2025/01

EKF

ENERGY
KNOWLEDGE
FUTURE

ELECTRICAL EQUIPMENT CATALOGUE

ekfgroup.com

ELECTRICAL EQUIPMENT CATALOGUE

EKF

EKF

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

IN-HOUSE R&D

COMPREHENSIVE RANGE OF ELECTRICAL PRODUCTS, CATERING TO DIVERSE APPLICATIONS

- over **20 years** of experience in electrical engineering
- over **2 000 employees** worldwide
- local presence **in 20 countries** across Middle East, Africa and Asia
- over **5 000 annual projects** globally with more than **1 000 engineering consultants and partners**
- over **19 000 SKUs**
- **35 000 m²** of manufacturing facilities in Russia and China
- global network of over **350 distributors**

EKF is represented in 20 countries across Middle East, Africa and Asia

EKFGROUP.COM

R&D AND MANUFACTURING

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

35 000 m^2 of **manufacturing facilities** in Russia and China

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**

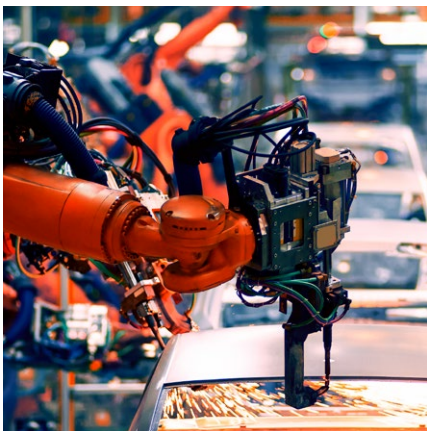
Products certified by DEKRA, TÜV (2020) and other globally accredited certification companies

CE IEC TÜV NORD ISO 9001 RoHS compliant NB-0018 SASO المواصفات السعودية Saudi Standards

TRUSTED ELECTRICAL SOLUTIONS

Over **5 000 projects implemented** every year

Over **1 000 engineering consultants** trust our equipment in designing energy efficient residential, commercial, and industrial facilities



LOCAL AND GLOBAL CUSTOMERS

Industry & Construction

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

Residential & Commercial

Over **5 000 facilities** utilize 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 drive **continuous innovation** through in-house R&D

We offer **exeptional value**

We maintain responsive communication **for efficient problem resolution**

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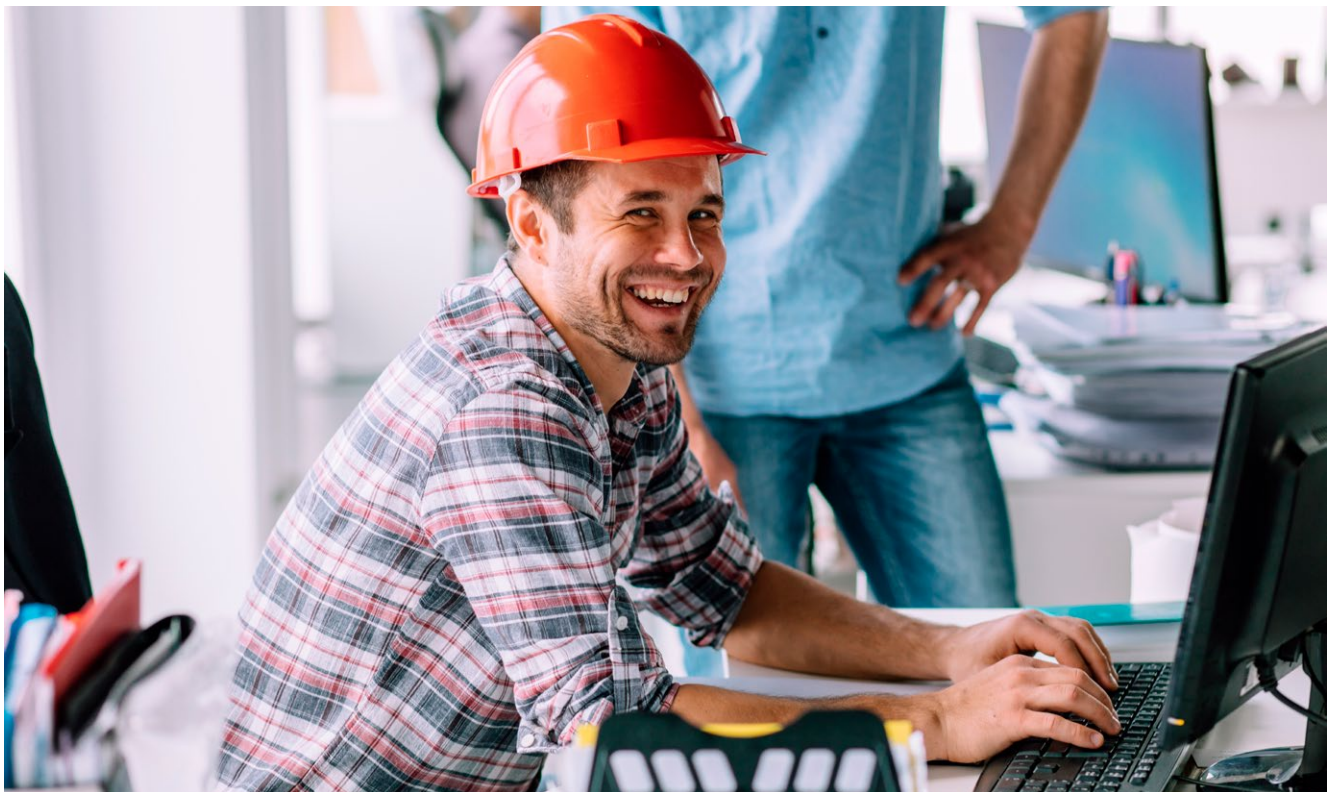
DIN Rail Modular Equipment



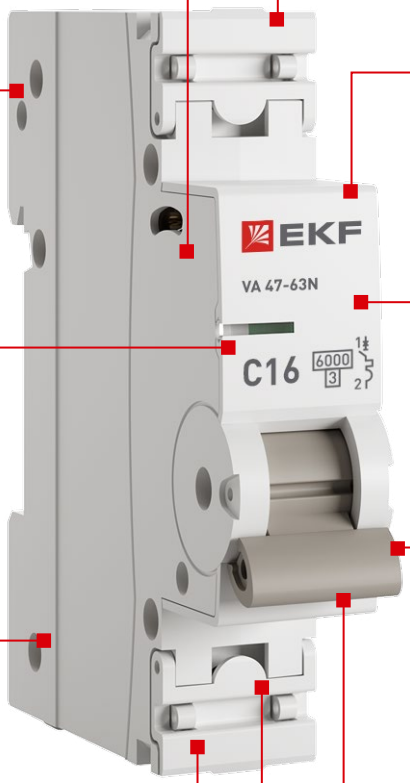
PROXIMA modular equipment offers a complete solution for any household, residential development, and industrial application. A comprehensive product range, advanced design, world-class quality and reliability standards, together with an extended EKF warranty make PROXIMA an ideal choice for meeting and 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 4,5 kA to 15 kA

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

Finger safe IP20 terminals

Wide variety of accessories extending device functions

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

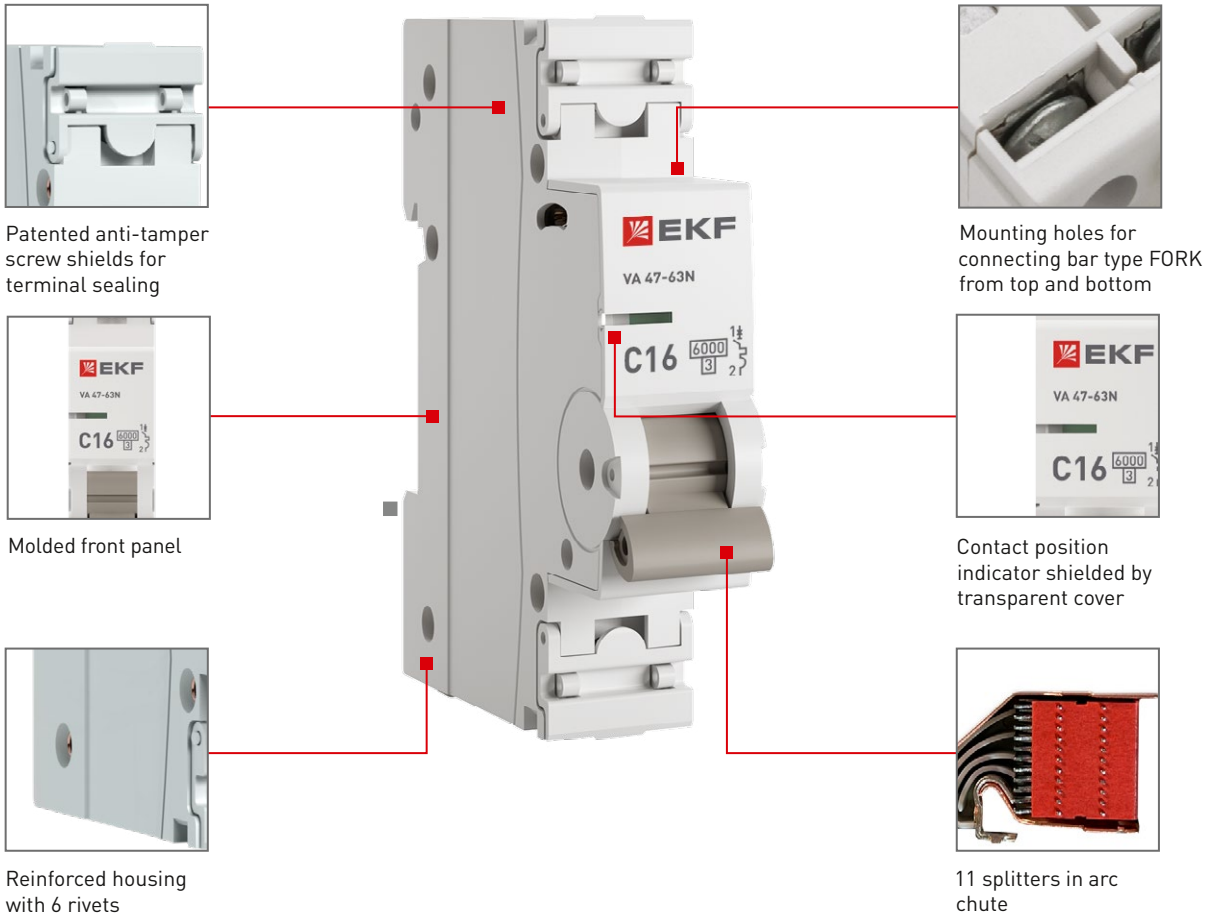
PROXIMA Miniature Circuit Breakers

Series	VA 47-63N	VA 47-100	VA 47-125	VA 47-63 1P+N	VA 47-63N DC
Contact position indicator	Yes	Yes	Yes	Yes	Yes
Standard	IEC 60898-1	IEC 60898-1	IEC 60947-2	IEC 60898-1	IEC 60947-2
Rated frequency [Fn, Hz]	50 / 60	50 / 60	50 / 60	50 / 60	–
Rated breaking capacity [Icn, kA]	4,5 / 6	10	15	6	6
Poles	1P, 2P, 3P, 4P	1P, 2P, 3P, 4P	1P, 2P, 3P, 4P	1P+N	1P. 2P
Rated operation voltage [Ue, V]	1P: 220/380; 230/400; 240/415 2P: 220/380; 230/400; 240/415 3P: 380; 400; 415 4P: 380; 400; 415	1P: 220/380; 230/400; 240/415 2P: 220/380; 230/400; 240/415 3P: 380; 400; 415 4P: 380; 400; 415	1P: 220/380; 230/400; 240/415 2P: 220/380; 230/400; 240/415 3P: 380; 400; 415 4P: 380; 400; 415	220 / 230 / 240	1P: 250 2P: 500
Rated Current [In, A]	1; 2; 3; 4; 6; 10; 13; 16; 20; 25; 32; 40; 50; 63	10; 16; 20; 25; 32; 35; 40; 50; 63; 80; 100; 125	10; 16; 20; 25; 32; 40; 50; 63; 80; 100; 125	6, 10, 16, 20, 25, 32, 40	1, 2, 3, 4, 5, 6, 10, 13, 16, 20, 25, 32, 40, 50, 63
Tripping curves [type]	B, C, D	C, D	C, D	C, (B)	C
Rated impulse withstand voltage [Uimp, kV]	4	4	4	4	6,2
Energy limit class	3	3	3	3	3
Degree of protection	IP20	IP20	IP20	IP20	IP20
Mechanical endurance [cycles]	20 000	20 000	20 000	20 000	20 000
Electrical endurance [cycles]	10 000	8000	8000	10 000	10 000
Operation ambient temperature [°C]	-40 to +55	-25 to +50	-25 to +50	-25 to +55	-25 to +50
Cross-section of connected wires [mm²]	1-25	1-35	1-50	1-10	1-25
Tightening torque [N·m]	3	2,5	2,5	1,2	3
Line incoming type	Top or bottom	Top or bottom	Top or bottom	Top or bottom	Top or bottom
Accessories	Yes	Yes	–	–	Yes

Miniature circuit breakers VA 47-63N PROXIMA EKF

Miniature circuit breakers VA 47-63N PROXIMA EKF are electromechanical switching devices combining two main functions: short circuit protection and overload protection. Miniature circuit breakers (MCBs) are designed for residential and housing applications and comply with IEC 60898-1. The MCBs in this series feature an advanced design, including sealable plastic screw shields that cover the screw terminals to prevent unauthorized access to wires. Additionally, they have a reinforced housing with extra rivets for enhanced rigidity, and the front panel includes an indicator to show the physical contact position. The two-position clamp ensures easy MCB mounting onto a DIN rail.

Standard: IEC 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

Reinforced housing with 6 rivets

11 splitters in arc chute

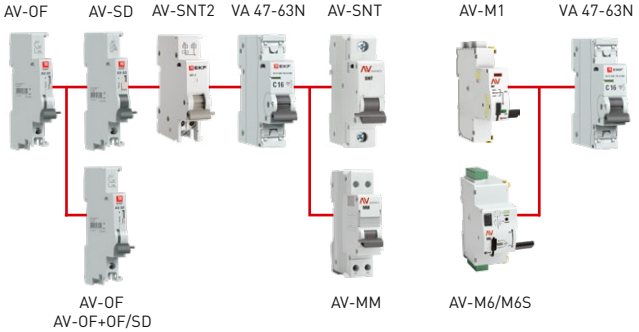
APPLICATION

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

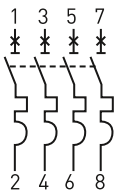
- Carrying current under normal conditions;
- Infrequent manual switching of individual circuit branches;
- Protection against overload and short-circuit currents;
- Final component of terminal power distribution system.

TECHNICAL DATA

Connection of accessories

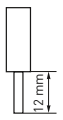
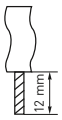
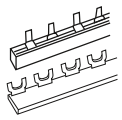


Wiring diagrams

Number of poles			
1P	2P	3P	4P
			

Installation and operation

1. Connection

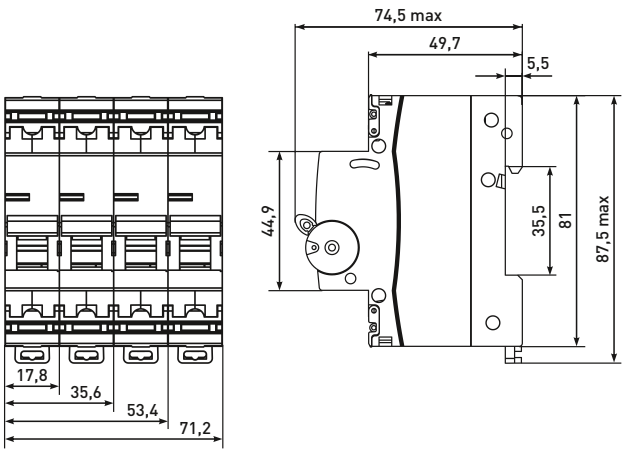
Conductor			Comb busbar
Solid	Stranded	Ferrule	Pin, fork
			

2. Accessories:

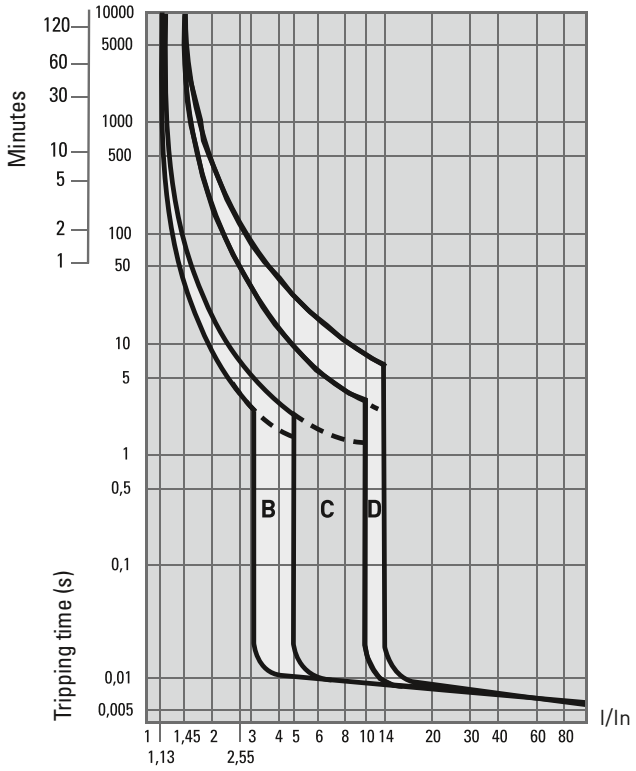
- Auxiliary contact AV-OF EKF (installed on the left)
- Alarm contact AV-SD EKF (installed on the left)
- Combined auxiliary and alarm contact AV-OF+OF/SD (installed on the left)
- Shunt release AV-SNT2 EKF (installed on the left)
- Overvoltage and undervoltage release AV-MM AVERES EKF (installed on 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	1P: 220/380; 230/400; 240/415 2P: 220/380; 230/400; 240/415 3P: 380; 400; 415 4P: 380; 400; 415
Frequency fn, Hz	50 / 60
Number of poles	1, 2, 3, 4
Rated current In, A	1; 2; 3; 4; 6; 8; 10; 13; 16; 13; 20; 25; 32; 40; 50; 63
Rated impulse withstand voltage Uimp, kV	4
Tripping types	B, C, D
Degree of protection	IP20
Rated breaking capacity Icn, kA	4,5 / 6
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)

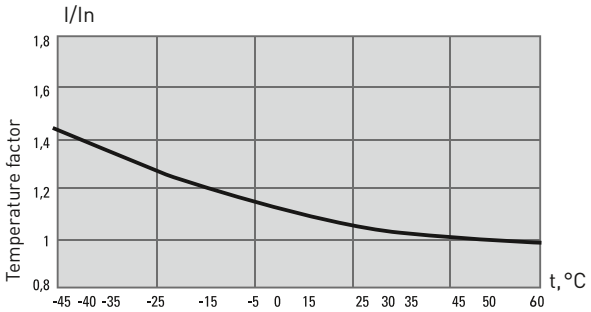


Tripping curves



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.

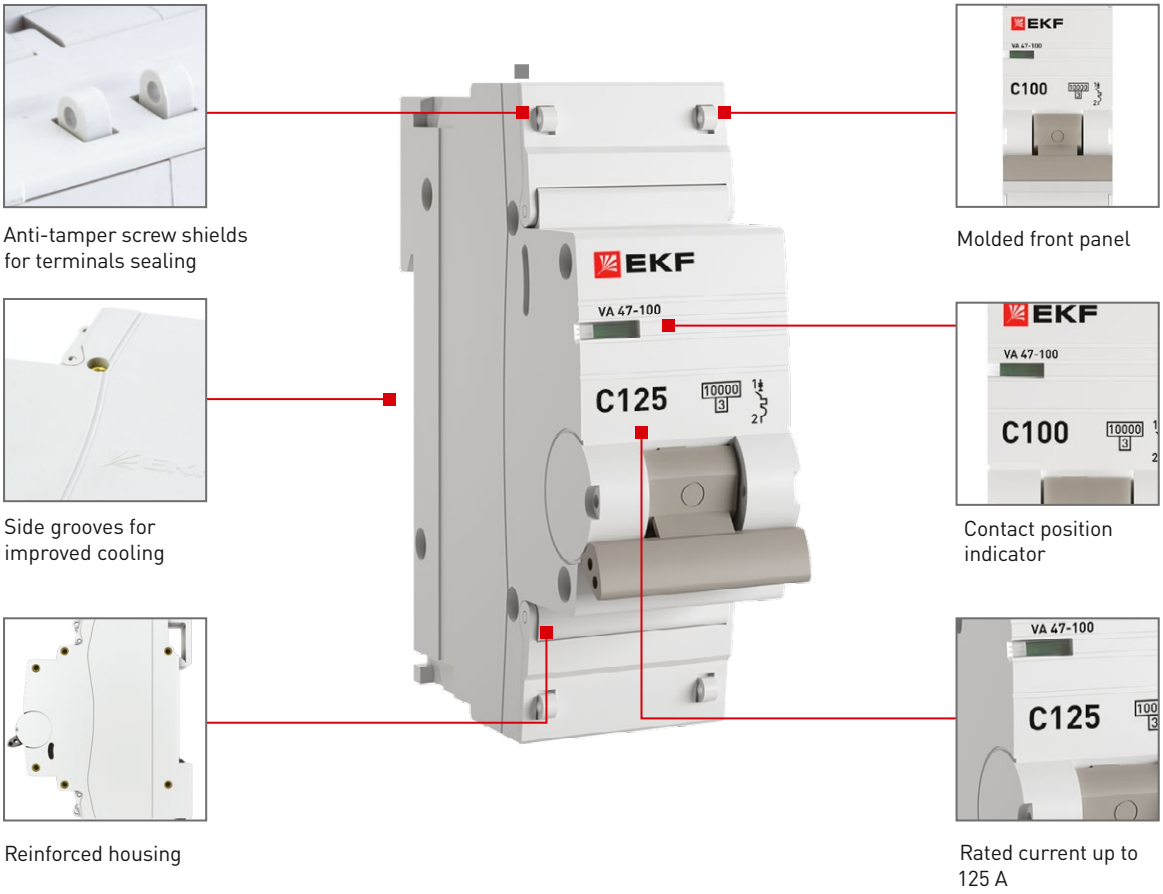
For all available documentation, scan the QR-code on the insert or on the inside of the package.

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 47-100 PROXIMA EKF

Due to their high breaking capacity limit of 10 kA, miniature circuit breakers VA 47–100 PROXIMA EKF combine all the features of the previous model (interchangeable) and the latest innovations. The MCB housing is 1,5 module (27 mm) wide with rated current up to 125A.

Standard: IEC 60898-1



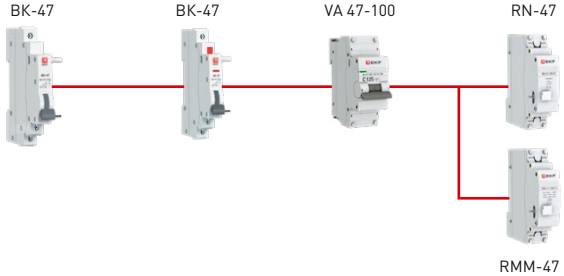
APPLICATION

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

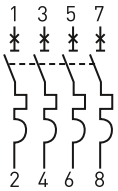
- Current carrying under normal conditions;
- Infrequent manual switching of individual circuit branches;
- Protection against overload and short-circuit currents;
- Final component of terminal power distribution system.

TECHNICAL DATA

Connection of accessories

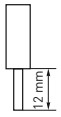
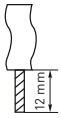
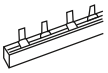


Wiring diagrams

Number of poles			
1P	2P	3P	4P
			

Installation and operation

1. Connection

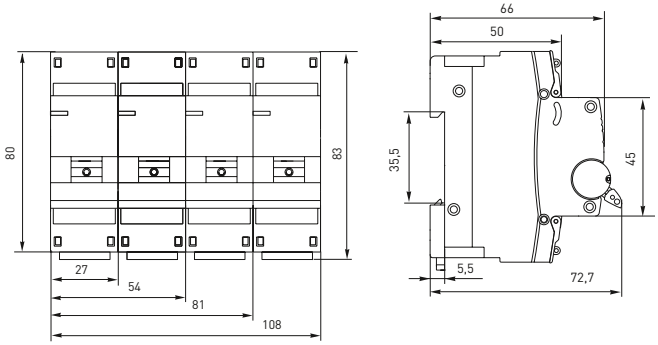
Conductor			Comb busbar
Solid	Starnded	Ferrule	Pin
			

2. Accessories:

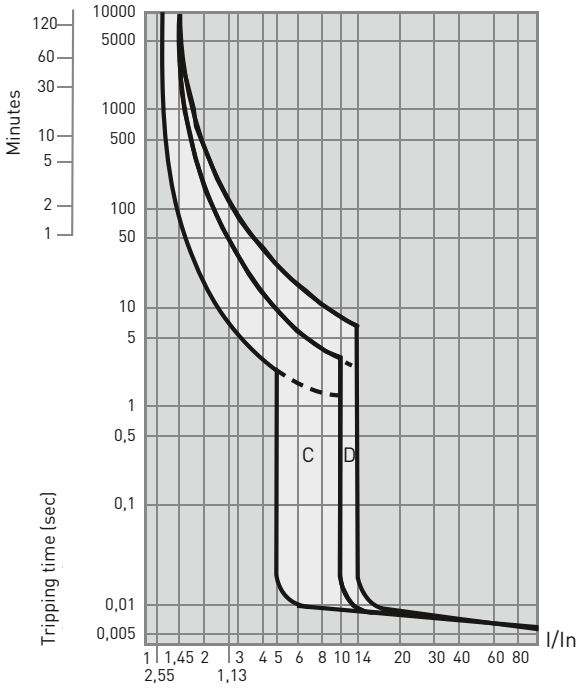
- Auxiliary contact BK-47 PROXIMA EKF (installed on the left)
- Overvoltage and undervoltage release RMM-47 PROXIMA EKF (installed on the right)
- Shunt release RN-47 PROXIMA EKF (installed on the right)
- Copper and aluminum wire connections are supported.

Parameters	Values
Rated voltage Ue, V	1P: 220/380; 230/400; 240/415 2P: 220/380; 230/400; 240/415 3P: 380; 400; 415 4P: 380; 400; 415
Frequency fn, Hz	50 / 60
Number of poles	1, 2, 3, 4
Rated current In, A	10; 16; 20; 25; 32; 35; 40; 50; 63; 80; 100; 125
Rated impulse withstand voltage Uimp, kV	4
Tripping curve types	C, D
Degree of protection	IP20
Rated breaking capacity Icn, kA	10
Energy limiting class	3
Mechanical endurance, O-C cycles	20 000
Electrical endurance, O-C cycles	8000
Operating temperature, °C	-25 to +55
Cross-section of connected wires, mm²	1–35
Max. tightening torque, N·m	2,5

Overall and installation dimensions (mm)

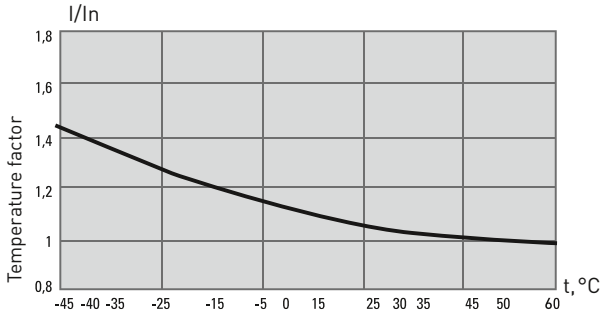


Tripping curves



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.

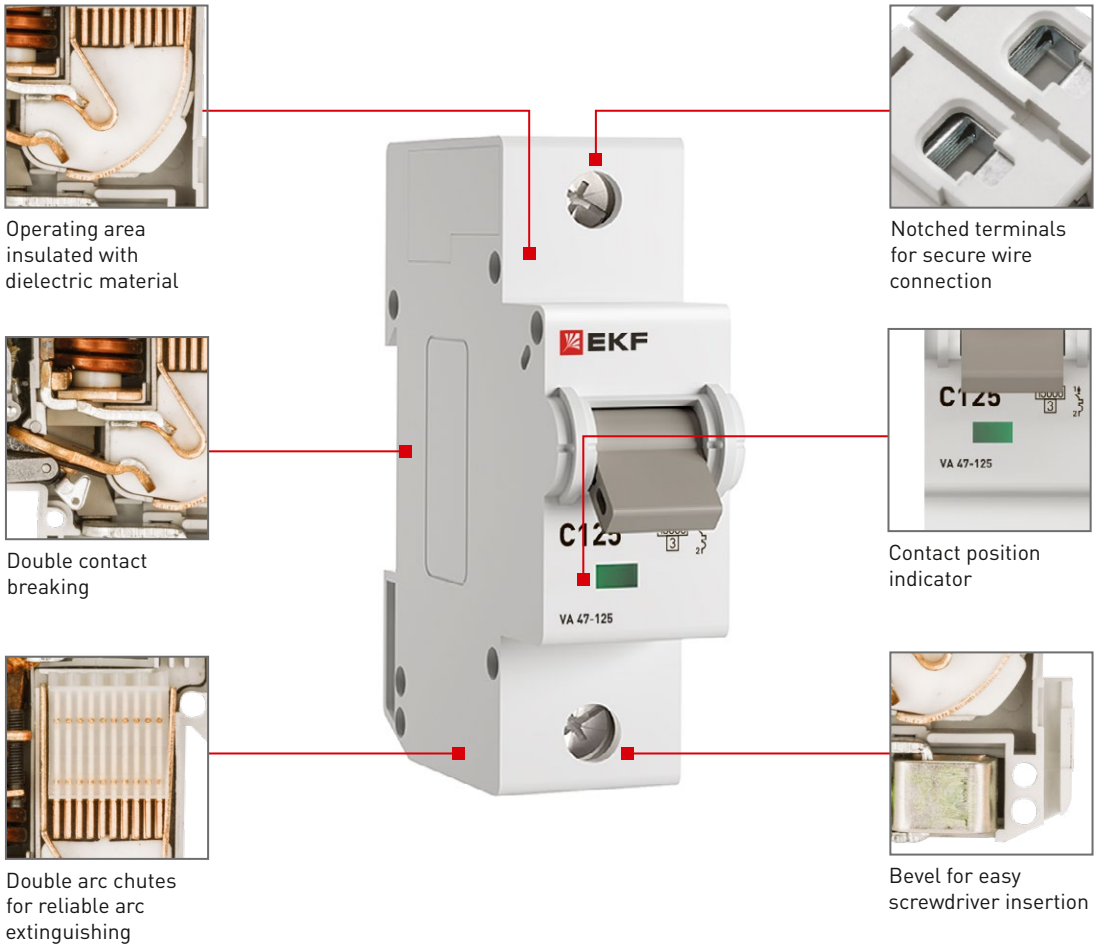
For all available documentation, scan the QR-code on the insert or on the inside of the package.

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 a high breaking capacity of 15 kA, can replace standard power circuit breakers in certain applications. These miniature circuit breakers (MCBs) are 1,5-module (27 mm) wide, feature a rated current of up to 125 A. Double contact breaking and two arc chutes ensure reliable arc extinguishing, while silver-impregnated contacts optimize current conductivity.

Standard: IEC 60947-2



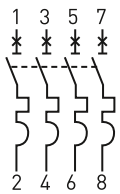
APPLICATION

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 60947-2 standard.

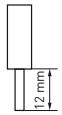
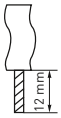
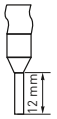
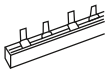
TECHNICAL DATA

Wiring diagrams

Number of poles			
1P	2P	3P	4P
			

Installation and operation

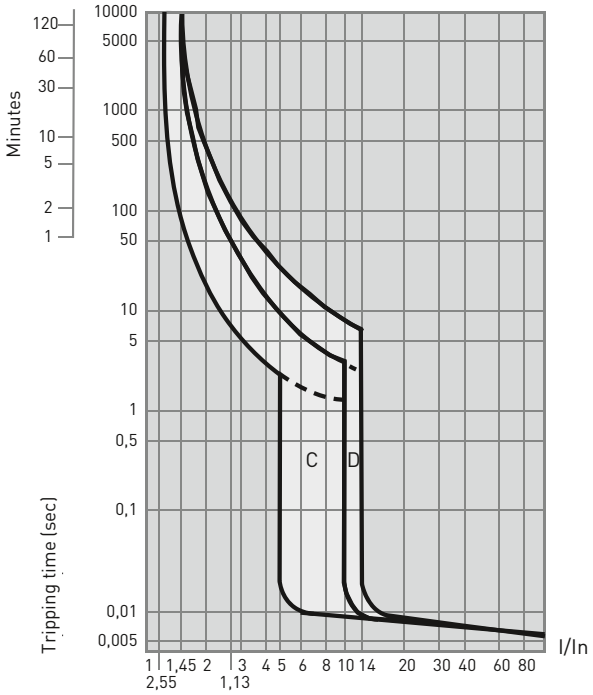
1. Connection

Conductor			Comb busbar
Solid	Stranded	Ferrule	Pin
			

2. MCBs VA 47-125 PROXIMA EKF support NO accessories.

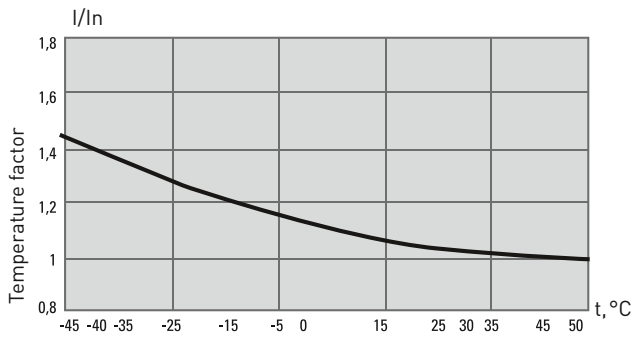
Parameters	Values
Rated voltage Ue, V	1P: 220/380; 230/400; 240/415 2P: 220/380; 230/400; 240/415 3P: 380; 400; 415 4P: 380; 400; 415
Frequency fn, Hz	50 / 60
Number of poles	1, 2, 3, 4
Rated current In, A	10; 16; 20; 25; 32; 40; 50; 63; 80; 100; 125
Rated impulse withstand voltage Uimp, kV	4
Tripping curve types	C, D
Degree of protection	IP20
Rated breaking capacity Icn, kA	15
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

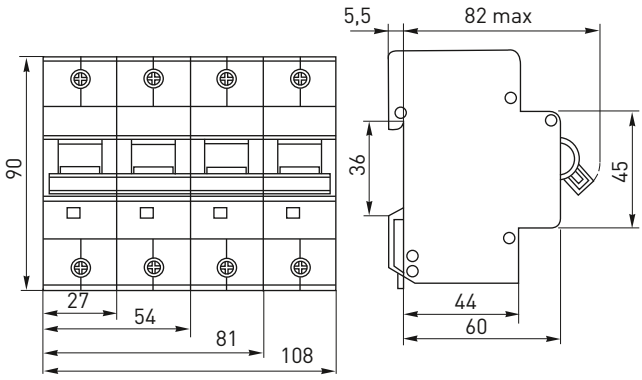


C – electromagnetic protection trips at (5-10) × In.
D – electromagnetic protection trips at (10-14) × In.

Temperature derating



Overall and installation dimensions (mm)



Delivery scope

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

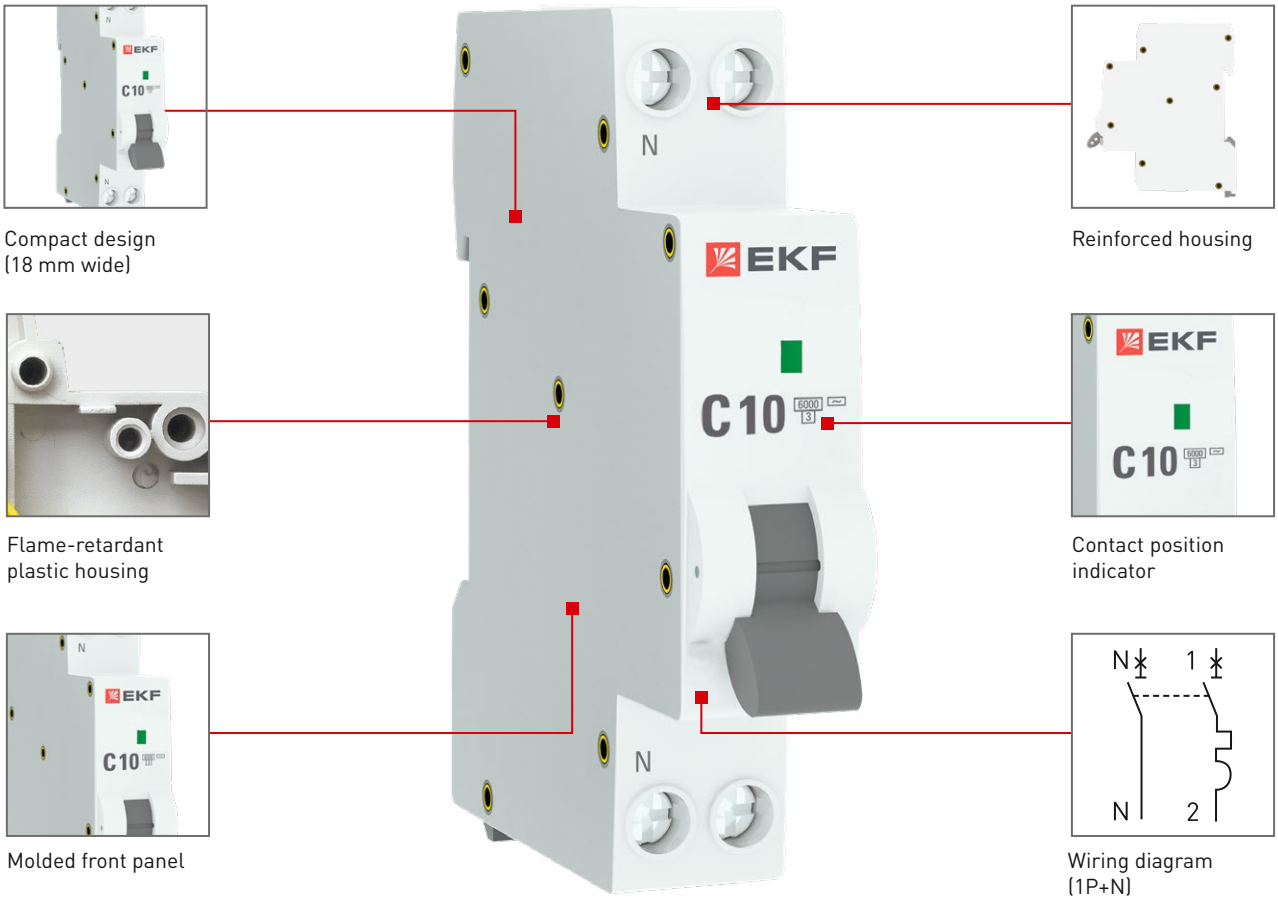
For all available documentation, scan the QR-code on the insert or on the inside of the package.

Picture	Rated current, A	Tripping curve	
		C	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. These MCBs offer protection against overload and short circuits, with isolation for both phase and neutral. The breaking capacity is 6kA, and the MCB housing is 1-module (18 mm) wide.

Standard: IEC 60898-1



APPLICATION

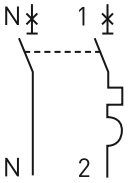
MCBs are used in public, commercial, industrial and residential buildings:

- 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

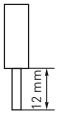
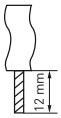
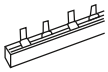
Wiring diagrams

Number of poles
1P + N



Installation and operation

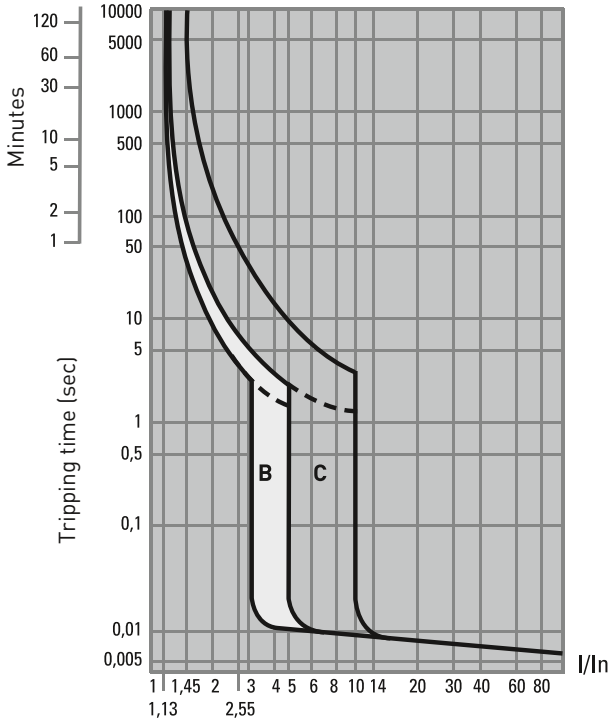
1. Connection

Conductor			Comb busbar
Solid	Stranded	Ferrule	Pin
			

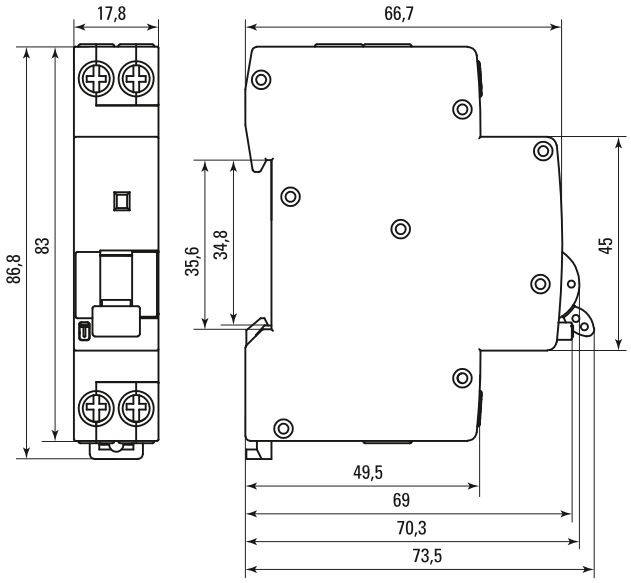
2. MCBs VA 47-63 1P+N PROXIMA EKF support NO accessories.

Parameters	Values
Rated voltage Ue, V	220 /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 types	C, (B)
Degree of protection	IP20
Rated breaking capacity Icn, kA	6
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

Tripping curves



Overall and installation dimensions (mm)



Delivery scope

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

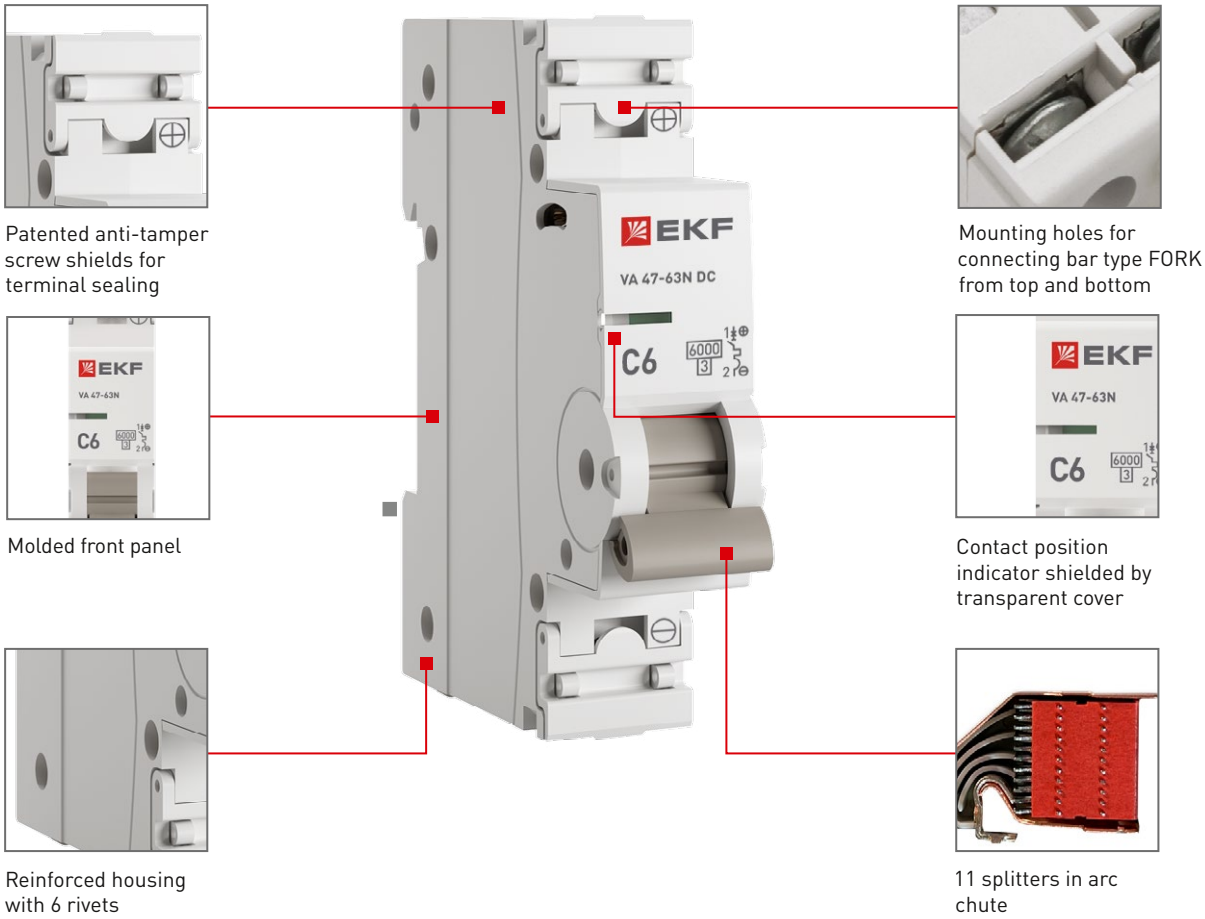
For all available documentation, scan the QR-code on the insert or on the inside of the package.

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

Miniature circuit breakers VA 47-63N DC PROXIMA EKF

Miniature circuit breakers VA 47-63N DC PROXIMA EKF are an upgrade of the market-proven line of VA 47-63 DC 6kA PROXIMA EKF. These electromechanical devices are used for DC circuit protection against overload and short circuit currents, for infrequent switching and routine current carrying in DC circuits. The MCBs in this series feature an advanced design, including sealable plastic screw shields that cover the screw terminals to prevent unauthorized access to wires. Additionally, they have a reinforced housing with extra rivets for enhanced rigidity, and the front panel includes an indicator to show the physical contact position. A two-position clamp ensures easy mounting onto a DIN rail.

Standard: IEC 60947-2



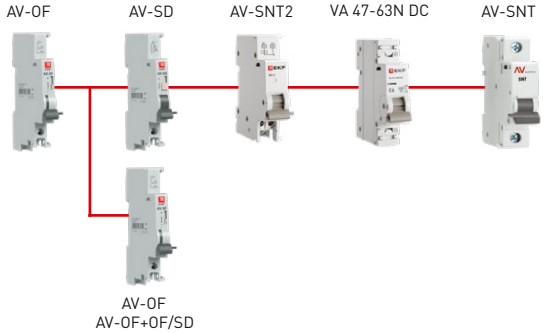
APPLICATION

MCBs are used in commercial, industrial and residential buildings:

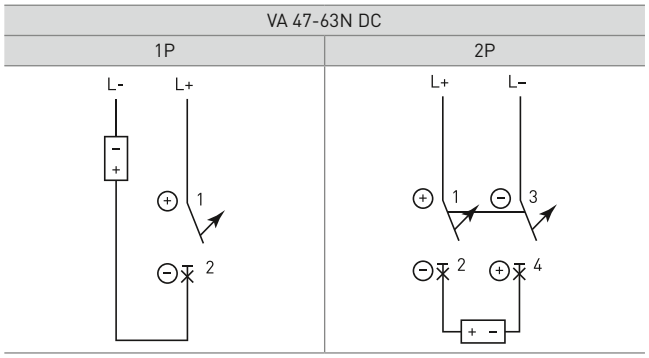
- Carrying current under normal conditions;
- Infrequent manual switching of individual circuit branches;
- Protection against overload and short-circuit currents;
- Final component of terminal power distribution system;
- Remote monitoring, fault signaling and additional trip functionality (with installed accessories).

TECHNICAL DATA

Connection of accessories

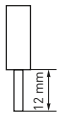
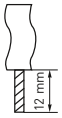
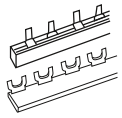


Wiring diagrams



Installation and operation

1. Connection

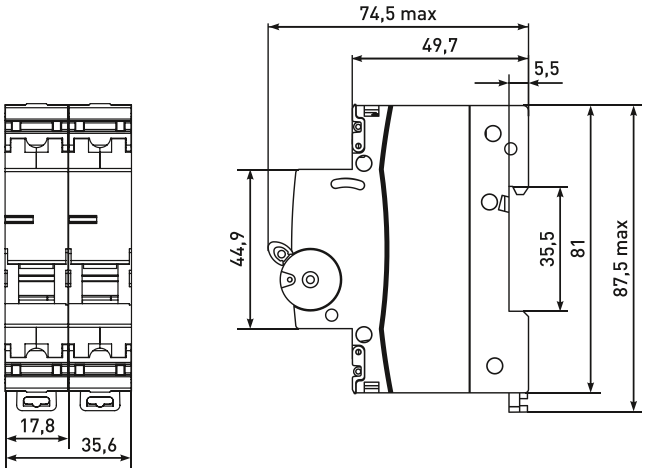
Conductor			Comb busbar
Solid	Stranded	Ferrule	Pin, fork
			

2. Accessories:

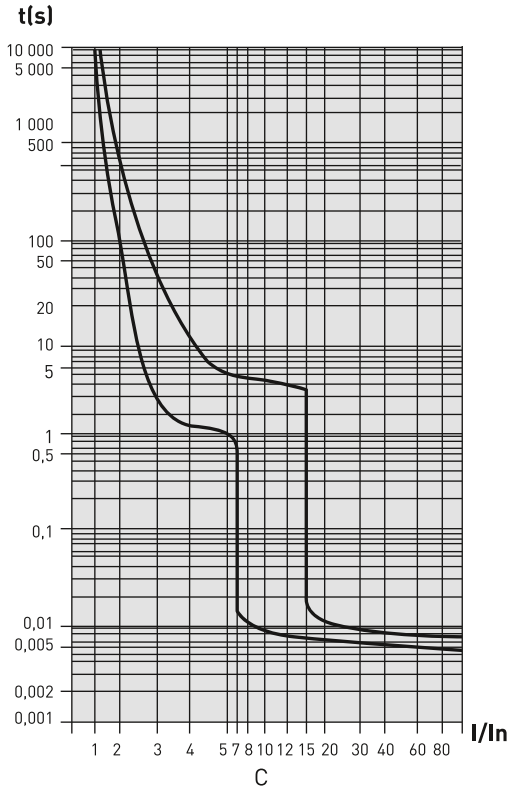
- Auxiliary contact AV-OF EKF (installed on the left)
- Alarm contact AV-SD EKF (installed on the left)
- Combined auxiliary and alarm contact AV-OF+OF/SD (installed on the left)
- Shunt release AV-SNT-2 EKF (installed on the left)
- Shunt release AV-SNT EKF (installed on the right)

Parameters	Values
Number of poles	1P, 2P
Rated operating voltage Ue, V DC	1P: 250 2P: 500
Rated current In, A	1, 2, 3, 4, 5, 6, 10, 13, 16, 20, 25, 32, 40, 50, 63
Rated breaking capacity Icn, kA	6
Tripping curve types	C
Rated impulse withstand voltage, kV	6,2
Energy limiting class	3
Mechanical endurance, O-C cycles	20 000
Electrical endurance, O-C cycles	10 000
Cross-section of connected wires, mm²	1 to 25
Degree of protection	IP20
Operating temperature, °C	From -25 to +50
Max. tightening torque, N·m	3

Overall and installation dimensions (mm)

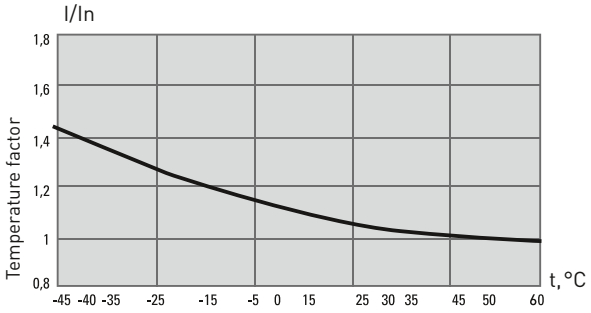


Tripping curves



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

Temperature derating



Delivery scope

Miniature circuit breakers VA 47-63N DC 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.

Picture	Rated current, A	C	Picture	Rated current, A	C
	1P			2P	
	1	M63DC611C		1	M63DC621C
	2	M63DC612C		2	M63DC622C
	3	M63DC613C		3	M63DC623C
	4	M63DC614C		4	M63DC624C
	5	M63DC615C		5	M63DC625C
	6	M63DC616C		6	M63DC626C
	10	M63DC6110C		10	M63DC6210C
	13	M63DC6113C		13	M63DC6213C
	16	M63DC6116C		16	M63DC6216C
	20	M63DC6120C		20	M63DC6220C
	25	M63DC6125C		25	M63DC6225C
	32	M63DC6132C		32	M63DC6232C
	40	M63DC6140C		40	M63DC6240C
	50	M63DC6150C		50	M63DC6250C
	63	M63DC6163C		63	M63DC6263C

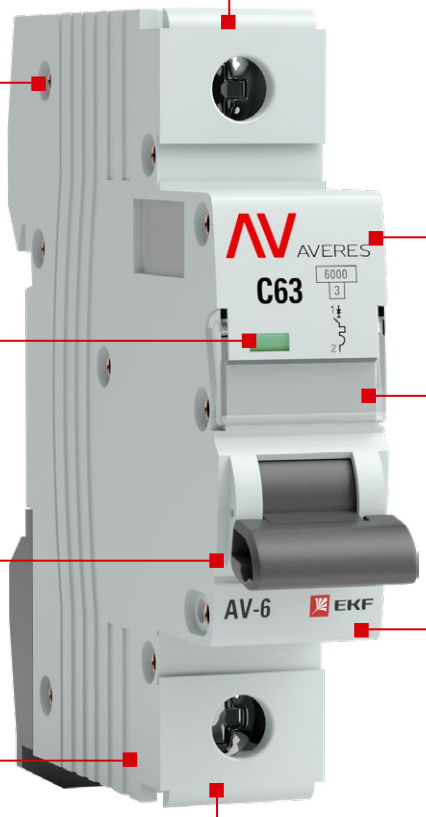
AVERES professional grade DIN rail-mounted modular equipment has been designed from the ground up for use in mission-critical industrial, private and public infrastructure projects, as well as premium residential developments. Unrivalled safety and reliability, top-of-the line functionality coupled with 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

Reinforced housing with 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

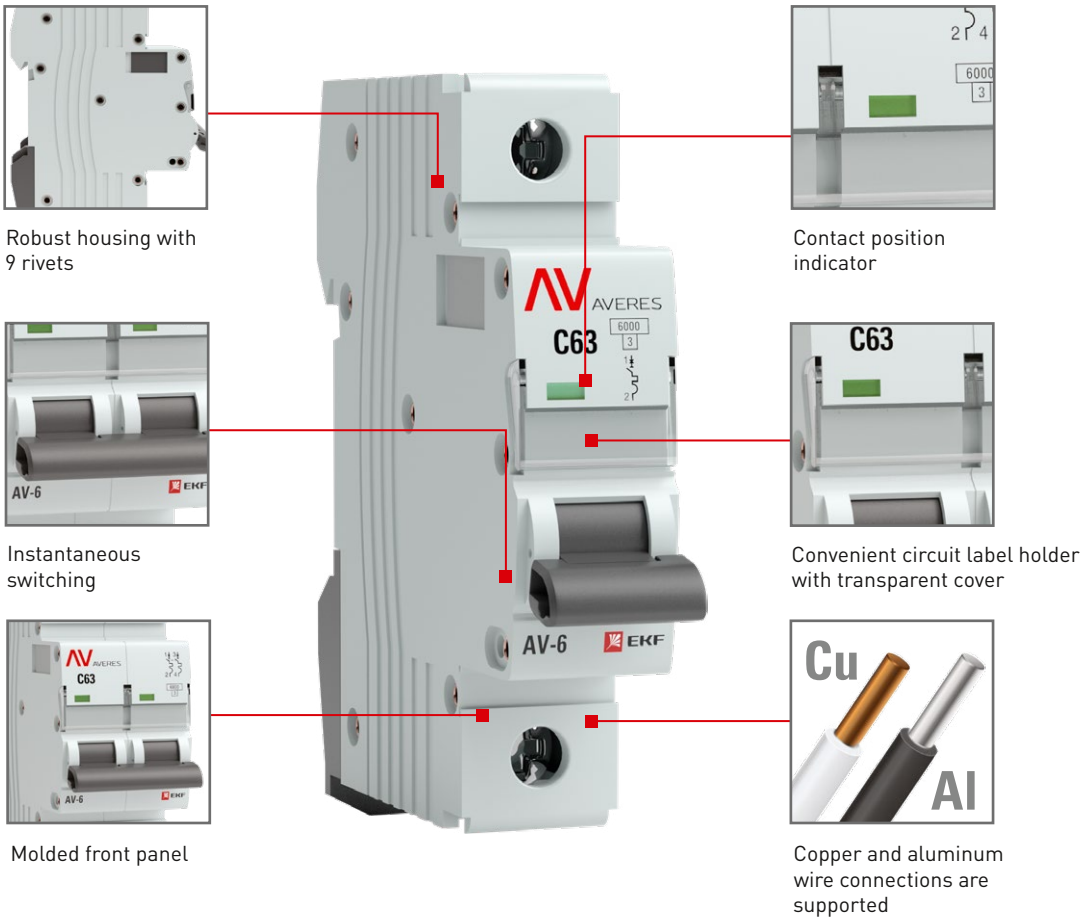
AVERES Miniature Circuit Breakers

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, kA]	6	-	-	10	-	-	-	-	-
Ultimate short-circuit breaking capacity [Icu, kA]	-	10	20	-	10	20	6	10	10
Service short-circuit breaking capacity [Ics]	6 kA	75% Icu		10 kA	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]	220 / 380; 230 / 400; 240 / 415	1P: 220-240; 2P, 3P, 4P: 380-415	1P: 100-133; 2P, 3P, 4P: 220-240	220 / 380; 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			1P/2P: 500 3P/4P: 1000	1P/2P: 500 3P/4P: 1000	500
Energy limit class	3			3			3	3	3
Degree of protection	IP20			IP20			IP20	IP20	IP20
Mechanical endurance [cycles]	20 000			20 000			20 000	20 000	10 000
Electrical endurance [cycles]	10 000			10 000			10 000	10 000	8000
Operation ambient temperature [°C]	-40 to +60			-40 to +60			-25 to +50	-25 to +50	-25 to +50
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
Accessories	Yes								

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 1P, 2P, 3P, 4P versions, with a rated breaking capacity (Icn) of 6 kA. MCBs can also be equipped with various accessories to extend their functionality. The devices in this series come with a 10-year warranty.

