 mm 1000 V EXPERT EKF – 1 pc. **Insulated tools:** Combination pliers 180 mm 1000 V EXPERT EKF – 1 pc. Reinforced diagonal cutting pliers 180 mm 1000 V EXPERT EKF – 1 pc. Long nose pliers 160 mm 1000 V EXPERT EKF – 1 pc. Voltage tester OI-1 EXPERT EKF – 1 pc. Soft case – 1 pc.	ndi-01
	Insulated tool set NII-04 EXPERT EKF	**Insulated tools:** Insulated cutting scissors NKi-12u 1000 V EXPERT EKF - 1 pc. Insulated combination pliers 180 mm 1000 V EXPERT EKF– 1 pc. Insulated round nose pliers 160 mm 1000 V EXPERT EKF – 1 pc. Soft case - 1 pc.	ndi-04
	Insulated tool set NII-12 EXPERT EKF	**Insulated tools:** Insulated combination pliers 160 mm 1000 V EXPERT EKF – 1 pc. Insulated diagonal cutting pliers 160 mm 1000 V EXPERT EKF – 1 pc. Insulated long nose pliers 160 mm 1000 V EXPERT EKF – 1 pc. Soft case – 1 pc.	ndi-12

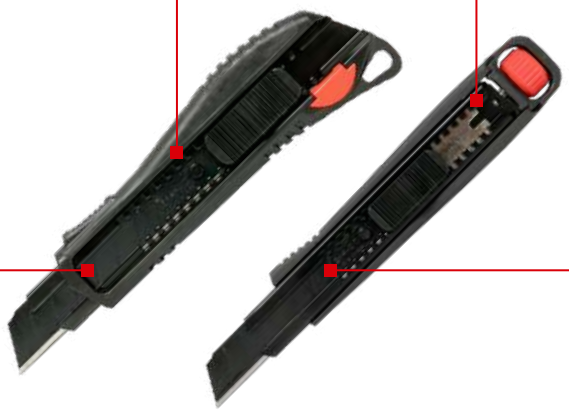
Utility knives with spare blades

Utility knives are used for cutting construction materials such as PVC flooring sheets, carpet, wallpaper, drywall, roofing materials, plastic, wood, as well as for modeling work. They can be used both for household and professional applications.

Tighter clearance between the blade and the metal guide for a more precise cut

Thicker (up to 1,2 mm) metal guide for improved rigidity and greater cutting force.

18mm blade - the most popular and ubiquitous type of utility blades, easy to find a replacement set.



Auto-Lock - automatic secure double-sided blade locking mechanism for additional safety and performance

APPLICATION

Utility knives are a versatile tool for making quick, precise cuts in various materials, and are commonly used for professional and household tasks:

- Opening packages and boxes
- Trimming materials: cardboard, wallpaper, flooring, insulation, and plastic sheeting
- Cutting and scoring leather, rubber, foam, carpet, etc.

Picture	Name	Width of blade, mm	Metal guide thickness, mm	Item code
	Snap-off utility knife 9 mm NCM-10 MASTER EKF	9	–	ncm-10-ms
	Snap-off utility knife 18 mm NCM-20 MASTER EKF	18		ncm-20-ms
	Reinforced snap-off utility knife 18 mm NCM-50 EXPERT EKF		1	ncm-50-exp
	Reinforced snap-off utility knife 18 mm NCM-80 PROFESSIONAL EKF		1,2	ncm-80-pro

Spare blades

- Improved hardening with microscopic serrations on the cutting edge for a cleaner cut. Three-stage laser sharpening.
- High-quality U10A knife steel keeps the edge even during the most demanding work.
- The most popular blade width on the market - 18mm, will fit most knives. 10 pieces per pack.

Picture	Name	Blade thickness, mm	Blade width, mm	Steel grade	Item code
	Snap-off blades 9 mm NC-10 MASTER EKF	0,35	9	Tool steel	cm-s30
	Snap-off blades 18 mm NC-20 MASTER EKF	0,5	18		cm-s60
	Snap-off blades 18 mm CM-30 EXPERT EKF	0,5		High quality carbon tool steel U10A - Japanese SK4 steel - ultra sharp and keeps the edge even after most demanding jobs.	cm-s30
	Snap-off blades 18 mm CM-60 PROFESSIONAL EKF	0,7			cm-s60

Digital multimeters

Multimeters are versatile electronic test instruments used in electrical engineering and electronics to determine the key characteristics of the AC and DC circuit. Depending on their functional equipment, the devices can measure basic parameters: current, voltage, circuit resistance, and also determine the polarity. EKF digital multimeters comply with the requirements of IEC 61010-1 for device safety and IEC 61326-2-1, IEC 61326-2-2 for electromagnetic compatibility. MASTER is a well-balanced range of easy-to-use and reliable products. EXPERT features high quality measuring instruments with a wide range of functions for everyday use. PROFESSIONAL features devices with extra functions

Wide range. Retail packaging

Several multimeter product lines with varying functionality and safety certification

High quality and safe materials

Wide range of functions. High measurement accuracy

APPLICATION

Multimeters are commonly used by electricians, technicians, and DIY enthusiasts for a wide range of tasks, e.g. measuring voltage, current, resistance and also continuity and didode testing.

TECHNICAL DATA

Parameters	Values														
	M182	M300	MS8232	MS8233E	MS8211	M830B	MAS830B	MAS830L	M832	M838	MAS838	MY61	MY64	MS18C	MS8236
Digit capacity	1999		2000		1999									6000	
Automatic selection of measurement mode	–	–	–	–	–	–	–	–	–	–	–	–	–	–	●
Automatic selection of measurement limits	–	–	●	●	●	–	–	–	–	–	–	–	–	–	●
Direct current voltage, V DC	500		600			1000	600		1000		600	1000			
Alternating current voltage, V AC	500		600			750	600		750		600	750			
Direct current, A	0,2			10	0,2	10								20	10
Alternating current, A	–	–	0,2	10	0,2	–						10	10	20	10
Resistance, MΩ	2		20			2						200		60	
Capacitance, mF	–	–	–	–	–	–	–	–	–	–	–	0,2		100	10
Frequency, MHz	–	–	–	–	–	–	–	–	–	–	–	–	0,2	9,999	10
Temperature measuring range, °C	–	–	–	1000	–	–	–	–	–	1370	1000	–	1000		
Duty cycle	–	–	–	–	–	–	–	–	–	–	–	–	–	–	●
Diode test	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Circuit continuity (buzzer)	●	●	●	●	●	–	–	●	●	●	●	●	●	●	●
Transistor hFE	●	–	–	–	–	●	●	●	●	●	●	●	●	●	●
Signal generator 50 Hz (meander)	–	–	–	–	–	–	–	–	●	–	–	–	–	–	–
True RMS	–	–	–	–	●	–	–	–	–	–	–	–	–	●	●
Relative measurement	–	–	–	–	–	–	–	–	–	–	–	–	–	–	●
DATA HOLD function	–	–	●	●	●	–	●	●	–	–	●	●	●	●	●
Max/Min value	–	–	–	●	–	–	–	–	–	–	–	–	–	–	●
USB interface	–	–	–	–	–	–	–	–	–	–	–	–	–	–	●
Non-contact voltage detection (NCV)	–	–	●	–	●	–	–	–	–	–	–	–	–	●	–
Live circuit test	–	–	–	–	–	–	–	–	–	–	–	–	–	●	–
Display backlight	–	–	●	●	●	–	–	●	–	–	–	–	–	●	●
Integrated flashlight	–	–	●	–	●	–	–	–	–	–	–	–	–	●	–
Auto power off	–	–	●	●	●	–	–	–	–	–	–	●	●	●	●

Delivery scope

M182, M300
1. Multimeter.
2. Set of probes (red/black) - 1 pc.
3. 12 V battery.
4. Case.
5. Technical and Operation manual

MS8233E, M838, MAS838, MY64
1. Multimeter.
2. Set of probes (red/black) - 1 pc.
3. 9 V battery.
4. Thermocouple, K type - 1 pc.
5. Technical and Operation manual

MS8211
1. Multimeter.
2. 1,5 V battery - 2 pcs.
3. Carrying bag.
4. Technical and Operation manual

MS8232
1. Multimeter.
2. Set of probes (red/black) - 1 pc.
3. 1,5 V battery - 2 pcs.
4. Technical and Operation manual

M830B, MAS830B, MAS830L, M832, MY61
1. Multimeter.
2. Set of probes (red/black) - 1 pc.
3. 9 V battery.
4. Technical and Operation manual

MS18C
1. Multimeter.
2. Set of probes (red/black) - 1 pc.
3. 1,5 V battery - 4 pcs.
4. Thermocouple, K type - 1 pc.
5. Technical and Operation manual

MS8236
1. Multimeter.
2. Set of probes (red/black) - 1 pc.
3. Multifunctional transistor tester - 1 pc.
4. Software CD.
5. USB cable.
6. 1,5 V battery - 4 pcs.
7. Thermocouple, K type - 1 pc.
8. Carrying bag.
9. Technical and Operation manual

Picture	Name	Safety category	Overall dimensions (W × H × D), mm	Item code
	Digital multimeter M182 MASTER EKF	CAT II 600V	50 × 100 × 23	In-180701-bm182
	Digital multimeter M300 EXPERT EKF	CAT III 600 V	70 × 120 × 18	In-180701-pm300
	Digital multimeter MS8232 EXPERT EKF	CAT III 600 V	61 × 128 × 25	In-180701-pm8232
	Digital multimeter MS8233E EXPERT EKF	CAT III 600 V	67 × 140 × 30	In-180701-pm8233E

Picture	Name	Safety category	Overall dimensions (W × H × D), mm	Item code
	Digital multimeter MS8211 EXPERT EKF	CAT III 600 V	225 × 38 × 26	In-180701-pm8211
	Digital multimeter M830B MASTER EKF	CAT I 1000 V CAT II 600 V	70 × 126 × 26	In-180701-bm830B
	Digital multimeter MAS830B EXPERT EKF	CAT III 600 V	69 × 138 × 31	In-180701-pm830B
	Digital multimeter MAS830L EXPERT EKF	CAT III 600 V	69 × 138 × 31	In-180701-pm830L

Picture	Name	Safety category	Overall dimensions (W × H × D), mm	Item code
	Digital multimeter M832 MASTER EKF	CAT I 1000 V CAT II 600 V	70 × 126 × 26	In-180701-bm832
	Digital multimeter M838 MASTER EKF	CAT I 1000 V CAT II 600 V	70 × 126 × 26	In-180701-bm182
	Digital multimeter MAS838 EXPERT EKF	CAT III 600 V	69 × 138 × 31	In-180701-pm838
	Digital multimeter MY61 EXPERT EKF	CAT III 600 V	93 × 188 × 50	In-180701-pm61

Picture	Name	Safety category	Overall dimensions (W × H × D), mm	Item code
	Digital multimeter MY64 EXPERT EKF	CAT III 600 V	93 × 188 × 50	In-180701-pm64
	Digital multimeter MS18C EXPERT EKF	CATIII 1000 V CATIV 600 V	89 × 190 × 50	In-180701-pm18C
	Digital multimeter MS8236 PROFESSIONAL EKF	CATIII 1000 V CATIV 600 V	94 × 204 × 57	In-180701-pm8236

Probes

Probes are important accessories for any multimeter. The wires of EKF probes are highly flexible and are reliably insulated. The surface at the base of the holder is ribbed to hold the probe comfortably and firmly in your fingers when measuring. There is a thick tab at the gripping area to prevent slippage and provide a secure grip. All EKF probes are marked with the category and operating voltage.
It is important to connect the wires correctly - the black probe is plugged into the common socket, the red one into the "+" socket.

Picture	Name	Safety category	Rated current, A	Lead length, mm	Item code
	Alligator clip set TLA3102 EXPERT EKF	CAT III 1000 V CAT IV 600 V	20	-	TLA3102
	Set of probes TL3001 (1m)(20AWG) EXPERT EKF		10	1000	TL3001
	Set of probes TL3006 (1,2m)(18AWG) EXPERT EKF		20	1200	TL3006

Digital clamp meters

Digital clamp meters are designed to measure current without breaking the circuit. Some models have additional functions for measuring voltage, frequency and temperature. EKF current clamps comply with the requirements of IEC 61010-1 for device safety and IEC 61326-2-1, IEC 61326-2-2 for electromagnetic compatibility. MASTER series offers a balanced range of simple and reliable products. EXPERT features high quality measuring instruments with a wide range of functions for everyday use.

Broad range. Retail packaging

Several clamp meter product lines with varying functionality and safety certification

High quality and safe materials

Wide range of functions. High measurement accuracy

APPLICATION

Clamp meters are primarily used for measuring electrical current without the need to disconnect the circuit being tested. Various models of EKF clamp meters offer different measurement ranges and additional functionality, making them valuable tools for electrical testing and troubleshooting tasks.

TECHNICAL DATA

Parameters	Values			
	266	266F	M266C	MS2016S
Digit capacity	1999	1999	1999	6000
Automatic selection of measurement mode	–	–	–	●
Automatic selection of measurement limits	–	–	–	●
Voltage, V DC	1000	1000	1000	600
Voltage, V AC	750	750	750	600
Voltage measurement with low input impedance LOWz	–	–	–	–
Direct current, A	–	–	–	–
Alternating current, A	1000	1000	1000	200
Resistance, MΩ	20	20	20	0,006
Capacitance, mF	–	–	–	–
Frequency, MHz	–	0,002	–	0,001
Temperature measuring range (°C)	–	–	750	–
Duty cycle	–	–	–	–
Diode test	–	●	–	–
Continuity test	●	●	●	●
Transistor hFE	–	–	–	–
True RMS	–	–	–	–
Relative measurement	–	–	–	–
DATA HOLD function	●	●	●	●
Max/Min value	–	–	–	–
Non-contact voltage detection (NCV)	–	–	–	●
Display backlight	–	–	–	●
Integrated flashlight	–	–	–	–
Auto power off	–	–	–	●

Delivery scope

266/266F

1. Digital clamp meter.
2. Set of probes (red/black) - 1 pc.
3. 9 V battery.
4. Carrying bag.
5. Technical and Operation manual

MS2016S

1. Digital clamp meter.
2. Set of probes (red/black) - 1 pc.
3. 1,5 V battery - 2 pcs.
4. Case.
5. Technical and Operation manual

M266C

1. Digital clamp meter.
2. Set of probes (red/black) - 1 pc.
3. Thermocouple, K type - 1 pc.
4. 9 V battery.
5. Carrying bag.
6. Technical and Operation manual

MS2019B

1. Digital clamp meter.
2. Set of probes (red/black) - 1 pc.
3. 1,5 V battery - 2 pcs.
4. Carrying bag.
5. Technical and Operation manual

Picture	Name	Safety category	Overall dimensions (W × H × D), mm	Item code
	Digital clamp meter 266 MASTER EKF	CAT I 1000 V CAT II 600 V	68 × 230 × 37	In-180702-bc266
	Digital clamp meter 266F MASTER EKF			In-180702-bc266F
	Digital current clamp M266C EXPERT EKF	CATII 1000 V CAT III 600 V	96 × 235 × 46	In-180702-pc266C
	Digital clamp meter MS2016S EXPERT EKF	CAT III 600 V	53 × 158 × 28	In-180702-pc2016S

Laser non-contact digital thermometer (pyrometer)

Infrared thermometer (pyrometer) is a device for non-contact measurement of the temperature, which is especially useful for measuring extremely hot objects or in situations where direct contact is impractical or dangerous. Laser non-contact digital thermometer (pyrometer) EXPERT EKF meets the following standards: EN61326-1, EN61010-1, EN60825-1.

Display backlight

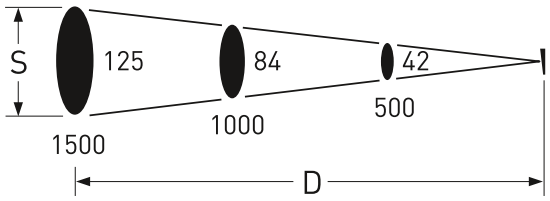
Instructions printed on the housing

APPLICATION

Pyrometers are used for measuring temperatures of moving objects, small or remote targets, and highly reflective surfaces where conventional contact-based temperature measurement methods may not be suitable, typically in industrial and scientific settings.

TECHNICAL DATA

Parameters	Values	
	MS6519A	MS6519B
Display	Color LCD	
D:S ratio	12 : 1	
Emissivity range	0,10-1,00	
Spectral range, μm	8–14	
Power, mW	< 1, Class 2	
Wavelength, nm	630–670	
Laser hazard class	2	
Response time, s	< 0,5	
Auto power off, s	30	
Operating temperature, °C	From 0 to 40	
Storage temperature, °C	From -10 to 60	
Temperature measurement range, °C	-50 to 0 (±3) / 0 to +380 ± (1,5% +2)	-50 to 0 (±3) / 0 to +550 ± (1,5% +2)
Power supply	2 × 1,5 V AAA	
Weight, g	200	
Service life, years	10	



The ratio between distance and spot size (D:S) is 12:1.

While measuring, the thermometer will shine a ring-shaped guide light. The measured temperature is the surface temperature of the target within the light ring. The smaller the target, the closer you should hold the thermometer.

Delivery scope

1. Infrared thermometer (pyrometer) - 1 pc.
2. 1,5 V battery - 2 pcs.
3. Technical and Operation manual

Name	Safety category	Overall dimensions (W ×H ×D), mm	Item code
Infrared thermometer (pyrometer) MS6519B EXPERT EKF	Laser hazard class	68 × 230 × 37	In-180703-pt6519B
Infrared thermometer (pyrometer) MS6519A EXPERT EKF		68 × 230 × 37	In-180703-pt6519A

Tape measures EKF

Tape measures are intended for linear measurement. Class 2 accuracy, sufficient for all general construction work.

- Two-piece impact-resistant body - comfortable to hold, non-slip, protects tape measure against damage.
- Stainless steel belt clip with rounded corners for fast and reliable attachment without damaging your clothes
- Tape measure housing dimensions printed on the body for easier measurement of the openings. Double sided scale. Steel tape with nylon coating.
- Auto-stop function for easy one-handed measurement
- Magnetic hook, shaped for easy drywall marking.

Name	Length, m	Item code
Tape measure RS-10 (3 m × 16 mm) EKF	3	rs-10-3-16-quad
Tape measure RS-10 (5 m × 25 mm) EKF	5	rs-10-5-25-quad
Tape measure RS-10 (7,5 m× 25 mm) EKF	7,5	rs-10-7.5-25-quad

Distance meters EXPERT EKF

The laser distance meter is a compact portable measuring instrument designed for the following operations: single distance measurement; continuous distance measurement; area measurement; volume measurement; indirect measurement (Pythagoras); addition and subtraction function; storing and recalling a value from memory.

IP 54 rated enclosure (protection against dust, water jets, splashes, dirt)

Built-in memory for 20 measurements. User-friendly interface

Embedded tilt sensor

Larger lens for greater accuracy and measurement speed

LCD display Bright. DayLight backlight for work even in dimly lit rooms

Integrated spirit level for greater accuracy when measuring greater distances

APPLICATION

Laser distance meters are commonly used in construction, real estate, interior design, and other applications where precise measurements are required.

TECHNICAL DATA

Parameters	Values
Measurement range, m	0,04 – 50 / 70*
Measurement time, s	0,5
Measurement error, mm	+/- 2,0**
Single measurement	Yes
Continuous measurement	Yes
Area measurement	Yes
Volume measurement	Yes
Indirect measurements using the Pythagorean theorem (two-point)	Yes
Indirect measurements using the Pythagorean theorem (three-point)	Yes
Addition/Subtraction	Yes
Sound indication control	Yes
Tilt sensor	Yes
Internal memory capacity	20 records

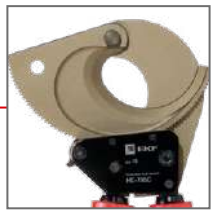
Parameters	Values
Reference points	From bottom surface / from top surface
Units	m / ft / in / ft + in
Laser class	II
Laser wavelength, nm	630–670
Laser auto power off	After 30 sec.
Device auto power off	After 180 sec.
Max laser power, mW	1
Degree of protection per IEC 60529	IP54
Battery type	2 × 1,5 V AAA
Battery life	Up to 5000 measurements
Operating temperature, °C	From -0 to +40
Dimensions, mm	115 × 20 × 29,5
Service life	10 years

Name	Max. measurement range, m	Number of reference points	Accuracy, mm	Item code
Laser distance meter LDM-50 EXPERT EKF	50	2	± 2,0	ldm-50
Laser distance meter LDM-70 EXPERT EKF	70			ldm-70

Ratchet cable cutters EXPERT EKF

Ratchet cable cutters EXPERT EKF are designed for cutting armored aluminum and copper cables, aerial bundled cables, type A and AC wires, steel rope, fittings and chains. Due to their compact design and independence from external energy sources, these tools are widely used both for fieldwork, associated with installing ABC and overhead lines, and for terminating cable entries or splicing high-voltage lines, as well as connecting electrical switchboard equipment, etc.

Telescopic handle design to quickly adjust the lever length and lock it in place with no additional tools required



High-alloy steel for optimal hardness and wear resistance of the cutting edge. Low friction, corrosion-resistant coating of the blades

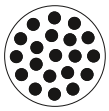
Ratchet cable cutters are supplied in a carry bag, sewn from mechanically resistant, dirt- and water-repellent fabric

Working part of ratchet cable cutters is hardened on an automated line. The hardness deviation for 10 000 cutters sampled is ±1 HRC

APPLICATION

Ratchet cable cutters provide a clean, precise, and efficient cut, particularly for heavy-duty cables and wires and can be used in a wide range of applications:

- Electrical installations
- Telecommunications and networking
- Industrial and construction projects
- Energy and power distribution.

Model	Unarmored cable	Steel tape armored cable	Steel wire armored cable	Aluminium conductor steel-reinforced cable	Steel rope 1 x 7	Steel rope 1 x 19	Low carbon steel bars and fittings, chains
							
Ratchet cable cutter NC-32M EXPERT EKF	32	32	–	–	–	–	–
Ratchet cable cutter NC-32BAC EXPERT EKF	32	32	–	32	–	–	8
Ratchet cable cutter NC-80BC EXPERT EKF	45	45	–	–	–	–	–
Ratchet cable cutter NC-70BC EXPERT EKF	75	75	70	–	–	–	–
Ratchet cable cutter NC-80BC EXPERT EKF	80	80	–	–	–	–	–
Ratchet cable cutter NC-100BCR EXPERT EKF	110	110	–	–	–	–	–
Ratchet cable cutter NC-130BC EXPERT EKF	130	130	–	–	–	–	–
Ratchet cable cutter NC-30C EXPERT EKF	–	–	10	30	10	–	–
Ratchet cable cutter NC-14C EXPERT EKF	–	–	10	30	10	–	10
Ratchet cable cutter NC-50BAC EXPERT EKF	–	–	16	50	12	16	16

Picture	Name	Overall dimensions, mm	Steel tape armored cable, mm	Cross-section, mm²	Steel wire armored cable, mm	Aluminium conductor steel-reinforced cable, mm	Steel rope 1 × 7, mm	Steel rope 1 × 19, mm	Low carbon steel bars and fittings, mm	Chain, mm	Telephone cable	Item code
	Ratchet cable cutter NC-32M EXPERT EKF	260 × 110 × 29	32	Cu cable, mm²: 4 × 50; Al cable, mm²: 4 × 70	–	–	–	–	–	–	–	nc-32
	Ratchet cable cutter NC-32BAC EXPERT EKF	255 × 110 × 29	32	Cu cable, mm² : 4 x 50; Al cable, mm² : 4 x 70;	-	-	-	-	8	4	-	nc-32bac
	Ratchet cable cutter NC-80BC EXPERT EKF	283 x 130 x 29	-	Total cable cross-section mm²: 400	-	-	-	-	-	-	-	nc-45
	Ratchet cable cutter NC-14C EXPERT EKF	345 × 125 × 46	–	–	–	35 (630 mm²)*	30	–	12	8	–	nc-14
	Ratchet cable cutter NC-30C EXPERT EKF	400 × 160 × 59	–	–	–	35 (630 mm²)*	–	–	14	10	–	nc-30
	Ratchet cable cutter NC-50BAC EXPERT EKF	395 × 150 × 58	–	–	–	50 (1440 mm²)*	–		16	12	–	nc-50
	Ratchet cable cutter NC-70BC EXPERT EKF	415 × 205 × 56	70	Cu cable, mm²: 3 × 120; Al cable, mm²: 3 × 150	–	–	–	–	–	–	Up to 3600 pairs	nc-70

* Recommended for cutting aerial bundled cable (ABC).

Picture	Name	Overall dimensions, mm	Steel tape armored cable, mm	Cross-section, mm²	Steel wire armored cable, mm	Aluminium conductor steel-reinforced cable, mm	Steel rope 1 × 7, mm	Steel rope 1 × 19, mm	Low carbon steel bars and fittings, mm	Chain, mm	Telephone cable	Item code
	Ratchet cable cutter NC-80BC EXPERT EKF	700 × 225 × 53	80	Cu cable, mm²: 3 × 120; Al cable, mm²: 3 × 150	–	–	–	–	–	–	Up to 3600 pairs	nc-80
	Ratchet cable cutter NC-100BCR EXPERT EKF	465 × 270 × 64	100	Cu cable, mm²: 3 × 300; Al cable, mm²: 3 × 300;	–	–	–	–	–	–	–	nc-100
	Ratchet cable cutter NC-130BC EXPERT EKF	510 × 330 × 65	130	Cu cable, mm²: 4 × 300; Al cable, mm²: 4 × 300;	–	–	–	–	–	–	–	nc-130

* Recommended for cutting aerial bundled cable (ABC).

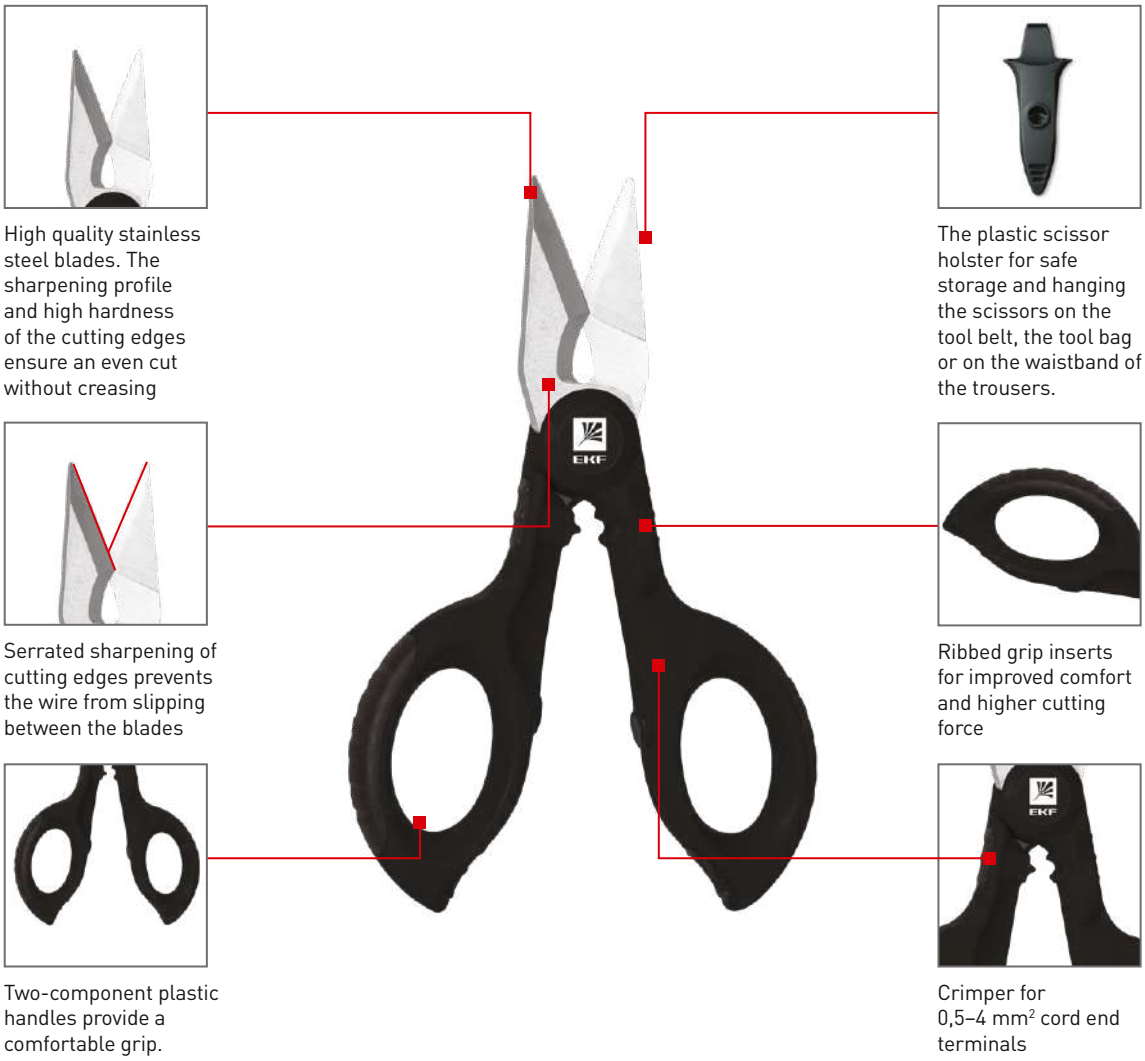
Repair and service kits for ratchet cable cutters

Repair kits are used for repair and maintenance of ratchet cable cutters.

Picture	Name	Ratchet cable cutter model	Delivery scope	Item code
	Repair kit for ratchet cable cutter NC-50BAC EXPERT EKF	nc-50	1. Moving blade. 2. Fixed blade. 3. Ratchet with needle bearings. 4. Ratchet pawl. 5. Pawl spring. 6. Ratchet spring. 7. Axial screw. 8. Axial screw nut. 9. Return spring. 10. Pin.	slnc-50
	Repair kit for ratchet cable cutter NC-70BAC EXPERT EKF	nc-70	1. Moving blade. 2. Fixed blade. 3. Ratchet with needle bearings. 4. Ratchet pawl. 5. Pawl spring. 6. Ratchet spring. 7. Axial screw. 8. Axial screw nut. 9. Return spring. 10. Pin.	slnc-70
	Repair kit for ratchet cable cutter NC-100BCR EXPERT EKF	nc-100	1. Moving blade. 2. Fixed blade. 3. Ratchet with needle bearings. 4. Axial screw. 5. Axial screw nut. 6. Multiplier gear. 7. Pin.	slnc-100

Electrician scissors WS-35 PROFESSIONAL EKF

Multi-purpose electrician scissors enable the performance of the majority of tasks, associated with electrical installation, including cutting the wire, insulation, stripping and crimping, reduce the number of required tools and significantly increase the speed of work. Intended for cutting installation wires, control cables, solid cables and conductors with a total diameter of up to 13 mm and stranded cables with conductor cross-section of up to 35 mm^2. On the inside of the handles there is a groove that can be used for crimping 0,5–4 mm^2 cord end terminals. Scissors can be used to remove the insulation from round cables.



APPLICATION

Electrician scissors are a versatile and essential tool for cutting and stripping wires and cables during electrical installations, repairs, and maintenance work.

Name	Item code
Electrician scissors with plastic carry case WS-35 PROFESSIONAL EKF	ws-35

Cable stripping knives PROFESSIONAL EKF

All wires and cables have a protective insulating layer that protects the conductors from touching contact surfaces and from each other. When connecting or installing equipment, the insulation must be removed to ensure a reliable connection and good contact. When choosing a method for removing the insulation, take into account the material from which it is made. In addition, it is important not to damage the conductor itself.

Two-component plastic handles provide a comfortable grip

High quality stainless steel blades. The sharpening profile and high hardness of the cutting edges provide high-quality cuts, retain the sharpness of cutting surfaces for longer, and reduce the cutting effort

IEC 60900

Cable stripping knives are tested for compliance with IEC 60900 and are suitable for working with live cables up to 1000 V

The ergonomic shape of the tool handle prevents slipping and ensures safe operation when removing the insulation, even in hard-to-reach places

APPLICATION

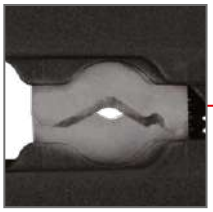
Cable stripping knives are specialized tools used for removing the insulation from electrical wires and cables, without damaging the underlying conductors, thus providing a safe and efficient way to prepare cables for installation or repair tasks.

Picture	Name	Description	Item code
	Insulated cable knife with guide shoe 1000V WS-31 PROFESSIONAL EKF	Precise, fast and safe removal of cable insulation, especially for large diameter cables. A small oblong platform, or "guide shoe" at the tip of the blade limits the depth of the cut and protects the individual cable strands from damage when stripping the insulation. The guide shoe can withstand a force of 1,5 tons. The blade is double-edged, enabling cutting of insulation towards of from the user. The handle can withstand electrical voltages up to 1000 V AC and 1500 V DC	ws-31
	Cable knife, straight blade 1000V WS-32 PROFESSIONAL EKF	A straight blade, most often used for stripping insulation from cables with a wide range of cross-sections and from individual conductors. The back of the blade has a reinforced spine, which prevents the blade from bending under load. The handle can withstand electrical voltages up to 1000 V AC and 1500 V DC	ws-32

Picture	Name	Description	Item code
	Cable knife, partially insulated blade 1000V WS-33 PROFESSIONAL EKF	A straight blade, most often used for stripping insulation from cables with a wide range of cross-sections and from individual conductors, with additional insulation along the blade to minimize the possibility of a short circuit when working under live voltage. The handle can withstand electrical voltages up to 1000 V AC and 1500 V DC	ws-33
	Cable stripping knife WS-12 PROFESSIONAL EKF	Quick and accurate stripping of PVC sheaths from round cables 4 to 28 mm in diameter using the integrated rotating eccentric blade, which enables a circular cross-cut or longitudinal cut of the cable sheath. Smooth sheath cut depth adjustment without damaging the insulation of the inner conductors. Plastic cap to cover the external blade. Replaceable internal rotating blade.	ws-12
	Cable stripping knife WS-18 PROFESSIONAL EKF	Quick and accurate stripping of PVC sheaths from round cables from 28 to 25 mm in diameter using the integrated rotating eccentric blade, which enables a circular or longitudinal cut of the cable sheath. Smooth sheath cut depth adjustment without damaging the insulation of the inner conductors. Replaceable internal rotating blade.	ws-18
	Cable stripping knife WS-15 PROFESSIONAL EKF	Quick and accurate stripping of PVC sheaths from round cables 4 to 28 mm in diameter using the integrated rotating eccentric blade, for a circular or longitudinal cut of the cable sheath. Smooth sheath cut depth adjustment without damaging the insulation of the inner conductors. Impact-resistant glass-reinforced plastic body. Fully-retractable external blade. Replaceable internal rotating blade.	ws-15
	Cable stripping knife WS-19 PROFESSIONAL EKF	Quick and accurate stripping of PVC sheaths from round cables 4 to 28 mm in diameter using the integrated rotating eccentric blade, for a circular or longitudinal cut of the cable sheath. Integrated wire stripper with semi-circular tool steel blades for stripping insulation from wires with a cross-section of 0,5/0,75/1,5/2,5/4,0/6,0 mm^2. Smooth sheath cut depth adjustment without damaging the insulation of the inner conductors. Impact-resistant glass-reinforced plastic body. Fully-retractable external blade. Replaceable internal rotating blade.	ws-19
	Cable stripping knife WS-25 PROFESSIONAL EKF	The device is designed for removing insulation from round cables with a diameter of 25,0 mm or more. The cutting depth can be manually adjusted up to 5,0 mm using a limiting switch. The replaceable blade can rotate, allowing for both longitudinal and transverse cuts. The end of the blade features a guide shoe that prevents damage to the conductor. Glass fiber reinforced plastic body. Plastic tool box included	ws-25

Wire strippers

EKF wire strippers enable quick and efficient removal of insulation from single- and multi-core wires and cables of various diameters without damaging the conductor. A broad range of available models enable the stripping of PVC, polyethylene, vinyl and composite insulation. The EKF product range includes strippers for all common types and gauges of wires and cables. The stripper automatically determines the cross-section of the wire or cable and thus enables even faster stripping of insulation without damaging the inner conductor. Multifunctional strippers can also be used for transverse and longitudinal cutting, stripping of inner and outer insulation, cutting cables and crimping cable lugs and cord end terminals.



The cutting blades of the PROFESSIONAL strippers are made out of Solingen steel, famous for its ability to retain a sharp cutting edge, job after job.

PROFESSIONAL series strippers body is molded from high-strength glass-reinforced polyamide.

Package with Eurohook hanger

Replacement blades available

APPLICATION

Wire strippers are indispensable tools for working with electrical wires, offering precision, efficiency, and safety when removing insulation to expose the conductors for connection and termination purposes.

Picture	Name	Description	Item code
	Wire stripper WS-01 MASTER EKF	Designed for stripping and cutting wires: - cutting wire up to 6 mm² in diameter - stripping wire with a cross-section from 0,6 to 2,6 mm²	ws-01
	Wire stripper WS-03 MASTER EKF	Stripping stranded and solid wires. Wire cross-section: 0,5–6,0 mm²; Wire diameter: 1,0; 1,6; 2,0; 2,6; 3,2	ws-03
	Wire stripper WS-04 MASTER EKF	Designed for stripping solid and stranded wires with a cross-section of 0,5–6,0 mm² Heavy-duty design Return spring and ergonomic handles Built-in stripping stop Self-aligning blades with 0,5–6,0 mm² grooved slots Single action wire gripping and stripping	ws-04

Picture	Name	Description	Item code
	Automatic wire stripper WS-11 PROFESSIONAL EKF	Stripping insulation of stranded and solid wires with a cross-section of 0,2–6,0 mm². The tool design enables automatic adjustment to any cross-section within the available range. The adjustable and graduated stripping stop enables the adjustment of stripping length between 5 and 12 mm. Replaceable blades. Built-in cutter for wires and cables up to 2,0 mm in diameter	ws-11
	Set of spare blades for stripper WS-11 PROFESSIONAL EKF		slws-11
	Automatic wire stripper WS-14 PROFESSIONAL EKF	Specialized tool for stripping two- and three-wire flat cables. Single action stripping of 0,5 to 10 mm² cables (20-6 AWG). Double action stripping of cables 10 mm² and up. Stripping of both stranded and solid wires. Built-in side cutter for wires up to 3,0 mm diameter.	ws-14
	Set of spare blades for stripper WS-14 PROFESSIONAL EKF		slws-14
	Automatic wire stripper WS-22 PROFESSIONAL EKF	Fully insulated wire stripper for solid and stranded wires. Built-in cutter for wires and cables up to 3,0 mm in diameter. Easy stripping of insulation from wires 0,2 - 16,0 mm² in cross-section. Replaceable Solingen steel blades	ws-22
	Set of spare blades for stripper WS-22 PROFESSIONAL EKF		slws-22
	Multifunctional hand stripper WS-13 PROFESSIONAL EKF	The design of the stripper enables automatic adjustment to the cable cross-section within the 0,5 to 6 mm² range. Built-in 8 to 20 mm stripping length measure. Built-in cutter for stranded wires with the cross-section up to 6 mm² (solid strands - up to 4 mm²). Replaceable internal blades for stripping PVC insulation.	ws-13
	Multifunctional hand stripper WS-16 PROFESSIONAL EKF	The tool is designed for removing the PVC sheath from wires with a diameter of 8–13 mm (for example, NYM cable with the cross-section from 1,5 to 2,5 mm², which makes it invaluable when installing lighting and installing socket circuits). Integrated wire stripper with semi-circular tool steel blades for stripping insulation from wires with a cross-section of 0,5/0,75 /1,5/2,5/4,0/6,0 mm². Two blades for cutting the outer sheath - for transverse and longitudinal cuts. Convenient for cramped areas - junction boxes, distribution enclosures, etc. Retractable hook blade, hidden in the tool body when not in use. Ergonomic shape for a secure and comfortable operation	ws-16
	Multifunctional hand stripper WS-17 PROFESSIONAL EKF	The tool is designed for stripping insulation from all common fine-wire cables from 0,5 to 6 mm². Thanks to a special automatic adjustment system, there is no need to pre-select the cable cross-section. The tool features a built-in cutter for stranded wires up to 6,0 mm² diameter (solid wires - up to 4 mm²). The tool has 2 integrated crimping sections for 0,5–2,5 mm² and 4–6 mm² wires	ws-17

Crimping pliers

Crimping pliers enable electricians to join all the separate parts of an electrical circuit, ensuring secure connection and good conductivity of electric current, leading to lower heat at the contact points and a decreased risk of short circuit and burnt contacts.

Automatic crimping control. Ratchet mechanism with automatic release at the end of the crimping cycle. Single action crimping

The jaws of the crimping pliers are marked with the cross-section of the cord end terminals or connectors

Proprietary surface treatment for better corrosion protection. Two-piece reinforced polypropylene handles

Eurohook hanger package

APPLICATION

Crimping pliers are commonly used in electrical work, telecommunications, and various other industries where a reliable and durable connection is required.

Picture	Name	Terminal type	Cross-section, mm²	Crimping profile, symbols	Item code
	Crimping pliers PK-01 (0,25-2,5 mm² RV, SV, PTV, DBV) MASTER EKF	NKI NVI	0,25–2,5	Oval	pk-01-mas
	Crimping pliers PK-16 MASTER EKF	TCL	1,5 – 16,0	Point	pk-16-mas
	Crimping pliers PK-35 MASTER EKF	TCL	2,5 – 35,0		pk-35-mas
	Crimping pliers PK-01 (0,25-2,5 mm² RV, SV, PTV, DBV) MASTER EKF	NKI NVI	0.5 – 6,0	Oval	pk-01-exp
	Crimping pliers PK-03 (4,0-16,0 mm² E, EN) EXPERT EKF	E, EN		Automotive	pk-04-exp
	Crimping pliers PK-05 (0,5-10,0 mm² TML) EXPERT EKF	TCL	0,5 – 10,0	Point	pk-05-exp

Cord end Type E crimping pliers EXPERT EKF

EKF series mechanical crimping tools are the fastest, cheapest and reliable way to get a high-quality contact.

Four- or six- sided die automatically adjusts to the correct size to ensure fast and reliable crimping. Pivoting cams crimping action

Two-component handles with hand stops ensure compliance with safety standards and prevent the hand from slipping into the working area

Ratchet to ensure the reliable completion of the crimping cycle. Crimping force adjustment

Eurohook hanger package

APPLICATION Designed for crimping insulated and non-insulated cord end terminals, as well as double sleeve ends.