Standards: IEC 60898-1, IEC 60947-2



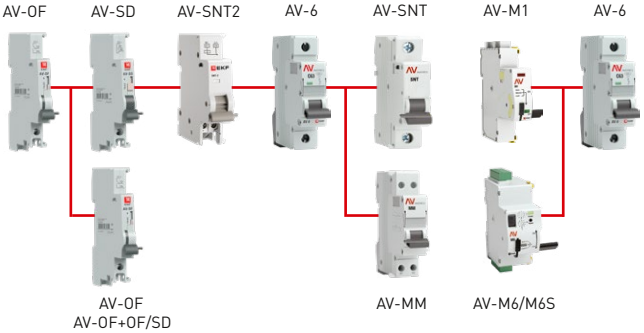
APPLICATION

MCBs are used in commercial, industrial and residential buildings:

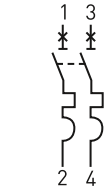
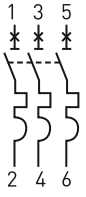
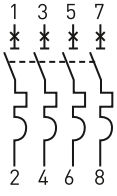
- Carrying current under normal conditions;
- Infrequent manual switching of individual circuit branches;
- Protection against overload and short-circuit currents;
- Final component of terminal power distribution system;
- Isolation in the industrial sector according to IEC 60947-2;
- Remote monitoring, fault signaling and additional trip functionality (with installed accessories).

TECHNICAL DATA

Connection of accessories



Wiring diagrams

Number of poles			
1P	2P	3P	4P
			

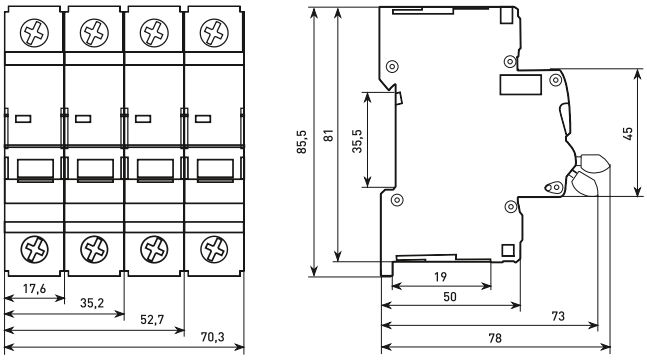
Parameters		Values
Rated operating voltage Ue, V		1P: 220/380; 230/400; 240/415 2P: 220/380; 230/400; 240/415 3P: 380; 400; 415 4P: 380; 400; 415
Frequency, Hz		50 / 60
Number of poles		1; 2; 3; 4
Rated current In, A		1; 2; 3; 4; 6; 10; 13; 16; 20; 25; 32; 40; 50; 63
Tripping curve types	B	4 In ±20%
	C	8 In ±20%
	D	12 In ±20%
Rated breaking capacity Icn (IEC 60898-1), kA		6
Ultimate short-circuit breaking capacity Icu (IEC 60947-2), kA	380–415 V AC	10
	220–240 V AC	20
Service short-circuit breaking capacity Ics (IEC 60947-2), kA		75% Icu
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		-40 to +60
Cross-section of connected wires, mm²		1-25
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
- Shunt release AV-SNT2
- 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)

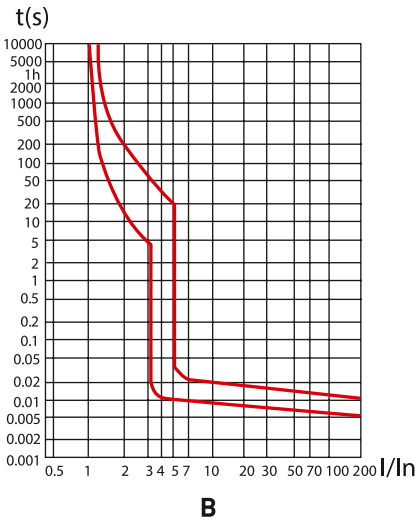


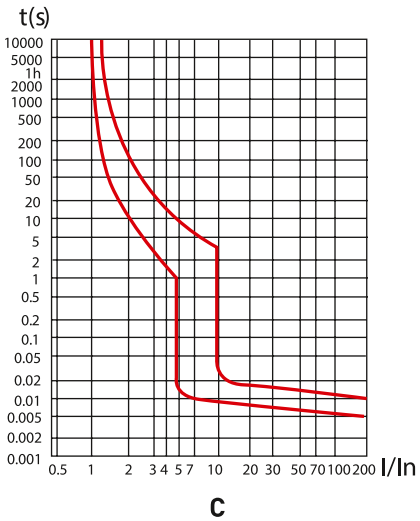
Delivery scope

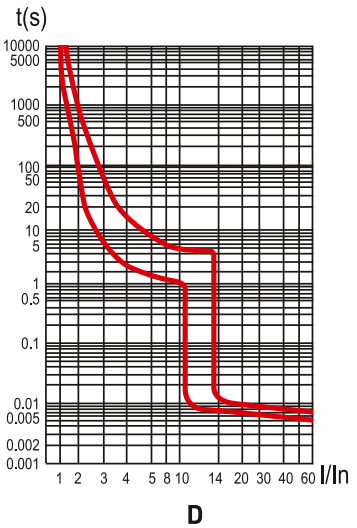
Miniature circuit breakers AV-6 AVERES EKF are supplied in a group package.

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

Tripping curves





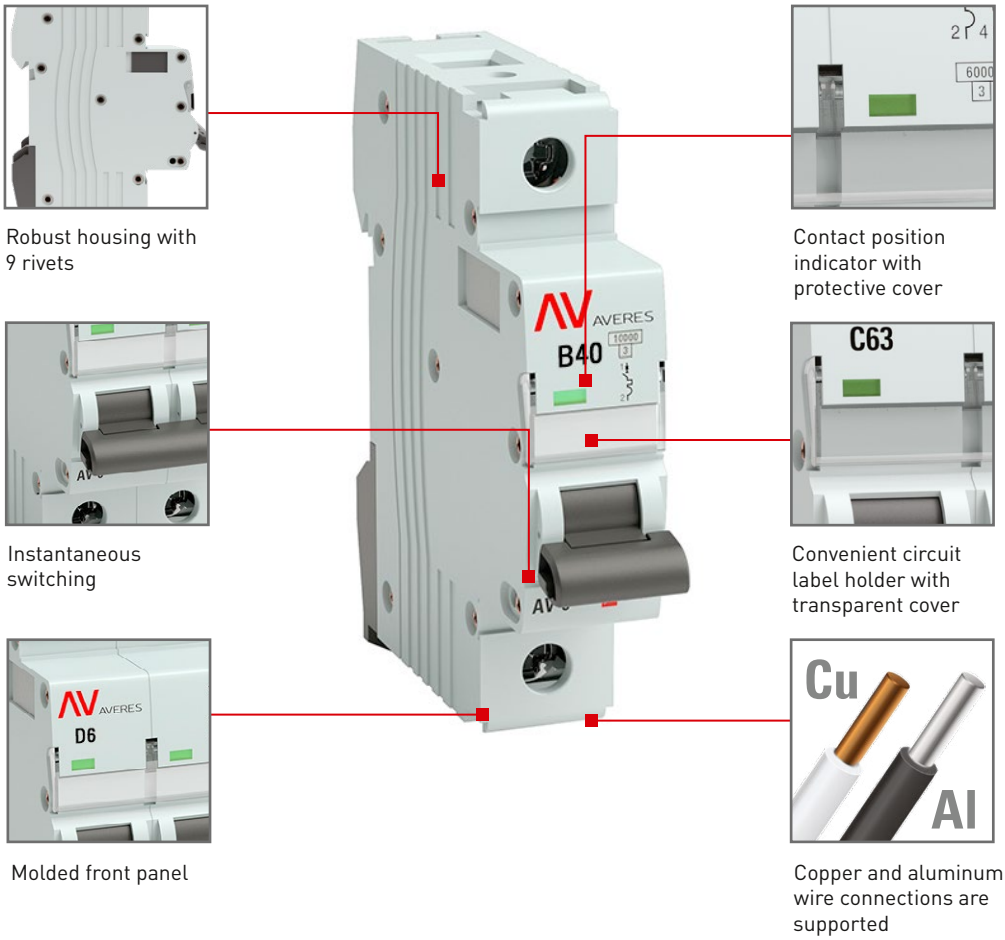


Picture	Rated current, A	Tripping curves		
		B	C	D
		1P		
	1	mcb6-1-01B-av	mcb6-1-01C-av	mcb6-1-01D-av
	2	mcb6-1-02B-av	mcb6-1-02C-av	mcb6-1-02D-av
	3	mcb6-1-03B-av	mcb6-1-03C-av	mcb6-1-03D-av
	4	mcb6-1-04B-av	mcb6-1-04C-av	mcb6-1-04D-av
	6	mcb6-1-06B-av	mcb6-1-06C-av	mcb6-1-06D-av
	10	mcb6-1-10B-av	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 1P, 2P, 3P, 4P versions, with a rated breaking capacity (Icn) of 10 kA. MCBs can also be equipped with various accessories to extend their functionality. The devices in this series come with a 10-year warranty.

Standards: IEC 60898-1, IEC 60947-2



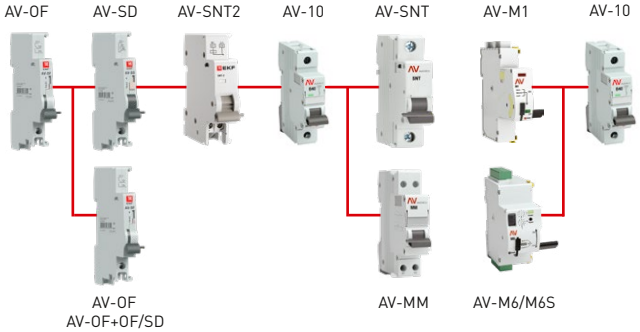
APPLICATION

MCBs are used in commercial, industrial and residential buildings:

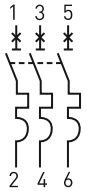
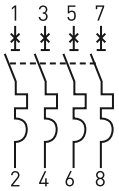
- Carrying current under normal conditions;
- Infrequent manual switching of individual circuit branches;
- Protection against overload and short-circuit currents;
- Final component of terminal power distribution system;
- Isolation in the industrial sector according to IEC 60947-2;
- Remote monitoring, fault signaling and additional trip functionality (with installed accessories).

TECHNICAL DATA

Connection of accessories



Wiring diagrams

Number of poles			
1P	2P	3P	4P
			

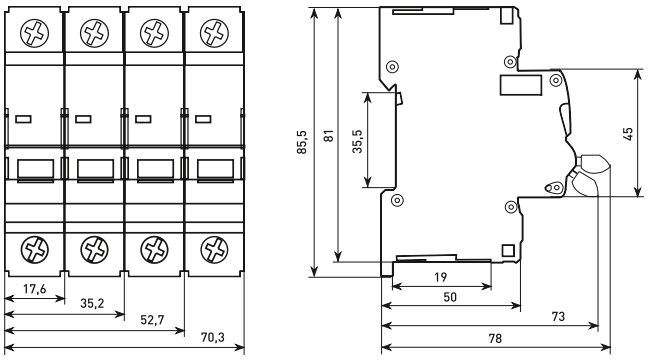
Parameters		Values
Rated operating voltage Ue, V		1P: 220/380; 230/400; 240/415 2P: 220/380; 230/400; 240/415 3P: 380; 400; 415 4P: 380; 400; 415
Frequency, Hz		50 / 60
Number of poles		1; 2; 3; 4
Rated current In, A		1, 2, 3, 4, 6, 10, 13, 16, 20, 25, 32, 40, 50, 63
Tripping curve types	B	4 In ±20%
	C	8 In ±20%
	D	12 In ±20%
Rated breaking capacity Icn (IEC 60898-1), kA		10
Ultimate short-circuit breaking capacity Icu (IEC 60947-2), kA	380–415 V AC	10
	220–240 V AC	20
Service short-circuit breaking capacity Ics (IEC 60947-2), kA		75% Icu
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		-40 to +60
Cross-section of connected wires, mm^2		1-25
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
- Shunt release AV-SNT2
- 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)

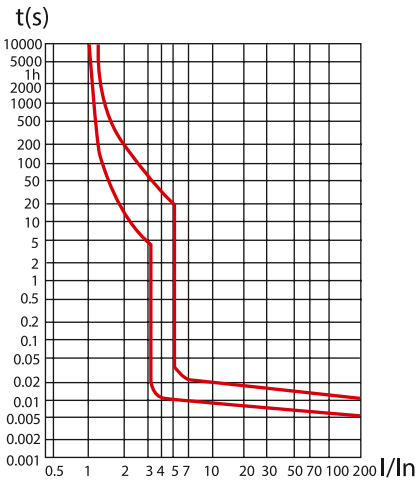


Delivery scope

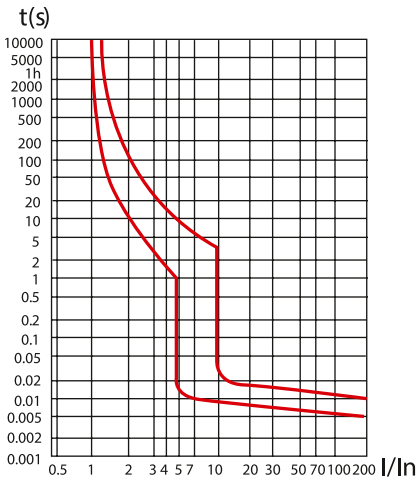
Miniature circuit breakers AV-10 AVERES EKF are supplied in a group package.

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

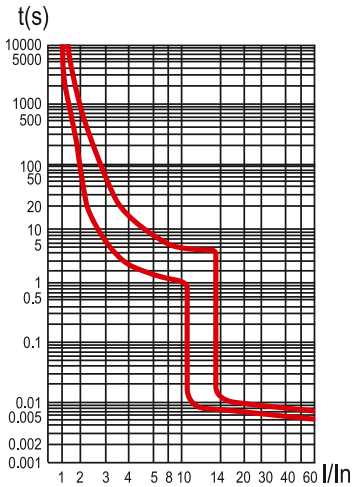
Tripping curves



B



C



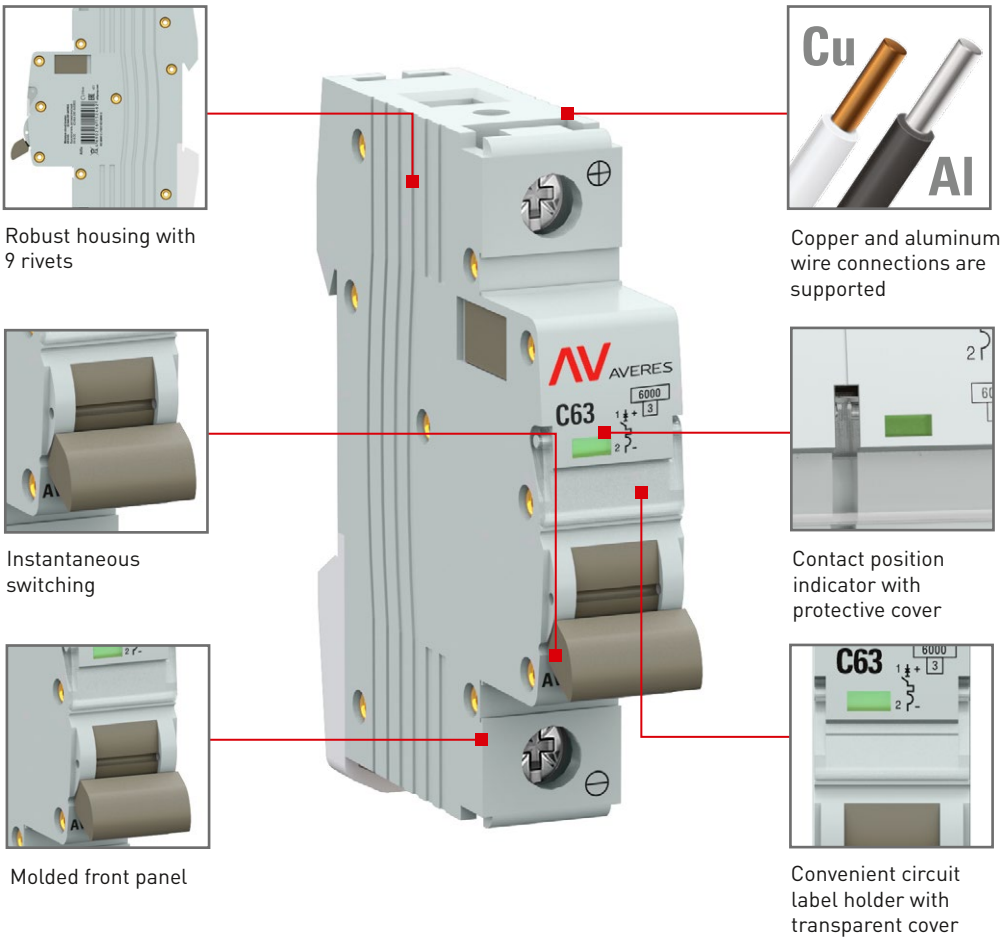
D

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 and AV-10 DC AVERES EKF

Miniature circuit breakers (MCB) AV-6 DC and 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 enhance their functionality. The devices in this series come with a 10-year warranty.

Standard: IEC 60947-2



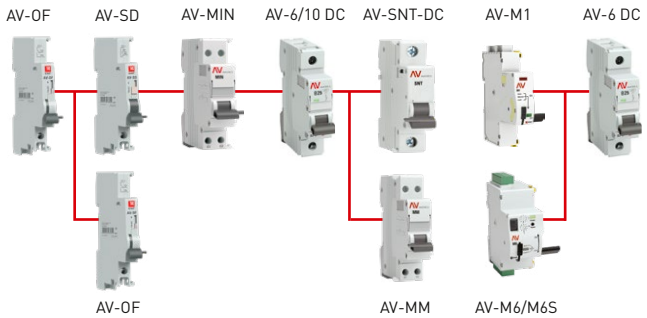
APPLICATION

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 60947-2;
- Remote monitoring, fault signaling and additional trip functionality (with installed accessories).

TECHNICAL DATA

Connection of accessories



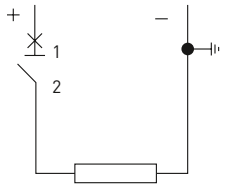
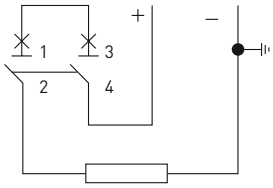
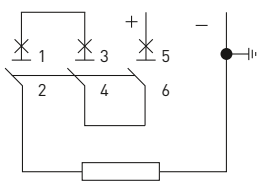
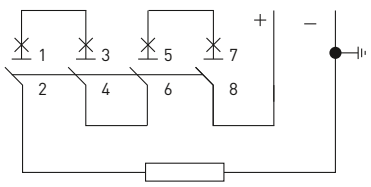
Installation and operation

Accessories:

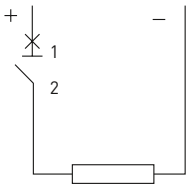
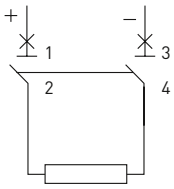
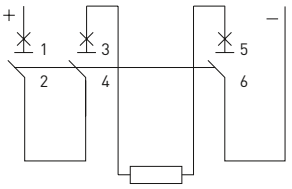
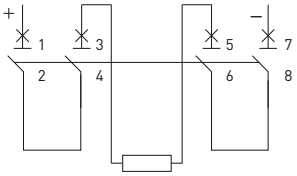
- Auxiliary contact AV-OF
- Alarm contact AV-SD
- Shunt release AV-SNT, AV-SNT-2, AV-SNT-DC
- Undervoltage release AV-MIN
- Overvoltage and undervoltage release AV-MM
- Auto recloser M6S (for 1P & 2P)
- Auto recloser M6 (for 2P, 3P & 4P)
- Auto recloser M1 (for 1P & 2P)

Wiring diagrams

AV-6/10 DC for distribution with earthed polarity

250 V	500 V	750 V	1000 V
			

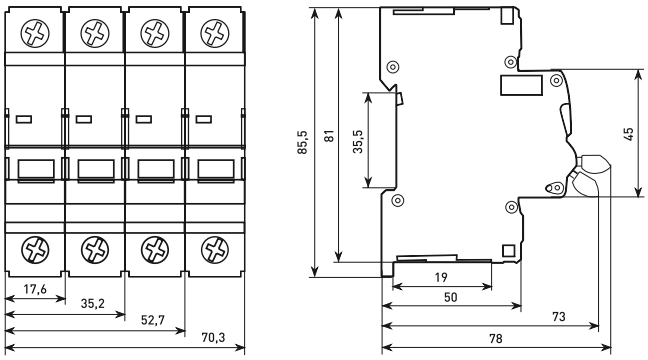
AV-6 DC for insulated distribution

250 V	500 V	750 V	1000 V
			

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
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 types	C, B
Rated breaking capacity Icn, kA	6 / 10
Rated insulation voltage Ui, V	1P/2P: 500; 3P/4P: 1000
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 +50
Tightening torque, N·m	3
Degree of protection	IP20
Cross-section of connected wires, mm²	1-25

Overall and installation dimensions (mm)

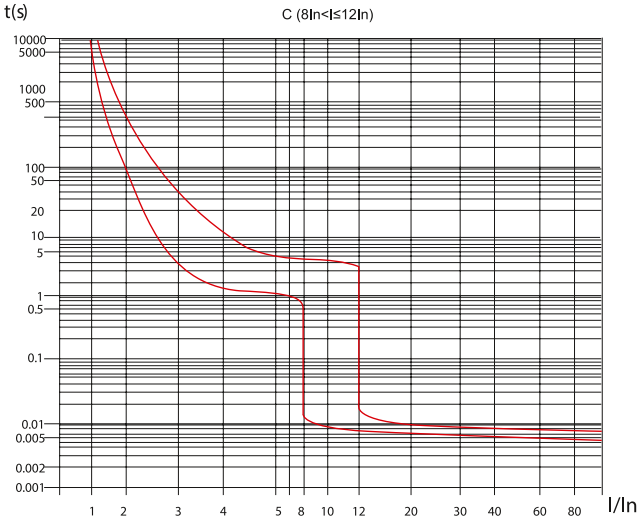


Delivery scope

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.

Tripping curves

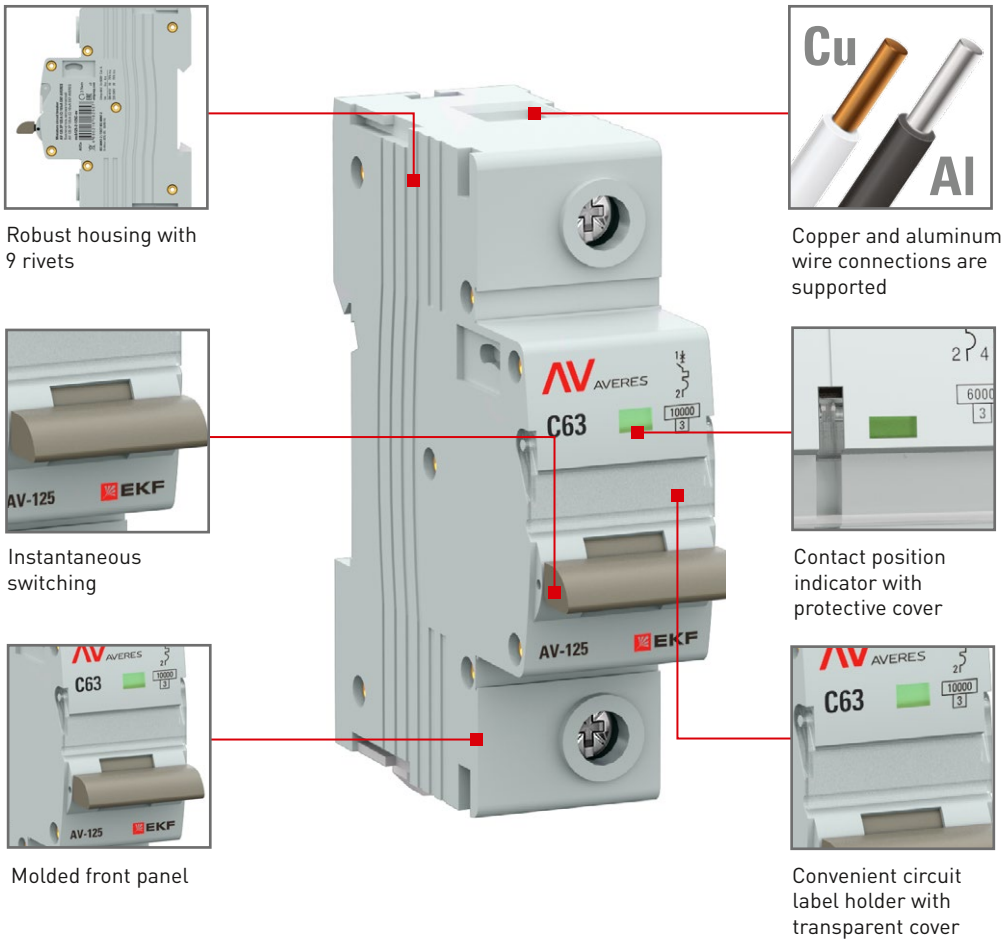


Picture	Rated current, A	Tripping curve C
		1P
	1	mcb6-DC-1-01C-av
	2	mcb6-DC-1-02C-av
	3	mcb6-DC-1-03C-av
	4	mcb6-DC-1-04C-av
	6	mcb6-DC-1-06C-av
	10	mcb6-DC-1-10C-av
	13	mcb6-DC-1-13C-av
	16	mcb6-DC-1-16C-av
	20	mcb6-DC-1-20C-av
	25	mcb6-DC-1-25C-av
	32	mcb6-DC-1-32C-av
	40	mcb6-DC-1-40C-av
	50	mcb6-DC-1-50C-av
	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 1P, 2P ,3P ,4P versions, with a rated breaking capacity (Icn) of 10 kA. The MCB housing is 1,5-module wide (27 mm) and supports rated currents of 63 A, 80 A, 100 A, and 125 A. The devices in this series come with a 10-year warranty.

Standard: IEC 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

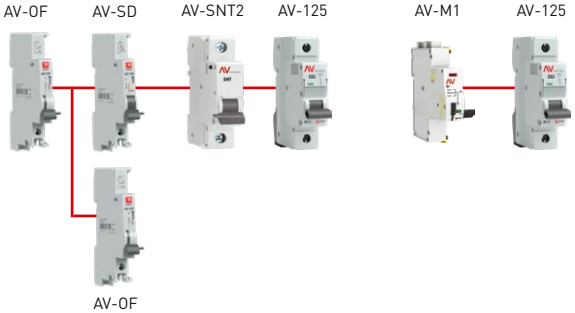
APPLICATION

MCBs are used in commercial, industrial and residential buildings:

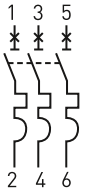
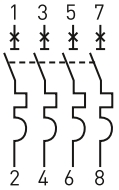
- Carrying current under normal conditions;
- Infrequent manual switching of individual circuit branches;
- Protection against overload and short-circuit currents;
- Final component of terminal power distribution system;
- Isolation in the industrial sector according to IEC 60947-2;
- Remote monitoring, fault signaling and additional trip functionality (with installed accessories).

TECHNICAL DATA

Connection of accessories



Wiring diagrams

Number of poles			
1P	2P	3P	4P
			

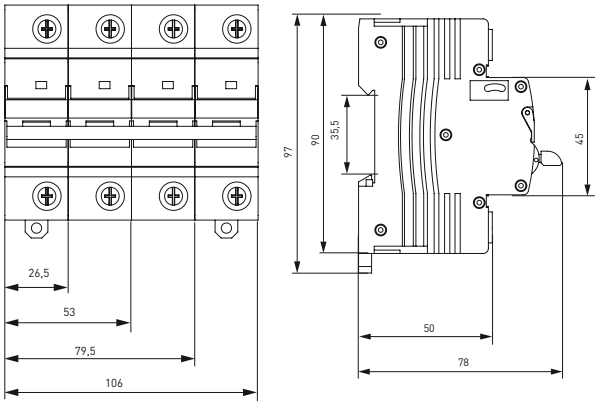
Installation and operation

Accessories:

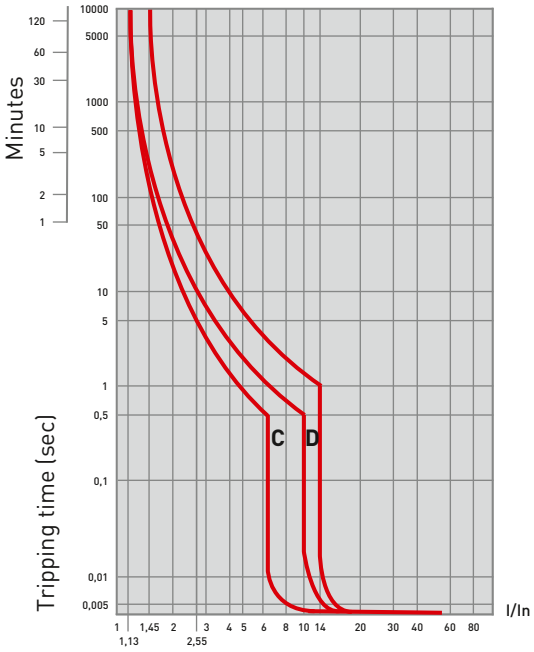
- Auxiliary contact AV-OF
- Alarm contact AV-SD
- Shunt release AV-SNT-2

Parameters	Values
Rated operating voltage Ue, V	1P: 220/380; 230/400; 240/415 2P: 220/380; 230/400; 240/415 3P: 380; 400; 415 4P: 380; 400; 415
Frequency, Hz	50 / 60
Number of poles	1; 2; 3; 4
Rated current In, A	63, 80, 100, 125
Tripping curve types	C, D
Ultimate short-circuit breaking capacity Icu (IEC 60947-2), kA	10
Service short-circuit breaking capacity Ics (IEC 60947-2), kA	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 +50
Maximum cross-section of connected wires, mm²	35
Degree of protection	IP20

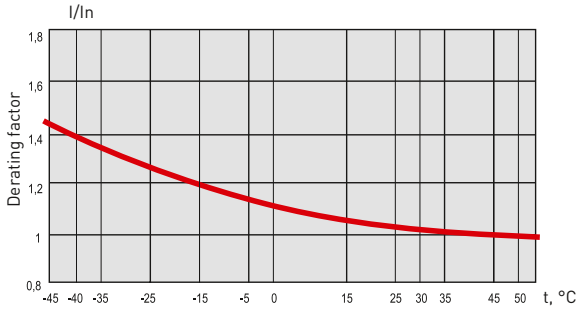
Overall and installation dimensions (mm)



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

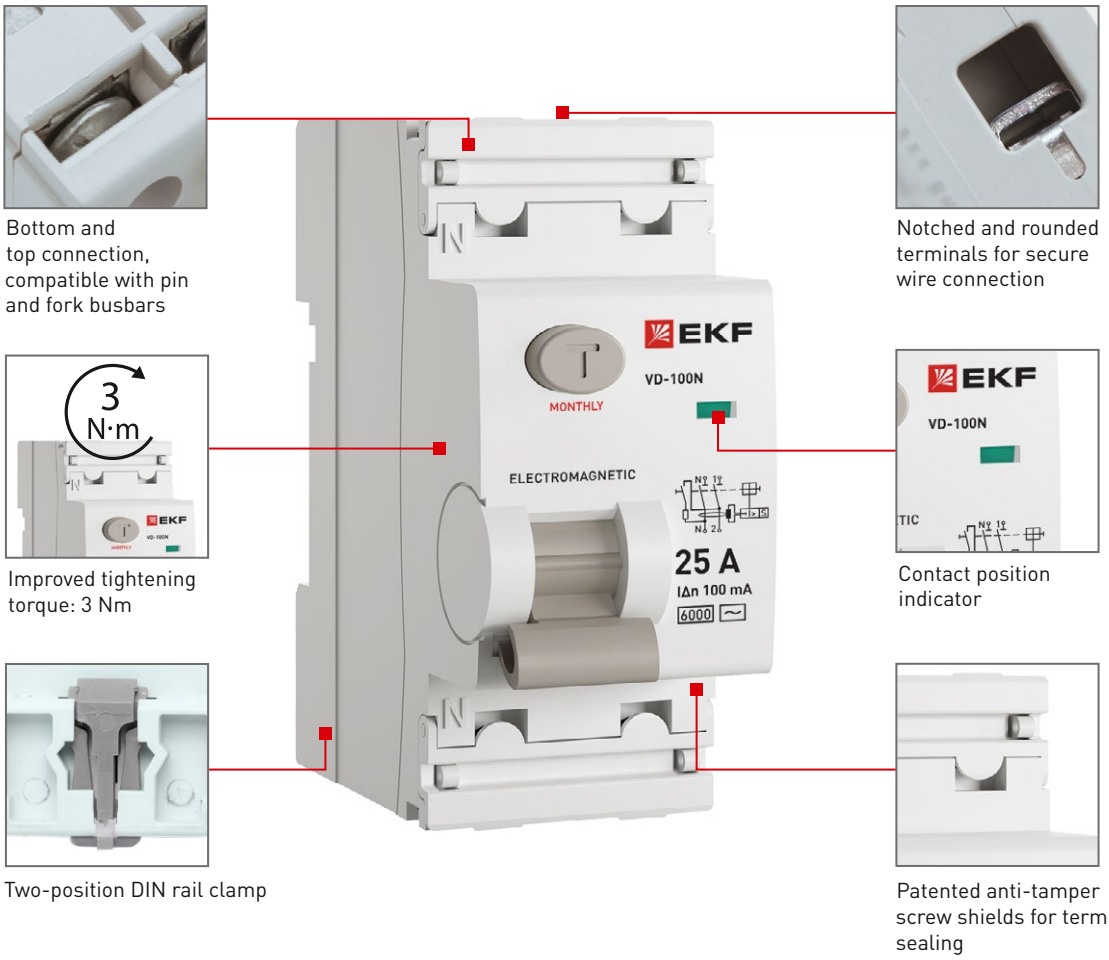
Residual current circuit breakers VD-100N PROXIMA EKF

Residual current circuit breakers VD-100N PROXIMA EKF are designed for use in 50/60 Hz AC electrical circuits with voltages up to 240 V or 415 V. Residual current circuit breakers (RCCB) are designed to:

- Protect individuals from electric shocks due to accidental contact with live parts;
- Safeguard electrical equipment in the event of insulation damage or faults;
- Prevent fires and damage caused by leakage currents, short circuits, or ground faults, as well as housing issues.

RCCBs are capable of operating within temperatures ranging from -40 °C to +55 °C. Selective versions are also available for advanced protection.

Standards: IEC 61008-2-1, IEC 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

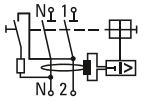
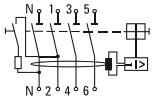
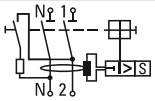
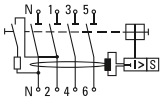
Patented anti-tamper screw shields for terminal sealing

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.).

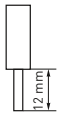
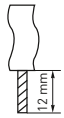
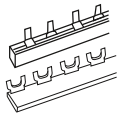
TECHNICAL DATA

Wiring diagrams

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

Installation and operation

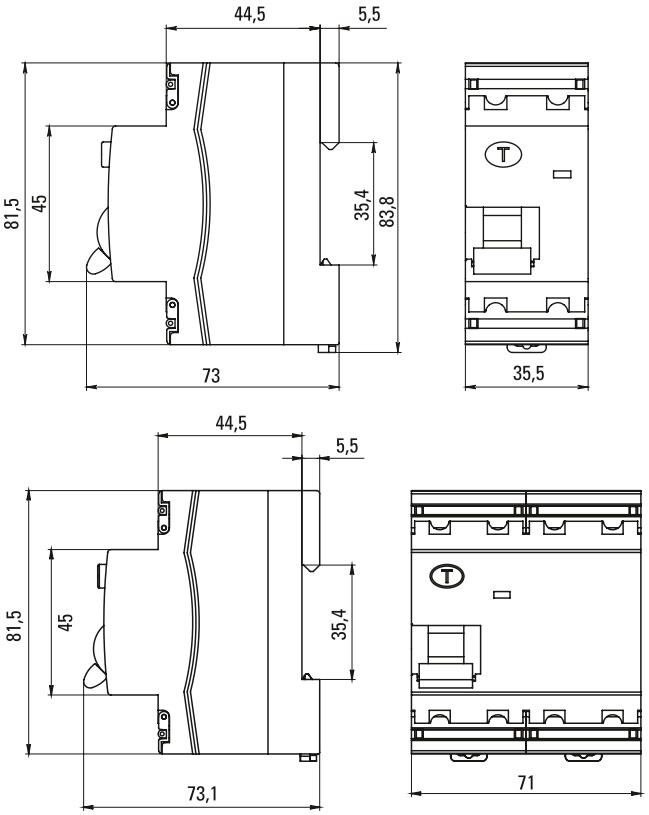
Connection

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	2P: 220 / 230 / 240 4P: 380 / 400 / 415
Sensitivity, A	16, 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, kA	6
Types of waveform detected	A, AC
Selectivity	AC-S
Rated residual non-operating current IΔno, mA	0,5IΔn
Rated insulation voltage Ui, V	660
Rated impulse withstand voltage Uimp, kV	4
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 (up to 63A); 35 (for 80A & 100A)
Degree of protection	IP20
Operating temperature, °C	From -40 to +55
Max. tightening torque, N·m	3

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

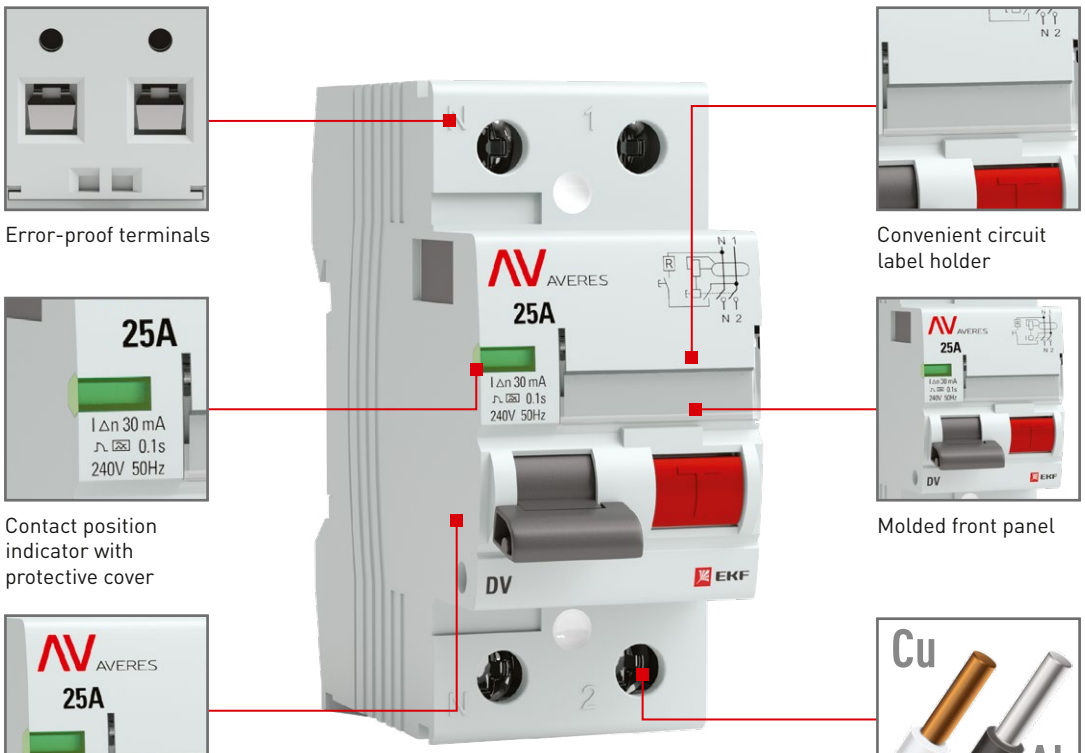
Picture	Rated current, A	Sensitivity			
		10 mA	30 mA	100 mA	300 mA
		2P Type AC			
	16	E1026M1610	E1026M1630	-	-
	25	E1026M2510	E1026M2530	E1026M25100	E1026M25300
	32	E1026M3210	E1026M3230	E1026M32100	-
	40	-	E1026M4030	E1026M40100	E1026M40300
	63	-	E1026M6330	E1026M63100	E1026M63300
	80	-	E1026M8030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

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

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. The devices in this series come with a 10-year warranty.

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

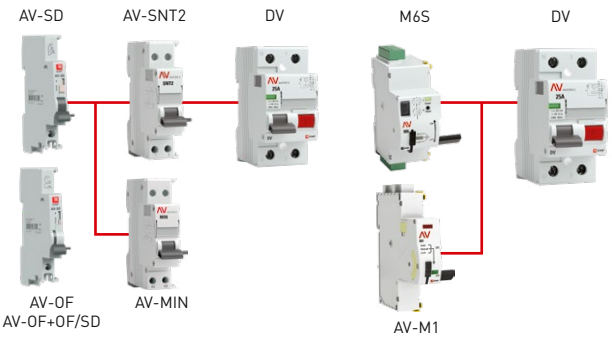


APPLICATION

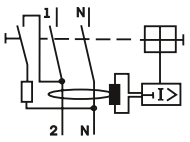
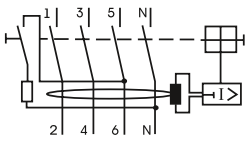
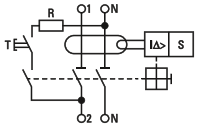
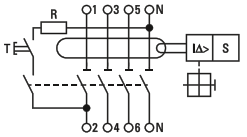
- Protection of people against electric shock by direct & indirect contact;
- Protection of electrical equipment in case of damaged insulation and faults;
- Protection of equipment against fires caused by leakage currents to housing or ground;
- RCCB type A is used in buildings and residential areas 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

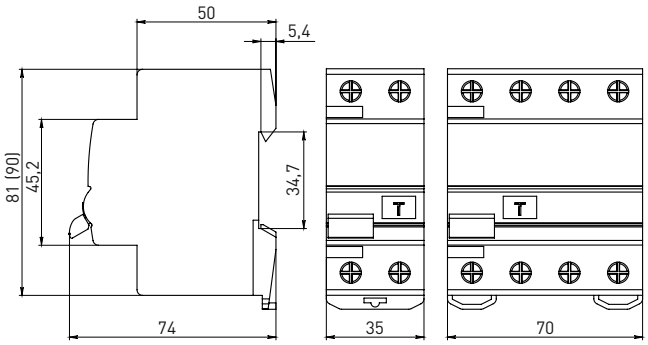
Accessories:

- 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	2P: 220 / 230 / 240 4P: 380 / 400 / 415
Frequency, Hz	50 / 60
Rated current In, A	25, 40, 63, 80, 100
Number of poles	2P, 4P
Residual current protection type	Electromagnetic
Type of waveform detected	A, AC
Selectivity	AC-S
Sensitivity IΔn, mA	10, 30, 100, 300
Rated conventional short-circuit current Inc, kA	10
Rated insulation voltage Ui, V	415
Rated impulse withstand voltage Uimp, kV	4
Mechanical endurance, O-C cycles	20 000
Electrical endurance, O-C cycles	10 000
Operating temperature, °C	-20 to +50
Max. tightening torque, N·m	3
Degree of protection	IP20
Max. cross-section of connected wires, mm²	25 (for 25-63 A); 35 (for 80 A & 100 A)

Overall and installation dimensions (mm)

RCCBs with rated currents of 25-63 A are 81 mm high, while RCCBs with rated current of 80 A and 100 A are 90 mm high.



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	Sensitivity			
		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

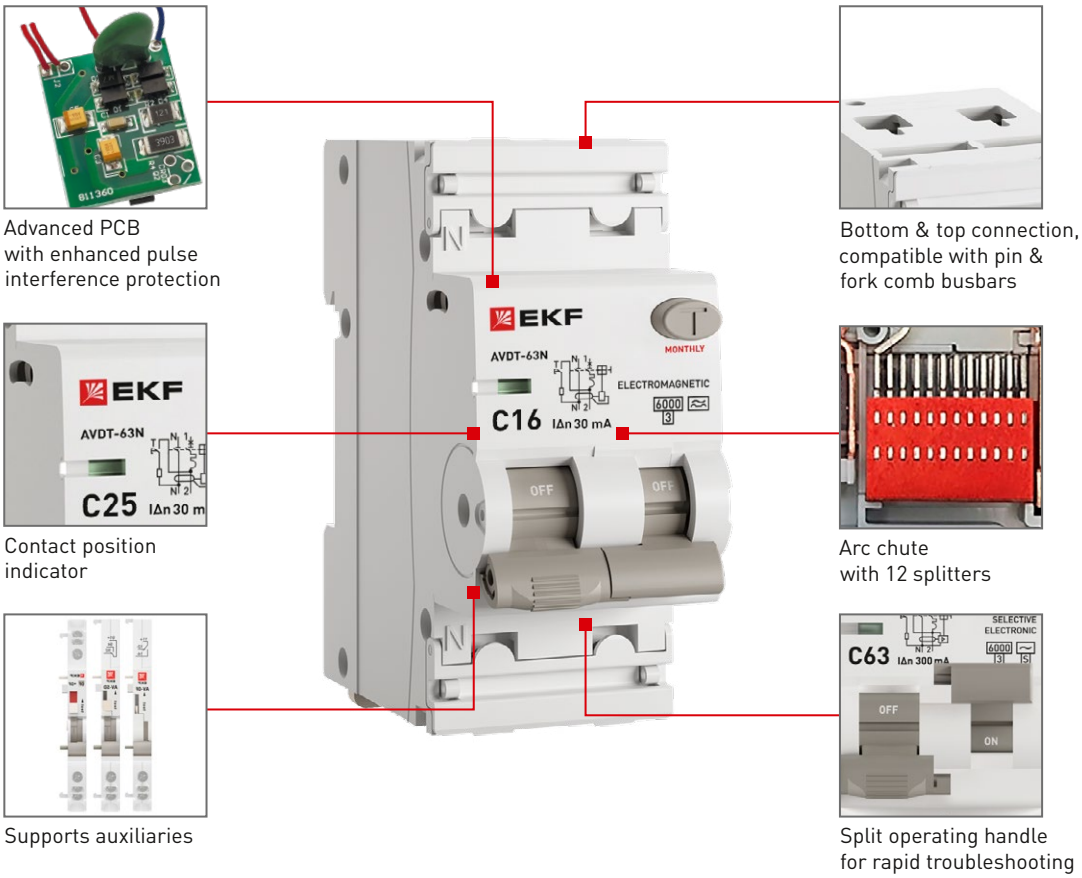
PROXIMA Residual Current Circuit Breakers with Overcurrent Protection

Series	AVDT-63N	AVDT-63M	AVDT-50M	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, kA]	6	6	10	6
Poles	1P+N, 3P+N	1P+N	1P+N	1P+N, 3P+N
Sensitivity [mA]	10, 30, 100, 300	10, 30, 100	10, 30, 100, 300	10, 30, 100, 300
Rated Current [In, A]	6, 10, 16, 20, 25, 32, 40, 50, 63	6, 10, 16, 20, 25, 32, 40	6, 10, 16, 20, 25, 32, 40, 50	6, 10, 16, 20, 25, 32, 40, 50, 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	Available	N/A	N/A	Available
Overvoltage protection	Available	N/A	N/A	N/A
Accessories	Available	N/A	N/A	N/A
Degree of protection	IP20	IP20	IP20	IP20
Mechanical endurance [O-C cycles]	20 000	10 000	20 000	10 000
Electrical endurance [O-C cycles]	10 000	4000	4000	4000
Operation ambient temperature [°C]	-25 to +50	-25 to +55	-35 to +70	-25 to +50
Cross-section of connected wires [mm²]	1-25	1-10	1-16	1-25

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

Residual current circuit breaker with overcurrent protection (RCBO) AVDT-63N 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. 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. Sealable plastic screw shields cover screw terminals and prevent unauthorized access to wires. Copper and aluminum wire connections are supported.

Standard: IEC 61009-1

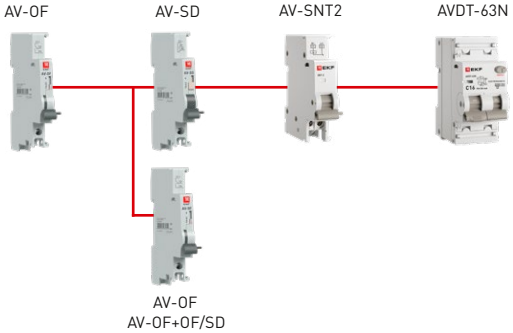


APPLICATION

- 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.

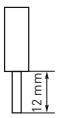
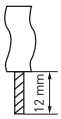
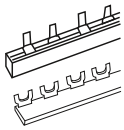
TECHNICAL DATA

Connection of accessories

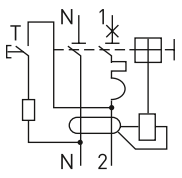
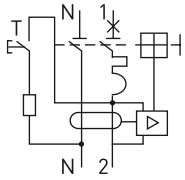
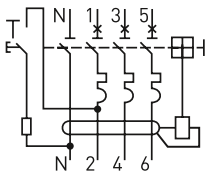
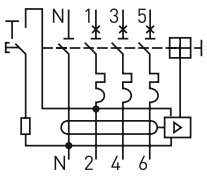


Installation and operation

1. Connection

Conductor			Comb busbar
Solid	Stranded	Ferrule	Pin, fork
			

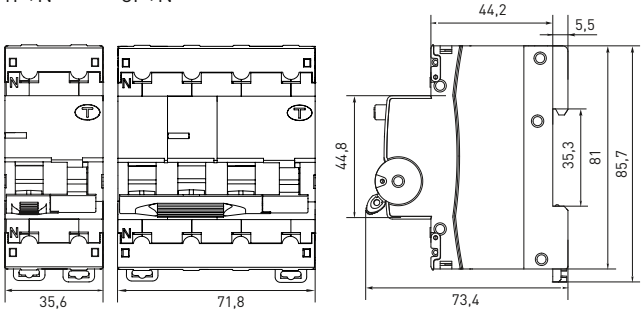
Wiring diagrams

AVDT-63N 1P+N electromagnetic	AVDT-63N 1P+N electronic	AVDT-63N 3P+N electromagnetic	AVDT-63N 3P+N electronic
			

Parameters	Values
Number of poles	1P+N, 3P+N
Rated operating voltage Ue, V	1P+N: 220 / 230 / 240 3P+N: 380 / 400 / 415
Rated frequency, Hz	50 / 60
Rated current In, A	6, 10, 16, 20, 25, 32, 40, 50, 63
Sensitivity IΔn, mA	10, 30, 100, 300
Rated breaking capacity Icn, kA	6
Type of waveform detected	A, AC
Selectivity	AC-S
Rated residual non-operating current, mA	0,5IΔn
Tripping curve types	B, C
Residual current protection type	Electronic & electromagnetic (voltage dependent & independent)
Rated impulse withstand voltage Uimp, kV	4
Mechanical endurance, O-C cycles	20 000
Electrical endurance, O-C cycles	10 000
Cross-section of connected wires, mm²	1 to 25
Degree of protection	IP20
Operating temperature, °C	From -25 to 50
Max. tightening torque, N·m	3

Overall and installation dimensions (mm)

1P+N 3P+N



Delivery scope

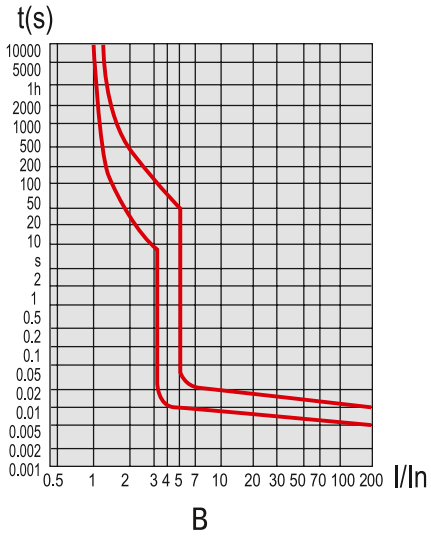
Residual current circuit breakers with overcurrent protection AVDT-63N PROXIMA EKF are supplied in individual and group package.

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

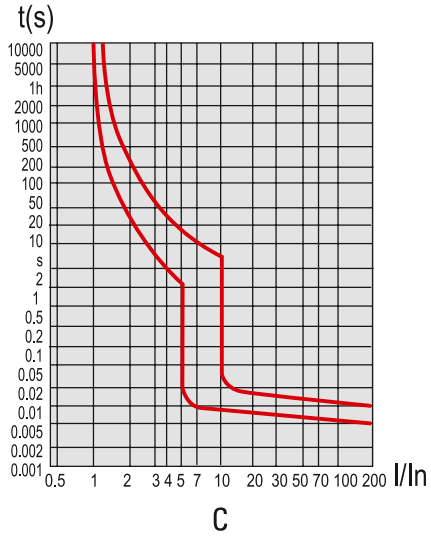
Tripping curves

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

At the ambient temperature of +30°C

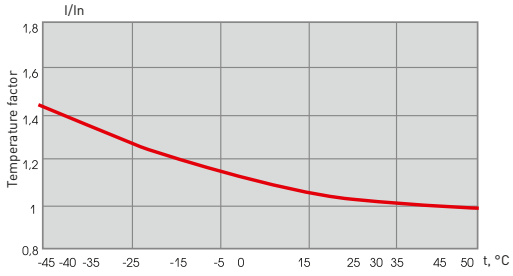


B



C

Temperature derating



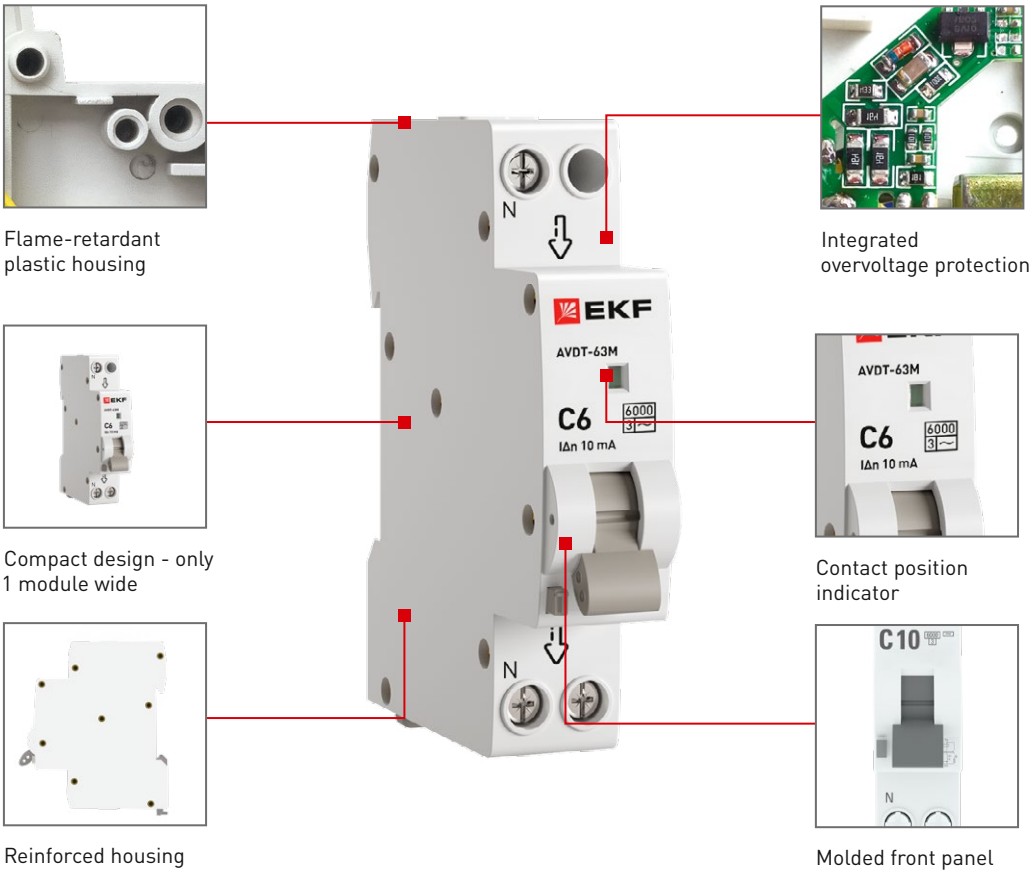
Picture	Rated current, A	Sensitivity			
		10 mA	30 mA	100 mA	300 mA
		1P+N Electronic Type AC Curve C			
	6	D63N26E6C10	D63N26E6C30	D63N26E6C100	–
	10	D63N26E10C10	D63N26E10C30	D63N26E10C100	–
	16	D63N26E16C10	D63N26E16C30	D63N26E16C100	–
	20	D63N26E20C10	D63N26E20C30	D63N26E20C100	–
	25	D63N26E25C10	D63N26E25C30	D63N26E25C100	D63N26E25C300
	32	–	D63N26E32C30	D63N26E32C100	D63N26E32C300
	40	–	D63N26E40C30	D63N26E40C100	D63N26E40C300
	50	–	D63N26E50C30	D63N26E50C100	D63N26E50C300
	63	–	D63N26E63C30	D63N26E63C100	D63N26E63C300
		1P+N Electronic Type AC Curve B			
	6	D63N26E6B10	D63N26E6B30	–	–
	10	D63N26E10B10	D63N26E10B30	–	–
	16	D63N26E16B10	D63N26E16B30	–	–
	20	D63N26E20B10	D63N26E20B30	–	–
	25	D63N26E25B10	D63N26E25B30	–	–
		1P+N Electromagnetic Type AC Curve C			
	6	D63N26M6C10	D63N26M6C30	D63N26M6C100	–
	10	D63N26M10C10	D63N26M10C30	D63N26M10C100	–
	16	D63N26M16C10	D63N26M16C30	D63N26M16C100	–
	20	D63N26M20C10	D63N26M20C30	D63N26M20C100	–
	25	D63N26M25C10	D63N26M25C30	D63N26M25C100	D63N26M25C300
	32	–	D63N26M32C30	D63N26M32C100	D63N26M32C300
	40	–	D63N26M40C30	D63N26M40C100	D63N26M40C300
	50	–	D63N26M50C30	D63N26M50C100	D63N26M50C300
	63	–	D63N26M63C30	D63N26M63C100	D63N26M63C300
		1P+N Electromagnetic Type AC Curve B			
	6	D63N26M6B10	D63N26M6B30	–	–
	10	D63N26M10B10	D63N26M10B30	–	–
	16	D63N26M16B10	D63N26M16B30	–	–
	20	D63N26M20B10	D63N26M20B30	–	–
	25	D63N26M25B10	D63N26M25B30	–	–
		1P+N Electronic Type A Curve C			
	6	D63N26EA6C10	D63N26EA6C30	–	–
	10	D63N26EA10C10	D63N26EA10C30	–	–
	16	D63N26EA16C10	D63N26EA16C30	–	–
	20	D63N26EA20C10	D63N26EA20C30	D63N26EA20C100	–
	25	D63N26EA25C10	D63N26EA25C30	D63N26EA25C100	–
	32	–	D63N26EA32C30	D63N26EA32C100	D63N26EA32C300
	40	–	D63N26EA40C30	D63N26EA40C100	D63N26EA40C300
	50	–	D63N26EA50C30	D63N26EA50C100	D63N26EA50C300
	63	–	D63N26EA63C30	D63N26EA63C100	D63N26EA63C300
		1P+N Electronic Type A Curve B			
	6	D63N26EA6B10	D63N26EA6B30	–	–
	10	D63N26EA10B10	D63N26EA10B30	–	–
	16	D63N26EA16B10	D63N26EA16B30	–	–
	20	D63N26EA20B10	D63N26EA20B30	–	–
	25	D63N26EA25B10	D63N26EA25B30	–	–
		1P+N Electromagnetic Type A Curve C			
	6	D63N26MA6C10	D63N26MA6C30	–	–
	10	D63N26MA10C10	D63N26MA10C30	–	–
	16	D63N26MA16C10	D63N26MA16C30	–	–
	20	D63N26MA20C10	D63N26MA20C30	D63N26MA20C100	–
	25	D63N26MA25C10	D63N26MA25C30	D63N26MA25C100	–
	32	–	D63N26MA32C30	D63N26MA32C100	D63N26MA32C300
	40	–	D63N26MA40C30	D63N26MA40C100	D63N26MA40C300
	50	–	D63N26MA50C30	D63N26MA50C100	D63N26MA50C300
	63	–	D63N26MA63C30	D63N26MA63C100	D63N26MA63C300
		1P+N Electromagnetic Type A Curve B			
	6	D63N26MA6B10	D63N26MA6B30	–	–
	10	D63N26MA10B10	D63N26MA10B30	–	–
	16	D63N26MA16B10	D63N26MA16B30	–	–
	20	D63N26MA20B10	D63N26MA20B30	–	–
	25	D63N26MA25B10	D63N26MA25B30	–	–

Picture	Rated current, A	Sensitivity			
		10 mA	30 mA	100 mA	300 mA
	1P+N Electronic Type AC-S Curve C				
	25	–	–	D63N26ES25C100	D63N26ES25C300
	32	–	–	D63N26ES32C100	D63N26ES32C300
	40	–	–	D63N26ES40C100	D63N26ES40C300
	50	–	–	D63N26ES50C100	D63N26ES50C300
	63	–	–	D63N26ES63C100	D63N26ES63C300
	1P+N Electromagnetic Type AC-S Curve C				
	25	–	–	D63N26MS25C100	D63N26MS25C300
	32	–	–	D63N26MS32C100	D63N26MS32C300
	40	–	–	D63N26MS40C100	D63N26MS40C300
	50	–	–	D63N26MS50C100	D63N26MS50C300
	63	–	–	D63N26MS63C100	D63N26MS63C300
	3P+N Electronic Type AC Curve C				
	10	–	D63N46E30C10	–	–
	16	D63N46E10C16	D63N46E30C16	–	–
	20	–	D63N46E30C20	–	–
	25	D63N46E10C25	D63N46E30C25	D63N46E100C25	D63N46E300C25
	32	–	D63N46E30C32	D63N46E100C32	D63N46E300C32
	40	–	D63N46E30C40	D63N46E100C40	D63N46E300C40
	50	–	D63N46E30C50	D63N46E100C50	D63N46E300C50
	63	–	D63N46E30C63	D63N46E100C63	D63N46E300C63
	3P+N Electromagnetic Type AC Curve C				
	10	–	D63N46M30C10	–	–
	16	D63N46M10C16	D63N46M30C16	–	–
	20	–	D63N46M30C20	–	–
	25	D63N46M10C25	D63N46M30C25	D63N46M100C25	D63N46M300C25
	32	–	D63N46M30C32	D63N46M100C32	D63N46M300C32
	40	–	D63N46M30C40	D63N46M100C40	D63N46M300C40
	50	–	D63N46M30C50	D63N46M100C50	D63N46M300C50
	63	–	D63N46M30C63	D63N46M100C63	D63N46M300C63
	3P+N Electronic Type A Curve C				
	10	–	D63N46EA30C10	–	–
	16	D63N46EA10C16	D63N46EA30C16	–	–
	20	–	D63N46EA30C20	–	–
	25	D63N46EA10C25	D63N46EA30C25	D63N46EA100C25	D63N46EA300C25
	32	–	D63N46EA30C32	D63N46EA100C32	D63N46EA300C32
	40	–	D63N46EA30C40	D63N46EA100C40	D63N46EA300C40
	50	–	D63N46EA30C50	D63N46EA100C50	D63N46EA300C50
	63	–	D63N46EA30C63	D63N46EA100C63	D63N46EA300C63
	3P+N Electromagnetic Type A Curve C				
	10	–	D63N46MA30C10	–	–
	16	D63N46MA10C16	D63N46MA30C16	–	–
	20	–	D63N46MA30C20	–	–
	25	D63N46MA10C25	D63N46MA30C25	D63N46MA100C25	D63N46MA300C25
	32	–	D63N46MA30C32	D63N46MA100C32	D63N46MA300C32
	40	–	D63N46MA30C40	D63N46MA100C40	D63N46MA300C40
	50	–	D63N46MA30C50	D63N46MA100C50	D63N46MA300C50
	63	–	D63N46MA30C63	D63N46MA100C63	D63N46MA300C63
	3P+N Electronic Type AC-S Curve C				
	16	–	–	D63N46ES100C16	–
	20	–	–	–	–
	25	–	–	D63N46ES100C25	D63N46ES300C25
	32	–	–	D63N46ES100C32	D63N46ES300C32
	40	–	–	D63N46ES100C40	D63N46ES300C40
	50	–	–	D63N46ES100C50	D63N46ES300C50
	63	–	–	D63N46ES100C63	D63N46ES300C63
	3P+N Electromagnetic Type AC-S Curve C				
	16	–	–	D63N46MS100C16	–
	20	–	–	–	–
	25	–	–	D63N46MS100C25	D63N46MS300C25
	32	–	–	D63N46MS100C32	D63N46MS300C32
	40	–	–	D63N46MS100C40	D63N46MS300C40
	50	–	–	D63N46MS100C50	D63N46MS300C50
	63	–	–	D63N46MS100C63	D63N46MS300C63

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 61009-1



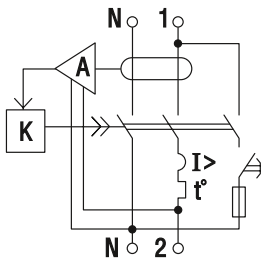
APPLICATION

- 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

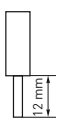
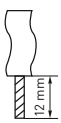
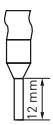
Wiring diagrams

AVDT-63M (electronic)



Installation and operation

1. Connection

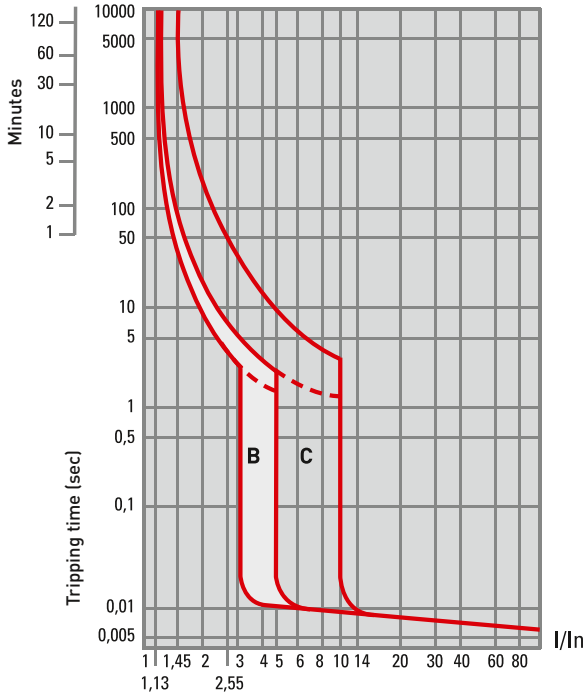
Conductor		
Solid	Stranded	Ferrule
		

2. RCBO AVDT-63M PROXIMA EKF supports NO accessories.

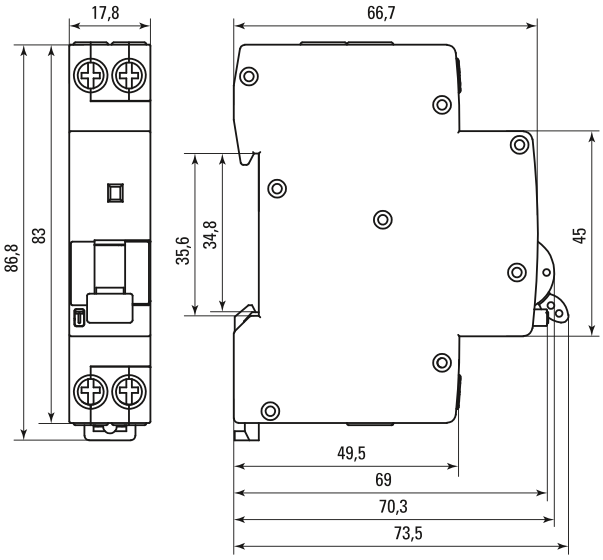
Parameters	Values
Rated operating voltage Ue, V	220 / 230 / 240
Frequency fn, Hz	50 / 60
Poles	1P+N
Rated current In, A	6, 10, 16, 20, 25, 32, 40
Neutral pole position	Left
Tripping curve types	B, C
Degree of protection	IP20
Rated breaking capacity Icn, kA	6
Residual current protection type	Electronic
Type of waveform detected	A; AC
Sensitivity IΔn, mA	10, 30, 100
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

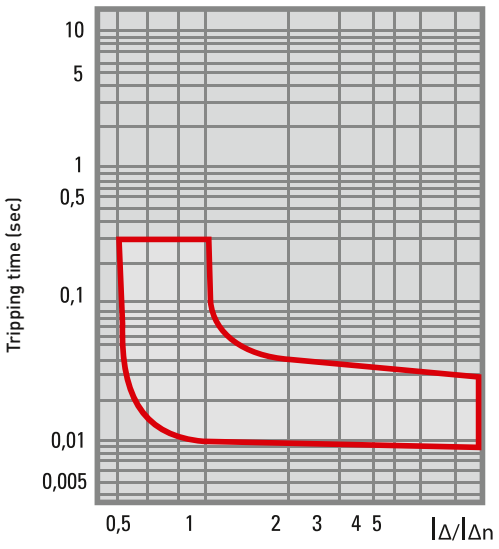
B – electromagnetic protection trips at (3-5) × In.
C – electromagnetic protection trips at (5-10) × In.



Overall and installation dimensions (mm)



Operating time by residual current

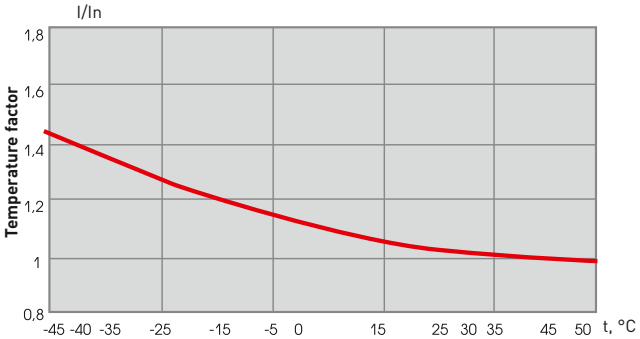


Delivery scope

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



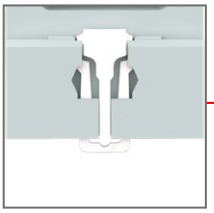
Picture	Rated current, A	Sensitivity	
		10 mA	30 mA
		Type A Curve B	
	6	D636EA06B10	–
	10	–	D636EA10B30
	16	–	D636EA16B30
	20	–	–
	25	–	–
	32	–	–
		Type AC Curve B	
	6	DA63M-6B-10	–
	10	–	DA63M-10B-30
	16	–	DA63M-16B-30
	20	–	–
	25	–	–
	32	–	–
		10 mA	**30 mA**	**100 mA**
		Type A Curve C		
	6	D636EA06C10	D636EA06C30	–
	10	D636EA10C10	D636EA10C30	–
	16	D636EA16C10	D636EA16C30	–
	20	D636EA20C10	D636EA20C30	–
	25	D636EA25C10	D636EA25C30	D636EA25C100
	32	D636EA32C10	D636EA32C30	D636EA32C100
		Type AC Curve C		
	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 AVDT-50M PROXIMA EKF

Residual current circuit breaker with overcurrent protection (RCBO) AVDT-50M 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.

Standard: IEC 61009-1

Robust 10 kA breaking capacity for excellent circuit protection



Two-position snap-on DIN rail mounting for quick and secure fitting

1-meter long flexible neutral and earth leads for easier installation

Space-saving 18 mm slim design for efficient panel utilization

Flame retardant plastic housing for enhanced fire safety

Wide rated current range up to 50 A to suit various applications

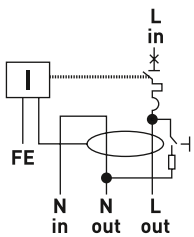
APPLICATION

- 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

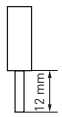
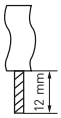
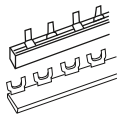
Wiring diagrams

AVDT-50M



Installation and operation

1. Connection

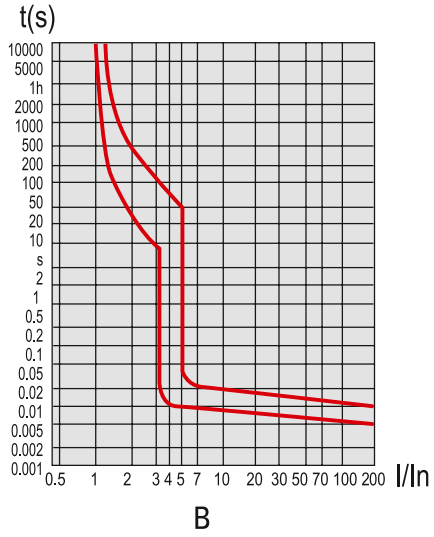
Conductor			Comb busbar
Solid	Stranded	Ferrule	Pin, fork
			

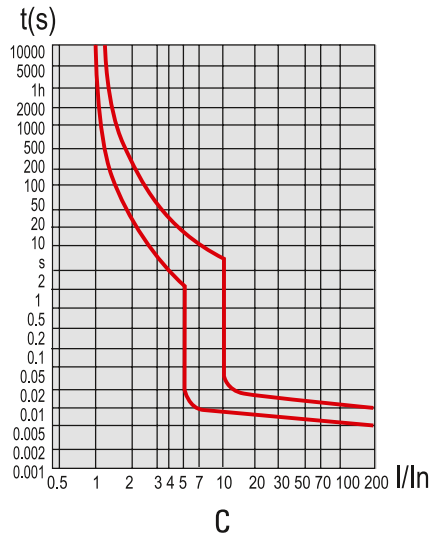
Parameters	Values
Number of poles	1P+N
Rated operating voltage Ue, V	220 / 230 / 240
Rated frequency, Hz	50 / 60
Rated current In, A	6, 10, 16, 20, 25, 32, 40, 50
Sensitivity IΔn, mA	10, 30, 100, 300
Rated breaking capacity Icn, kA	10
Type of waveform detected	A, AC
Selectivity	AC-S
Tripping curve types	B, C
Ultimate short-circuit breaking capacity Icu, kA	10
Service short-circuit breaking capacity Ics, kA	7,5
Residual current protection type	Electronic (voltage dependent)
Rated impulse withstand voltage Uimp, kV	4
Rated insulation voltage Ui, V	500
Energy limiting class	3
Mechanical endurance, O-C cycles	20 000
Electrical endurance, O-C cycles	4000
Max. cross-section of connected wires, mm2	10 (stranded wire); 16 (solid wire)
Degree of protection	IP20
Operating temperature, °C	From –35 to 70
Max. tightening torque, N·m	2

Tripping curves

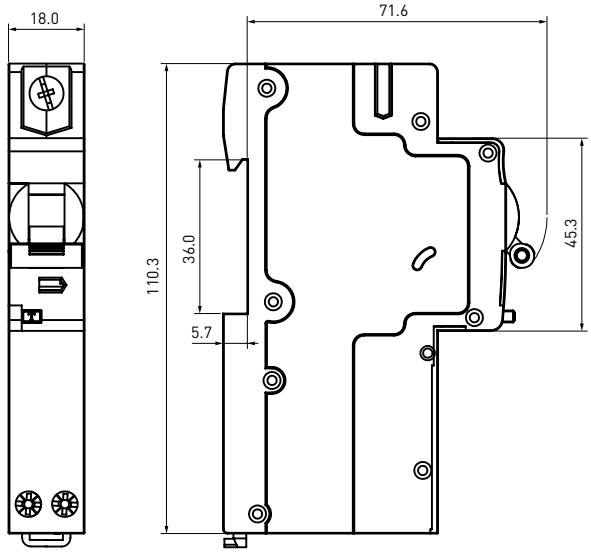
B – electromagnetic protection trips at (3-5) × In.
C – electromagnetic protection trips at (5-10) × In.

At the ambient temperature of +30°C

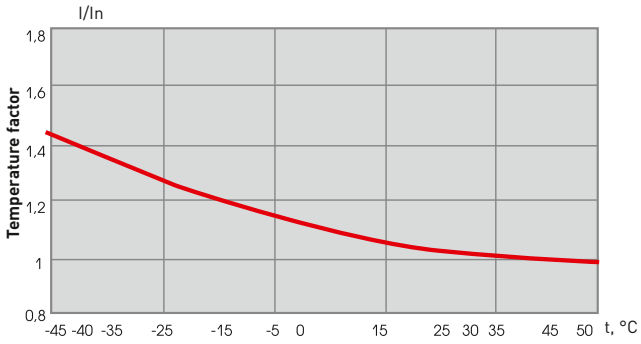




Overall and installation dimensions (mm)



Temperature derating



Delivery scope

Residual current circuit breakers with overcurrent protection AVDT-50M PROXIMA EKF are supplied in individual and group package.

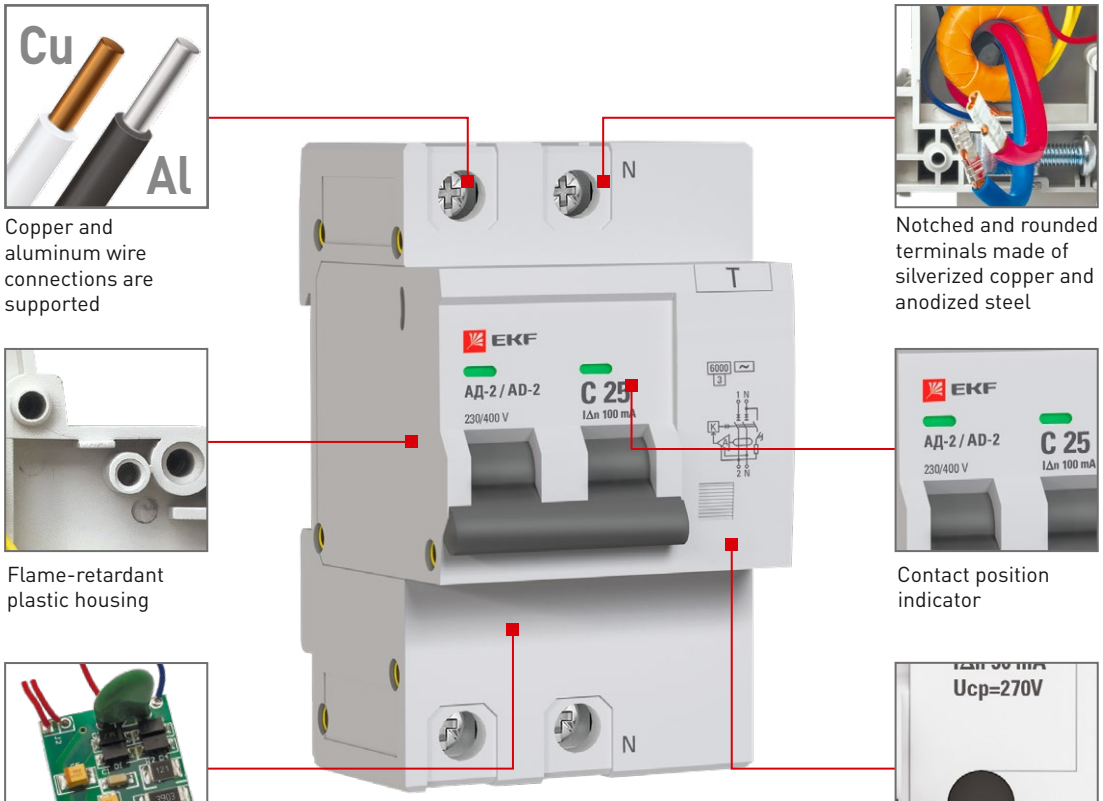
For all available documentation, scan the QR-code on the insert or on the inside of the package.

Picture	Rated current, A	Item code
	6	D5010AC06C30M
	10	D5010AC10C30M
	16	D5010AC16C30M
	20	D5010AC20C30M
	25	D5010AC25C30M
	32	D5010AC32C30M
	40	D5010AC40C30M
	50	D5010AC50C30M

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 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

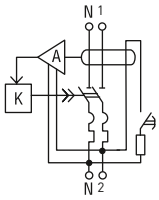
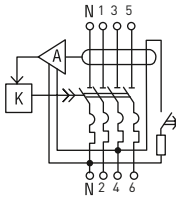
Return button for trip indication by residual current

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.

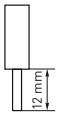
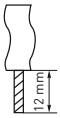
TECHNICAL DATA

Wiring diagrams

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

Installation and operation

1. Connection

Conductor		
Solid	Stranded	Ferrule
		

2. No accessories supported

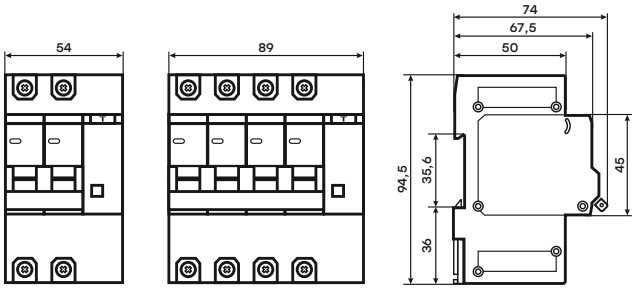
Parameters	Values
Rated operating voltage Ue, V	1P+N: 220 / 230 / 240 3P+N: 380 / 400 / 415
Frequency, Hz	50 / 60
Number of poles	1P+N, 3P+N
Rated current In, A	6, 10, 16, 20, 25, 32, 40, 50, 63
Neutral pole position	Left
Tripping curve types	B, C
Degree of protection	IP20
Rated breaking capacity Icn, kA	6
Residual current protection type	Electronic
Type of waveform detected	AC
Sensitivity IΔn, mA	10, 30, 100, 300
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



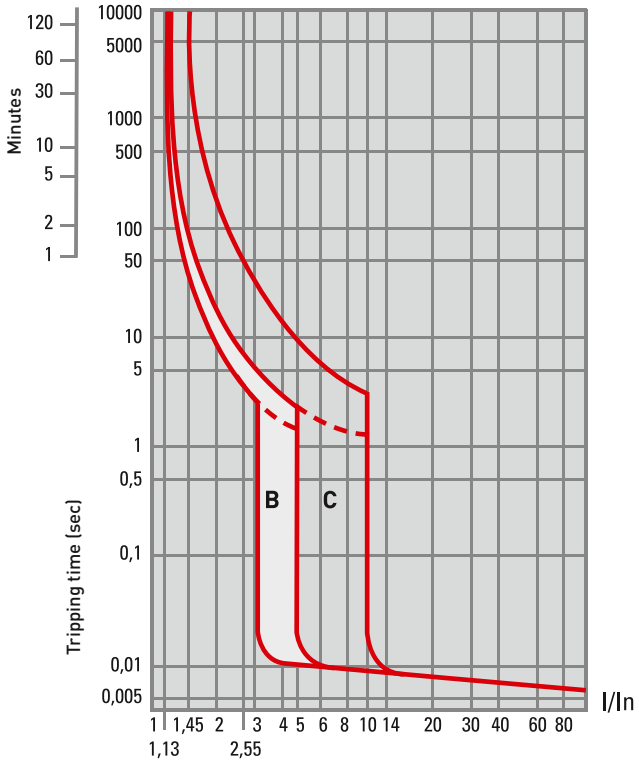
Delivery scope

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

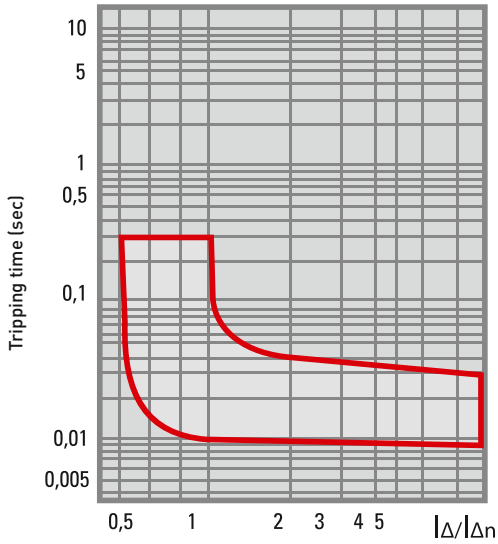
For all available documentation, scan the QR-code on the insert or on the inside of the package.

Tripping curves

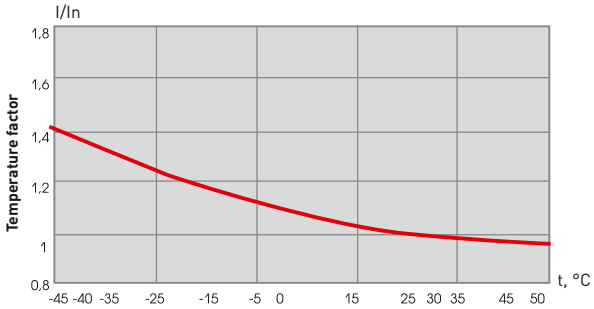
B – electromagnetic protection trips at (3-5) × In.
C – electromagnetic protection trips at (5-10) × In.



Operating time by residual current



Temperature derating

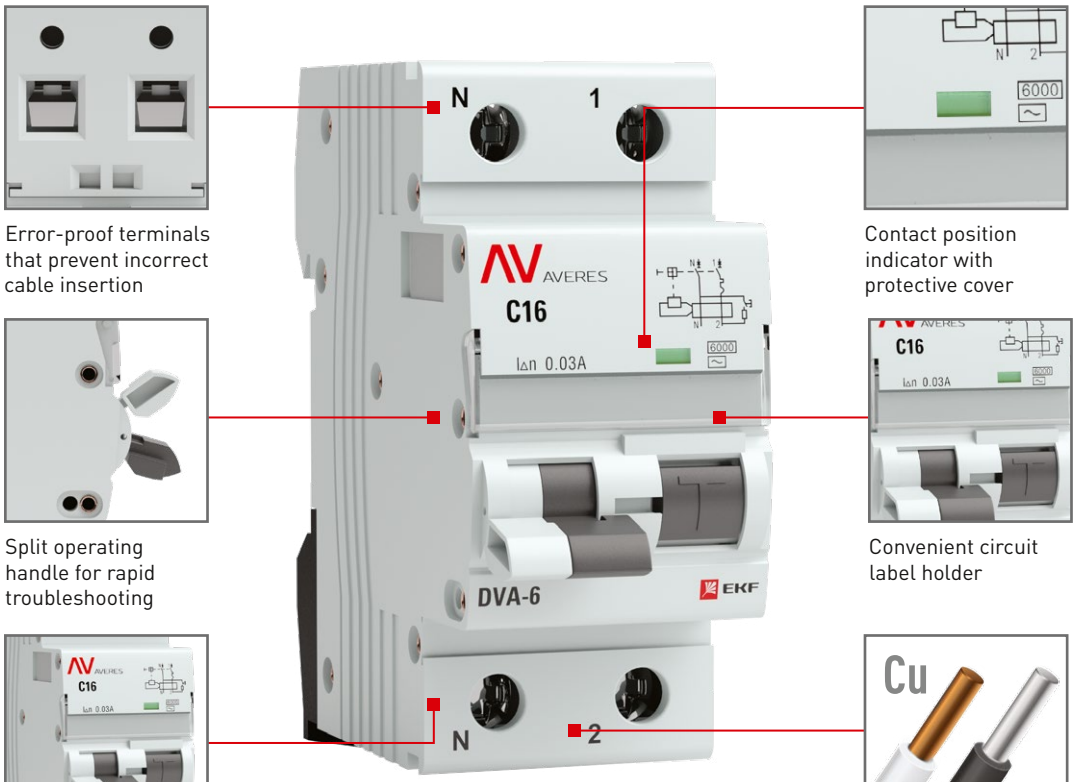


Picture	Rated current, A	30 mA, type AC	100 mA, type AC	300 mA, type AC	100 mA, type AC-S	300 mA, type AC-S
	AD-2 6 kA					
	6	DA2-6-06-30-pro	–	–	-	-
	10	DA2-6-10-30-pro	–	–	-	-
	16	DA2-6-16-30-pro	DA2-6-16-100-pro	–	-	-
	20	DA2-6-20-30-pro	–	–	-	-
	25	DA2-6-25-30-pro	DA2-6-25-100-pro	DA2-6-25-300-pro	-	-
	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-4 6 kA					
	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 61009-1

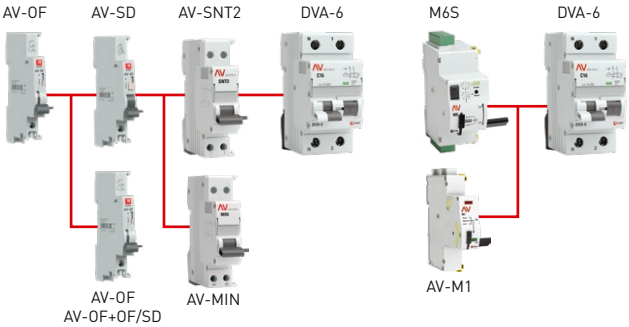


APPLICATION

- 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.

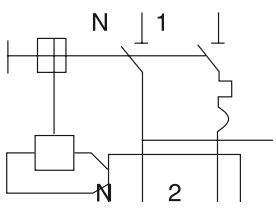
TECHNICAL DATA

Connection of accessories



Wiring diagrams

DVA-6



Installation and operation

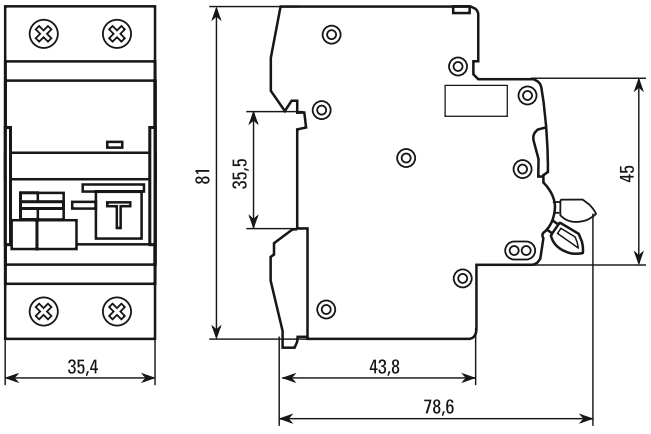
Accessories:

- 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	220 / 230 / 240
Frequency , Hz	50 / 60
Rated current In, A	6, 10, 13, 16, 20, 25, 32, 40
Tripping curve types	B, C, D
Number of poles	1P+N
Rated breaking capacity Icn, kA	6 / 10*
Residual current protection type	Electromagnetic
Type of waveform detected	A, AC
Sensitivity IΔn, mA	30, 100, 300
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 of 10 kA.

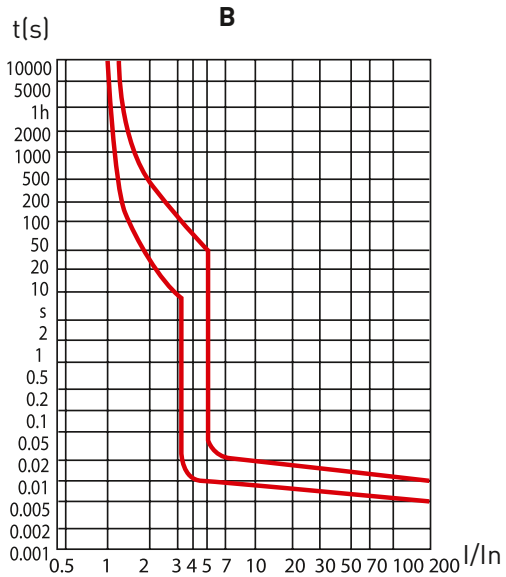
Overall and installation dimensions (mm)

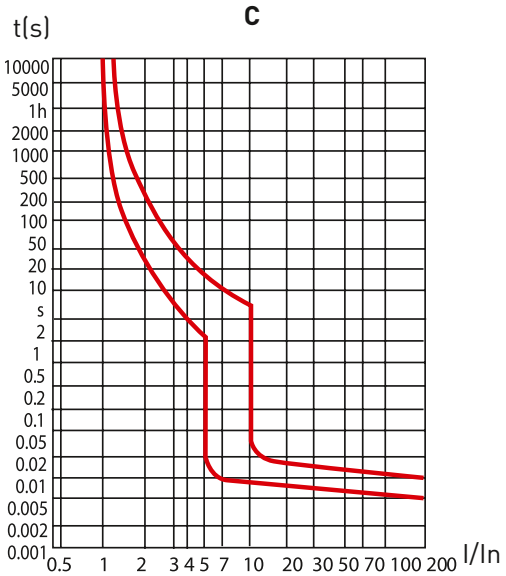


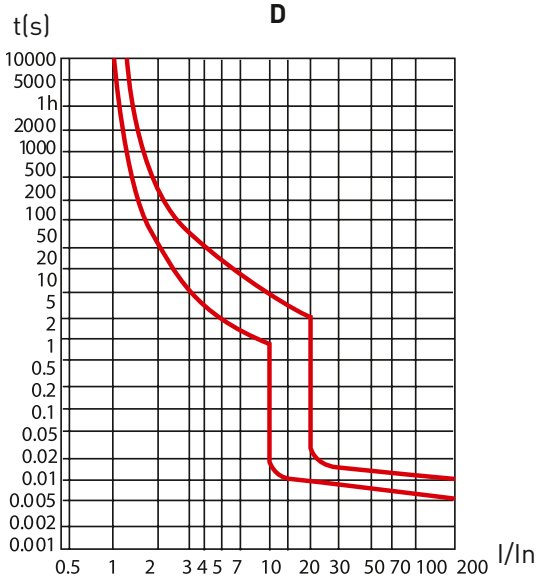
Delivery scope

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





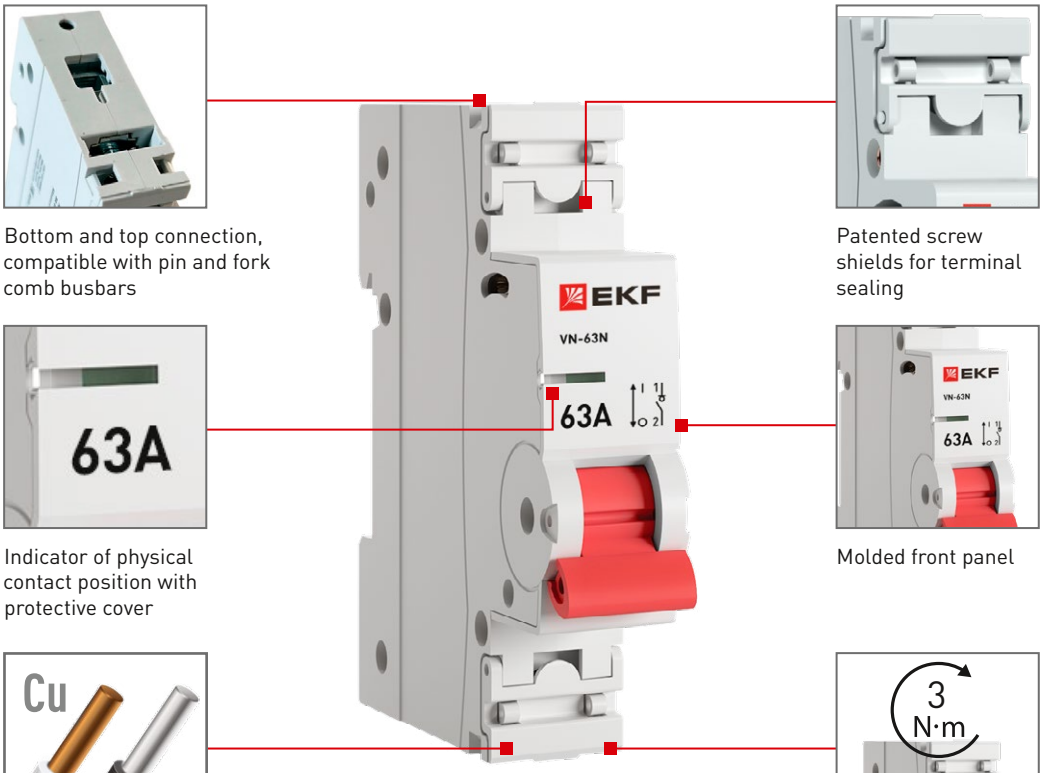


Picture	Rated current, A	Tripping curve		
		B	C	D
		Type A		
		30 mA		
	6	rcbo6-1pn-6B-30-a-av	rcbo6-1pn-6C-30-a-av	rcbo6-1pn-6D-30-a-av
	10	rcbo6-1pn-10B-30-a-av	rcbo6-1pn-10C-30-a-av	rcbo6-1pn-10D-30-a-av
	13	rcbo6-1pn-13B-30-a-av	rcbo6-1pn-13C-30-a-av	rcbo6-1pn-13D-30-a-av
	16	rcbo6-1pn-16B-30-a-av	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 in this series feature an advanced design, including sealable plastic screw shields that cover the screw terminals to prevent unauthorized access to wires. Additionally, they have a reinforced housing with extra rivets for enhanced rigidity, and the front panel includes an indicator to show the physical contact position. A two-position clamp ensures easy mounting onto a DIN rail.

Standard: IEC 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

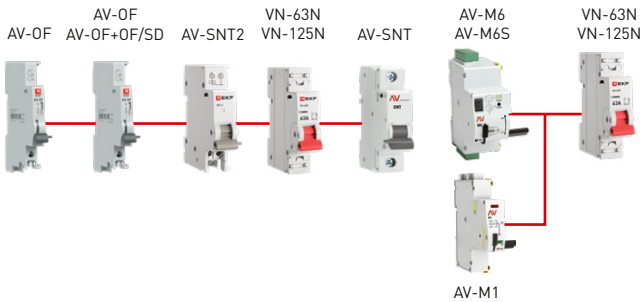
APPLICATION

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

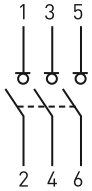
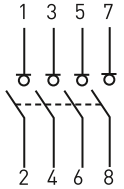
- Control electrical circuits;
- Disconnect circuit sections for downstream maintenance;
- Ensure safety when conducting maintenance work;
- Provide continuous protection for operators.

TECHNICAL DATA

Connection of accessories



Wiring diagrams

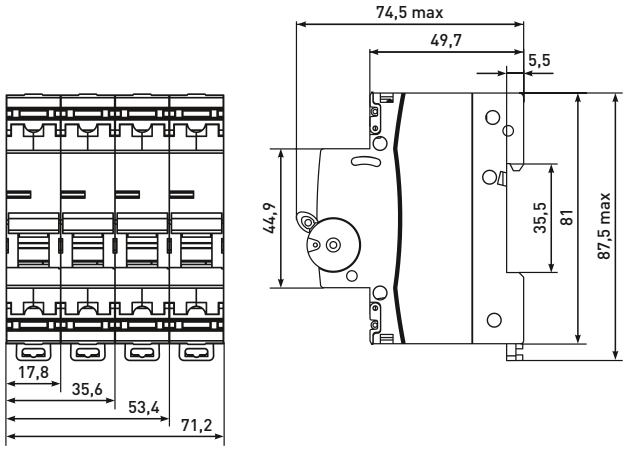
Number of poles			
1P	2P	3P	4P
			

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-SNT2 (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	
	VN-63N	VN-125N
Rated operating voltage Ue, V	1P, 2P: 220 / 230 / 240 3P, 4P: 380 / 400 / 415	
Frequency, Hz	50 / 60	
Number of poles	1; 2; 3; 4	
Rated current In, A	16, 20, 25, 32, 40, 63	80, 100, 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, mm²	1–25	1-50
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 AVN AVERES EKF

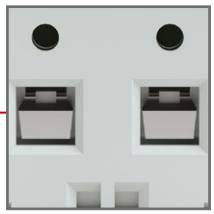
The switch disconnector AVN AVERES EKF is an electromechanical switching device used for switching in AC circuits. Switch disconnectors are designed for switching capacitive, resistive and inductive loads including motors protected by other switching devices.

Standard: IEC 60947-3

Broad range of accessories (up to 63 A)

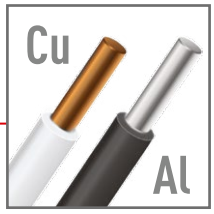
Contact position indicator with protective cover

Rated current up to 125 A



Error-proof terminals that prevent incorrect cable insertion

Convenient circuit labeling window



Copper and aluminum connections supported

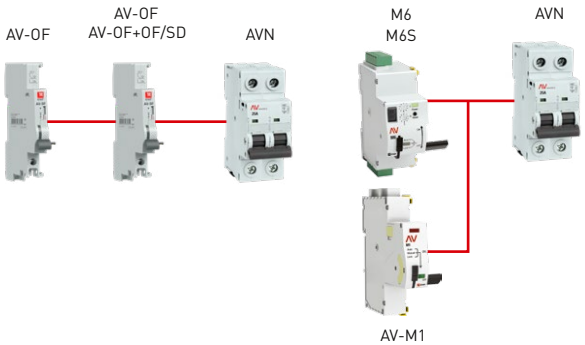
APPLICATION

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

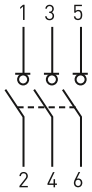
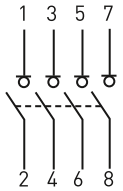
- Residential & commercial buildings;
- Public & infrastructure facilities;
- Industrial facilities.

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.

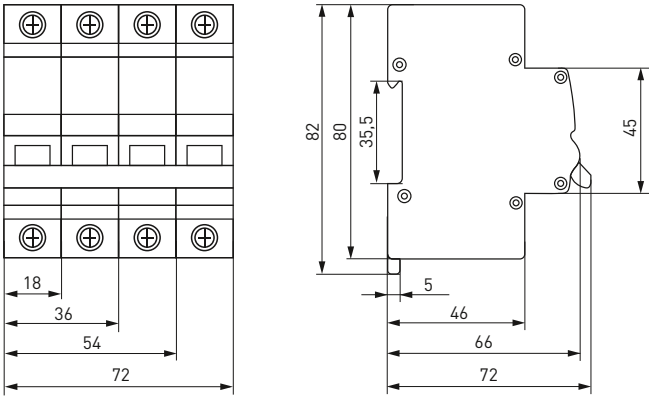
Parameters	Values
Number of poles	1; 2; 3; 4
Frequency, Hz	50 / 60
Rated operating voltage Ue, V	1P, 2P: 220 / 230 / 240 3P, 4P: 380 / 400 / 415
Rated current In, A	16, 25, 40, 63, 100, 125
Rated short-time withstand current (for 16, 25, 40, 63 A) Icw, kA	1
Rated short-time withstand current (for 100, 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
Max. 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

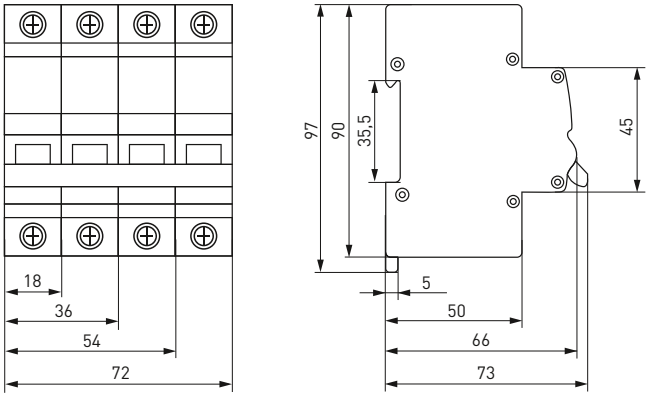
Modular switch disconnectors AVN AVERES EKF are supplied in a group package.
For all available documentation, scan the QR-code on the insert or on the inside of the package.

Overall and installation dimensions (mm)

16 A, 25 A, 40 A, 63 A



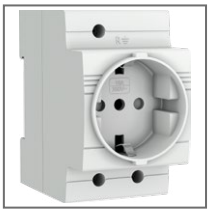
100 A, 125 A



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

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

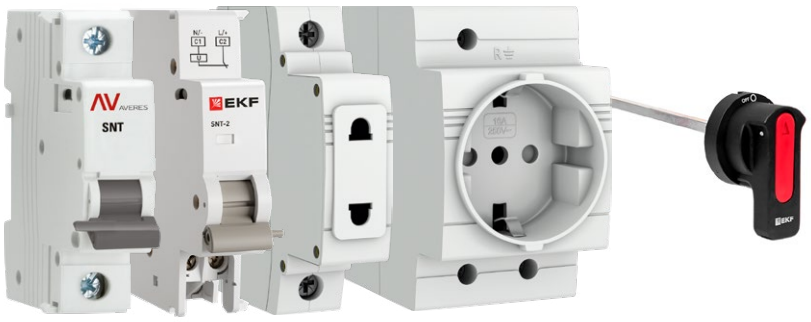
Neon lamp replaced by LED (LS-47, LSF-47)

Unification of all accessories

7 8 9 10 11 12 13 14

Reinforced housing with 6 rivets

Molded front panel



15 16 17 18 19

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

1. Auxiliary contact BK-47 PROXIMA EKF
2. Overvoltage and undervoltage release RMM-47 PROXIMA EKF
3. Shunt release RN-47 PROXIMA EKF
4. Modular push button KM-47 (red) PROXIMA EKF
5. Modular push button KM-47 (grey) PROXIMA EKF
6. Modular bell ZD-47 PROXIMA EKF
7. Single indicator light LS-47 (yellow) PROXIMA EKF
8. Single indicator light LS-47 (white) PROXIMA EKF
9. Single indicator light LS-47 (green) PROXIMA EKF
10. Single indicator light LS-47 (red) PROXIMA EKF
11. Three-phase indicator light LSF-47 PROXIMA EKF
12. Auxilliary contact AV-0F EKF
13. Alarm contact AV-SD EKF
14. Combined auxiliary and alarm contact AV-0F+0F/SD EKF
15. Shunt release SNT EKF
16. Shunt release SNT2 EKF
17. Modular socket RD-47 240V PROXIMA EKF
18. Modular socket RDE-47 (EURO with protective earth-contact) 240V PROXIMA EKF
19. 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

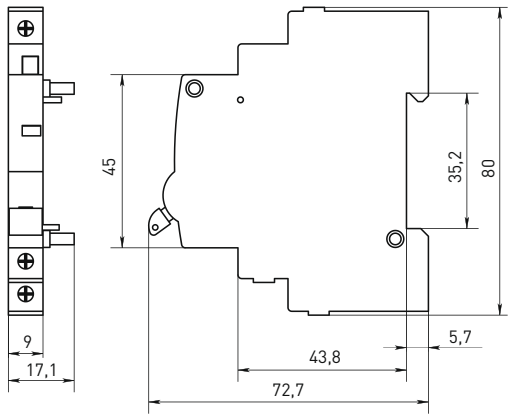
Main device	Accessories
Miniature circuit breaker VA 47-100 PROXIMA EKF	Auxiliary contact BK-47 PROXIMA EKF Shunt release RN-47 PROXIMA EKF Overvoltage and undervoltage release RMM-47 PROXIMA EKF
Miniature circuit breaker VA 47-63N PROXIMA EKF Modular switch disconnector VN-63N/ VN-125N PROXIMA EKF Residual current circuit breaker with overcurrent protection AVDT-63N PROXIMA EKF	Auxiliary contact AV-OF EKF Alarm contact AV-SD EKF Combined auxiliary and alarm contact AV-OF+OF/SD EKF Shunt releases SNT & SNT2 EKF Auto reclosers AV-M1, AV-M6(S) EKF

TECHNICAL DATA

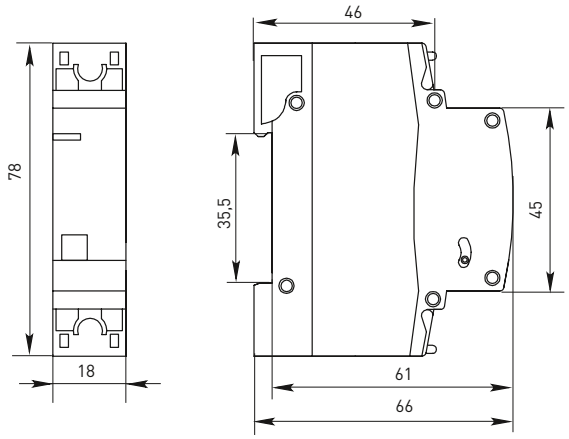
Characteristics	Accessories PROXIMA EKF							
	BK-47	RMM-47	RN-47	KM-47	ZD-47	LS-47	RD-47	RDE-47
Rated current, A	3	–	1,3	6	0,5	0,5	16	16
Rated voltage, V AC	230 / 400	min. 170 max. 270	230	230	230	230	230	230
Contacts	–	–	–	2NO + 2NC	–	–	1P+N	1P + N + PE
Size compared to 1 module (18mm)	0,5	1	1	1	1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

Overall and installation dimensions (mm)

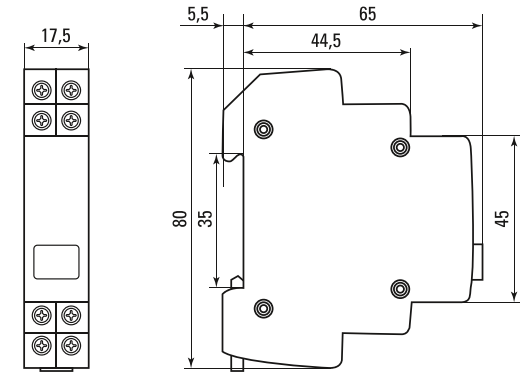
BK-47



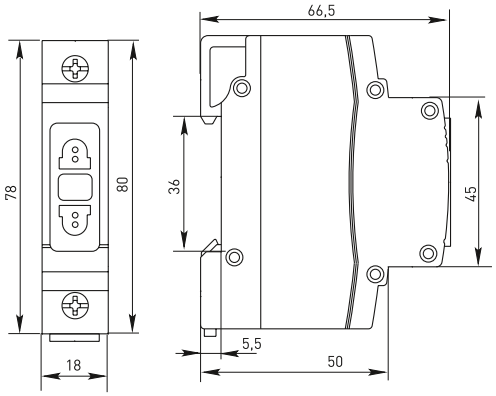
RMM-47 & RN-47



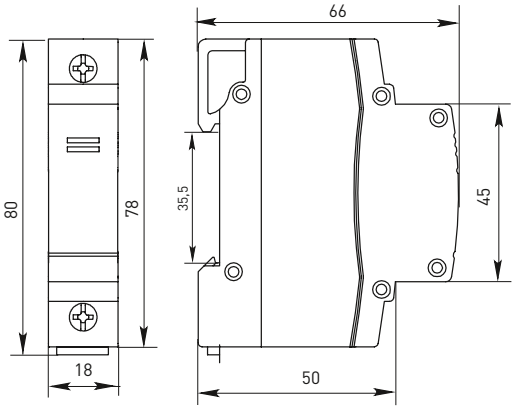
KM-47



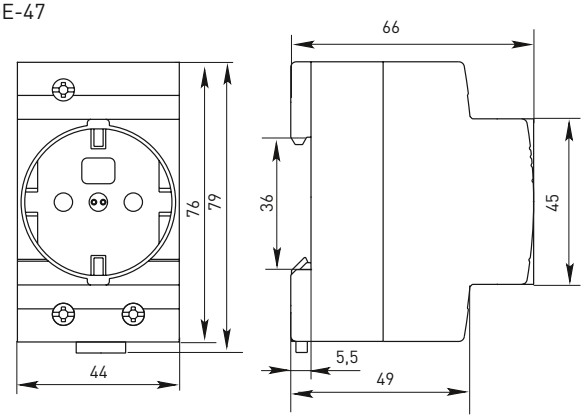
RD-47



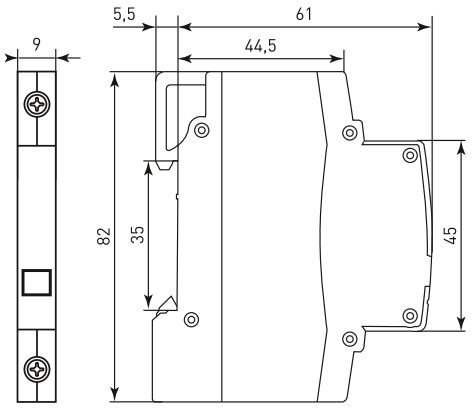
ZD-47



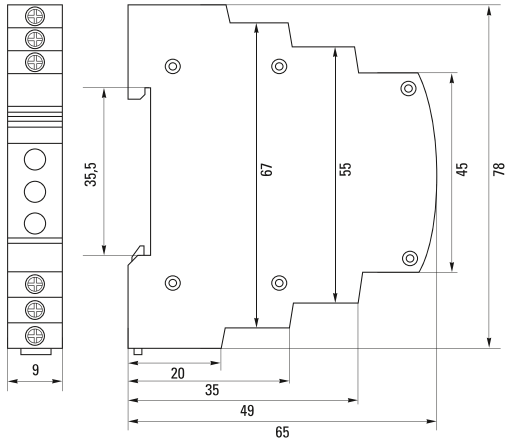
RDE-47



LS-47



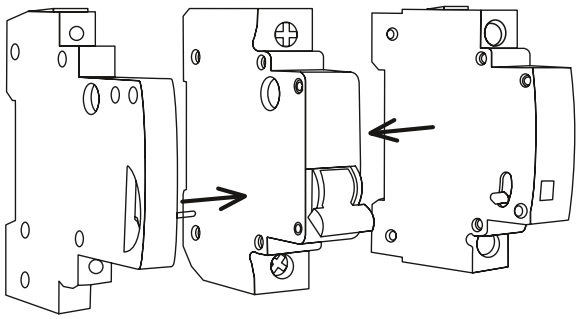
LSF-47



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.