Picture	Name	Terminal type	Cross-section, mm²	Crimping profile pictogram	Item code
	Crimping pliers PK-02 (0,25-6,0 mm² E, EN) EXPERT EKF	E, EN	0,25 – 6,0	Trapezoid	pk-02-mas
	Crimping pliers PK-02 (0,25-6,0 mm² E,EN) MASTER EKF				pk-02-exp
	Crimping pliers PK-03 (4,0-16,0 mm² E, EN) EXPERT EKF		4,0–16,0		pk-03-exp
	Crimping pliers PK-06 (2x0,5 - 2x6,0 mm² TE) EXPERT EKF	TE	2x0,5 – 2x6,0		pk-06-exp
	Crimping pliers PKV-6-4 EXPERT EKF	E, TE, EN	0,25 – 6,0	Square	pkv-6-4-exp
	Crimping pliers PKV-6-6 EXPERT EKF			Hexagon	pkv-6-6-exp
	Crimping pliers PKV-16-4 EXPERT EKF		4,0–16,0	Square	pkv-16-4-exp
	Crimping pliers PKVt-16-4 EXPERT EKF	E, TE, EN	0,25-16,0	Square	pkvt-16-4-exp
		TE	2x0,25-2x10,0		
	Crimping pliers PKVu-16-6 EXPERT EKF	E, TE, EN	0,25-16,0	Hexagon	pkvy-16-6-exp
		TE	2x0,5 - 2x6,0		
	Crimping pliers PKV-70 EXPERT EKF	E, TE, EN	25,0–70,0	Trapezoid with two points	pkv-70-exp
	Set of insulated cord end terminals E no.6 (0,5-6mm²) with tool PKV-6-4 EXPERT EKF		0,5 – 6,0	Square	nabor-nshvi-6

Mechanical crimping tools EXPERT EKF

Mechanical crimping tools EXPERT EKF feature a rotating die to quickly and efficiently crimp copper and aluminum cable lugs and sleeves, spending minimal time on reconfiguring the tool for the different cross-sections.

Reliable and easy to use. Single action crimping

Zero-play rotating die design for quick die change and quality crimping

APPLICATION

Designed for termination of copper and aluminum lugs and sleeves.

Name	Crimping range, mm²	Crimping cross-section	Item code
Mechanical crimping tool PK -50 EXPERT EKF	6 – 50	6, 10, 16, 25, 35, 50	pk-50-exp
Mechanical crimping tool PK-120 EXPERT EKF	10 - 120	10, 16, 25, 35, 50, 70, 95, 120	pk-120-exp

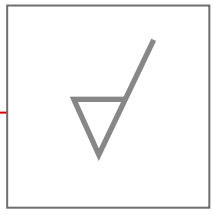
Hydraulic crimping tools

EKF hydraulic crimping tools are designed for quick and high-quality crimping of copper and aluminum cable lugs and sleeves according to DIN standards, using a hydraulic force multiplier.

360° rotating working head. The locking pin is conveniently retained when replacing the crimping dies.

The open working area facilitates easy lug and cable insertion and visual control over crimping.

All-weather hydraulic oil and gaskets ensure reliable tool operation in a wide range of temperatures



Minimum roughness of the hydraulic cylinder is 40 µm, corresponding to N9 surface finish class

APPLICATION

EKF hydraulic crimping tools are powerful tools used for crimping and compressing electrical connectors, lugs, and terminals onto the ends of electrical conductors and cables:
- electrical engineering and power distribution;
- telecommunications;
- construction.

Operation

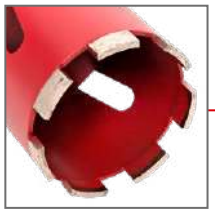
The hydraulic crimping tools use 40 µm oil filter for reliable impurities filtering.
Pressure relief valve seats and needles are both electropolished and diamond-lapped to ensure tight seal and smooth actuation.
The hydraulic unit is flushed with pressurized oil before assembly to remove machining swarf and particulate.
Fast cylinder operation - 3 to 4 strokes to bring the piston rod to the lug and start crimping.

Models of the EXPERT series with "s" in their name are equipped with a pressure relief valve. It prevent excess pressure from building up inside the cylinder and damaging the tool. When dies close and the necessary crimping force is reached, the valve prevents the pumping of additional oil into the piston. When the necessary crimping force is reached, a drop in pressure is felt in the handle of the tool, indicating that the the crimping is finished.

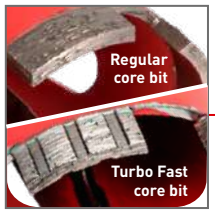
Picture	Name	Crimping range, mm²	Pressure relief valve	Die set included	Tool / package weight, kg	Item code
	Manual hydraulic crimping tool PGR-70 MASTER EKF	4–70	N/A	4, 6, 8, 10, 16, 25, 35, 50, 70	1,7 / 2,7	pgr-70
	Manual hydraulic crimping tool PGR-120 MASTER EKF	10–120		10, 16, 25, 35, 50, 70, 95, 120	2,7 / 4,3	pgr-120
	Manual hydraulic crimping tool PGR-300 MASTER EKF	10–300		10, 16, 25, 35, 50, 70, 95, 120, 150, 185, 240, 300	3,6 / 6,2	pgr-300
	Manual hydraulic crimping tool PGRs-70 EXPERT EKF	4–70	Yes	4, 6, 8, 10, 16, 25, 35, 50, 70	1,8 / 2,8	pgrs-70
	Manual hydraulic crimping tool PGRs-120 EXPERT EKF	10–120		10, 16, 25, 35, 50, 70, 95, 120	2,9 / 4,5	pgrs-120
	Manual hydraulic crimping tool PGRs-300 EXPERT EKF	10–300		10, 16, 25, 35, 50, 70, 95, 120, 150, 185, 240, 300	4,0 / 6,5	pgrs-300

Core drill bits

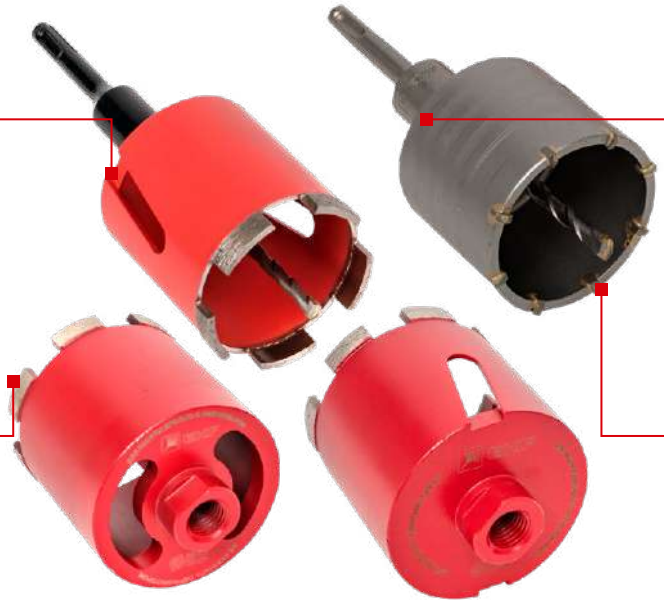
MASTER series carbide core drill bits are designed for quick and efficient hole cutting in concrete, bricks, foamed concrete and sandstone with a rotary hammer in impact mode. EXPERT series diamond core drill bits are used for dry cutting in concrete, brick, natural and artificial stone, and dense limestone using a rotary hammer drill with deactivated impact function. PROFESSIONAL series diamond core drill bits are designed for dry drilling with MicroHit technology. Suitable for concrete, including heavily reinforced concrete with 18 mm rebar. MH models have lateral openings for cooling, dust and swarf removal, as well as core extraction. MHS models with their open-top design are intended to be used in conjunction with a dust extraction system. PROFESSIONAL series diamond core drill bits are suitable both for consumer-grade micro-impact drills starting from 1 kW, as well as pro-grade drilling equipment.



Increased number of exposed diamonds for improved cutting speed



Laser-brazed cutters for a high-quality, secure connection



Centering drill quick-release for improved job time and extended tool life

High-quality brass-brazed VK8 carbide cutters

APPLICATION

Core drill bits are used in construction, remodeling, and industrial applications where the installation of pipes, conduits, or cables requires precise and neat holes in hard surfaces.

Picture	Name	Hole diameter, mm	Number of cutters, pcs	Arbor	Cutting depth, mm	Item code
	Carbide core drill bit with accessories TCT-68 M22 SDS-plus MASTER EKF	68	8	M22	50	tct-68-m22
	Carbide core drill bit with accessories TCT-72 M22 SDS-plus MASTER EKF	72				tct-72-m22
	Diamond core drill bit DCH-68 Laser M16 SDS-Plus EXPERT EKF	68	5	M16	70	dch-68-m16
	Diamond core drill bit DCH-72 Laser M16 SDS-plus EXPERT EKF	72				dch-72-m16
	Diamond core drill bit DCH-82 Laser M16 SDS-plus EXPERT EKF	82	6			dch-82-m16
	Diamond core drill bit Turbo Fast 68 DCH-68TRB Laser M16 EXPERT EKF	68	5			dch-68-trb-m16
	Diamond core drill bit Turbo Fast 72 DCH-72TRB Laser M16 EXPERT EKF	72	5			dch-72-trb-m16
	Diamond core drill bit Turbo Fast 82 DCH-82TRB Laser M16 EXPERT EKF	82	6			dch-82-trb-m16
	Diamond core drill bit for micro-impact drills DCH-68MH Micro Hit Laser M16 PROFESSIONAL EKF	68	6			dch-68-mh-m16
	Diamond core drill bit for micro-impact drills DCH-72MH Micro Hit Laser M16 PROFESSIONAL EKF	72				dch-72-mh-m16
	Diamond core drill bit for micro-impact drills DCH-82MH Micro Hit Laser M16 PROFESSIONAL EKF	82	7			dch-82-mh-m16
	Diamond core drill bit for micro-impact drills DCH-68MHS Micro Hit Laser M16 PROFESSIONAL EKF	68	6			dch-68-mhs-m16
	Diamond core drill bit for micro-impact drills DCH-72MHS Micro Hit Laser M16 PROFESSIONAL EKF	72				dch-72-mhs-m16
	Diamond core drill bit for micro-impact drills DCH-82MHS Micro Hit Laser M16 PROFESSIONAL EKF	82	7			dch-82-mhs-m16
Used in conjunction with MHS						
	Dust extractor for diamond drill bit (M16-M18) EXPERT EKF	–	–	–	–	dd-exp

The dust extractor is fitted with a spring-loaded M16 centering bit and with an M18 internal thread on the outside, allowing for the precise drilling of socket openings, with virtually no deviation from the center point.

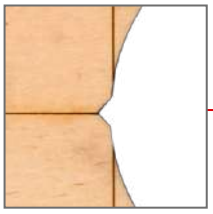
Core drill bit adapters

Adapters are used to secure the diamond core drill bit in the chuck of an electric drill. The Ø8 centering drill bit and a wedge for removing the drill bit from the adapter are included in the package.

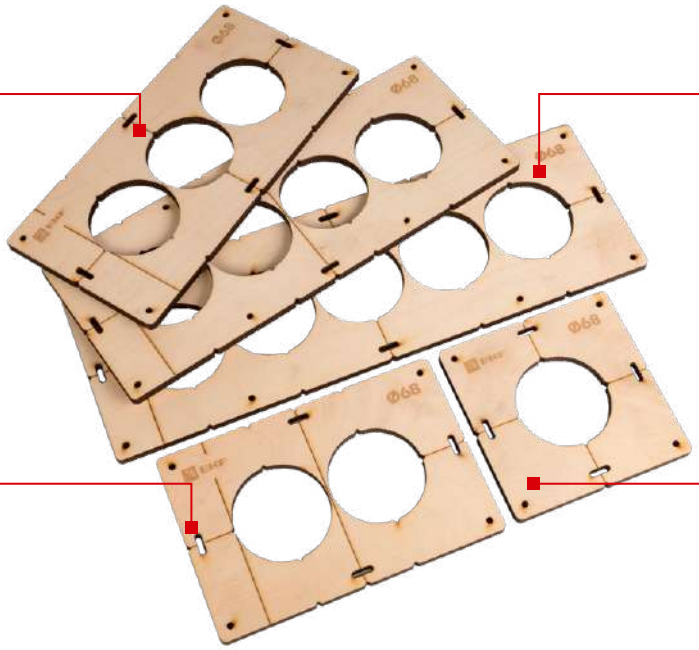
Picture	Name	Item code
	Adapter Hex/M16 with centering drill bit EXPERT EKF	ad-hex
	Adapter SDS-plus/M16 with centering drill bit EXPERT EKF	ad-sdsplus

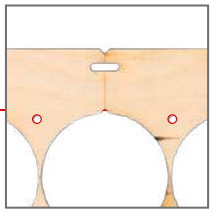
Drilling templates EXPERT EKF

Drilling templates are used for marking and securing the core drill bit when cutting holes for mounting boxes on various surfaces and materials. With drilling templates, you can save time and money as you can avoid the traditional marking steps and do not need a centering drill bit.

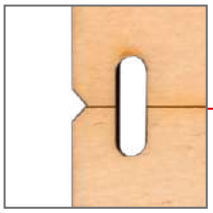


Additional line for marking with a laser level to precisely measure the distance from the edge of the mounting box to the reference point





Additional hole for securing the template when the finishing has already been applied to the wall or for securing to wooden walls for 68 mm templates

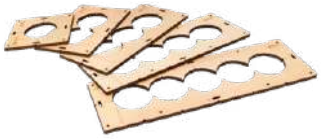
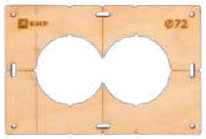
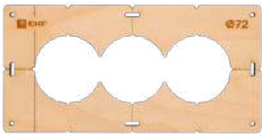
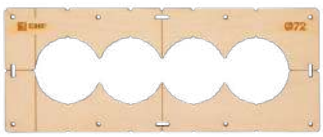
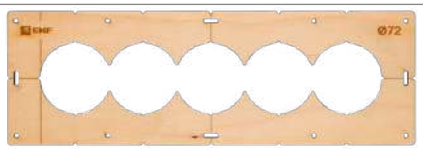


Marking points for spirit level and pencil. Slotted mounting holes for easy level adjustment

Four fixing mounting holes at the edges. Laser-cut from 8 mm plywood

APPLICATION

Drilling templates are essential for positioning and drilling holes in walls, floors, and other structural elements to accommodate electrical wiring, and conduit runs, ensuring accurate placement and alignment of the openings.

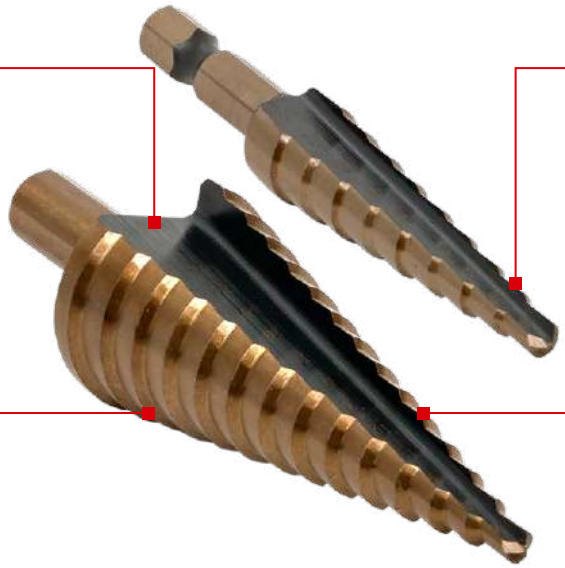
Picture	Name	Item code
	Set of templates for mounting boxes, diameter 68 mm EXPERT EKF	sh-d68-k
	Set of templates for mounting boxes, diameter 72 mm EXPERT EKF	sh-d72-k
	Set of templates for mounting boxes, diameter 82 mm EXPERT EKF	sh-d82-k
	Template for mounting boxes 1 hole diameter 68 mm EXPERT EKF	sh-d68-1
	Template for mounting boxes 1 hole diameter 72 mm EXPERT EKF	sh-d72-1
	Template for mounting boxes 1 hole diameter 82 mm EXPERT EKF	sh-d82-1
	Template for mounting boxes 2 holes diameter 68 mm EXPERT EKF	sh-d68-2
	Template for mounting boxes 2 holes diameter 72 mm EXPERT EKF	sh-d72-2
	Template for mounting boxes 2 holes diameter 82 mm EXPERT EKF	sh-d82-2
	Template for mounting boxes 3 holes diameter 68 mm EXPERT EKF	sh-d68-3
	Template for mounting boxes 3 holes diameter 72 mm EXPERT EKF	sh-d72-3
	Template for mounting boxes 3 holes diameter 82 mm EXPERT EKF	sh-d82-3
	Template for mounting boxes 4 holes diameter 68 mm EXPERT EKF	sh-d68-4
	Template for mounting boxes 4 holes diameter 72 mm EXPERT EKF	sh-d72-4
	Template for mounting boxes 4 holes diameter 82 mm EXPERT EKF	sh-d82-4
	Template for mounting boxes 5 holes diameter 68 mm EXPERT EKF	sh-d68-5
	Template for mounting boxes 5 holes diameter 72 mm EXPERT EKF	sh-d72-5
	Template for mounting boxes 5 holes diameter 82 mm EXPERT EKF	sh-d82-5

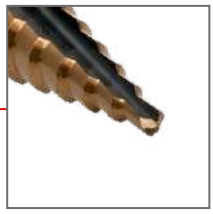
Step drill bits EKF

Step drill bits are used for fast and low-noise drilling of large diameter holes in sheet metal and plastic with cordless and corded power tools. Useful in electrical installation for drilling holes for indicator lights, tumblers, cable glands etc.

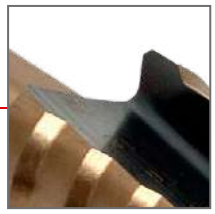
Even and odd size rows. Oxide coating for better corrosion resistance.

1/4" hexagon or three-point shank





Hard, durable and heat resistant high-speed steel that holds the edge well



Drill/Chamfer in a single pass. Can be re-sharpened if blunted

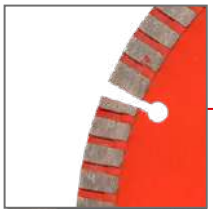
APPLICATION

Step drill bits provide a convenient and efficient method for drilling accurate and clean holes of various sizes in thin materials:
- metalworking,
- electrical and plumbing installations.

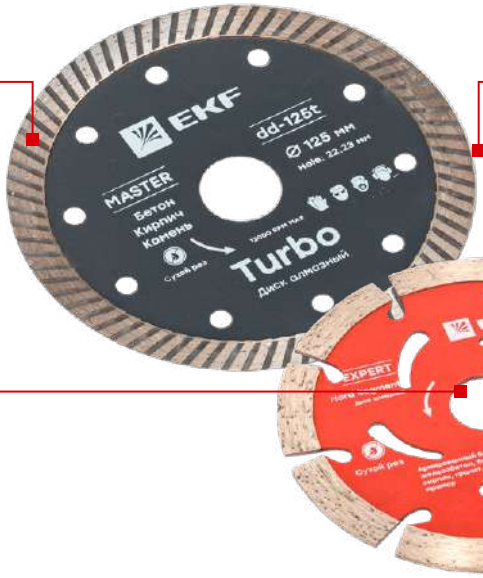
Picture	Name	Hole diameter, mm	Shank type	Total length, mm	Step height, mm	Item code
	Step drill bit ST-4-12/1 HSS	4, 5, 6, 7, 8, 9, 10, 11, 12	1/4"	70	5	ST-4-12/1
	Step drill bit ST-4-20/2 HSS	4, 6, 8, 10, 12, 14, 16, 18, 20	Three-point	75		ST-4-20/2
	Step drill bit ST-4-30/2 HSS	4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30	Three-point	100		ST-4-30/2
	Step drill bit ST-4-39/3 HSS	4, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39	Three-point	113		ST-4-39/3

Diamond disks

Compared to segmented discs, turbo rimmed discs produce cleaner and neater cut. Turbo rim helps to increase cutting speed, while the perforations in the body of the disc improve cooling and extend the life of the tool. Suitable for both dry and wet cutting.



Turbo and turbo segmented discs for faster cutting



Increased cutting segment width for a longer service life

Arbor size of 22, 23 is suitable for both angle grinders and wall chasers

Optimum cutting segment/disc thickness ratio to prevent binding

APPLICATION

Diamond discs offer an effective and versatile solution for cutting, grinding, and shaping hard and abrasive materials:

- Grinding and shaping to achieve the desired surface smoothness, profile, or texture.
- Tile and glass cutting without chipping or cracking.
- Cutting and grinding stone, metal, and abrasive materials.

Picture	Name	Description	Outer diameter, mm	Maximum speed, rpm	Thickness / height of the cutters, mm	Depth of cut, mm	Item code
	Diamond disk Segmented (125 x 22,23 mm) MASTER EKF	Concrete curbstone, fireclay brick, brick, paving slabs, hard sandstone	125	12 200	2,2 / 10	20	dd-125s
	Diamond disk Segmented (150x22,23 mm) MASTER EKF		150	10 200	2,2 / 10	30	dd-150s
	Diamond disk Segmented (230×22,23 mm) MASTER EKF		230	6600	2,7 / 10	60	dd-230s
	Diamond disk Turbo (125×22,23 mm) MASTER EKF	Concrete, curbstone, brick, paving slabs, hard sandstone, granite	125	12 000	2,2 / 10	20	dd-125t
	Diamond disk Turbo (150×22,23 mm) MASTER EKF		150	10 200	2,3 / 10	30	dd-150t
	Diamond disk Turbo (230×22,23 mm) MASTER EKF		230	6600	2,8 / 10	60	dd-230t
	Diamond disk Hard Segmented (125×22,23 mm) EXPERT EKF	Concrete, curbstone, brick, paving slabs, hard sandstone, granite	125	12 200	2 / 10	20	dd-125hps
	Diamond disk Hard Segmented (150×22,23 mm) EXPERT EKF		150	10 200	2,2 / 10	30	dd-150hps
	Diamond disk Hard Segmented (230×22,23 mm) EXPERT EKF		230	6800	2,4 / 10	60	dd-230hps
	Diamond disk Turbo Segmented (125×22,23 mm) EXPERT EKF	reinforced concrete, mesh reinforced concrete, concrete, curbstone, natural stone, paving slabs, brick	125	12 200	2,1 / 10	20	dd-125ts
	Diamond disk Turbo Segmented (230×22,23 mm) EXPERT EKF		230	6600	2,5-10	60	dd-230ts

Concrete drill bits

Designed for impact drilling in concrete, brick and stone. Compatible with SDS-plus impact drill chucks. **Concrete drill bits with four cutters EXPERT EKF** are intended for drilling into reinforced concrete. The drill bit will not bind or break when hitting rebar. Cross-shaped cutting head reduces wear rate and enables drilling through small diameter rebar. The design of the cutting edges minimizes the risk of the drill bit binding. Four cutting edges and grooved four-flute helix ensure excellent swarf removal and heat dissipation characteristics. **Concrete drill bits with two cutters MASTER EKF** feature time-tested design that gets the job done without breaking the bank. Durable VK8 carbide cutters for efficient rotary and impact drilling. Slotted flutes for improved swarf extraction, bit rigidity and cleaner finish.

Grooved four-flute helix for better swarf removal and improved drill bit strength.

Tip: Expert series – four-cutter tip; Master series – VK8 carbide chisel tip. Diffusion-welded cutting tip for better wear resistance.

Picture	Name	Item code
	Concrete drill bit SDS-plus 10x160 mm 4 cutters, 4S spiral EXPERT EKF	db-10-160-4x4
	Concrete drill bit SDS-plus 10x210 mm 4 cutters, 4S spiral EXPERT EKF	db-10-210-4x4
	Concrete drill bit SDS-plus 12x160 mm 4 cutters, 4S spiral EXPERT EKF	db-12-160-4x4
	Concrete drill bit SDS-plus 12x210 mm 4 cutters, 4S spiral EXPERT EKF	db-12-210-4x4
	Concrete drill bit SDS-plus 6x110 mm 4 cutters, 4S spiral EXPERT EKF	db-6-110-4x4
	Concrete drill bit SDS-plus 6x160 mm 4 cutters, 4S spiral EXPERT EKF	db-6-160-4x4
	Concrete drill bit SDS-plus 6x210 mm 4 cutters, 4S spiral EXPERT EKF	db-6-210-4x4
	Concrete drill bit SDS-plus 8x110 mm 4 cutters, 4S spiral EXPERT EKF	db-8-110-4x4
	Concrete drill bit SDS-plus 8x160 mm 4 cutters, 4S spiral EXPERT EKF	db-8-160-4x4
	Concrete drill bit SDS-plus 8x210 mm 4 cutters, 4S spiral EXPERT EKF	db-8-210-4x4
	Concrete drill bit SDS-plus 10x160 mm 2 cutters, 4S spiral MASTER EKF	db-10-160-2x4
	Concrete drill bit SDS-plus 10x210 mm 2 cutters, 4S spiral MASTER EKF	db-10-210-2x4
	Concrete drill bit SDS-plus 6x110 mm 2 cutters, 4S spiral MASTER EKF	db-6-110-2x4
	Concrete drill bit SDS-plus 6x160 mm 2 cutters, 4S spiral MASTER EKF	db-6-160-2x4
	Concrete drill bit SDS-plus 6x210 mm 2 cutters, 4S spiral MASTER EKF	db-6-210-2x4
	Concrete drill bit SDS-plus 8x110 mm 2 cutters, 4S spiral MASTER EKF	db-8-110-2x4
	Concrete drill bit SDS-plus 8x160 mm 2 cutters, 4S spiral MASTER EKF	db-8-160-2x4
	Concrete drill bit SDS-plus 8x210 mm 2 cutters, 4S spiral MASTER EKF	db-8-210-2x4
	Set of concrete drill bits SDS-plus 5x110, 6x110, 6x160, 8x160, 10x160 mm (2 cutters) (4S spiral) MASTER EKF	db-h5-2x4

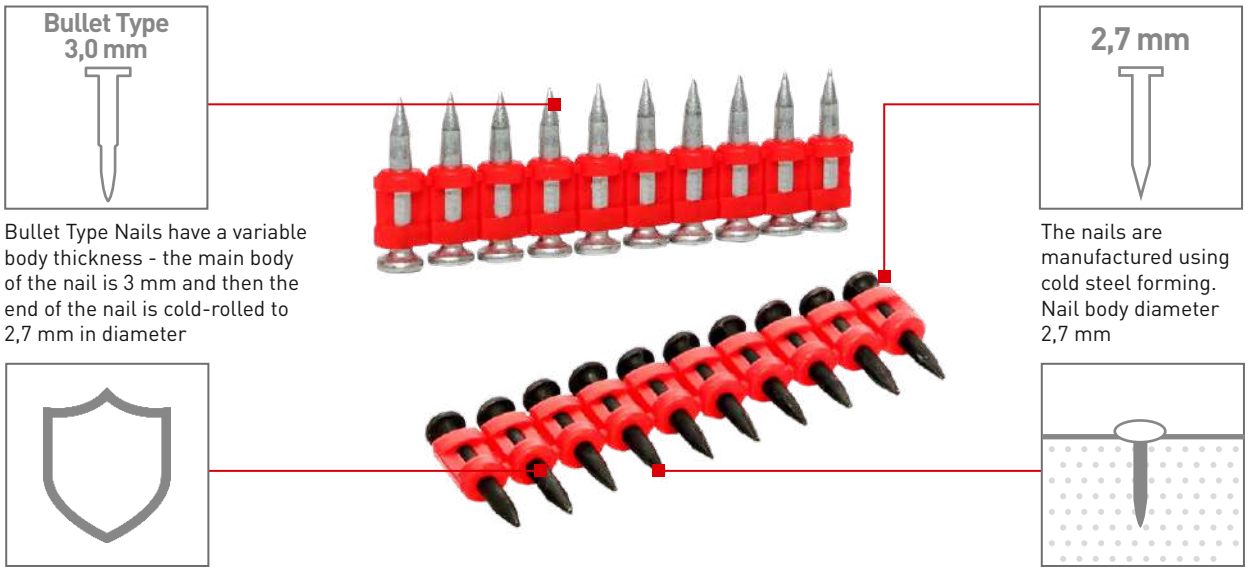
Chisels MASTER EKF

Three-stage induction heat-treatment with strict control over process temperature for each treatment area offer excellent tool life and durability. High-alloy steel and wear-resistant coating ensure extended life and corrosion resistance of the chisel. High impact and dynamic load rating. Polished round shaft.

Picture	Name	Item code
	Chisel semi-round SDS-plus 22x250 mm MASTER EKF	ch-22-250-ms
	Chisel flat wide SDS-plus 40x250 mm MASTER EKF	ch-40-250-ms
	Chisel flat SDS-plus 20x250 mm MASTER EKF	ch-20-250-ms
	Chisel pick-shaped SDS-plus 250 mm MASTER EKF	ch-14-250-ms

Nails for concrete, metal, brick (type CN) EKF

Nail gun nails are designed for instant securing of utility and suspension system elements to concrete, brick and metal using combustion-powered (gas) nail guns. Standard, galvanized nails are suitable for use in brick and softer concrete. Bullet type reinforced nails with a forged tip are suitable for medium to high-strength concrete and to ceiling concrete.



Bullet Type Nails have a variable body thickness - the main body of the nail is 3 mm and then the end of the nail is cold-rolled to 2,7 mm in diameter

The nails are manufactured using cold steel forming. Nail body diameter 2,7 mm

Bullet type nail ends are cold-rolled down to 2,7 mm to improve their performance. Galvanized or zinc plated to protect against corrosion

Hardened tip facilitates penetration into the material without the formation of microcracks

APPLICATION Nail gun nails are utilized in various construction, woodworking, and carpentry applications.

Picture	Name	Nail type / Coating	Dimensions, mm (diameter × length)	Item code
	Forged nails for concrete, metal (type CN) Bullet Type diameter 3 mm length 17 mm, mechanical galvanization (1000 pcs.)	Reinforced, forged Bullet Type tip, galvanized	3,0 × 17	cpn-3017bp
	Forged nails for concrete, metal (type CN) Bullet Type diameter 3 mm length 19 mm, mechanical galvanization (1000 pcs.)		3,0 × 19	cpn-3019bp
	Forged nails for concrete, metal (type CN) Bullet Type diameter 3 mm length 22 mm, mechanical galvanization (1000 pcs.)		3,0 × 22	cpn-3022bp
	Forged nails for concrete, metal (type CN) Bullet Type diameter 3 mm length 25 mm, mechanical galvanization (1000 pcs.)		3,0 × 25	cpn-3025bp
	Nails for concrete, metal, brick (type CN) diameter 2,7mm length 17 mm (1000 pcs.)	Standard, blued	2,7 × 17	cpn-2717bg
	Nails for concrete, metal, brick (type CN) diameter 2.7 mm, length 19 mm (1000 pcs.)		2,7 × 19	cpn-2719bg
	Nails for concrete, metal, brick (type CN) diameter 2.7 mm, length 22 mm (1000 pcs.)		2,7 × 22	cpn-2722bg
	Nails for concrete, metal, brick (type CN) diameter 2.7 mm, length 25 mm (1000 pcs.)		2,7 × 25	cpn-2725bg

PVC insulation tape SafeFlex EKF

SafeFlex insulation tape is made of high-quality flame-retardant PVC. A rubber adhesive layer of the insulation tape ensures instant maximum adhesion. SafeFlex features high elasticity level represented by two variables: tensile strength of 15 MPa and elongation at break of 200%. Thus, this insulation tape facilitates securing of conductors or other objects with the required tension and uniform winding.

Highly ductile. Elongation at break – min. 200%

Convenient box for the storage of SafeFlex PRO tape

Resistant to high humidity, metal corrosion, abrasion, aging, and UV light

9 color options

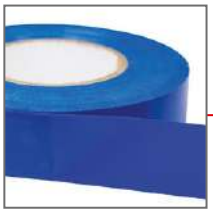
APPLICATION

- Electrical insulation of conductors and cables
- Splicing and bundling
- Protection against mechanical damage
- Color coding

Picture	Name	Base thickness, mm	Elongation at break, %	Adhesion, N/cm	Tape width, mm	Tape length per roll, m	Breakdown voltage, V	Operating temperature, °C	Elongation at break for SafeFlex/ SafeFlex Pro 33+, %	Tensile strength, MPa	Color	Item code
	PVC insulation tape SafeFlex Auto	0,15	Min. 200	1	15	5	6000	–10 to +80	Min. 200 / Min. 220	15	Blue	plc-iz-sfau-s
											Black	plc-iz-sfau-b
	PVC insulation tape SafeFlex				19	20					White	plc-iz-sf-w
											Yellow	plc-iz-sf-y
											Yellow-green	plc-iz-sf-yg
											Green	plc-iz-sf-g
											Brown	plc-iz-sf-br
											Red	plc-iz-sf-r
											Steel gray	plc-iz-sf-st
											Blue	plc-iz-sf-s
											Black	plc-iz-sf-b
	PVC insulation tape SafeFlex Pro 33+	0,18		1,5							Black	plc-iz-sfpro-b

Insulation tape EKF

EKF insulation tape is made of high-quality flame-retardant PVC with ruber-based adhesive layer. This consumable is used for electrical insulation, labeling, and protection against mechanical damage, moisture, etc. in household and construction electrical work. The tape is resistant to UV rays, humidity, abrasion, metal corrosion, and aging. The tape is offered in white, red, blue, yellow, green, black, and yellow-green colors.



High ductility. Elongation at break: 190%

Packaging protects the tape from weather exposure and extends its shelf life

Resistant to humidity, metal corrosion, abrasion, aging, UV rays

Seven colors

APPLICATION

- Electrical insulation of conductors and cables
- Splicing and bundling
- Protection against mechanical damage

TECHNICAL DATA

Parameters	Size	
	0,13 × 15	0,18 × 19
Width	15	19
Moisture resistance	PV-0	
Ignition resistance, °C	850	
Tape length per roll, m	20	

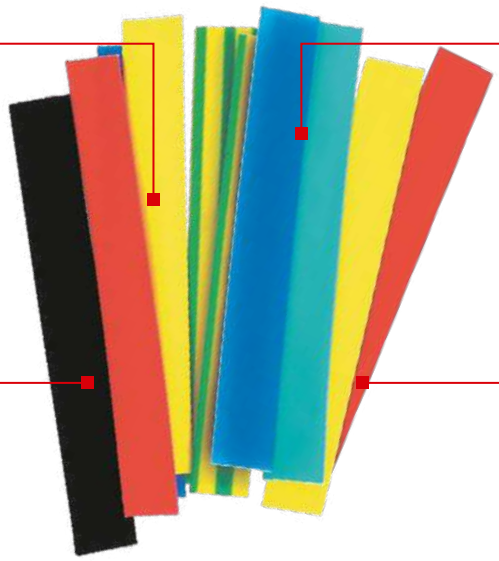
Parameters	Values
Adhesion (stickiness), sec.	45
Tensile strength, MPa	15
Breakdown voltage, V	6000
Elongation at break, %	190
Operating temperature, °C	from –10 to +80

Name	Base thickness, mm	Adhesive layer thickness, mm	Tape width, mm	Tape length per roll, m	Color	Item code
Insulation tape EKF	0,18	0,015	19	20	White	plc-iz-a-w
					Yellow	plc-iz-a-y
					Yellow-green	plc-iz-a-yg
					Green	plc-iz-a-g
					Red	plc-iz-a-r
					Blue	plc-iz-a-s
					Black	plc-iz-a-b
	0,13		15		White	plc-iz-b-w
					Yellow	plc-iz-b-y
					Yellow-green	plc-iz-b-yg
					Green	plc-iz-b-g
					Red	plc-iz-b-r
					Blue	plc-iz-b-s
					Black	plc-iz-b-b

Heat-shrink tubes EKF

Polyethylene heat-shrink tubes EKF can be used for electrical insulation, labeling and finishing. Heat-shrink tubes are designed for sealing couplings, terminating cable ends with caps, insulating cables, strands, and wire connection points, bundling wires; for mechanical protection and color coding of products, etc. The tube shrinks under high temperature (from 90 to 125 °C). The tube shrinks quickly, tightly conforming to the shape of the cable shape. For home use, heat-shrink tubes are a user-friendly substitute for insulating tape.

Wide selection of packaging: roll, 1m pre-cut, retail packaging



Wide range of sizes. Diameter: from 1 to 120 mm (before shrinking)

Wide range of colors: black, blue, yellow, green, red, white, yellow-green, transparent

Self-extinguishing, contains fire retardant

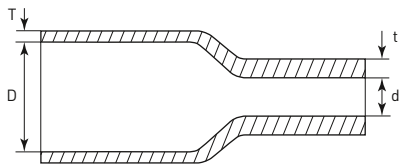
APPLICATION

- Insulation and corrosion protection of electrical conductors and contact connections
- Binding of cables and wires

TECHNICAL DATA

Parameters	Values
Operating voltage, kV	up to 1
Rupture strength, MPa	Over 7,3
Tensile strength, MPa	Min. 10
Electrical resistivity, Ohm*m	1014
Electric strength, kV/mm	Min. 23
Flammability	Non-flammable VW-1
Elongation at break, %	Min. 300
Elongation at break after shrinkage, %	Min. 100
Radial shrinkage, %	Min. 50
Concentricity, %	Over 65
Shrinkage temperature, °C	from –90 to +125
Installation temperature, °C	from –5 to +50

Overall and installation dimensions

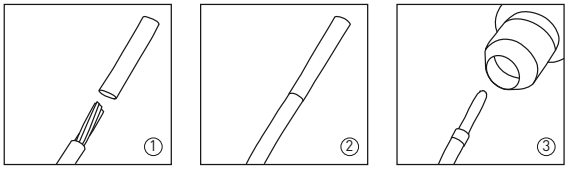


Name	Optimal shrinkage range, mm	Name	Optimal shrinkage range, mm
Heat-shrink tube NF 1/0,5	0,9-0,6	Heat-shrink tube NF 16/8	14,4-9,6
Heat-shrink tube NF 1,5/0,75	1,35-0,9	Heat-shrink tube NF 18/9	16,2-10,8
Heat-shrink tube NF 2/1	1,8-1,2	Heat-shrink tube NF 20/10	18-12
Heat-shrink tube NF 2,5/1,25	2,25-1,5	Heat-shrink tube NF 25/12,5	22,5-15
Heat-shrink tube NF 3/1,5	2,7-1,8	Heat-shrink tube NF 30/15	27-18
Heat-shrink tube NF 4/2	3,6-2,4	Heat-shrink tube NF 35/17,5	31,5-21
Heat-shrink tube NF 5/2,5	4,5-3	Heat-shrink tube NF 40/20	36-24
Heat-shrink tube NF 6/3	5,4-3,6	Heat-shrink tube NF 50/25	45-30
Heat-shrink tube NF 8/4	7,2-4,8	Heat-shrink tube NF 60/30	54-36
Heat-shrink tube NF 10/5	9-6	Heat-shrink tube NF 80/40	72-48
Heat-shrink tube NF 12/6	10,8-7,2	Heat-shrink tube NF 100/50	90-60
Heat-shrink tube NF 14/7	12,6-8,4	Heat-shrink tube NF 120/60	108-72

Installation and operation

To select the right size of a heat-shrink tube for your application, follow these steps:

1. The tube internal diameter before shrinking must be 10–20% larger than the base, and the tube diameter after shrinking must be 10–20% less than the base diameter. The tube of the proper size ensures a tight fit to the base.
2. Prepare the base before shrinking: clean dust and grease from the surface. If a metal surface has sharp edges, protrusions and burrs, grind them down.
3. Use a heat gun or a propane torch for shrinking. Adjust the torch, so that flame turns yellow. Do not use with a poined high-temperature blue flame.
4. To ensure uniform shrinkage and prevent burning through the tube, the heat source should always be in smooth motion along the heat-shrink tube. Optimal shrinking temperature: from +90 to +125 °C.
5. Do not use heat-shrink tubes with kinks, scratches and bubbles on the outer surface, or cuts along the tube ends.
6. To prevent the tube from wrinkling and air bubbling, shrink it either from the center towards the ends, or from one end to the other. First, shrink the tube around the base radially, then shrink along the lenght of the tube.
7. After shrinking, the tube shall have no damage, the tube surface shall be smooth, without wrinkles or bubbles. The tube must tightly conform to the shape of the base.