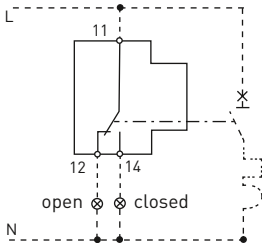
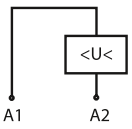
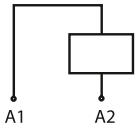
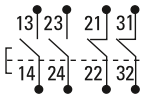
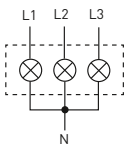
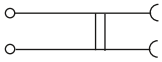
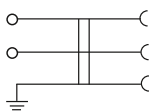


2. Release operation

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.

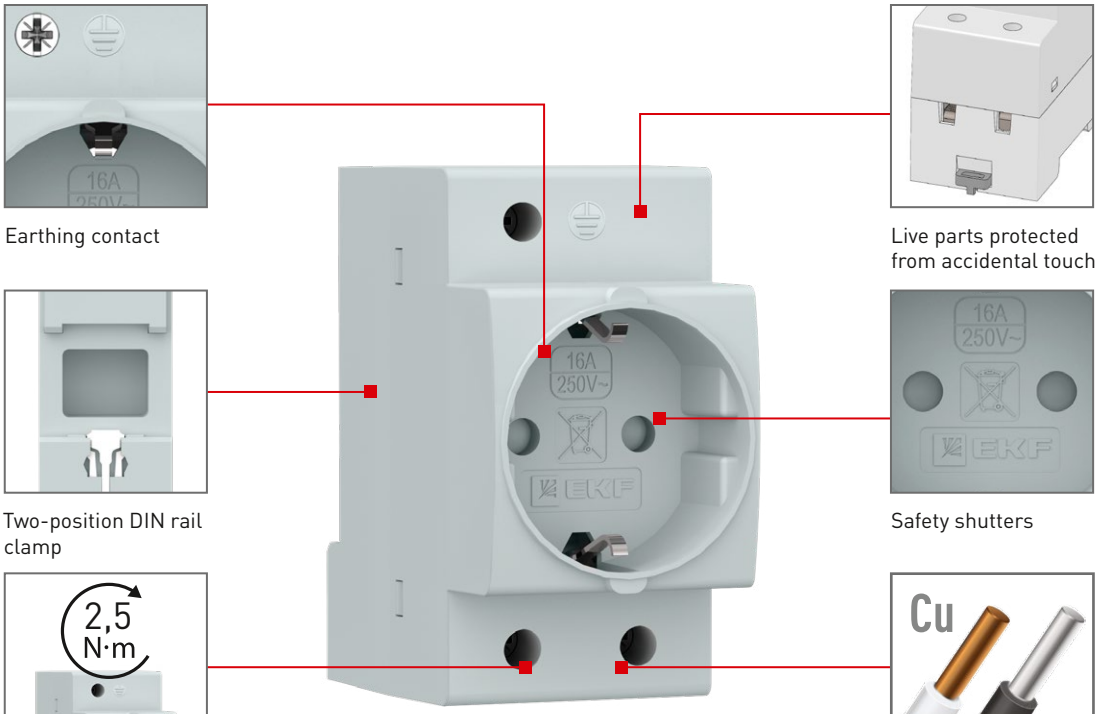
With this feature, you can identify the cause of circuit breaker tripping: overcurrent or overload in the protected circuit, incorrect voltage, or remote trip.

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

Picture	Name	Wiring diagram	Description	Item code
	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.



Earthing contact

Live parts protected from accidental touch

Two-position DIN rail clamp

Safety shutters

Improved tightening torque: 2,5 N·m

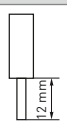
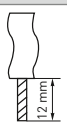
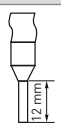
Copper and aluminum wire connections supported

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

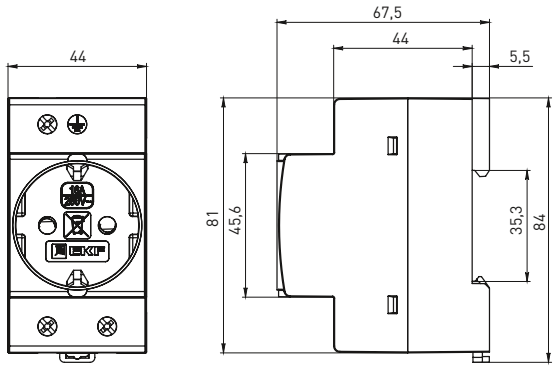
Conductor		
Solid	Stranded	Ferrule
		

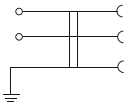
Delivery scope

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.

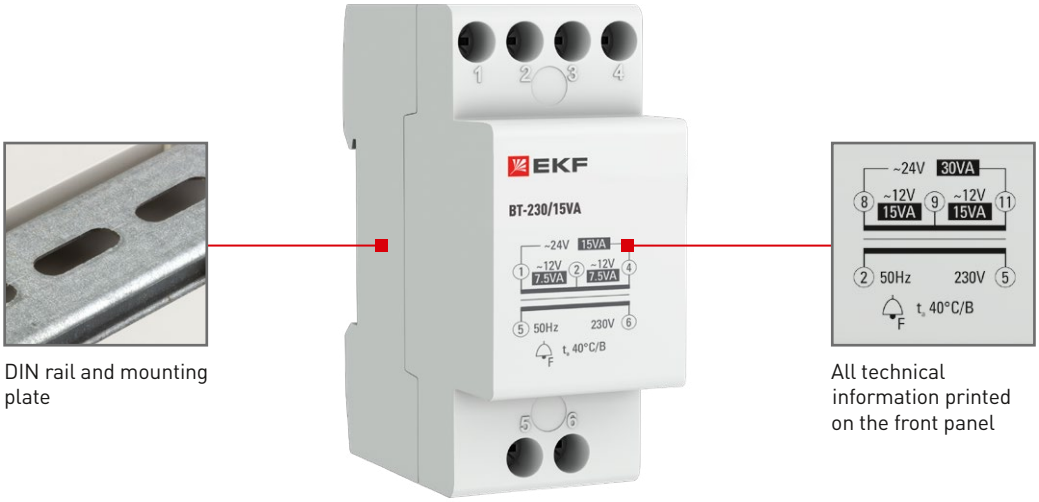
Overall and installation dimensions (mm)



Picture	Rated current, A	Wiring diagram	Item code
	16		RDE4716

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

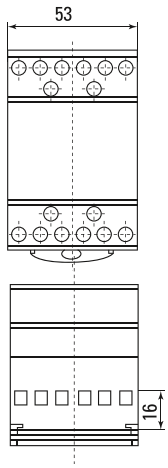
All technical information printed on the front panel

TECHNICAL DATA

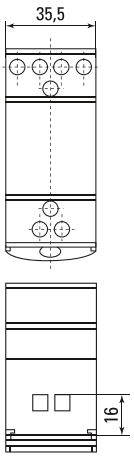
Parameters	Values	
	15VA	30VA
Primary voltage 2-5	230 V	
Secondary voltage 8-9	12 V	
Secondary voltage 9-11	12 V	
Winding power 8-9, VA	7,5	15
Winding power 9-11, VA	7,5	15
Rated frequency, Hz	50 / 60	
Connected power 8-11, P, VA	15	30
Max. rated secondary voltage deviation, %	±3	
Operating mode	Short-term 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	

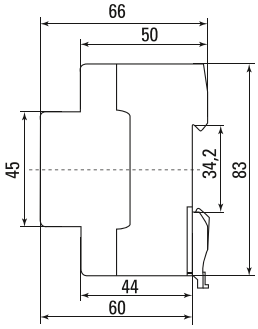
Overall and installation dimensions (mm)

30 VA



15 VA





Installation and operation

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

Delivery scope

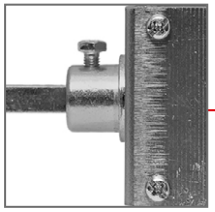
Bell transformers VT PROXIMA EKF are delivered in a group package. For all available documentation, scan the QR-code on the insert or on the inside of the package.

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

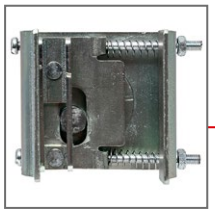
External rotary handle RP-47 EKF

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

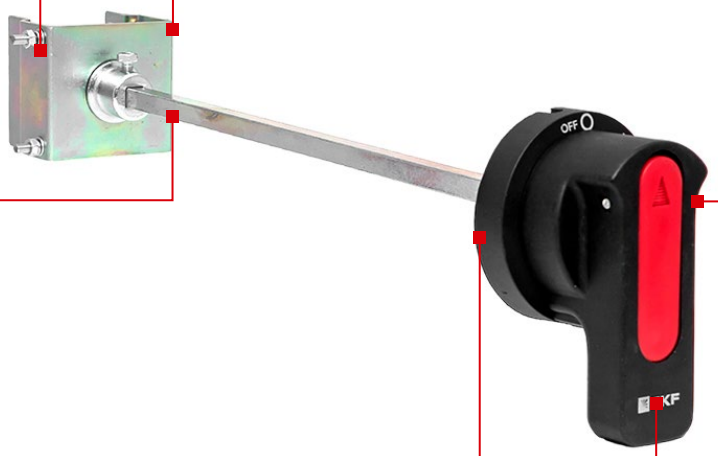
Extended shaft length: 300 mm



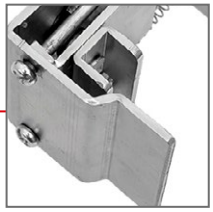
Easily adjustable extension shaft



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 47-100 PROXIMA EKF; AV-6, AV-6 DC, AV-10 AVERES EKF).
Modular switch disconnectors: 2P, 3P, 4P (VN-63N/VN-125N 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 (AVDT-63N, AVDT-63M, AD-2/AD-4 PROXIMA EKF).

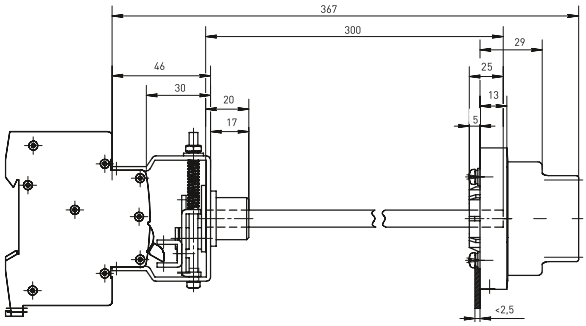
Delivery scope

External rotary handles are supplied in an individual package.

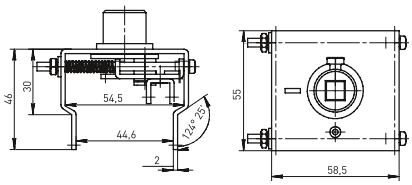
For all available documentation, scan the QR-code on the insert or on the inside of the package.

Picture	Net weight, kg	Item code
	0,5	RP47300

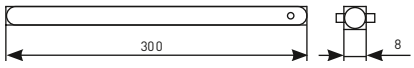
Overall and installation dimensions (mm)



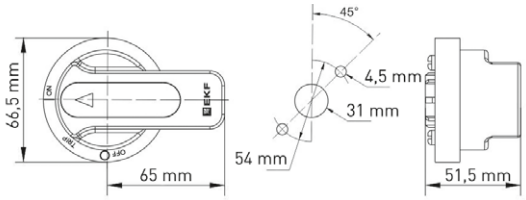
Overall dimensions of operating mechanism



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 60947-5-1

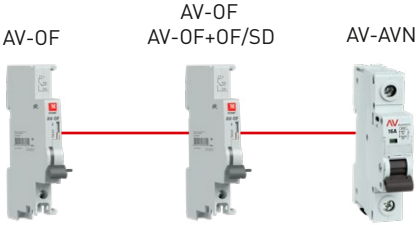
AV-SNT AV-SNT-2 AV-MIN AV-MM AV-SNT-DC

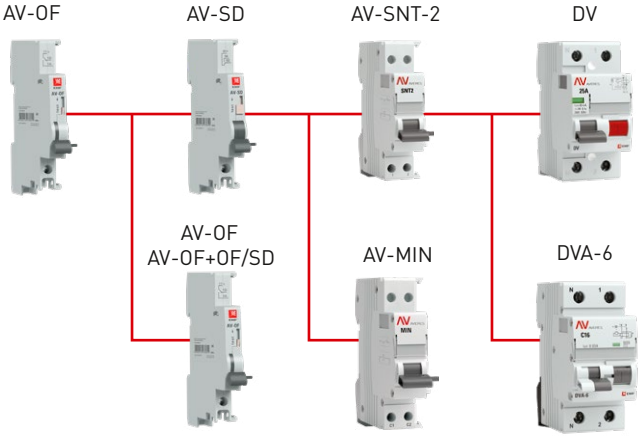
AV-OF AV-OF AV-OF+OF/SD AV-L

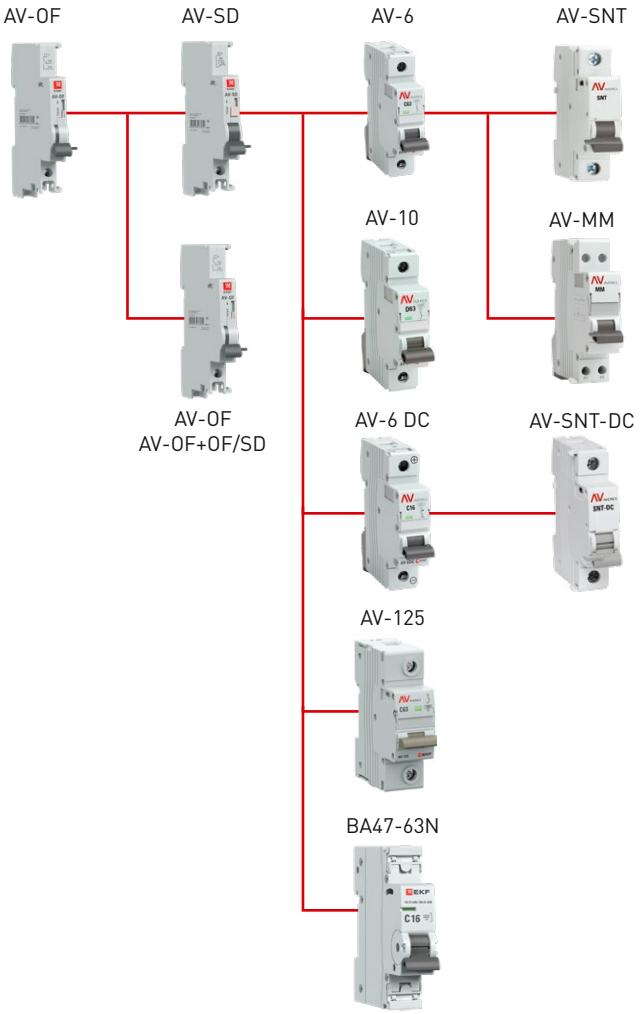
- Shunt release AV-SNT(-DC) is installed to the right of MCBs AV-6 or AV-10 to trip them when the control terminal receives a signal.
- Shunt release AV-SNT-2 features the same dimensions as AV-SNT, but is installed to the left of both PROXIMA and AVERES devices.
- Undervoltage release AV-MIN is installed 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 modular devices to indicate contact status of the device it is connected to. The alarm contact AV-SD is installed to the left of DIN rail modular devices 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.

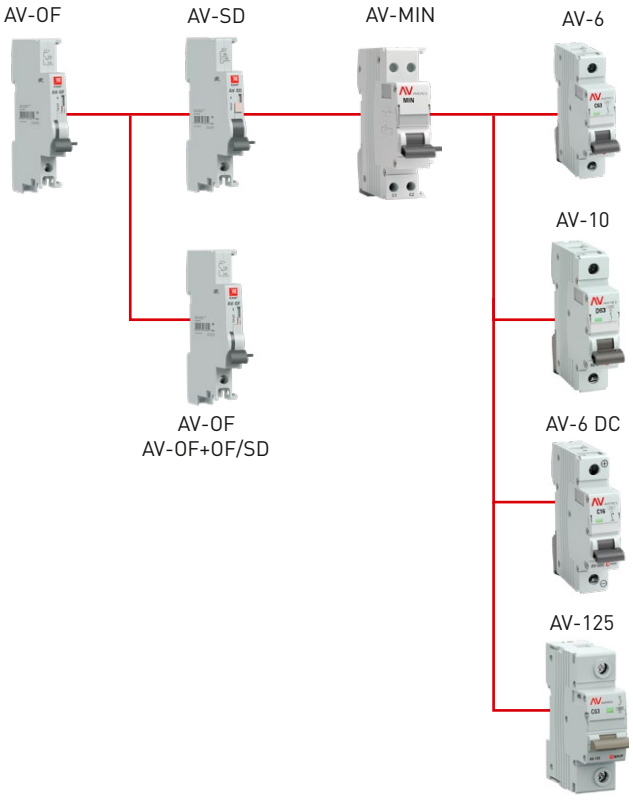
TECHNICAL DATA

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 (Uc): 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 right (SNT2 - 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
AC-12	3	400
	6	230
DC-12	6	24
	2	48
	1	130

Shunt release AV-SNT

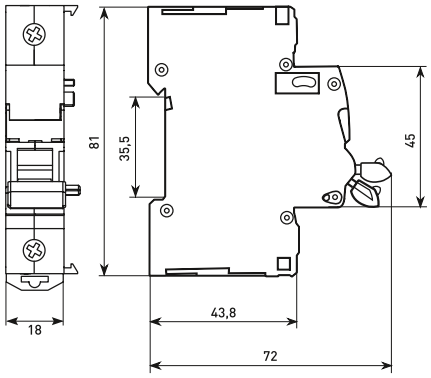
- Rated voltage: 230V AC
- Control voltage: (70%~146%) × Ue.

Undervoltage release AV-MIN

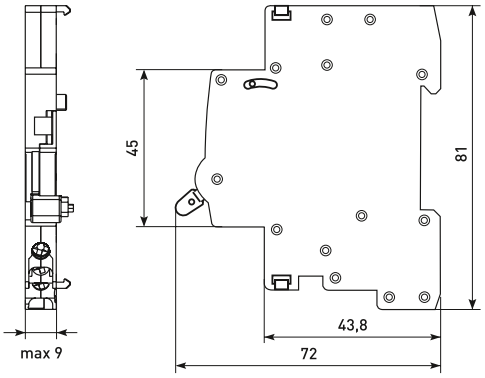
- Rated voltage: 230V AC
- Trip voltage: (35%~70%) × Ue.
- Non-trip voltage: (85%~110%) × Ue.

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.

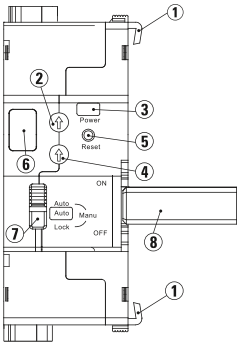
Standards: IEC 60947–4–1, IEC 61095

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



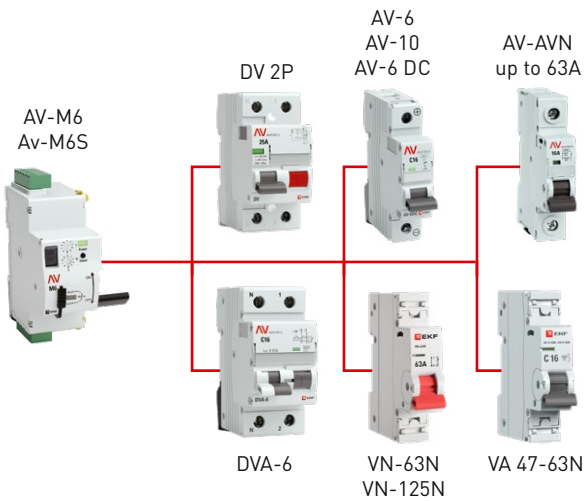
1. Locking tabs
2. Time delay selector
3. Contact position indicator
4. Reclosing attempts selector
5. Counter reset button
6. Tripping counter
7. Mode switch
8. Operating handle

APPLICATION

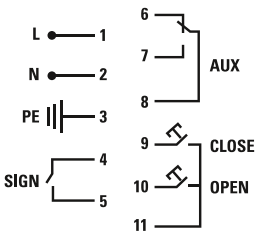
- Remote control of modular devices (on/off).
- Automatic reclosing of modular devices.
- Adjustable number and interval of reclosings.
- Visual indication of the number of attempted reclosings.
- Lockout mode for circuit repair and maintenance.
- Built-in alarm contact.

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)

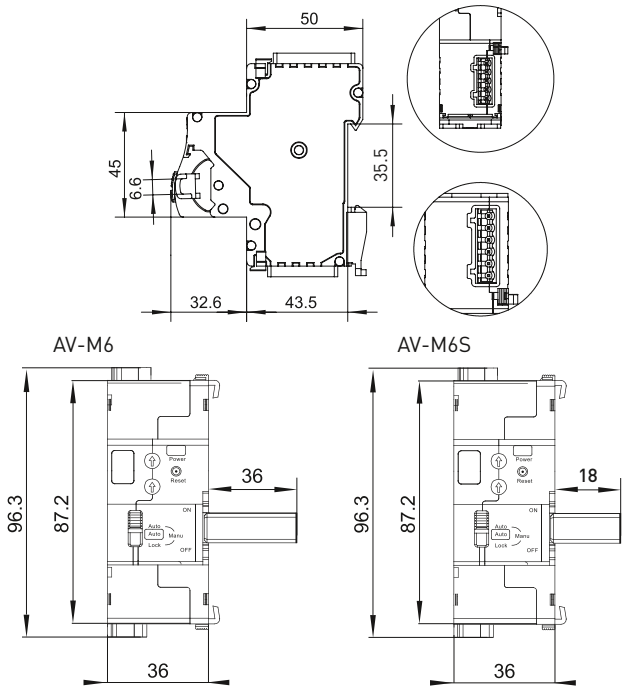
Parameters	Values
Rated operating voltage Ue, V	230
Voltage type	AC
Frequency, Hz	50 / 60
Power, VA	3
Standby power, W	0,5
Number of reclosing operations (configured), times	0, 1, 2, 3, 4, 5, 6, 7, 8, 9
Max. reclosing time, sec.	0,1
Time delay (configured), sec	0, 10, 20, 30, 45, 60, 90, 120, 150, 180
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)

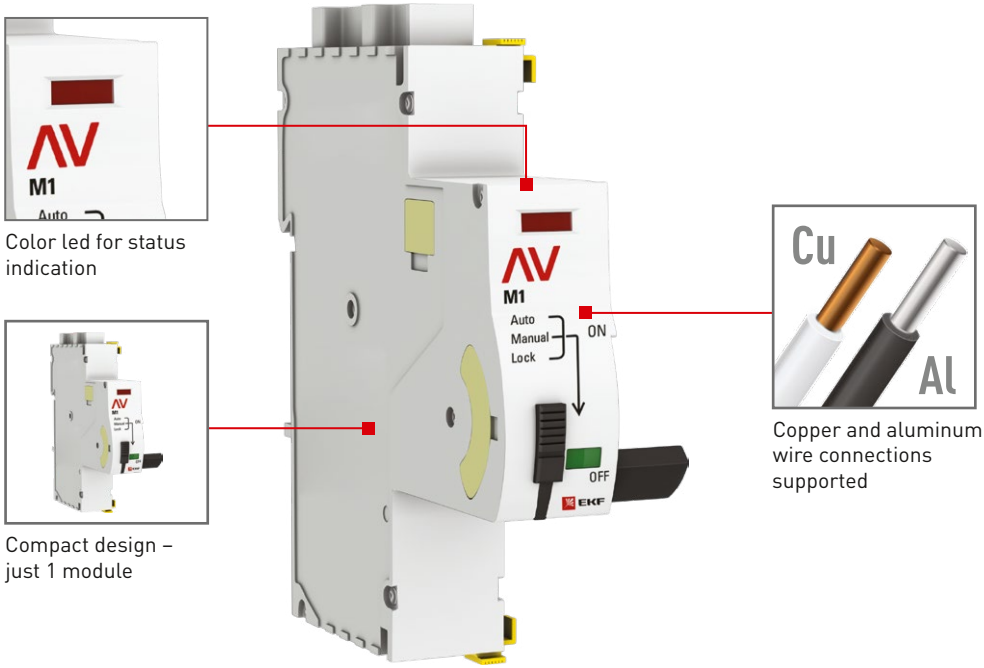


Name	Compatibility	Voltage, V	Electrical endurance	Item code
Auto recloser AV-M6	AV-6, AV-10 (2P, 3P, 4P); DVA-6, DV; AVN (1P, 2P) up to 63A, VA 47-63N, VN-63N	230	4000	av-m6-averes
Auto recloser AV-M6S	AV-6, AV-10 (1P, 2P); DVA-6, DV; AVN (1P, 2P) up to 63A, VA 47-63N, VN-63N			av-m6s-averes

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 60947-5-1

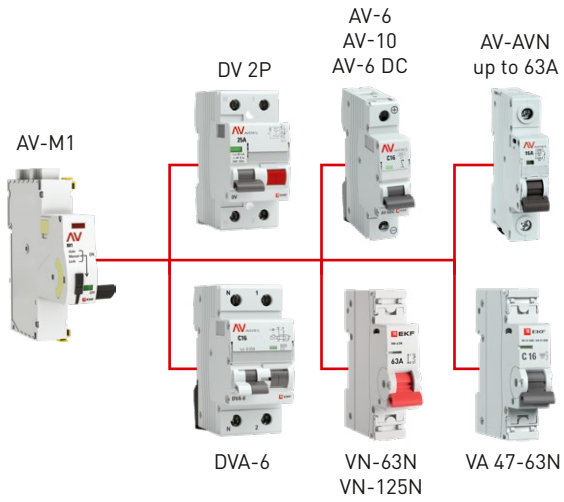


APPLICATION

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

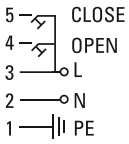
TECHNICAL DATA

Connection of accessories

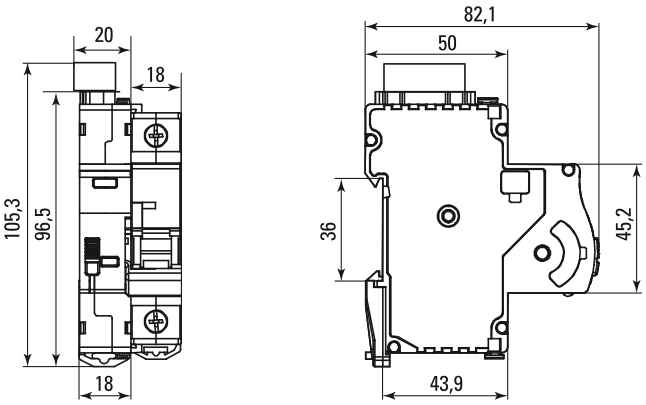


Parameters	Values
Rated operating voltage Ue, V	230
Voltage type	AC
Frequency, Hz	50 / 60
Power, VA	1,5
Standby power, W	0,5
Number of reclosing operations, times	3
Reclosing time, sec	1
Time delay, sec	10–60–300
Degree of protection	IP20
Mechanical endurance, O-C cycles	8000
Electrical endurance, O-C 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

Wiring diagram

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

Overall and installation dimensions (mm)



Delivery scope

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

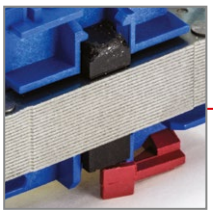
For all available documentation, scan the QR-code on the insert or on the inside of the package.

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

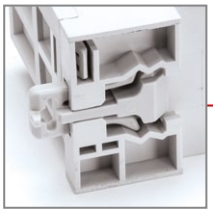
Modular contactors KM PROXIMA EKF

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, establishing the electrical connection. When the coil is de-energized, the spring pushes the movable contact back to its original position. Copper and aluminum wire connections are supported.

Standards: IEC 60947–4–1, IEC 61095

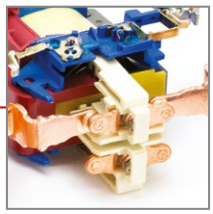


Rubber dampers
for noise free operation



Two-position DIN rail
clamp

Silver-plated
contacts



Bridge contact for
quick arc quenching

Manual control option

Contact position indicator

APPLICATION

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

- Industrial Automation
- Home Automation
- Power Distribution
- Building Management Systems
- HVAC Systems
- Lighting Control.

TECHNICAL DATA

Parameters	Values
Rated operating voltage Ue, V	220 / 230 / 240 380 / 400 / 415
Rated frequency, Hz	50 / 60
Utilization category	AC-1/AC-7a, AC-7b
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
Rated voltage of control coil Uc, V AC	24, 220-240
Inrush current of control coil, mA	30 (KM-16, KM-20), 60 (KM-25, KM-32, KM-40), 95 (KM-50, KM-63)
Holding current of control coil, mA	18 (KM-16, KM-20), 12 (others)
Contacts	2NO, 2NC, 1NO+1NC, 2NO+2NC, 3NO+1NC, 4NO, 4NC
Contact closing voltage, V	From 195 to 253

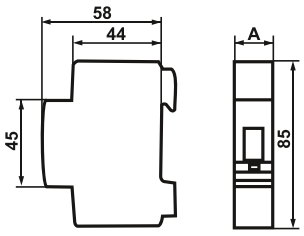
Parameters	Values
Contact opening voltage, V	From 46 to 172
Closing response time, ms	20
Opening response time, ms	30
Max. power consumption of control coil, W	5
Mechanical endurance, O-C cycles	1 000 000
Electrical endurance, O-C cycles	150 000
Max. altitude above sea level, m	2000
Operation environment	Non-explosive, dust-free
Tightening toque, N·m	0,8
Degree of protection (IEC 60529)	IP20
Mounting	Vertical to a 35 mm DIN rail

Contactor type	Power terminals		Coil terminal	
	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	
		220-240 V	380-415 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-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

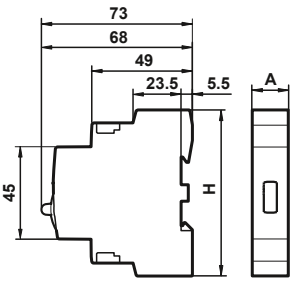
Overall and installation dimensions (mm)

KM



Module size	Module size
1	18
2	36
3	54

KM MANUAL



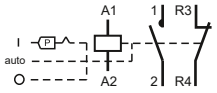
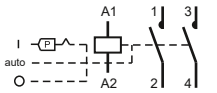
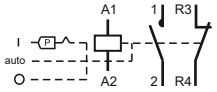
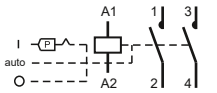
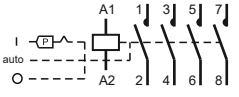
Module size	Width A, mm	Height H, mm
1	18	81
2	36	85
3	54	85

Delivery scope

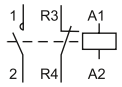
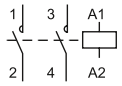
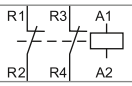
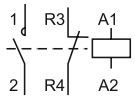
Modular contactors KM PROXIMA EKF are supplied in individual or group package.

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

Modular contactor KM Manual

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

Modular contactor KM

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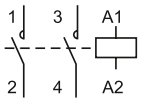
					km-2-25-11m*	
					km-2-32-11m*	
					km-2-40-11m	
					km-2-50-11m*	
					km-2-63-11m	
		2	0		km-2-16-20m*	
					km-2-20-20m*	
					km-2-25-20m*	
					km-2-32-20m*	
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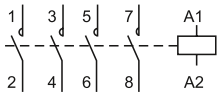
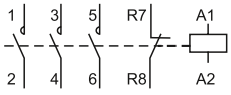
					km-2-50-20m*	
					km-2-63-20m*	
	3M (54 mm)	4	0		km-3-16-40m*	
					km-3-20-40m*	
					km-3-25-40m*	km-3-25-40-24v-m*
					km-3-32-40m*	km-3-32-40-24v-m*
					km-3-40-40m	km-3-40-40-24v-m*
					km-3-50-40m*	
					km-3-63-40m	
		3	1		km-3-16-31m*	
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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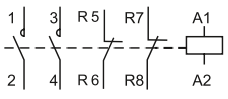
					km-3-63-31m	
		2	2		km-3-16-22m*	
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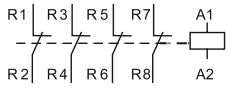
		0	4		km-3-25-04m*	
					km-3-40-04m*	
					km-3-63-04m*	

Modular contactors KM AVERES EKF

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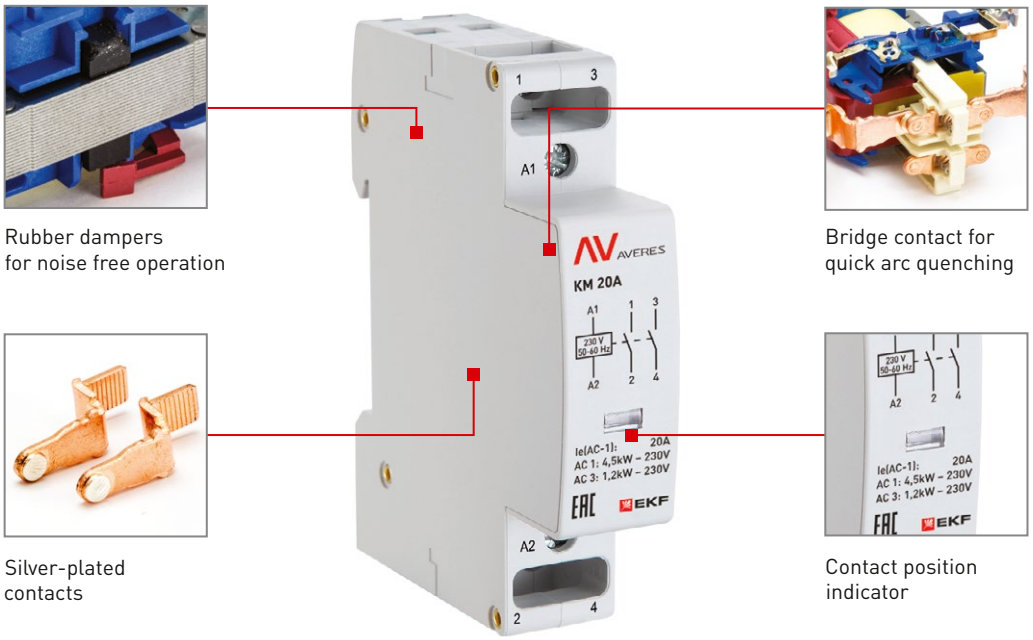


APPLICATION

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

- Industrial Automation
- Home Automation
- Power Distribution
- Building Management Systems
- HVAC Systems
- Lighting Control

TECHNICAL DATA

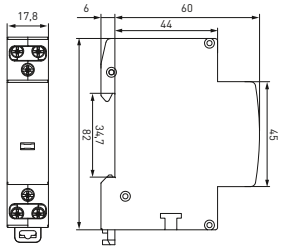
Parameters	Values			
	1-module	2-module	3-module	6-module
Rated operating voltage Ue, V	220-240 / 380-415			
Rated frequency, Hz	50 / 60			
Utilization category	AC-1/AC-7a, AC-3/AC-7b			
Rated insulation voltage Ui, V	500			
Rated impulse withstand voltage Uimp, kV	4			
Rated conventional short-circuit current, kA	3			
Contact closing voltage, V	195-253			
Contact opening voltage, V	46-172			
Closing response time, ms	<30		<55	
Opening response time, ms	<20		<45	
Max. power consumption of control coil, W	≤1,1	≤1,35	≤1,55	
Rated voltage of control coil Uc, V AC	24 / 48 / 110 / 220-240			
Mechanical endurance, O-C cycles	1 000 000			
Electrical endurance, O-C cycles	250 000		300 000	
Max. altitude above sea level, m	2000			
Operation environment	Non-explosive, dust-free			
Operation ambient temperature, °C	-30 to 80			
Max. switching operations per day	100			
Degree of protection (IEC 60529)	IP20			
Mounting	35 mm DIN rail			

Model	Rated current, A	Power terminals			Coil terminal	
		Cross-section of connected wires, mm²		Tightening torque, Nm	Wire cross-section, mm²	Tightening torque, Nm
		Solid	Stranded			
km-av-1 km-av-2	20 / 25	1-6	1-10	1,2	1-2,5	0,6
km-av-2 km-av-3 km-av-6	40 / 63 / 80 / 100	1-16	1-25	2		
km-av-3 km-av-6	125	1-16	1-25	2,5		

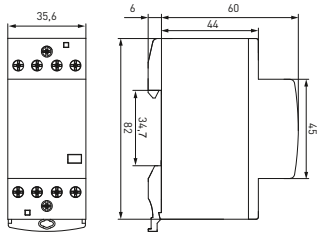
Model	Rated operating current Ie, A	Rated power at rated voltage, kW	
		220-240 V	380-415 V
AC-1/AC-7a (low-inductive loads)			
km-av-1	20	4,5	–
km-av-1 km-av-2	25	5	16
km-av-2 km-av-3	40	9	27,5
km-av-2 km-av-3	63	11,6	40
km-av-3 km-av-6	80	11,6	40
km-av-3 km-av-6	100	25	65
km-av-3 km-av-6	125	25	65
AC-3/AC-7b			
km-av-1	20	1,2	–
km-av-1 km-av-2	25	1,5	4
km-av-2 km-av-3	40	3	12,5
km-av-2 km-av-3	63	3,3	15
km-av-3 km-av-6	80	3,3	15
km-av-3 km-av-6	100	6	22
km-av-3 km-av-6	125	6	22

Overall and installation dimensions (mm)

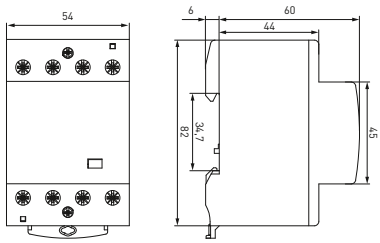
1-module



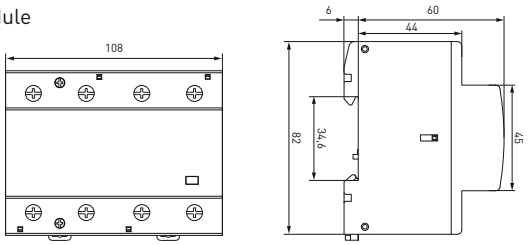
2-module



3-module



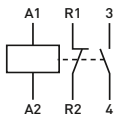
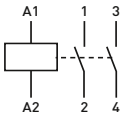
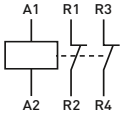
6-module

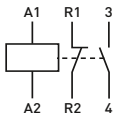


Delivery scope

Modular contactors KM AVERES 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	Number of contacts		Wiring diagrams	Item code
	NO	NC		
1-module				
	1	1		km-av-1-20-11-110V km-av-1-20-11-230V km-av-1-20-11-24V km-av-1-20-11-48V km-av-1-25-11-110V km-av-1-25-11-230V km-av-1-25-11-24V km-av-1-25-11-48V
	2	0		km-av-1-20-20-110V km-av-1-20-20-230V km-av-1-20-20-24V km-av-1-20-20-48V km-av-1-25-20-110V km-av-1-25-20-230V km-av-1-25-20-24V km-av-1-25-20-48V
	0	2		km-av-1-20-02-110V km-av-1-20-02-230V km-av-1-20-02-24V km-av-1-20-02-48V km-av-1-25-02-110V km-av-1-25-02-230V km-av-1-25-02-24V km-av-1-25-02-48V

Picture	Number of contacts		Wiring diagrams	Item code
	NO	NC		
2-module				
	1	1		km-av-2-40-11-110V
				km-av-2-40-11-230V
				km-av-2-40-11-24V
				km-av-2-40-11-48V
				km-av-2-63-11-110V
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				km-av-2-63-11-24V
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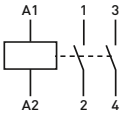
	2	0		km-av-2-40-20-110V
				km-av-2-40-20-230V
				km-av-2-40-20-24V
				km-av-2-40-20-48V
				km-av-2-63-20-110V
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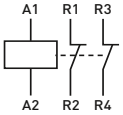
	0	2		km-av-2-40-02-110V
				km-av-2-40-02-230V
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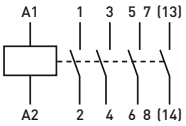
				km-av-2-40-02-48V
				km-av-2-63-02-110V
				km-av-2-63-02-230V
				km-av-2-63-02-24V
				km-av-2-63-02-48V
	4	0		km-av-2-25-40-110V
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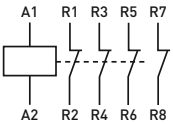
	0	4		km-av-2-25-04-110V
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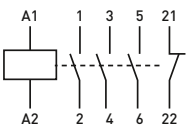
	3	1		km-av-2-25-31-110V
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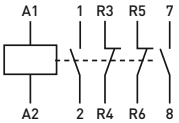
	2	2		km-av-2-25-22-110V
				km-av-2-25-22-230V
				km-av-2-25-22-24V
				km-av-2-25-22-48V

Picture	Number of contacts		Wiring diagrams	Item code
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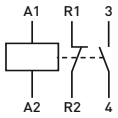
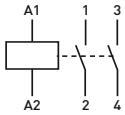
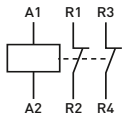
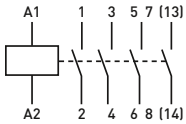
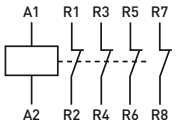
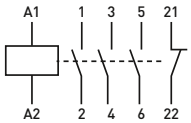
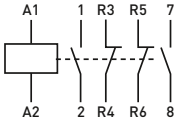
3-module				
	1	1		km-av-3-100-11-110V km-av-3-100-11-230V km-av-3-100-11-24V km-av-3-100-11-48V km-av-3-125-11-110V km-av-3-125-11-230V km-av-3-125-11-24V km-av-3-125-11-48V km-av-3-80-11-110V km-av-3-80-11-230V km-av-3-80-11-24V km-av-3-80-11-48V
	2	0		km-av-3-100-20-110V km-av-3-100-20-230V km-av-3-100-20-24V km-av-3-100-20-48V km-av-3-125-20-110V km-av-3-125-20-230V km-av-3-125-20-24V km-av-3-125-20-48V km-av-3-80-20-110V km-av-3-80-20-230V km-av-3-80-20-24V km-av-3-80-20-48V
	0	2		km-av-3-100-02-110V km-av-3-100-02-230V km-av-3-100-02-24V km-av-3-100-02-48V km-av-3-125-02-110V km-av-3-125-02-230V km-av-3-125-02-24V km-av-3-125-02-48V km-av-3-80-02-110V km-av-3-80-02-230V km-av-3-80-02-24V km-av-3-80-02-48V
	4	0		km-av-3-40-40-110V km-av-3-40-40-230V km-av-3-40-40-24V km-av-3-40-40-48V km-av-3-63-40-110V km-av-3-63-40-230V km-av-3-63-40-24V km-av-3-63-40-48V
	0	4		km-av-3-40-04-110V km-av-3-40-04-230V km-av-3-40-04-24V km-av-3-40-04-48V km-av-3-63-04-110V km-av-3-63-04-230V km-av-3-63-04-24V km-av-3-63-04-48V
	3	1		km-av-3-40-31-110V km-av-3-40-31-230V km-av-3-40-31-24V km-av-3-40-31-48V km-av-3-63-31-110V km-av-3-63-31-230V km-av-3-63-31-24V km-av-3-63-31-48V
	2	2		km-av-3-40-22-110V km-av-3-40-22-230V km-av-3-40-22-24V km-av-3-40-22-48V km-av-3-63-22-110V km-av-3-63-22-230V km-av-3-63-22-24V km-av-3-63-22-48V

Picture	Number of contacts		Wiring diagrams	Item code
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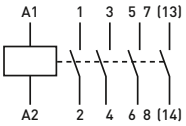
6-module				
	4	0		km-av-6-100-40-110V
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				km-av-6-100-40-48V
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				km-av-6-125-40-230V
				km-av-6-125-40-24V
				km-av-6-125-40-48V
				km-av-6-80-40-110V
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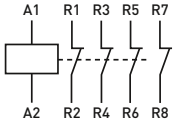
	0	4		km-av-6-100-04-110V
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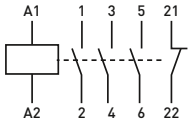
	3	1		km-av-6-100-31-110V
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				km-av-6-125-31-24V
				km-av-6-125-31-48V
				km-av-6-80-31-110V
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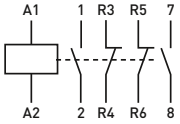
	2	2		km-av-6-100-22-110V
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				km-av-6-125-22-230V
				km-av-6-125-22-24V
				km-av-6-125-22-48V
				km-av-6-80-22-110V
				km-av-6-80-22-230V
				km-av-6-80-22-24V
				km-av-6-80-22-48V

Surge protective devices

Surge protective devices (SPD) are used to suppress voltage surges (originating from lightning strikes) in 220-440 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.

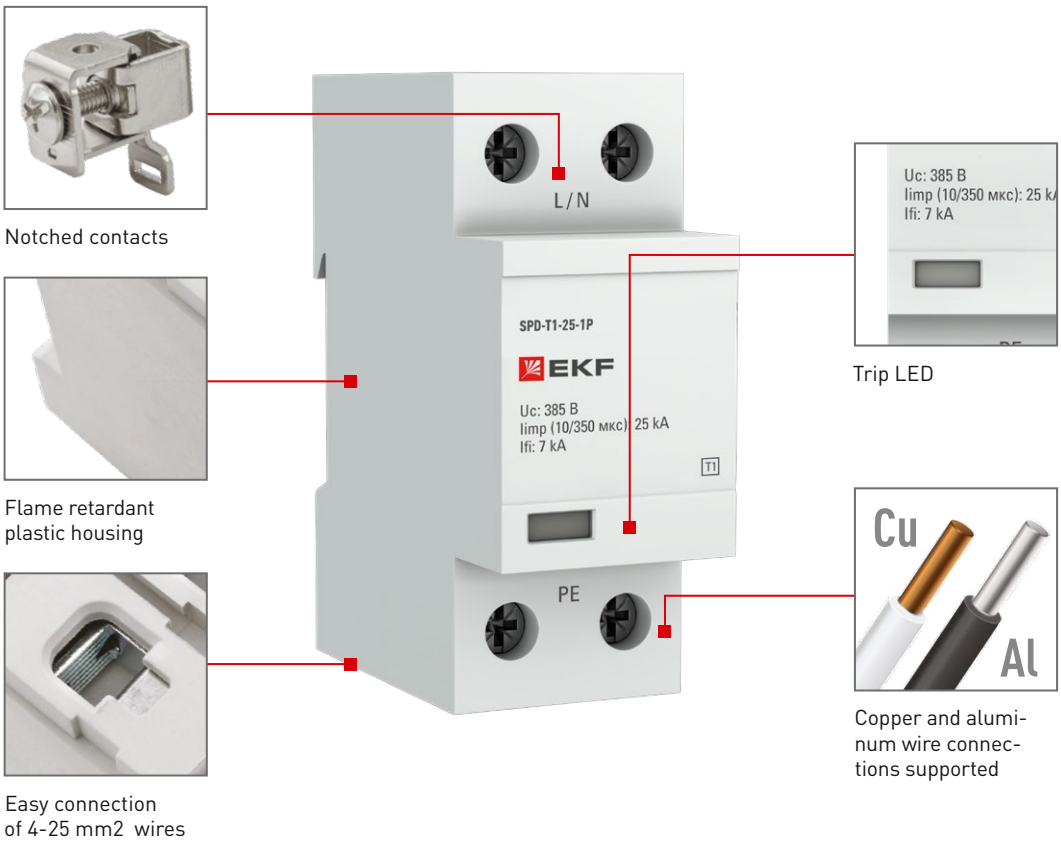
SPDs Type II are used for protection of a facility power distribution network against switching interference or transients, or as the second level of lightning protection, usually installed in sub-distribution switchboards.

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 60947–4–1



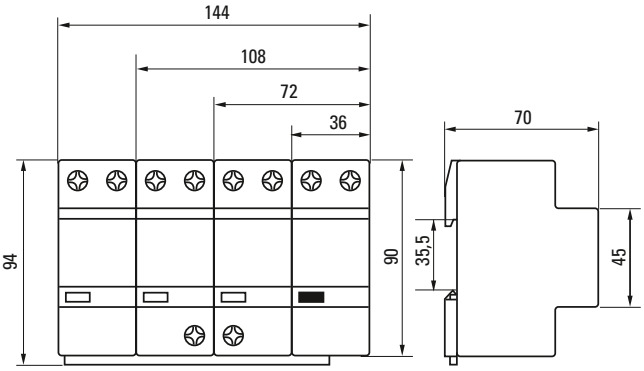
APPLICATION

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.

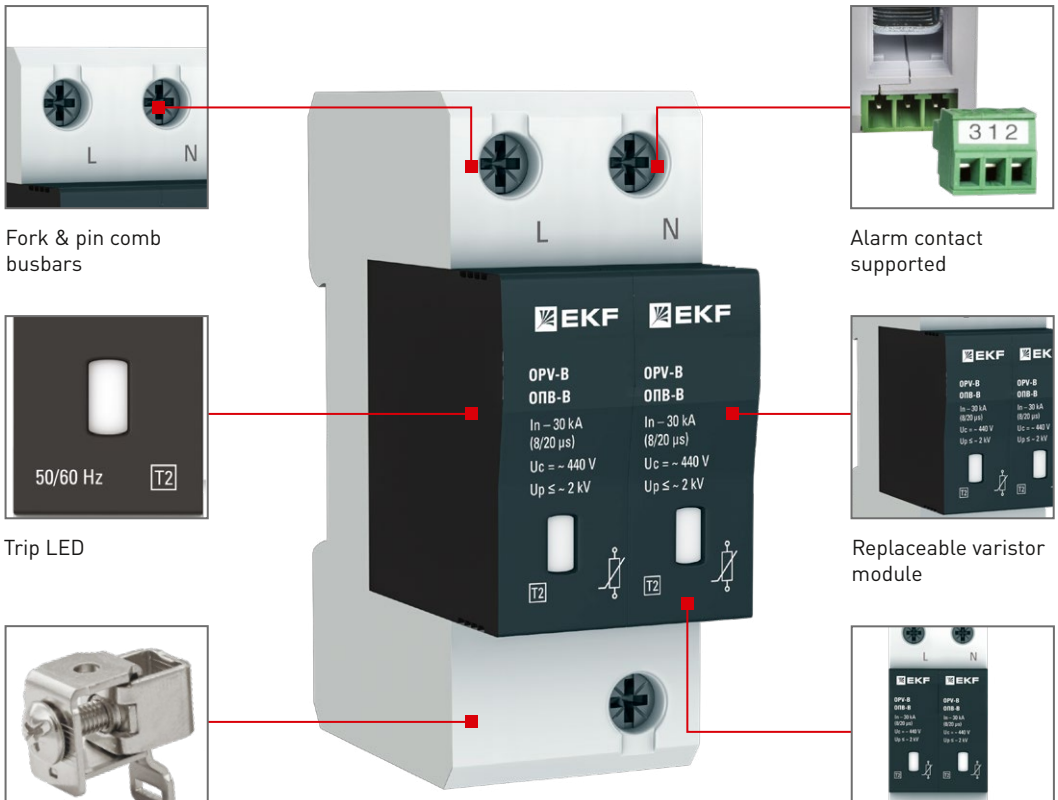
For all available documentation, scan the QR-code on the insert or on the inside of the package.

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					2	spd-t1-25-1p
	SPD Type I Iimp 25kA (10/350μs) 2P EKF			25				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 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

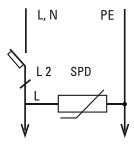
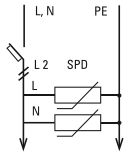
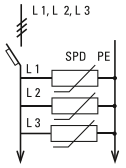
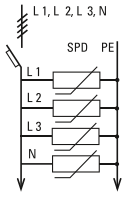
SPDs are designed for protection:

- 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

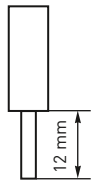
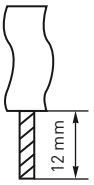
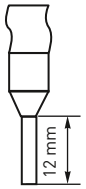
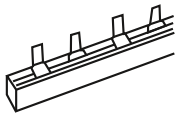
Wiring diagrams

Number of poles			
1P	2P	3P	4P
			

Parameters	Values		
	B	C	D
Degree of protection by IEC 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	440	275
Voltage protection rating U_p, kV	2,0	1,8	1,0
Alarm contact parameters	I = 3A, U = 250V, f = 50/60 Hz		

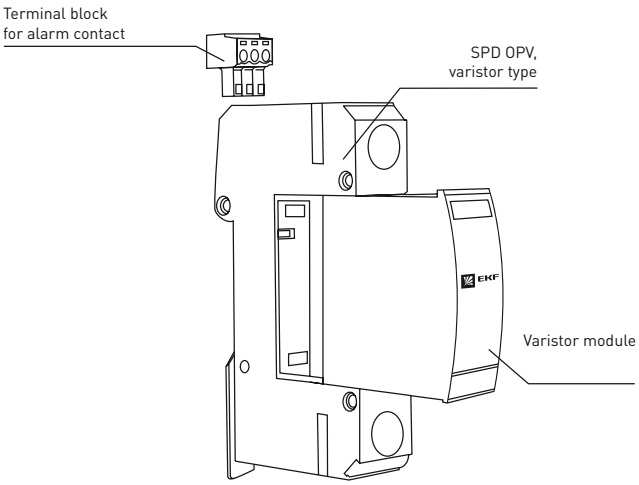
Installation and operation

1. Connection

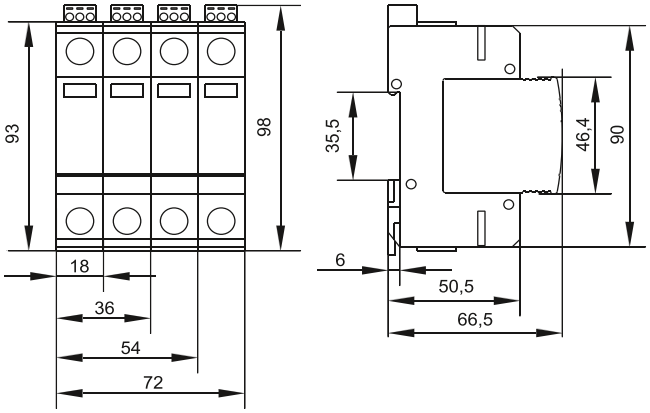
Conductor			Comb busbar
Solid	Stranded	Ferrule	Pin
			

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:

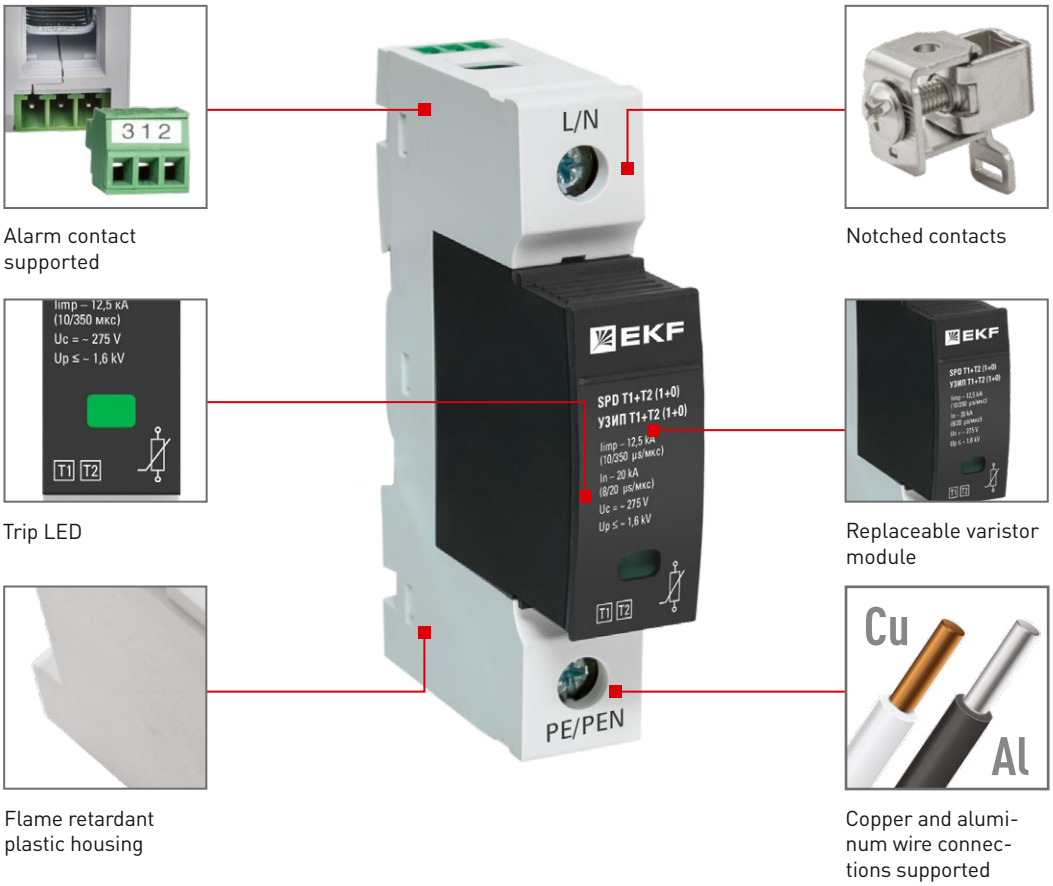
1P, 2P, 3P, 4P

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 440V with alarm EKF					opv-b4
SPD OPV-C/1P In 20kA 440V 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 440V with alarm EKF					opv-c2
SPD OPV-C/3P In 20kA 440V with alarm EKF					opv-c3
SPD OPV-C/4P In 20kA 440V 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 61643-11



Alarm contact supported

Notched contacts

Trip LED

Replaceable varistor module

Flame retardant plastic housing

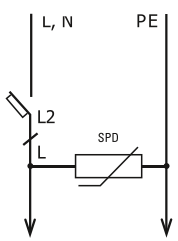
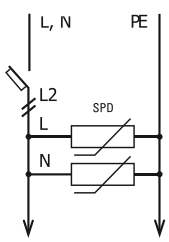
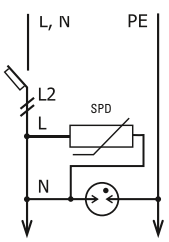
Copper and aluminum wire connections supported

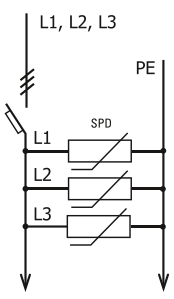
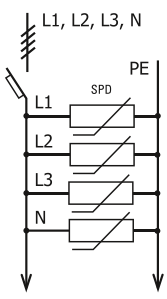
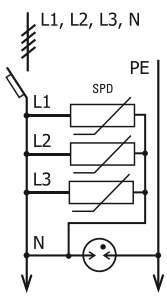
APPLICATION

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

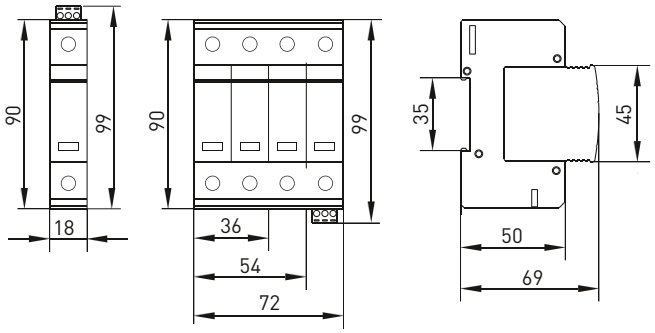
Wiring diagram

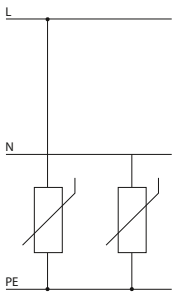
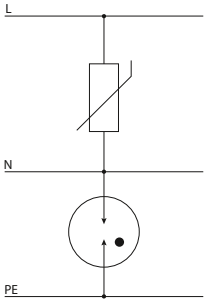
Number of poles		
1P	2P	1P+N
		

Number of poles		
3P	4P	3P+N
		

Parameters	Values
Maximum operating voltage Uc, V	275
Impulse discharge current (10/350 μs) limp, 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=50/60 Hz

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; limp-12,5kA; In-20kA; Uc-275V; 1+0 EKF		OV12-1-501
SPD T I+II; limp-12,5kA; In-20kA; Uc-275V; 1+1 EKF		OV12-11-505
SPDT I+II; limp-12,5kA; In-20kA; Uc-275V; 2+0 EKF		OV12-2-502
SPD T I+II; limp-12,5kA; In-20kA; Uc-275V; 3+0 EKF		OV12-3-503
SPD T I+II; limp-12,5kA; In-20kA; Uc-275V; 3+1 EKF		OV12-31-506
SPD T I+II; limp-12,5kA; In-20kA; Uc-275V; 4+0 EKF		OV12-4-504
SPD T I+II; limp-7kA; In-20kA; Uc-275V; 1+1 EKF		OV12-11-402
SPD T I+II; limp-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	Max. fuse link current, A	Quantity	Fuse link Item code	Fuse link holder Item code
SPD Type I limp 25kA (10/350μs) 1P EKF	spd-t1-25-1p	125	1	pvc-22x58-125	pr-22-58-1
SPD Type I limp 25kA (10/350μs) 2P EKF	spd-t1-25-2p	125	2		pr-22-58-2
SPD Type I limp 25kA (10/350μs) 3P EKF	spd-t1-25-3p	125	3		pr-22-58-3
SPD Type I limp 25kA (10/350μs) 4P EKF	spd-t1-25-4p	125	4		pr-22-58-3 + pr-22-58-1
SPD T I+II; limp-12,5kA; In-20kA; Uc-275V; 1+0 EKF	OV12-1-501	80	1	pvc-22x58-80	pr-22-58-1
SPD T I+II; limp-12,5kA; In-20kA; Uc-275V; 1+1 EKF	OV12-11-505	80	2		pr-22-58-2
SPD T I+II; limp-12,5kA; In-20kA; Uc-275V; 3+0 EKF	OV12-3-503	80	3		pr-22-58-3
SPD T I+II; limp-12,5kA; In-20kA; Uc-275V; 3+1 EKF	OV12-31-506	80	4		pr-22-58-3 + pr-22-58-1
SPD T I+II; limp-12,5kA; In-20kA; Uc-275V; 4+0 EKF	OV12-4-504	80	4		pr-22-58-3 + pr-22-58-1
SPD OPV-B/1P In 30kA 440V with alarm EKF	opv-b1	63	1	pvc-14x51-63	pr-14-51-1
SPD OPV-B/1P In 30kA 440V with alarm EKF	opv-b2	63	2		pr-14-51-2
SPD OPV-B/3P In 30kA 440V with alarm EKF	opv-b3	63	3		pr-14-51-3
SPD OPV-B/4P In 30kA 440V with alarm EKF	opv-b4	63	4		pr-14-51-3 + pr-14-51-1
SPD OPV-C/1P In 20kA 440V with alarm EKF	opv-c1	50	1	pvc-14x51-50	pr-14-51-1
SPD OPV-C/1P In 20kA 440V with alarm EKF	opv-c2	50	2		pr-14-51-2
SPD OPV-C/3P In 20kA 440V with alarm EKF	opv-c3	50	3		pr-14-51-3
SPD OPV-C/4P In 20kA 440V with alarm EKF	opv-c4	50	4		pr-14-51-3 + pr-14-51-1
SPD OPV-D/1P In 5kA 275V with alarm EKF	opv-d1	20	1	pvc-10x38-20	pr-10-38-1
SPD OPV-D/2P In 5kA 275V with alarm EKF	opv-d2	20	2		pr-10-38-2
SPD OPV-D/3P In 5kA 275V with alarm EKF	opv-d3	20	3		pr-10-38-3
SPD OPV-D/4P In 5kA 275V with alarm EKF	opv-d4	20	4		pr-10-38-3 + pr-10-38-1

Molded Case Circuit Breakers

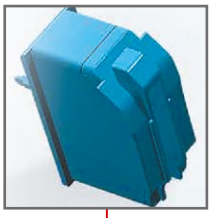
Molded case circuit breakers AV Power AVERES EKF

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.

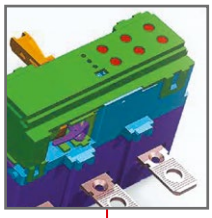
- Standard thermomagnetic trip unit
- The electronic trip unit provides a three-stage protection, measuring, signalling and communication.
- The communication module can be configured to support up to four remote control units and is compatible with various communication protocols.

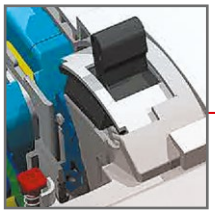
Standard: IEC 60947-2

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.

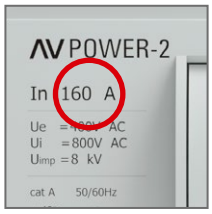
Spring mechanism applies constant positive force to maintain reliable contact area, even if contact pads are worn down, extending the MCCB service life

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

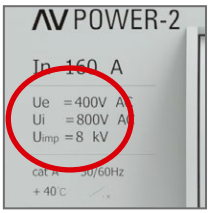
- Industrial & critical infrastructure facilities;
- Residential & commercial construction projects;
- Switching component of backup power supply systems;
- Electrical circuit isolation and partitioning (three MCCBs);
- Remote switching of electrical equipment;
- Control & energy-saving systems, automated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

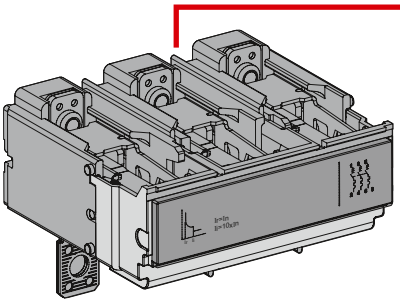
Icu – ultimate short-circuit breaking capacity.

Ics – service short-circuit breaking capacity.

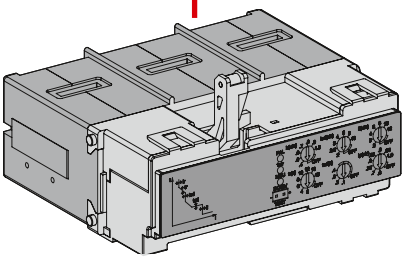
Trip unit type

ON indicator

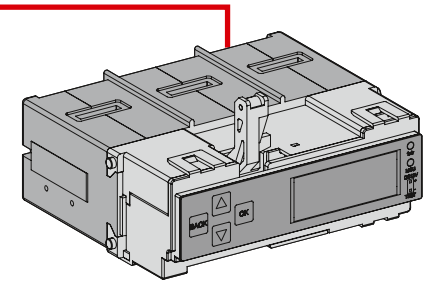
OFF indicator



TM – thermomagnetic trip unit
tried and true downstream protection

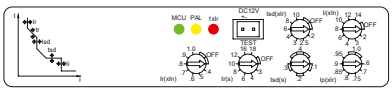


ETU2.0 – electronic trip unit (standard)
ETU2.2 – electronic trip unit (standard)
RS-485, Modbus-RTU

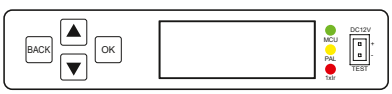


ETU6.0 – electronic trip unit (LCD)
ETU6.2 – electronic trip unit
RS-485, Modbus-RTU and LCD

Overload current setpoint: 10-800 A
Overcurrent setpoint: fixed 100 ... 8000 A Ir=10 × In



- 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



- 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, 4P							
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		380 / 400 / 415 / 690							
Ultimate short-circuit breaking capacity Icu, kA	380-415 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 *	380-415 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	10 000				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	
	H	130	155	165	165	257		275	
	D	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

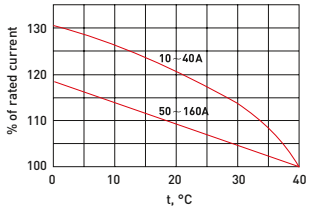
Name	+40 °C	+45 °C	+50 °C	+55 °C	+60 °C
AV POWER-1	1,0 × In	0,94 × In	0,88 × In	0,81 × In	0,74 × In
AV POWER-2		0,96 × In	0,91 × In	0,85 × In	0,78 × In
AV POWER-3		0,97 × In	0,94 × In	0,90 × In	0,86 × In
AV POWER-4					

Housing dielectric strength against altitude above sea level

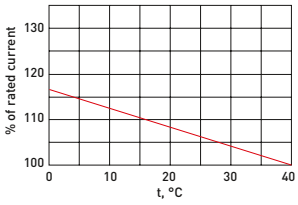
Parameters	Values						
Altitude above sea level, m	2000	2500	3000	3500	4000	4500	5000
Power-frequency withstand voltage, V	3000	3000	2500	2400	2200	2100	2000
Insulation voltage	1	1	0,9	0,85	0,8	0,72	0,7
Switching capacity derating factor	1	1	0,9	0,82	0,78	0,75	0,7
Operate current derating factor	1	1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

Temperature derating factor

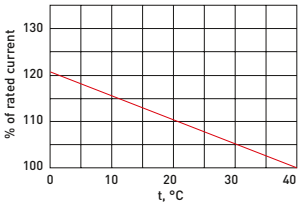
AV POWER-1



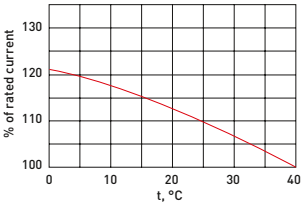
AV POWER-2



AV POWER-3

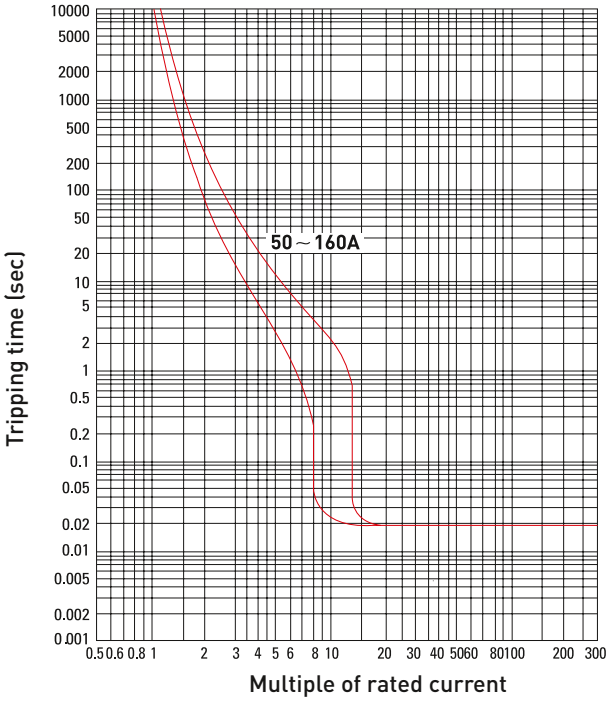


AV POWER-4

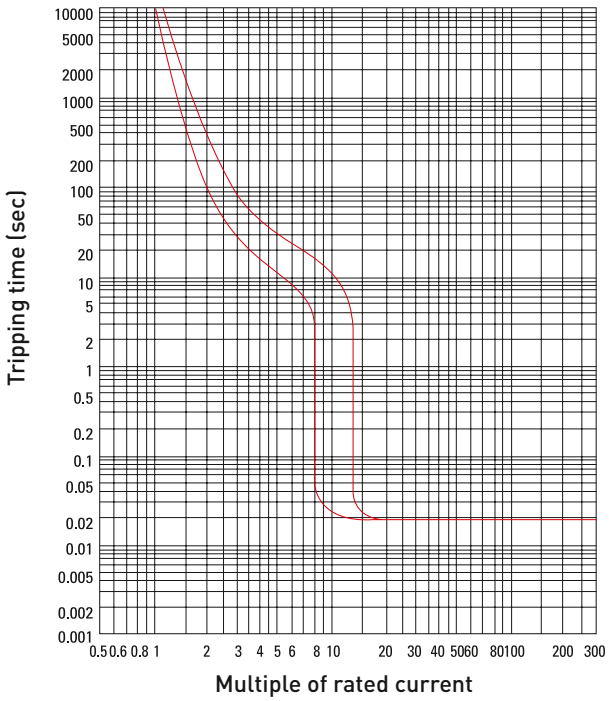


Tripping curves

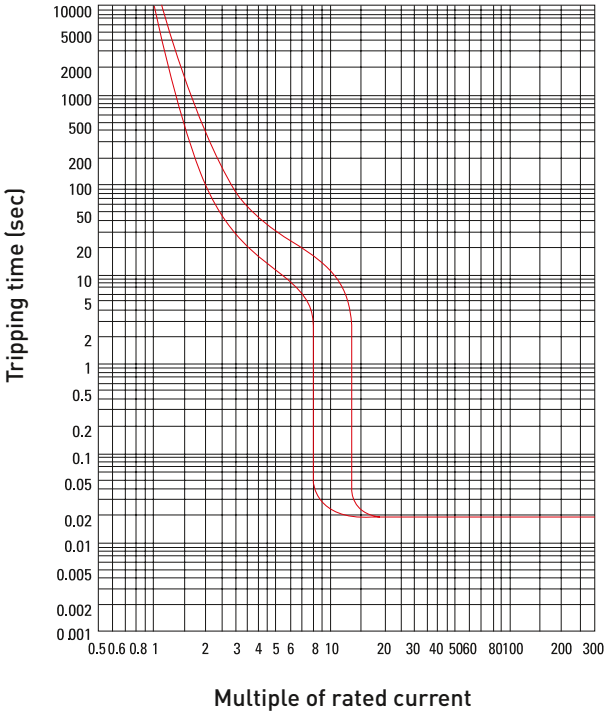
AV POWER-1



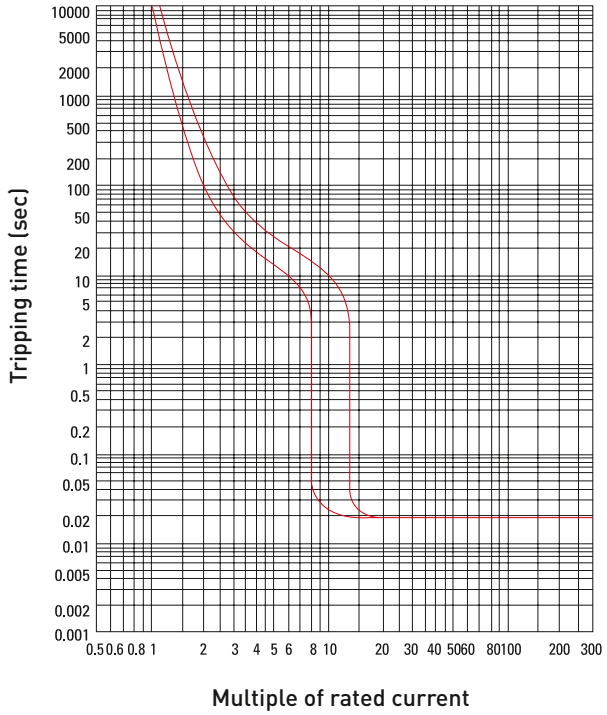
AV POWER-2



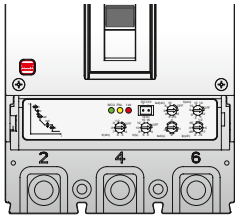
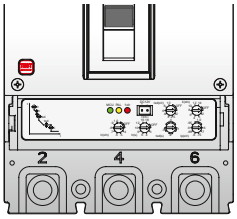
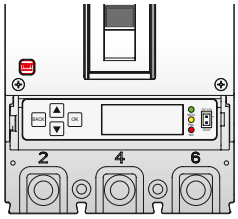
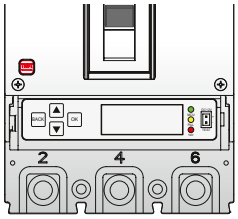
AV POWER-3



AV POWER-4



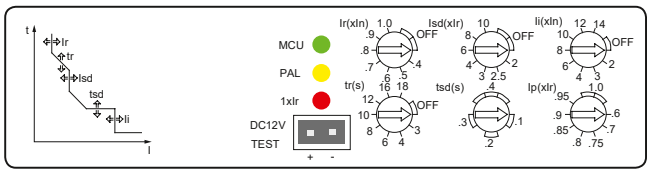
Electronic trip unit

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.			

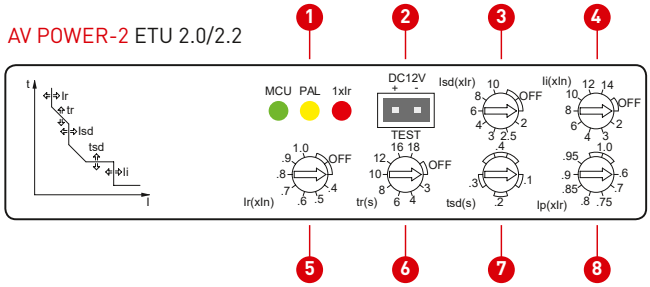
Parameters		AV POWER-1		AV POWER-2		AV POWER-3		AV POWER-4		AV POWER-5
Number of poles		3P, 4P								
Rated current In, A		32, 63, 100, 160		250		400, 630		1000		800, 1000, 1250, 1600
Rated insulation voltage Ui, V AC		1000								
Rated impulse withstand voltage Uimp, kV		8								12
Rated operating voltage Ue, V AC		380 / 400 / 415 / 690								
Ultimate short-circuit breaking capacity Icu, kA	380-415 V AC	50	100	50	100	50	100	50	100	70
	690 V AC	10	30	30	40	30	40	30	40	25
Service short-circuit breaking capacity Ics, kA	380-415 V AC	50	75	50	75	50	75	50	75	70
	690 V AC	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		216/290
	H	155		165		257		275		288
	D	79		90,5		103		105		155

Electronic trip units ETU2.0, ETU2.2

AV POWER-1 ETU 2.0/2.2

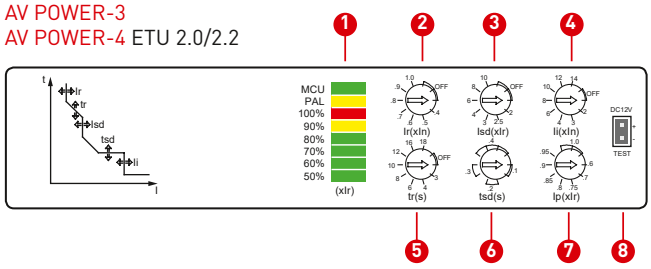


AV POWER-2 ETU 2.0/2.2



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
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
PAL
100%
90%
80%
70%
60%
50%
(xIr)

MCU: green - trip unit power on

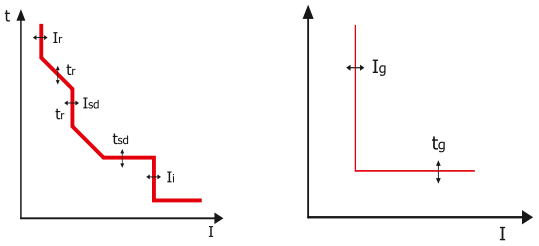
PAL: Pre-overload /fault. **Flashing** yellow for peak current I≥Ip. **Constant** yellow for I≥1,15Ir

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%	$I_{sd} \leqslant I < 1{,}5I_{sd}$	Dependence	$I^2T_{sd}=(1{,}5I_{sd})^2t_{sd}$			
Tripping time t_{sd}	$1{,}5I_{sd} \leqslant I < Ii$	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

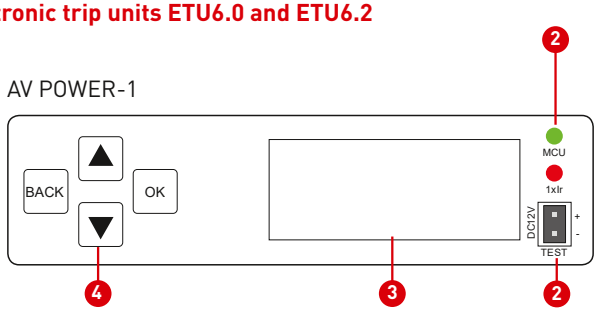
For a three-pole version, the overload pre-alarm function is included in the basic scope of delivery.
For a four-pole version, the ground fault protection function is included in the basic scope of delivery. Factory settings Ip = 0,9 × Ir

Factory settings

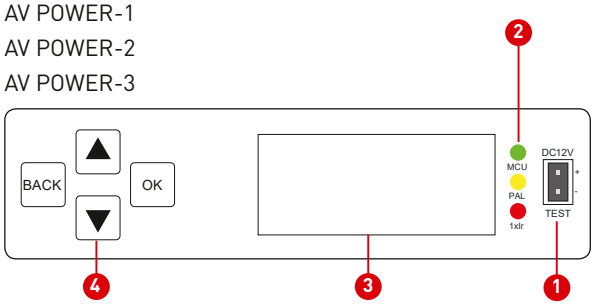
Protective characteristics			Notes
Overload protection	Current setpoint Ir, A	1,0 × In	–
	Delay time setpoint tr, sec	18	At I = 6 × Ir
Overcurrent protection	Current setpoint Isd, A	6 × Ir	–
	Delay time setpoint tsd, sec.	0,1	At 1,5Isd≤I <Ii
Instant short-circuit current protection	Current setpoint Ii,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

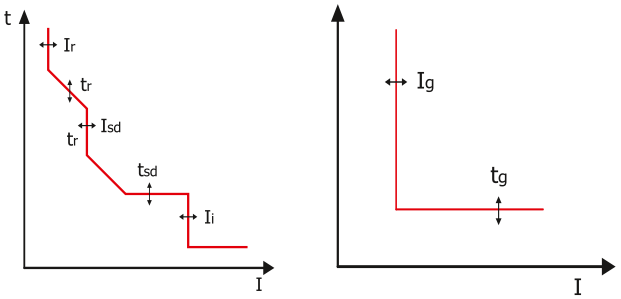


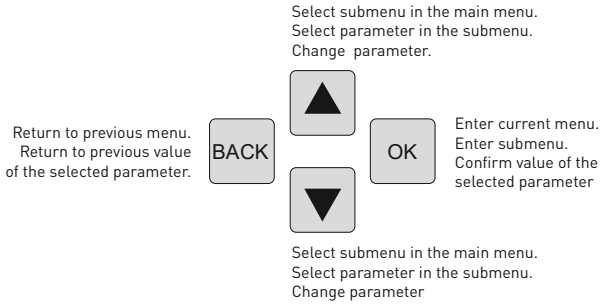
AV POWER-1
AV POWER-2
AV POWER-3



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%

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

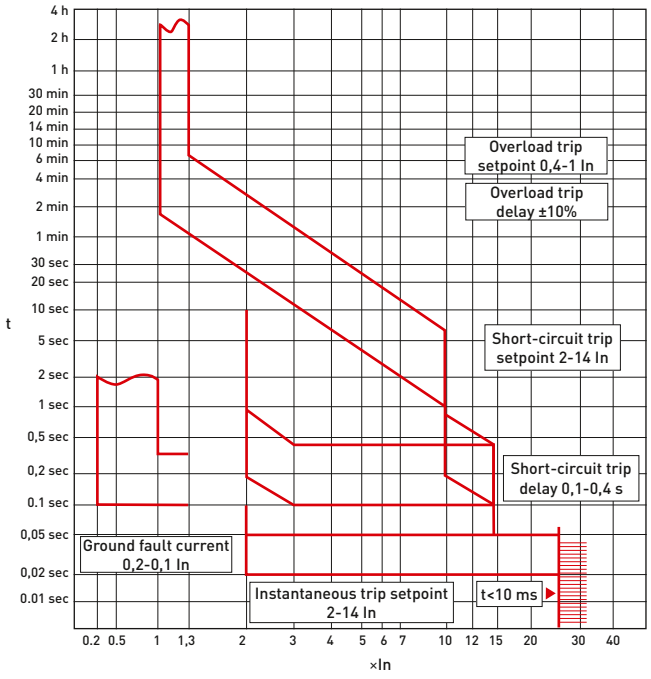
Ground fault protection	
Earth leakage setpoint Ig, ± 10%, A	(0,2~ 1) × In + OFF (min. step: 1A)
Tripping characteristics	I≤0,9Ig no tripping; I>1,1Ig tripping
Tripping time tg, sec.	0,1s ~ 0,8s + alarm (min. step: 0,1 sec.)

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

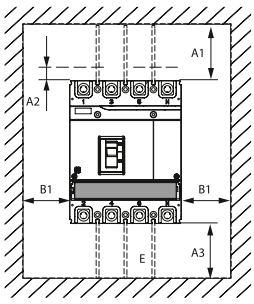
ETU-6.0/ETU-6.2. Factory settings

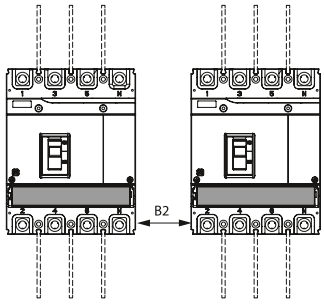
Protective characteristics			Notes
Overload protection	Current setpoint Ir, A	1,0 × In	–
	Delay time setpoint tr, sec	18	At I = 6Ir
Operating characteristics	Current setpoint Isd, A	6 × Ir	–
	Delay time 0,1 ~ 1,0 sec	0,1	At 1,5Isd≤I <Ii
Instant short-circuit protection	Current setpoint Ii, A	10 × In	–
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



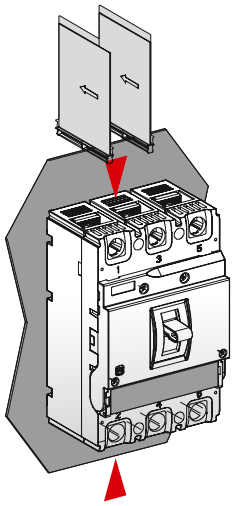


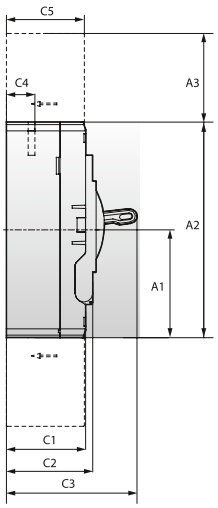
Name	Minimum installation dimensions, mm				
	A1	A2	A3	B1	B2
AV POWER-1 TR AVERES EKF	50	25	25	25	0
AV POWER-1 ETU AVERES EKF	50	25	25	25	0
AV POWER-2 AVERES EKF	80	25	25	25	0
AV POWER-3 AVERES EKF	106	25	25	25	0
AV POWER-4 AVERES EKF	110	25	25	25	0

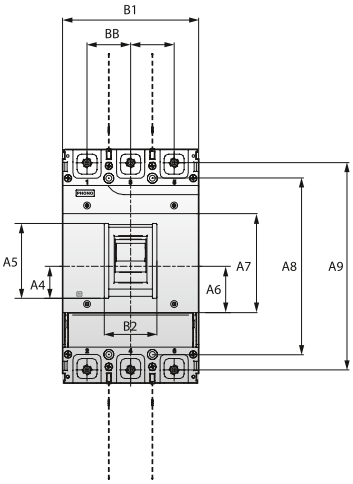
A1: Upper distance to conducting surfaces (including earthing buses)
A2: Upper distance to non-conducting surfaces
A3: Lower distance from MCCB terminal to bottom surfaces
B1: Distance from MCCB to side surfaces (including earthing buses)
B2: Distance between molded case circuit breakers
Notes: E – Interphase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

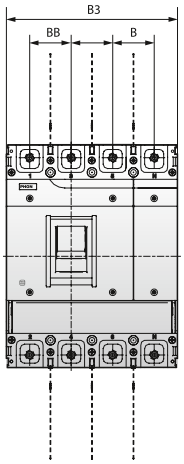
Overall and installation dimensions

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.



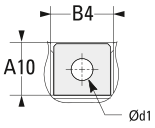




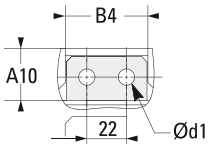


Inputs

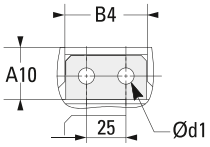
AV POWER-1-3



AV POWER-4

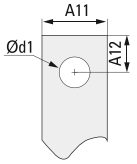


AV POWER-5

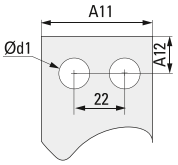


Wire cross-section

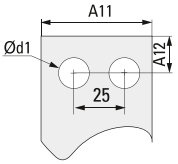
AV POWER-1-3



AV POWER-4

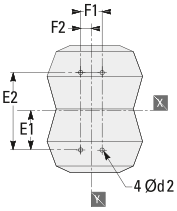


AV POWER-5

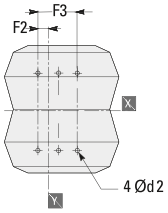


Installation dimensions

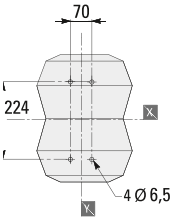
AV POWER-1-3



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	15,8	13	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	13	8,5	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	66	73	99,5	24,6	65	71,5	143	35	17,5	70	8,5	4,5
AV POWER-3 AVERES EKF	32	95	103,5	151,5	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).

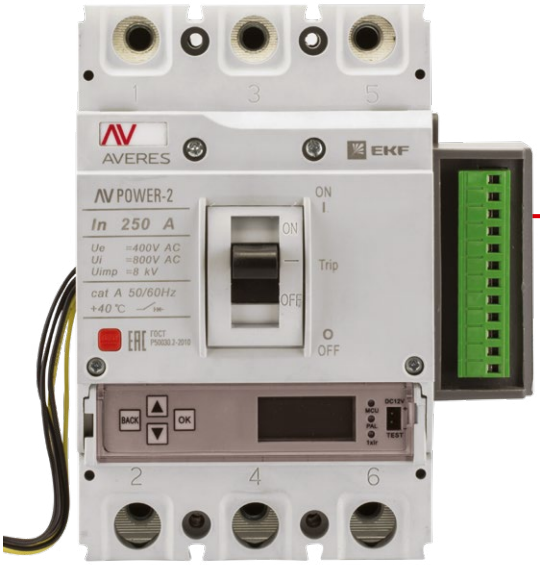
All accessories are ordered separately to complete the MCCB AV POWER to meet the application requirements. Installation procedure varies for different accessories. Auxiliary and alarm contacts, and releases shall be installed into special slots behind the front panel screwed to the MCCB housing. The 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.

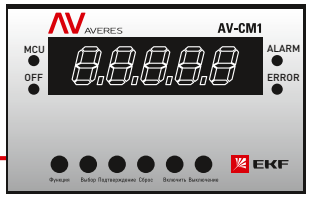
MCCB type	Name	Item code
AV POWER-1 TR	Alarm contact AL AV POWER-1 for TR left-sided	mccb-1L-AL-TR-av
	Alarm contact AL AV POWER-1 for TR right-sided	mccb-1R-AL-TR-av
	Auxiliary and alarm contact AX+AL AV POWER-1 for TR left-sided	mccb-1L-AX+AL-TR-av
	Auxiliary and alarm contact AX+AL AV POWER-1 for 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

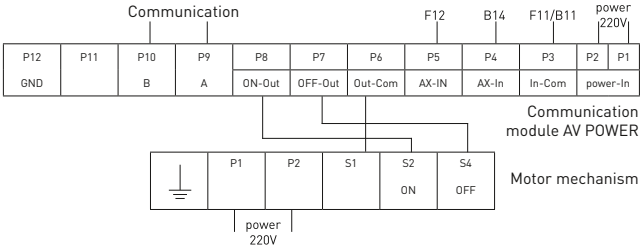
Communication interface for electronic trip unit ETU X.2 AVERES EKF

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

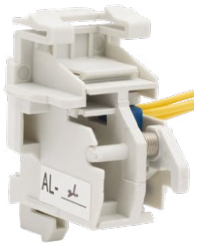




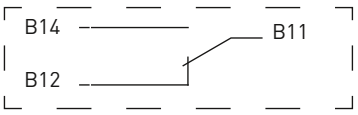
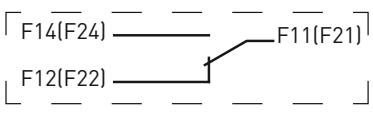
Wiring diagram



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

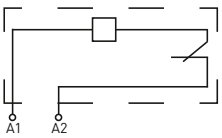
Wiring diagram

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

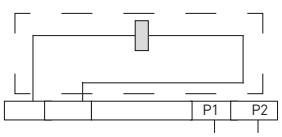


Undervoltage release UVT AVERES EKF

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.

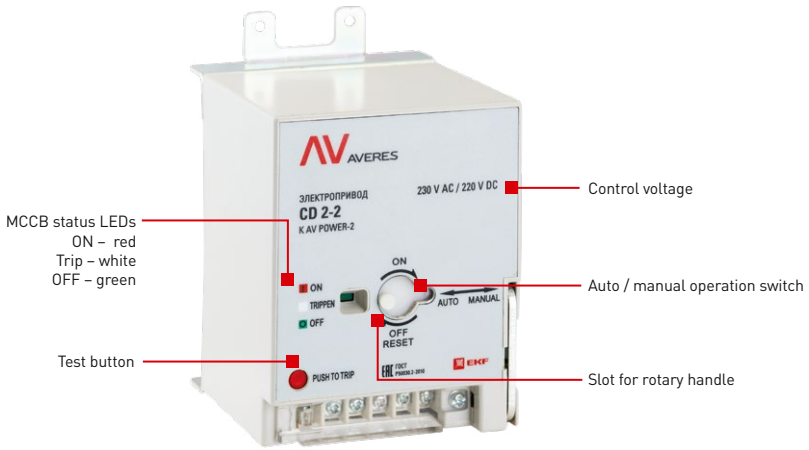
Name	Operating voltage Ue, V, 50/60 Hz	Operate voltage	Hold Voltage	Breaking voltage	Consumed power, VA, 230 V, 50/60 Hz	Item code
Undervoltage release UVT AV POWER-1 for TR AC230V right-sided AVERES EKF	230	(0,85÷1,1) Ue	(0,35÷0,7) Ue	<0,35Ue	2,6	mccb-1R-UVT-TR-av
Undervoltage release UVT AV POWER-1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



Motor mechanism CD-2 AVERES EKF

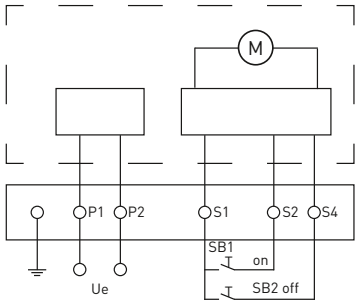
The motor mechanism is designed for remote MCCB close/open operations. The motor mechanism can be operated both remotely and manually – with a rotary handle on the front panel. Both copper and aluminum wire connections are supported.



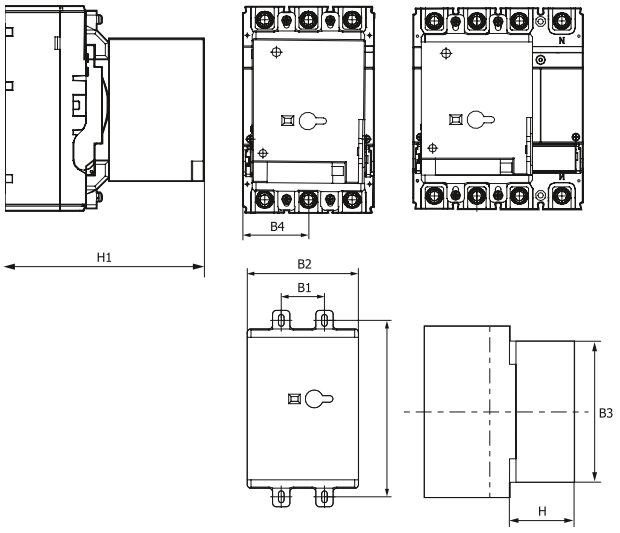
TECHNICAL DATA

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
	AC at 50/60 Hz	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

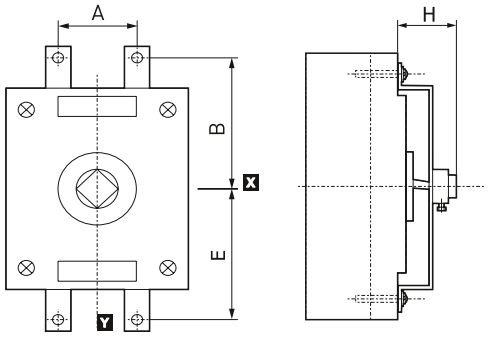
Rotary extended handle CS1, CS2 AVERES EKF

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.

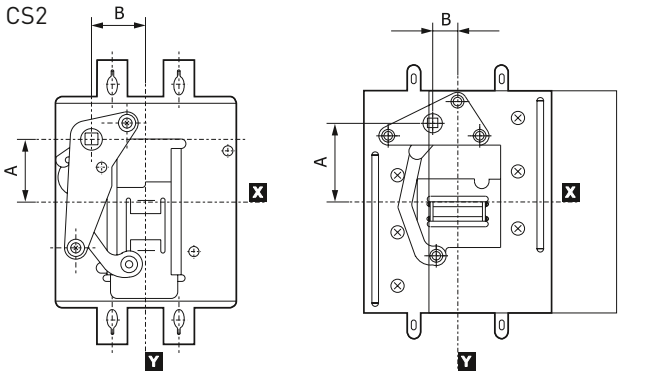
TECHNICAL DATA

Overall and installation dimensions

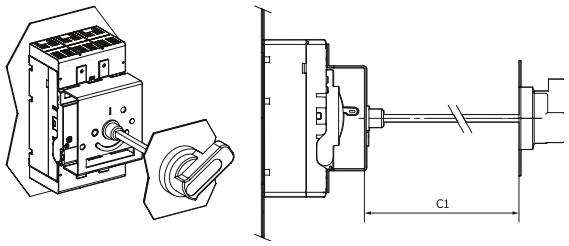
CS1

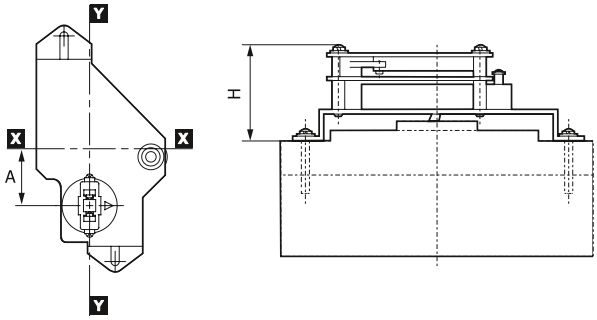


CS2



Note. Compatible both with vertically and horizontally installed MCCBs.

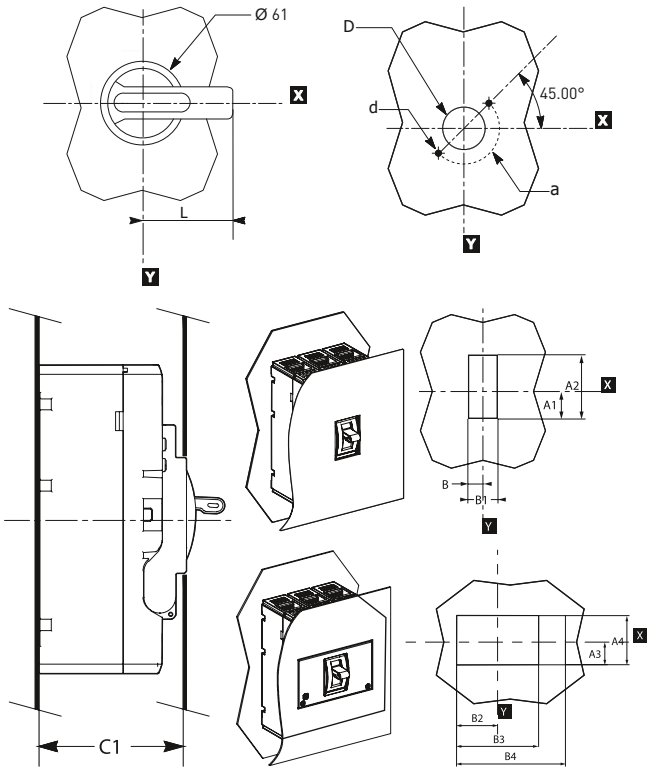




Name	Overall dimensions, mm			
	A	B	E	H
Extended rotary handle CS1 AV POWER-1 for TR AVERES EKF	25	55,5	55,5	52
Extended rotary handle CS1 AV POWER-1 for ETU AVERES EKF	30	66	66	52
Extended rotary handle CS1 AV POWER-2 AVERES EKF	35	71,5	71,5	56
Extended rotary handle CS1 AV POWER-3 AVERES EKF	48	97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

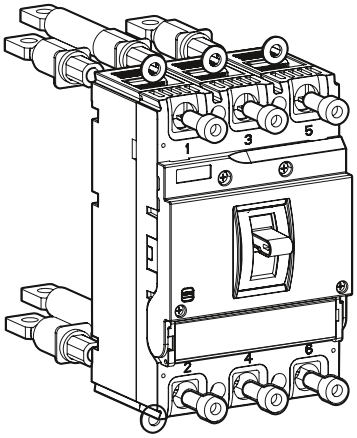
Note:
1. The standard length of extension shaft is 150 mm.
2. The three- and four-pole MCCBs match the rotary handles of the same size.

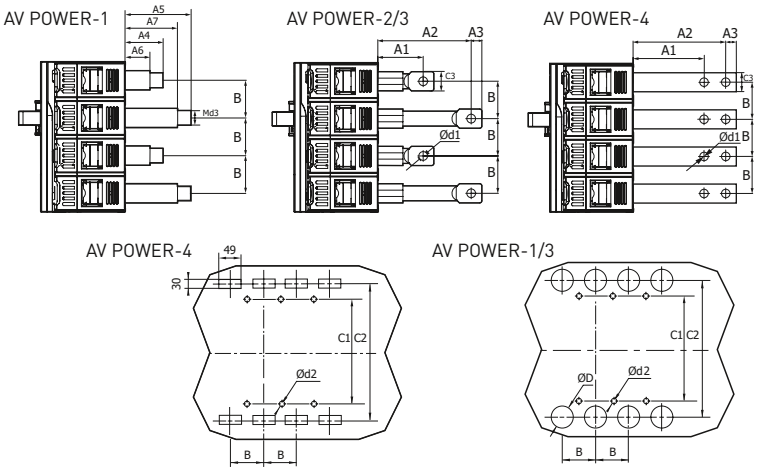
MCCB type	Overall dimensions, mm									
	A1	A2	A3	A4	B	B1	B2	B3	B4	C1
AV POWER-1 TR	15,5	31	24,5	55	12,5	26	38,5	77	102	66,5
AV POWER-1 ETU	22	44	29	59	14,5	30	46	92	122	85
AV POWER-2	24	48	29	63	16,8	33,5	52,8	105,5	140,5	96,5
AV POWER-3	36	84	52	110	29,5	59	76	152	200	107
AV POWER-4	39	83	52	104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



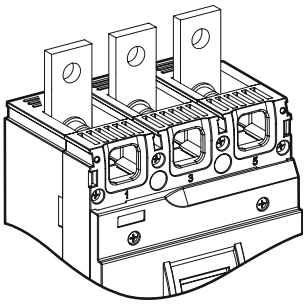


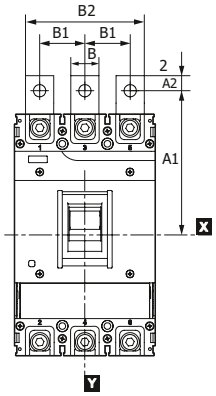
Name	Overall dimensions, mm														
	A1	A2	A3	A4	A5	A6	A7	B	C1	C1	C3	d1	d2	d3	D
Outer connecting plates F AV POWER-1 rear connection for TR	–	–	–	55,5	85,5	30,5	60,5	25	111	116	–	8,5	4	8	15
Outer connecting plates F AV POWER-1 rear connection for ETU	–	–	–	51	81	26	56	90	132	137	–	8,5	4	8	15
Outer 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

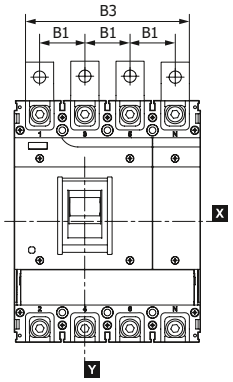
Name	Picture	Item code
Outer connecting plates F AV POWER-1 rear connection for TR AVERES EKF		mccb-1-F-TR-av
Outer connecting plates F AV POWER-1 rear connection for ETU AVERES EKF		mccb-1-F-ETU-av
Outer connecting plates F AV POWER-2 rear connection AVERES EKF		mccb-2-F-av
Outer connecting plates F 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

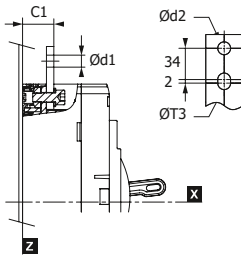
Outer connecting plates K2 AVERES EKF

Overall and installation dimensions







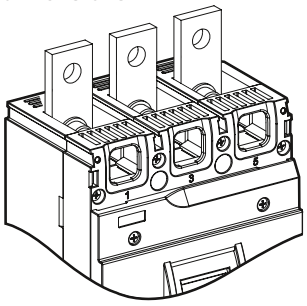


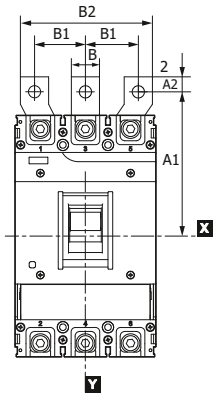
MCCB type	Overall dimensions, mm								
	A1	A2	B	B1	B2	B3	C1	d1	d2
AV POWER-1 TR	93	10	18	25	68	93	26,8	9	-
AV POWER-1 ETU	103,5	10	18	30	78	108	31,5	9	-
AV POWER-2	112,5	10	24,5	35	94,5	129,5	30	9	-
AV POWER-3	157	14,8	32	48	128	176	33/35	14	-
AV POWER-4	210,5	15	46	70	186	256	45,5	14	14

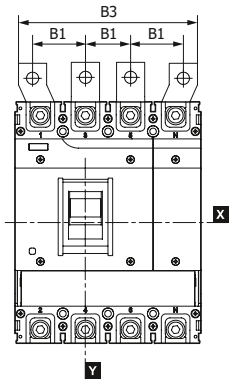
Name	Picture	Item code
Outer connecting plates K2 AV POWER-1 for TR AVERES EKF		mccb-1-K2-TR-av
Outer connecting plates K2 AV POWER-1 for ETU AVERES EKF		mccb-1-K2-ETU-av
Outer connecting plates K2 AV POWER-2 AVERES EKF		mccb-2-K2-av
Outer connecting plates K2 AV POWER-3 250-400A AVERES EKF		mccb-3-K2400-av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

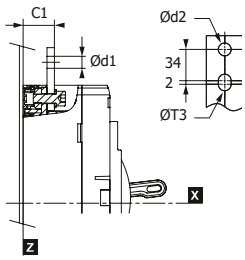
Outer connecting plates K3 AVERES EKF

Overall and installation dimensions







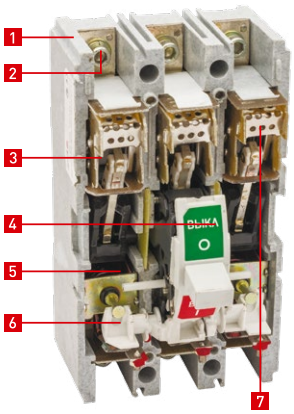


MCCB type	Overall dimensions, mm								
	A1	A2	B	B1	B2	B3	C1	d1	d2
AV POWER-1 TR	93	10	18	25	68	93	26,8	9	-
AV POWER-1 ETU	103,5	10	18	30	78	108	31,5	9	-
AV POWER-2	112,5	10	24,4	35	94,5	130	30	9	-
AV POWER-3	157	14,8	32	48	128	176	33/35	14	-
AV POWER-4	210,5	15	46	70	186	256	45,5	14	14

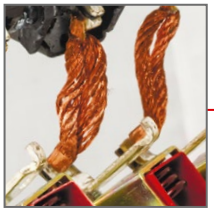
Name	Picture	Item code
Outer connecting plates K3 AV POWER-1 for TR AVERES EKF		mccb-1-K3-TR-av
Outer connecting plates K3 AV POWER-1 for ETU AVERES EKF		mccb-1-K3-ETU-av
Outer connecting plates K3 AV POWER-2 AVERES EKF		mccb-2-K3-av
Outer connecting plates K3 AV POWER-3 250-400A AVERES EKF		mccb-3-K3400-av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

Molded case circuit breakers VA-99M EKF

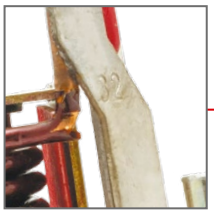
VA-99M is a monoblock consisting of a base and a front panel with an aperture for the operating handle and the TEST button cap to test the tripping mechanism. The base (1), made of thermal-resistant, flame-retardant ABS plastic serves as a support structure for terminals (2), fixed and movable contacts (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.
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.