Roll

Name	Dimensions before shrinking, mm		Dimensions after shrinking, mm		Max. longitudinal shrinkage, %	Quantity per package, m	Item code							
							Color							
	Diameter, mm	Wall thickness, mm	Diameter, mm	Wall thickness, mm			Yellow	Yellow-green	Green	Red	Blue	Black	White	Transparent (roll pack)
Heat-shrink tube NF 2/1	2	0,25±0,05	1	0,45±0,1	5	200	tut-2-y	tut-2-yg	tut-2-j	tut-2-r	tut-2-g	tut-2-b	tut-2-w	tut-2-tr roll (100 m)
Heat-shrink tube NF 3/1,5	3	0,25±0,05	1,5	0,45±0,1		200	–	tut-3-yg	–	–	–	tut-3-b	–	–
Heat-shrink tube NF 4/2	4	0,25±0,05	2	0,45±0,1		200	tut-4-y	tut-4-yg	tut-4-j	tut-4-r	tut-4-g	tut-4-b	tut-4-w	tut-4-tr roll (100 m)
Heat-shrink tube NF 5/2,5	5	0,35±0,05	2,5	0,55±0,1		100	–	tut-5-yg	–	–	–	tut-5-b	–	–
Heat-shrink tube NF 6/3	6	0,35±0,05	3	0,55±0,1		100	tut-6-y	tut-6-yg	tut-6-j	tut-6-r	tut-6-g	tut-6-b	tut-6-w	tut-6-tr roll (100 m)
Heat-shrink tube NF 8/4	8	0,35±0,05	4	0,55±0,1		100	tut-8-y	tut-8-yg	tut-8-j	tut-8-r	tut-8-g	tut-8-b	tut-8-w	tut-8-tr roll (100 m)
Heat-shrink tube NF 10/5	10	0,35±0,05	5	0,6±0,1		100	tut-10-y	tut-10-yg	tut-10-j	tut-10-r	tut-10-g	tut-10-b	tut-10-w	tut-10-tr roll (100 m)
Heat-shrink tube NF 12/6	12	0,35±0,1	6	0,7±0,1		100	tut-12-y	tut-12-yg	tut-12-j	tut-12-r	tut-12-g	tut-12-b	tut-12-w	tut-12-tr roll (50 m)
Heat-shrink tube NF 16/8	16	0,35±0,1	8	0,7±0,1		100	tut-16-y	tut-16-yg	tut-16-j	tut-16-r	tut-16-g	tut-16-b	tut-16-w	tut-16-tr roll (50 m)
Heat-shrink tube NF 18/9	18	0,4±0,1	9	0,8±0,1		100	tut-18-y	tut-18-yg	tut-18-j	tut-18-r	tut-18-g	tut-18-b	tut-18-w	–
Heat-shrink tube NF 20/10	20	0,5±0,1	10	0,9±0,1		100	tut-20-y	tut-20-yg	tut-20-j	tut-20-r	tut-20-g	tut-20-b	tut-20-w	tut-20-tr roll (25 m)
Heat-shrink tube NF 25/12,5	25	0,5±0,1	12,5	0,9±0,1		50	tut-25-y	tut-25-yg	tut-25-j	tut-25-r	tut-25-g	tut-25-b	tut-25-w	tut-25-tr roll (25 m)
Heat-shrink tube NF 30/15	30	0,5±0,1	15	1±0,2		50	tut-30-y	tut-30-yg	tut-30-j	tut-30-r	tut-30-g	tut-30-b	tut-30-w	–
Heat-shrink tube NF 35/17,5	35	0,5±0,1	17,5	1±0,2		50	–	–	–	–	–	tut-35-b	–	–
Heat-shrink tube NF 40/20	40	0,5±0,1	20	1±0,2		50	tut-40-y	tut-40-yg	tut-40-j	tut-40-r	tut-40-g	tut-40-b	tut-40-w	–
Heat-shrink tube NF 50/25	50	0,5±0,1	25	1±0,2		50	tut-50-y	tut-50-yg	tut-50-j	tut-50-r	tut-50-g	tut-50-b	tut-50-w	–
Heat-shrink tube NF 60/30	60	0,6±0,1	30	1,2±0,2		25	tut-60-y	tut-60-yg	tut-60-j	tut-60-r	tut-60-g	tut-60-b	tut-60-w	–
Heat-shrink tube NF 80/40	80	0,6±0,1	40	1,2±0,2		25	tut-80-y	–	tut-80-j	tut-80-r	tut-80-g	tut-80-b	tut-80-w	–
Heat-shrink tube NF 100/50	100	0,6±0,1	50	1,2±0,2		25	tut-100-y	–	tut-100-j	tut-100-r	tut-100-g	tut-100-b	tut-100-w	–
Heat-shrink tube NF 120/60	120	0,6±0,1	60	1,2±0,2		25	tut-120-y	–	tut-120-j	tut-120-r	tut-120-g	tut-120-b	tut-120-w	–

1 meter pre-cut

Name	Dimensions before heat shrinking, mm		Dimensions after heat shrinking, mm		Max. longitudinal shrinkage, %	Quantity per package, m	Item code						
							Color						
	Diameter, mm	Wall thickness, mm	Diameter, mm	Wall thickness, mm			Yellow	Yellow-green	Green	Red	Blue	Black	White
Heat-shrink tube NF 1/0,5	1	0,2±0,05	0,5	0,4±0,05	5	200	–	–	–	–	–	tut-1-b-1m	–
Heat-shrink tube NF 1,5/0,75	1,5	0,2±0,05	0,75	0,4±0,05		200	–	–	–	–	–	tut-1.5-b-1m	–
Heat-shrink tube NF 2/1	2	0,25±0,05	1	0,45±0,1		200	tut-2-y-1m	tut-2-yg-1m	tut-2-j-1m	tut-2-r-1m	tut-2-g-1m	tut-2-b-1m	tut-2-w-1m
Heat-shrink tube NF 2,5/1,25	2,5	0,25±0,05	1,25	0,45±0,1		200	–	–	–	–	–	tut-2.5-b-1m	–
Heat-shrink tube NF 3/1,5	3	0,25±0,05	1,5	0,45±0,1		200	–	–	–	–	–	tut-3-b-1m	–
Heat-shrink tube NF 4/2	4	0,25±0,05	2	0,45±0,1		100	tut-4-y-1m	tut-4-yg-1m	tut-4-j-1m	tut-4-r-1m	tut-4-g-1m	tut-4-b-1m	tut-4-w-1m
Heat-shrink tube NF 5/2,5	5	0,35±0,05	2,5	0,55±0,1		100	–	–	–	–	–	tut-5-b-1m	–
Heat-shrink tube NF 6/3	6	0,35±0,05	3	0,55±0,1		50	tut-6-y-1m	tut-6-yg-1m	tut-6-j-1m	tut-6-r-1m	tut-6-g-1m	tut-6-b-1m	tut-6-w-1m
Heat-shrink tube NF 8/4	8	0,35±0,05	4	0,55±0,1		50	tut-8-y-1m	tut-8-yg-1m	tut-8-j-1m	tut-8-r-1m	tut-8-g-1m	tut-8-b-1m	tut-8-w-1m
Heat-shrink tube NF 10/5	10	0,35±0,05	5	0,6±0,1		50	tut-10-y-1m	tut-10-yg-1m	tut-10-j-1m	tut-10-r-1m	tut-10-g-1m	tut-10-b-1m	tut-10-w-1m
Heat-shrink tube NF 12/6	12	0,35±0,1	6	0,7±0,1		50	tut-12-y-1m	tut-12-yg-1m	tut-12-j-1m	tut-12-r-1m	tut-12-g-1m	tut-12-b-1m	tut-12-w-1m
Heat-shrink tube NF 14/7	14	0,35±0,1	7	0,7±0,1		50	tut-14-y-1m	tut-14-yg-1m	tut-14-j-1m	tut-14-r-1m	tut-14-g-1m	tut-14-b-1m	tut-14-w-1m
Heat-shrink tube NF 16/8	16	0,35±0,1	8	0,7±0,1		50	tut-16-y-1m	tut-16-yg-1m	tut-16-j-1m	tut-16-r-1m	tut-16-g-1m	tut-16-b-1m	tut-16-w-1m
Heat-shrink tube NF 18/9	18	0,4±0,1	9	0,8±0,1		25	–	–	–	–	–	tut-18-b-1m	–
Heat-shrink tube NF 20/10	20	0,5±0,1	10	0,9±0,1		50	tut-20-y-1m	tut-20-yg-1m	tut-20-j-1m	tut-20-r-1m	tut-20-g-1m	tut-20-b-1m	tut-20-w-1m
Heat-shrink tube NF 25/12,5	25	0,5±0,1	12,5	0,9±0,1		50	tut-25-y-1m	tut-25-yg-1m	tut-25-j-1m	tut-25-r-1m	tut-25-g-1m	tut-25-b-1m	tut-25-w-1m
Heat-shrink tube NF 30/15	30	0,5±0,1	15	1±0,2		25	tut-30-y-1m	tut-30-yg-1m	tut-30-j-1m	tut-30-r-1m	tut-30-g-1m	tut-30-b-1m	tut-30-w-1m
Heat-shrink tube NF 35/17,5	35	0,5±0,1	17,5	1±0,2		50	–	–	–	–	–	tut-35-b-1m	–
Heat-shrink tube NF 40/20	40	0,5±0,1	20	1±0,2		25	tut-40-y-1m	tut-40-yg-1m	tut-40-j-1m	tut-40-r-1m	tut-40-g-1m	tut-40-b-1m	tut-40-w-1m
Heat-shrink tube NF 50/25	50	0,5±0,1	25	1±0,2		25	–	–	–	–	–	tut-50-b-1m	–
Heat-shrink tube NF 60/30	60	0,6±0,1	30	1,2±0,2		25	–	–	–	–	–	tut-60-b-1m	–
Heat-shrink tube NF 80/40	80	0,6±0,1	40	1,2±0,2		25	–	–	–	–	–	tut-80-b-1m	–
Heat-shrink tube NF 100/50	100	0,6±0,1	50	1,2±0,2		25	–	–	–	–	–	tut-100-b-1m	–

Retail packaging

Name	Piece length, mm	Colors	Number of pieces of each color	Total number of pieces	Item code
Heat-shrink tube NF 2/1 set	100	White, red, blue, green, black, yellow, yellow-green	3 pcs	21	tut-n-2
Heat-shrink tube NF 4/2 set					tut-n-4
Heat-shrink tube NF 6/3 set					tut-n-6
Heat-shrink tube NF 8/4 set					tut-n-8
Heat-shrink tube NF 10/5 set					tut-n-10
Heat-shrink tube NF 12/6 set					tut-n-12
Heat-shrink tube NF 16/8 set					tut-n-16
Heat-shrink tube NF 20/10 set					tut-n-20
Heat-shrink tube NF 30/15 set					tut-n-30
Heat-shrink tube NF 40/20 set					tut-n-40
Heat-shrink tube NF 50/25 set					tut-n-50

Sets of different sizes

Picture	Diameter before shrinking, mm	Diameter after shrinking, mm	Piece length, mm	Colors	Number of pieces of each color	Total number of pieces	Item code
	10	5	100 mm	White, red, blue, green, black, yellow, yellow-green	7	49	tut-n-1-r
	12	6					
	16	8					
	20	10					
	25	12,5					
	30	15					
	40	20					
	1	0,5	100 mm	Black, Blue, Green, White, Red, Yellow	6	30	tut-n-2-r
	1,5	0,75					
	2	1					
	2,5	1,25					
	3	1,5					
	3	1,5	100 mm	Black, Blue, Green, White, Red, Yellow	6	30	tut-n-3-r
	4	2					
	5	2,5					
	6	3					
	8	4					
	4	2	100 mm	Black, blue, green, white, red, yellow, yellow-green	5	35	tut-n-4-r
	6	3					
	8	4					
	10	5					
	12	6					

Picture	Diameter before heat shrinking, mm	Diameter after heat shrinking, mm	Segment length, mm	Yellow-green	Blue	Red	Green	White	Total number of pieces	Item code
	4	2	100 мм	7	6	6	6	3	105	tut-n-5-r
	6	3		6	5	5	5	2		
	8	4		5	5	5	5	2		
	10	5		4	3	3	3	1		
	12	6		2	2	2	2	1		
	20	10		2	2	2	2	1		

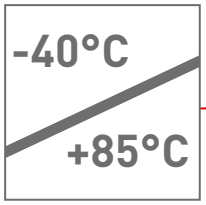
Adhesive-lined heat-shrink tubes EKF

Adhesive heat-shrink tubes are designed to protect, insulate and seal joints, conductors and assembly parts. The adhesive heat-shrink tubes feature hot-melt glue on the inner surface, that melts when heated, providing tight adhesion and extra protection.

Name	Diameter, mm	Wall thickness, mm	Diameter, mm	Wall thickness, mm	Max. longitudinal shrinkage, %	Quantity per package, m	Item code	
							color	
							black	transparent
Adhesive heat-shrink tube NF 3/1	3±0.4	0.40±0.15	1±0.4	0.85±0.25	5	400	tut-k3-b	–
Adhesive heat-shrink tube NF 4,8/1,6	4.8±0.4	0.40±0.15	1.6±0.4	1.05±0.25		200	tut-k4.8-b	–
Adhesive heat-shrink tube NF 6/2	6±0.4	0.45±0.15	2±0.4	1.10±0.25		160	tut-k6-b	–
Adhesive heat-shrink tube NF 9/3	9±0.5	0.60±0.20	3±0.5	1.45±0.25		100	tut-k9-b	–
Adhesive heat-shrink tube NF 12/4	12±0.5	0.60±0.20	4±0.5	1.45±0.25		100	tut-k12-b	–
Adhesive heat-shrink tube NF 18/6	18±0.7	0.75±0.25	6±0.7	1.70±0.40		50	tut-k18-b	–
Adhesive heat-shrink tube NF 24/8	24±0.7	0.75±0.25	8±0.7	2.00±0.55		50	tut-k24-b	–
Adhesive heat-shrink tube NF 30/10	30±1.0	0.80±0.30	10±1.0	2.20±0.55		50	tut-k30-b	–
Adhesive heat-shrink tube NF 39/13	39±1.0	0.85±0.35	13±1.0	2.50±0.55		50	tut-k39-b	–
Adhesive heat-shrink tube NF 50/17	50±1.0	0.85±0.40	17±1.0	2.50±0.55		30	tut-k50-b	–
Adhesive heat-shrink tube NF 4/1	4±0.4	0.45±0.2	1±0.4	1.0±0.15		600	tut4-k4-b	–
Adhesive heat-shrink tube NF 6/1,5	6±0.4	0.5±0.2	1,25±0.4	1.1±0.15		1200	tut4-k6-b	–
Adhesive heat-shrink tube NF 8/2	8±0.45	0.6±0.2	2±0.45	1.2±0.15		900	tut4-k8-b	–
Adhesive heat-shrink tube NF 12/3	12±0.5	0.7±0.2	3±0.5	1.4±0.15		480	tut4-k12-b	–
Adhesive heat-shrink tube NF 16/4	16±0.5	0.7±0.2	4±0.5	1.7±0.15		360	tut4-k16-b	–
Adhesive heat-shrink tube NF 24/6	24±0.7	0.7±0.25	6±0.7	2.1±0.15		300	tut4-k24-b	–
Adhesive heat-shrink tube NF 32/8	32±1.0	0.8±0.25	8±1.0	2.4±0.15		240	tut4-k32-b	–
Adhesive heat-shrink tube NF 52/13	52±1.0	0.8±0.3	13±1.0	2.4±0.15		160	tut4-k52-b	–
Adhesive heat-shrink tube NF 3/1	3±0.4	0.3±0.15	1±0.4	1.0±0.15		600	–	tut-k3-tr
Adhesive heat-shrink tube NF 4,8/1,6	4.8±0.4	0.3±0.2	1.6±0.4	1.1±0.15		1200	–	tut-k4.8-tr
Adhesive heat-shrink tube NF 6/2	6±0.4	0.3±0.2	2±0.4	1.2±0.15		900	–	tut-k6-tr
Adhesive heat-shrink tube NF 9/3	9±0.5	0.3±0.25	3±0.5	1.4±0.15		1050	–	tut-k9-tr
Adhesive heat-shrink tube NF 12/4	12±0.5	0.4±0.2	4±0.5	1.4±0.15		480	–	tut-k12-tr
Adhesive heat-shrink tube NF 18/6	18±0.7	0.45±0.2	6±0.7	1.7±0.15		360	–	tut-k18-tr
Adhesive heat-shrink tube NF 24/8	24±0.7	0.5±0.2	8±0.7	2.1±0.15		300	–	tut-k24-tr
Adhesive heat-shrink tube NF 30/10	30±1.0	0.55±0.2	10±1.0	2.4±0.15		240	–	tut-k30-tr
Adhesive heat-shrink tube NF 39/13	39±1.0	0.6±0.2	13±1.0	2.4±0.15		200	–	tut-k39-tr

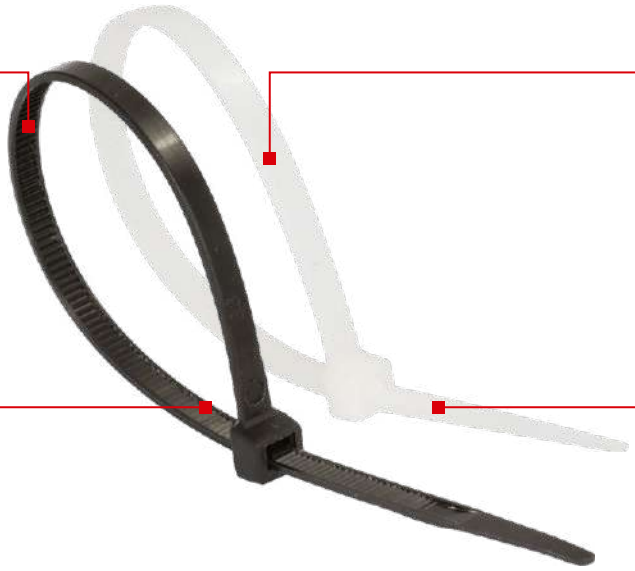
Cable ties FlexLock EKF

Cable ties FlexLock EKF are designed for tying cables and wires into bundles and for securing cables to surfaces. Made of PA 6.6 polyamide, cable ties are resistant to oil, grease, solvents, weak acids and UV rays. FlexLock cable ties have durable self-locking mechanism. For black cable ties, carbon powder is added during the production process – being one of the most effective stabilizers, carbon improves product resistance to weather exposure and UV rays (direct sunlight).



Extended range of operating temperatures. Flammability class of raw materials: UL 94-V2

Various dimensions: 2,5 - 12,4 mm wide and 8cm - 1m long



Material: Halogen-free self-extinguishing Nylon 6.6

Bright and convenient retail packaging of 50 pcs.

APPLICATION

Cable ties are designed for tying cables and wires into a bundle and for installing cable lines and conductors both indoors and outdoors.

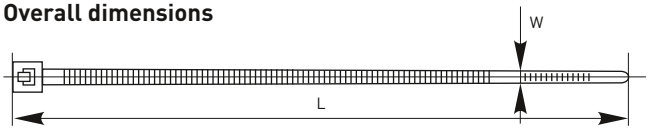
TECHNICAL DATA

Parameters	Values
Materials	6.6 DuPont Polyamide
Operating temperature, °C	From -40 to +85
Flammability class of raw materials	UL 94-V2
Minimum installation temperature, °C	-10
Maximum short-term withstand temperature, °C	+110
Tensile strength, N	> 80

Installation and operation

1. Ties can be applied at the temperature from -10 to +85 °C.
2. Open the packaging only before use.
3. If installing in low temperature conditions, first keep the package with cable ties at room temperature for two hours.

Overall dimensions



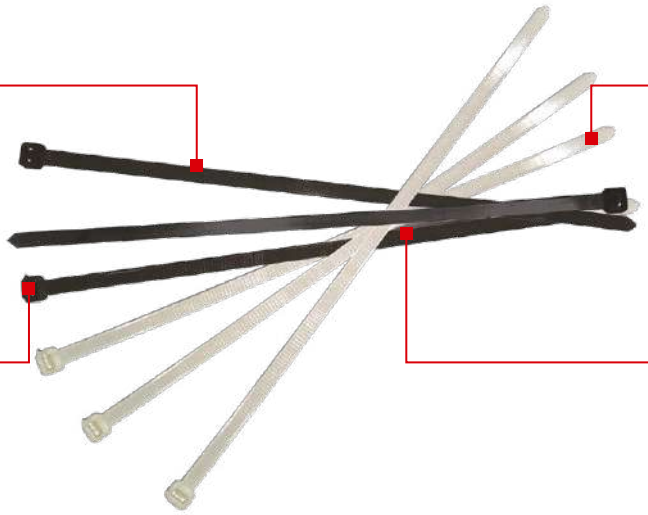
Name	Dimensions, mm				Weight, g ±10%	Tensile strength, N	Item code			
	Width, W	Length, L	Min. Bundle Ø	Max. Bundle Ø			Packaging (100 pcs.)		Packaging (50 pcs.)	
							White	Black	White	Black
Cable tie 2,5x100	2,5±0,2	100±3	3,00	20,50	0,23	80	plc-fl-ctsw-2.5x100	plc-fl-ctsb-2.5x100	plc-fl-ctsw-2.5x100-r	plc-fl-ctsb-2.5x100-r
Cable tie 2,5x120		120±3		27,00	0,31		plc-fl-ctsw-2.5x120	plc-fl-ctsb-2.5x120	–	–
Cable tie 2,5x150		150±3		36,50	0,38		plc-fl-ctsw-2.5x150	plc-fl-ctsb-2.5x150	plc-fl-ctsw-2.5x150-r	plc-fl-ctsb-2.5x150-r
Cable tie 2,5x160		160±3		39,80	0,41		plc-fl-ctsw-2.5x160	plc-fl-ctsb-2.5x160	–	–
Cable tie 2,5x200		200±3		52,50	0,50		plc-fl-ctsw-2.5x200	plc-fl-ctsb-2.5x200	plc-fl-ctsw-2.5x200-r	plc-fl-ctsb-2.5x200-r

Name	Dimensions, mm				Weight, g ±10%	Tensile strength, N	Item code			
	Width, W	Length, L	Min. Bundle Ø	Max. Bundle Ø			Packaging (100 pcs.)		Packaging (50 pcs.)	
							White	Black	White	Black
Cable tie 3.6x140	3,6±0,2	140±3	3,50	33,00	0,59	180	plc-fl-ctsw-3.6x140	plc-fl-ctsb-3.6x140	–	–
Cable tie 3,6x150		150±3		36,00	0,61		plc-fl-ctsw-3.6x150	plc-fl-ctsb-3.6x150	plc-fl-ctsw-3.6x150-r	plc-fl-ctsb-3.6x150-r
Cable tie 3,6x180		180±3		46,00	0,73		plc-fl-ctsw-3.6x180	plc-fl-ctsb-3.6x180	–	–
Cable tie 3,6x200		200±3		52,50	0,83		plc-fl-ctsw-3.6x200	plc-fl-ctsb-3.6x200	plc-fl-ctsw-3.6x200-r	plc-fl-ctsb-3.6x200-r
Cable tie 3,6x250		250±3		68,00	1,07		plc-fl-ctsw-3.6x250	plc-fl-ctsb-3.6x250	plc-fl-ctsw-3.6x250-r	plc-fl-ctsb-3.6x250-r
Cable tie 3,6x300		300±3		84,00	1,27		plc-fl-ctsw-3.6x300	plc-fl-ctsb-3.6x300	plc-fl-ctsw-3.6x300-r	plc-fl-ctsb-3.6x300-r
Cable tie 3,6x370		370±3		106,00	1,54		plc-fl-ctsw-3.6x370	plc-fl-ctsb-3.6x370	–	–
Cable tie 4,6x120	4,6±0,2	120±3	3,50	23,80	0,70	230	plc-fl-ctsw-4.6x120	plc-fl-ctsb-4.6x120	–	–
Cable tie 4,6x160		160±3		36,60	0,88		plc-fl-ctsw-4.6x160	plc-fl-ctsb-4.6x160	–	–
Cable tie 4,6x180		180±3		43,00	1,11		plc-fl-ctsw-4.6x180	plc-fl-ctsb-4.6x180	–	–
Cable tie 4,8x200	4,8±0,2	200±3		49,50	1,13		plc-fl-ctsw-4.8x200	plc-fl-ctsb-4.8x200	plc-fl-ctsw-4.8x200-r	plc-fl-ctsb-4.8x200-r
Cable tie 4,8x250		250±3		65,00	1,52		plc-fl-ctsw-4.8x250	plc-fl-ctsb-4.8x250	plc-fl-ctsw-4.8x250-r	plc-fl-ctsb-4.8x250-r
Cable tie 4,8x300		300±3		81,00	1,79		plc-fl-ctsw-4.8x300	plc-fl-ctsb-4.8x300	plc-fl-ctsw-4.8x300-r	plc-fl-ctsb-4.8x300-r
Cable tie 4,8x350		350±3		97,00	2,10		plc-fl-ctsw-4.8x350	plc-fl-ctsb-4.8x350	–	–
Cable tie 4,8x380		380±3		106,70	2,30		plc-fl-ctsw-4.8x380	plc-fl-ctsb-4.8x380	–	–
Cable tie 4,8x400		400±3		113,10	2,42		plc-fl-ctsw-4.8x400	plc-fl-ctsb-4.8x400	–	–
Cable tie 4,8x450		450±3		129,00	2,85		plc-fl-ctsw-4.8x450	plc-fl-ctsb-4.8x450	–	–
Cable tie 7,6x150	7,6±0,3	150±5	8,50	35,00	1,73	540	plc-fl-ctsw-7.6x150	plc-fl-ctsb-7.6x150	–	–
Cable tie 7,6x200		200±5		50,90	2,44		plc-fl-ctsw-7.6x200	plc-fl-ctsb-7.6x200	–	–
Cable tie 7,6x250		250±5		66,80	3,00		plc-fl-ctsw-7.6x250	plc-fl-ctsb-7.6x250	–	–
Cable tie 7,6x300		300±5		82,80	3,52		plc-fl-ctsw-7.6x300	plc-fl-ctsb-7.6x300	–	–
Cable tie 7,6x350		350±5		98,50	4,00		plc-fl-ctsw-7.6x350	plc-fl-ctsb-7.6x350	–	–
Cable tie 7,6x400		400±5		114,50	4,66		plc-fl-ctsw-7.6x400	plc-fl-ctsb-7.6x400	–	–
Cable tie 7,6x450		450±5		130,50	5,10		plc-fl-ctsw-7.6x450	plc-fl-ctsb-7.6x450	–	–
Cable tie 7,6x500		500±5		146,40	5,67		plc-fl-ctsw-7.6x500	plc-fl-ctsb-7.6x500	–	–
Cable tie 8,8x500	8,8±0,4	500±6		146,50	7,10	800	plc-fl-ctsw-8.8x500	plc-fl-ctsb-8.8x500	–	–
Cable tie 8,8x610		610±6		181,50	9,85		plc-fl-ctsw-8.8x610	plc-fl-ctsb-8.8x610	–	–
Cable tie 8,8x750		750±6		205,00	11,90		plc-fl-ctsw-8.8x750	plc-fl-ctsb-8.8x750	–	–
Cable tie 12,4x650	12,4±0,5	650±8	9,00	195,00	16,50	1200	plc-fl-ctsw-12.4x650	plc-fl-ctsb-12.4x650	–	–

Cable ties (white, black) EKF

Cable ties EKF are designed for tying cables and wires into bundles and for securing cables to surfaces. EKF cable ties have durable self-locking mechanism. Made of Nylon 6.6, cable ties are resistant to aging, corrosion, salts, ultraviolet, acids, bases, alcohol, gasoline and oils. For black cable ties, carbon powder is added during the production process – being one of the most effective stabilizers, carbon improves product resistance to weather exposure and UV rays (direct sunlight).

Increased teeth width



Durable and reliable

Reliable self-locking mechanism

Material: Halogen-free self-extinguishing Nylon 6.6

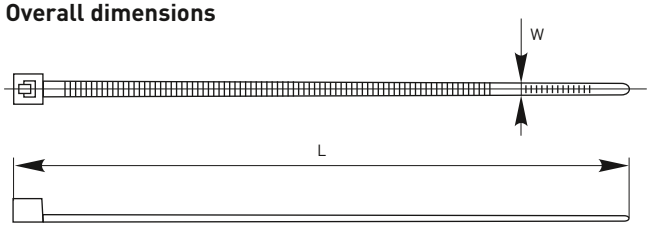
APPLICATION

Designed for binding and bundling wires and cables indoors and outdoors.

TECHNICAL DATA

Parameters	Values
Density g/cm³	1,5
Insulating capability, mm²	> 300
Tensile strength,%	20–50
Flexural strength, kg/cm³	800
Minimal size, mm	2,5 × 60
Insulating capability, mm²	35
Operating temperature, °C	from-40 to +80

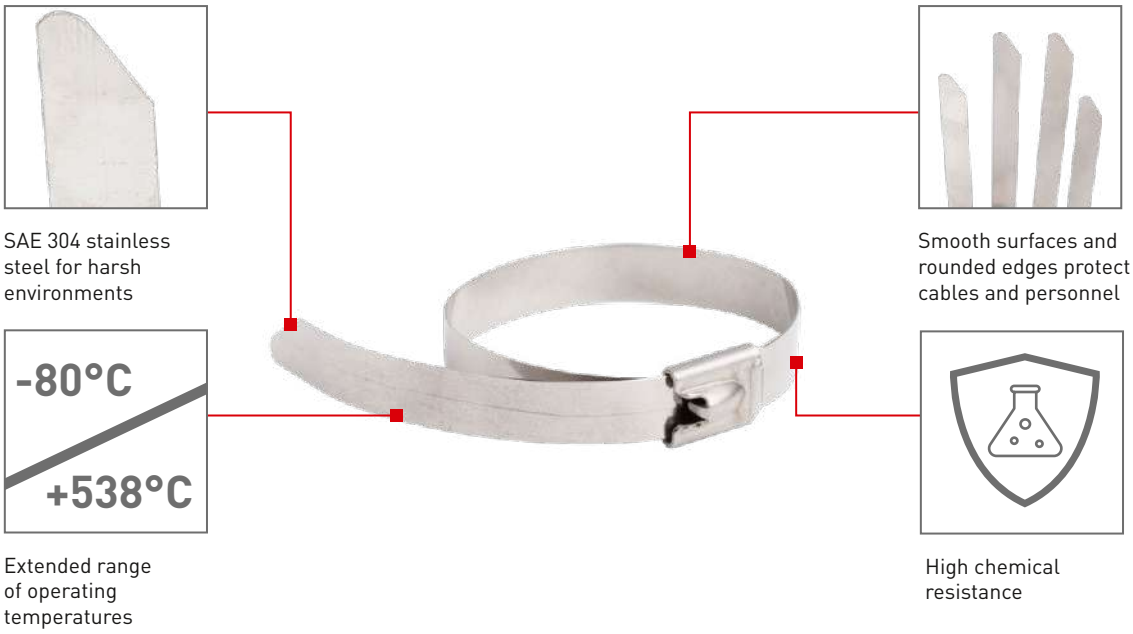
Overall dimensions



Name	Dimensions, mm			Item code	
	width (W)	length (L)	Effective width	White	Black
Cable tie 2,5x80 EKF	2,5	80	2,3	plc-c-2,5x80	plc-cb-2,5x80
Cable tie 2,5x100 EKF		100		plc-c-2,5x100	plc-cb-2,5x100
Cable tie 2,5x120 EKF		120		plc-c-2,5x120	plc-cb-2,5x120
Cable tie 2,5x150 EKF		150		plc-c-2,5x150	plc-cb-2,5x150
Cable tie 2,5x200 EKF		200		plc-c-2,5x200	plc-cb-2,5x200
Cable tie 2,5x250 EKF		250		plc-c-2.5x250	plc-cb-2.5x250
Cable tie 3,6x150 EKF	3,6	150	3,4	plc-c-3,6x150	plc-cb-3,6x150
Cable tie 3,6x180 EKF		180		plc-c-3,6x180	plc-cb-3,6x180
Cable tie 3,6x200 EKF		200		plc-c-3,6x200	plc-cb-3,6x200
Cable tie 3,6x250 EKF		250		plc-c-3,6x250	plc-cb-3,6x250
Cable tie 3,6x300 EKF		300		plc-c-3,6x300	plc-cb-3,6x300
Cable tie 3,6x370 EKF		370		plc-c-3,6x370	plc-cb-3,6x370
Cable tie 4,8x150 EKF	4,8	150	4,6	plc-c-4,8x150	plc-cb-4,8x150
Cable tie 4,8x180 EKF		180		plc-c-4,8x180	plc-cb-4,8x180
Cable tie 4,8x200 EKF		200		plc-c-4,8x200	plc-cb-4,8x200
Cable tie 4,8x250 EKF		250		plc-c-4,8x250	plc-cb-4,8x250
Cable tie 4,8x300 EKF		300		plc-c-4,8x300	plc-cb-4,8x300
Cable tie 4,8x350 EKF		350		plc-c-4,8x350	plc-cb-4,8x350
Cable tie 4,8x380 EKF		380		plc-c-4,8x380	plc-cb-4,8x380
Cable tie 4,8x400 EKF		400		plc-c-4,8x400	plc-cb-4,8x400
Cable tie 4,8x430 EKF		430		plc-c-4,8x430	plc-cb-4,8x430
Cable tie 4,8x450 EKF		450		plc-c-4,8x450	plc-cb-4,8x450
Cable tie 7,2x200 EKF	7,2	200	7	plc-c-7,2x200	plc-cb-7,2x200
Cable tie 7,2x250 EKF		250		plc-c-7,2x250	plc-cb-7,2x250
Cable tie 7,2x300 EKF		300		plc-c-7,2x300	plc-cb-7,2x300
Cable tie 7,2x350 EKF		350		plc-c-7,2x350	plc-cb-7,2x350
Cable tie 7,2x400 EKF		400		plc-c-7,2x400	plc-cb-7,2x400
Cable tie 7,2x450 EKF		450		plc-c-7,2x450	plc-cb-7,2x450
Cable tie 7,2x500 EKF		500		plc-c-7,2x500	plc-cb-7,2x500
Cable tie 8,2x400 EKF	8,2	400	8	plc-c-8,2x400	plc-cb-8,2x400
Cable tie 8,2x500 EKF		500		plc-c-8,2x500	plc-cb-8,2x500
Cable tie 8,2x650 EKF		650		plc-c-8,2x650	plc-cb-8,2x650
Cable tie 8,2x750 EKF		750		plc-c-8,2x750	plc-cb-8,2x750
Cable tie 11,5x650 EKF	11,5	650	11,3	plc-c-11,5x650	plc-cb-11,5x650

Cable ties stainless steel AISI 304 FlexLock EKF

AISI 304 stainless steel cable ties FlexLock EKF are designed for bundling cables and wires, and routing cable lines and conductors in harsh environments, under high vibration, humidity, radiation and extreme temperature conditions. Steel cable ties are used for securing different types of pipe. The self-locking head facilitates installation and ensures reliable clamping along the entire circumference of the cable tie.



APPLICATION

Securing, bundling and holding down pipes, armored cables and other pieces of hardware in harsh environments.

TECHNICAL DATA

Parameters	Values
Materials	AISI 304 stainless steel for harsh environments
Operating temperature, °C	from –80 to +538
Flammability	Non-flammable
Water absorption	None
UV resistance	High
Chemical resistance	High
Tensile strength, N	› 890

Name	Width, mm	Length, mm	Ultimate tensile strength, N	Min. bundle diameter, mm	Max. bundle diameter, mm	Item code	
						100 pcs./pack	10 pcs./pack
Cable tie stainless steel AISI 304 4,6x150 FlexLock EKF	4,6	150±3	890	15	46	plc-fl-tss-304-4.6x150	plc-fl-tss-304-4.6x150-r
Cable tie stainless steel AISI 304 4,6x200 FlexLock EKF		200±3			61,9	plc-fl-tss-304-4.6x200	plc-fl-tss-304-4.6x200-r
Cable tie stainless steel AISI 304 4,6x290 FlexLock EKF		290±3			90,6	plc-fl-tss-304-4.6x290	plc-fl-tss-304-4.6x290-r
Cable tie stainless steel AISI 304 4,6x360 FlexLock EKF		360±3			112,8	plc-fl-tss-304-4.6x360	plc-fl-tss-304-4.6x360-r
Cable tie stainless steel AISI 304 7,9x520 FlexLock EKF	7,9	520±3	1600		163,8	plc-fl-tss-304-7.9x520	plc-fl-tss-304-7.9x520-r

Velcro cable ties EKF

Cable ties are designed for securing and bunding wires and cables. Velcro cable ties can be easily reused and repositioned and enable convenient access when rearranging various units of equipment.

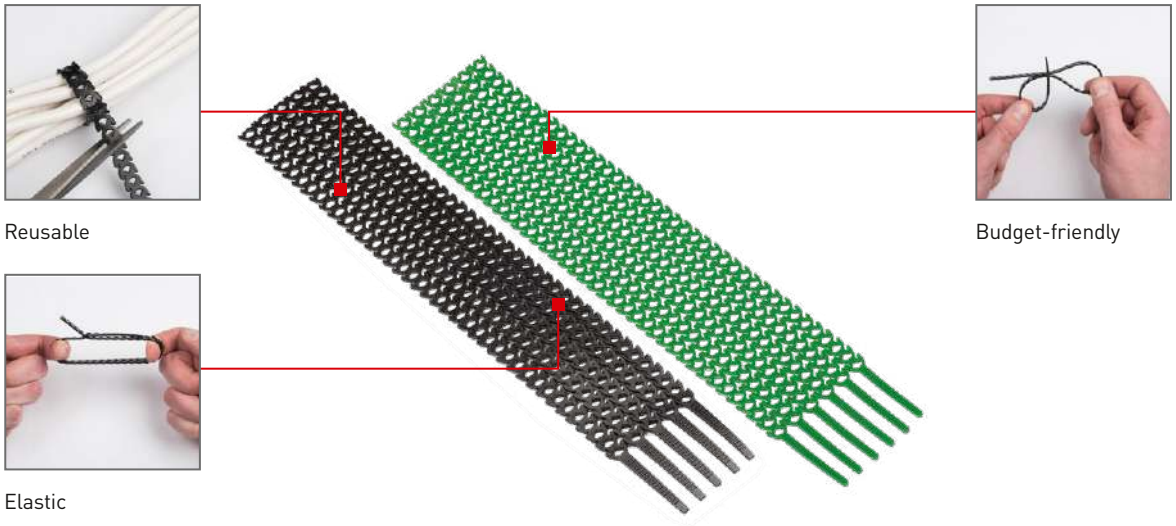
APPLICATION

Velcro cable ties offer a lightweight, reusable and convenient alternative to traditional plastic cable ties. Ideal for household and light duty applications.

Name	Length, mm	Width, mm	Item code
Velcro cable tie 16mm 5m roll white EKF	5000	16	hlft-1-w
Velcro cable tie 16mm 5m roll black EKF	5000	16	hlft-1-b
Velcro cable tie 20mm 5m roll white EKF	5000	20	hlft-2-w
Velcro cable tie 20mm 5m roll black EKF	5000	20	hlft-2-b
Velcro cable tie 12x135mm white (20 pcs.) EKF	135	12	hlct-1-w
Velcro cable tie 12x135mm black (20 pcs.) EKF	135	12	hlct-1-b
Velcro cable tie 15x210mm white (20 pcs.) EKF	210	15	hlct-2-w
Velcro cable tie 15x210mm black (20 pcs.) EKF	210	15	hlct-2-b
Velcro cable tie 14x310mm white (20 pcs.) EKF	310	14	hlct-3-w
Velcro cable tie 14x310mm black (20 pcs.) EKF	310	14	hlct-3-b

Flexible cable ties FlexSTRAP EKF

FlexSTRAP cable ties are designed for bundling, routing and securing cables and wires. These easy to use cable ties are durable yet flexible, withstand UV rays and temperature fluctuation, and can be reused.



APPLICATION

FlexSTRAP cable ties are used for tying and fastening cables and wires in bundles, for reeling cable coils. They can be used both in electrics and in everyday life (office, home, etc.)

TECHNICAL DATA

Parameters	Values
Materials	Polyurethane
Operating temperature, °C	From -20 to +50
Min. installation temperature, °C	-5
Tensile strength, kg	10

Installation and operation

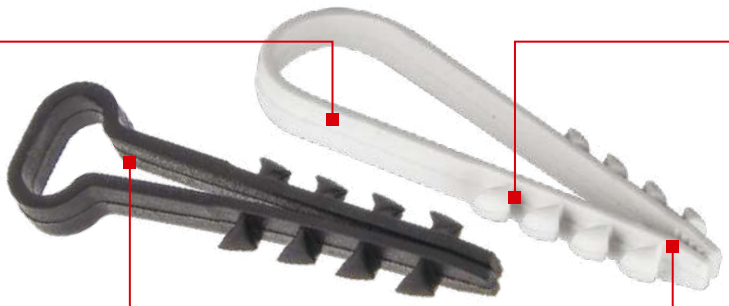
1. Cable ties should be used at temperature from -20 to +50 °C.
2. If installing in low temperature conditions, first keep the package with cable ties at room temperature for two hours.

Name	Color	Width, mm	Length, mm	Materials	Tensile strength, kg	Operating temperature, °C	Installation temperature, °C	Min. bundle diameter, mm	Max. bundle diameter, mm	Packaging (pcs.)	Item code
Flexible cable tie white 20 pcs. FlexSTRAP EKF	White	10	300	Poly-urethane	10	from -20 to 50	from -5	5	80	20	plc-fs-wr
Flexible cable tie black 20 pcs. FlexSTRAP EKF	Black							5	80	20	plc-fs-br
Flexible cable tie green 20 pcs. FlexSTRAP EKF	Green							5	80	20	plc-fs-gr

Dowel cable ties EKF

Dowel cable ties are designed for fastening any type of cable to walls: electrical, communication, etc. With dowel cable ties, you can easily secure any cable – you need only a hammer drill or a rotary hammer.

Airtight packaging for extended shelf life



Easy installation

Material: Halogen-free self-extinguishing Nylon 6.6

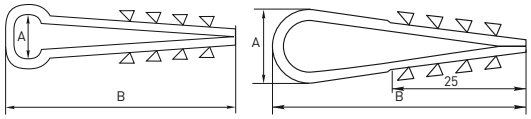
Larger teeth for secure fastening

APPLICATION

Designed for fixing cables and wires, rigid and flexible pipes to brick and concrete walls, as well as to walls made of foam blocks and natural stone.

TECHNICAL DATA

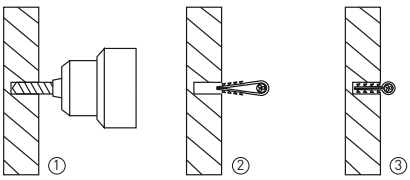
Overall dimensions



Delivery scope

Dowel tie – 50/100 pcs., depending on the type of product.

Mounting procedure



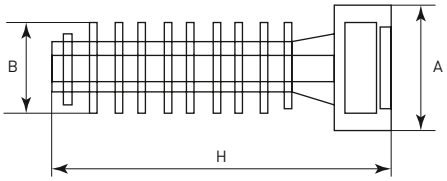
1. Drill a hole in the wall.
2. Insert the wire/cable into the tie loop.
3. Insert the cable tie into the hole until it stops.

Picture	Name	Color	Cable loop diameter, mm	Overall dimensions, mm		Item code		
				A	B	100 pcs./pack	50 pcs./pack	10 pcs./pack
	Dowel tie for round cable 5-10mm EKF	White	6	5-10	45	plc-ncc-5x10w	plc-ncs50-5x10w	plc-ncs-5x10w-r
	Dowel tie for round cable 11-18mm EKF			11-18	54	plc-ncc-11x18w	plc-ncs50-11x18w	plc-ncs-11x18w-r
	Dowel tie for round cable 19-25mm EKF			19-25	62	plc-ncc-19x25w	plc-ncs50-19x25w	plc-ncs-19x25w-r
	Dowel tie for round cable 5-10mm EKF	Black		5-10	45	plc-ncc-5x10b	plc-ncs50-5x10b	plc-ncs-5x10b-r
	Dowel tie for round cable 11-18mm EKF			11-18	54	plc-ncc-11x18b	plc-ncs50-11x18b	plc-ncs-11x18b-r
	Dowel tie for round cable 19-25mm EKF			19-25	62	plc-ncc-19x25b	plc-ncs50-19x25b	plc-ncs-19x25b-r
	Dowel tie for flat cable 5x8mm EKF	White		8	45	plc-nccf-5x8w	–	–
	Dowel tie for flat cable 5x10mm EKF			10		plc-cd1-5x10w	plc-cd-5x10w	plc-cd-5x10w-r
	Dowel tie for flat cable 6x12mm EKF			12		plc-cd1-6x12w	plc-cd-6x12w	plc-cd-6x12w-r
	Dowel tie for flat cable 6x14mm EKF			14		plc-cd1-6x14w	plc-cd-6x14w	plc-cd-6x14w-r
	Dowel tie for flat cable 5x8mm EKF	Black		8		plc-nccf-5x8b	–	–
	Dowel tie for flat cable 5x10mm EKF			10		plc-cd1-5x10b	plc-cd-5x10b	plc-cd-5x10b-r
	Dowel tie for flat cable 6x12mm EKF			12		plc-cd1-6x12b	plc-cd-6x12b	plc-cd-6x12b-r
	Dowel tie for flat cable 6x14mm EKF			14		plc-cd1-6x14b	plc-cd-6x14b	plc-cd-6x14b-r

Banding dowels EKF

Picture	Name	Color	Grip width, mm	Overall dimensions, mm			Item code
				A	B	H	
	Banding dowel 6x35 EKF	White	3 × 6	12,5	7,8	35	plc-fti-6w
	Banding dowel 8x45 EKF		8	14,.5	3,4	45	plc-fti-8w
	Banding dowel 6x35 EKF	Black	3 × 6	12,5	7,8	35	plc-fti-6b
	Banding dowel 8x45 EKF		8	14,.5	3,4	45	plc-fti-8b

Overall dimensions



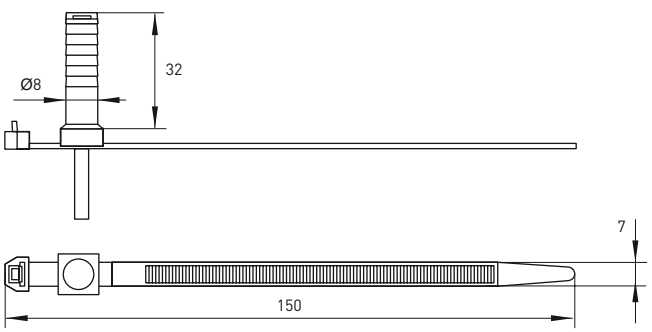
Delivery scope

Banding dowel - 100 pcs.

Dowel cable ties

Picture	Name	Color	Item code
	Dowel cable tie 7x150 EKF	Grey	plc-nst-7.2x150w
	Dowel cable tie 7x150 EKF	Black	plc-nst-7.2x150b

Overall dimensions (mm)

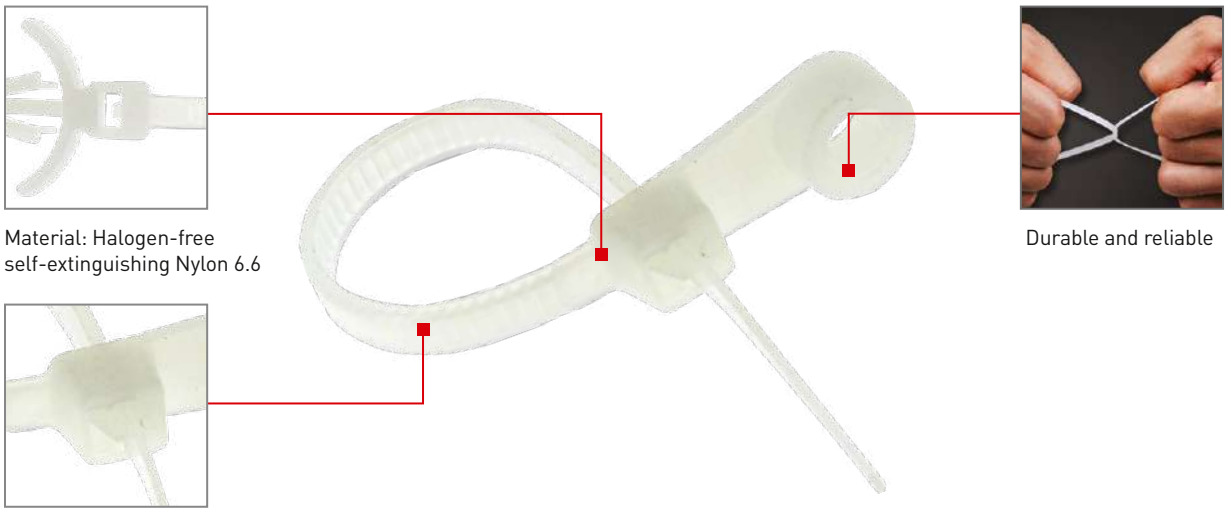


Delivery scope

Dowel cable tie – 50 pcs., depending on the type of product.

Cable ties with holes, bases, anchors EKF

Cable ties are designed for fastening and bundling cables and wires, and arranging cable management systems.



Material: Halogen-free self-extinguishing Nylon 6.6

Durable and reliable

Reliable self-locking mechanism

APPLICATION

Specialty cable ties can be used for securing cables and wire bundles in a variety of cable routing and cable management scenarios.

TECHNICAL DATA

Cable tie with fixing hole

Parameters	Values	
	3,6 × 100	3,6 × 200
Wire bundle diameter, mm	5–20	5–50
Maximum withstand load, N	150	

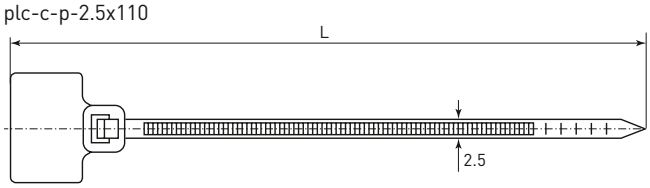
Cable tie with marking plate

Parameters	Values
Plate dimensions, mm	13 × 20
Wire bundle diameter, mm	4–25

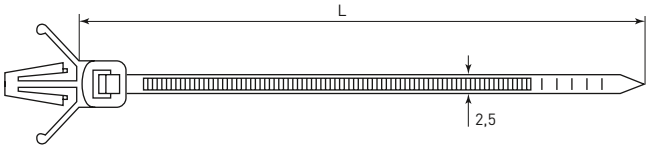
Anchor cable tie

Parameters	Values
Wire bundle diameter, mm	5–20
Maximum thickness of mounting plate, mm	2
Hole diameter, mm	4,5–5
Maximum withstand load, N	80

plc-c-p-2.5x110

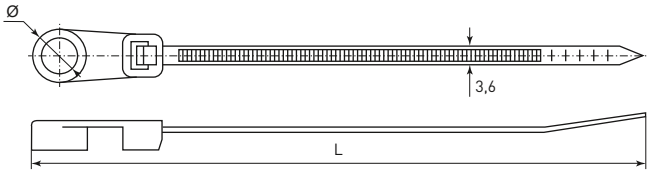


plc-c-a-2.5x100



Overall dimensions

plc-c-o-3.6x100, plc-c-o-3.6x200



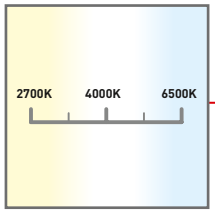
Delivery scope

1. Nylon anchor cable tie 2,5x100 – 100 pcs.
2. Nylon cable tie with marking plate 2,5x110 - 100 pcs.
3. Nylon cable tie with fixing hole 3,6x100 - 100 pcs.
4. Nylon cable tie with fixing hole 3,6x200 - 100 pcs.

Name	Size, мм		Item code
	Width	Length	
Nylon cable tie with fixing hole 3,6x100 EKF	3,6	100	plc-c-o-3.6x100
Nylon cable tie with fixing hole 3,6x200 EKF	3,6	200	plc-c-o-3.6x200
Nylon cable tie with marking plate 2,5x110 EKF	2,5	110	plc-c-p-2.5x110
Nylon anchor cable tie 2,5x100 EKF	2,5	100	plc-c-a-2.5x100

Smart lamps EKF Connect

With EKF Connect smart LED lamps you can easily change the color temperature, color, and brightness of the light to create the ambiance you want. Smart lamps can be controlled via Wi-Fi with the EKF Connect mobile app, available on iOS and Android. You can schedule the app to turn the lamps on and off at a certain time, or set a timer. By setting up scenarios, you can control multiple devices at the same time with a push of a button.



Warm or cool light. Brightness control

Endless RGB color options

Supports both iOS and Android

Supports Wi-Fi and Bluetooth Low Energy

APPLICATION

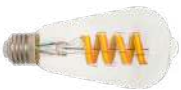
Smart lamps are commonly used in residential buildings, allowing users to remotely control and adjust the lights, using a smartphone or voice commands. They are easily integrated into smart home automation systems for scheduling, energy-saving, and security purposes.

TECHNICAL DATA

Parameters	Values
Voltage, V	220 – 240
Frequency, Hz	50 - 60
Service life, hours	25 000
Warranty	3 years

Delivery scope

1. Smart lamp.
2. Technical manual.

Picture	Name	Lamp socket	Luminous flux*, lm	Color temperature, K	Power consumption, W	RGB	Item code
	Smart lamp E27 8W RGBW Wi-Fi EKF Connect	E27	806	2700 - 6500	8	Yes	slwf-e27-rgbw
	Smart lamp E14 5W RGBW Wi-Fi EKF Connect	E14	400	3000 - 6500	5	Yes	slwf-e14-rgbw
	Smart lamp GU10 5W RGBW Wi-Fi EKF Connect	GU10	500	2700 - 6500	5	Yes	slwf-gu10-rgbw
	Smart filament bulb E27 Wi-Fi EKF Connect	E27	725	2300 - 5700	6,5	N/A	slwf-e27-fil
	Smart filament bulb RBG E27 ST64 EKF Connect	E27	300	2700	4,9	Yes	slwf-e27-st64-fil-rgbw
	Smart lamp GX53 RGBW Wi-Fi EKF Connect	GX53	821	3000 - 6400	8,5	Yes	slwf-gx53-rgbw

*Luminous flux measured in neutral white light mode at 4300K color temperature.

Smart plugs EKF Connect

EKF Connect smart plugs make conventional appliances smart. Using the Android and iOS app, as well as select voice assistants, you can control lamps, fans, heaters, humidifiers and any other devices that start working immediately after being turned on. Pro models support energy monitoring: they measure voltage, current, and energy consumption, as well as collect daily or monthly power consumption statistics.

APPLICATION

Smart plugs can be used in homes, offices, and various other settings to provide energy management and automation for a wide range of electronic appliances and devices.

TECHNICAL DATA

Parameters	Values
Voltage/Frequency, V/Hz	230 / 50-60
Maximum total current, A	16
Maximum total power, W	3680
Dimensions, mm	55 × 55 × 80
Weight, g	98

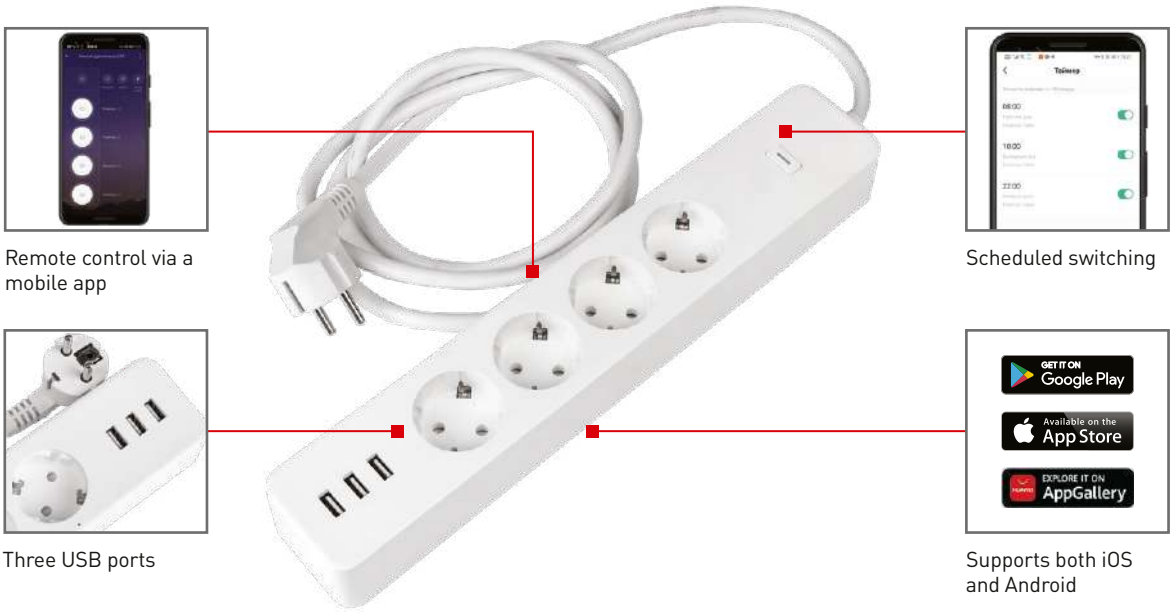
Delivery scope

1. Smart plug.
2. Technical manual.

Name	Overload protection	Energy monitoring	Item code
Smart plug Wi-Fi white EKF Connect	N/A	N/A	RCS-1-WF
Smart plug Wi-Fi black PRO EKF Connect	Yes (auto power off)	Yes	RCS-2-WF

Smart power strips EKF connect

EKF Connect smart power strips make conventional appliances smart. Using the Android and iOS app, as well as select voice assistants, you can control lamps, fans, heaters, humidifiers and any other devices that start working immediately after being turned on. In addition to four conventional outlets, EKF connect smart power strips feature three USB ports for charging mobile devices. For the basic model, all four outlets are switched on/off at the same time.



APPLICATION

Smart power strips are versatile devices that offer advanced power management and energy-saving features for homes, offices, and various other settings that rely on multiple electronic devices and appliances.

TECHNICAL DATA

Parameters	Values
Voltage/Frequency, V/Hz	230 / 50-60
Maximum total current, A	16
Maximum total power, W	3680
Outlets	4
USB charging ports	3
Rated USB charging voltage, V	5
Maximum total USB charging current, A	3,1

Parameters	Values
Cable length, m	1,8
Dimensions, mm	312 × 55 × 39
Weight, g	610

Delivery scope

1. Smart power strip
2. Technical manual.

Name	Energy monitoring	Overload protection	Item code
Smart power strip USB Wi-Fi EKF Connect	N/A	N/A	RCE-1-WF
Smart power strip USB Wi-Fi PRO EKF Connect	Yes	Yes (auto power off)	RCE-2-WF

Smart cameras EKF Connect

With EKF Connect smart cameras you can easily arrange video monitoring of your house or apartment, and keep an eye on your kids and pets. You can view the camera feed any time in the EKF Connect app, available on Android and iOS. All smart cameras support recording video to a memory card or to cloud storage. Smart cameras also feature motion detection and sending detection alerts with an associated photo to the app.

Night mode with IR illumination up to 10 meters

Bi-directional voice communication (baby monitor mode)

Supports both iOS and Android. Supports ONVIF

Motion and sound detection with in-app notifications and a photo

APPLICATION

Smart cameras are deployed in a wide range of settings to enhance safety, security, and operational efficiency through real-time monitoring, video analytics, and remote access.

TECHNICAL DATA

Parameters	Values
Sensor	1/2,9'' 2 MP CMOS
Resolution	1920x1080 (HxW)
Frame rate	1-25 FPS
Min. illumination	Color mode 0,01 lux B/W mode 0,001 lux
IR illumination	Up to 10 meters
Video compression	H.264
Bitrate	32 Kbps ~ 2 Mbps
Audio	Integrated microphone/speaker
Alarm	Smart motion sensor
Supported protocols	HTTP, DHCP, DNS, TCP/IP
Wi-Fi, GHz	2.4

Parameters	Values
Operating system	iOS 8 / Android 4.4 and newer
Security	User authentication, software encryption
Operating temperature, °C	–20 to +50
Video storage	SD card (max. 128 GB), smartphone, cloud storage*

*Cloud storage is a subscription-based service

Delivery scope

1. Smart camera.
2. Power adapter.
3. Cable.
4. Technical manual.

Picture	Name	Degree of protection	Application	Motion tracking mode	Camera motion control	Item code
	Smart home camera M8S Wi-Fi EKF Connect	IP20	Indoors	N/A	N/A	scwf-m8s
	Smart outdoor camera EKF Connect IP65 Wi-Fi	IP65	Indoors and outdoors	N/A	N/A	scwf-ex
	Smart PT camera Wi-Fi EKF Connect	IP20	Indoors	Yes	Yes	scwf-tz

Smart LED strips EKF Connect

With EKF Connect smart LED strips you can easily change the color temperature, color, and brightness of the light to create the ambiance you want. Smart LED strips can be controlled via Wi-Fi with the EKF Connect mobile app, available on iOS and Android. You can schedule the app to turn the LED strip on and off at a certain time, or set a timer. All smart LED strips come with an IR remote, so that you can control them even without a smartphone.

Warm or cool light. Brightness control

Supports both iOS and Android

Endless RGB color options

Supports Wi-Fi and Bluetooth Low Energy

APPLICATION

Smart LED strips can be used in a wide range of settings to provide customizable, energy-efficient, and visually appealing lighting solutions. Their flexible, color-changing capabilities and integration with smart control systems make them suitable for various residential, commercial, and entertainment applications.

TECHNICAL DATA

Parameters	Values
Length, m	3
Cut lines, mm	100
Voltage/Frequency, V/Hz	220 – 240 / 50 – 60
Power consumption, W	18
Luminous flux*, lm	760
Color temperature, K	3000 – 6500, RGB
Service life, hours	25 000

*Luminous flux measured in cold white light mode at 6500K color temperature.

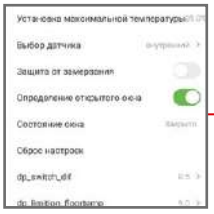
Delivery scope

1. Smart LED strip.
2. Power adapter.
3. Controller.
4. Remote control.
5. Technical manual.

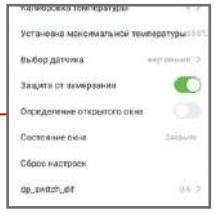
Name	Item code
Smart LED strip RGBW 3m EKF Connect	slswf-3-rgbw

Smart thermostats EKF Connect

EKF Connect smart thermostats are designed to control heating cable or heating film systems. Once installed and connected to the Wi-Fi network, smart thermostats can be controlled remotely via the EKF Connect mobile app.

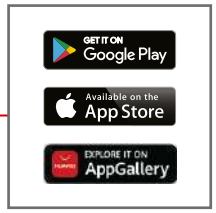


Open window detection



Anti-freezing function

Remote control via EKF Connect mobile app



Supports both iOS and Android

APPLICATION

Smart thermostats are used in residential, commercial, and industrial settings, providing improved comfort, energy efficiency, and cost savings.

TECHNICAL DATA

Parameters	Values
Voltage/Frequency, V/Hz	250 / 50 - 60
Maximum total current, A	16
Accuracy, °C	0,5
Operating temperature, °C	5 – 45
Terminals, mm²	2 × 1,5 or 1 × 2,5
Degree of protection	IP20
Dimensions, mm	86 × 86 × 38
Weight, g	123

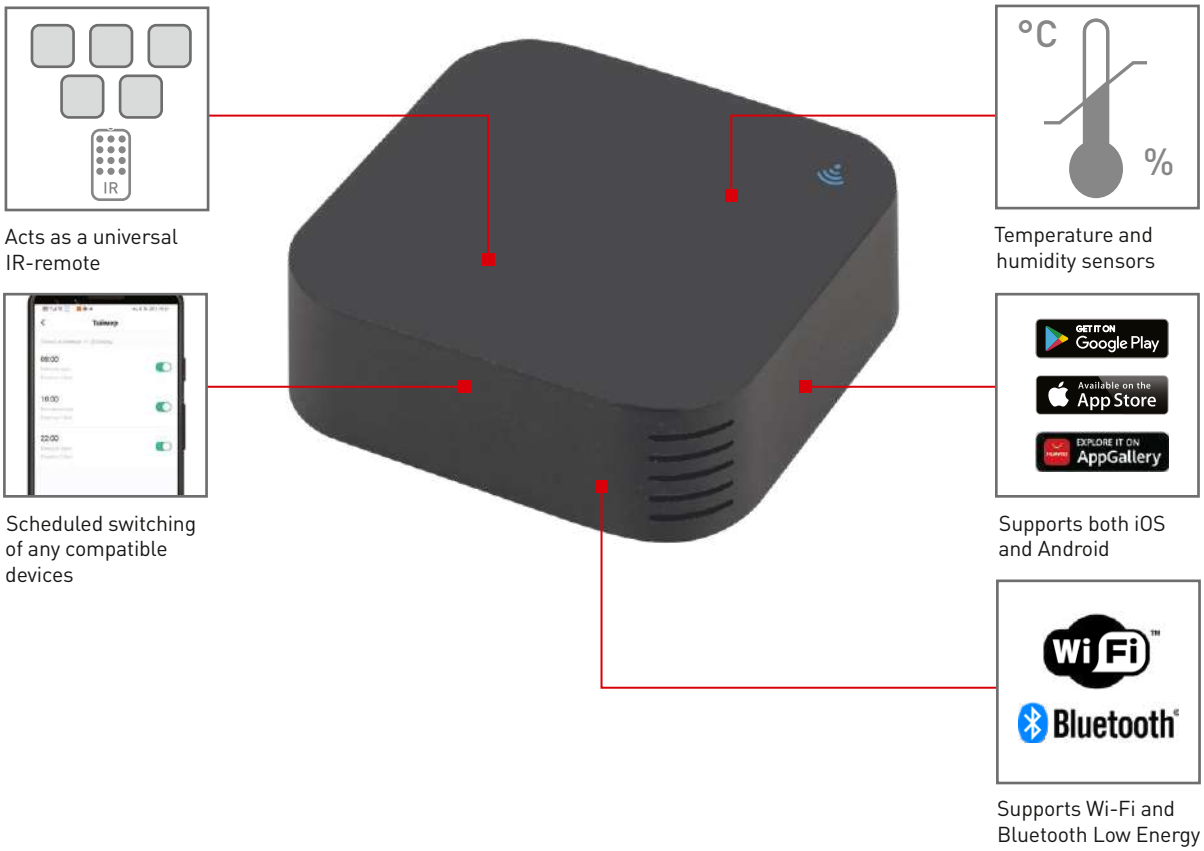
Delivery scope

1. Smart thermostat.
2. Remote floor temperature sensor – 3 m.
3. Mounting kit.
4. Technical manual.

Name	Item code
Smart thermostat for electric underfloor heating Wi-Fi EKF Connect	ett-4

Smart remote with temperature and humidity sensors EKF Connect

EKF Connect smart remote enables the control of any IR-remote controllable devices via the mobile app or select voice assistants. It can be used to control air conditioners, TV's, home entertainment systems, etc. Thanks to built-in temperature and humidity sensors, the remote can send this data directly to the EKF Connect mobile app, that can be used to create custom smart scenarios, e.g turn on the air conditioner when the temperature rises too high, or turn on the smart plug controlling the humidifier, when the humidity drops too low.



Acts as a universal IR-remote

Temperature and humidity sensors

Scheduled switching of any compatible devices

Supports both iOS and Android

Supports Wi-Fi and Bluetooth Low Energy

APPLICATION

Smart IR remotes provide a user-friendly control solution for IR-enabled devices in residential, commercial, and industrial applications, offering convenience, simplicity, and integration with smart home and automation systems.

TECHNICAL DATA

Parameters	Values
Dimensions, mm	60 × 60 × 20
Power supply	5V / 1A DC
Led indicator	Blue
Infrared frequency, kHz	38
Infrared beam range (max.), m	10
Wi-Fi, Ghz	2.4
Supported Wi-Fi mode	IEEE802/11b/g/n
Temperature measuring range, °C	0...60

Parameters	Values
Temperature measurement accuracy, °C	±1
Humidity measurement range, %	0 ~ 99
Humidity measurement accuracy, %	±5
Weight, g	32,7

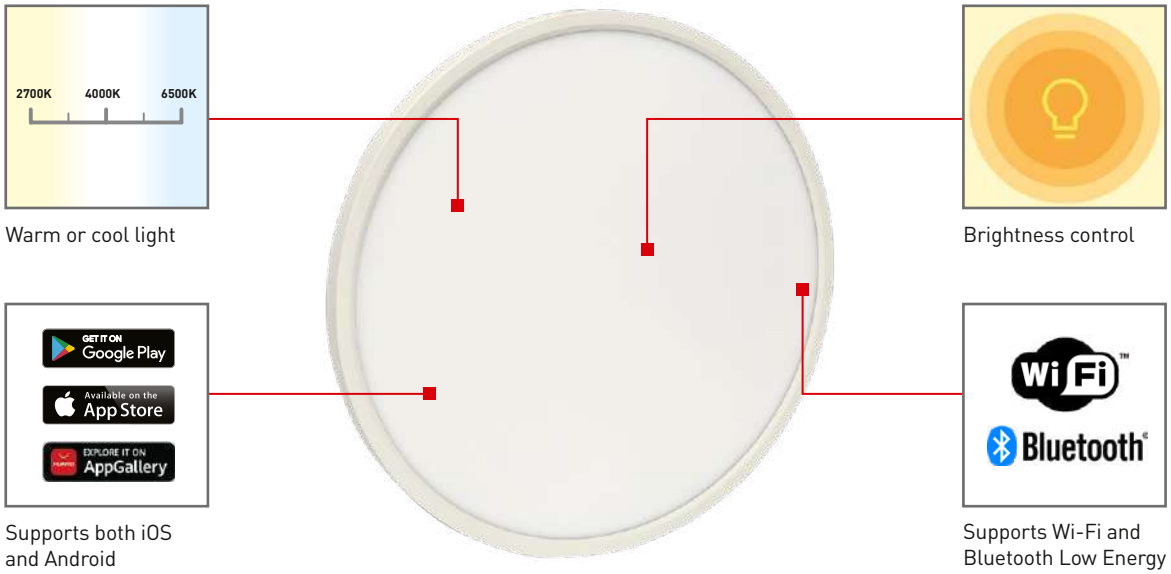
Delivery scope

1. Smart remote.
2. USB cable.
3. Technical manual.

Name	Item code
Smart remote with temperature and humidity sensors EKF Connect	irr-ths

Smart ceiling lights EKF Connect

With EKF Connect smart ceiling lights you can easily change the color temperature, color, and brightness of the light to create the ambiance you want. Smart ceiling lights can be controlled via Wi-Fi with the EKF Connect mobile app, available on iOS and Android. You can schedule the app to turn the lamps on and off at a certain time, or set a timer. By setting up scenarios, you can control multiple devices at the same time with a push of a button.



APPLICATION

Smart ceiling lights are used to control lighting levels and provide efficient and customizable lighting solutions in a variety of applications:

- Home & office
- Hotels & restaurants
- Museums, libraries, community centers and other public buildings.

TECHNICAL DATA

Characteristics	Values
Voltage, V	220 – 240
Frequency, Hz	50 - 60
Service life, hours	30 000
Thickness, mm	24
Warranty	3 years
Degree of protection	IP40

Delivery scope

1. Smart ceiling light - 1 pc.
2. Ceiling mount - 1 pc.
3. Screws - 3 pcs.
4. Dowels - 3 pcs.
5. Technical manual - 1 pc.

Picture	Name	Color temperature, K	Diameter, mm	Luminous flux, lm	Power consumption, W	Item code
	Smart ceiling light EKF Connect	2800–6000	230	1800	18	sclwf-230-cct
			300	2880	24	sclwf-300-cct
			400	3840	32	sclwf-400-cct
			480	4320	36	sclwf-480-cct
			600	5400	45	sclwf-600-cct

Water leakage protection system AquaExpert EKF

The AquaExpert system is designed to automatically shut off the water supply and issue sound alarm in the event of water leakage in water supply, heating and sewage systems. If water contacts the sensor, the controller sends a signal to the motor-operated ball valves to shut off the water supply. Water leak sensors are installed in places where water is likely to leak: bathrooms, kitchens, WCs, etc.

APPLICATION

- Apartment buildings and country houses.
- Public buildings and hotels.
- Control systems for buildings and facilities.
- Boiler and heat supply stations.
- Water treatment plants.
- Other premises and buildings at risk of water leaks.

TECHNICAL DATA

Operation

When water contacts the electrodes of the sensor connected to the controller, sound alarm is activated, and the controller sends a signal to the ball valves to shut off the water supply. The valves will remain closed even if power fails.

Leak sensor

Parameters	Values	
	Wired	Wireless
Length of connecting cable, m	3-100	–
Maximum radio range, m	–	500
Receive and transmit frequency, MHz	–	868
Current consumption, mA	0	–
Degree of protection	IP67	
Operating temperature, °C	From -30 to +60	From -20 to +60
Sensor battery type	–	2 x CR2032

Controller

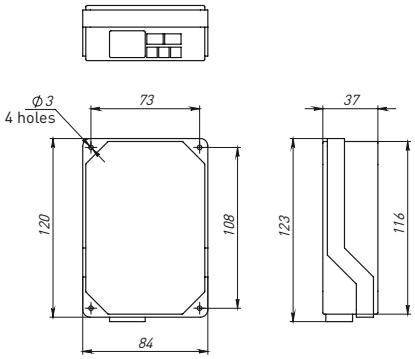
Parameters	Values	
	AquaExpert	AquaExpert RADIO
Supply voltage, V	~220 ± 10	
Power consumption, W	1,5	4
Wireless frequency, MHz	–	868
Max. continuous operation, h	Unlimited	
Degree of protection	IP54	
Maximum control relay load current at 250V, A	10	
Maximum number of connected motors	6	20
Maximum number of connected leak sensors	200	
Maximum number of wireless leak sensors	–	32
Dimensions, mm	84 × 120 × 36	
Max weight, g	225	
Operating temperature, °C	From 0 to +60	

Motor-operated ball valve

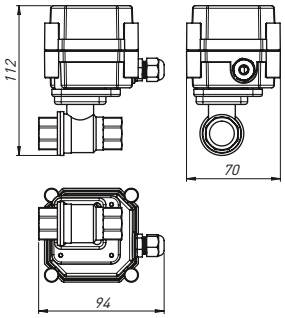
Parameters		Values	
		½'	¾'
Motor power, W		6	
Operating temperature, °C		From -10 to +60	
Length of connecting cable, m		1	
Closing/opening time, sec		15	
Degree of protection		IP65	
Maximum torque Nm (kgcm)		10 (100)	
Supply voltage, V AC		220 ± 15%	
Current consumption at opening/closing, mA		Max. 80	
Standby current consumption, mA		max. 30	
Motor overall dimensions (without valve) (W × H × D), mm		70 × 65 × 70	
Ball valve throat dimension		1/2 inch (D=15 mm)	3/4 inch (D=20 mm)
Ball valve specifications	Maximum liquid pressure, atm	40	
	Maximum liquid temperature, °C	+120	
Working fluids		Water or any liquid compatible with P.T.F.E.	
Housing material		Forged Brass CW617N, Nickel coating	
Ball material		Forged Brass CW617N, Chrome coating	
Stem material		Brass CW614N, explosion proof design	
Ball seal		P.T.F.E.	
Stem seal		NBR	
Minimum motor life (0-C cycles)		250 000	

Overall and installation dimensions (mm)

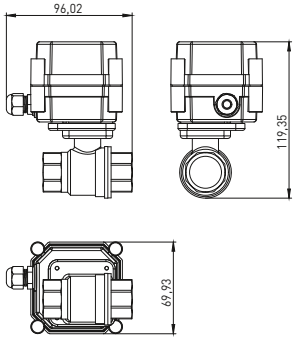
AquaExpert-control. AquaExpert-control-radio



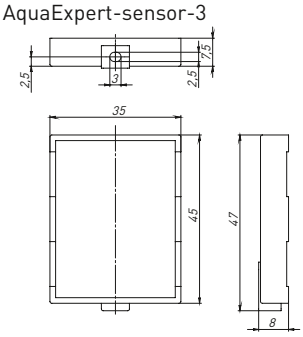
AquaExpert-valve-1/2



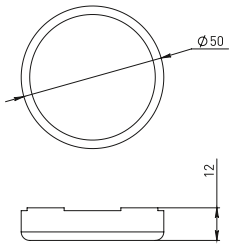
AquaExpert-valve-3/4



AquaExpert-sensor-3



AquaExpert-sensor-radio



Delivery scope

Controller
1. Controller - 1 pc.
2. Mounting kit (brackets, screws) - 1 pc.
3. Technical manual – 1 pc.

Leak sensor
1. Water leak sensor with 3m cable – 1 pc.
2. Technical manual – 1 pc.

Wireless leak sensor
1. Wireless water leak sensor (including batteries) - 1 pc.
2. Technical manual – 1 pc.

Motor-operated ball valve
1. Ball valve – 1 pc.
2. Motor - 1 pc.
3. Technical manual – 1 pc.

Water leakage protection system AquaExpert
1. Ball valve – 2 pcs.
2. Controller - 1 pc.
3. Leak sensor - 3 pcs.
4. Technical manual – 6 pcs.

Picture	Name	Item code
	Motor-operated ball valve 1/2" AquaExpert 220V EKF	AquaExpert-valve-1/2
	Motor-operated ball valve 3/4" AquaExpert 220V EKF	AquaExpert-valve-3/4
	Controller for AquaExpert EKF	AquaExpert-control
	Controller for AquaExpert RADIO EKF	AquaExpert-control-radio
	Wired water leakage sensor 3m EKF	AquaExpert-sensor-3
	Wireless water leak sensor AquaExpert RADIO EKF	AquaExpert-sensor-radio

Picture	Name	Item code
	Water leakage protection system AquaExpert 1/2" EKF	AquaExpert-1/2
	Water leakage protection system AquaExpert 3/4" EKF	AquaExpert-3/4
	Water leakage protection system AquaExpert RADIO 1/2" EKF	AquaExpert-1/2-radio
	Water leakage protection system AquaExpert RADIO 3/4" EKF	AquaExpert-3/4-radio

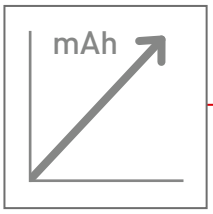
Batteries EKF

Alkaline batteries are widely used in various household and specialist appliances. EKF offers a broad range of batteries for different applications:
- 1.2 V standard AAA, AA, AA, C, & D batteries;
- 9 V batteries – rectangular dry cells;
- 12 V A27, A23 batteries.

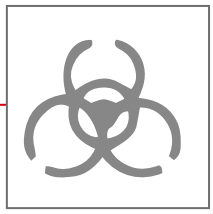
All EKF batteries are alkaline. They last longer, have a higher capacity and are perfect for heavy-duty applications. Excellent solution for children's toys, measuring devices, wall clocks and other devices.

Always in stock

Bright retail packaging



Higher capacity and higher discharge current, compared to competition. High energy density



Batteries contain no hazardous substances: mercury or cadmium

APPLICATION Portable source of electric power for light and heavy duty use.

Picture	Name	Item code
	Alkaline battery 9V (6LR61) blister 1pc. EKF	9V-BL1
	Alkaline battery C (LR14) blister 2pcs. EKF	LR14-BL2
	Alkaline battery D (LR20) blister 2pcs. EKF	LR20-BL2
	Alkaline battery A23 for alarms blister 5pcs. EKF	A23-BL5
	Alkaline battery A27 for alarms blister 5pcs. EKF	A27-BL5
	Alkaline battery AA (LR6) blister 4pcs. EKF	LR6-BL4

Picture	Name	Item code
	Alkaline battery AA (LR6) plastic box 24pcs. EKF	LR6-BOX24
	Alkaline battery AA (LR6) shrink 4pcs. EKF	LR6-SR4
	Alkaline battery AAA (LR03) blister 4pcs. EKF	LR03-BL4
	Alkaline battery AAA (LR03) plastic box 24pcs. EKF	LR03-BOX24
	Alkaline battery AAA (LR03) shrink 4pcs. EKF	LR03-SR4

Power Connectors

Power connectors EKF

Power connectors are designed to connect portable or stationary electrical equipment to 50/60 Hz AC circuits with the rated voltage of 220/230/240 or 380/400/415 V. The connectors are used for power supply of industrial and construction electrical equipment, power tools, mobile shop & food trucks, etc.

Protective covers to prevent moisture & dust ingress

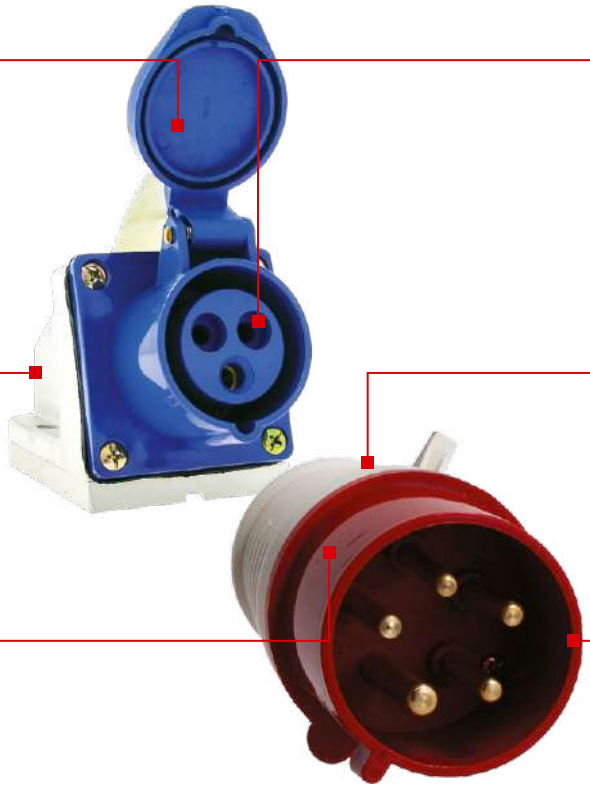
Anti-rust nickel-plated plug & socket pins

Ribbed surface for non-slip grip

Extra clamp for wire securing in the socket

Impact- & frost-resistant housing does not deform or deteriorate

Multi-size gland for different wire cross sections



APPLICATION

- Power supply for industrial and construction equipment.
- Connecting mobile shops, fast food outlets, mobile infrastructure facilities, etc. to the electrical networks.
- Power supply to various electrical consumers in conditions of high humidity and dustiness.