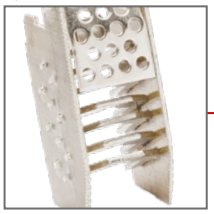
Standard: IEC 60947-2



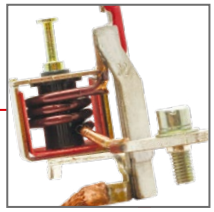
Internal conductive parts made of electrical copper



Bonded bimetal strip for stable long-term operation

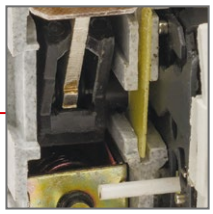


Solid plates of uniform thickness for improved arc quenching



Coiled magnetic release for improved short-circuit tripping

Simple and reliable design



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 V 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

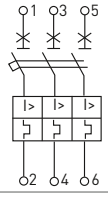
Electronic trip unit VA-99M

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.

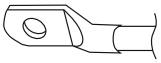
Ir2(× Ir1) – short circuit tripping setpoint is set relative to preset Ir1. The switch has 10 positions (2-12 × Ir1).
t2 (s) – short-circuit current tripping delay time. Setting range: 0,06–0,3 sec. The function is available for any time t2 set except OFF.
Ir3 (× Ir1) – instant short-circuit current 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

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 100 1P	VA-99M 250			VA-99M 400			VA-99M 630			VA-99M 800			VA-99M 1250		
Poles	3P, 4P		3P, 4P			1P	3P, 4P						3P, 4P								
Rated operating current Ie, A	16, 20, 25, 32, 40, 50, 63		16, 20, 25, 32, 40, 50, 63, 80, 100, 125			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		
Rated operating voltage Ue, V AC	220/230/240	380/400/415	220/230/240	380/400/415	690	220/230/240	220/230/240	380/400/415	690	220/230/240	380/400/415	690	220/230/240	380/400/415	690	220/230/240	380/400/415	690	220/230/240	380/400/415	690
Ultimate short-circuit breaking capacity Icu, kA	36	25	36	25	10	25	50	35	15	50	35	15	75	50	35	75	50	35	75	50	35
Service short-circuit breaking capacity Ics, kA	28	18	28	18	5	18	36	26	8	36	26	8	50	35	15	50	35	15	50	35	15
TM trip unit setting temperature, °C	50																				
Min. mechanical endurance, O-C cycles	7000						4000												2500		
Min. electrical endurance, O-C cycles	2000																		1500		
Rated peak short-circuit current Icm, kA	2,1×Icu						–						2,2×Icu								
Rated insulation voltage Ui, V	800																				
Rated impulse withstand voltage Uimp, kV	8																				
Utilization category according to IEC 60947-2	A																				
Type of trip unit	Thermal-magnetic																				
Set point of electromagnetic trip unit	10×In/5×In												10×In								
Power consumption, W	25						70			85			100			160					
Protection degree	IP30																				
Operating temperature, °C	from –25 to +50																				
Weight, kg	1		1,25			-	2			5,75			8,25			24,6			26,8		
Min. service life, years	10																				

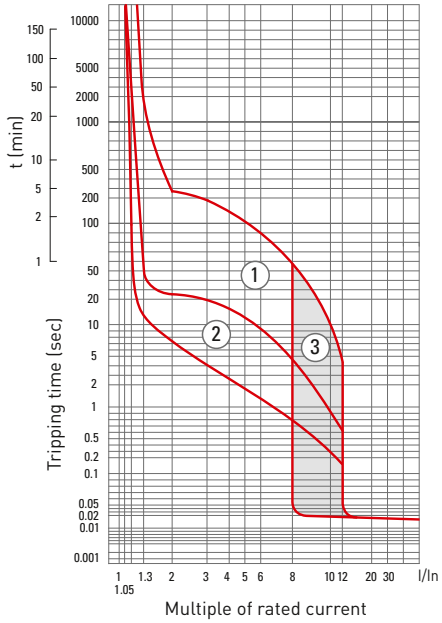
Electronic trip unit

Parameters	Values						
	VA-99M 100/63A	VA-99M 100/100A	VA-99M 250/250A	VA-99M 400/400A	VA-99M 630/630A	VA-99M 800/800A	VA-99M 1250/1250A
Rated current In, A	63	100	250	400	630	800	1250
Rated insulation voltage Ui, V	800						
Rated impulse voltage, Uimp, kV	8						
Rated operating voltage Ue, V	380/400/415						
Ultimate short-circuit breaking capacity Icu, kA	25	25	35	35	50	50	50
Service short-circuit breaking capacity Ics, kA	18	18	26	26	35	35	35
Set point of thermal protection current Ir1, A	32-63	63-100	100-250	160-400	252-630	630-800	850-1250
Rated short-time withstand current Icw, kA	1,2 t = 0,5 sec.	1,2 t = 0,5 sec.	1,2 t = 0,5 sec.	5 t = 1 sec.	8 t = 1 sec.	10 t = 1 sec.	20 t = 1 sec.
Utilization category	B						
Trip unit	Electrnonic						
Min. mechanical endurance, O-C cycles	8500	8500	7000	4000	4000	2500	2500
Min. electrical endurance, O-C cycles	1500	1500	1000	1000	1000	500	500
Poles	3P, 4P						
Protection degree	IP30						
Operating temperature, °C	from – 5 to + 50						
Min. service life, years	10						

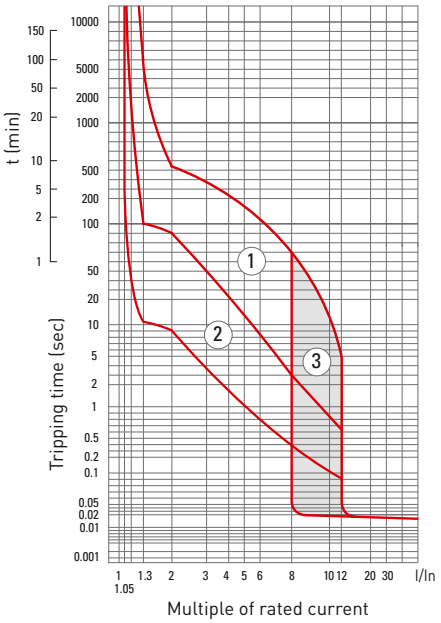
Tripping characteristics

VA-99M tripping curves

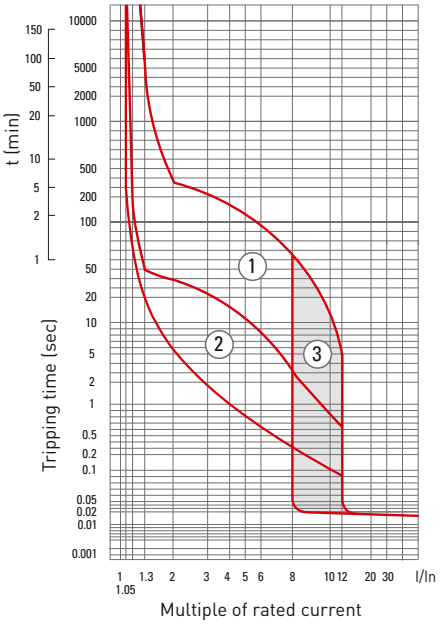
VA-99M/63



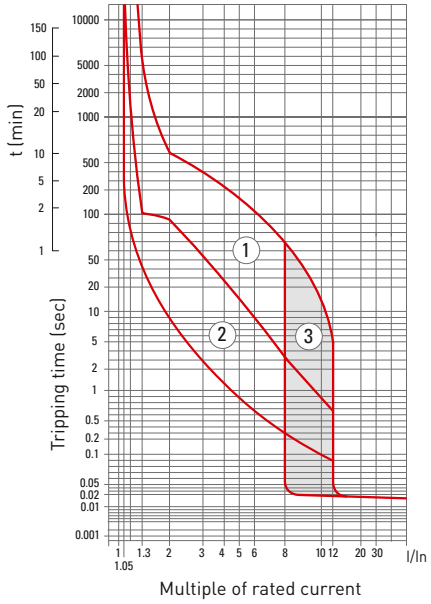
VA-99M/400



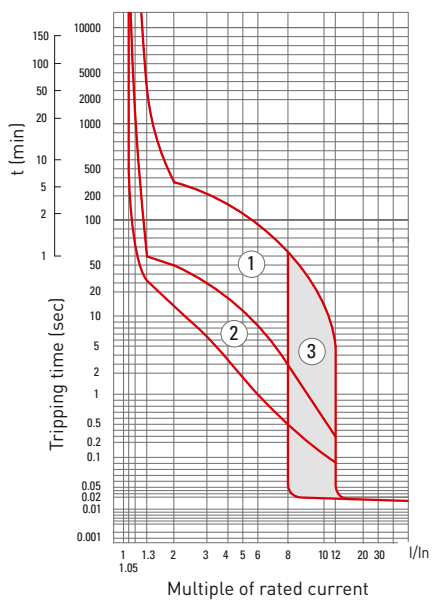
VA-99M/100



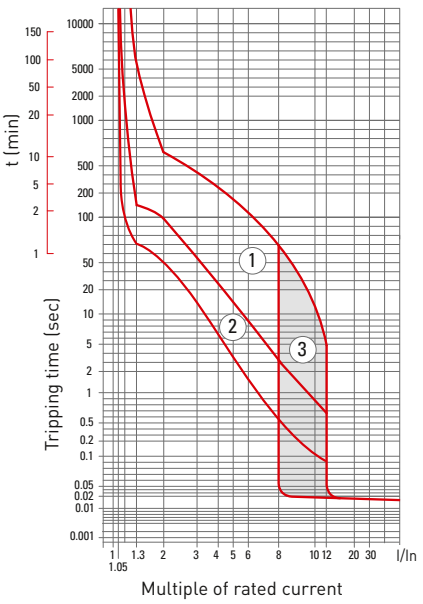
VA-99M/630



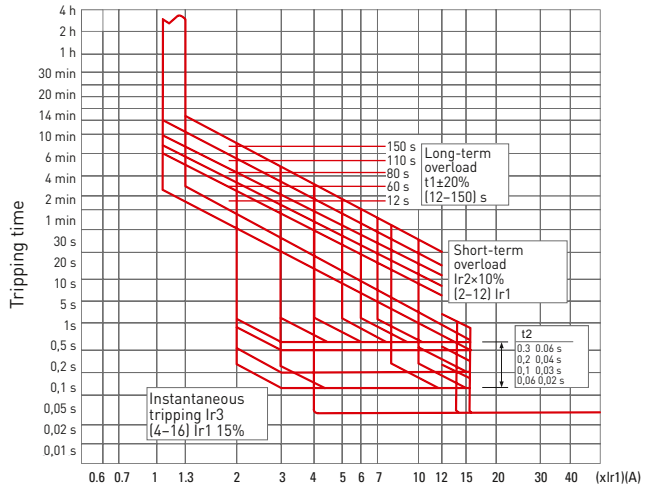
VA-99M/250



VA-99M/800

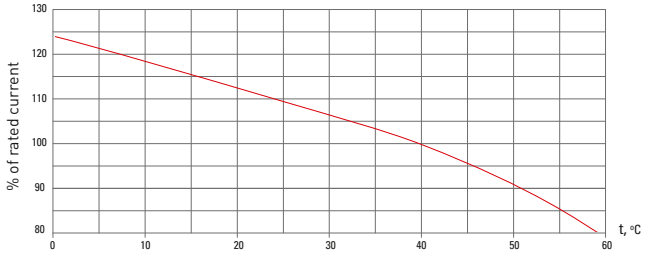


VA-99M/ 63-800A with electronic trip unit



Temperature derating factor

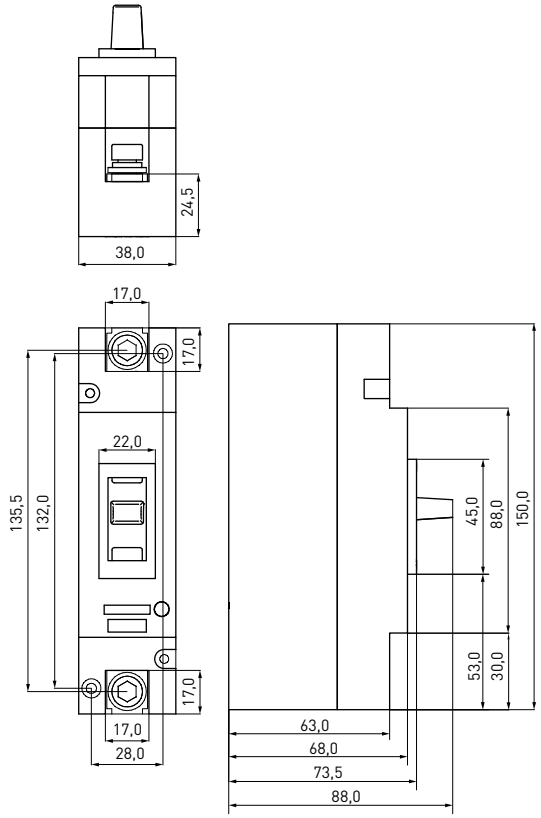
VA-99M/63-1250



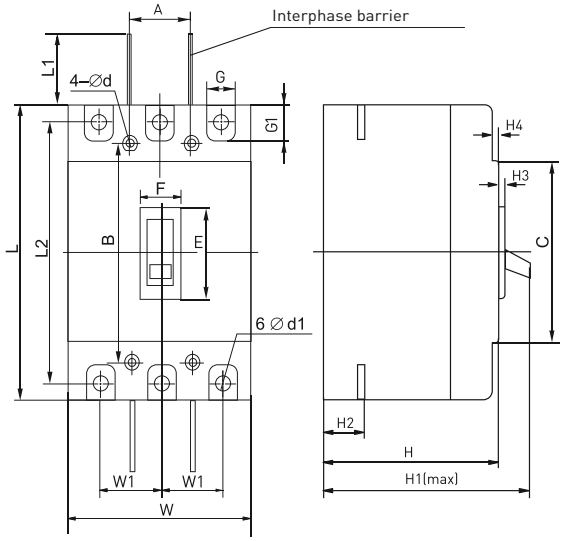
The devices shall be commissioned at normal operating temperature. The tripping time of the molded case circuit breaker is determined by its tripping curve. The actual value of the overload protection (Ir) shall be adjusted as per the diagram above.

Overall and installation dimensions (mm)

VA-99M/100 1P

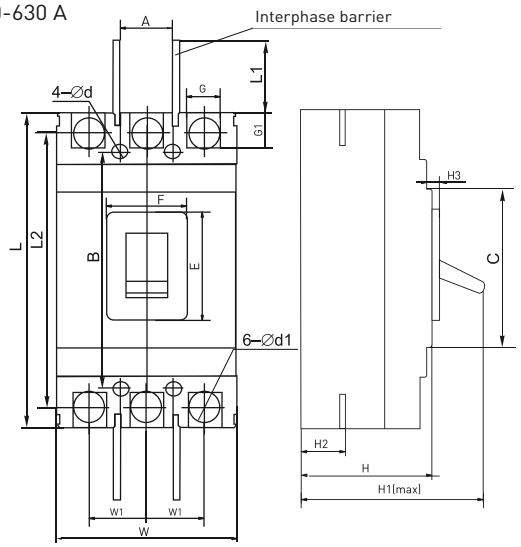


VA-99M/63-250 A



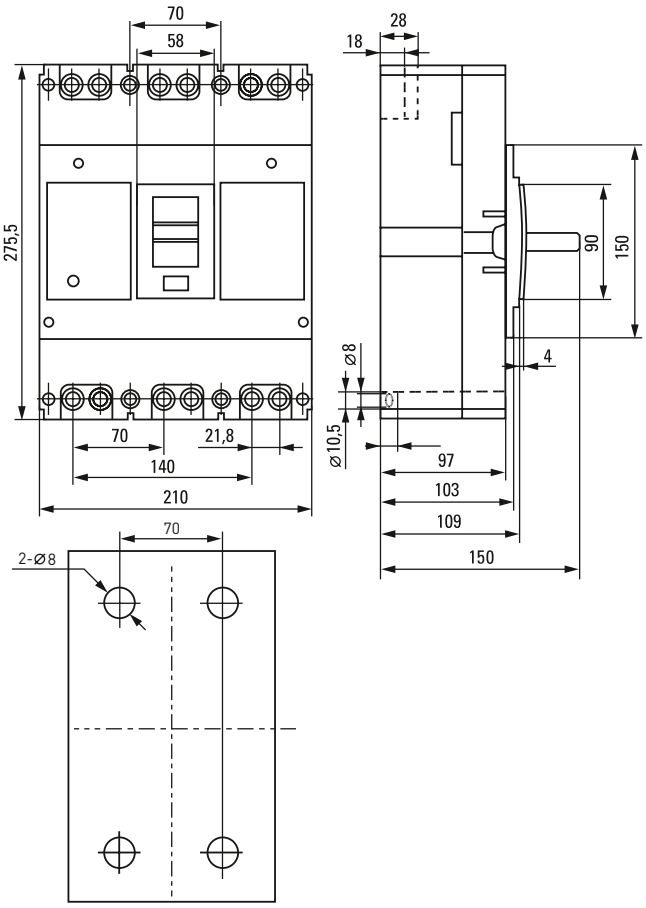
Dimensions, mm		Name		
		VA-99M/63 A	VA-99M/100 A	VA-99M/250 A
Overall dimensions	C	85	84	102
	E	48	50	50
	F	22	22	22
	G	14	17	23
	G1	14	16	24
	H	72	68	88
	H1	90	88	110
	H2	20	24	24
	H3	4,5	4	4
	H4	7	7	5
	L	136	150	165
	L1	14	60	80
	L2	117	132	144
	W	76	92	107
	W1	25	30	35
Installation dimensions	A	25	30	35
	B	117	129	126
	Ø d	3,5	4,5	5,5
	Ø d1	7	10	10

VA-99M/400-630 A

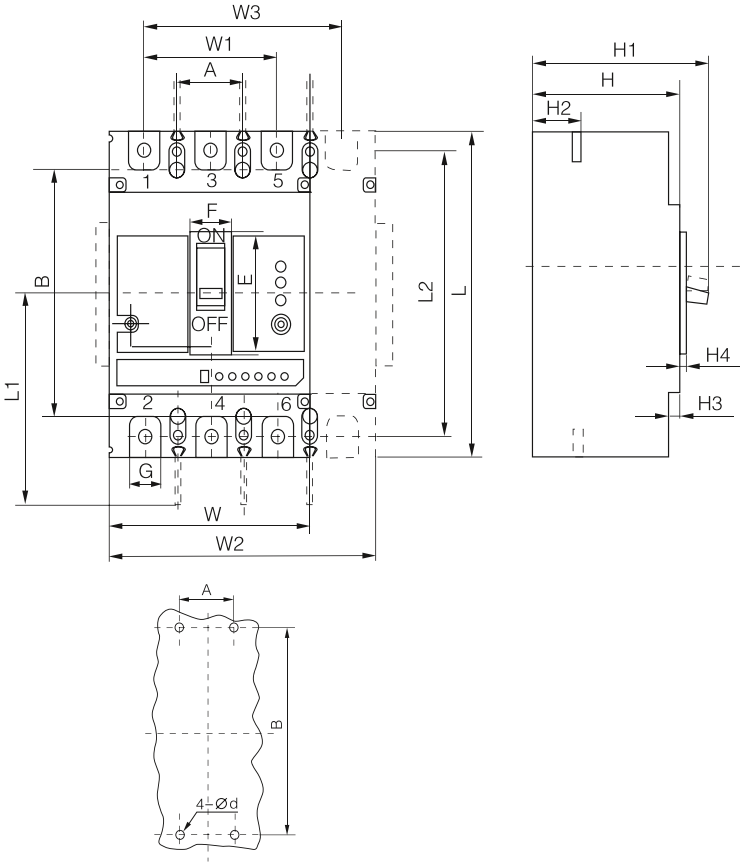


Dimensions, mm		Name	
		VA-99M/400 A	VA-99M/630 A
Overall dimensions	C	127	134
	E	86	88
	F	90	64
	G	32	45
	G1	32	34
	H	106	111
	H1	150	156
	H2	38	44
	H3	6	6,5
	L	258	272
	L1	105	105
	L2	225	234
	W	149	183
	W1	44	58
Installation dimensions	A	44	58
	B	194	200
	Ø d	7	7
	Ø d1	26	30

VA-99M/800-1000 A

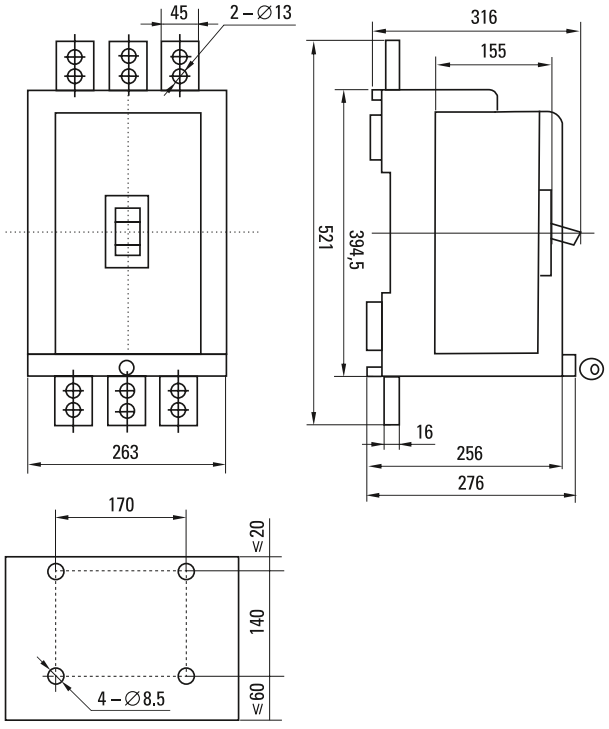


VA-99M 100-800 A with electronic trip unit



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



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 +50°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. 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	4P	1P	3P	4P	3P	4P	3P	4P
16	mccb99-63-16mm*	mccb99-63-16mm-4P*	mccb99-100-16mm-1P*	mccb99-100-16mm*	–	–	–	–	–
20	mccb99-63-20mm	mccb99-63-20mm-4P*	mccb99-100-20mm-1P	mccb99-100-20mm	–	–	–	–	–
25	mccb99-63-25mm	mccb99-63-25mm-4P*	mccb99-100-25mm-1P*	mccb99-100-25mm	–	–	–	–	–
32	mccb99-63-32mm	mccb99-63-32mm-4P*	mccb99-100-32mm-1P	mccb99-100-32mm	–	–	–	–	–
40	mccb99-63-40mm	mccb99-63-40mm-4P*	mccb99-100-40mm-1P	mccb99-100-40mm	–	–	–	–	–
50	mccb99-63-50mm	mccb99-63-50mm-4P*	mccb99-100-50mm-1P*	mccb99-100-50mm	–	–	–	–	–
63	mccb99-63-63mm	mccb99-63-63mm-4P*	mccb99-100-63mm-1P	mccb99-100-63mm	–	–	–	–	–
80	–	–	mccb99-100-80mm-1P	mccb99-100-80mm	-	–	–	–	–
100	–	–	mccb99-100-100mm-1P	mccb99-100-100mm	mccb99-100-100mm-4P	–	–	–	–
125	–	–	mccb99-100-125mm-1P	mccb99-100-125mm	mccb99-100-125mm-4P	mccb99-250-125mm	mccb99-250-125mm-4P	–	–
160	–	–	–	–	–	mccb99-250-160mm	mccb99-250-160mm-4P	–	–
200	–	–	–	–	–	mccb99-250-200mm	mccb99-250-200mm-4P	–	–
225	–	–	–	–	–	mccb99-250-225mm	mccb99-250-225mm-4P*	–	–
250	–	–	–	–	–	mccb99-250-250mm	mccb99-250-250mm-4P	–	–
315	–	–	–	–	–	–	–	mccb99-400-315mm	mccb99-400-315mm-4P
400	–	–	–		–	–	–	mccb99-400-400mm	mccb99-400-400mm-4P

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

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.

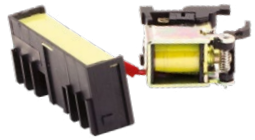
MCCB type	Accessories	Item code
VA-99M 63	Alarm+Auxiliary contact	mccb99m-63-alax
	Alarm contact	mccb99m-63-al
	Auxiliary contact	mccb99m-63-ax
	Mechanical interlock	mccb99m-63-mil-3p
	Mechanical interlock	mccb99m-63-mil-4p
	Motor mechanism CD2 220V	mccb99m-63-cd2-220dc
	Motor mechanism CD2 230V AC	mccb99m-63-cd2-230ac
	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
	Plug-in panel front connection	mccb99m-63-pin-3f
	Plug-in panel rear connection	mccb99m-63-pin-3r
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
	Mechanical interlock	mccb99m-100-mil-4p
	Undervoltage release 230V AC	mccb99m-100-uvt-230ac
	Extended rotary handle CS1	mccb99m-100-cs1
	Plug-in panel front connection	mccb99m-100-pin-3f
	Plug-in panel rear connection	mccb99m-100-pin-3r
VA-99M 250	Alarm+Auxiliary contact	mccb99m-250-alax
	Alarm contact	mccb99m-250-al
	Auxiliary contact	mccb99m-250-ax
	Set of connection plates (6 pcs.)	mccb99m-250-ocp-k2
	Mechanical interlock	mccb99m-250-mil-3p
	Mechanical interlock	mccb99m-250-mil-4p
	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
	Plug-in panel front connection	mccb99m-250-pin-3f
	Plug-in panel rear connection	mccb99m-250-pin-3r

MCCB type	Accessories	Item code
VA-99M 400	Alarm+Auxiliary contact	mccb99m-400-alax
	Alarm contact	mccb99m-400-al
	Auxiliary contact	mccb99m-400-ax
	Set of connection plates (6 pcs.)	mccb99m-400-ocp-k2
	Mechanical interlock	mccb99m-400-mil-3p
	Mechanical interlock	mccb99m-400-mil-4p
	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
	Plug-in panel front connection	mccb99m-400-pin-3f
	Plug-in panel rear connection	mccb99m-400-pin-3r
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
	Mechanical interlock	mccb99m-630-mil-4p
	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
	Plug-in panel front connection	mccb99m-630-pin-3f
	Plug-in panel rear connection	mccb99m-630-pin-3r
	Withdrawable panel front connection	mccb99m-630-dod-3f
	Withdrawable panel rear connection	mccb99m-630-dod-3r
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 60947-2

Picture	Name	Operating voltage, V	Operating voltage range	Item code
	Shunt release 230V AC VA-99M 63 EKF	230 V, 50/60 Hz	(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, 50/60 Hz		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 60947-2

Picture	Name	Operating voltage Ue	Operate voltage	Hold voltage	Breaking voltage	Power consumption, W	Item code
	Undervoltage release VA-99M 63 EKF	230 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 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

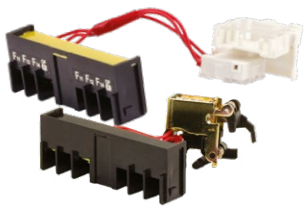
The alarm contact indicates the MCCB tripping by overcurrent (overload or short circuit), shunt release, undervoltage release, or TEST button. After the MCCB is reclosed, the alarm turns off.

Standard: IEC 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 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

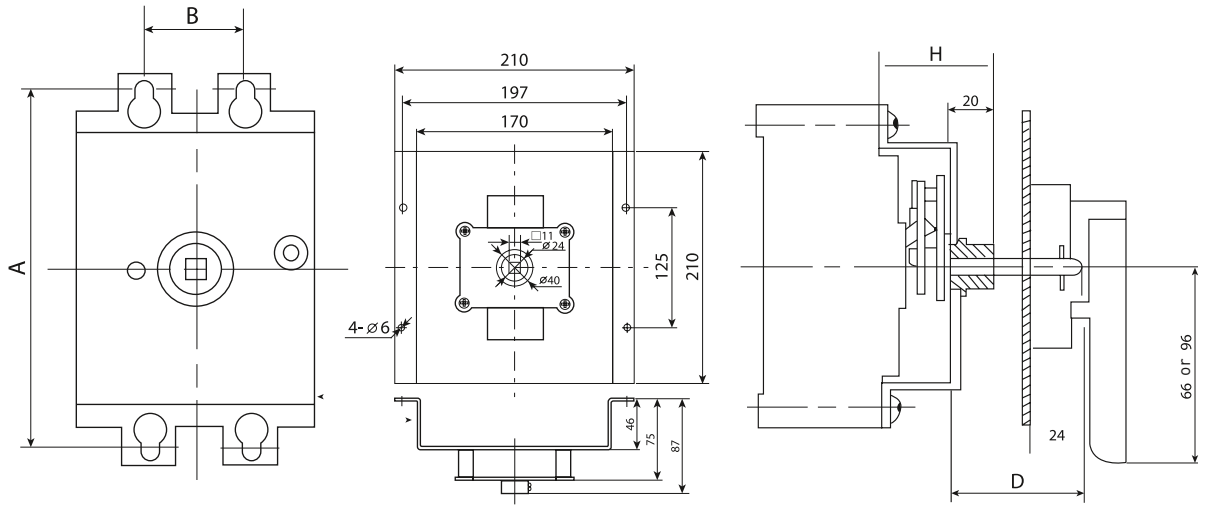
The extended rotary handle is designed to convert rotary motion into linear motion for MCCB operation. The mechanism is installed directly to the MCCB, while the rotary handle operates the mechanism through the enclosure door.

Standard: IEC 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 400 EKF	mccb99m-a-127
	Extended rotary handle eccentric VA-99M 630 EKF	mccb99m-a-128

Overall and installation dimensions (mm)

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	

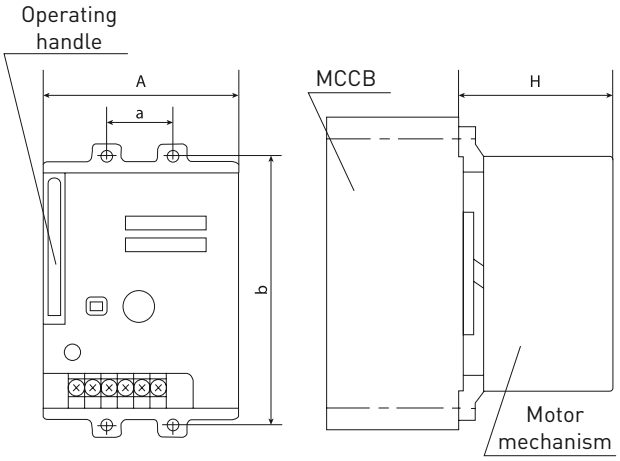
Motor mechanism for VA-99M EKF

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 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

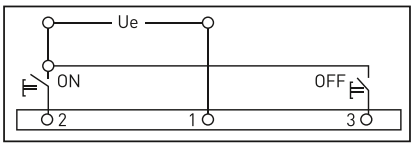
Overall and installation dimensions



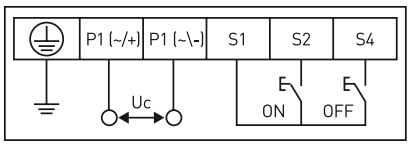
Name	a, mm	b, mm	A, mm	H, mm
Motor mechanism for VA-99M 63 EKF	25	117	90	88,5
Motor mechanism for VA-99M 100 EKF	30	129		89,5
Motor mechanism for VA-99M 250 EKF	35	126		92
Motor mechanism for VA-99M 400 EKF	44	194	130	142
Motor mechanism for VA-99M 630 EKF	58	200		153
Motor mechanism for VA-99M 800 EKF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

Wiring diagrams

VA-99M 63, 100, 250



VA-99M 400, 630, 800



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.

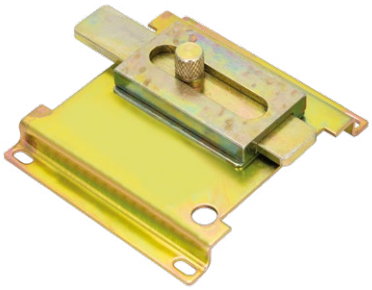
The ON button is used to switch the MCCB to the ON position, while the OFF button – to the OFF position.

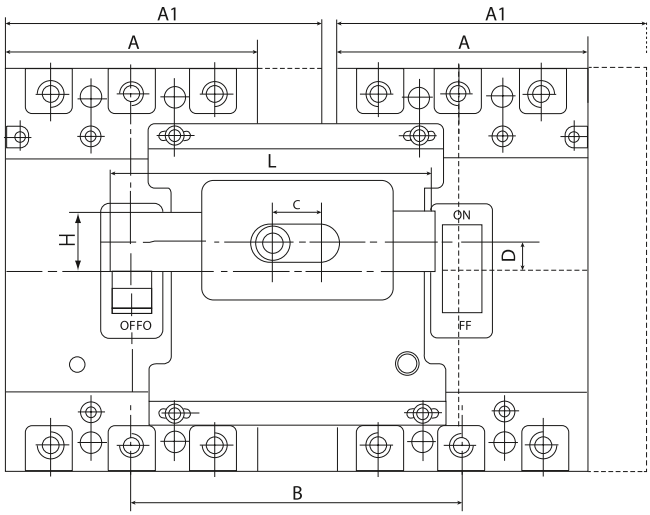
The indication window at the front panel serves for visual control of the MCCB and motor mechanism.

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 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	18	13	95	22	mccb99m-63-mil-3p
Mechanical interlock of 2 VA-99M 100 3P EKF	92	–	120		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	42	16	175		mccb99m-400-mil-3p
Mechanical interlock of 2 VA-99M 630 3P EKF	182	–	220		12	198		mccb99m-630-mil-3p
Mechanical interlock of 2 VA-99M 800 3P EKF	210	–	240		3,5	230		mccb99m-800-mil-3p
Mechanical interlock of 2 VA-99M 63 4P EKF	–	103	132	18	13	125		mccb99m-63-mil-4p
Mechanical interlock of 2 VA-99M 100 4P EKF	–	122	152		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	42	16	225		mccb99m-400-mil-4p
Mechanical interlock of 2 VA-99M 630 4P EKF	–	240	280		12	258		mccb99m-630-mil-4p

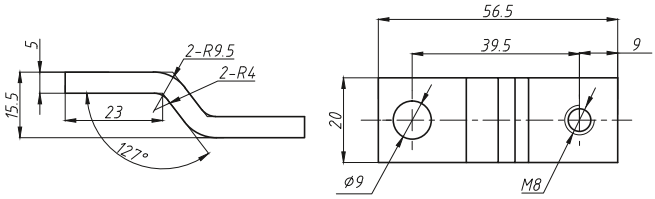
Outer connecting plates VA-99M EKF

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

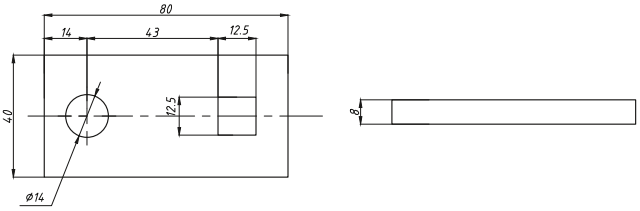
Name	MCCB type	Item code
Set of connecting plates VA-99M 100 (6 pcs.) EKF	VA-99M 100	mccb99m-a-100-ocp
Set of connecting plates VA-99M 250 (6 pcs.) EKF	VA-99M 250	mccb99m-a-250-ocp
Set of connecting plates VA-99M 400 (6 pcs.) EKF	VA-99M 400	mccb99m-a-400-ocp
Set of connecting plates VA-99M 630 (6 pcs.)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

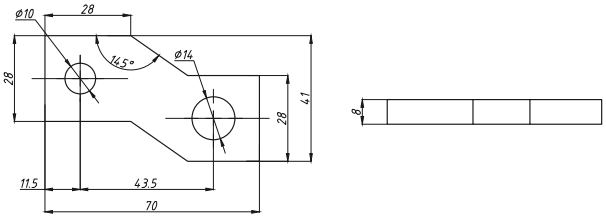
Set of outer connecting plates for VA-99M 250 EKF



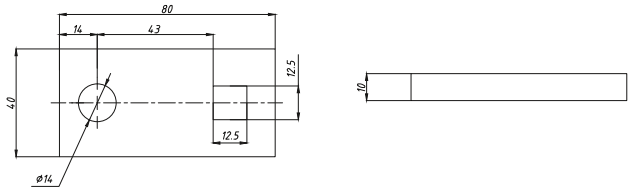
Set of outer connecting plates for VA-99M 630 EKF



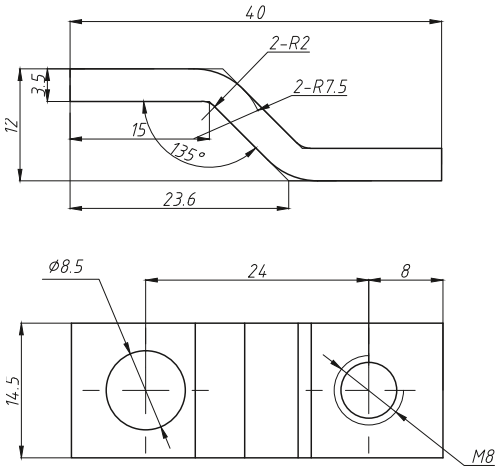
Set of outer connecting plates for VA-99M 400 EKF



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

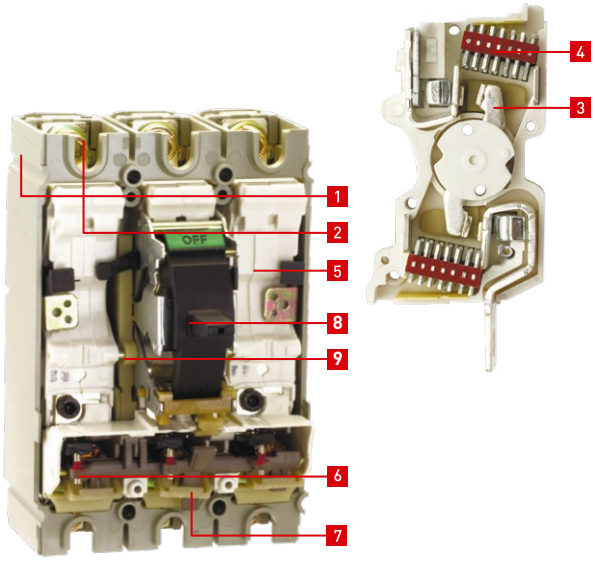


Set of outer connecting plates for VA-99M 100 EKF

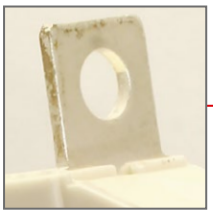


Molded case circuit breakers VA-99C EKF

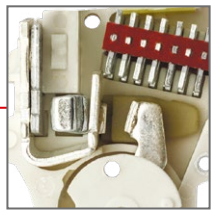
The molded case circuit breaker (MCCB) VA-99C is a monoblock consisting of a base and a front panel with an aperture for the operating handle and TEST button cap to test the tripping mechanism.
The base (1), made of thermal-resistant, flame-retardant plastic, serves as a support structure for terminals (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.
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 and bottom of the circuit breaker. The kit includes bolts and clamps required for installation. Copper and aluminum wire connections are supported.



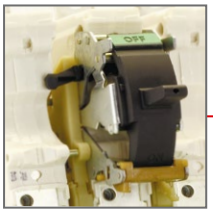
Standard: IEC 60947-2



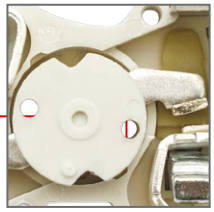
Connecting bars made of silver-coated electrical copper



Silverized tungsten composite contact pads

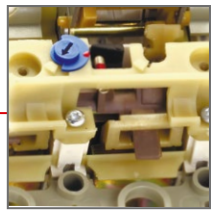


Instantaneous switching by charged spring



Rotary double-make action

Microprocessor trip unit with configurable thermal current and overload current setpoint



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

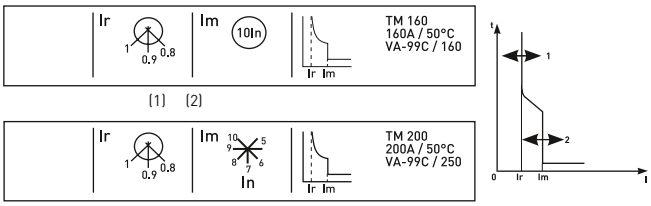
Installation and operation

Utilization category: A/B (by IEC 60947-2).
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

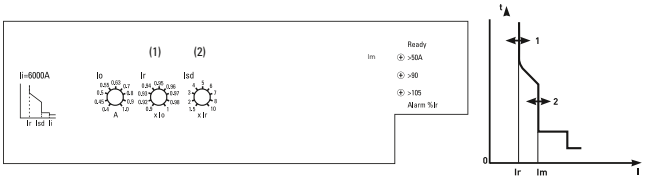
Parameters	Altitude above sea level, m			
	2000	3000	4000	5000
Insulation dielectric strength, V	3000	2500	2100	1800
Rated insulation voltage Ui, V	750	700	600	500
Maximum operating voltage, V	690	550	480	420
Average thermal resistance current at 40 °C, A	1 × In	0,96 × In	0,93 × In	0,9 × In

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).

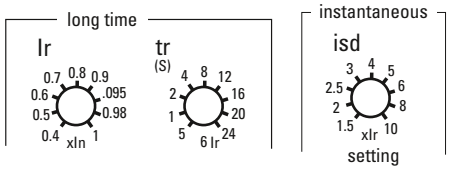


Electronic trip unit
Overload protection with adjustable current setpoint and constant time setpoint.
For VA-99C/250-630:
- rough adjustment Io = (0,4 – 1,0) In (9 positions)
- fine adjustment Ir = (0,9 – 1,0) Io (9 positions)
- short-circuit current protection (9 positions).

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



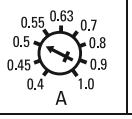
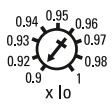
For VA-99C/1250:
Ir – overload tripping setpoint adjustment Ir = (0,4 – 1,0) In (9 positions)
tr – overload current tripping delay time tr = (0,5 – 24) sec. (9 positions)
Isd – short-circuit current setpoint adjustment Isd = (1,5 – 10) × Ir (9 positions).



Parameters		Values					
		VA-99C/100	VA-99C/160	VA-99C/250	VA-99C/400	VA-99C/630	VA-99C/1250
Number of poles		3P, 4P					
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		380 / 400 / 415 / 690					
Ultimate short-circuit breaking capacity Icu, kA	380-415 V AC	35	35	45	45	45	50
	690 V AC	8	8	8	10	10	20
Service short-circuit breaking capacity Ics, kA	380-415 V AC	35	35	45	45	45	50
	690 V AC	8	8	8	10	10	20
Trip unit		Thermomagnetic			Electronic		
Utilization category		A					B
Endurance (without maintenance)	Mechanical	20 000			10 000		
	Electrical at 380-415 V AC	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

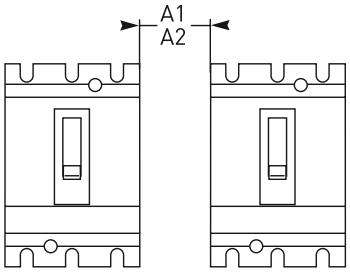
Testing

Setting example	
	

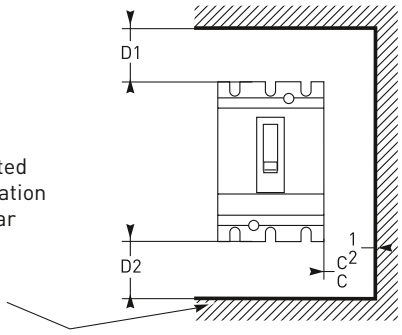
Trip unit setpoint for VA-99C 400A at Io = 0,5 and Ir = 0,9 is as follows: 400 × 0,5 × 0,9 = 180 A.
Trip unit setpoint for VA-99C 630A at the same Io and Ir is as follows: 630 x 0,5 x 0,9= 283,5 A

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.

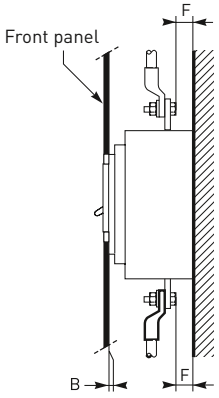
Min. distance between adjacent MCCBs.



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



Min. distance between MCCB and front/rear panel.

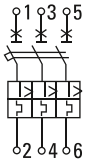
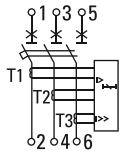


If F< 8, an insulating screen is obligatory

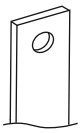
Dimensions, mm	Insulation, insulated busbars or painted metal sheet				Unpainted metal sheet					
MCCB type		C1	D1	D2	C2	D1	D2	A1[2]	A2[3]	B
VA-99C/100/250	U < 440 V	0	30	30	5	35	35	0	10	0
	U < 600 V	0	30	30	10[1]	35	35	0	20	0
	U > 600 V	0	30	30	20[1]	35	35	0	40	0
VA-99C/400/630	U < 440 V	0	30	30	5	60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

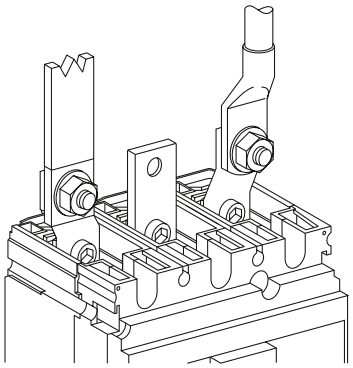
Wiring diagrams

Thermomagnetic trip unit	Microprocessor trip unit
	

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

Ambient temperature derating factor

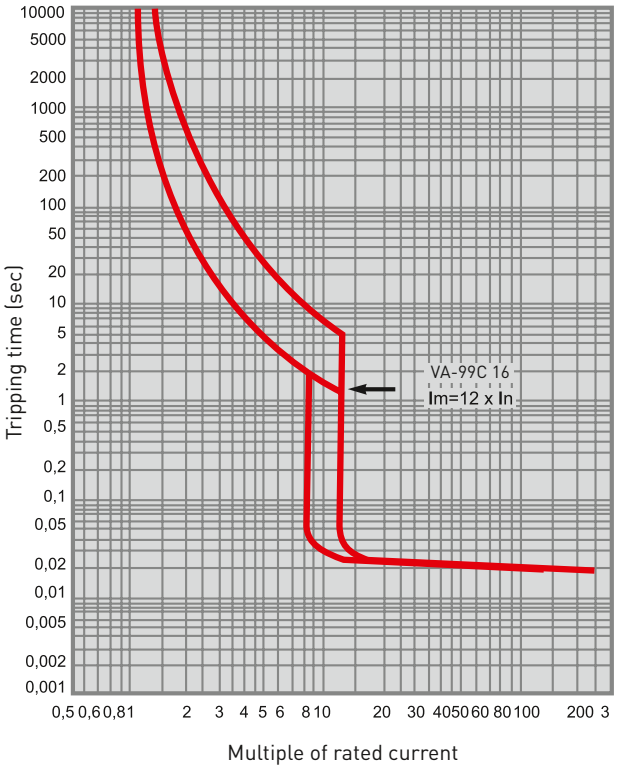
Rated current, A	-40°C	-35°C	-25°C	-15°C	-0°C	+10°C	+20°C	+30°C	+40°C	+50°C	+60°C	+70°C
12.5A	17,5	17	16	15,5	15	14,5	13,5	13	12,5	11,5	11	10,5
16A	22,5	22	20,5	20	19	18,5	17,5	17	16	15	14,5	14
20A	28	27,5	26,5	25,5	24	23	22	21	20	19,5	18,5	18
25A	35	34	33	32	30	28	27	26	25	24	22,5	22
32A	45	44	42	41	38	37	35	33	32	30,5	29	28
40A	56	55	53	51	48	46	44	42	40	37	33,5	29
50A	70	68,5	66	64	60	57,5	55	52,5	50	47,5	45	40
63A	88	86,5	83	80	75	72	69	66	63	58,5	53	46
80A	112	110	106	102	96	92	88	84	80	74,5	67	56
100A	140	137	132	127	120	115	110	105	100	93	84	76
125A	175	172	165	159	150	144	137	131	125	118	106	96
160A	224	220	212	204	192	184	176	168	160	152	136	120
200A	280	275	265	255	240	230	220	210	200	190	175	166
225A	315	309	300	288	270	259	247	236	225	213	196	180
250A	350	343	332	319	300	287	275	262	250	237	218	207

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

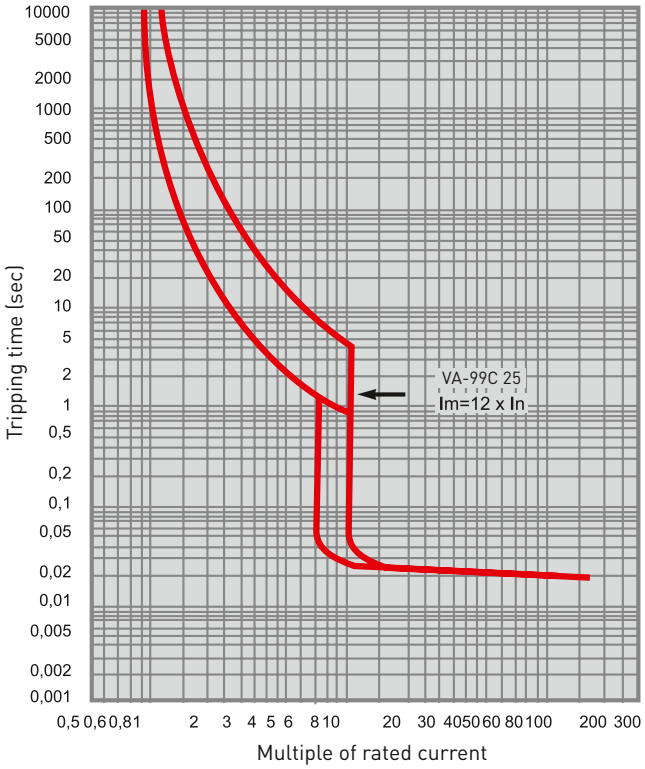
Electronic trip units are not sensitive to temperature variations. However, the current limit value of the MCCB depends on the ambient temperature.