TECHNICAL DATA

Compatibility chart

		Wander sockets									Panel-mounted sockets						Wall-mounted sockets									
	Model	223	215	213	214	224	225	233	234	235	413	414	415	423	424	425	113	114	115	123	124	125	133	134	135	145
Wander plugs	023																									
	013																									
	014																									
	015																									
	024																									
	025																									
	033																									
	034																									
	035																									
	045																									
Wall-mounted plugs	513																									
	514																									
	515																									
	523																									
	524																									
	525																									

Overall and installation dimensions

Wander plugs

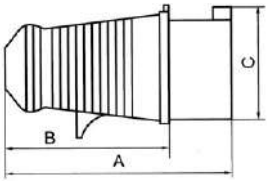


Figure 1

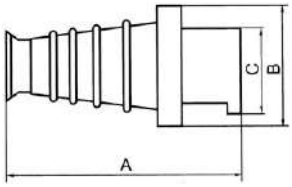


Figure 2

Model	Figure no.	Dimensions, mm		
		A	B	C
013	1	121	84	51
023		138	92	63
033		233	110	75,5
014		121	84	54
024		138	92	63
034		233	110	75,5
015		129	94	63
025		149	97	70
035	2	233	100	75,5
045		282	125	88

Wall-mounted plugs

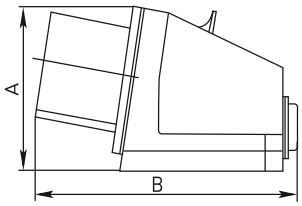


Figure 3

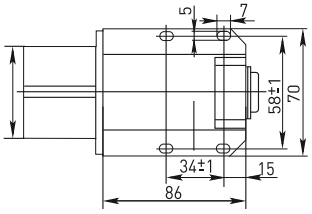


Figure 4

Model	Figure no.	Dimensions, mm		
		A	B	C
513	3,4	78	131	44
514		78	131	50
515		80	133	55
523		97	151	65
524		97	151	65
525		103	153	70

Wander sockets

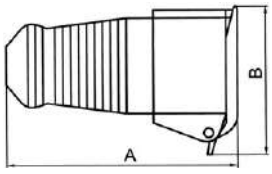


Figure 5

Model	Figure no.	Dimensions, mm	
		A	B
213	5	130	66
223		149	90
233		245	110
214		130	76
224		150	90
234		245	110
215		139	90
225		154	100
235		245	110

Wall-mounted sockets

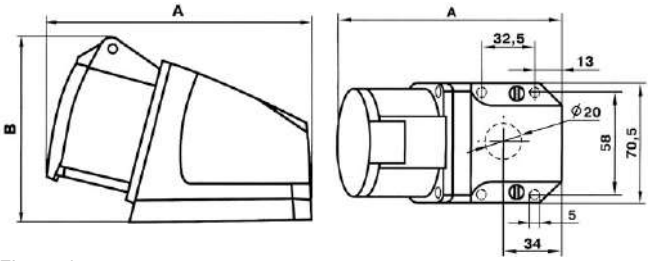


Figure 6

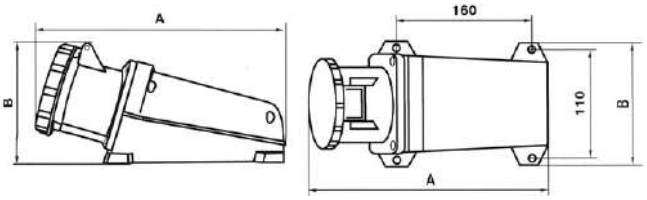


Figure 7

Model	Figure no.	Dimensions, mm	
		A	B
113	6	125	68
114		132	91
115		130	76
123		142	96
124		140	86
125		150	90
133		153	105
134		266	130
135	7	266	130
145		340	155

Panel-mounted sockets

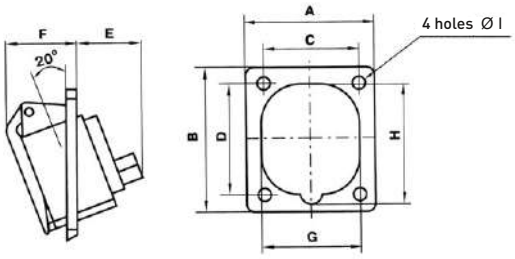


Figure 8

Model	Figure no.	Dimensions, mm								
		A	B	C	D	E	F	G	H	I
413	8	63	69	48	48	38	35	50	70	6
423		78	92	58	70	40	36	86	90	6
414		75	85	60	60	50	30	60	73	6
424		80	95	60	70	95	40	70	90	6
415		75	85	60	60	70	30	68	88	6
425		80	95	60	70	40	38	75	95	6
112		50	50	34	33	28	10	34	64	3

Cable cross section and diameter

Wall-mounted plugs

Item code	Core cross-section, mm²	Cable diameter, mm
ps-513-16-220	1–2,5	From 6,5
ps-514-16-380	1–2,5	From 6,5
ps-515-16-380	1–2,5	From 6,5
ps-523-32-220	2,5–6	From 6,5
ps-524-32-380	2,5–6	From 6,5
ps-525-32-380	2,5–6	From 6,5

Panel-mounted sockets

Item code	Core cross-section, mm²
ps-413-16-220	1–2,5
ps-414-16-380	1–2,5
ps-415-16-380	1–2,5
ps-423-32-220	2,5–6
ps-424-32-380	2,5–6
ps-425-32-380	2,5–6

Wall-mounted sockets

Item code	Core cross-section, mm²	Cable diameter, mm
ps-113-16-220	1–2,5	From 6.5
ps-114-16-380	1–2,5	From 6.5
ps-115-16-380	1–2,5	From 6.5
ps-123-32-220	2,5–6	From 6,5
ps-124-32-380	2,5–6	From 6,5
ps-125-32-380	2,5–6	From 6,5
ps-133-63-220	6–25	MG-40 gland (in the kit)
ps-134-63-380	6–25	
ps-135-63-380	6–25	MG-63 gland (in the kit)
ps-145-125-380	25–70	

Wander plugs and sockets

Item code		Core cross-section, mm²	Cable diameter, mm
ps-013-16-220	ps-213-16-220	from 1 to 2,5	From 6
ps-014-16-380	ps-214-16-380	from 1 to 2,5	From 6
ps-015-16-380	ps-215-16-380	from 1 to 2,5	From 8
ps-023-32-220	ps-223-32-220	from 2,5 to 6	From 8
ps-024-32-380	ps-224-32-380	from 2,5 to 6	From 8
ps-025-32-380	ps-225-32-380	from 2,5 to 6	From 8
ps-033-63-220	ps-233-63-220	from 6 to 16	16 to 38
ps-034-63-380	ps-234-63-380	from 6 to 16	16 to 38
ps-035-63-380	ps-235-63-380	from 6 to 16	16 to 38
ps-045-125-380	–	from 16 to 50	from 30 to 50

Sockets

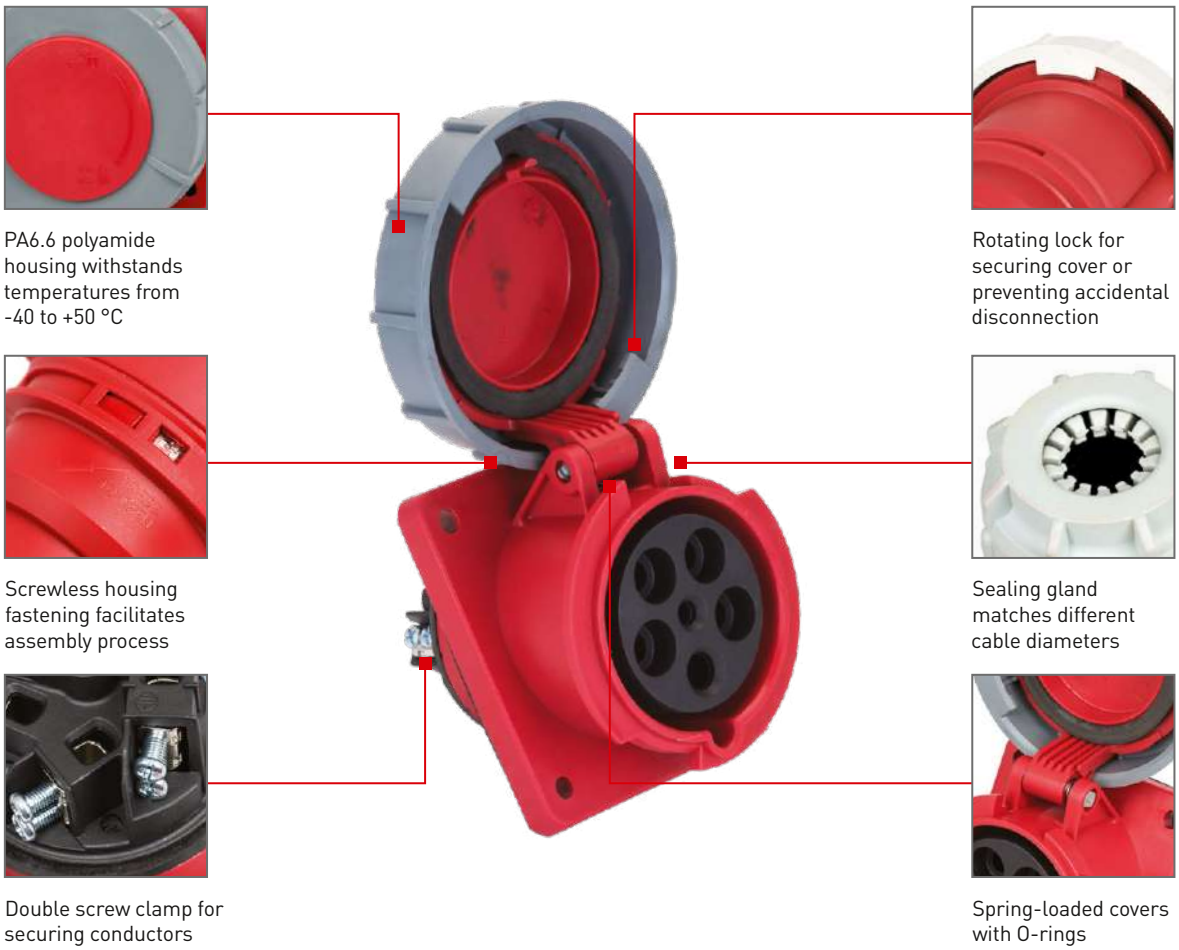
Rated current, A	Voltage, V	Poles	Picture	Degree of protection	Item code		
					Wall-mounted sockets	Wander sockets	Panel-mounted sockets
16	110	2P + PE		IP44	–	–	–
	230/240	2P + PE			–	–	ps-112-16-220
	230/240	2P + PE			ps-113-16-220	ps-213-16-220	ps-413-16-220
	400/415	3P + PE			ps-114-16-380	ps-214-16-380	ps-414-16-380
	400/415	3P + PE + N			ps-115-16-380	ps-215-16-380	ps-415-16-380
32	230/240	2P + PE			ps-123-32-220	ps-223-32-220	ps-423-32.220
	400/415	3P + PE			ps-124-32-380	ps-224-32-380	ps-424-32-380
	400/415	3P + PE + N			ps-125-32-380	ps-225-32-380	ps-425-32-380
63	230/240	2P + PE		IP67	ps-133-63-220	ps-233-63-220	–
	400/415	3P + PE			ps-134-63-380	ps-234-63-380	–
	400/415	3P + PE + N			ps-135-63-380	ps-235-63-380	–
125	400/415	3P + PE + N			ps-145-125-380	–	–

Plugs

Rated current, A	Voltage, V	Poles	Picture	Degree of protection	Item code	
					Wander plugs	Wall-mounted plugs
16	230/240	2P + PE		IP44	ps-013-16-220	ps-513-16-220
	400/415	3P + PE			ps-014-16-380	ps-514-16-380
	400/415	3P + PE + N			ps-015-16-380	ps-515-16-380
32	230/240	2P + PE			ps-023-32-220	ps-523-32-220
	400/415	3P + PE			ps-024-32-380	ps-524-32-380
	400/415	3P + PE + N			ps-025-32-380	ps-525-32-380
63	230/240	2P + PE		IP67	ps-033-63-220	–
	400/415	3P + PE			ps-034-63-380	–
	400/415	3P + PE + N			ps-035-63-380	–
125	400/415	3P + PE + N			ps-045-125-380	–

Industrial power connectors IP67 EKF

IP67 industrial power connectors are highly resistant to mechanical stress, abrasion, UV light and corrosive chemicals. IP67 connectors are used for power supply of industrial and construction equipment and are perfect for harsh operating conditions where power supply quality, continuity and reliability are required.



PA6.6 polyamide housing withstands temperatures from -40 to +50 °C

Rotating lock for securing cover or preventing accidental disconnection

Screwless housing fastening facilitates assembly process

Sealing gland matches different cable diameters

Double screw clamp for securing conductors

Spring-loaded covers with O-rings

APPLICATION

- Power supply for industrial and construction equipment.
- Connecting mobile shops, fast food outlets, mobile infrastructure facilities, etc. to electrical networks.
- Power supply to various electrical consumers in conditions of high humidity and dustiness

TECHNICAL DATA

Compatibility chart

		Power panel-mounted sockets								Power panel-mounted straight sockets								Power panel-mounted angled sockets								Wander sockets							
	Model	1142	1152	1242	1252	1342	1352	1442	1452	3142	3152	3242	3252	3342	3352	3442	3452	4142	4152	4242	4252	4342	4352	4442	4452	2142	2152	2242	2252	2342	2352	2442	2452
Wander plugs	0142	■								■								■								■							
	0152		■								■								■								■						
	0242			■								■								■								■					
	0252				■								■								■								■			
	0342					■								■								■								■		
	0352						■								■								■								■	
	0442							■								■								■								■	
	0452								■								■								■								■

Cable cross section and diameter

Wander plugs and sockets

Item code		Core cross-section, mm²	Cable diameter, mm
ps-0142-16-380	ps-2142-16-380	1–2,5	6–16
ps-0152-16-380	ps-2152-16-380	1–2,5	8–16
ps-0242-32-380	ps-2242-32-380	2,5–6	10–20
ps-0252-32-380	ps-2252-32-380	2,5–6	10–20
ps-0342-63-380	ps-2342-63-380	6–16	20–30
ps-0352-63-380	ps-2352-63-380	6–16	20–30
ps-0442-125-380	ps-2442-125-380	16–50	30–44,5
ps-0452-125-380	ps-2452-125-380	16–50	30–44,5

Power wall-mounted sockets

Item code	Core cross-section, mm²	Cable diameter, mm
ps-1142-16-380	1–2,5	MG25 gland
ps-1152-16-380	1–2,5	MG25 gland
ps-1242-32-380	2,5–6	MG25 gland
ps-1252-32-380	2,5–6	MG25 gland
ps-1342-63-380	6–16	MG40 gland
ps-1352-63-380	6–16	MG40 gland
ps-1442-125-380	16–50	MG40 gland
ps-1452-125-380	16–50	MG40 gland

Panel-mounted sockets

Item code	Core cross-section, mm²	Cable diameter, mm
ps-3142-16-380	ps-4142-16-380	1–2,5
ps-3152-16-380	ps-4152-16-380	1–2,5
ps-3242-32-380	ps-4242-32-380	2,5–6
ps-3252-32-380	ps-4252-32-380	2,5–6
ps-3342-63-380	ps-4342-63-380	6–16
ps-3352-63-380	ps-4352-63-380	6–16
ps-3442-125-380	ps-4442-125-380	16–50
ps-3452-125-380	ps-4452-125-380	16–50

Overall and installation dimensions

Power wander sockets

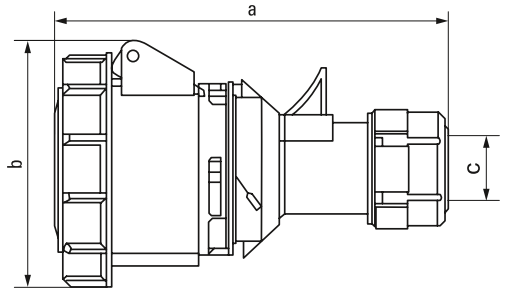


Figure 1

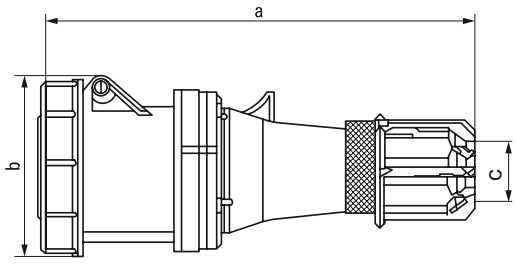


Figure 2

Model	Figure no.	Dimensions, mm		
		a	b	c
2142	1	139	84	6–15
2152		145	92	8–16
2242		162	96	10–20
2252		168	102	12–22
2342	2	261	114	30
2352				
2442		305	115	44,5
2452				

Power wall-mounted sockets

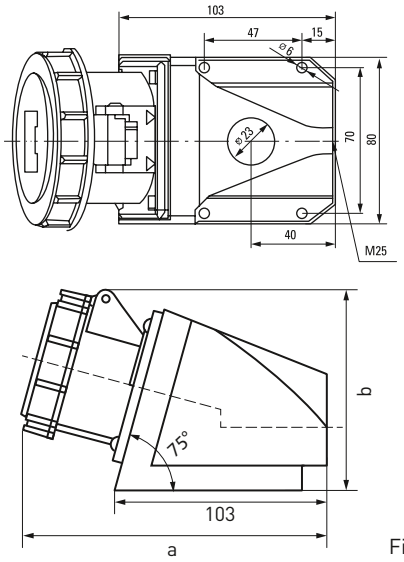
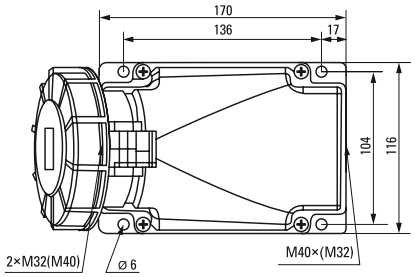


Figure 3



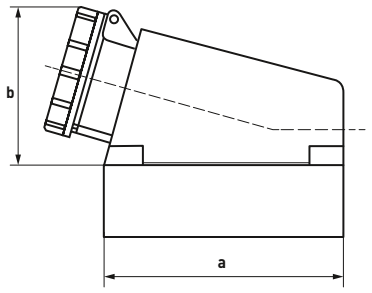
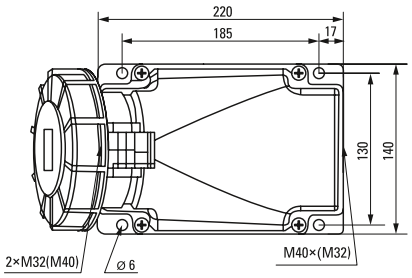


Figure 4



Model	Figure no.	Dimensions, mm	
		a	b
1142	3	155	98
1152		153	103
1242		165	107
1252		166	109
1342	4	250	171
1352			
1442		285	220
1452			

Panel-mounted sockets

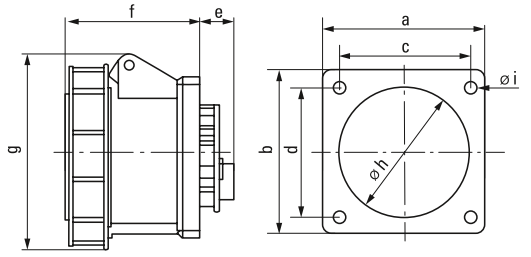


Figure 5

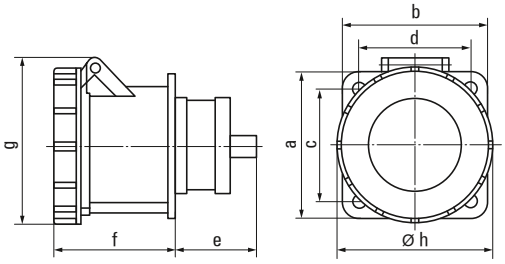


Figure 6

Model	Figure no.	Dimensions, mm								
		a	b	c	d	e	f	g	h	i
3142	5	76	76	61	61	17	60	84	53	5,5
3152								91	60	
3242								98		
3252								102		
3342	6	100	100	80	80	39	95	114	80	–
3352										
3442		120	120	100	100	45	104	127	90	
3452										

Panel-mounted angled sockets

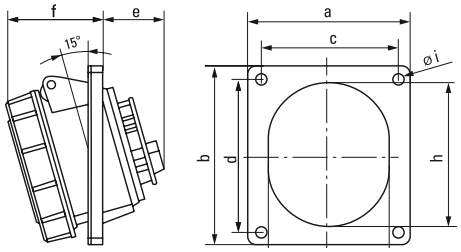


Figure 7

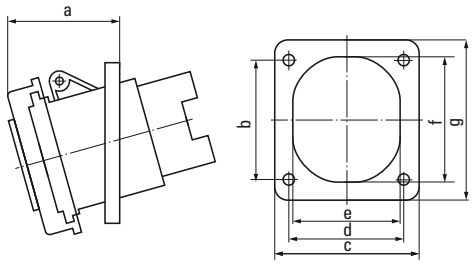


Figure 8

Model	Figure no.	Dimensions, mm								
		a	b	c	d	e	f	g	h	i
4142	7	93	101	78	86	33	52	70	77	5,5
4152						36			78	
4242						40	63	72	83	
4252						41		78		
4342	8	83	89	101	81	80,5	92	113	–	–
4352										
4442		80	106	120	92	99	105	130		
4452										

Power wander plugs

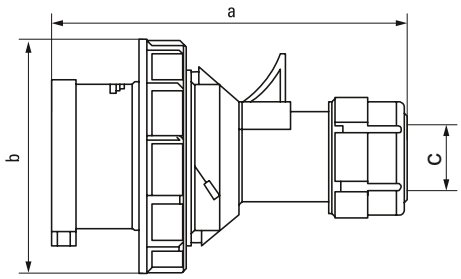


Figure 9

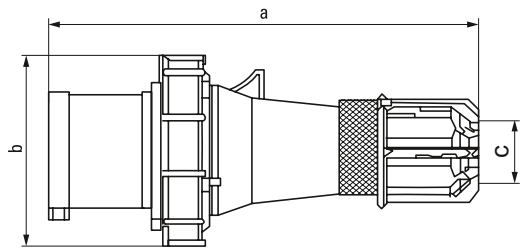


Figure 10

Model	Figure no.	Dimensions, mm		
		a	b	c
0142	9	124	78	6-15
0152		131	87	8-16
0242		146	93	10-20
0252		152	100	
0342	10	240	115	30
0352				
0442		295	126	44,5
0452				

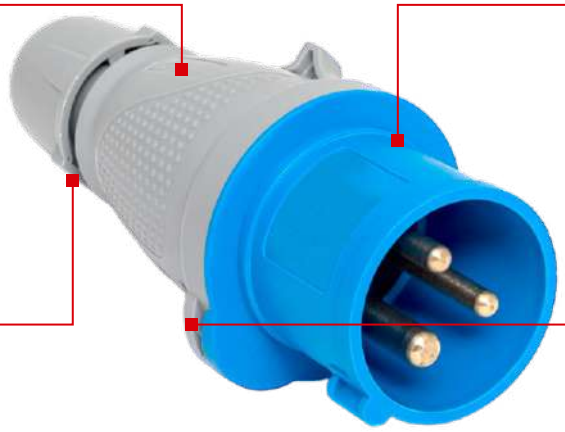
Picture	Rated current, A	Voltage, V	Poles	Picture	Degree of protection	Item code
Power wander sockets						
	16	400/415	3P+PE		IP67	ps-2142-16-380
			3P+PE+N			ps-2152-16-380
	32		3P+PE			ps-2242-32-380
			3P+PE+N			ps-2252-32-380
	63		3P+PE			ps-2342-63-380
			3P+PE+N			ps-2352-63-380
	125		3P+PE			ps-2442-125-380
			3P+PE+N			ps-2452-125-380
Power wall-mounted sockets						
	16	400415	3P+PE		IP67	ps-1142-16-380
			3P+PE+N			ps-1152-16-380
	32		3P+PE			ps-1242-32-380
			3P+PE+N			ps-1252-32-380
	63		3P+PE			ps-1342-63-380
			3P+PE+N			ps-1352-63-380
	125		3P+PE			ps-1442-125-380
			3P+PE+N			ps-1452-125-380
	16	400/415	3P+PE		IP67	ps-3142-16-380
			3P+PE+N			ps-3152-16-380
	32		3P+PE			ps-3242-32-380
			3P+PE+N			ps-3252-32-380
	63		3P+PE			ps-3342-63-380
			3P+PE+N			ps-3352-63-380
	125		3P+PE			ps-3442-125-380
			3P+PE+N			ps-3452-125-380
Power panel-mounted sockets angled						
	16	400/415	3P+PE		IP67	ps-4142-16-380
			3P+PE+N			ps-4152-16-380
	32		3P+PE			ps-4242-32-380
			3P+PE+N			ps-4252-32-380
	63		3P+PE			ps-4342-63-380
			3P+PE+N			ps-4352-63-380
	125		3P+PE			ps-4442-125-380
			3P+PE+N			ps-4452-125-380
Power wander plugs						
	16	400/415	3P+PE		IP67	ps-0142-16-380
			3P+PE+N			ps-0152-16-380
	32		3P+PE			ps-0242-32-380
			3P+PE+N			ps-0252-32-380
	63		3P+PE			ps-0342-63-380
			3P+PE+N			ps-0352-63-380
	125		3P+PE			ps-0442-125-380
			3P+PE+N			ps-0452-125-380

Power connectors RU EKF

Power connectors EKF are designed to connect stationary and portable equipment to 50/60 Hz AC circuits with the rated voltage of 220/230/240 V or 380/400/415 V. Power connectors ensure a safe and efficient power supply to a wide range of applications, including industrial machinery and power distribution systems.

Standards: IEC/EN 60309-1, IEC/EN 60309-2

Ribbed surface of wander connectors for non-slip grip



Lever on the socket cover ensures one-hand opening and aligning

Collet with gland for secure cable connection. Hooks prevent collet nut from falling off when fully unscrewed

Screwless housing fastening facilitates assembly process – only one screwdriver required

APPLICATION

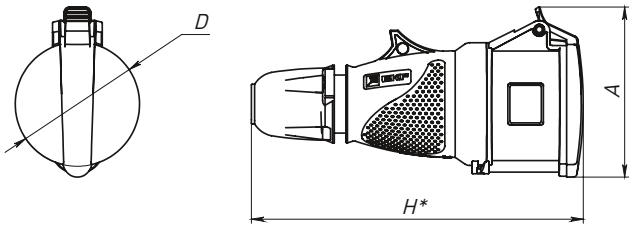
- Power supply for industrial and construction equipment.
- Connecting mobile shops, fast food outlets, mobile infrastructure facilities, etc. to the electrical networks.

TECHNICAL DATA

Rated current, A	Voltage, V	Poles	Item code		
			Wander plugs	Wander sockets	Wall-mounted sockets
16	220–240	2P + PE	ps-013-16-220-PRO	ps-213-16-220-PRO	ps-113-16-220-PRO
	380–415	3P + PE	ps-014-16-380-PRO	ps-214-16-380-PRO	ps-114-16-380-PRO
	380–415	3P + PE + N	ps-015-16-380-PRO	ps-215-16-380-PRO	ps-115-16-380-PRO
32	220–240	2P + PE	ps-023-32-220-PRO	ps-223-32-220-PRO	ps-123-32-220-PRO
	380–415	3P + PE	ps-024-32-380-PRO	ps-224-32-380-PRO	ps-124-32-380-PRO
	380–415	3P+PE+N	ps-025-32-380-PRO	ps-225-32-380-PRO	ps-125-32-380-PRO

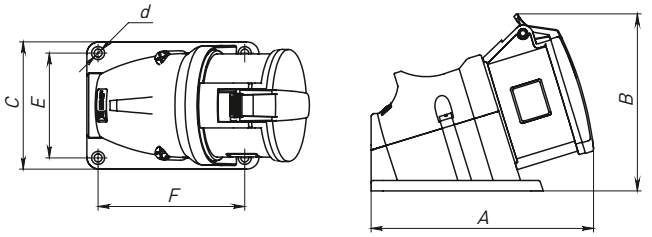
Overall and installation dimensions

Wander sockets



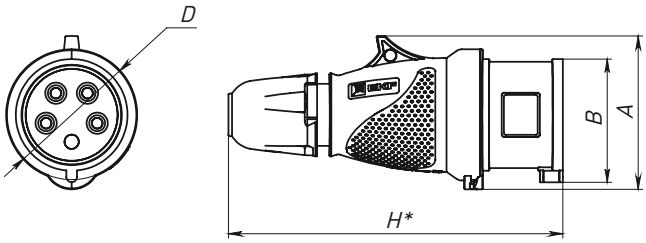
Item code	Dimensions, mm		
	A	D	H*
ps-213-16-220-PRO	78,5	55	159
ps-214-16-380-PRO	85	62	164
ps-215-16-380-PRO	91	67	169
ps-223-32-220-PRO	96	69	197
ps-224-32-380-PRO	69	69	197
ps-225-32-380-PRO	102,5	75	200

Wall-mounted sockets



Item code	Dimensions, mm					
	A	B	C	d	E	F
ps-113-16-220-PRO	118,3	97,4	66	5,3	51	79
ps-114-16-380-PRO	124	101,7	73	5,3	58	84
ps-115-16-380-PRO	129,9	106,5	78	5,3	63	89
ps-123-32-220-PRO	144,8	114,6	79	5,3	64	95
ps-124-32-380-PRO	144,8	114,6	79	5,3	64	95
ps-125-32-380-PRO	148,7	118,3	85,0	5,3	70	98

Wander plugs



Item code	Dimensions, mm			
	A	B	C	d
ps-013-16-220-PRO	62,5	46,8	55	150
ps-014-16-380-PRO	70	53,4	62	155
ps-015-16-380-PRO	76,5	60,6	67	160
ps-023-32-220-PRO	78,5	62,9	67,6	186
ps-024-32-380-PRO	78,5	62,9	67,6	186
ps-025-32-380-PRO	86,5	69,5	74	189

Parameters	Values
Degree of protection	IP44
Operating temperature, °C	-25 to +50
Installation temperature, °C	-5 to +50
PE contact position, h	6

Delivery scope

Connectors are supplied in an individual package. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Name	Core cross-section, mm²	Item code
Wander plug 013 2P+PE 16A IP44 EKF	1–2,5	ps-013-16-220-PRO
Wander plug 014 3P+PE 16A IP44 EKF	1–2,5	ps-014-16-380-PRO
Wander plug 015 3P+PE+N 16A IP44 EKF	1–2,5	ps-015-16-380-PRO
Wander plug 023 2P+PE 32A IP44 EKF	2,5–6	ps-023-32-220-PRO
Wander plug 024 3P+PE 32A IP44 EKF	2,5–6	ps-024-32-380-PRO
Wander plug 025 3P+PE+N 32A IP44 EKF	2,5–6	ps-025-32-380-PRO
Wander socket 213 2P+PE 16A IP44 EKF	1–2,5	ps-213-16-220-PRO
Wander socket 214 3P+PE 16A IP44 EKF	1–2,5	ps-214-16-380-PRO
Wander socket 215 3P+PE+N 16A IP44 EKF	1–2,5	ps-215-16-380-PRO
Wander socket 223 2P+PE 32A IP44 EKF	2,5–6	ps-223-32-220-PRO
Wander socket 224 3P+PE 32A IP44 EKF	2,5–6	ps-224-32-380-PRO
Wander socket 225 3P+PE+N 32A IP44 EKF	2,5–6	ps-225-32-380-PRO
Wall-mounted socket 113 2P+PE 16A IP44 EKF	1–2,5	ps-113-16-220-PRO
Wall-mounted socket 114 3P+PE 16A IP44 EKF	1–2,5	ps-114-16-380-PRO
Wall-mounted socket 115 3P+PE+N 16A IP44 EKF	1–2,5	ps-115-16-380-PRO
Wall-mounted socket 123 2P+PE 32A IP44 EKF	2,5–6	ps-123-32-220-PRO
Wall-mounted socket 124 3P+PE+N 32A IP44 EKF	2,5–6	ps-124-32-380-PRO
Wall-mounted socket 125 3P+PE+N 32A IP44 EKF	2,5–6	ps-125-32-380-PRO

Rubber Schuko connectors IP44 EKF

Rubber Schuko connectors EKF are designed to connect heavy-duty electrical equipment with current up to 16 A to 230/240 V / 50/60 Hz networks. The connectors feature reinforced brass contacts and high-impact frost-resistant thermoplastic housing, withstanding temperatures from -40 to +55 °C, making them ideal for outdoor applications. Rated IP44, these connectors can be used for harsh and demanding applications.

Standards: IEC 60884-2-2, EN 60884-1

Protective covers provide IP44 rating

User-friendly & smart design

Reinforced brass contacts with additional fire-proof insulation

Additional bracket for securely holding the wire

Cable gland protects wires of various cross-sections from dust and moisture

Thermoplastic rubber housing withstands temperatures from -40 to +85°C

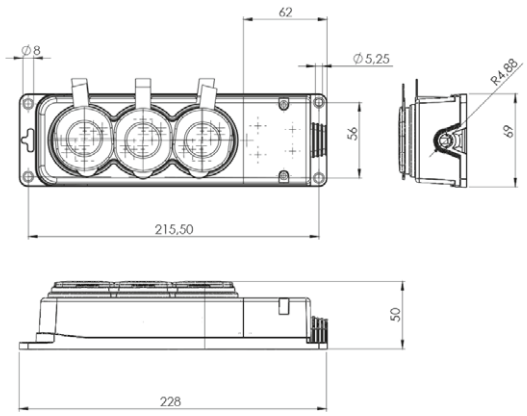
APPLICATION

- Connecting consumers to industrial power networks.
- Arrangement of power supply to mobile facilities.
- Connection of electricity consumers at construction sites.
- Connection of domestic power tools in gardens and household plots.

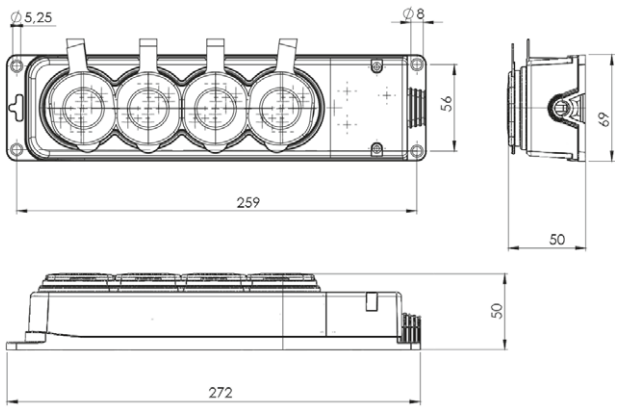
TECHNICAL DATA

Overall and installation dimensions

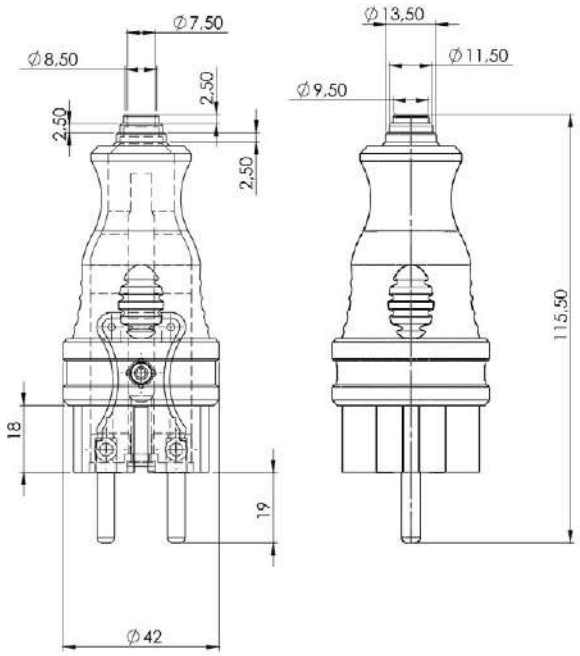
Rubber Schuko strip 3 sockets with safety covers

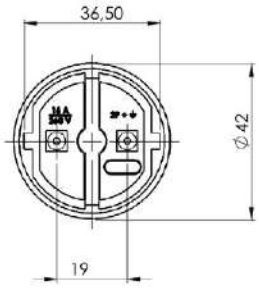


Rubber Schuko strip 4 sockets with safety covers

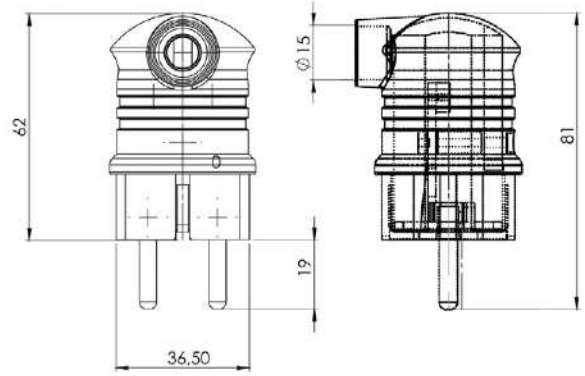


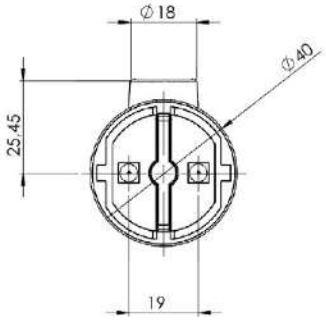
Rubber Schuko straight plug



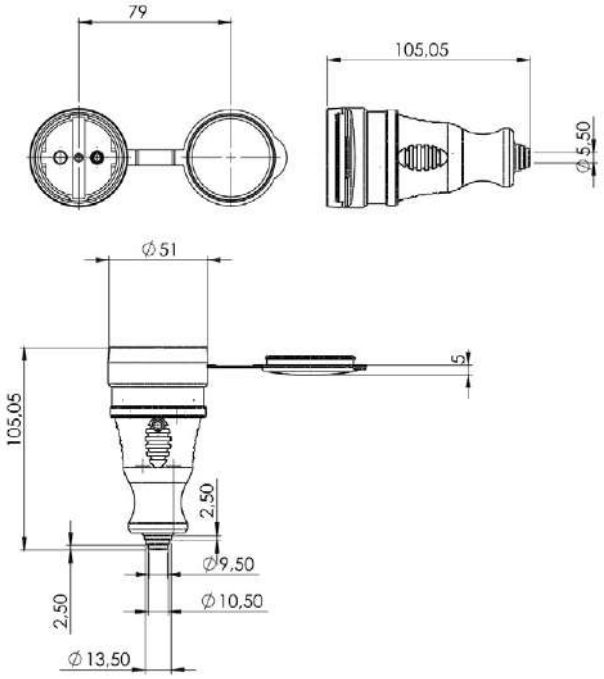


Rubber Schuko straight plug

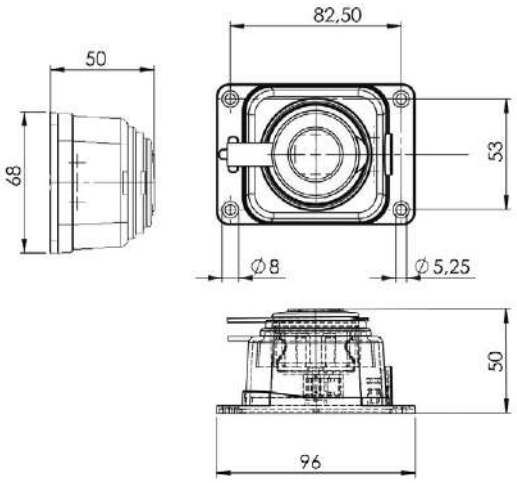




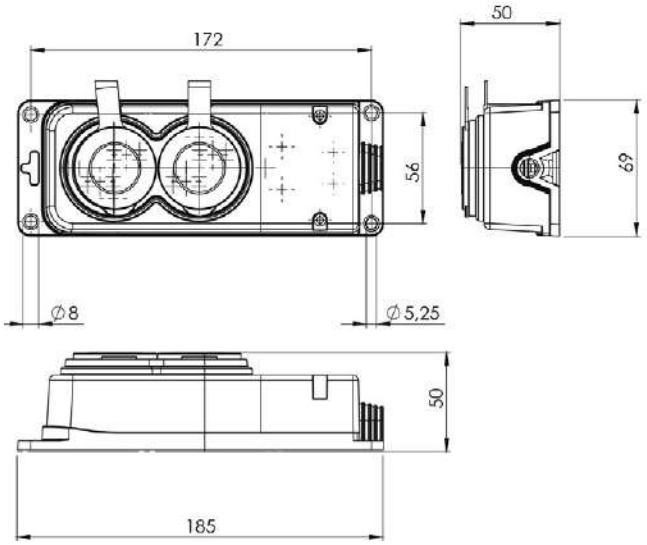
Wander rubber Schuko socket with safety cover



Wall-mounted rubber Schuko socket with safety cover



Rubber Schuko strip 2 sockets with safety covers



Picture	Name	Number of poles	Item code
	Rubber Schuko plug straight 2P+PE 16A IP44 EKF	2P+PE	RPS-011-16-230-44-r
	Rubber Schuko plug straight orange 2P+PE 16A IP44 EKF		RPS-011-16-230-44-ro
	Rubber Schuko plug straight red 2P+PE 16A IP44 EKF		RPS-011-16-230-44-rr
	Rubber Schuko plug angled 2P+PE 16A IP44 EKF		RPS-017-16-230-44-r
	Wander rubber Schuko socket with safety cover 2P+PE 16A IP44 EKF		RPS-012-16-230-44-r
	Wander rubber Schuko socket orange with safety cover 2P+PE 16A IP44 EKF		RPS-012-16-230-44-ro
	Wander rubber Schuko socket orange with safety cover 2P+PE 16A IP44 EKF		RPS-014-16-230-44-r
	Rubber Schuko strip 2 sockets with safety covers 2P+PE 16A IP44 EKF		RPS-018-16-230-44-r
	Rubber Schuko strip 3 sockets with safety covers 2P+PE 16A IP44 EKF		RPS-015-16-230-44-r
	Rubber Schuko strip 4 sockets with safety covers 2P+PE 16A IP44 EKF		RPS-020-16-230-44-r

Rubber Schuko connectors IP44 EKF

Rubber Schuko connectors IP44 EKF are perfect for connecting construction electrical equipment, power tools, car washes, industrial equipment, etc. Thanks to thermoplastic elastomer housing, these connectors are resistant to wear, impact, chemicals, and extreme temperature. IP44 connectors are widely used for construction and production applications, machine building, power supply of trailers and stalls.

Standards: IEC 60884-2-2, EN 60884-1

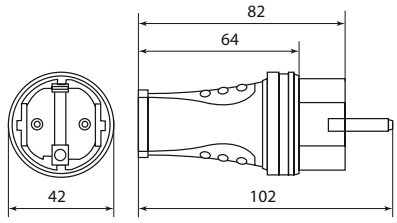
APPLICATION

- Connecting consumers to industrial power networks.
- Arrangement of power supply to mobile facilities.
- Connection of electricity consumers at construction sites.
- Connection of domestic power tools in gardens and household plots.

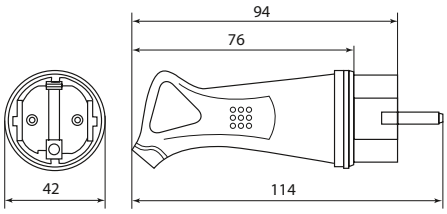
TECHNICAL DATA

Overall and installation dimensions

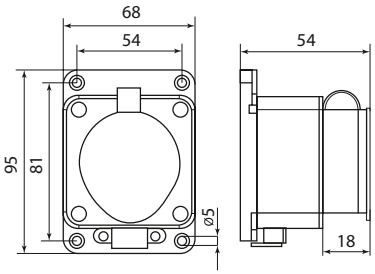
Rubber schuko plug straight



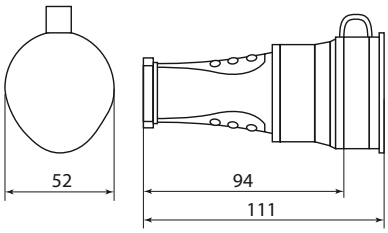
Rubber Schuko plug angled



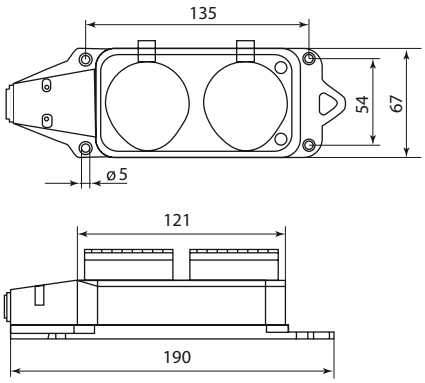
Wall-mounted rubber Schuko socket with safety cover



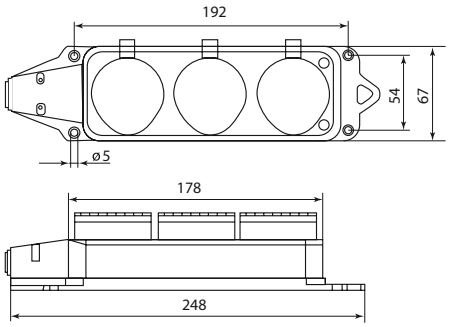
Wander rubber Schuko socket with safety cover



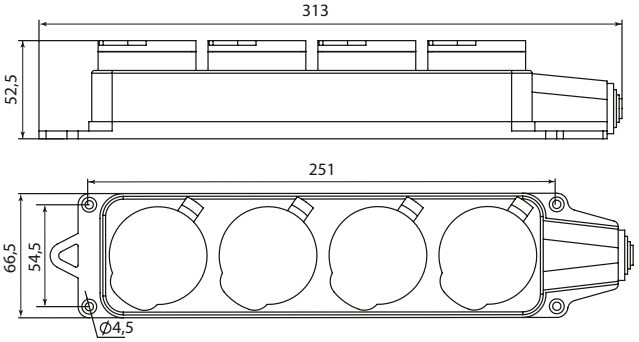
Rubber Schuko strip 2 sockets with safety covers



Rubber Schuko strip 3 sockets with safety covers



Rubber Schuko strip 4 sockets with safety covers



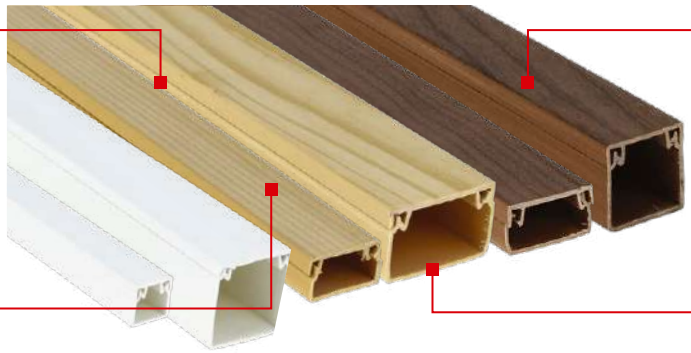
Picture	Name	Number of poles	Rated current, A	Rated voltage, V	Operating temperature, °C	Item code
	Rubber Schuko plug straight 2P+PE 16A IP44 EKF	2P+PE	16	230/240	from 25 to 50	RPS-011-16-230-44
	Rubber Schuko plug angled 2P+PE 16A IP44 EKF					RPS-017-16-230-44
	Wander rubber Schuko socket with safety cover 2P+PE 16A IP44 EKF					RPS-012-16-230-44
	Rubber Schuko strip 1 socket with safety cover 2P+PE 16A IP44 EKF					RPS-014-16-230-44
	Rubber Schuko strip 2 sockets with safety covers 2P+PE 16A IP44 EKF					RPS-018-16-230-44
	Rubber Schuko strip 3 sockets with safety covers 2P+PE 16A IP44 EKF					RPS-015-16-230-44
	Rubber Schuko strip 4 sockets with safety covers 2P+PE 16A IP44 EKF Mars					RPS-020-16-230-44

Cable Support Systems

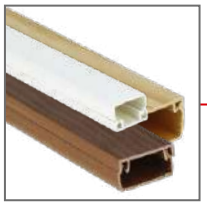
Cable ducts EKF-Plast

Cable ducts are mechanical supports designed to bundle, contain, and route cables in any type of buildings and facilities. The EKF cable duct systems consist of ducts and accessories for connecting, branching and bending cable routes. The EKF cable ducts are made of high-quality self-extinguishing PVC compound.

Non-flammable. IP 40 degree of protection



Barcodes for smart storage & distribution



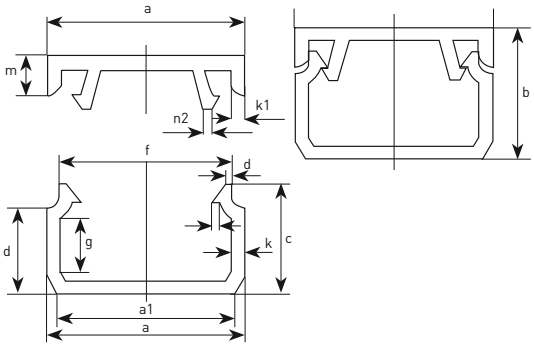
White / black / light wood / dark wood

Mounting holes pre-drilled

TECHNICAL DATA

Parameters	Values
Materials	Self-extinguishing PVC composite
Color	White / black / light wood / dark wood
Installation temperature, °C	From -5 to +60
Operating temperature, °C	From -25 to +60
Maximum operating voltage, V	1000

Overall and installation dimensions

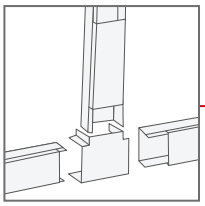


Name	Dimensions, mm												
	a	a1	b	c	d	f	g	k	k1	m	n	n1	n2
Cable duct 12 x 12	12	–	12	10,3	8,5	10	6,8	1	1	3	0,5	0,5	0,7
Cable duct 15 x 10	15	13,6	10	8,3	6,5	13	4						
Cable duct 16 x 16	16	–	16	14,3	12,5	14	10,8						
Cable duct 20 x 10	20	18,6	10	8,3	6,5	18	4						
Cable duct 25 x 16	25	–	16	14,5	11,5	22	9,2	1,3	1,1	4	0,5	0,9	0,8
Cable duct 25 x 25	25		25	23,5	20,5	22	18,2			4			
Cable duct 40 x 16	40		16	14	11	36,4	8,7			4,5		0,8	0,6
Cable duct 40 x 25	40		25	23	20,5	36	18,2		1,3			0,9	0,8
Cable duct 40 x 40	40		40	38	35,5	36	33,2						
Cable duct 60 x 40	60		40	38	32,5	56,6	29,6	1,7	1,7	6,5		1	0,6
Cable duct 60 x 60	60		60	58	52,5	56,6	49,6						
Cable duct 80 x 40	80		40	38	32,5	76,6	29,6						
Cable duct 80 x 60	80		60	58	52,5	76,6	52,5						
Cable duct 100 x 40	100		40	37,5	82,5	96	29,2	1,9	1,9	7		1,2	0,5
Cable duct 100 x 60	100		60	57,5	52	96	48,5	2	2	7		1,3	0,7

Name	Meters per package	Effective cross-section, mm²	Maximum cable duct capacity (according to IET On-Site Guide BS 7671:2018, Appendix E), mm	Item code			
				White	Light wood	Dark wood	Black
Cable duct (12 x 12) (120 m) EKF-Plast	120	130	7	kk-12-12	kk-12-12w	kk-12-12d	kk-12-12b
Cable duct (15 x 10) (144 m) EKF-Plast	144	135	7,2	kk-15-10	kk-15-10w	kk-15-10d	kk-15-10b
Cable duct (16 x 16) (84 m) EKF-Plast	84	230	10	kk-16-16	kk-16-16w	kk-16-16d	kk-16-16b
Cable duct (20 x 10) (96 m) EKF-Plast	96	180	8,4	kk-20-10	kk-20-10w	kk-20-10d	kk-20-10b
Cable duct (25 x 16) (40 m) EKF-Plast	40	360	12,5	kk-25-16	kk-25-16w	kk-25-16d	kk-25-16b
Cable duct (25 x 25) (32 m) EKF-Plast	32	563	16,1	kk-25-25	kk-25-25w	kk-25-25d	kk-25-25b
Cable duct (40x16) (30 m) EKF-Plast	30	576	14	kk-40-16	kk-40-16w	kk-40-16d	kk-40-16b
Cable duct (40x25) (24 m) EKF-Plast	24	900	20,5	kk-40-25	kk-40-25w	kk-40-25d	kk-40-25b
Cable duct (40x40) (24 m) EKF-Plast	24	1440	26,6	kk-40-40	kk-40-40w	kk-40-40d	kk-40-40b
Cable duct (60x40) (18 m) EKF-Plast	18	2160	31,7	kk-60-40	kk-60-40w	kk-60-40d	kk-60-40b
Cable duct (60x60) (12 m) EKF-Plast	12	3240	39,9	kk-60-60	kk-60-60w	kk-60-60d	kk-60-60b
Cable duct (80x40) (12 m) EKF-Plast	12	2880	37,4	kk-80-40	–	–	kk-80-40b
Cable duct (80x60) (8 m) EKF-Plast	8	4320	46,5	kk-80-60	–	–	kk-80-60b
Cable duct (100x40) (8 m) EKF-Plast	8	3600	37	kk-100-40	kk-100-40w	kk-100-40d	kk-100-40b
Cable duct (100x60) (8 m) EKF-Plast	8	5400	52,4	kk-100-60	kk-100-60w	kk-100-60d	kk-100-60b

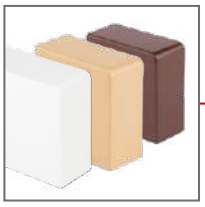
Accessories for EKF-Plast cable ducts

A wide range of accessories for building, connecting, and installing cable ducts enables the implementation of a clean, comprehensive and professional-looking solution for concealed cable routing.

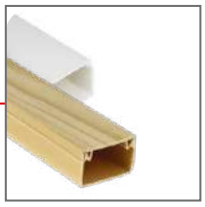


A wide range of accessories for cable routing of any complexity

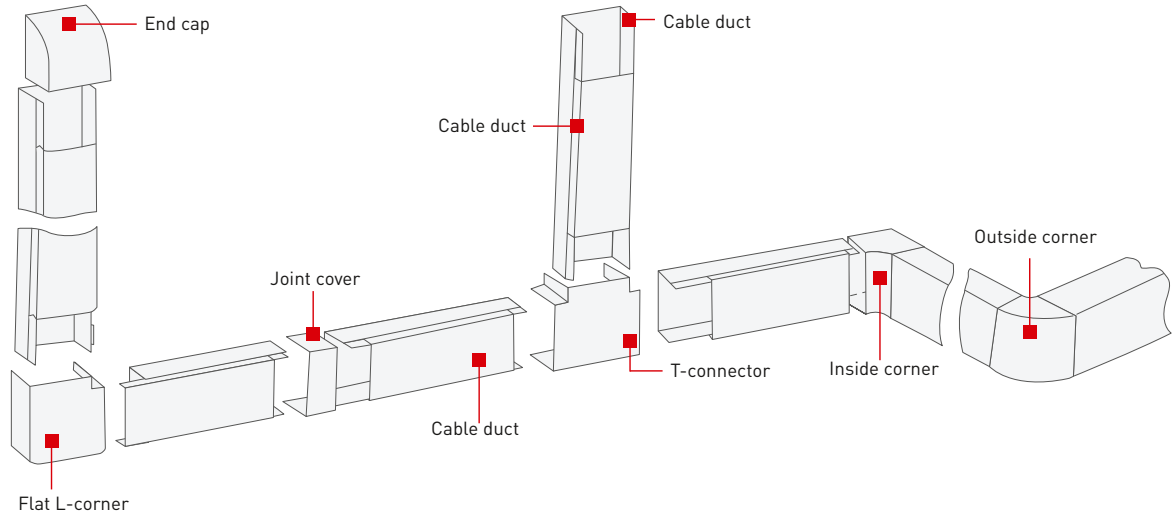
All accessories are easily snapped into place and do not require tools or retainers



White / black / light wood / dark wood



Made of self-extinguishing PVC



APPLICATION

EKF-plast range of cable duct accessories offers versatile solutions for efficiently managing cable installations. Inside and outside corners enable seamless routing around bends and corners, ensuring a neat and organized appearance. T-connectors facilitate branching of cables, allowing for easy expansion or integration into existing systems. Angles provide flexibility in directing cables to different locations, optimizing cable management. These accessories are ideal for various applications such as offices, industrial settings, and home installations, where cable organization and protection are crucial for maintaining efficient and safe operations.

Picture	Name	Dimensions (W×D), mm	Item code		
			White	Light wood	Dark wood
	Outside corner 15x10 (4 pcs.) EKF-Plast	15 × 10	obw-15-10x4	obl-15-10x4	obd-15-10x4
	Outside corner 16x16 (4 pcs.) EKF-Plast	16 × 16	obw-16-16x4	obl-16-16x4	obd-16-16x4
	Outside corner 20x10 (4 pcs.) EKF-Plast	20 × 10	obw-20-10x4	obl-20-10x4	obd-20-10x4
	Outside corner 25x16 (4 pcs.) EKF-Plast	25 × 16	obw-25-16x4	obl-25-10x4	obd-25-16x4
	Outside corner 25x25 (4 pcs.) EKF-Plast	25 × 25	obw-25-25x4	obl-25-25x4	obd-25-25x4
	Outside corner 40x16 (4 pcs.) EKF-Plast	40 × 16	obw-40-16x4	obl-40-16x4	obd-40-16x4
	Outside corner 40x25 (4 pcs.) EKF-Plast	40 × 25	obw-40-25x4	obl-40-25x4	obd-40-25x4
	Outside corner 40x40 (4 pcs.) EKF-Plast	40 × 40	obw-40-40x4	obl-40-40x4	obd-40-40x4
	Outside corner 60x40 (4 pcs.) EKF-Plast	60 × 40	obw-60-40x4	–	–
	Outside corner 60x60 (4 pcs.) EKF-Plast	60 × 60	obw-60-60x4	obl-60-60x4	obd-60-60x4
	Outside corner 100x40 (2 pcs.) EKF-Plast	100 × 40	obw-100-40x2	–	–
	Outside corner 100x60 (2 pcs.) EKF-Plast	100 × 60	obw-100-60x2	–	–

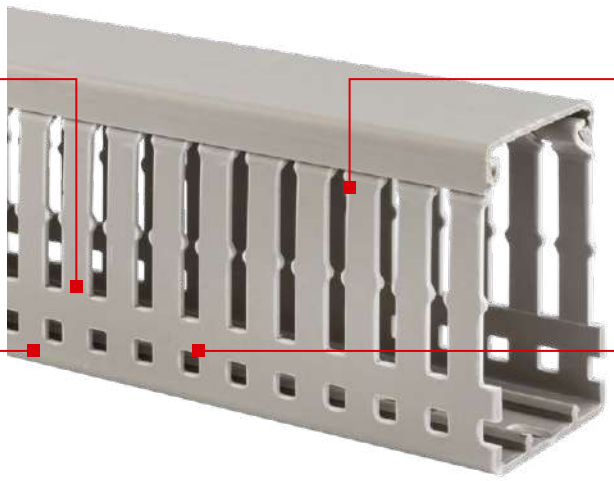
Picture	Name	Dimensions (W×D), mm	Item code		
			White	Light wood	Dark wood
	Inside corner (15x10) (4 pcs.) EKF-Plast	15 × 10	ibw-15-10x4	ibl-15-10x4	ibd-15-10x4
	Inside corner (16x16) (4 pcs.) EKF-Plast	16 × 16	ibw-16-16x4	ibl-16-16x4	ibd-16-16x4
	Inside corner (20x10) (4 pcs.) EKF-Plast	20 × 10	ibw-20-10x4	ibl-20-10x4	ibd-20-10x4
	Inside corner (25x16) (4 pcs.) EKF-Plast	25 × 16	ibw-25-16x4	ibl-25-16x4	ibd-25-16x4
	Inside corner (25x25) (4 pcs.) EKF-Plast	25 × 25	ibw-25-25x4	ibl-25-25x4	ibd-25-25x4
	Inside corner (40x16) (4 pcs.) EKF-Plast	40 × 16	ibw-40-16x4	ibl-40-16x4	ibd-40-16x4
	Inside corner (40x25) (4 pcs.) EKF-Plast	40 × 25	ibw-40-25x4	ibl-40-25x4	ibd-40-25x4
	Inside corner (40x40) (4 pcs.) EKF-Plast	40 × 40	ibw-40-40x4	ibl-40-40x4	ibd-40-40x4
	Inside corner (60x40) (4 pcs.) EKF-Plast	60 × 40	ibw-60-40x4	–	–
	Inside corner (60x60) (4 pcs.) EKF-Plast	60 × 60	ibw-60-60x4	ibl-60-60x4	ibd-60-60x4
	Inside corner (100x40) (2 pcs.) EKF-Plast	100 × 40	ibw-100-40x2	–	–
	Inside corner (100x60) (2 pcs.) EKF-Plast	100 × 60	ibw-100-60x2	–	–
	End cap (15x10) (4 pcs.) EKF-Plast	15 × 10	ecw-15-10x4	ecl-15-10x4	ecd-15-10x4
	End cap (16x16) (4 pcs.) EKF-Plast	16 × 16	ecw-16-16x4	ecl-16-16x4	ecd-16-16x4
	End cap (20x10) (4 pcs.) EKF-Plast	20 × 10	ecw-20-10x4	ecl-20-10x4	ecd-20-10x4
	End cap (25x16) (4 pcs.) EKF-Plast	25 × 16	ecw-25-16x4	ecl-25-16x4	ecd-25-16x4
	End cap (25x25) (4 pcs.) EKF-Plast	25 × 25	ecw-25-25x4	ecl-25-25x4	ecd-25-25x4
	End cap (40x16) (4 pcs.) EKF-Plast	40 × 16	ecw-40-16x4	ecl-40-16x4	ecd-40-16x4
	End cap (40x25) (4 pcs.) EKF-Plast	40 × 25	ecw-40-25x4	ecl-40-25x4	ecd-40-25x4
	End cap (40x40) (4 pcs.) EKF-Plast	40 × 40	ecw-40-40x4	ecl-40-40x4	ecd-40-40x4
	End cap (60x40) (4 pcs.) EKF-Plast	60 × 40	ecw-60-40x4	–	–
	End cap (60x60) (4 pcs.) EKF-Plast	60 × 60	ecw-60-60x4	ecl-60-60x4	ecd-60-60x4
	End cap (100x40) (2 pcs.) EKF-Plast	100 × 40	ecw-100-40x2	–	–
	End cap (100x60) (2 pcs.) EKF-Plast	100 × 60	ecw-100-60x2	–	–
	Joint cover (15x10) (4 pcs.) EKF-Plast	15 × 10	conw-15-10x4	conl-15-10x4	cond-15-10x4
	Joint cover (16x16) (4 pcs.) EKF-Plast	16 × 16	conw-16-16x4	conl-16-16x4	cond-16-16x4
	Joint cover (20x10) (4 pcs.) EKF-Plast	20 × 10	conw-20-10x4	conl-20-10x4	cond-20-10x4
	Joint cover (25x16) (4 pcs.) EKF-Plast	25 × 16	conw-25-16x4	conl-25-16x4	cond-25-16x4
	Joint cover (25x25) (4 pcs.) EKF-Plast	25 × 25	conw-25-25x4	conl-25-25x4	cond-25-25x4
	Joint cover (40x16) (4 pcs.) EKF-Plast	40 × 16	conw-40-16x4	conl-40-16x4	cond-40-16x4
	Joint cover (40x25) (4 pcs.) EKF-Plast	40 × 25	conw-40-25x4	conl-40-25x4	cond-40-25x4
	Joint cover (40x40) (4 pcs.) EKF-Plast	40 × 40	conw-40-40x4	conl-40-40x4	cond-40-40x4
	Joint cover (60x40) (4 pcs.) EKF-Plast	60 × 40	conw-60-40x4	–	–
	Joint cover (60x60) (4 pcs.) EKF-Plast	60 × 60	conw-60-60x4	conl-60-60x4	cond-60-60x4
	Joint cover (100x40) (2 pcs.) EKF-Plast	100 × 40	conw-100-40x2	–	–
	Joint cover (100x60) (2 pcs.) EKF-Plast	100 × 60	conw-100-60x2	–	–
	T-connector (15x10) (4 pcs.) EKF-Plast	15 × 10	tchw-15-10x4	tchl-15-10x4	tchd-15-10x4
	T-connector (16x16) (4 pcs.) EKF-Plast	16 × 16	tchw-16-16x4	tchl-16-16x4	tchd-16-16x4
	T-connector (20x10) (4 pcs.) EKF-Plast	20 × 10	tchw-20-10x4	tchl-20-10x4	tchd-20-10x4
	T-connector (25x16) (4 pcs.) EKF-Plast	25 × 16	tchw-25-16x4	tchl-25-16x4	tchd-25-16x4
	T-connector (25x25) (4 pcs.) EKF-Plast	25 × 25	tchw-25-25x4	tchl-25-25x4	tchd-25-25x4
	T-connector (40x16) (4 pcs.) EKF-Plast	40 × 16	tchw-40-16x4	tchl-40-16x4	tchd-40-16x4
	T-connector (40x25) (4 pcs.) EKF-Plast	40 × 25	tchw-40-25x4	tchl-40-25x4	tchd-40-25x4
	T-connector (40x40) (4 pcs.) EKF-Plast	40 × 40	tchw-40-40x4	tchl-40-40x4	tchd-40-40x4
	T-connector (60x40) (4 pcs.) EKF-Plast	60 × 40	tchw-60-40x4	–	–
	T-connector (60x60) (4 pcs.) EKF-Plast	60 × 60	tchw-60-60x4	tchl-60-60x4	tchd-60-60x4
	T-connector (100x40) (2 pcs.) EKF-Plast	100 × 40	tchw-100-40x2	–	–
	T-connector (100x60) (2 pcs.) EKF-Plast	100 × 60	tchw-100-60x2	–	–
	Bend 90 deg. 15x10 (4 pcs.) EKF-Plast	15 × 10	abw-15-10x4	abl-15-10x4	abd-15-10x4
	Bend 90 deg. 16x16 (4 pcs.) EKF-Plast	16 × 16	abw-16-16x4	abl-16-16x4	abd-16-16x4
	Bend 90 deg. 20x10 (4 pcs.) EKF-Plast	20 × 10	abw-20-10x4	abl-20-10x4	abd-20-10x4
	Bend 90 deg. 25x16 (4 pcs.) EKF-Plast	25 × 16	abw-25-16x4	abl-25-16x4	abd-25-16x4
	Bend 90 deg. 25x25 (4 pcs.) EKF-Plast	25 × 25	abw-25-25x4	abl-25-25x4	abd-25-25x4
	Bend 90 deg. 40x16 (4 pcs.) EKF-Plast	40 × 16	abw-40-16x4	abl-40-16x4	abd-40-16x4
	Bend 90 deg. 40x25 (4 pcs.) EKF-Plast	40 × 25	abw-40-25x4	abl-40-25x4	abd-40-25x4
	Bend 90 deg. 40x40 (4 pcs.) EKF-Plast	40 × 40	abw-40-40x4	abl-40-40x4	abd-40-40x4
	Bend 90 deg. 60x40 (4 pcs.) EKF-Plast	60 × 40	abw-60-40x4	–	–
	Bend 90 deg. 60x60 (4 pcs.) EKF-Plast	60 × 60	abw-60-60x4	abl-60-60x4	abd-60-60x4
	Bend 90 deg. 100x40 (2 pcs.) EKF-Plast	100 × 40	abw-100-40x2	–	–
	Bend 90 deg. 100x60 (2 pcs.) EKF-Plast	100 × 60	abw-100-60x2	–	–

Perforated cable ducts

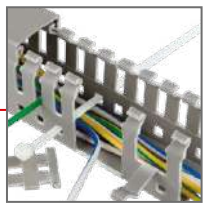
Perforated cable ducts are used for cable routing inside distribution enclosures and electrical cabinets. Perforations facilitate cable installation and maintenance, as well as airflow for improved cooling. EKF cable ducts are 2-meter rectangular sections with a removable cover, fully enclosing the conductors. Made of self-extinguishing polyvinyl chloride compounds, the cable ducts are excellent additional insulators. Use of cable ducts facilitates cable routing and significantly saves time for installation. Colour: gray RAL 7030.

Pre-notched sidewall finger snap-off line

Made of PVC. Perforations match with distances between terminals of modular devices



Pre-notched sidewall section snap-off lines



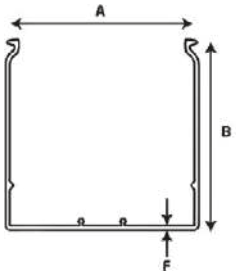
Perforations for cable ties. Different diameter preforations in the base for flexible drill-free mounting options

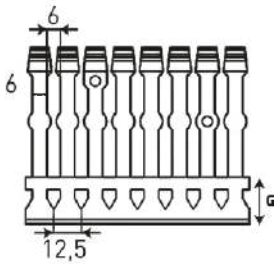
APPLICATION

Perforated (slotted) plastic cable duct is designed to efficiently organize and manage cables in various applications. The slots allow for easy insertion and removal of wires, enabling quick and convenient cable routing. This type of wiring duct is commonly used in electrical panels, control cabinets, and server rooms, where effective cable management is essential. The perforations also assist in enhancing airflow and heat dissipation, making it suitable for installations that require proper ventilation. With its durable design and versatility, perforated plastic cable duct is a reliable solution for neat and organized cable management.

TECHNICAL DATA

Overall and installation dimensions





Name	Dimensions, mm					Item code
	Width A	B	F	G	Length	
Perforated cable duct 25x25mm EKF	25	25	1,3	13,5	2000	kk25-25
Perforated cable duct 40x25mm EKF		40	1,4	13,5		kk40-25
Perforated cable duct 60x25mm EKF		60	1,6	17,2		kk60-25
Perforated cable duct 80x25mm EKF		80	1,8	16,5		kk80-25
Perforated cable duct 40x40mm EKF	40	40	1,4	14,9		kk40-40
Perforated cable duct 60x40mm EKF		60	1,6	15,6		kk60-40
Perforated cable duct 80x40mm EKF		80	1,8	19		kk80-40
Perforated cable duct 100x40mm EKF		100	1,9	20,9		kk100-40
Perforated cable duct 50x50mm EKF	50	50	1,6	15,3		kk50-50
Perforated cable duct 40x60mm EKF	60	40	1,6	13,5		kk40-60
Perforated cable duct 60x60mm EKF		60	1,8	17,4		kk60-60
Perforated cable duct 80x60mm EKF		80	1,8	19		kk80-60
Perforated cable duct 100x60mm EKF		100	2	21		kk100-60
Perforated cable duct 40x80mm EKF	80	40	1,8	15,3		kk40-80
Perforated cable duct 60x80mm EKF		60	1,8	17,4		kk60-80
Perforated cable duct 80x80mm EKF		80	1,8	20,8		kk80-80
Perforated cable duct 100x80mm EKF		100	2,2	21,2		kk100-80
Perforated cable duct 40x100mm EKF	100	40	1,8	15,3		kk40-100
Perforated cable duct 60x100mm EKF		60	2	17,6		kk60-100
Perforated cable duct 80x100mm EKF		80	1,3	21		kk80-100
Perforated cable duct 100x100mm EKF		100	1,3	21,2		kk100-100
Perforated cable duct 60x120mm EKF	120	60	1,8	17,6		kk60-120
Perforated cable duct 80x120mm EKF		80	2	21		kk80-120

Plastic electrical conduits

Plastic electrical conduits are designed to route and protect electrical cables. EKF offers a wide range of products and solutions for indoor & outdoor wiring, as well as cast-in and other specialized conduits.

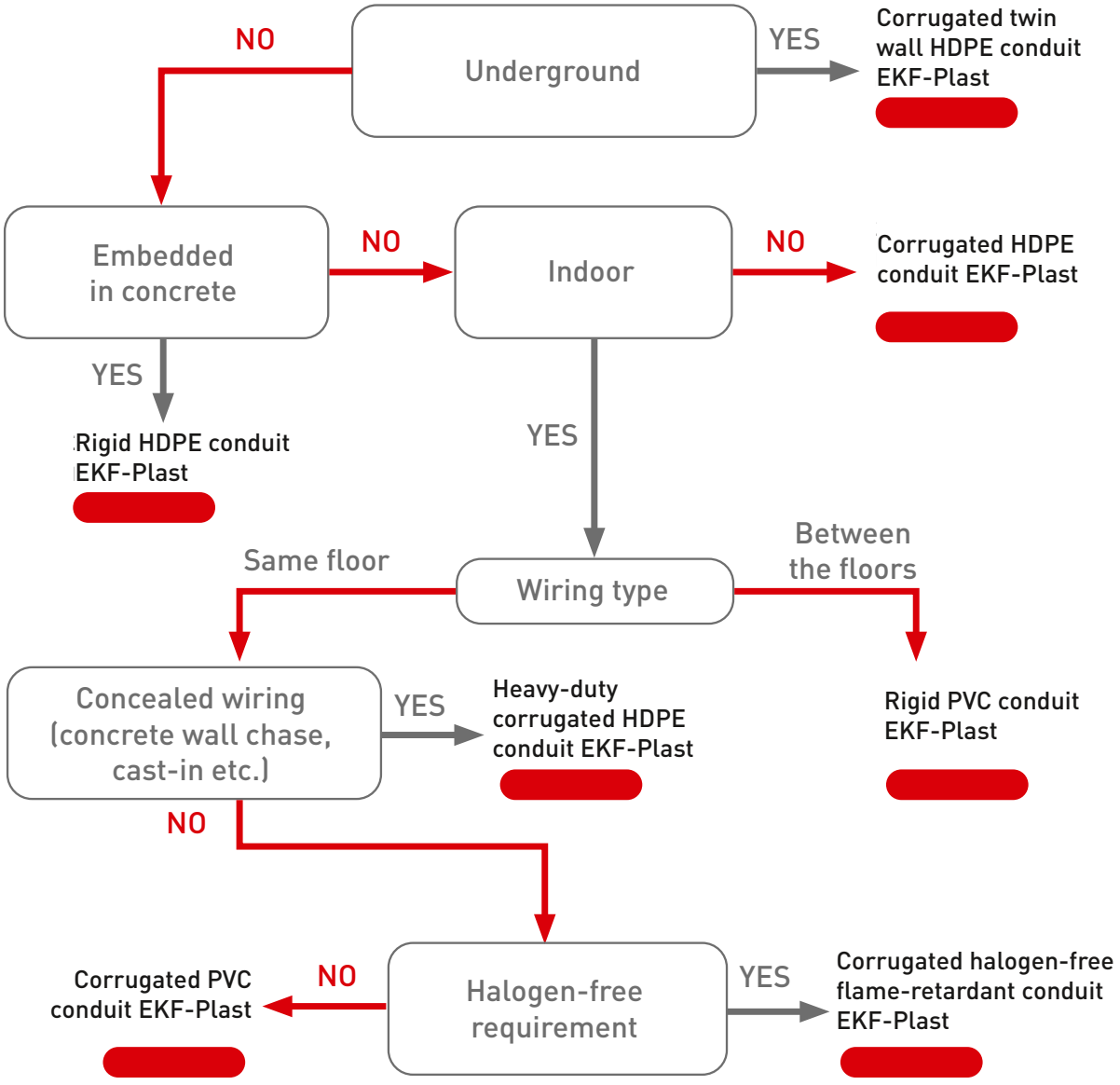
Installation tips

- Do not bend the conduit by more than 90 degrees.
- Distance between turns (bends) should be at least 6 meters.
- Length of single-piece conduit should not exceed 25 meters.
- Use a separate conduit for each cable run. Do note route more than one circuit via each conduit.
- In wet and fire-hazardous rooms, seal the connection points and junction box fittings, and fit cable entries with glands.
- Secure cable conduits with mounting clips every 50 cm of the run.

Tube diameter selection

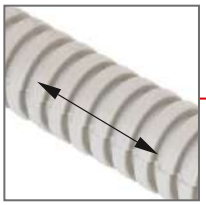
- For low-current and telecom lines, use 16mm conduits.
- For luminaires, use 16mm conuduits.
- For wiring accessories (sockets, switches), use 20 mm or larger conduits.
- For connecting junction boxes within the same floor use 2 mm or larger conduits.
- For connecting electrical panels within the same floor use 50 mm or larger conduits.
- For interfloor connections, use 40 mm, 50 mm or 63 mm conduits.

Conduit selection flowchart

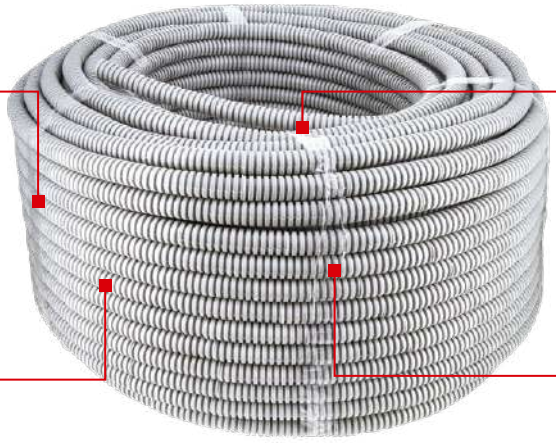


Corrugated PVC conduits EKF-Plast

Corrugated PVC conduits are a professional cable routing system for open or concealed (for heavy-duty conduits) wiring of power and low-voltage circuits in buildings and facilities. Corrugated conduits are made of self-extinguishing PVC, protecting against ignition of cable insulation and subsequent flame propagation along the conduit in the event of short circuit. The conduit protects the cables inside it from mechanical damage and serves as an additional insulator.

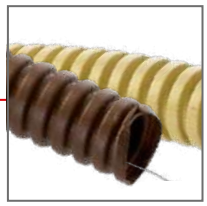


Broad selection of coil lengths



Complete range of accessories

Degree of protection: IP55



Color: white, grey, light wood, dark wood, black

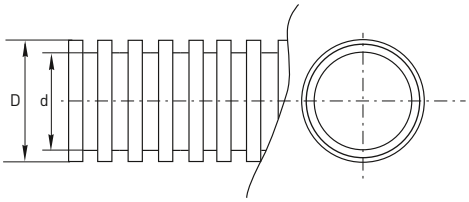
APPLICATION

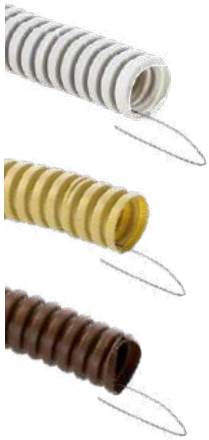
Open and concealed wiring systems in applications where a more flexible cable routing solution is required.

TECHNICAL DATA

Parameters	Values
Material	Self-extinguishing PVC
Colour	Grey/light wood/dark wood/black
Installation temperatue, °C	From -25 to +60
Compression strength	Over 125N/5cm

Overall and installation dimensions



Picture	Name	Outer diameter D, mm	Inner diameter d, mm	Coil length, m	Draw cord	Item code
	Corrugated PVC conduit with draw cord d=16mm (10m) grey EKF-Plast	16±0,4	10,7±0,3	10		tg-z-16-10m
	Corrugated PVC conduit with draw cord d=16mm (25m) grey EKF-Plast	16±0,4	10,7±0,3	25		tg-z-16-25n
	Corrugated PVC conduit with draw cord d=16mm (50m) grey EKF-Plast	16±0,4	10,7±0,3	50		tg-z-16-50m
	Corrugated PVC conduit with draw cord d=16mm (100m) grey EKF-Plast	16±0,4	10,7±0,3	100		tg-z-16
	Corrugated PVC conduit with draw cord d=20mm (10m) grey EKF-Plast	20±0,4	14,1±0,3	10		tg-z-20-10m
	Corrugated PVC conduit with draw cord d=20mm (25m) grey EKF-Plast	20±0,4	14,1±0,3	25		tg-z-20-25n
	Corrugated PVC conduit with draw cord d=20mm (50m) grey EKF-Plast	20±0,4	14,1±0,3	50		tg-z-20-50m
	Corrugated PVC conduit with draw cord d=20mm (100m) grey EKF-Plast	20±0,4	14,1±0,3	100		tg-z-20
	Corrugated PVC conduit with draw cord d=25mm (10m) grey EKF-Plast	25±0,4	18,3±0,4	10		tg-z-25-10m
	Corrugated PVC conduit with draw cord d=25mm (25m) grey EKF-Plast	25±0,4	18,3±0,4	25		tg-z-25-25n
	Corrugated PVC conduit with draw cord d=25mm (50m) grey EKF-Plast	25±0,4	18,3±0,4	50		tg-z-25
	Corrugated PVC conduit with draw cord d=32mm (25m) grey EKF-Plast	32±0,4	24,3±0,4	25		tg-z-32-25
	Corrugated PVC conduit with draw cord d=32mm (50m) grey EKF-Plast	32±0,4	24,3±0,4	50		tg-z-32
	Corrugated PVC conduit with draw cord d=40mm (15m) grey EKF-Plast	40±0,4	31,2±0,4	15		tg-z-40
	Corrugated PVC conduit with draw cord d=50mm (20m) grey EKF-Plast	50±0,4	39,6±0,4	20		tg-z-50
	Corrugated PVC conduit with draw cord d=63mm (15m) grey EKF-Plast	63±0,4	50,6±0,4	15	Yes	tg-z-63
	Heavy-duty corrugated PVC conduit with draw cord d=16mm (100m) grey EKF-Plast	25±0,4	10,7±0,3	100		tg-z-16-t
	Heavy-duty corrugated PVC conduit with draw cord d=20mm (100m) grey EKF-Plast	25±0,4	14,1±0,3	100		tg-z-20-t
	Heavy-duty corrugated PVC conduit with draw cord d=25mm (75m) grey EKF-Plast	32±0,4	18,3±0,4	75		tg-z-25-t
	Heavy-duty corrugated PVC conduit with draw cord d=32mm (50m) grey EKF-Plast	32±0,4	24,3±0,4	50		tg-z-32-t
	Heavy-duty corrugated PVC conduit with draw cord d=40mm (25m) grey EKF-Plast	40±0,4	31,2±0,4	25		tg-z-40-t
	Heavy-duty corrugated PVC conduit with draw cord d=50mm (20m) grey EKF-Plast	50±0,4	39,6±0,4	20		tg-z-50-t
	Corrugated PVC conduit with draw cord d=16mm (25m) light wood EKF-Plast	16±0,4	10,7±0,3	25		tg-z-16w
	Corrugated PVC conduit with draw cord d=20mm (25m) light wood EKF-Plast	20±0,4	14,1±0,3	25		tg-z-20w
	Corrugated PVC conduit with draw cord d=25mm (25m) light wood EKF-Plast	25±0,4	18,3±0,4	25		tg-z-25w
	Corrugated PVC conduit with draw cord d=16mm (25m) dark wood EKF-Plast	16±0,4	10,7±0,3	25		tg-z-16d
	Corrugated PVC conduit with draw cord d=20mm (25m) dark wood EKF-Plast	20±0,4	14,1±0,3	25		tg-z-20d
	Corrugated PVC conduit with draw cord d=25mm (25m) dark wood EKF-Plast	25±0,4	18,3±0,4	25		tg-z-25d
	Corrugated PVC conduit with draw cord d=16mm (100m) white EKF-Plast	16±0,4	10,7±0,3	100		tg-z-16-100-white
	Corrugated PVC conduit with draw cord d=20mm (100m) white EKF-Plast	20±0,4	14,1±0,3	100		tg-z-20-100-white
	Corrugated PVC conduit with draw cord d=25mm (50m) white EKF-Plast	25±0,4	18,3±0,4	50		tg-z-25-50-white

Corrugated halogen-free flame-retardant conduits EKF-Plast

Corrugated HFFR conduits are made from high-quality flame-retardant plastic that does not release harmful halogens. The HFFR conduits are recommended for use in public spaces.

Halogen-free

Flame-retardant

Degree of protection: IP55

Complete range of accessories

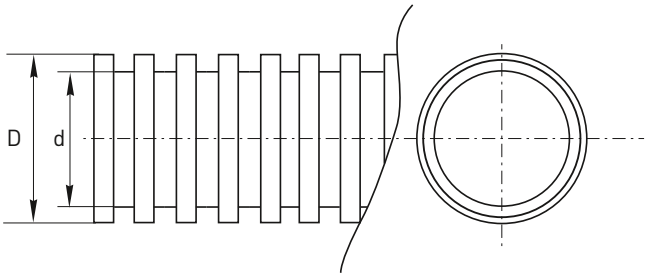
APPLICATION

Open and concealed wiring sysems with halogen-free requirements.

TECHNICAL DATA

Parameters	Values
Material	Polyolefin
Colour	Black
Installation temperature, °C	From -5 to +60
Operating temperature, °C	From -25 to +60
Compression strength	Over 125 N/ 5 cm

Overall and installation dimensions

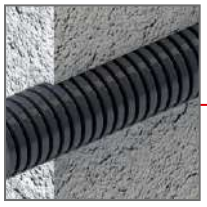


Picture	Name	Outer diameter D, mm	Inner diameter d, mm	Coil length, m	Draw cord	Item code
	Corrugated halogen-free flame-retardant conduit with draw cord d=16mm (100m) black EKF-Plast	16±0,4	10,7±0,3	100	Yes	FRHF-16
	Corrugated halogen-free flame-retardant conduit with draw cord d=20mm (100m) black EKF-Plast	20±0,4	14,1±0,3	100	Yes	FRHF-20
	Corrugated halogen-free flame-retardant conduit with draw cord d=25mm (75m) black EKF-Plast	25±0,4	18,3±0,4	75	Yes	FRHF-25
	Corrugated halogen-free flame-retardant conduit with draw cord d=32mm (50m) black EKF-Plast	32±0,4	24,3±0,4	50	Yes	FRHF-32
	Corrugated halogen-free flame-retardant conduit with draw cord d=40mm (25m) black EKF-Plast	40±0,4	31,2±0,4	25	Yes	FRHF-40
	Corrugated halogen-free flame-retardant conduit with draw cord d=50mm (20m) black EKF-Plast	50±0,4	39,6±0,4	20	Yes	FRHF-50
	Corrugated halogen-free flame-retardant conduit with draw cord d=63mm (15m) black EKF-Plast	63±0,4	50,6±0,4	15	Yes	FRHF-63

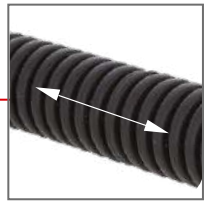
Corrugated high-density polyethylene conduits EKF-Plast

Corrugated HDPE conduits are used for concealed and open wiring of insulated communication cables with rated voltage up to 1000 V AC/DC. The conduits can be used both indoors and outdoors. The EKF conduits are available in two versions: regular - for open wiring and heavy-duty – for cast-in and concealed wiring applications.

Degree of protection: IP55. UV resistant



Heavy-duty conduits can be cast-in



Variety of coil length options

Complete range of accessories

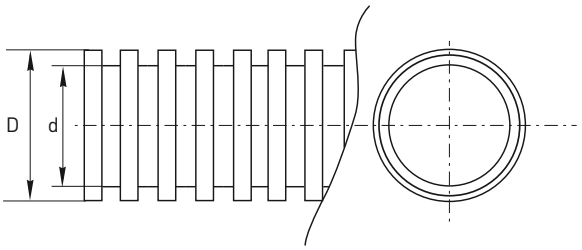
APPLICATION

Open and concealed wiring systems in applications where a more flexible cable routing solution is required.