Tripping curves

VA-99C/16

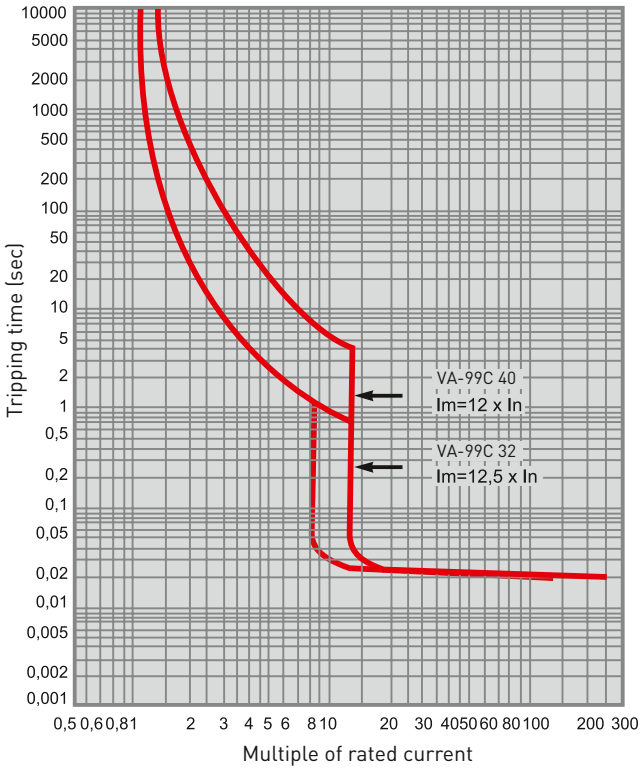


VA-99C/25

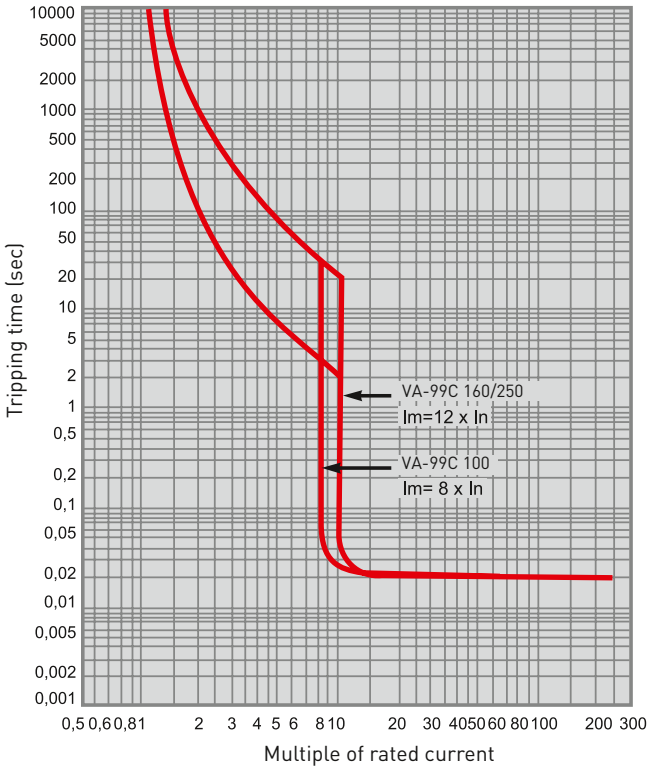


Tripping curves

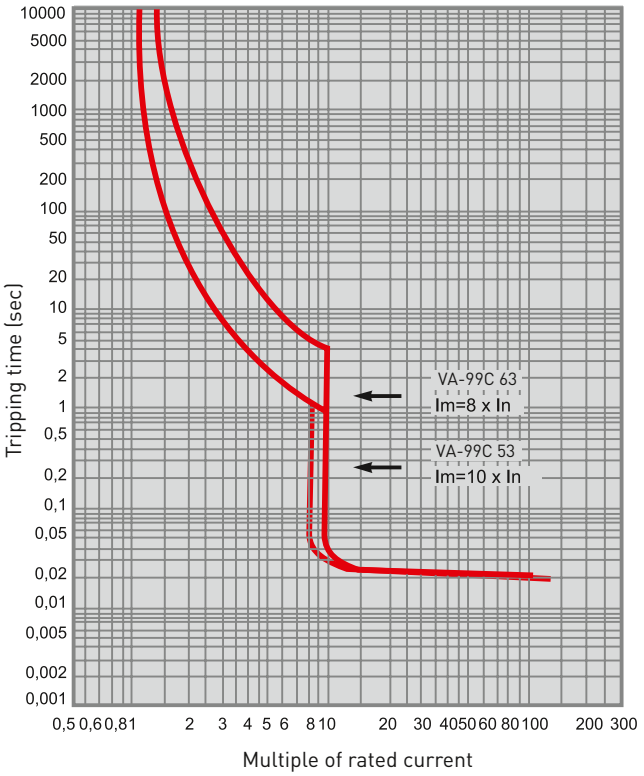
VA-99C/40



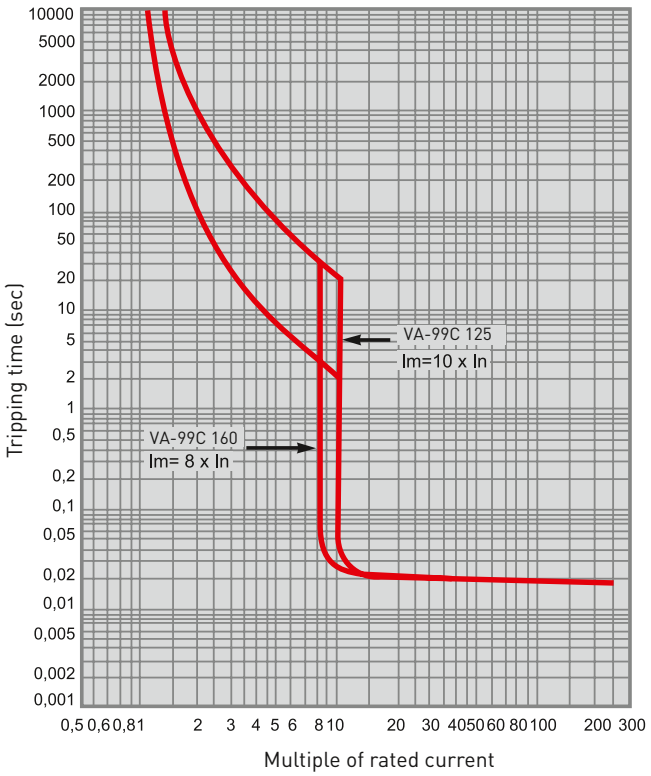
VA-99C/100



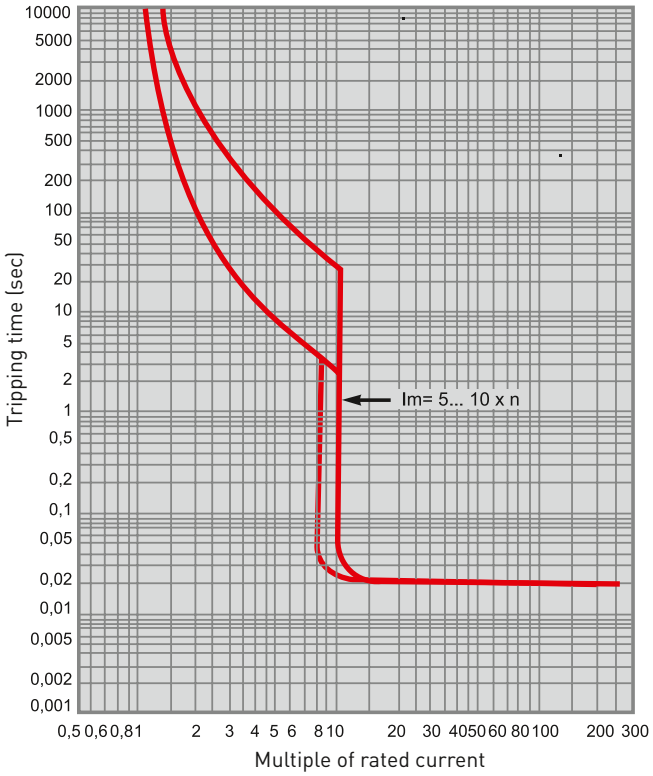
VA-99C/50, VA-99C/63



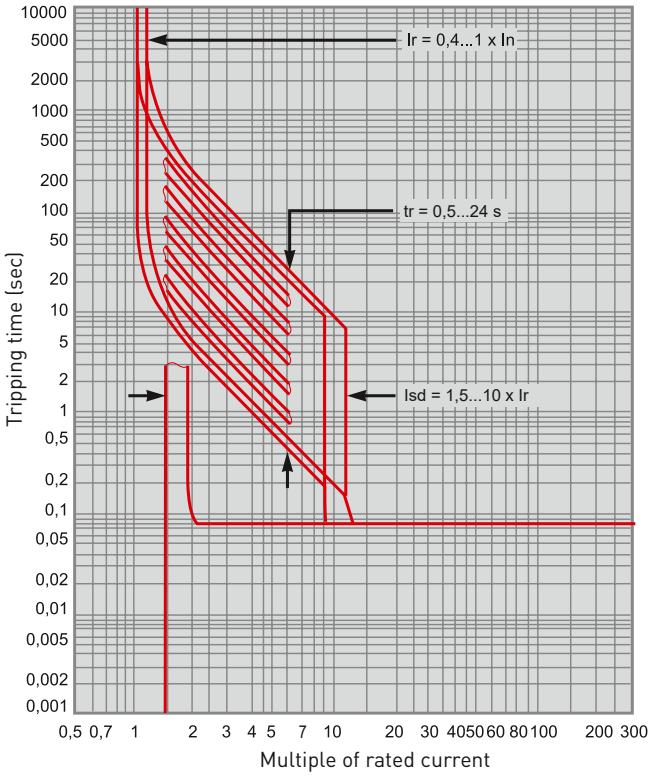
VA-99C/160



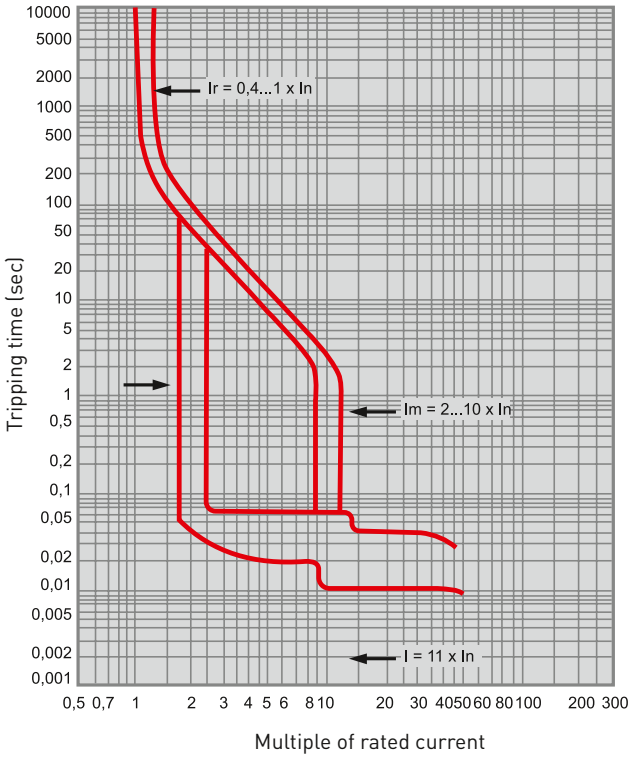
VA-99C/250



VA-99C/1250 with electronic trip unit

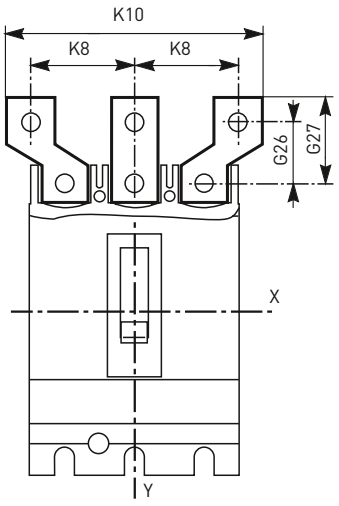


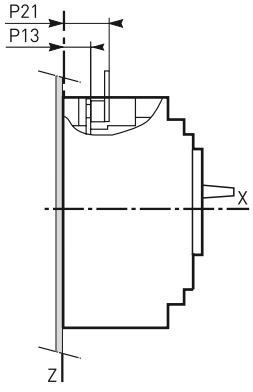
VA-99C/400 – 630

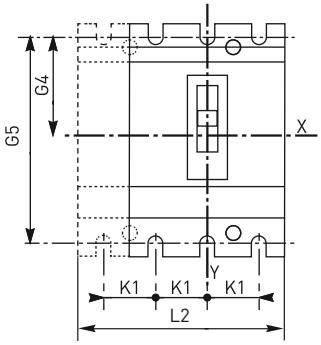


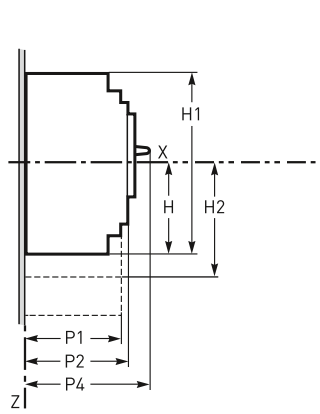
Overall and installation dimensions (mm)

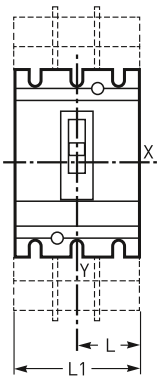
Connection dimensions

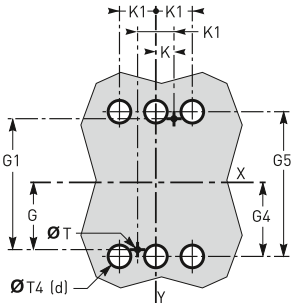


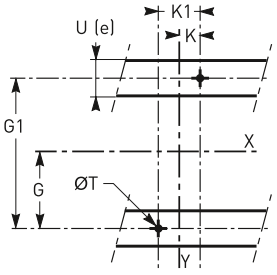


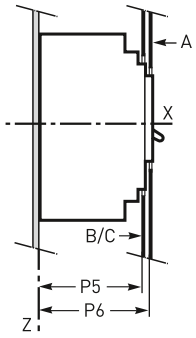


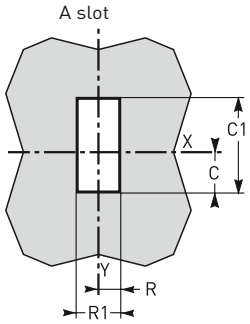


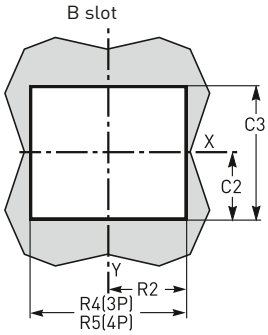


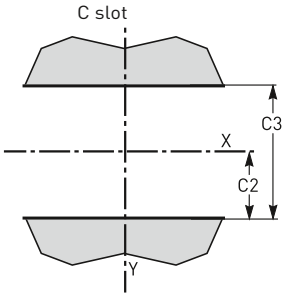


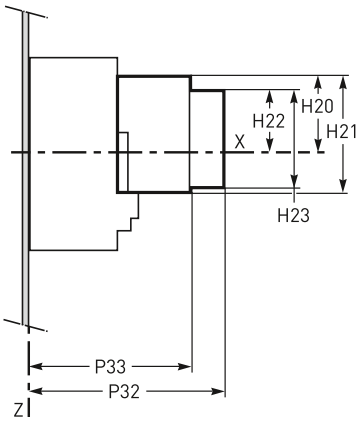


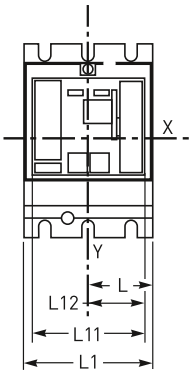


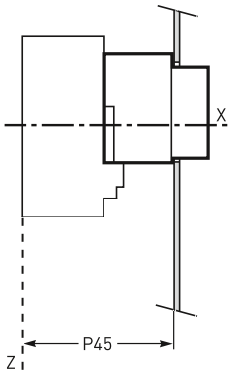


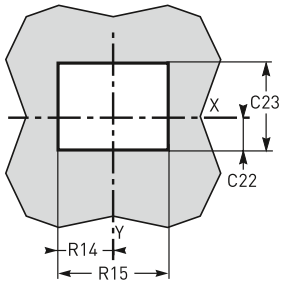












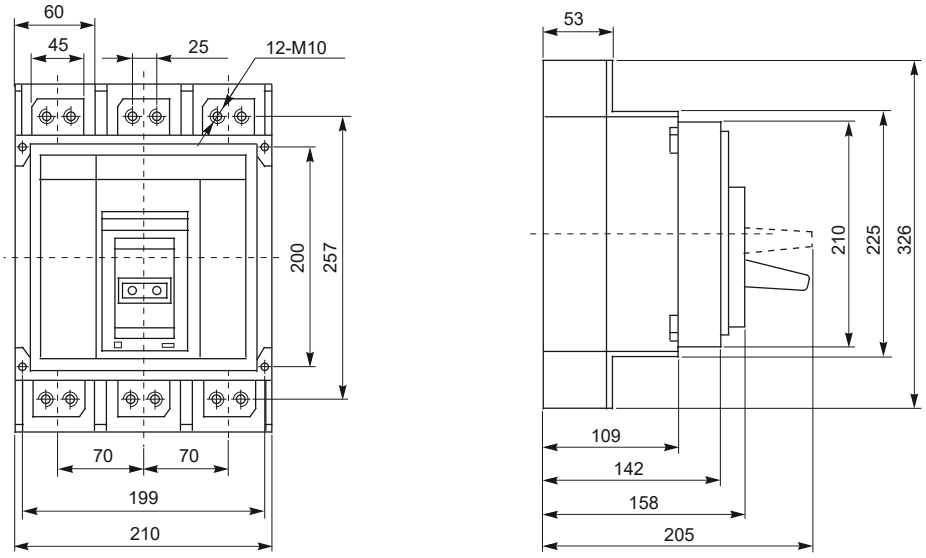
Name	C	C1	C2	C3	C22	C23	G	G1	G4	G5	G26	G27	H	H1	H2	H20	H21	H22	H23
VA-99C/100/160/250 EKF	29	76	54	108	58	43	62,5	125	70	140	30	41	80,5	161	94	86	6	22	32
VA-99C/400/630 EKF	41,5	116	92,5	184	93	63	100	200	113,5	227	39	54	127,5	255	142,5	126	6	32	32

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 TRIP UNIT								
Rated current, A	VA-99C/100		VA-99C/160		VA-99C/250		VA-99C/400-630	
	3P	4P	3P	4P	3P	4P	3P	4P
16	mccb99C-100-16-tma*	–	–	–	–	–	–	–
20	mccb99C-100-20-tma*	–	–	–	–	–	–	–
25	mccb99C-100-25-tma*	–	–	–	–	–	–	–
32	mccb99C-100-32-tma	–	–	–	–	–	–	–
40	mccb99C-100-40-tma	mccb99C-100-40-4p-tma	–	–	–	–	–	–
50	mccb99C-100-50-tma	mccb99C-100-50-4p-tma	–	–	–	–	–	–
63	mccb99C-100-63-tma	mccb99C-100-63-4p-tma	mccb99C-160-63-tma*	–	–	–	–	–
80	mccb99C-100-80-tma	mccb99C-100-80-4p-tma	mccb99C-160-80-tma*	–	–	–	–	–
100	mccb99C-100-100-tma	mccb99C-100-100-4p-tma	mccb99C-160-100-tma	mccb99C-160-100-4p-tma	–	–	–	–
125	–	–	mccb99C-160-125-tma	mccb99C-160-125-4p-tma	mccb99c-250-125-tma	–	–	–
160	–	–	mccb99C-160-160-tma	mccb99C-160-160-4p-tma	mccb99c-250-160-tma	–	–	–
200	–	–	–	–	mccb99C-250-200-tma	mccb99C-250-200-4p-tma	–	–
225	–	–	–	–	mccb99C-250-225-tma*	mccb99C-250-225-4p-tma*	–	–
250	–	–	–	–	mccb99C-250-250-tma	mccb99C-250-250-4p-tma	–	–
400	–	–	–	–	–	–	mccb99C-400-400-tma*	mccb99C-400-400-4p-tma
500	–	–	–	–	–	–	mccb99C-630-500-tma	mccb99C-630-500-4p-tma
630	–	–	–	–	–	–	mccb99C-630-630-tma*	mccb99C-630-630-4p-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-em*	mccb99C-400-200-4p-em*	–	–	–	–
225	mccb99C-400-225-em*	mccb99C-400-225-4p-em*	–	–	–	–
250	mccb99C-400-250-em*	mccb99C-400-250-4p-em*	–	–	–	–
300	mccb99C-400-300-em*	mccb99C-400-300-4p-em*	–	–	–	–
315	mccb99C-400-315-em	mccb99C-400-315-4p-em*	–	–	–	–
400	mccb99C-400-400-em	mccb99C-400-400-4p-em*	mccb99C-630-400-em*	mccb99C-630-400-4p-em*	–	–
500	–	–	mccb99C-630-500-em*	mccb99C-630-500-4p-em*	–	–
630	–	–	mccb99C-630-630-em	mccb99C-630-630-4p-em	–	–
800	–	–	–	–	mccb99C-1250-800-em	mccb99C-1250-800-4P-em
1000	–	–	–	–	mccb99C-1250-1000-em	mccb99C-1250-1000-4P-em
1250	–	–	–	–	mccb99C-1250-1250-em	mccb99C-1250-1250-4P-em
1600	–	–	–	–	mccb99C-1250-1600-em	mccb99C-1250-1600-4P-em

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.

Accessory	Item code	Compatible MCCB					
		VA-99C/ 100	VA-99C/ 160	VA-99C/ 250	VA-99C/ 400	VA-99C/ 630	VA-99C/ 1250
Auxiliary contact VA-99C 100-1250A EKF	mccb99c-a-16	•	•	•	•	•	•
Plug-in panel VA-99C 100-250 rear connection EKF	mccb99c-250-pin-3r	•	•	•	–	–	–
Plug-in panel VA-99C 100-250 front connection EKF	mccb99c-250-pin-3f	•	•	•	–	–	–
Plug-in panel VA-99C 400-630 rear connection EKF	mccb99c-630-pin-3r	–	–	–	•	•	–
Plug-in panel VA-99C 400-630 front connection EKF	mccb99c-630-pin-3f	–	–	–	•	•	–
Draw-out panel VA-99C 100-250 rear connection EKF	mccb99c-250-dod-3r	•	•	•	–	–	–
Draw-out panel VA-99C 100-250 front connection EKF	mccb99c-250-dod-3f	•	•	•	–	–	–
Draw-out panel VA-99C 400-630 rear connection EKF	mccb99c-630-dod-3r	–	–	–	•	•	–
Draw-out panel VA-99C 400-630 front connection EKF	mccb99c-630-dod-3f	–	–	–	•	•	–
Connection plates VA-99C 100-160A (6pcs.) EKF	mccb99c-a-24-160a	•	•	–	–	–	–
Connection plates VA-99C 250A (6pcs.) EKF	mccb99c-a-24-250a	–	–	•	–	–	–
Connection plates VA-99C 400-630A (6pcs.) EKF	mccb99c-a-24-630a	–	–	–	•	•	–
Connection plates VA-99C 1250A (6pcs.) EKF	mccb99c-a-23	–	–	–	–	–	•
Undervoltage release VA-99C MN 100-630A EKF	mccb99c-a-1	•	•	•	•	•	–
Shunt release VA-99C MX 100-630A EKF	mccb99c-a-7	•	•	•	•	•	–
Shunt release VA-99C MX 1250A EKF	mccb99c-a-22	–	–	–	–	–	•
Motor mechanism VA-99C CD/2-250 3P+N EKF	mccb99c-a-20n	•	•	•	–	–	–
Motor mechanism VA-99C CD/2-250 EKF	mccb99c-a-20	•	•	•	–	–	–
Motor mechanism VA-99C CD/2-630 EKF	mccb99c-a-21	–	–	–	•	•	–
Motor mechanism VA-99C CD/2-1250 EKF	mccb99c-a-24	–	–	–	–	–	•
Interphase barriers VA-99C 100-250A EKF	mccb99c-a-aip-100-250	•	•	•	–	–	–
Interphase barriers VA-99C 400-630A EKF	mccb99c-a-aip-400-630	–	–	–	•	•	–
Extended rotary handle CS1-M VA-99C 100A/160A/250A EKF	mccb99c-250-cs1-m	•	•	•	–	–	–
Extended rotary handle CS1-M VA-99C 400A/630A EKF	mccb99c-630-cs1-m	–	–	–	•	•	–

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 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 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 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.

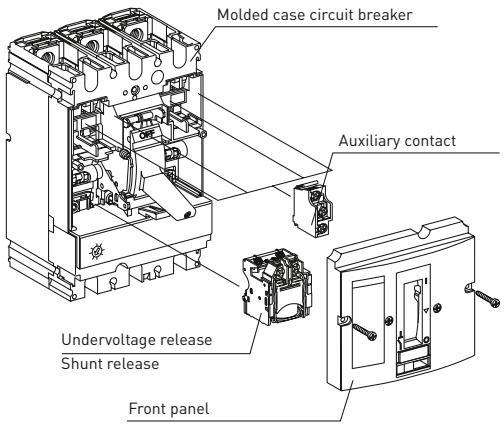
The auxiliary contacts return to their initial state after the MCCB resets. A single model of auxiliary contact fulfils functions "OF" & "SD", depending on the arrangement in the device.

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

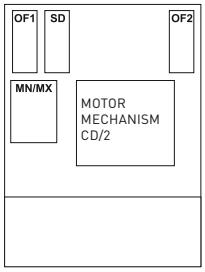
Parameters		Values			
Conventional thermal current, A		6			
Min. load		100 mA at 24 V			
Utilization category (IEC 60947-5-1)		AC-12	AC-15	DC-12	DC-14
Operating current, A	24 V	6	6	6	1
	48 V	6	6	2,5	0,2
	110 V	6	5	0,6	0,05
	220 / 240 V	6	4	–	–
	250 V	–	–	0,3	0,03
	380 / 440 V	6	2	–	–
	480 V	6	1,5	–	–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

Installation and operation

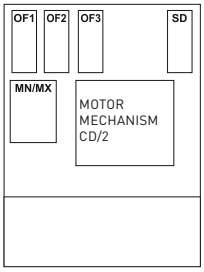
1.Installation of VA-99C accessories



2. Arrangement options



VA-99C/100-250

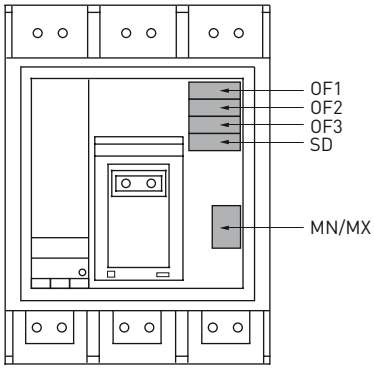


VA-99C/400-630

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.

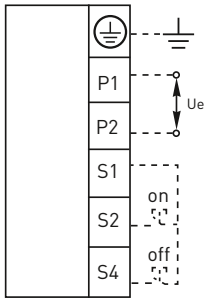
Use contacts P1 & P2 to connect power supply. Use contacts S2 & S4 to connect operation spring buttons. Contact S1 is a common-type contact. The ON button is used to switch the MCCB to the ON position, while the OFF button - to the OFF position.

Arrangement of VA-99C/1250 accessories



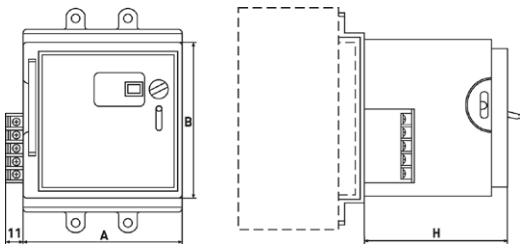
Motor mechanism CD/2 EKF

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

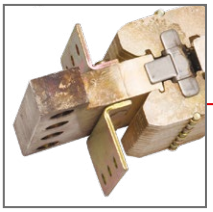
Air Circuit Breakers

Air circuit breakers VA-45 EKF

The air circuit breakers VA-45 EKF are designed to carry current under normal conditions and break overcurrent (short circuits and overloads, including single-phase earth faults) to be used in three-phase 50/60 Hz AC circuits at rated voltage up to 690V. VA-45 EKF feature an 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 60947-2

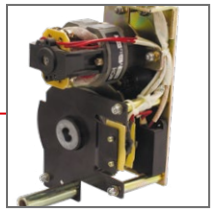
Fixed and with-drawable versions



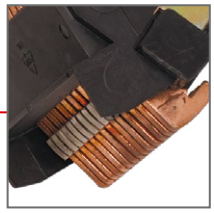
Silver-plated electrical copper connecting busbars

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.
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 in to 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.

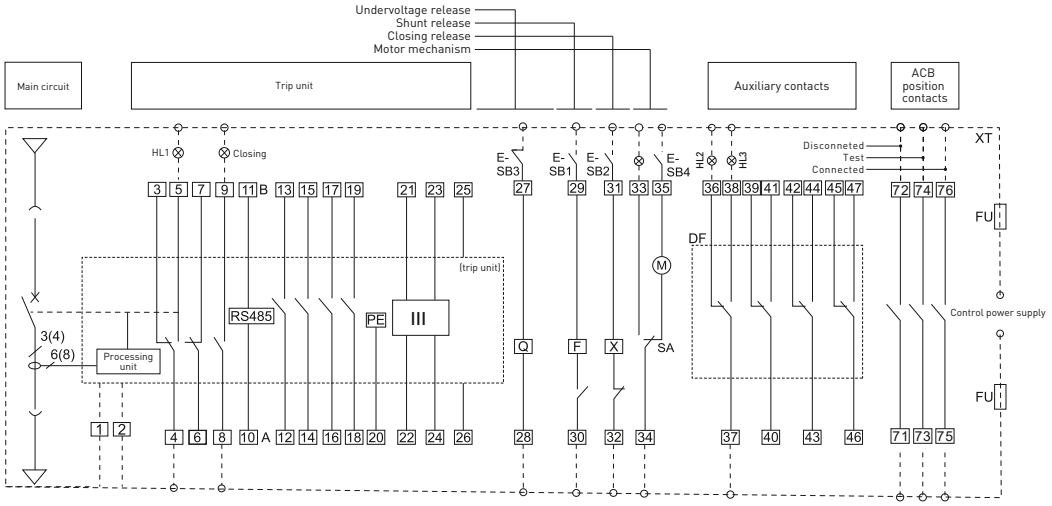
Electronic control unit functions:

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. Measurement
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– Trip indicator
HL2 – ACB OFF indicator
HL3 – ACB ON indicator
Q – Undervoltage release (to be ordered separately)
F – Shunt release
X – Closing release
M – Motor mechanism
XT – Terminals (terminal clamps) 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 earthing
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):

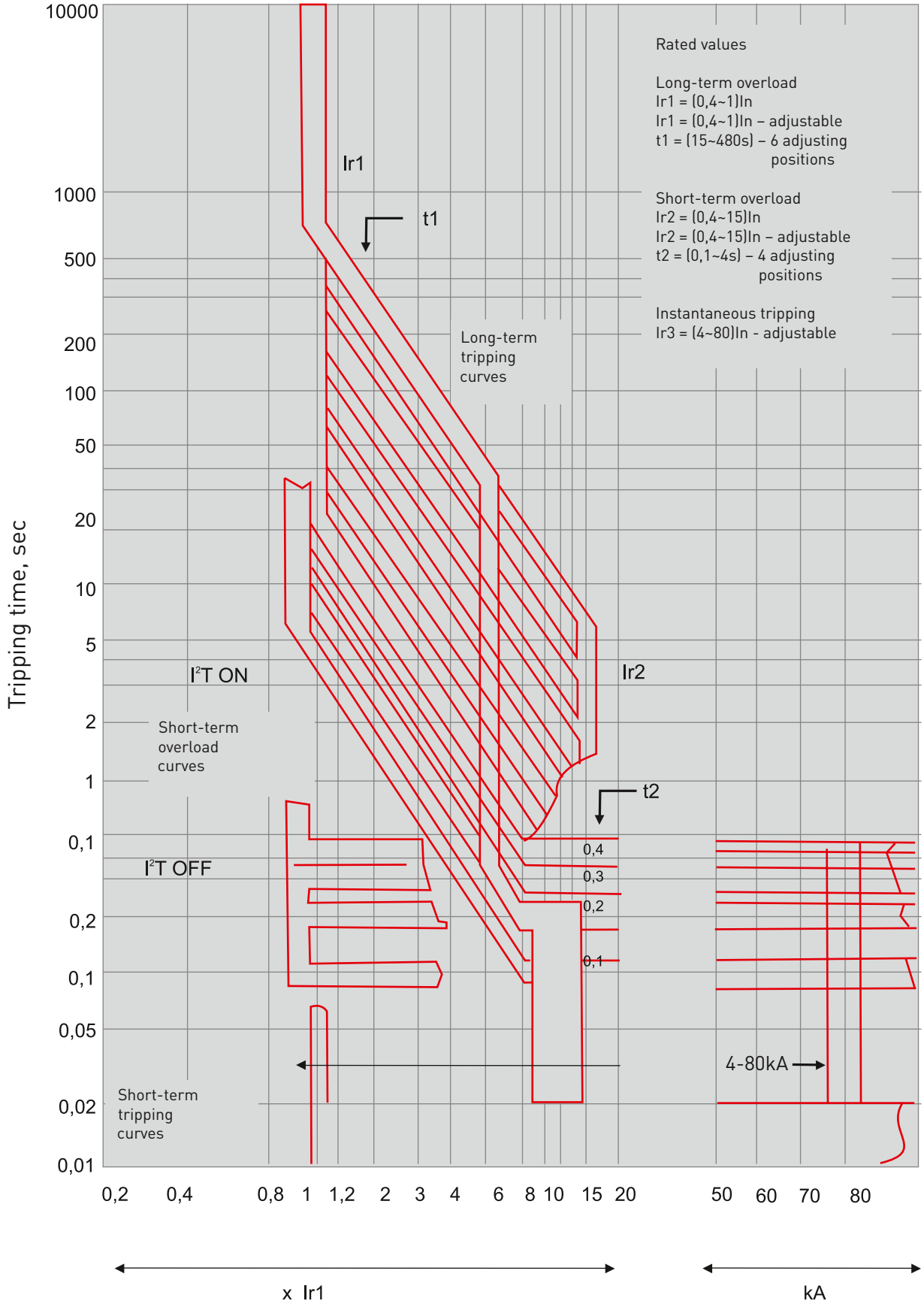
71, 72 – position contact "Disconnected" (CO)
73, 74 – position contact "Test" (CO)
75, 76 – position contact "Connected" (CO).

Parameters		Values				
		VA-45/2000	VA-45/3200	VA-45/4000	VA-45/5000	VA-45/6300
Number of poles		3P / 4P				
Rated frequency, Hz		50 / 60				
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		380/400/415/690				
Ultimate short-circuit breaking capacity Icu, kA	380-415 V AC	85	100	100	120	120
	690 V AC	60	65	65	80	80
Service short-circuit breaking capacity Ics, kA	380-415 V AC	70	65	65	80	80
	690 V AC	55	50	50	70	70
Rated short-time withstand current Icw, kA	380-415 V AC	70	65	65	85	85
	690 V AC	55	50	50	65	65
Trip unit		Microprocessor				
Utilization category		B				
Mechanical endurance, O-C cycles	With service	20 000	10 000	10 000	6000	6000
	Without service	10 000	5000	5000	3000	3000
Electrical endurance, O-C cycles	380-415 V AC	6500	3000	1500	500	500
	690 V AC	3000	1500	750	300	300
Degree of protection		IP30 for front panel / IP00 for terminal side				
Operating ambient temperature, °C		from -15 to +60				
Altitude above sea level, m		2000				

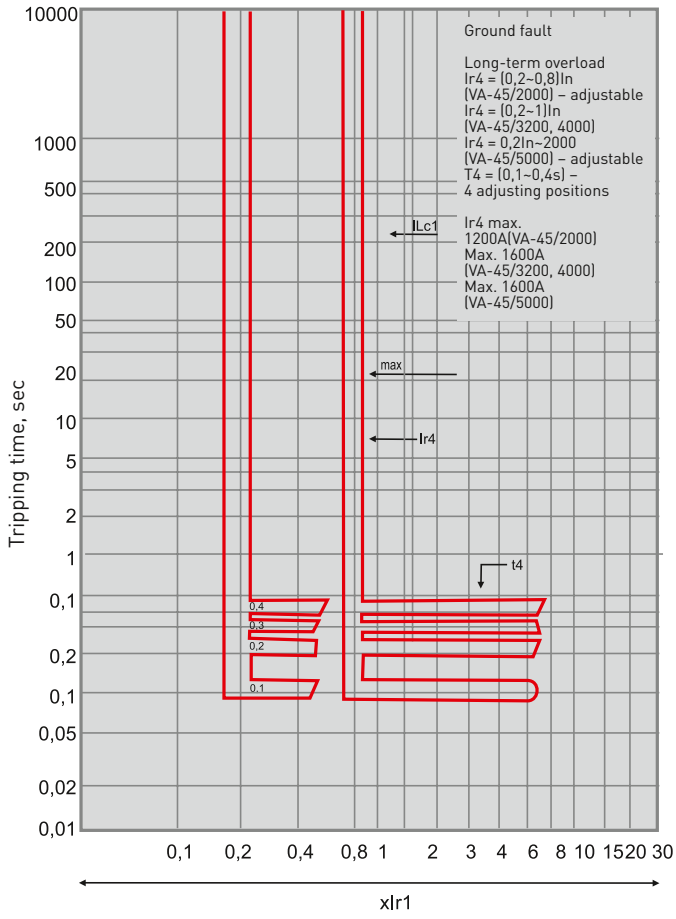
Tripping characteristics

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, the continuous current carrying capacity is reduced in accordance with the chart.

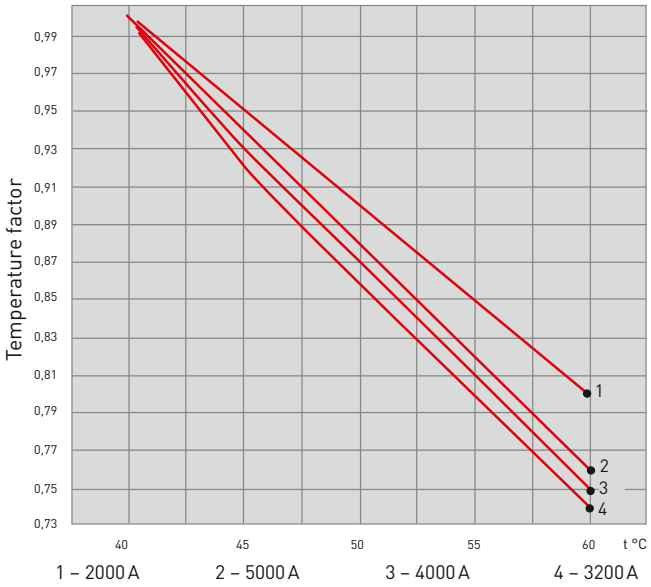
VA-45/3200



Ground fault protection

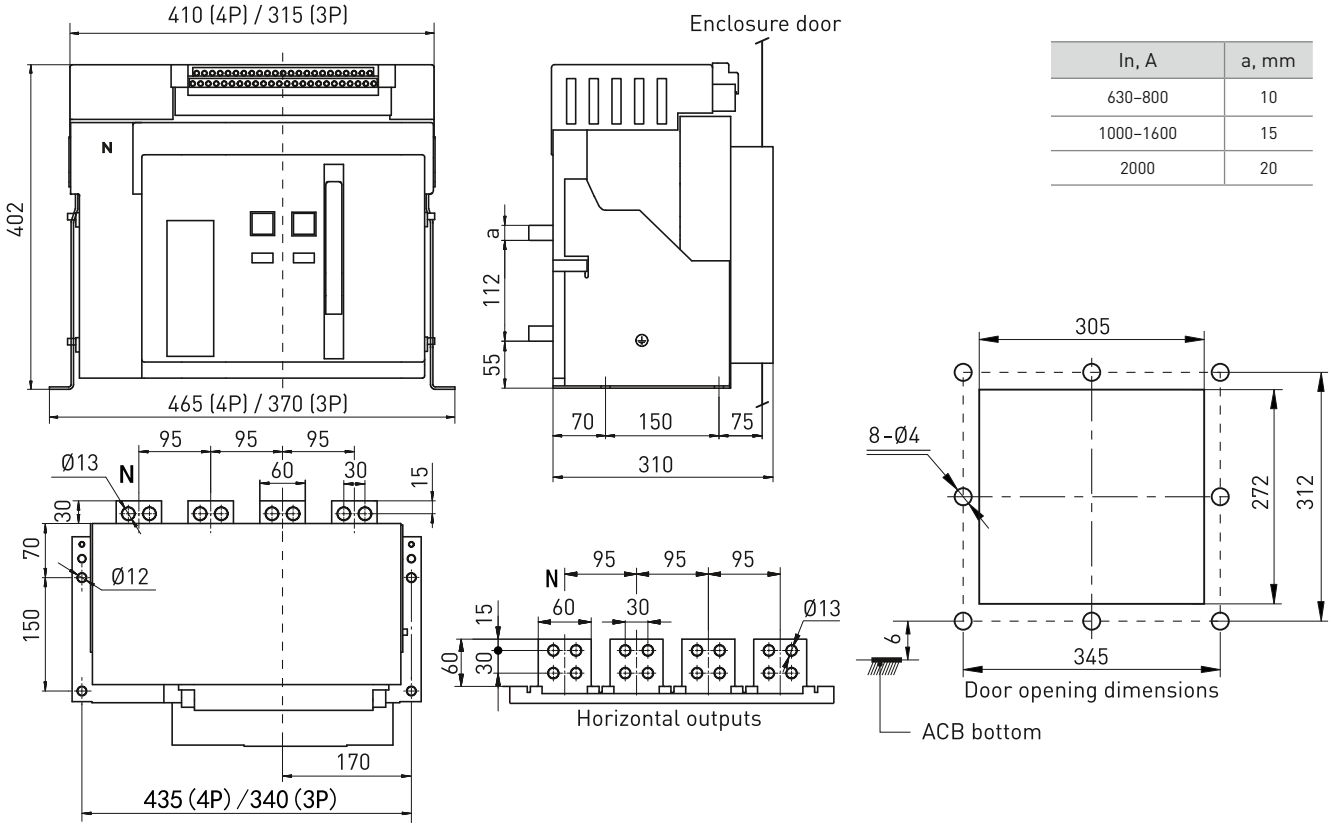


Temperature derating



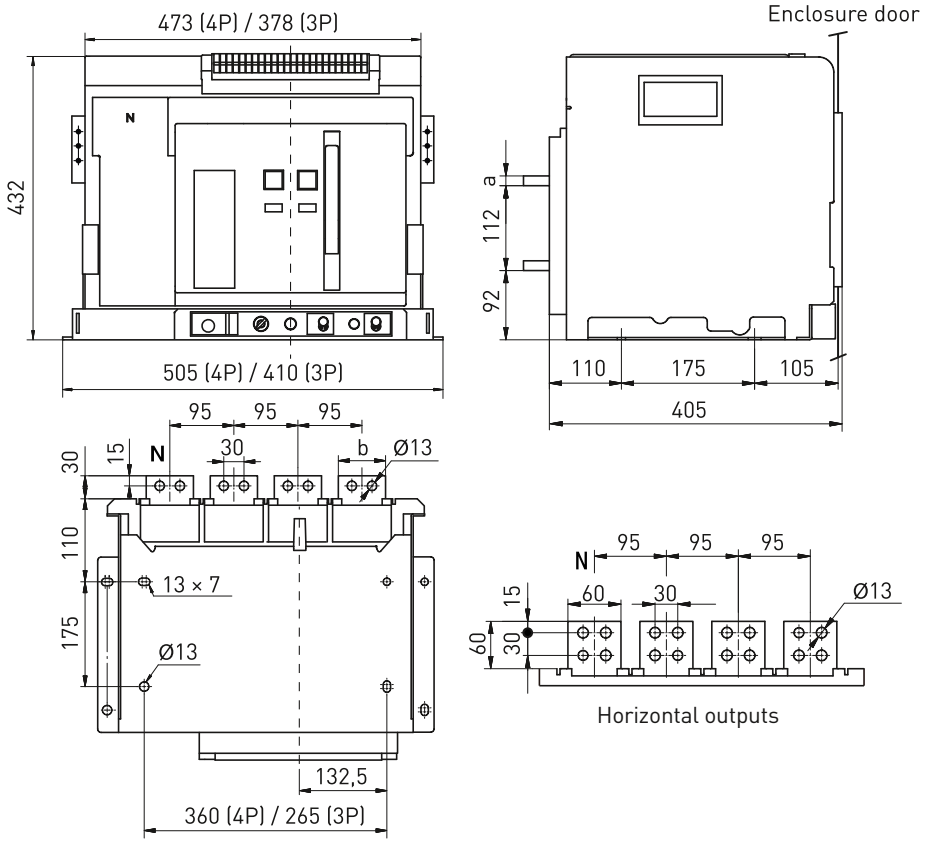
Overall and installation dimensions

VA-45 2000 FIXED v2

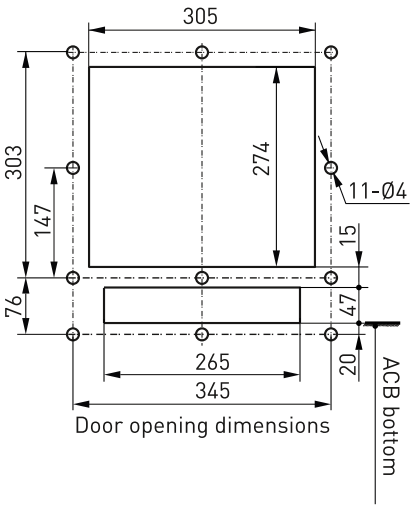


In, A	a, mm
630–800	10
1000–1600	15
2000	20

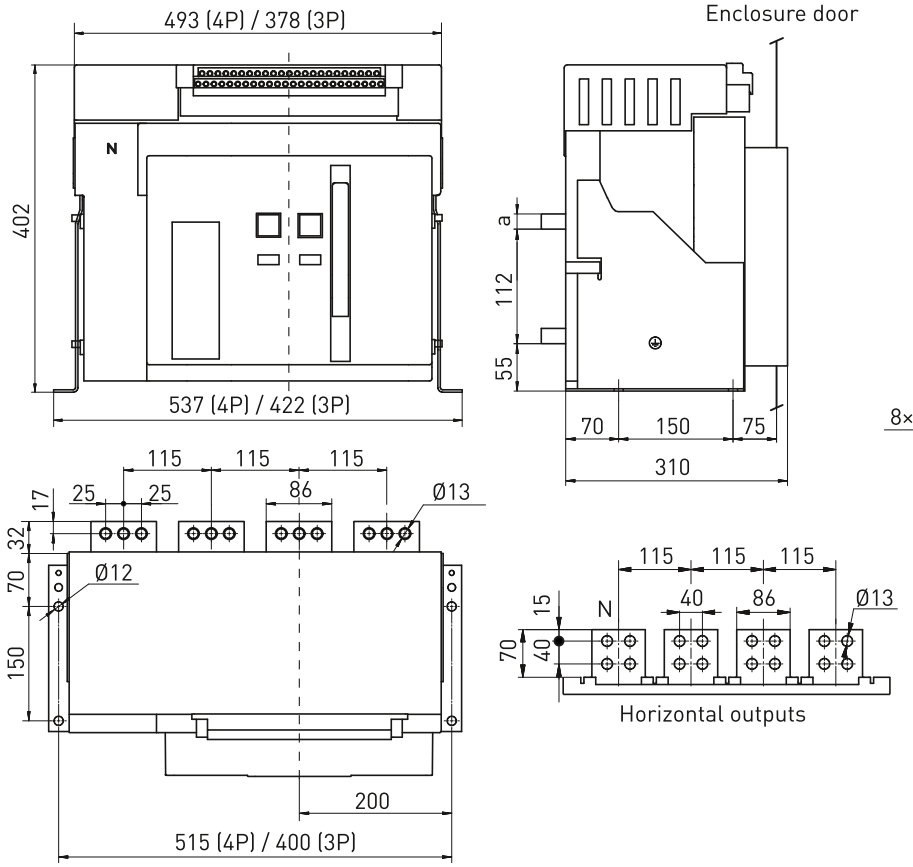
VA-45 2000 WITHDRAWABLE v2



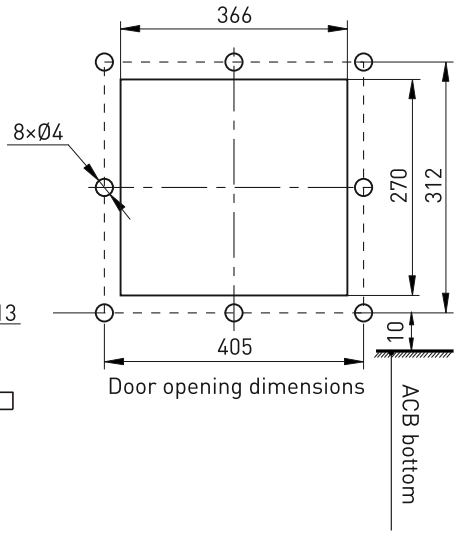
In	a, mm	b, mm
630–800	10	60
1000–1600	15	60
2000	20	60



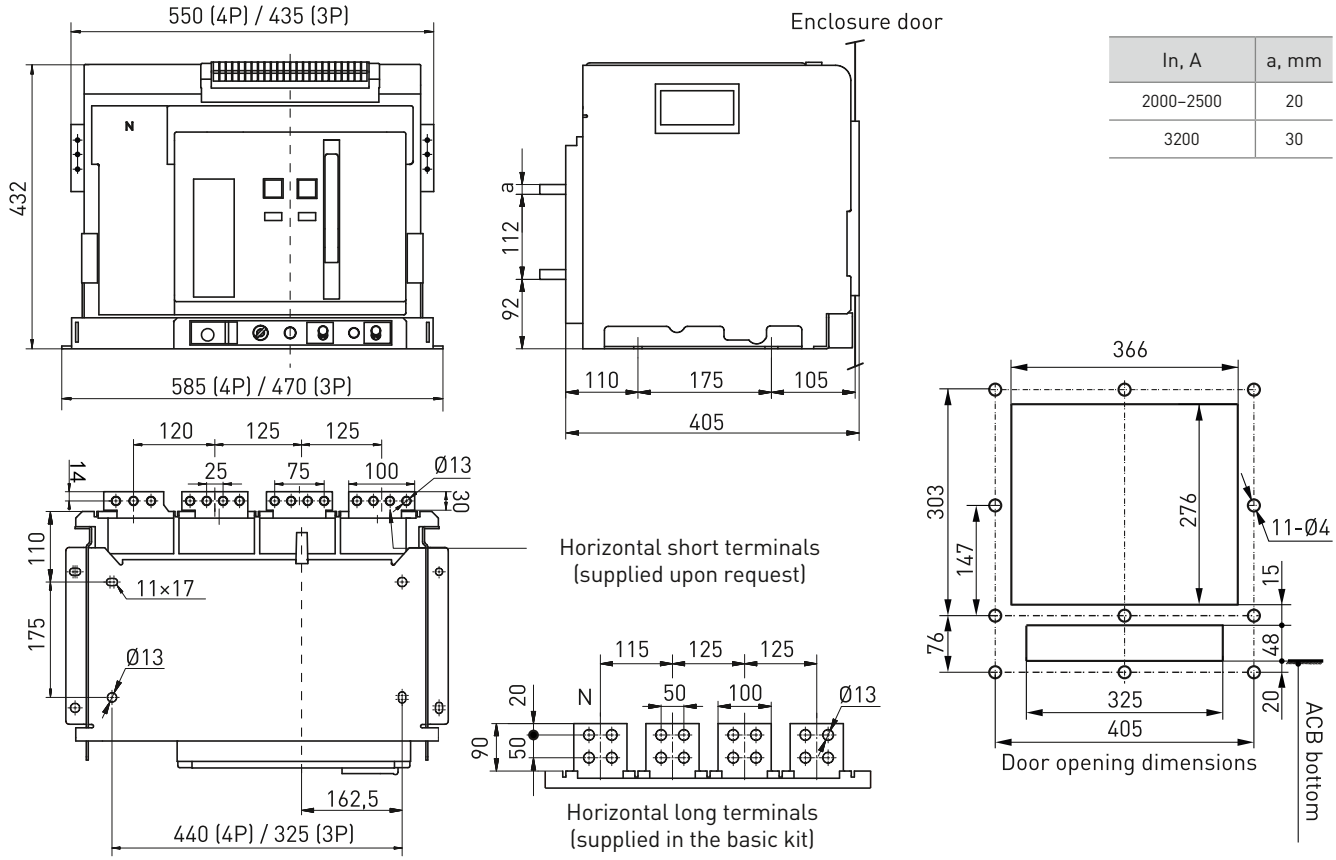
VA-45 3200 FIXED v2



In, A	a, mm
2000–2500	20
3200	30

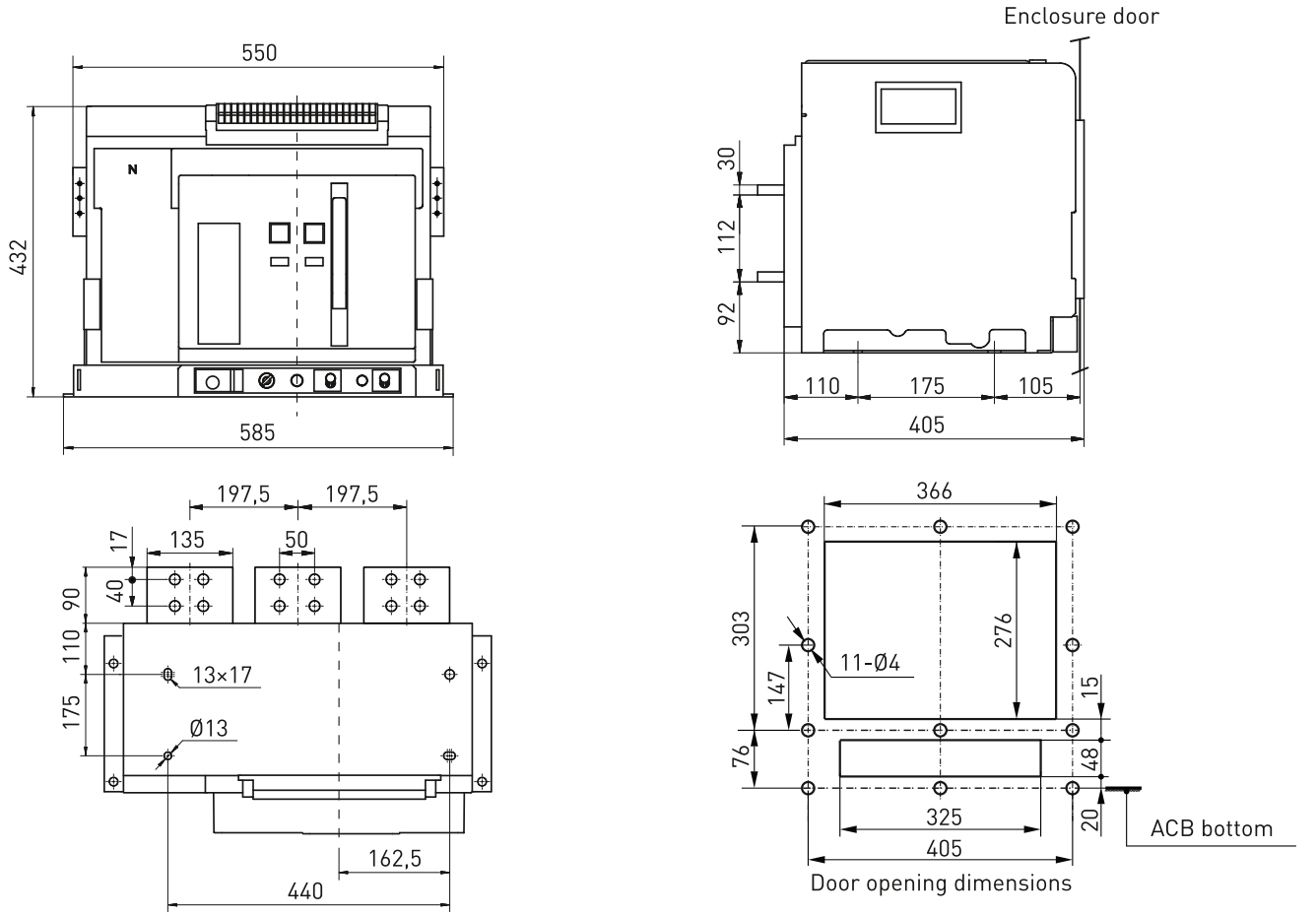


VA-45 3200 WITHDRAWABLE v2

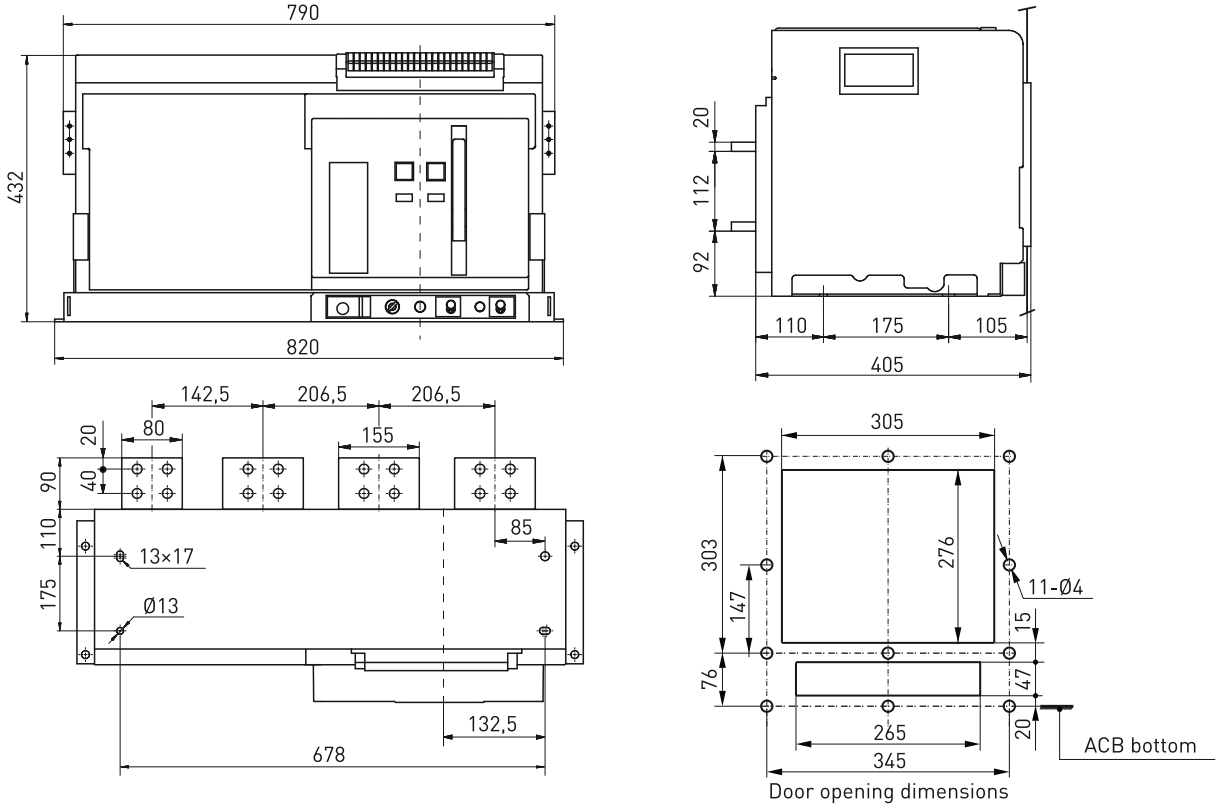


In, A	a, mm
2000–2500	20
3200	30

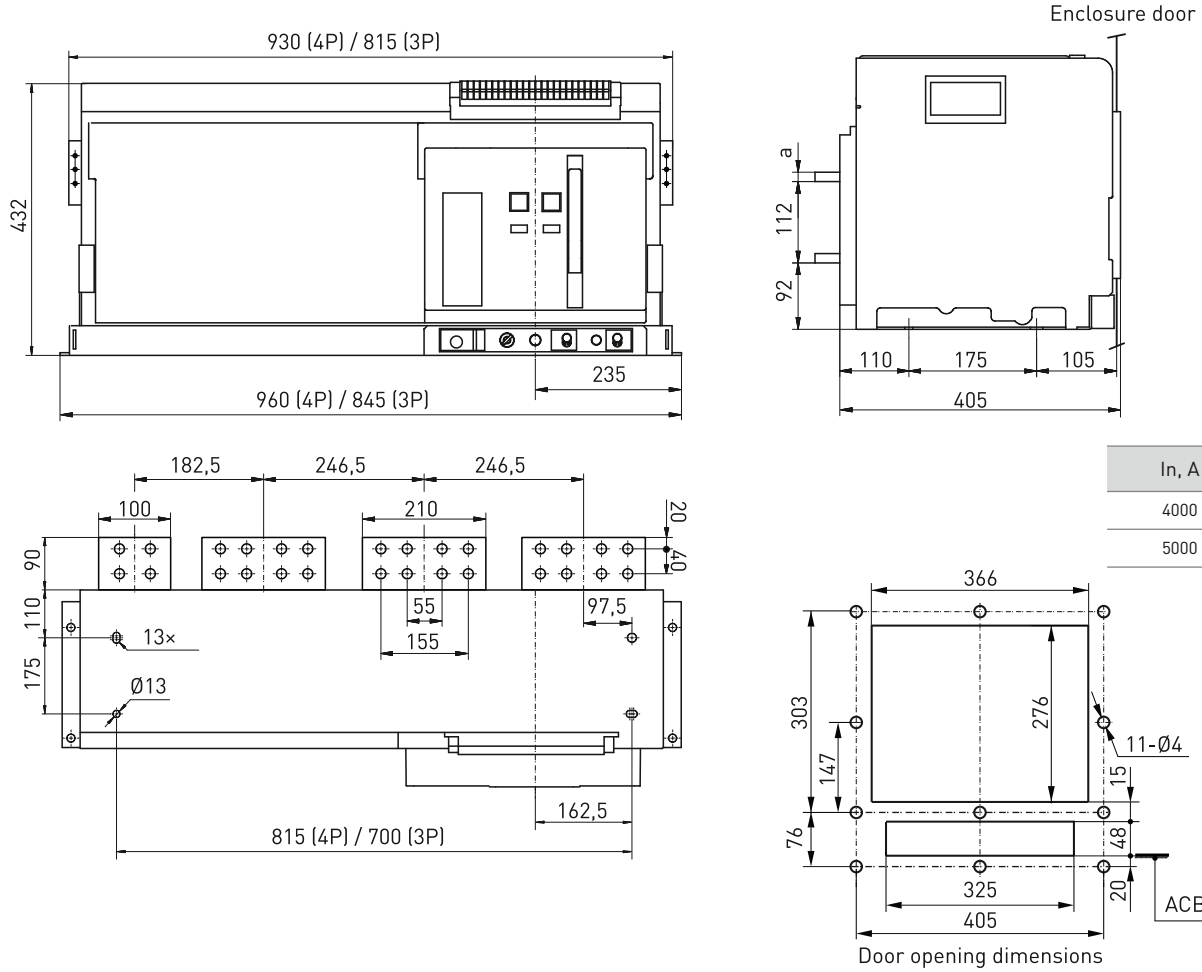
VA-45 4000 3P WITHDRAWABLE v2



VA-45 4000 4P WITHDRAWABLE v2

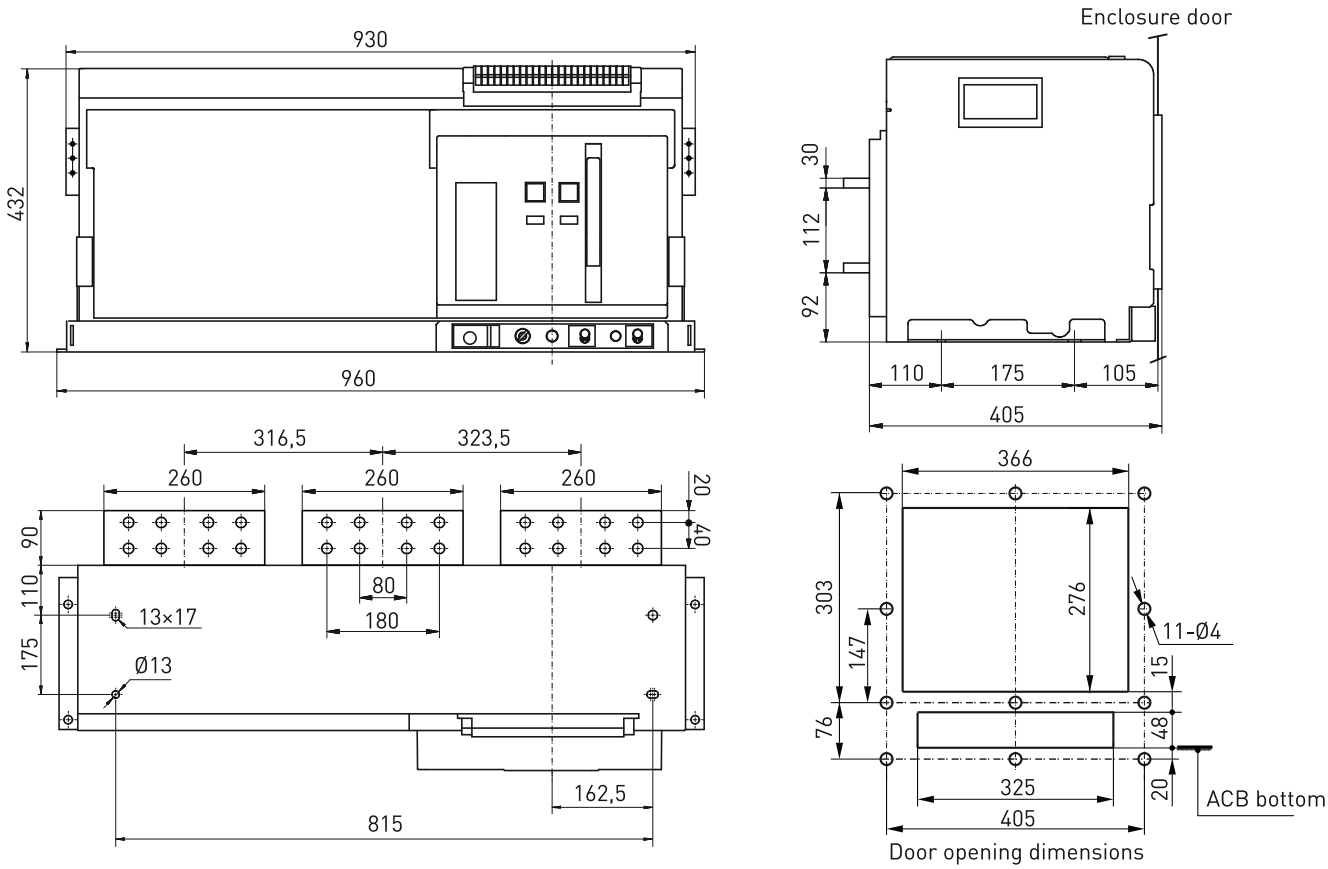


VA-45 5000 WITHDRAWABLE v2



In, A	a, mm
4000	20
5000	30

BA-45 6300 WITHDRAWABLE v2



ACB type	Rated current, A	Busbars	
		Size, mm	Quantity, pcs.
1600	200	20 x 5	1
	400	50 x 5	1
	630	40 x 5	2
	800	50 x 5	2
	1000	40 x 5	3
	1250	40 x 5	4
	1600	50 x 10	2
2000	630	60 x 5	2
	800	60 x 5	2
	1000	60 x 5	2
	1250	60 x 10	2
	1600	60 x 10	2
	2000	60 x 10	3
3200	2000	100 x 10	2
	2500	100 x 10	3
	3200	100 x 10	4
4000	3200	100 x 10	4
	4000	100 x 10	5
6300	4000	100 x 10	6
	5000	100 x 10	7
	6300	100 x 10	8