TECHNICAL DATA

Parameters	Values
Material	HDPE (high density polyethylene)
Colour	Black / Orange
Installation temperature, °C	From -25 to +60
Operating temperature, °C	From -40 to +90
Compression strength	Over 125 N/ 5 cm – regular Over 350 N/ 5 cm – heavy-duty

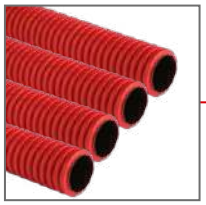
Overall and installation dimensions



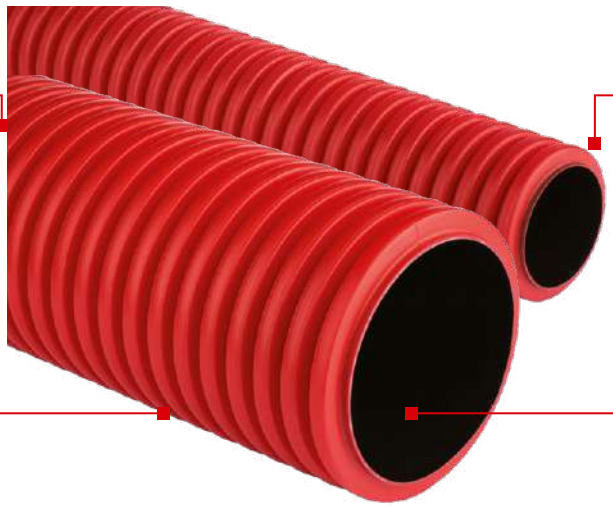
Name	Outer diameter D, mm	Inner diameter d, mm	Coil length, m	Draw cord	Cast-in applications	Item code	
						black	orange
Corrugated HDPE conduit with draw cord d=16mm (25m) EKF-Plast	16±0,4	10,7±0,3	25	Yes	N/A	tpnd-16-25m	–
Corrugated HDPE conduit with draw cord d=16mm (100m) EKF-Plast	16±0,4	10,7±0,3	100			tpnd-16	tpnd-16-o
Corrugated HDPE conduit with draw cord d=20mm (25m) EKF-Plast	20±0,4	14,1±0,3	25			tpnd-20-25m	–
Corrugated HDPE conduit with draw cord d=20mm (100m) EKF-Plast	20±0,4	14,1±0,3	100			tpnd-20	tpnd-20-o
Corrugated HDPE conduit with draw cord d=25mm (25m) EKF-Plast	25±0,4	18,3±0,4	25			tpnd-25-25m	–
Corrugated HDPE conduit with draw cord d=25mm (50m) EKF-Plast	25±0,4	18,3±0,4	50			tpnd-25-50m	–
Corrugated HDPE conduit with draw cord d=25mm (75m) EKF-Plast	25±0,4	18,3±0,4	75			tpnd-25n	tpnd-25-o
Corrugated HDPE conduit with draw cord d=32mm (25m) EKF-Plast	32±0,4	24,3±0,4	25			tpnd-32-25m	–
Corrugated HDPE conduit with draw cord d=32mm (50m) EKF-Plast	32±0,4	24,3±0,4	50			tpnd-32n	tpnd-32-o
Corrugated HDPE conduit with draw cord d=40mm (25m) EKF-Plast	40±0,4	31,2±0,4	25			tpnd-40n	tpnd-40-o
Corrugated HDPE conduit with draw cord d=50mm (20m) EKF-Plast	50±0,4	39,6±0,4	20			tpnd-50n	tpnd-50-o
Corrugated HDPE conduit with draw cord d=63mm (15m) EKF-Plast	63±0,4	50,6±0,4	15			tpnd-63n	–
Heavy-duty corrugated HDPE conduit with draw cord d=16mm (100m) EKF-Plast	16±0,4	10,3±0,4	100		Yes	tpnd-16-t	tpnd-16-to
Heavy-duty corrugated HDPE conduit with draw cord d=20mm (100m) EKF-Plast	20±0,4	13,8±0,4	100			tpnd-20-t	tpnd-20-to
Heavy-duty corrugated HDPE conduit with draw cord d=25mm (75m) EKF-Plast	25±0,4	17,8±0,4	75			tpnd-25-t	–
Heavy-duty corrugated HDPE conduit with draw cord d=25mm (50m) EKF-Plast	25±0,4	17,8±0,4	50			–	tpnd-25-to
Heavy-duty corrugated HDPE conduit with draw cord d=32mm (50m) EKF-Plast	32±0,4	23,6±0,4	50			tpnd-32-t	–
Heavy-duty corrugated HDPE conduit with draw cord d=32mm (25m) EKF-Plast	32±0,4	23,6±0,4	25			–	tpnd-32-to
Heavy-duty corrugated HDPE conduit with draw cord d=40mm (25m) EKF-Plast	40±0,4	30,6±0,4	25			tpnd-40-t	–
Heavy-duty corrugated HDPE conduit with draw cord d=40mm (20m) EKF-Plast	40±0,4	30,6±0,4	20			–	tpnd-40-to
Heavy-duty corrugated HDPE conduit with draw cord d=50mm (20m) EKF-Plast	50±0,4	38,0±0,4	20			tpnd-50-t	–
Heavy-duty corrugated HDPE conduit with draw cord d=50mm (15m) EKF-Plast	50±0,4	38,0±0,4	15			–	tpnd-50-to

Corrugated twin wall HDPE conduits EKF-Plast

Twin wall conduits are designed to protect power and signal cables, communication lines and low-voltage systems (CCTV, ACS, emergency lighting, etc.) from external mechanical damage and corrosive environment exposure. EKF twin wall conduits are the perfect solution for efficient cable routing arrangement. The conduits, including the inner wall, are made only from top-quality HDPE, ensuring a perfectly smooth surface and reducing the cabling time significantly.



Container shipping option (5,7m in length)



Does not contain LDPE. Protection degree up to IP67

Complete range of accessories

Perfectly smooth inner wall – easy cable pulling

APPLICATION

Open and concealed wiring systems in applications where a high degree of ingress protection and/or high compression strength is required.

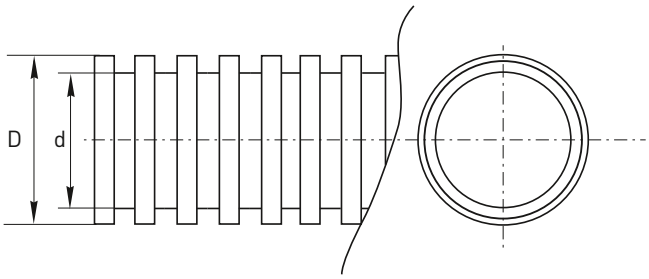
TECHNICAL DATA

Parameters	Values
Material	HDPE
Colour	Red
Installation temperature, °C	From -5 to +60
Operating temperature, °C	From -45 to +60
Compression strength	450 N – flexible; 750 N – rigid

Storage

Conduits can be stored under a cover or in non-insulated rooms, with temperature and humidity similar to open-air conditions. Short-term open-air storage allowed.

Overall and installation dimensions

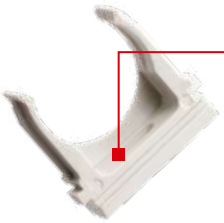


Name	Outer diameter D, mm	Inner diameter d, mm	Length, m	Draw cord	Item code
Corrugated twin wall HDPE conduit with draw cord d=40mm (50m) red EKF-Plast	40	32,0	50	Yes	tg2st-40-50m
Corrugated twin wall HDPE conduit with draw cord d=50mm (50m) red EKF-Plast	50	41,5	50		tg2st-50-50m
Corrugated twin wall HDPE conduit with draw cord d=63mm (50m) red EKF-Plast	63	51,5	50		tg2st-63-50m
Corrugated twin wall HDPE conduit with draw cord d=75mm (50m) red EKF-Plast	75	62,5	50		tg2st-75-50m
Corrugated twin wall HDPE conduit with draw cord d=90mm (50m) red EKF-Plast	90	77.0	50		tg2st-90-50m
Corrugated twin wall HDPE conduit with draw cord d=110mm (50m) red EKF-Plast	110	92,0	50		tg2st-110-50m
Corrugated twin wall HDPE conduit with draw cord d=125mm (50m) red EKF-Plast	125	107,0	50		tg2st-125-50m
Corrugated twin wall HDPE conduit with draw cord d=160mm (50m) red EKF-Plast	160	137,0	50		tg2st-160-50m
Corrugated twin wall HDPE conduit with draw cord d=200mm (35m) red EKF-Plast	200	175,0	35		tg2st-200-35m
Corrugated twin wall HDPE rigid conduit d=50mm (6m) (36m/pack) red EKF-Plast	50	39,5	6,0	-	tr2st-50-6m
Corrugated twin wall HDPE rigid conduit d=63mm (6m) (36m/pack) red EKF-Plast	63	49,5	6,0		tr2st-63-6m
Corrugated twin wall HDPE rigid conduit d=75mm (6m) (36m/pack) red EKF-Plast	75	60,5	6,0		tr2st-75-6m
Corrugated twin wall HDPE rigid conduit d=90mm (6m) (36m/pack) red EKF-Plast	90	75,0	6,0		tr2st-90-6m
Corrugated twin wall HDPE rigid conduit d=110mm (6m) (36m/pack) red EKF-Plast	110	90,0	6,0		tr2st-110-6m
Corrugated twin wall HDPE rigid conduit d=125mm (6m) (36m/pack) red EKF-Plast	125	105,0	6,0		tr2st-125-6m
Corrugated twin wall HDPE rigid conduit d=160mm (6m) (36m/pack) red EKF-Plast	160	135,0	6,0		tr2st-160-6m
Corrugated twin wall HDPE rigid conduit d=200mm (6m) (36m/pack) red EKF-Plast	200	173,0	6,0		tr2st-200-6m

Accessories for cable conduits EKF-Plast

Accessories for cable conduits ensure quick and easy cable routing of any complexity. All accessories meet the same exact specifications as compatible conduits.

Broad range of accesories enable flexible design of cabling systems



Quick mount accessories for improved mounting quality and faster installation

Safe and secure installation, high level of ingress protection (up to IP67)

Elements hold together securely during cable pulling

APPLICATION

Conduit fittings and accessories compliment cable conduits to facilitate the creation of a complete wiring solution.

Corrugated and rigid conduit accessories

Picture	Name	Diameter, mm	Item code					
			Grey	Orange	Light wood	Dark wood	Black	White
	Conduit clip d=16mm (100 pcs.) EKF-Plast	16	derj-z 16n	–	–	–	derj-z-16-black	–
	Conduit clip d=20mm (100 pcs.) EKF-Plast	20	derj-z 20n	–	–	–	derj-z-20-black	–
	Conduit clip d=25mm (100 pcs.) EKF-Plast	25	derj-z 25n	–	–	–	derj-z-25-black	–
	Conduit clip d=32mm (50 pcs.) EKF-Plast	32	derj-z-32n	–	–	–	derj-z-32-black	–
	Conduit clip d=40mm (30 pcs.) EKF-Plast	40	derj-z-40n	–	–	–	–	–
	Conduit clip d=50mm (20 pcs.) EKF-Plast	50	derj-z-50	–	–	–	–	–
	Conduit clip d=16mm (10 pcs.) EKF-Plast	16	derj-z-16n-r	derj-z-16o	derj-z-16w	derj-z-16d	derj-z-16b	derj-z-16-white
	Conduit clip d=20mm (10 pcs.) EKF-Plast	20	derj-z-20n-r	derj-z-20o	derj-z-20w	derj-z-20d	derj-z-20b	derj-z-20-white
	Conduit clip d=25mm (10 pcs.) EKF-Plast	25	derj-z-25n-r	derj-z-25o	derj-z-25w	derj-z-25d	derj-z-25b	derj-z-25-white
	Conduit clip d=32mm (10 pcs.) EKF-Plast	32	derj-z-32n-r	–	–	–	–	–

Corrugated conduit accessories

Picture	Diameter, mm	Name	Quantity per package, pcs	Item code	Quantity per package, pcs.	Item code	
				Grey		Grey	White
	16	Conduit coupling 16mm EKF-Plast	100	ms-t-16	10	ms-t-16-r	ms-t-16-w-r
	20	Conduit coupling 20mm EKF-Plast	50	ms-t-20	10	ms-t-20-r	–
					5	–	ms-t-20-w-r
	25	Conduit coupling 25mm EKF-Plast	50	ms-t-25	10	ms-t-25-r	–
					5	–	ms-t-25-w-r
	32	Conduit coupling 32mm EKF-Plast	25	ms-t-32	5	ms-t-32-r	–
	40	Conduit coupling 40mm EKF-Plast	20	ms-t-40	5	ms-t-40-r	–
	50	Conduit coupling 50mm EKF-Plast	10	ms-t-50	–	–	–

Picture	Name	Diameter, mm	Item code
	Corrugated conduit adapter 16mm (50 pcs.) grey EKF-Plast	16	kn-t-16
	Corrugated conduit adapter 20mm (50 pcs.) grey EKF-Plast	20	kn-t-20
	Corrugated conduit adapter 25mm (25 pcs.) grey EKF-Plast	25	kn-t-25
	Corrugated conduit adapter 32mm (10 pcs.) grey EKF-Plast	32	kn-t-32

Rigid Conduit Accessories

Picture	Name	Diameter, mm	Item code
	Flex coupling conduit - junction box 16mm IP44 (10 pcs.) grey EKF-Plast	16	mtk-16
	Flex coupling conduit - junction box 20mm IP44 (10 pcs.) grey EKF-Plast	20	mtk-20
	Flex coupling conduit - junction box 25mm IP44 (10 pcs.) grey EKF-Plast	25	mtk-25
	Flex coupling conduit - junction box 32mm IP44 (10 pcs.) grey EKF-Plast	32	mtk-32
	Flex coupling conduit - conduit 16mm IP44 (10 pcs.) grey EKF-Plast	16	mtt-16
	Flex coupling conduit - conduit 20mm IP44 (10 pcs.) grey EKF-Plast	20	mtt-20
	Flex coupling conduit - conduit 25mm IP44 (10 pcs.) grey EKF-Plast	25	mtt-25
	Flex coupling conduit - conduit 32mm IP44 (10 pcs.) grey EKF-Plast	32	mtt-32
	Flex coupling conduit - conduit 40mm IP44 (10 pcs.) grey EKF-Plast	40	mtt-40
	Flex coupling conduit - conduit 50mm IP44 (10 pcs.) grey EKF-Plast	50	mtt-50

Picture	Diameter	Name	Quantity per package, pcs.	Item code Grey	Quantity per package, pcs	Item code White
	16	Conduit tee 16mm EKF-Plast	10	tr-t-16	5	tr-t-16w-r
	20	Conduit tee 20mm EKF-Plast	10	tr-t-20	5	tr-t-20w-r
	25	Conduit tee 25mm EKF-Plast	10	tr-t-25	5	tr-t-25w-r
	32	Conduit tee 32mm EKF-Plast	10	tr-t-32	–	–
	16	Conduit elbow 90 deg. 16mm EKF-Plast	10	ug-t-16	5	ug-t-16w-r
	20	Conduit elbow 90 deg. 20mm EKF-Plast	10	ug-t-20	5	ug-t-20w-r
	25	Conduit elbow 90 deg. 25mm EKF-Plast	10	ug-t-25	5	ug-t-25w-r
	32	Conduit elbow 90 deg. 32mm EKF-Plast	10	ug-t-32	–	–

Twin Wall Conduit Accessories

Picture	Name	Pipe diameter, mm	Item code
	Twin wall conduit spacer d=50mm quad black EKF-Plast	50	CL-50-4-2
	Twin wall conduit spacer d=63mm quad black EKF-Plast	63	CL-63-4-2
	Twin wall conduit spacer d=75mm quad black EKF-Plast	75	CL-75-4-2
	Twin wall conduit spacer d=90mm quad black EKF-Plast	90	CL-90-4-2
	Twin wall conduit spacer d=110mm quad black EKF-Plast	110	CL-110-4-2
	Twin wall conduit spacer d=160mm quad black EKF-Plast	160	CL-160-4-2
	Twin wall conduit spacer d=2000mm quad black EKF-Plast	200	CL200-4-2
	Twin wall conduit coupling d=40mm black EKF-Plast	40	CQR40
	Twin wall conduit coupling d=50mm black EKF-Plast	50	CQR50
	Twin wall conduit coupling d=63mm black EKF-Plast	63	CQR63
	Twin wall conduit coupling d=75mm black EKF-Plast	75	CQR75
	Twin wall conduit coupling d=90mm black EKF-Plast	90	CQR90
	Twin wall conduit coupling d=110mm black EKF-Plast	110	CQR110
	Twin wall conduit coupling d=160mm black EKF-Plast	160	CQR160
	Twin wall conduit coupling d=200mm black EKF-Plast	200	CQR200
	Twin wall conduit O-ring d=40mm black EKF-Plast	40	SR40
	Twin wall conduit O-ring d=50mm black EKF-Plast	50	SR50
	Twin wall conduit O-ring d=63mm black EKF-Plast	63	SR63
	Twin wall conduit O-ring d=75mm black EKF-Plast	75	SR75
	Twin wall conduit O-ring d=90mm black EKF-Plast	90	SR90
	Twin wall conduit O-ring d=1100mm black EKF-Plast	110	SR110
	Twin wall conduit end cap d=40mm red EKF-Plast	40	EC40
	Twin wall conduit end cap d=50mm red EKF-Plast	50	EC50
	Twin wall conduit end cap d=63mm red EKF-Plast	63	EC63
	Twin wall conduit end cap d=75mm red EKF-Plast	75	EC75
	Twin wall conduit end cap d=90mm red EKF-Plast	90	EC90
	Twin wall conduit end cap d=125mm red EKF-Plast	125	EC125
	Twin wall conduit end cap d=160mm red EKF-Plast	160	EC160
	Twin wall conduit end cap d=200mm red EKF-Plast	200	EC200
	Twin wall conduit end cap d=110mm red EKF-Plast	110	EC110

Electrical boxes

An electrical box, also known as a junction box or outlet box, is a protective enclosure used in electrical systems to house and protect wire connections, switches, receptacles (outlets), or other electrical devices. It provides a safe and accessible place for electrical connections to be made while preventing accidental contact with live wires, which could lead to electric shock or fires. Electrical boxes come in various shapes, sizes, and materials (metal such as steel, or non-metallic materials like PVC or plastic) appropriate for different applications and local electrical codes. They can be designed for installation inside walls (flush-mount), on wall surfaces (surface-mount), or in ceilings. Some are intended for indoor use, while others are designed for outdoor applications and may have features such as weatherproofing to protect against moisture and environmental conditions. The type of box needed depends on the specifics of the electrical project, including the type and number of wires being connected, whether it's for residential or commercial use, and the requirements for the area where it will be installed.

Stud partition wall boxes

Electrical boxes used in stud partition walls are designed to house and protect electrical connections, like switches, outlets, and wire splices. They provide a safe and secure enclosure to prevent electrical shocks, short circuits, and fire hazards by keeping the wiring isolated from flammable materials and other electrical components. Made of polypropylene to meet safety standards, these boxes can be used together with different types of conduits to build a complete wiring solution.

Metal or plastic clamps, optional terminal blocks and box covers

Flush-mounted for a clean finished look

Optional cover to convert mounting boxes to junction boxes

Knock-outs for connecting corrugated or rigid cable conduits

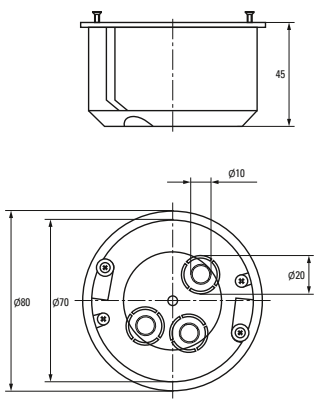
APPLICATION

Mounting and junction boxes are an ubiquitous and essential component of any household, commercial or industrial wiring system, providing cable splicing, branching and inspection points, as well as serving as mounting bases for wiring accessories and devices. Stud partition wall boxes are designed for quick, safe, and secure installation in framed walls.

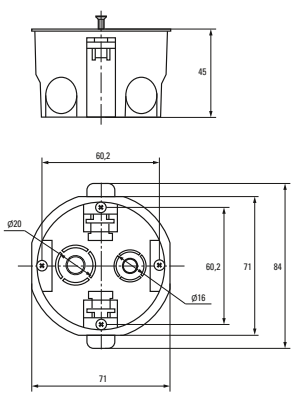
TECHNICAL DATA

Overall and installation dimensions

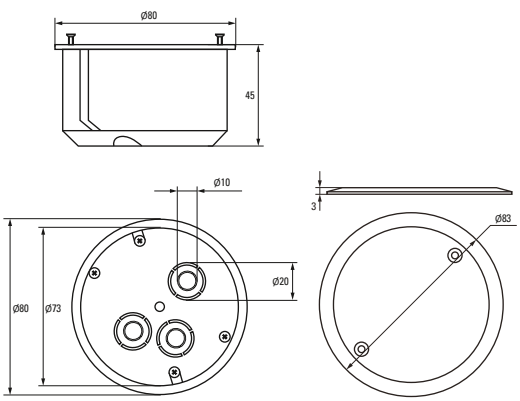
KMP-020-009



KMP-020-011



KMP-020-026



Picture	Name	Delivery scope		External size	Materials	Color	Degree of protection	Item code
	Stud partition wall mounting box with plastic clamps (71x45) IP30 EKF		Plastic clamps Universal cover* Item code: plc-kmt-100-015 Mounting box connector* Item code: plc-100-030	Ø 71 × 45	Polypropylene (PP)	Black	IP20	plc-kmt-020-011
	Stud partition wall mounting box with metal clamps (80x45) IP30 EKF		Metal clamps. Terminal block* Item code: plc-kmt-020-017 Universal cover* Item code: plc-kmt-100-015	Ø 80 × 45			IP30	plc-kmt-020-009
	Multipurpose mounting box with metal clamps and cover (80x45) EKF		Cover. Metal clamps Terminal block* Item code: plc-kmt-020-017		Polypropylene/ polystyrene	Black (white cover)	IP42	plc-kmt-020-026

* Sold separately

Masonry electrical boxes

Masonry electrical boxes are designed for wiring of electrical wiring accessories (socket outlets, switches, etc.) as well as for cable routing, splicing and branching in solid masonry walls. All electrical box models have multiple cable entry knockouts that can be used with both rigid and flex conduits. All boxes meet the requirements of applicable electrical codes and safety standards.

Flush-mounted for a clean finished look

Gangable models available

Optional cover to convert mounting boxes to junction boxes

Gangable, self-tapping screws, terminal block and box cover models available

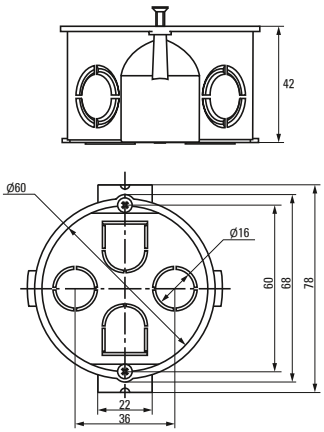
APPLICATION

Masonry electrical boxes are designed to be an essential component of concealed wiring systems.

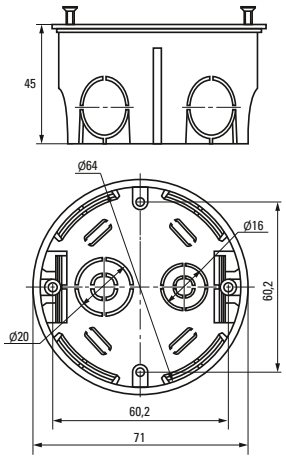
TECHNICAL DATA

Overall and installation dimensions

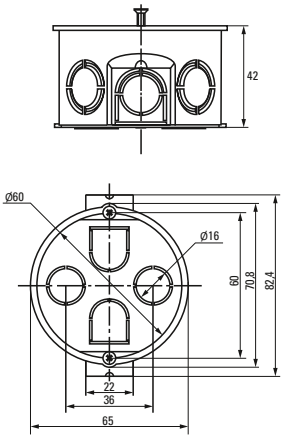
KMT-010-002



KMT-010-033



KMT-010-044



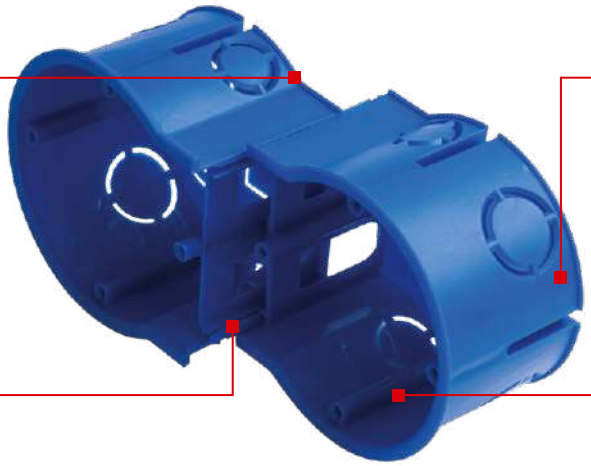
Picture	Name	Delivery scope		Size	Materials	Color	Degree of protection	Item code
	Masonry mounting box with self-tapping screws (68x42) IP20 EKF		Self-tapping screws included, gangable Universal cover* Item code: plc-kmt-100-015	Ø 68 × 42	polystyrene	Blue	IP20	plc-kmt-010-002
	Masonry mounting box with self-tapping screws (71x45) IP20 EKF		Self-tapping screws included Universal cover* Item code: plc-kmt-100-015	Ø 71 × 45	polystyrene	Blue	IP20	plc-kmt-010-033
	Gangable masonry mounting box with self-tapping screws (71x42) EKF		Self-tapping screws included, gangable Universal cover* Item code: plc-kmt-100-015	Ø 71 × 42	Polypropylene (PP)	Black	IP20	plc-kmt-010-044

* Sold separately

Modular gangable masonry mounting boxes

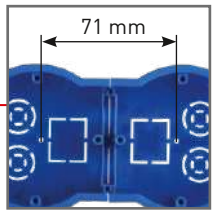
The novel design concept behind the new line of EKF modular gangable mounting boxes sets a new standard for the category. There can never be enough outlets in a modern world with rechargable mobile devices, and our modular solution helps in building safe, convenient and easy to configure multi-gang designs. By using only two parts - end and center sections you can quickly configure and install the desired number of mounting boxes for your wiring accessories.

Retail (with an individual sticker) and bulk order options



Made in Russia

Sections can be easily joined together to create multi-gang configurations



Precise 71 mm center distance between any joined sections. Plastic passes hot-wire test (650 °C)

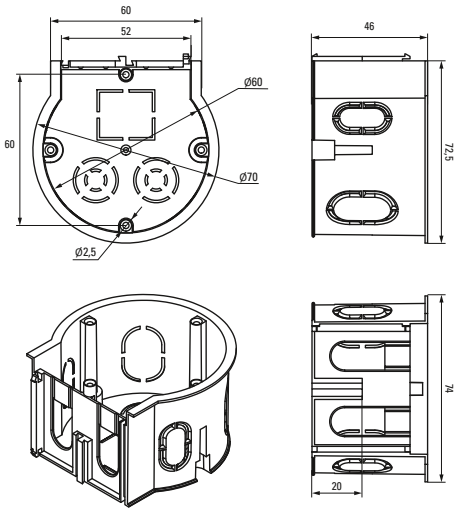
APPLICATION

Modular gangable masonry mounting boxes are the perfect solution for providing flexible multi-gang configurations for solid masonry wall applications as per user requirements

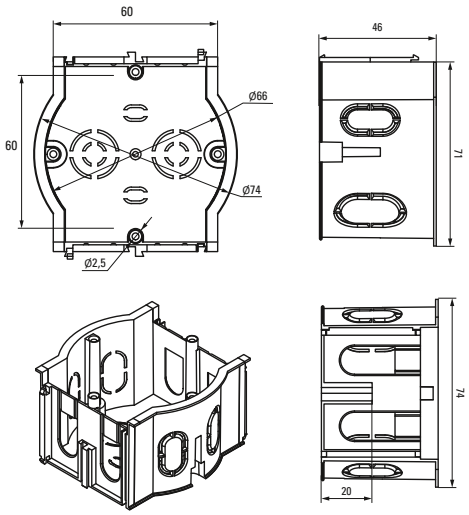
Picture	Name	Delivery scope	Size	Materials	Color	Degree of protection	Item code
	Modular gangable masonry mounting box with self-tapping screws (71x45) end section EKF	Self-tapping screws	71 × 45	Polypropylene (PP)	Blue	IP20	plc-kmt-010-4005
	Modular gangable masonry mounting box with self-tapping screws (71x45) end section retail EKF						plc-kmt-010-4005-r*
	Modular gangable masonry mounting box with self-tapping screws (71x45) center section EKF						plc-kmt-010-4007
	Modular gangable masonry mounting box with self-tapping screws (71x45) center section retail EKF						plc-kmt-010-4007-r*

* With retail sticker.

KMT-010-4005



KMT-010-4007



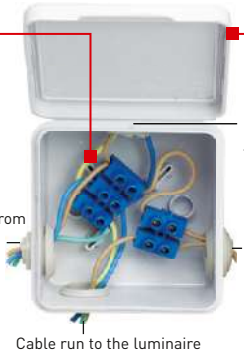
Surface-mounted junction boxes

Surface-mounted junction boxes are used with corrugated, rigid or reinforced cable conduits for power or low-voltage circuits. Cable glands enable safe and secure connection of corrugated, rigid or reinforced conduits that meets all safety standards. Junction boxes are mounted to walls, ceilings or cable trays.

Product range includes models with knock-out, cut-out and membrane entries

Available IP ratings: IP42, IP54 and IP55. Junction boxes are suitable for spaces with increased risk of mechanical stress and corrosive environment

To manage wires in the box, both screw and screwless terminals are available



Easy access to the wiring concealed behind a snap-on or screw-on cover

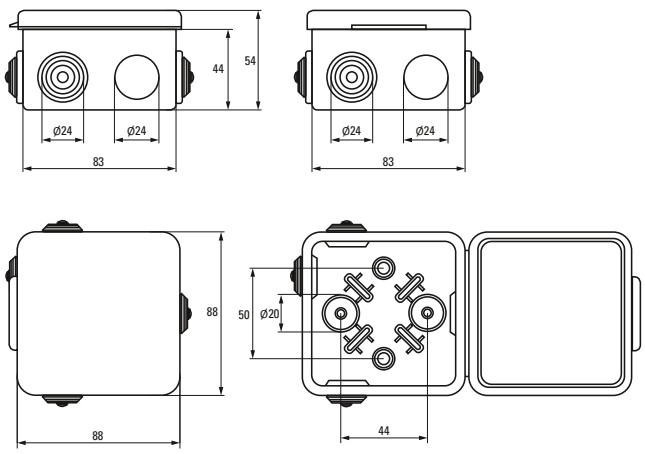
APPLICATION

Surface-mounted junction boxes are protective enclosures used to house, organize, and protect wire connections and electrical conduits in both residential and commercial settings. They are typically mounted on the surface of walls or ceilings and offer easy access for maintenance, as well as safeguarding electrical connections from environmental factors and tampering.

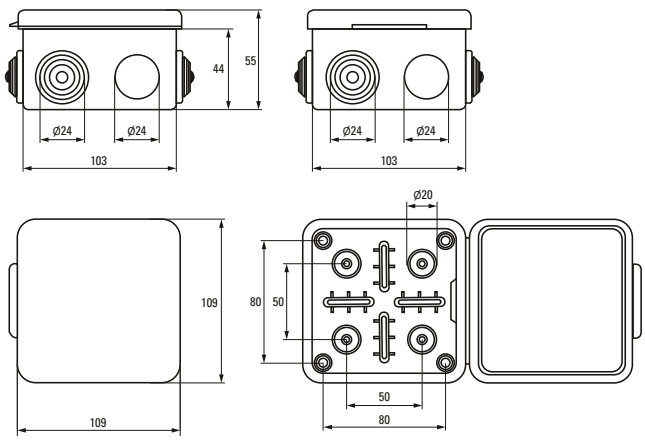
TECHNICAL DATA

Overall and installation dimensions

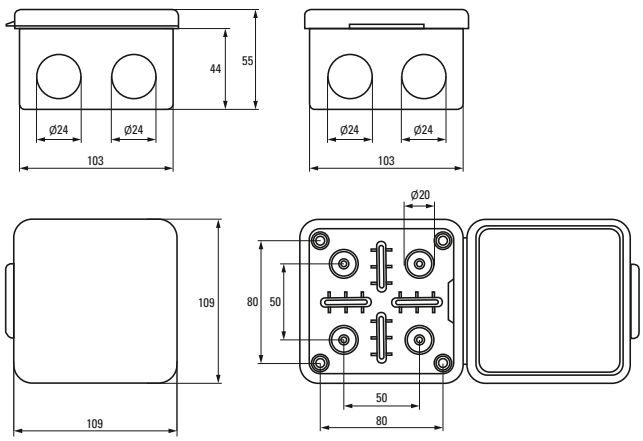
KMP-030-031



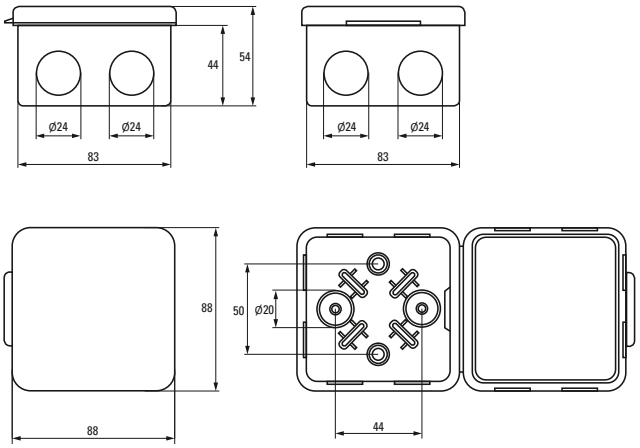
KMP-030-014



KMP-030-034



KMP-030-035



Picture	Name	Delivery scope	Size	Materials	Color	Degree of protection	Item code
	Junction box KMP-030-031 surface-mounted with cover, 8 membrane entries black IP55 retail sticker EKF	Cover. 8 membrane entries	83 × 83 × 54	Polypropylene, PVC	Black	IP54	plc-kmr-030-031-b
	Junction box KMP-030-014 with cover, 8 membrane entries black IP55 retail sticker EKF	Cover. 8 membrane entries	103 × 103 × 55				plc-kmr-030-014-b
	Junction box KMP-030-031 surface-mounted with cover, 8 membrane entries IP54 EKF	Cover. 8 membrane entries	83 × 83 × 54		Grey		plc-kmr-030-031 plc-kmr-030-031-r*
	Junction box KMP-030-014 surface-mounted with cover, 8 membrane entries IP54 EKF	Cover. 8 membrane entries	103 × 103 × 55				plc-kmr-030-014 plc-kmr-030-014-r*
	Junction box KMP-030-034 dust-/waterproof no membrane entries EKF	Snap-on cover	109 × 109 × 55				plc-kmr-030-034
	Junction box KMP-030-035 dust-/waterproof no membrane entries EKF	Snap-on cover	88 × 88 × 54				plc-kmr-030-035

Fire-resistant junction boxes IP55 EKF

Fire-resistant boxes are used for open wiring in fire-resistant cabling systems, for routing, branching and splicing cables, while ensuring their continued performance in the event of fire, as well as protecting wiring from dust and moisture ingress.

Junction boxes come with ceramic terminal blocks pre-installed

Membrane cable glands improve installation speed by over 30%

IP55 degree of protecytion

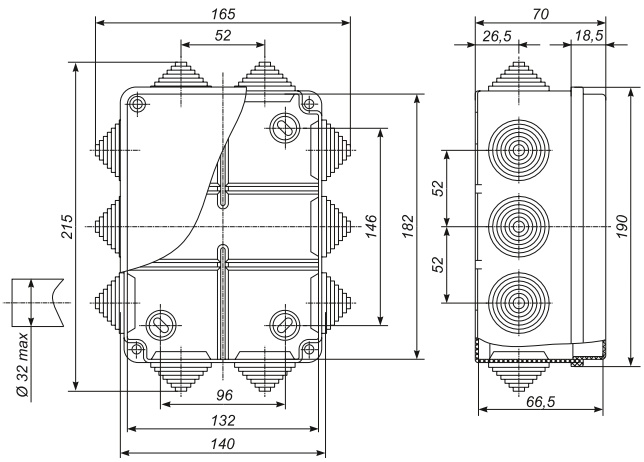
APPLICATION

Fire-resistant junction boxes are designed to maintain circuit integrity and prevent the spread of fire by housing electrical connections in a compartment that can withstand high temperatures. They are commonly used in buildings and structures where enhanced fire safety measures are essential, such as in industrial settings, commercial complexes, and multi-story residential buildings.

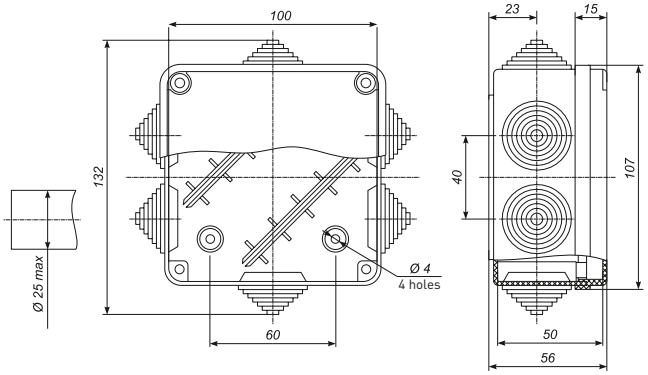
TECHNICAL DATA

Overall and installation dimensions

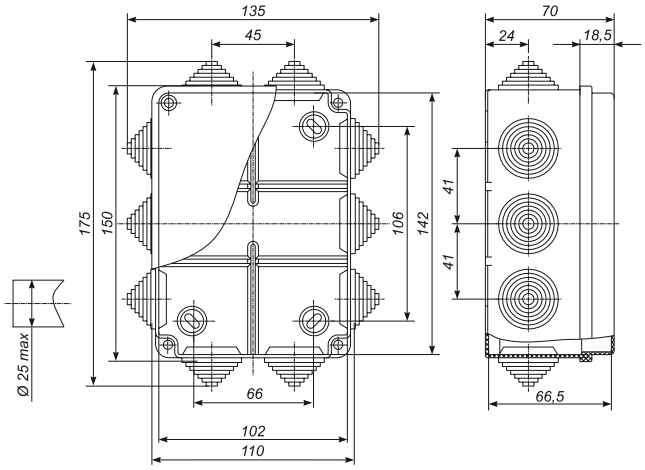
Fire-resistant box 190 × 140 × 70 mm



Fire-resistant box 100 × 100 × 50 mm



Fire-resistant box 150 × 110 × 70 mm



Name	Overall dimensions, mm	Number of terminal blocks	Cross-section of connected wires, mm²	Number of membrane entries, mm²	Item code
Fire-resistant junction box 100x100x50mm 1 triple terminal block 1,5-10mm² IP55 EKF	100 × 100 × 50	1	1,5-10	6	plc-kmrf-100-3-10
Fire-resistant junction box 100x100x50mm 2 double terminal blocks 1,5-2,5mm² IP55 EKF	100 × 100 × 50	2	1,5–2,5	6	plc-kmrf-100-4-02
Fire-resistant junction box 100x100x50mm 2 double terminal blocks 1,5-6mm² IP55 EKF	100 × 100 × 50	2	1,5–6	6	plc-kmrf-100-4-06
Fire-resistant junction box 100x100x50mm 3 double terminal blocks 1,5-10mm² IP55 EKF	100 × 100 × 50	3	1,5–10	6	plc-kmrf-100-6-10
Fire-resistant junction box 100x100x50mm 3 double terminal blocks 1,5-2,5mm² IP55 EKF	100 × 100 × 50	3	1,5–2,5	6	plc-kmrf-100-6-02
Fire-resistant junction box 100x100x50mm 3 double terminal blocks 1,5-6mm² IP55 EKF	100 × 100 × 50	3	1,5–6	6	plc-kmrf-100-6-06
Fire-resistant junction box 150x110x70mm 3 double terminal blocks 1,5-10mm² IP55 EKF	150 × 110 × 70	3	1,5–10	10	plc-kmrf-150-6-10
Fire-resistant junction box 150x110x70mm 3 double terminal blocks 1,5-6mm² IP55 EKF	150 × 110 × 70	3	1,5–6	10	plc-kmrf-150-6-06
Fire-resistant junction box 150x110x70mm 5 double terminal blocks 1,5-6mm² IP55 EKF	150 × 110 × 70	5	1,5–6	10	plc-kmrf-150-10-06
Fire-resistant junction box 190x140x70mm 10 double terminal blocks 0,5-4mm² IP55 EKF	190 × 140 × 70	10	0,5–4	10	plc-kmrf-190-20-04
Fire-resistant junction box 190x140x70mm 3 double terminal blocks 1,5-10mm² IP55 EKF	190 × 140 × 70	3	1,5–10	10	plc-kmrf-190-6-10
Fire-resistant junction box 190x140x70mm 3 double terminal blocks 1,5-25mm² IP55 EKF	190 × 140 × 70	3	1,5–25	10	plc-kmrf-190-6-25
Fire-resistant junction box 190x140x70mm 5 double terminal blocks 1,5-10mm² IP55 EKF	190 × 140 × 70	5	1,5–10	10	plc-kmrf-190-10-10
Fire-resistant junction box 190x140x70mm 7 double terminal blocks 0,5-4mm² IP55 EKF	190 × 140 × 70	7	0,5–4	10	plc-kmrf-190-14-04

Waterproof cable connectors FreeTools IP68 EKF

FreeTools cable connectors enable watertight connection, cable protection and circuit integrity. IP68 nylon connectors can be used under water and underground up to one meter at temperatures from -40 to +85°C with no risk of connection derating. With compact design, the connectors are easy to install in confined spaces. Cable connectors ensure stable performance of electrical circuits in lighting and ventilation systems, as well as reliable connection of industrial and transport electrical equipment.

IP68 — can be fully immersed under water up to one meter

Fast watertight connection of conductors with no special tools required

Screw or push-in terminal in the kit

Reusable. Two seals for use with different cable cross-sectons

APPLICATION

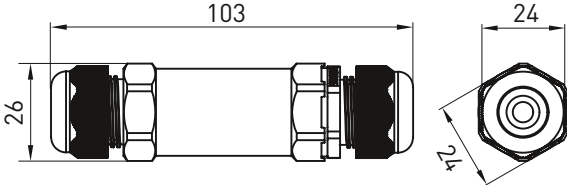
Waterproof cable connectors are designed for electrical connections that are exposed to moisture or submerged in water, ensuring a secure and watertight seal to prevent short circuits and corrosion. They are commonly used in outdoor lighting, marine applications, and industrial equipment where protection against water ingress is crucial for safety and functionality.

TECHNICAL DATA

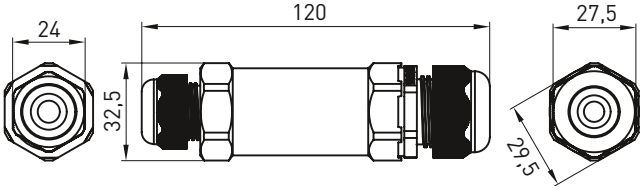
Parameters	Values
Degree of protection	IP68
Operating temperature, °C	from –40 to +85
Housing material	Polyamide 6.6
Seal material	Rubber
Contact part material	Nickel-plated brass (Cu = 52,8%, Zn = 30%, Ni = 15,1%)
Cable diameter with two rubber seals, mm	4–7
Cable diameter with one rubber seal, mm	7–12
Terminal housing material	Nylon
Max. tightening torque	1 N·m
UV resistance	Available

Overall and installation dimensions

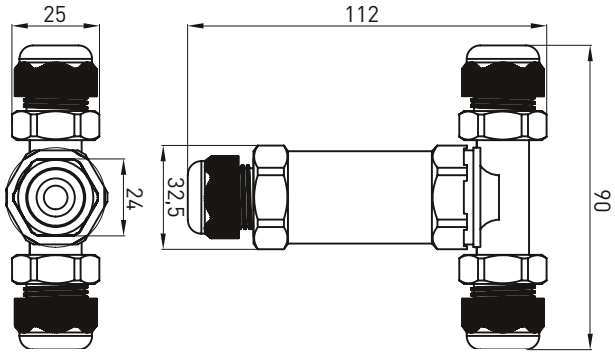
plc-uac-cb3



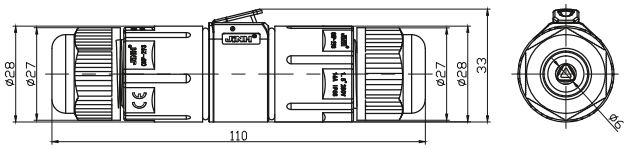
plc-uac-cb5



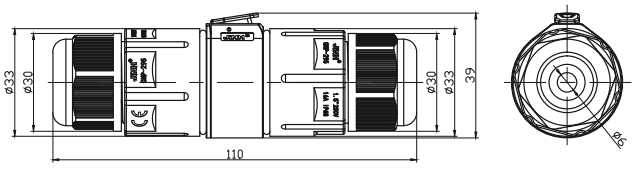
plc-uac-cb3t, plc-uac-cb5t



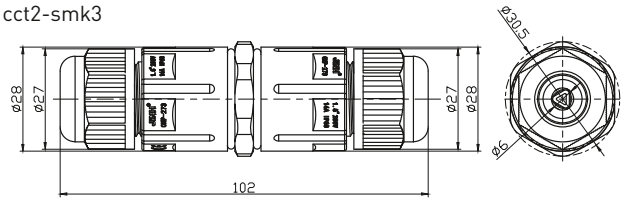
cct-smk3



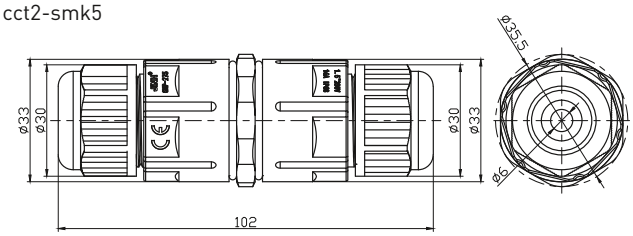
cct-smk5



cct2-smk3



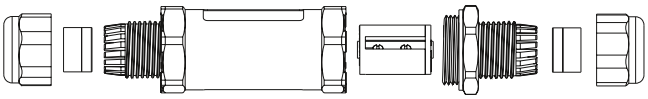
cct2-smk5



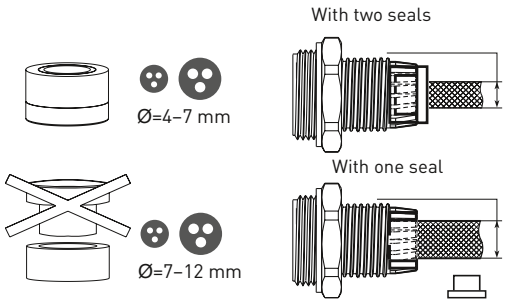
Installation and operation

WARNING! Turn off power before connecting or disconnecting any cables. Do not operate connectors with visual mechanical damage.

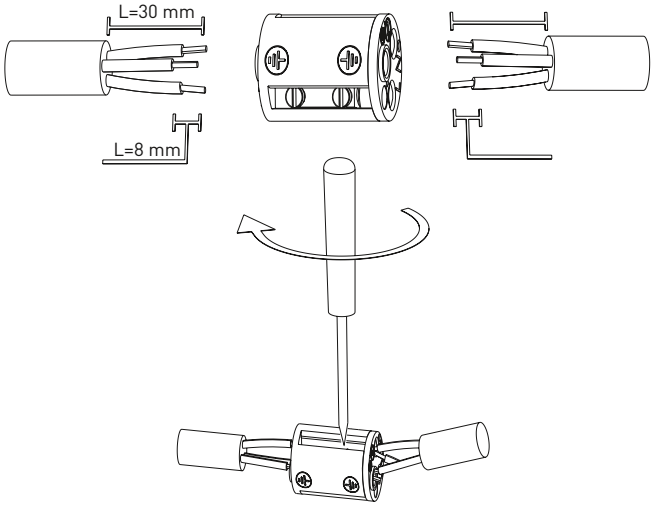
1. Open the connector, remove seal covers.



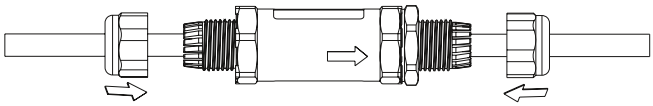
2. Place cables to be connected into the connector. For 4-7mm cables, use two rubber seals. For 7–12 mm cables, use a single rubber seal.



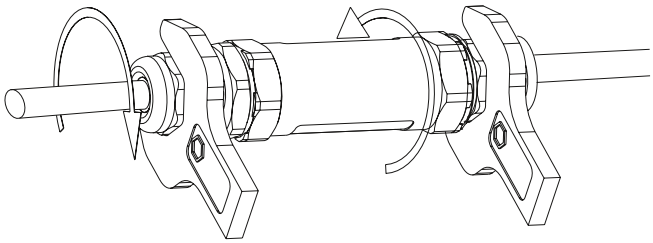
3. Prepare and connect cables with a terminal block.



4. Place the connected cables in the connector and close the cover tightly.



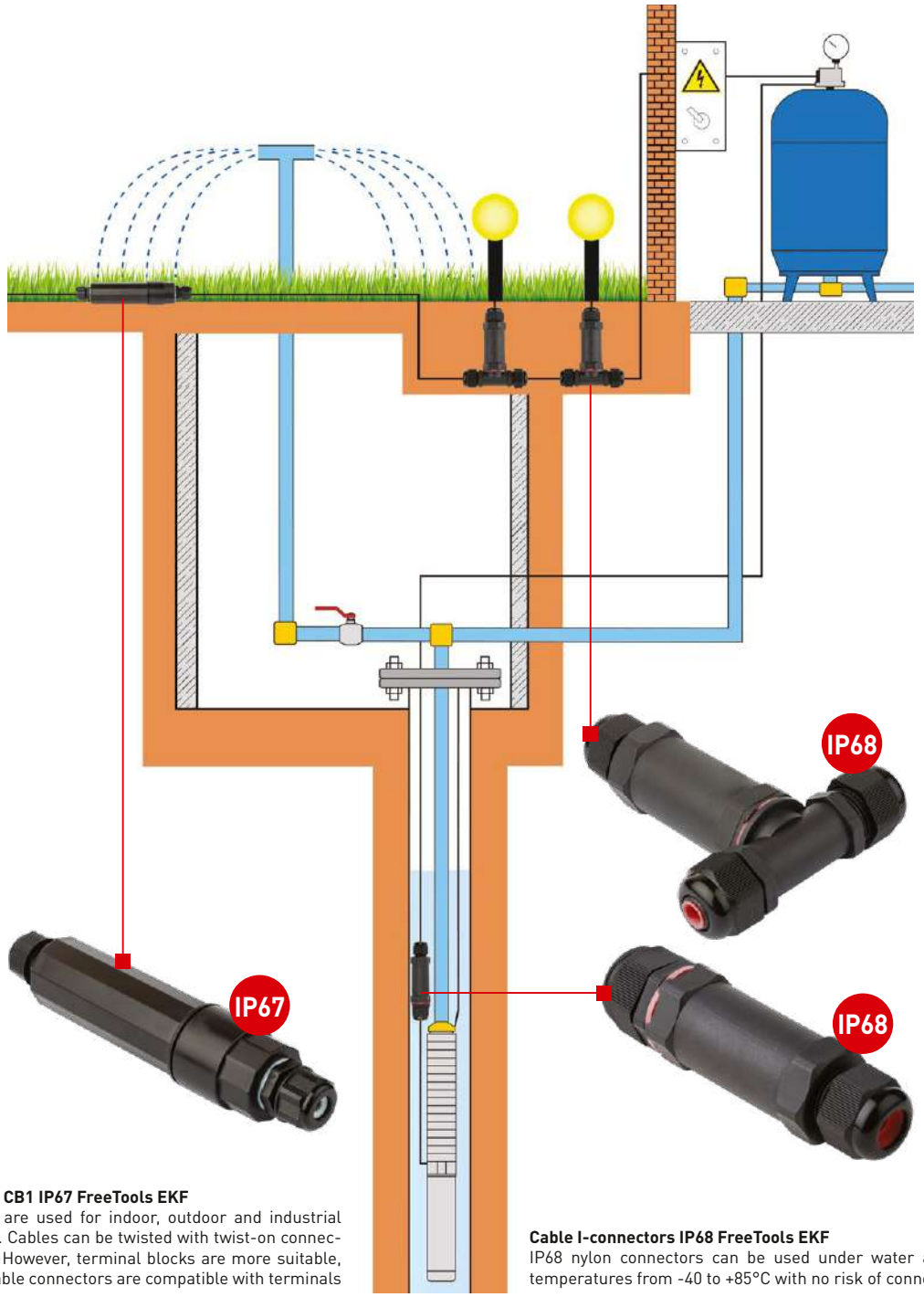
5. Torque the seal covers tight.



6. Inspect the assembled connector.

Picture	Name	Rated current, A	Cross-section, mm²	Item code
	Cable I-connector (terminal block 3PIN) IP68 FreeTools EKF	25	0,5–4,0	plc-uac-cb3
	Cable I-connector (terminal block 5PIN) IP68 FreeTools EKF	16	0,5–2,5	plc-uac-cb5
	Cable T-connector (terminal block 3PIN) IP68 FreeTools EKF	16	0,5–2,5	plc-uac-cb3T
	Cable T-connector (terminal block 5PIN) IP68 FreeTools EKF	16	0,5–2,5	plc-uac-cb5T
	Cable I-connector (SMK 3PIN) IP68 FreeTools EKF	16	0,5–1,5	cct-smk3
	Cable I-connector (SMK 5PIN) IP68 FreeTools EKF	16	0,5–1,5	cct-smk5
	Cable I-connector (SMK 3PIN) IP68 FreeTools EKF	16	0,5–1,5	cct2-smk3
	Cable I-connector (SMK 5PIN) IP68 FreeTools EKF	16	0,5–1,5	cct2-smk5

Common use cases



Cable connector CB1 IP67 FreeTools EKF
CB1 connectors are used for indoor, outdoor and industrial lighting systems. Cables can be twisted with twist-on connectors inside CB1. However, terminal blocks are more suitable, as EKF sealed cable connectors are compatible with terminals of any brand.

Cable I-connectors IP68 FreeTools EKF
IP68 nylon connectors can be used under water and underground at temperatures from -40 to +85°C with no risk of connection derating.

N
ВВОД
1
BASIC
АД-12 1P+N
C32
BASIC
BA 47-29/VA 47-29
C 16
230/400 V~
0 - ВЫКЛ
N
2

BASIC

Miniature circuit breakers VA 47-29 BASIC

Miniature circuit breakers VA 47-29 4,5kA BASIC offer dependable performance, including overload and short-circuit protection at a budget-friendly cost. VA 47-29 MCBs are available in one-, two-, and three-pole versions with both aluminium and copper connections supported.

Standard: IEC/EN 60898-1

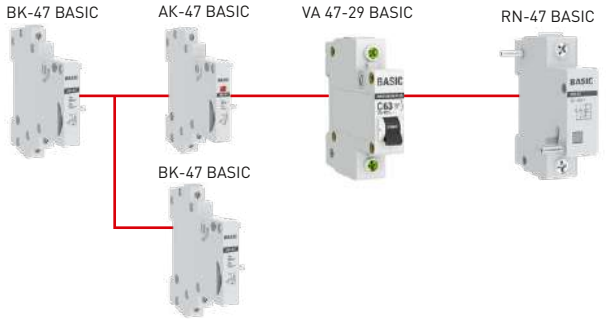
APPLICATION

Miniature circuit breakers VA 47-29 4,5kA up to 63A BASIC are used in public, commercial, industrial and residential buildings:

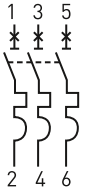
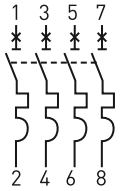
- carrying current under normal conditions;
- infrequent manual switching of individual circuit branches;
- protection against overload and short-circuit currents;
- final component of terminal power distribution system.

TECHNICAL DATA

Connection of accessories



Wiring diagrams

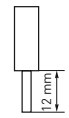
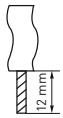
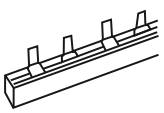
Number of poles			
1P	2P	3P	4P
			

Parameters	Values
Rated operating voltage Ue, V	230 / 400
Frequency, Hz	50 / 60
Number of poles	1; 2; 3; (4)
Rated current In, A	6–63
Rated impulse withstand voltage Uimp, kV	4
Tripping curve	B, C
Degree of protection	IP20
Rated breaking capacity Icn, A	4500
Energy limiting class	3
Mechanical endurance, O-C cycles	20 000
Electrical endurance, O-C cycles	6000
Operating temperature, °C	- 25 to +50
Cross-section of connected wires, mm^2	1–25
Max. tightening torque, N·m	2,5

BASIC

Installation and operation

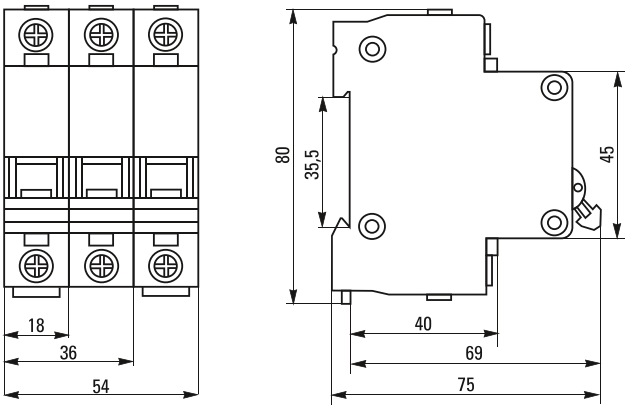
1. Connection

Conductor			Comb busbar
solid	stranded	ferrule	PIN
			

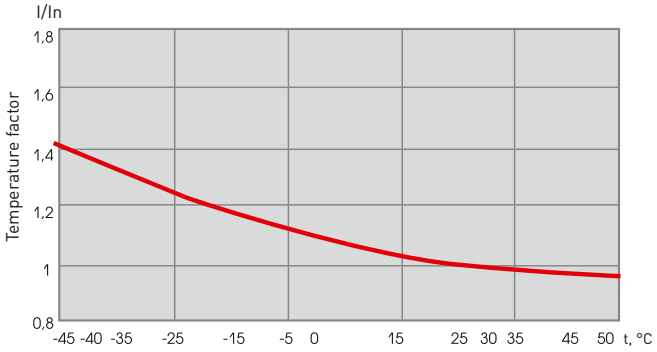
2. Accessories:

- Copper and aluminum wire connections are supported
- Alarm contact AK-47 BASIC (installed on the left)
- Auxiliary contact BK-47 BASIC (installed on the left)
- Shunt release RN-47 BASIC (installed on the right).

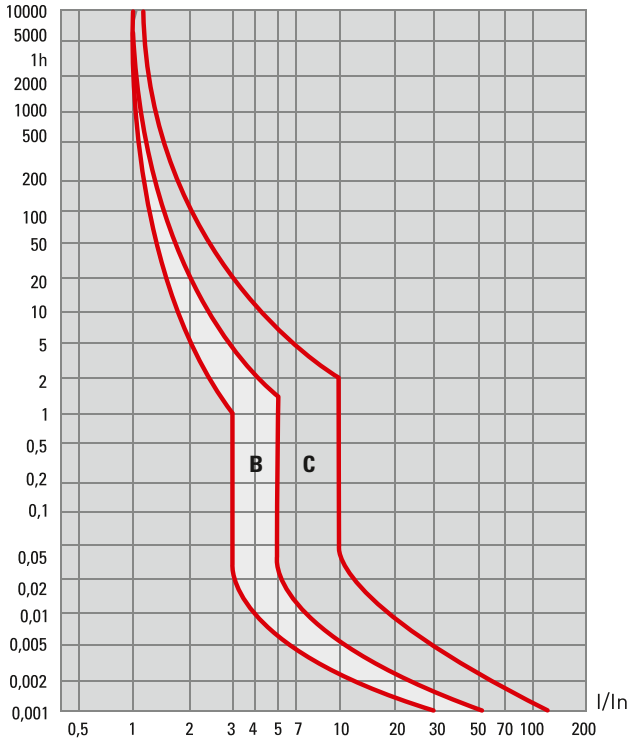
Overall and installation dimensions (mm)



Temperature derating



Tripping curves



B – electromagnetic protection trips at (3-5) × In.
C – electromagnetic protection trips at (5-10) × In.

Delivery scope

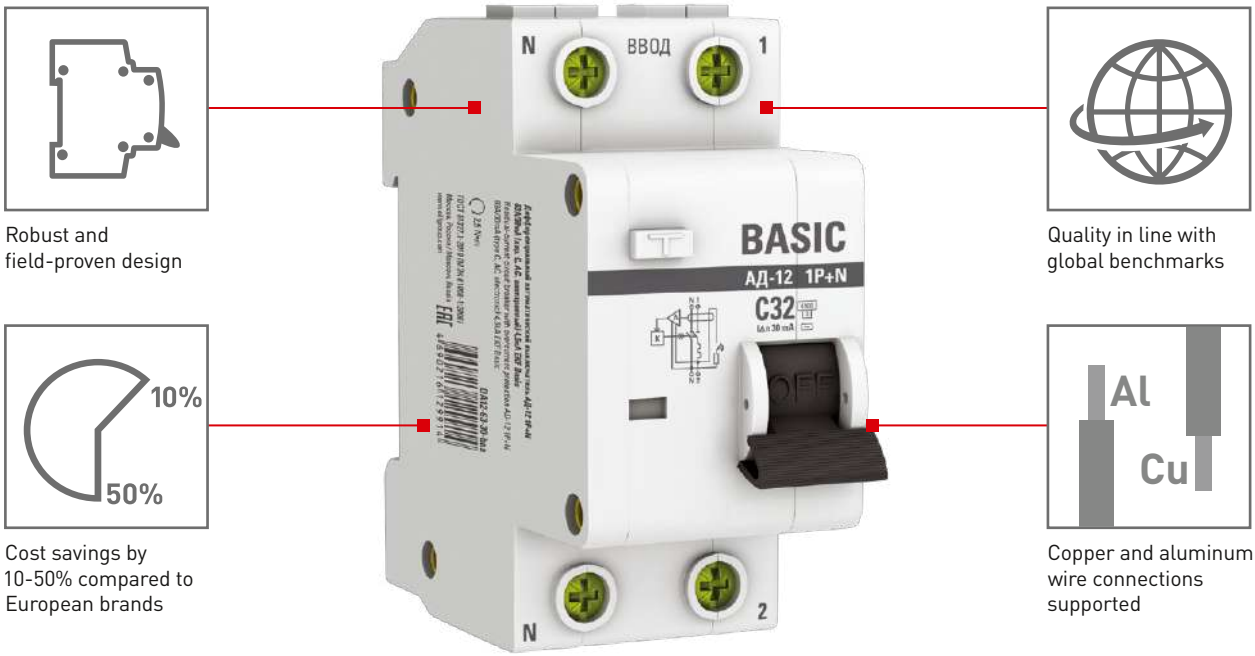
Miniature circuit breakers VA 47-29 BASIC are supplied in a group package.
For all available documentation, scan the QR-code on the insert or on the inside of the package.

Rated current, A	1P		2P		3P	
	B	C	B	C	B	C
6	mcb4729-1-06-B	mcb4729-1-06C	mcb4729-2-06-B	mcb4729-2-06C	mcb4729-3-06-B	mcb4729-3-06C
10	mcb4729-1-10-B	mcb4729-1-10C	mcb4729-2-10-B	mcb4729-2-10C	mcb4729-3-10-B	mcb4729-3-10C
16	mcb4729-1-16-B	mcb4729-1-16C	mcb4729-2-16-B	mcb4729-2-16C	mcb4729-3-16-B	mcb4729-3-16C
20	mcb4729-1-20-B	mcb4729-1-20C	mcb4729-2-20-B	mcb4729-2-20C	mcb4729-3-20-B	mcb4729-3-20C
25	mcb4729-1-25-B	mcb4729-1-25C	mcb4729-2-25-B	mcb4729-2-25C	mcb4729-3-25-B	mcb4729-3-25C
32	–	mcb4729-1-32C	–	mcb4729-2-32C	–	mcb4729-3-32C
40	–	mcb4729-1-40C	–	mcb4729-2-40C	–	mcb4729-3-40C
50	–	mcb4729-1-50C	–	mcb4729-2-50C	–	mcb4729-3-50C
63	–	mcb4729-1-63C	–	mcb4729-2-63C	–	mcb4729-3-63C

Residual current circuit breakers with overcurrent protection AD-12 BASIC

Residual current circuit breakers with overcurrent protection (RCBO) AD-12 BASIC combine the functions of circuit breakers and residual current devices. When the circuit breaker detects leakage current to the ground (fault) or overcurrent (overload or short circuit) in the protected circuit section, the RCBO trips to disconnect the circuit.

Standard: IEC/EN 61009-1



APPLICATION

- Protection of people against electric shock by direct & indirect contact;
- Protection of electrical equipment in the event of damaged insulation and faults;
- Protection of equipment against fires caused by leakage currents to housing or ground faults and subsequent short circuits;
- Auto disconnection of electrical circuit section in case of overload and short circuit.

TECHNICAL DATA

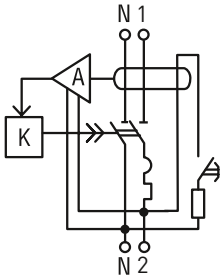
Connection of accessories

AD-12 BASIC

RN-47 BASIC

Wiring diagram

AD-12

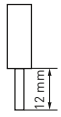
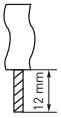


Parameters	Values
Rated operating voltage Ue, V	230
Frequency, Hz	50 / 60
Number of poles	1P+N
Rated current In, A	10–63
Neutral pole position	Left
Tripping curve	C
Degree of protection	IP20
Rated breaking capacity Icn, A	4500
Residual current protection type	Electronic
Residual current trip type	AC
Rated residual current IΔn, A	0,03
Energy limiting class	3
Mechanical endurance, O-C cycles	8000
Electrical endurance, O-C cycles	4000
Operating temperature, °C	from -20 to +50
Cross-section of connected wires, mm²	1–25
Max. tightening torque, N·m	2,5

BASIC

Installation and operation

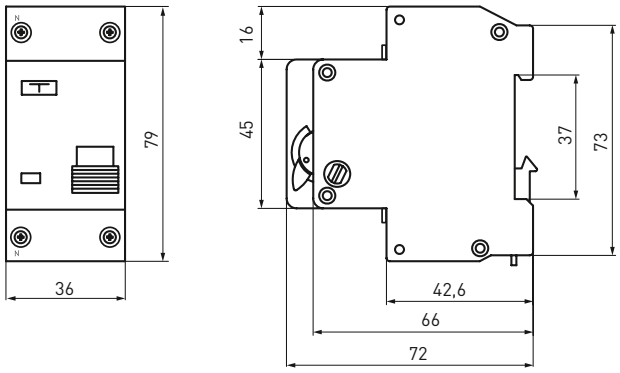
1. Connection

Conductor		
solid	stranded	ferrule
		

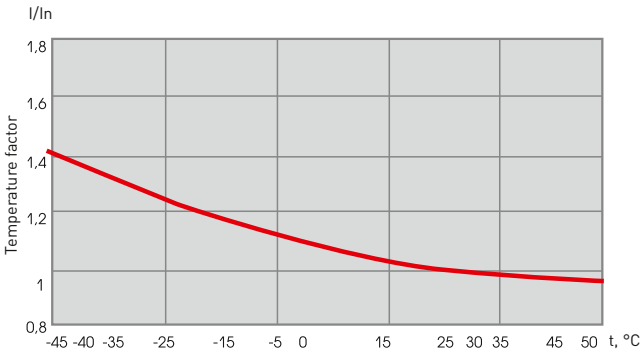
2. Accessories:

- Copper and aluminum wire connections are supported.
- Shunt release RN-47 EKF BASIC (installed on the right)

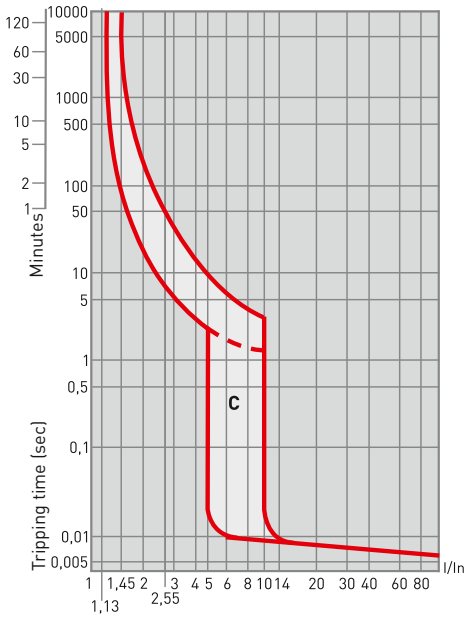
Overall and installation dimensions (mm)



Temperature derating

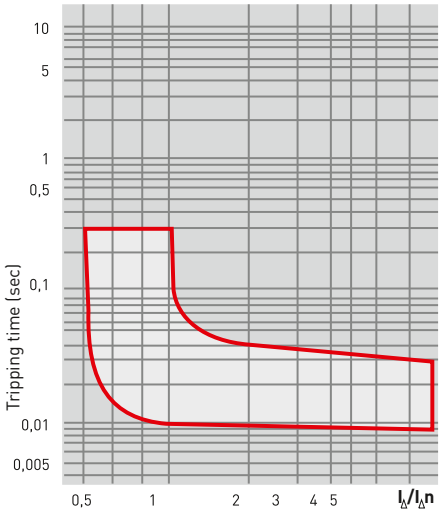


Tripping curve



C – electromagnetic protection trips at (5-10) × In.

At the ambient temperature of +30°C



Delivery scope

Residual current circuit breakers with overcurrent protection AD-12 BASIC are supplied in a group package.
For all available documentation, scan the QR-code on the insert or on the inside of the package.

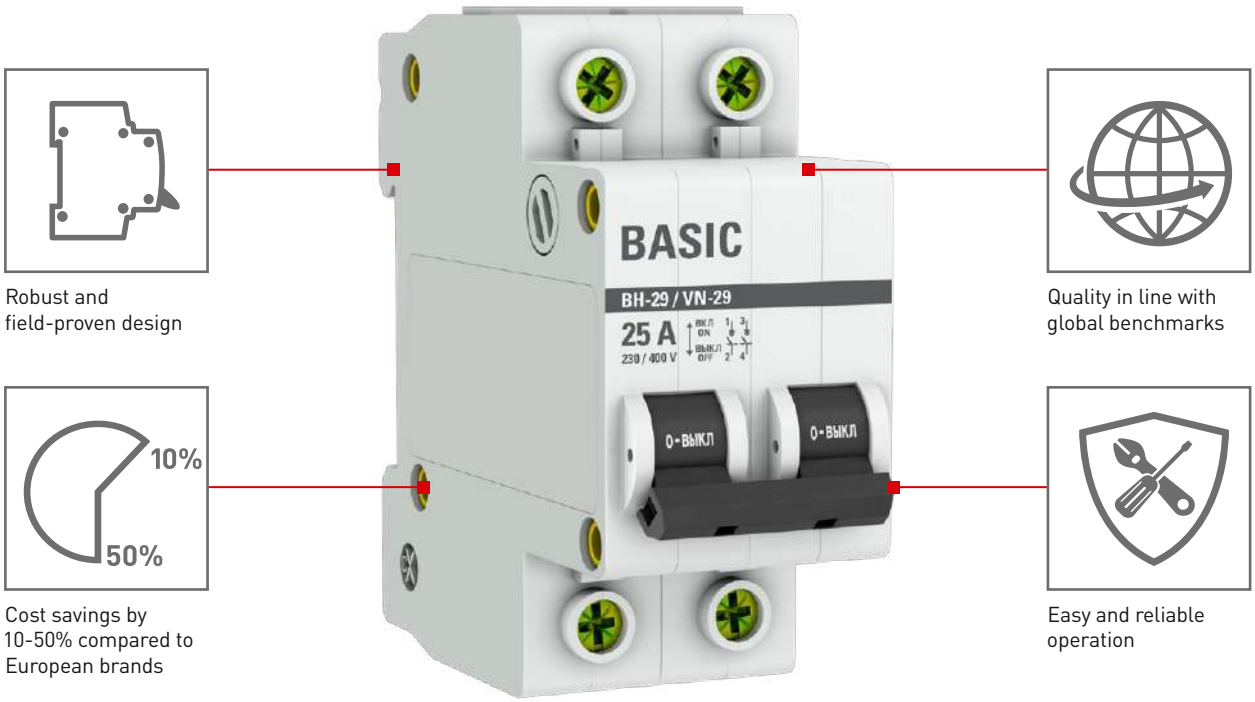
Name	Rated current, A	Item code
AD-12 1P+N 10A 30mA type AC curve C electronic 4,5kA BASIC	10	DA12-10-30-bas
AD-12 1P+N 16A 30mA type AC curve C electronic 4,5kA BASIC	16	DA12-16-30-bas
AD-12 1P+N 20A 30mA type AC curve C electronic 4,5kA BASIC	20	DA12-20-30-bas
AD-12 1P+N 25A 30mA type AC curve C electronic 4,5kA BASIC	25	DA12-25-30-bas
AD-12 1P+N 32A 30mA type AC curve C electronic 4,5kA BASIC	32	DA12-32-30-bas
AD-12 1P+N 40A 30mA type AC curve C electronic 4,5kA BASIC	40	DA12-40-30-bas
AD-12 1P+N 50A 30mA type AC curve C electronic 4,5kA BASIC	50	DA12-50-30-bas
AD-12 1P+N 63A 30mA type AC curve C electronic 4,5kA BASIC	63	DA12-63-30-bas

BASIC

Modular switch disconnectors VN-29 BASIC

Modular switch disconnectors VN-29 BASIC are used for close/open operations in electrical circuits. The switch disconnectors are available in one-, two-, three, and four-pole versions.

Standard: IEC/EN 60947-3



APPLICATION

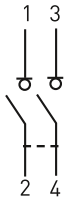
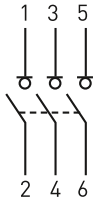
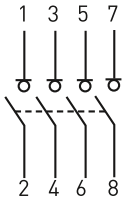
Modular switch disconnectors are used in commercial and residential buildings to:

- control electrical circuits;
- disconnect circuit sections for downstream maintenance;
- ensure safety when conducting maintenance work;
- provide continuous protection for operators.

TECHNICAL DATA

Connection of accessories

Wiring diagrams

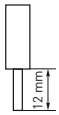
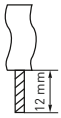
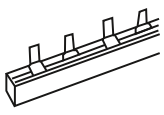
Number of poles			
1P	2P	3P	4P
			

Parameters	Values
Rated operating voltage Ue, V	230 / 400
Frequency, Hz	50 / 60
Poles	1; 2; 3; 4
Rated current In, A	16-63
Degree of protection	IP20
Rated short-time withstand current Icw, kA	1
Mechanical endurance, O-C cycles	20 000
Electrical endurance, O-C cycles	10 000
Operating temperature, °C	- 25 to + 50
Cross-section of connected wires, mm^2	1-25
Max. tightening torque, N·m	2,5

BASIC

Installation and operation

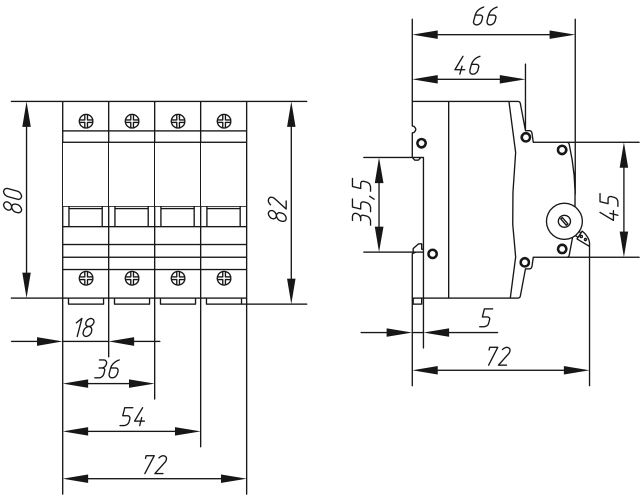
1. Connection

Conductor			Comb busbar
solid	stranded	ferrule	PIN
			

2. Accessories:

- Alarm contact AK-47 BASIC (installed on the left)
- Auxiliary contact BK-47 BASIC (installed on the left)
- Shunt release RN-47 EKF BASIC (installed on the right).

Overall and installation dimensions (mm)



Delivery scope

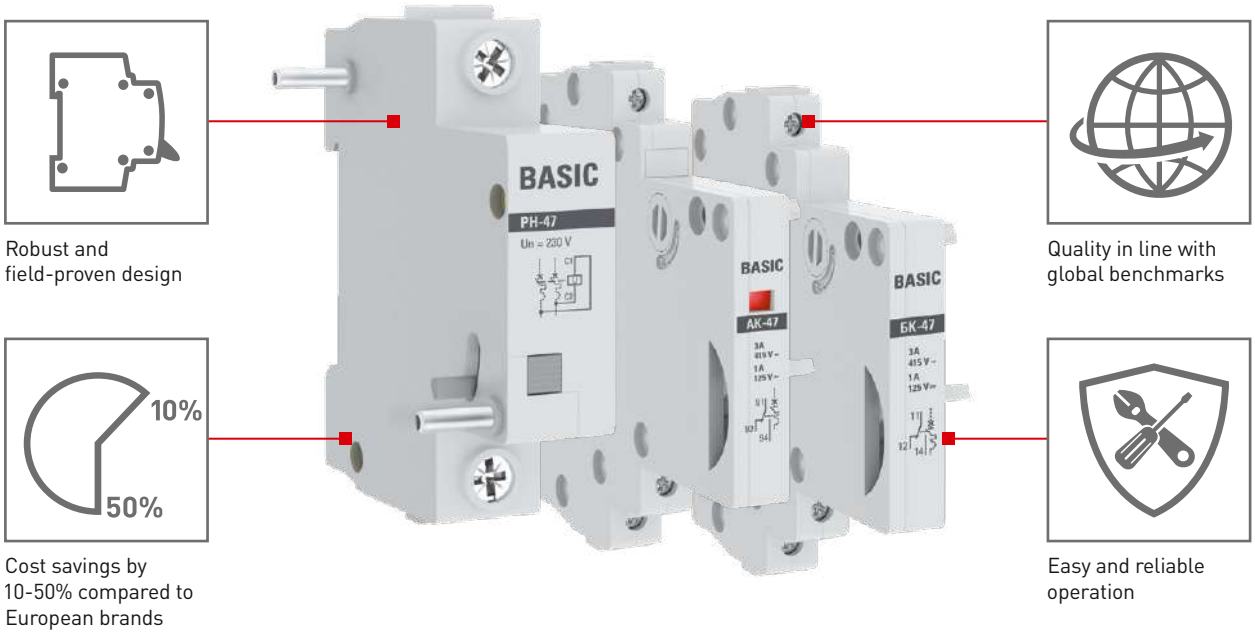
Modular switch disconnectors VN-29 BASIC are supplied in a group package.
For all available documentation, scan the QR-code on the insert or on the inside of the package.

Rated current, A	Item code			
	1P	2P	3P	4P
16	SL29-1-16-bas	SL29-2-16-bas	SL29-3-16-bas	SL29-4-16-bas
20	SL29-1-20-bas	–	–	–
25	SL29-1-25-bas	SL29-2-25-bas	SL29-3-25-bas	SL29-4-25-bas
32	–	–	SL29-3-32-bas	–
40	SL29-1-40-bas	SL29-2-40-bas	SL29-3-40-bas	SL29-4-40-bas
63	SL29-1-63-bas	SL29-2-63-bas	SL29-3-63-bas	SL29-4-63-bas

BASIC accessories

The BASIC accessories provide monitoring and control of modular devices at a reasonable price. They are compatible with the BASIC range of DIN rail modular equipment.

Standard: IEC/EN 60947-1



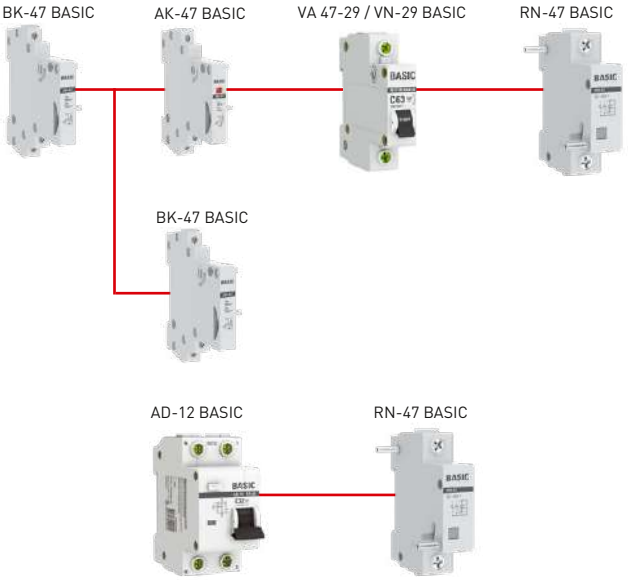
APPLICATION

Improving maintenance, monitoring and control capabilities of distribution panels.

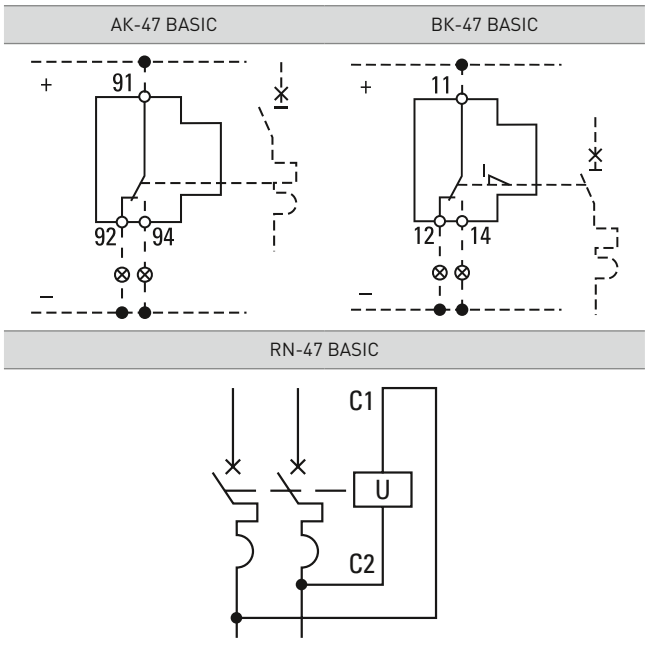
Main device	Accessories
Miniature circuit breakers VA 47-29 (4,5kA) up to 63A BASIC	Alarm contact AK-47 BASIC Auxiliary contact BK-47 BASIC Shunt release RN-47 BASIC
Residual current circuit breakers with overcurrent protection AD-12 up to 63A BASIC	Auxiliary contact BK-47 BASIC Shunt release RN-47 BASIC

TECHNICAL DATA

Connection of accessories



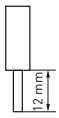
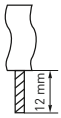
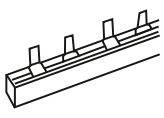
Wiring diagrams



BASIC

Installation and operation

1. Connection

Conductor			Comb busbar
solid	stranded	ferrule	PIN
			

2. Connection position

Auxiliary and alarm contacts are installed to the left, while release – to the right of devices. Install the pins (in the kit) before mounting the release.

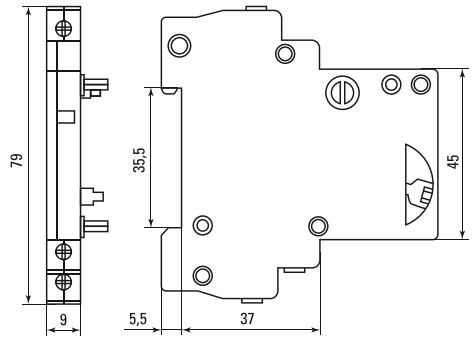
2. Shunt release operation

When the shunt release RN-47 trips, the «RETURN» button on the front panel pushes outward. To reclose a tripped circuit breaker, press the «RETURN» button until it latches. With this feature, you can identify the cause of circuit breaker tripping: overcurrent or overload in the protected circuit, invalid voltage, or remote trip. To prevent coil failure by overheating, the solenoid shall be controlled in pulse mode.

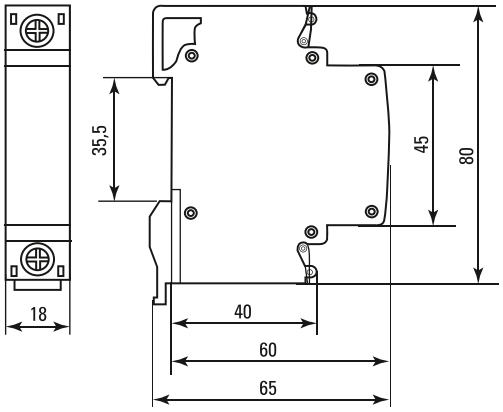
Parameters	AK-47	BK-47	RN-47
Rated current, A	1,3	1,3	1,3
Rated voltage, V	3/415 AC 1/125 DC	3/415 AC 1/125 DC	180–260
Size compared to 1 module (18mm)	0,5	0,5	1
Cross-section of connected wires, mm²	2,5	2,5	25

Overall and installation dimensions (mm)

AK-47 & BK-47



RN-47



Delivery scope

Accessories BASIC are supplied in a group package.
For all available documentation, scan the QR-code on the insert or on the inside of the package.

Picture	Name	Description	Item code
	Alarm contact AK-47 BASIC	Indicates circuit breaker tripping by fault. The contact switches only when the circuit breaker is tripped by overload or short circuit.	mdac-47-bas
	Auxiliary contact BK-47 BASIC	Indicates contact status, when the circuit breaker is closed/opened manually or is tripped by overload or short circuit.	mdbc-47-bas
	Shunt release RN-47 BASIC	Remotely trips the circuit breaker. Using a solenoid, the release trips the circuit breaker by actuating the MCB handle.	mdri-47-bas

EKF

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