Installation and operation

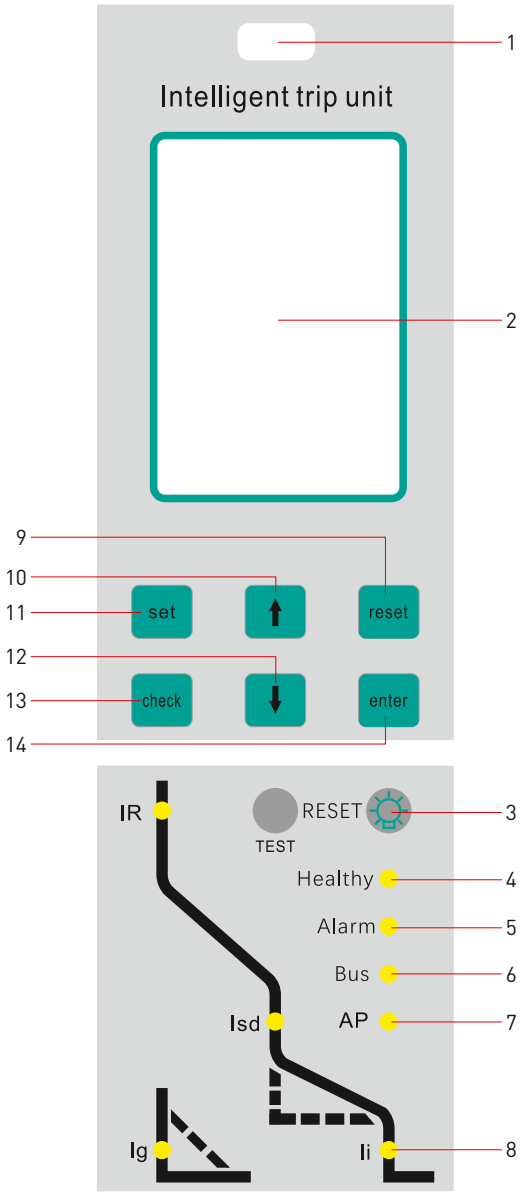
Ambient temperature: from -15 to 60 °C.
Altitude above sea level without derating: max. 2000 m.
Relative humidity: max. 50% at max. ambient temperature. Do not operate the circuit breaker in explosive environments, or environments where conductive dust and gases may corrode metals and destroy insulation.
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

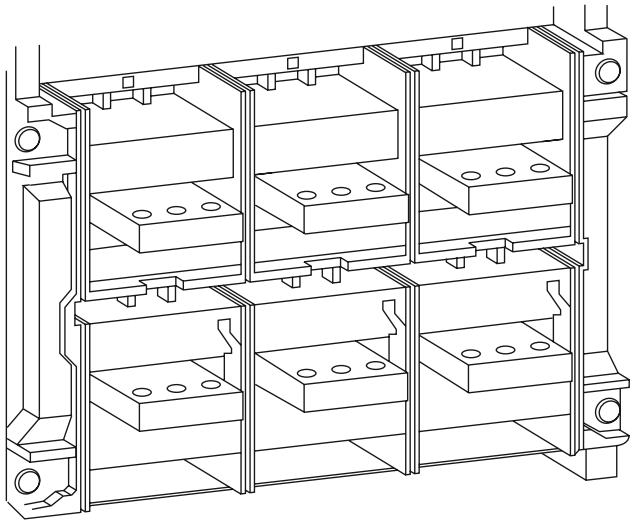


Indication:
1. RESET flag
2. LCD
3. Reset LED
4. Operation LED (Healthy)
5. Alarm LED
6. Communication LED (Bus)
7. Advanced protection LED (AP)
8. Protection LEDs

Push buttons:
9. Back
10. Up
11. Set
12. Down
13. Check
14. Enter

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 (ECU) features a 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.

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
- Panel frame
- Interphase barriers
2. Mounting kit
3. Technical manual

Auxiliaries

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

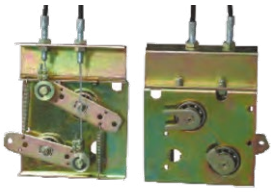
* Only for withdrawable versions.

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

Accessories for VA-45 EKF

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

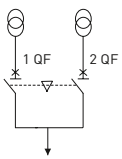
Flexible cable interlock

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

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.

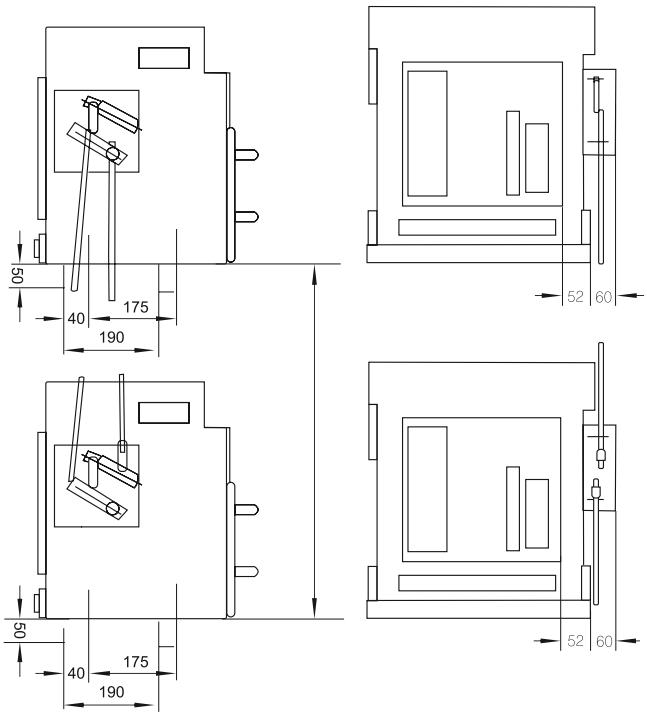
Wiring diagrams



1 QF	2 QF
0	0
0	1
1	0

Rigid tie rod interlock

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



Access lock for control push-buttons

The access lock 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	Making voltage	Holding 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.

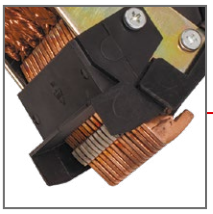
Picture	Name	Operating voltage, V	Making voltage	Holding voltage	Breaking voltage	Item code
	Closing release VA-45 230V EKF	230V, 50/60Hz	(0,85 - 1,1) Ue	(0,7 - 1,1) Ue	<0,7Ue	acb-45-kv-230
	Opening release VA-45 230V EKF					acb-45-k-230

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 of 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 60947-2

Most compact design

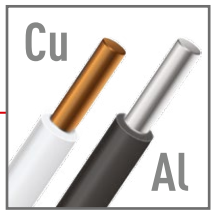


High electrical endurance

Withdrawable and fixed versions

Single size frame for all rated currents

Horizontal outputs



Copper and aluminum wire connections supported

APPLICATION

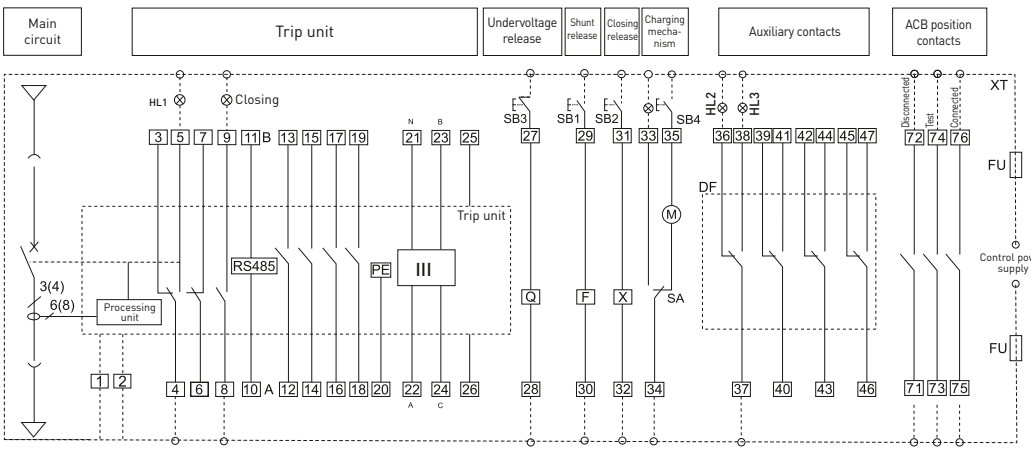
ACBs VA-450 are used in residential buildings, commercial facilities and industrial applications:

- 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

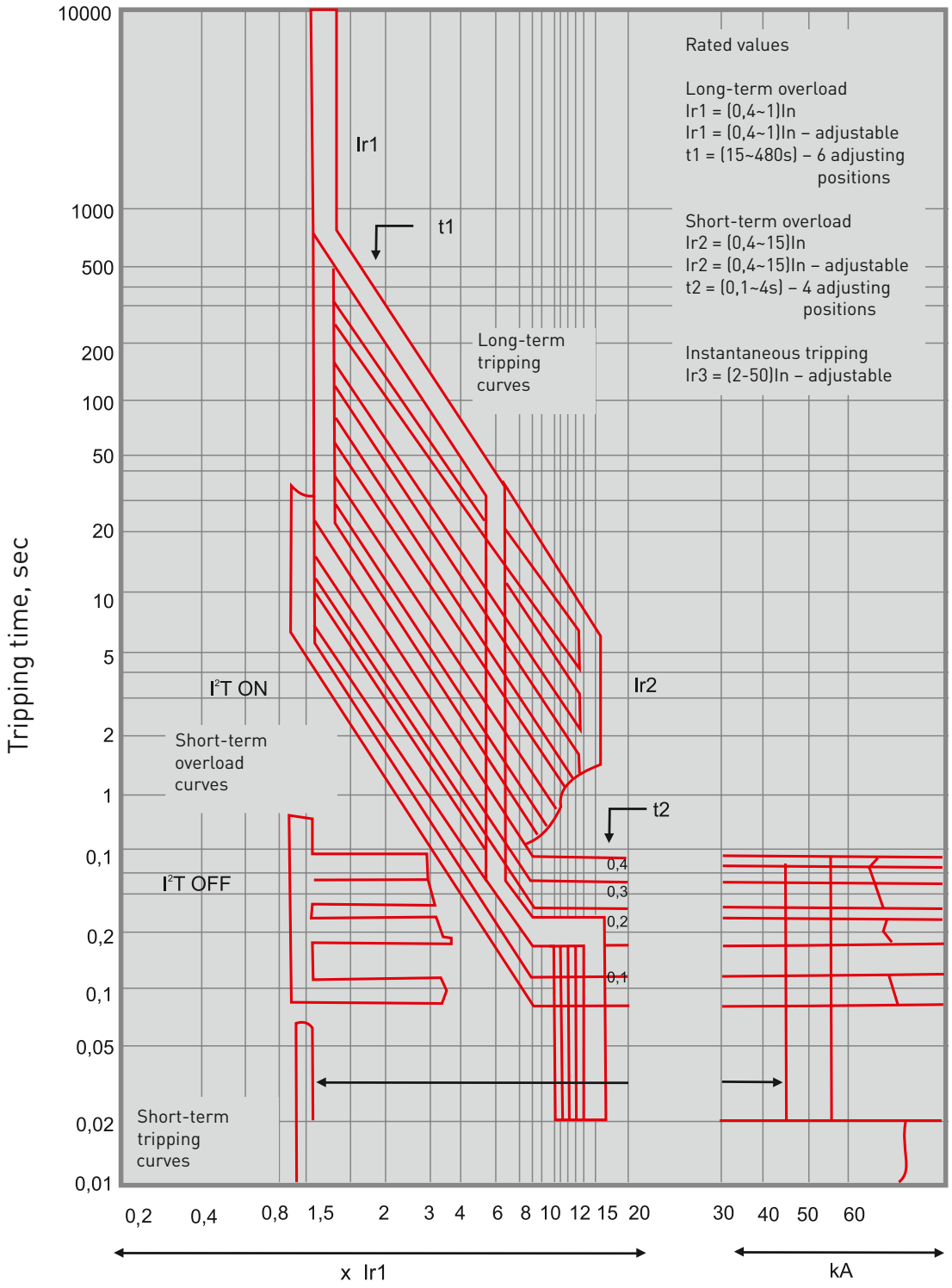


Description

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

Tripping characteristics

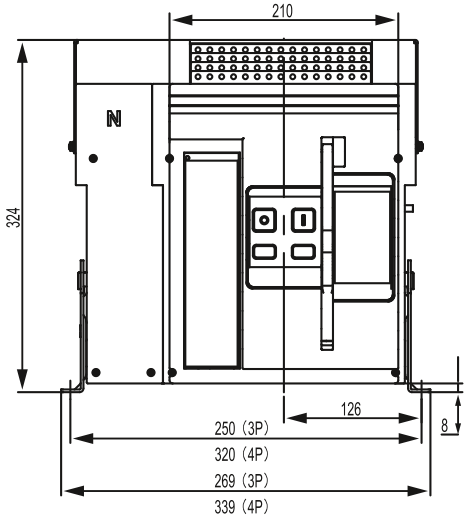
Ambient temperature derating factor
The ACB can continuously carry rated current at ambient temperature of max. +50 °C.
Once the air temperature is above this value, the continuous current carrying capacity is reduced in accordance with the derating diagram.

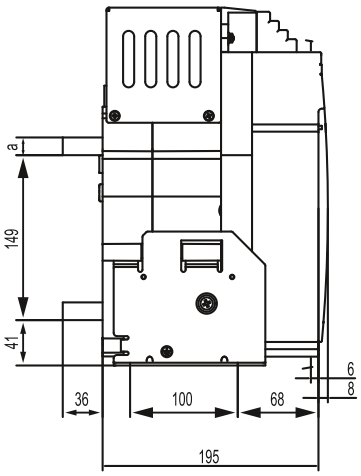


Parameters		Values
Number of poles		3P / 4P
Rated frequency, Hz		50 / 60
Rated current In, A		200, 400, 630, 800, 1000, 1250, 1600
Rated insulation voltage Ui, V AC		1000
Rated impulse withstand voltage Uimp, kV		8
Rated operating voltage Ue, V AC		380 / 400 / 415 / 690
Ultimate short-circuit breaking capacity Icu, kA	380-415 V AC	65
	690 V AC	50
Service short-circuit breaking capacity Ics, kA	380-415 V AC	55
	690 V AC	42
Rated short-time withstand current Icw, kA	380-415 V AC	50
	690 V AC	42
Trip unit		Microprocessor
Utilization category		B
Mechanical endurance, O-C cycles	With service	30 000
	Without service	15 000
Electrical endurance, O-C cycles	380-415 V AC	6000
	690 V AC	3000
Degree of protection		IP30
Operating ambient temperature, °C		from -15 to +60
Altitude above sea level, m		2000

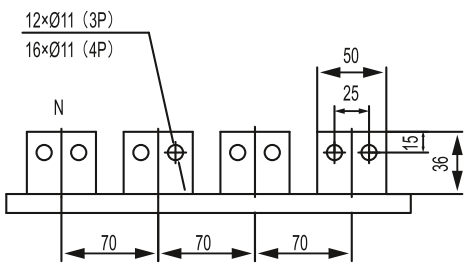
Overall and installation dimensions

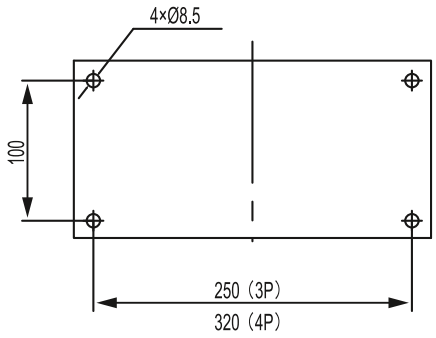
VA-450 1600 FIXED v2





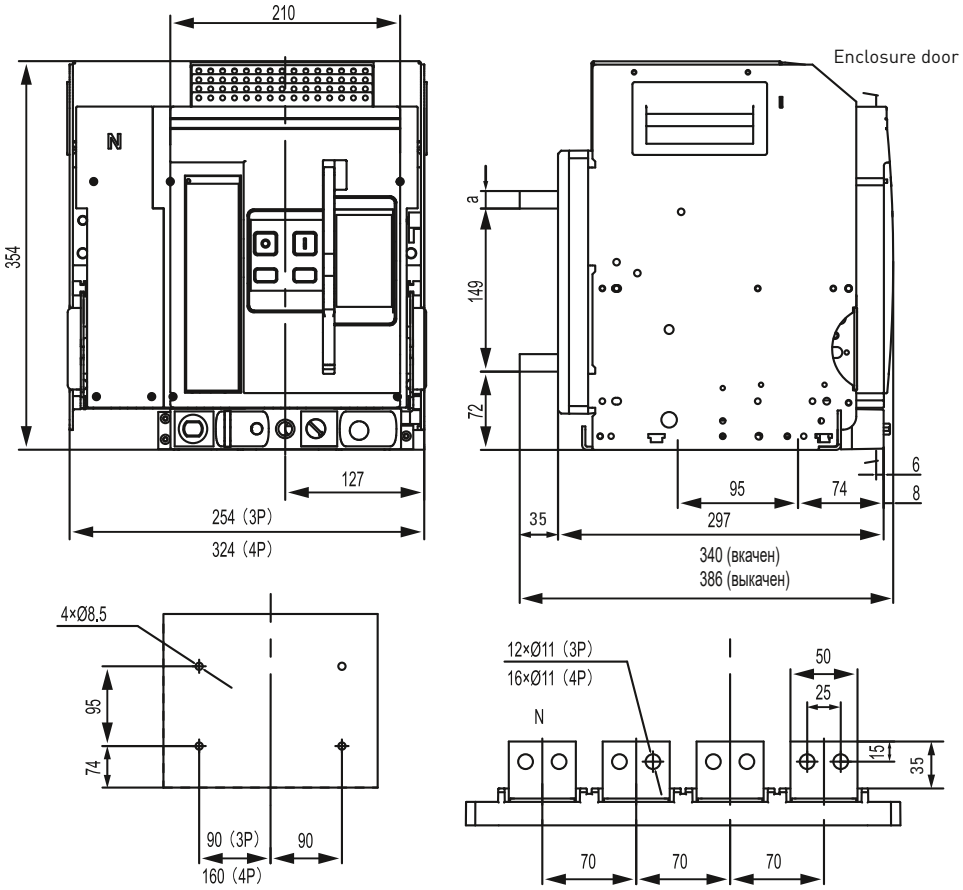
Enclosure door





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

VA-450 1600 WITHDRAWABLE v2



Rated current In, A	H, 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

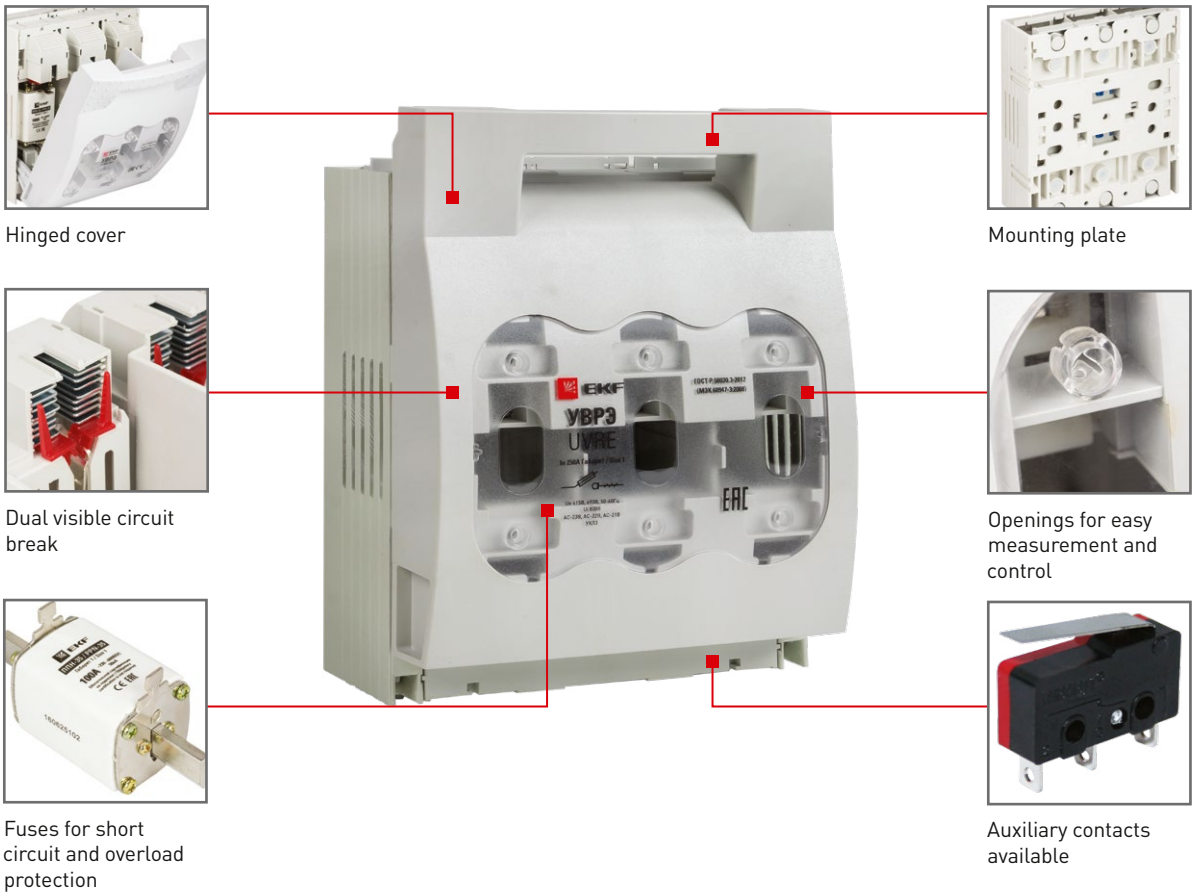
Picture	Name	Rated current In, A	Item code
	Fixed		
	VA-450 1600/ 200A 3P 55kA fixed EKF	200	mccb450-1600-200-v2
	VA-450 1600/ 400A 3P 55kA fixed EKF	400	mccb450-1600-400-v2
	VA-450 1600/ 630A 3P 55kA fixed EKF	630	mccb450-1600-630-v2
	VA-450 1600/800A 3P 55kA fixed EKF	800	mccb450-1600-800-v2
	VA-450 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 60947-3



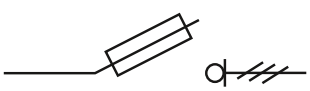
APPLICATION

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

TECHNICAL DATA

Wiring diagrams

Fuse switch disconnector UVRE EKF

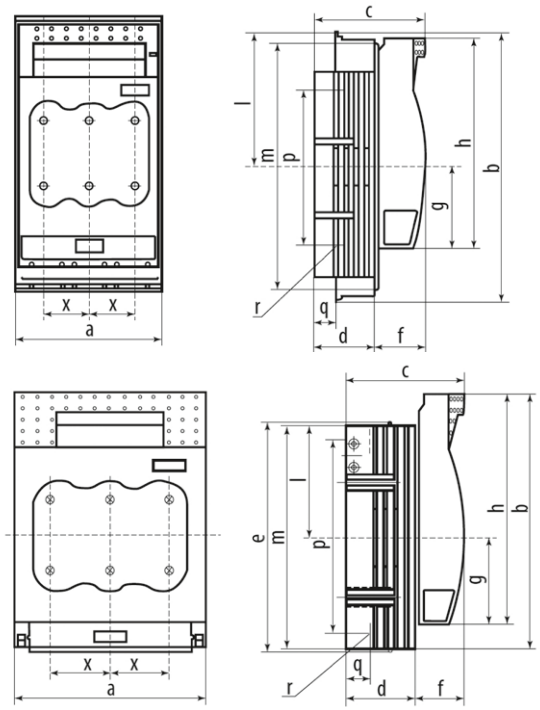


Installation and operation

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.

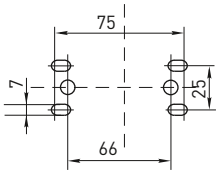
Parameters	Values			
Conventional thermal current Ith, A	160	250	400	630
Type (size) of fuse link	NH (PPN-33) size 0	NH(PPN-35) size 1	NH(PPN-37) size 2	NH (PPN-39) size 3
Maximum rated voltage Ue, V	690			
Rated frequency, Hz	50 / 60			
Maximum impulse withstand voltage Uimp, kV	6			
Rated insulation 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

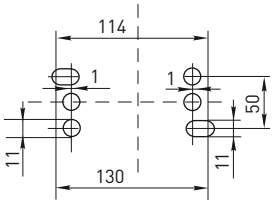


Model	Dimensions, mm													
	a	b	c	d	e	f	g	h	l	m	p	q	r	x
UVRE 160A	106	200	82,5	45	220	37	60	155	100	181	115	17	M8	33
UVRE 250 A	184	243	111,5	66		45,5	84	220	107	214,5	185	21,5	M10	57
UVRE 400 A	210	288	128	80		48	92	249	124	255	210	25	M10	65
UVRE 630 A	256	300	142,5	94,5		48	98,5	259	127,5	267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

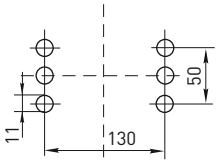
UVRE 160 A EKF



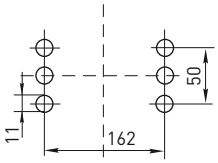
UVRE 250A EKF



UVRE 400A EKF



UVRE 630A 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.

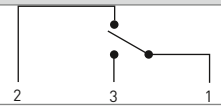
Delivery scope

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	



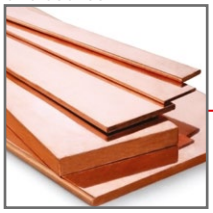
Picture	Name	Item code
	Auxiliary contact NO+NC for fuse switch disconnector UVRE EKF	vre-a-02

Strip type fuse switch disconnectors UVRE EKF

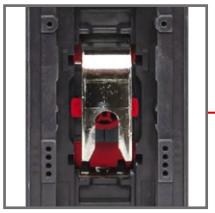
The strip type fuse switch disconnectors UVRE for fuse links are designed for manual switching and protection of the 50 / 60 Hz AC circuits with rated voltage up to 690V against short circuit and overload and are installed in lead-in distribution panels and low-voltage switchboards of transformer substations.
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 60947-3

Vertical installation, can utilize smaller enclosures

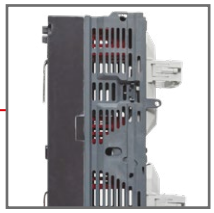


Busbars for easier connection

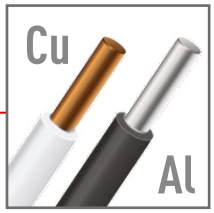


Safe and easy direct installation to busbar with dovetail terminals

Visible double circuit break when opened



Fully enclosed housing for safer operation



Copper and aluminum connections supported

APPLICATION

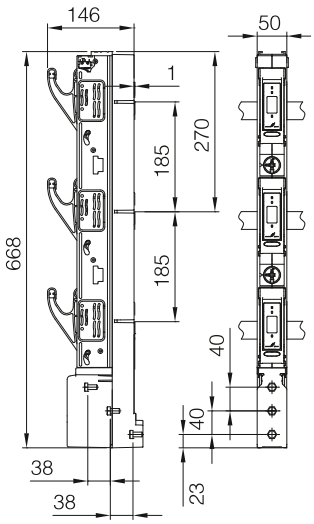
Switch disconnectors are used for manual circuit switching:
- distribution enclosures;
- switchboards;
- control rooms.

TECHNICAL DATA

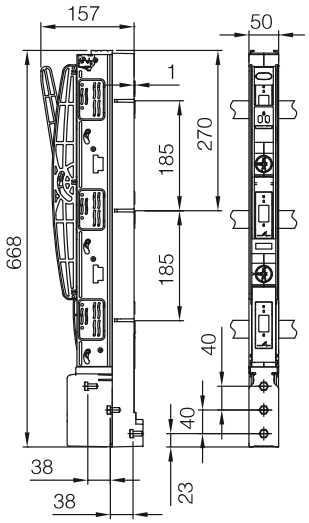
Parameters	Values											
	UVRE strip type (size 00)			UVRE strip type (size 1)			UVRE strip type (size 2)			UVRE strip type (size 3)		
Rated operating voltage Ue, V AC	380–415	500	690	380–415	500	690	380–415	500	690	380–415	500	690
Rated thermal current Ith, A	160	125	100	250	250	200	400	400	315	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

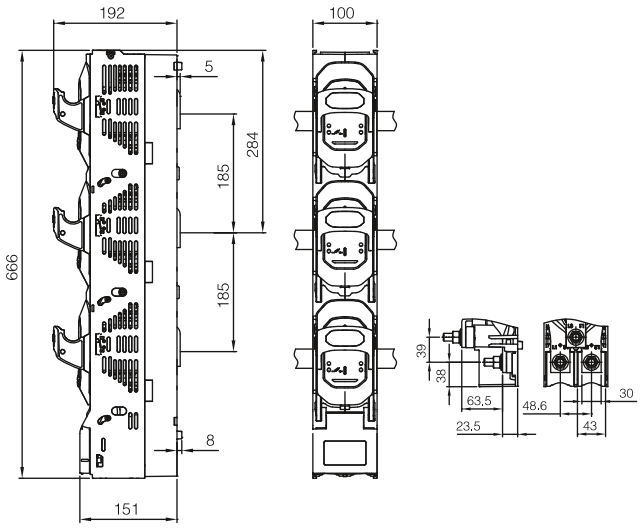
UVRE strip type (size 00) independent



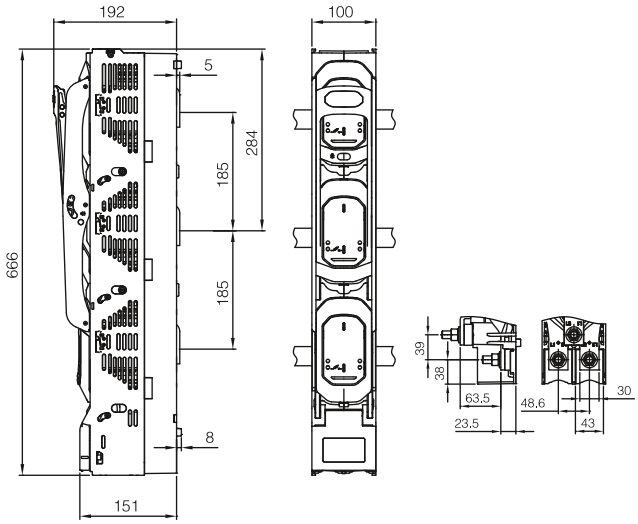
UVRE strip type (size 00) synchronous



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-23B, AC-22B	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-23B, AC-22B	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-23B, AC-22B, AC-21B	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-23B, AC-22B, AC-21B	uvre2-v-250-p
Strip type fuse switch disconnector UVRE v2 (185mm) 400A synchronous operation for fuse link NH size 2 EKF	400	NH (PPN-37) size 2	AC-23B, AC-22B, AC-21B	uvre2-v-400-o
Strip type fuse switch disconnector UVRE v2 (185mm) 400A independent operation for fuse link NH size 2 EKF	400	NH (PPN-37) size 2	AC-23B, AC-22B, AC-21B	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) size 3	AC-23B, AC-22B, AC-21B	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) size 3	AC-23B, AC-22B, AC-21B	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 690 V AC 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, 2000 & 2500 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 60947-3

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

Windows on the switch disconnectors for a visible break

Safety lockout tab on the handle

Changeover switch versions

Constant switching speed

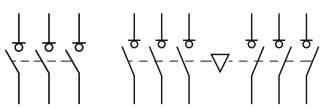
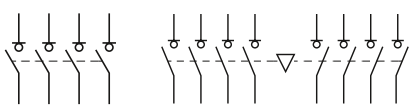
Extra pole option

APPLICATION

TwinBlock switch disconnectors are designed for manual circuit switching:
- Power distribution systems;
- Industrial applications;
- Commercial buildings;
- Mmotor control centers;
- Railway systems.

TECHNICAL DATA

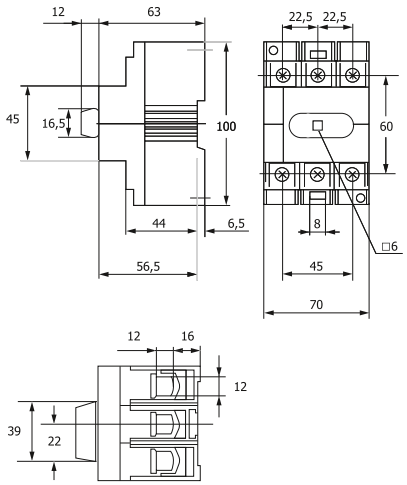
Wiring diagrams

3P	4P
	

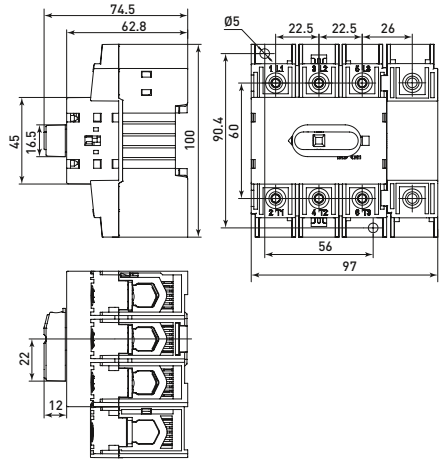
Parameters		Values													
		80	100	160	200	250	315	400	630	800	1000	1250	1600	2000	2500
Rated insulation voltage Ui, V		1000													
Rated AC frequency, Hz		50 / 60													
Rated operating voltage Ue, V	AC	690 / 380–415													
	DC	440 / 230													
Rated impulse withstand voltage Uimp, kV		12													
Number of poles		3P, 4P													
Rated current In, A		80	100	160	200	250	315	400	630	800	1000	1250	1600	2000	2500
Conventional thermal current Ith, A		80	100	160	200	250	315	400	630	800	1000	1250	1600	2000	2500
Maximum cross-section of connected copper wires, mm^2		70	70	70	95	120	185	240	2x185	2x240	2x300	2x400	2x500	3x500	4x500
Rated breaking capacity for Ue=690V, AC-23, A		160	320	640	1600	2000	2520	3200	5040	6400	10 000	10 000	10 000	2000	2500
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	55	55
Power dissipation/pole, W		4,5	4	6,5	4	6,5	6,5	10	25	40	19	29	48	55	85
Tightening torque, N·m		7					16		27		65				
Bolted connection		–	–	M8×25			M10×30		M12×40		M12×50		M12×60		
Mechanical endurance, O-C cycles		10 000					8000		5000		3000				
Extra pole option		N/A	N/A	Available								N/A	N/A	Available	
Degree of protection		IP00													
Operating temperature, °C		From -40 to +50													

Overall and installation dimensions (mm)

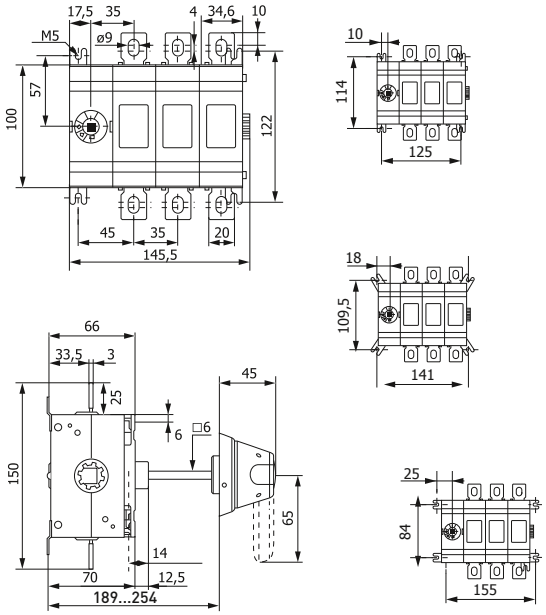
Switch disconnector 40–125 A 3P



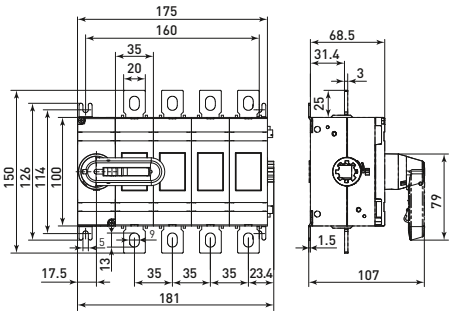
Switch disconnector 63–125 A 4P



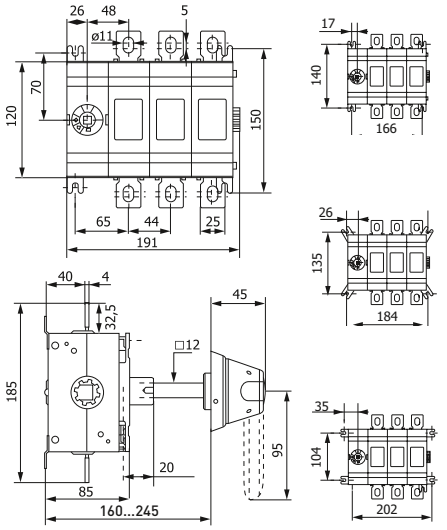
Switch disconnector 160-250 A 3P



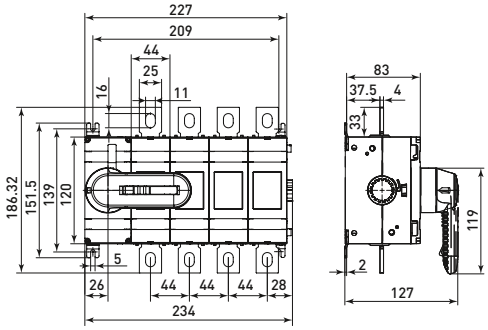
Switch disconnector 160-250 A 4P



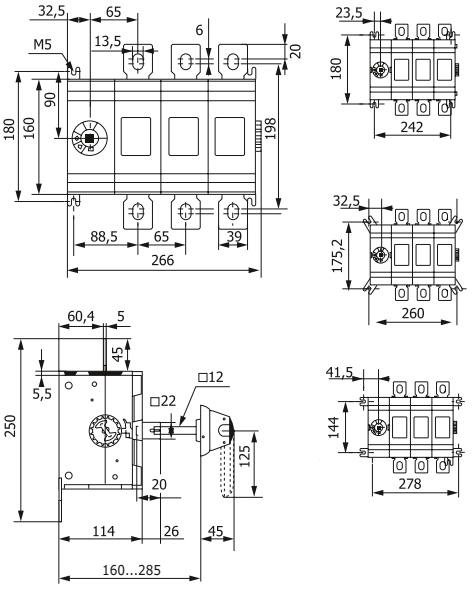
Switch disconnector 315-400 A 3P



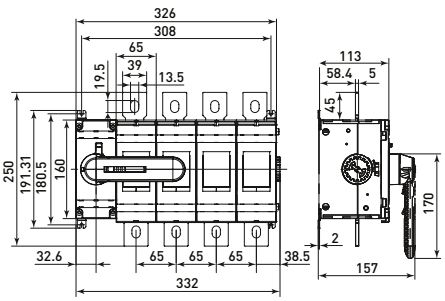
Switch disconnector 315-400 A 4P



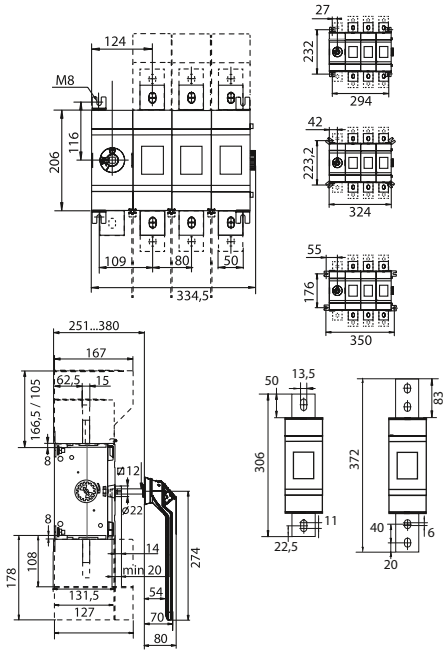
Switch disconnector 630-800 A 3P



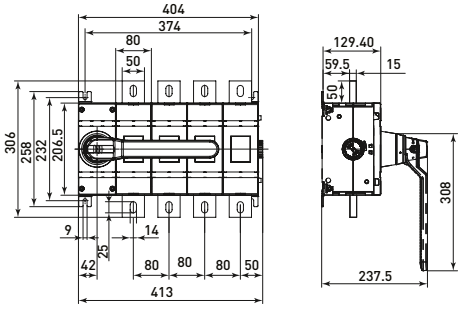
Switch disconnector 630-800 A 4P



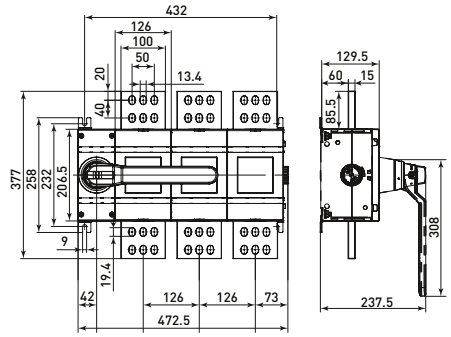
Switch disconnector 1000-1600 A 3P



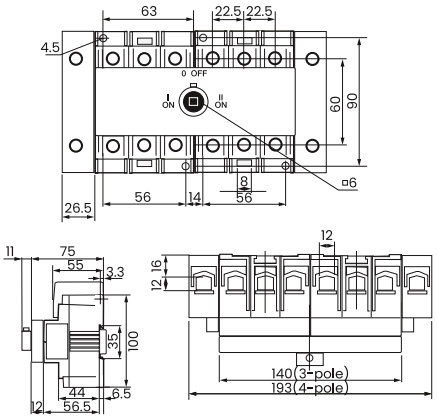
Switch disconnector 1000-1600 A 4P



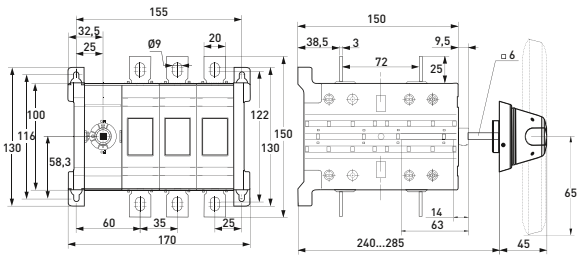
Switch disconnector 2000-2500 A 3P



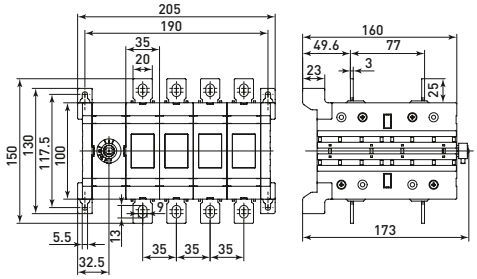
Changeover switch 40-125 A 3P-4P



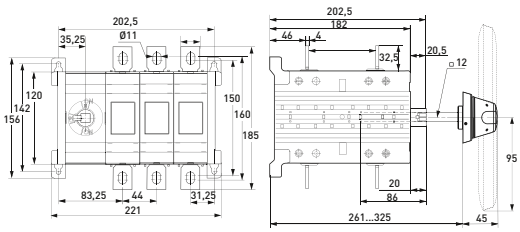
Changeover switch 160-250 A 3P



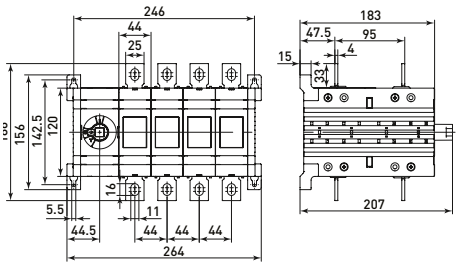
Changeover switch 160-250 A 4P



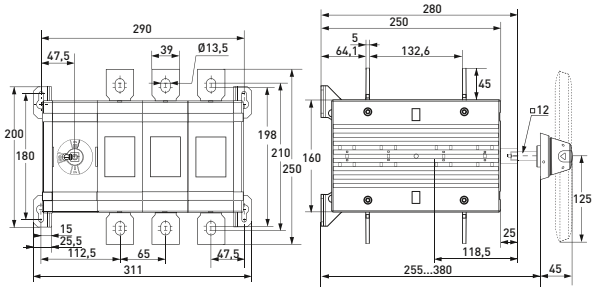
Changeover switch 315-400 A 3P



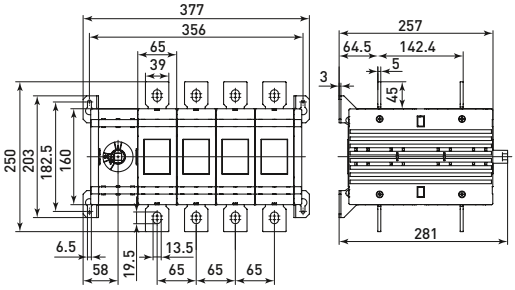
Changeover switch 315-400 A 4P



Changeover switch 630-800 A 3P

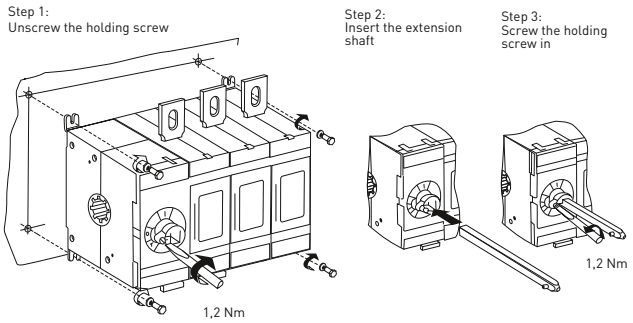


Changeover switch 630-800 A 4P



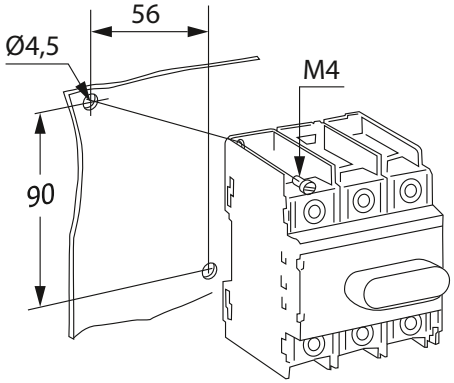
Installation and operation

Switch disconnectors must 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

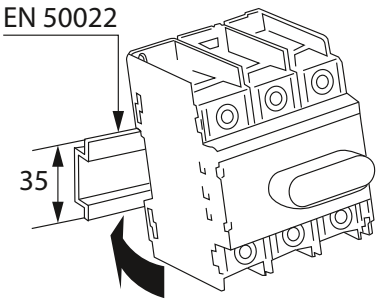


Installation of 40-125A models

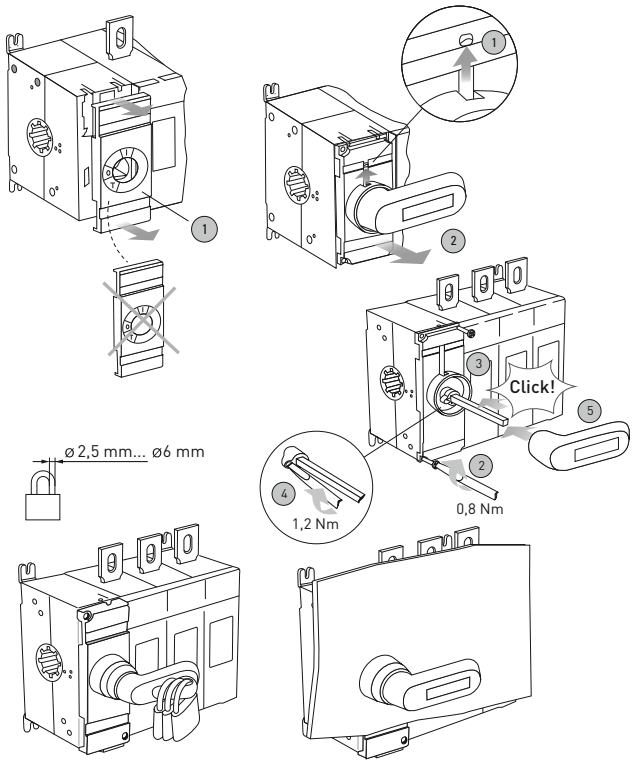
Mounting plate



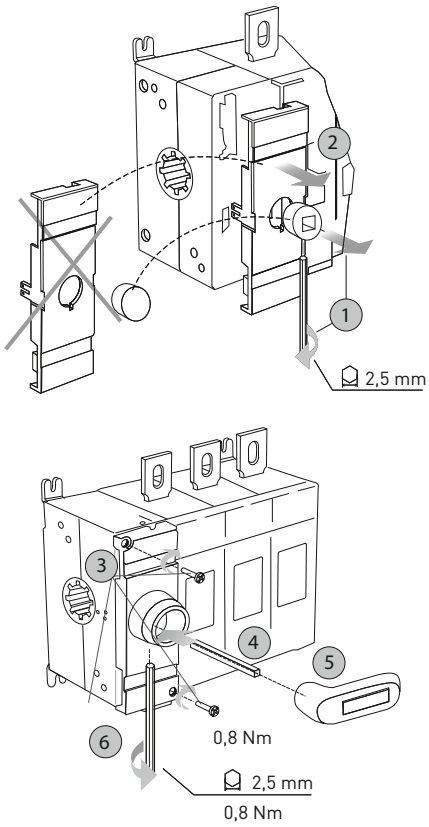
DIN rail



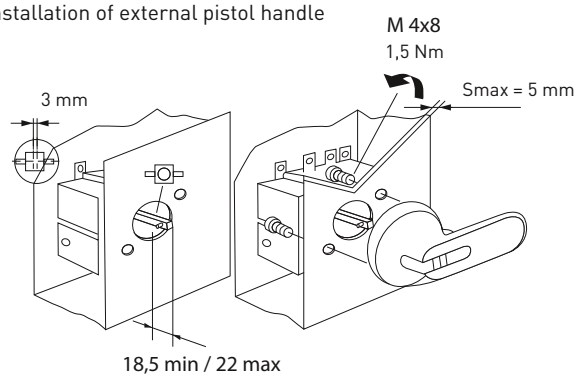
Installation of direct-mount rotary handle for 315-2500A models



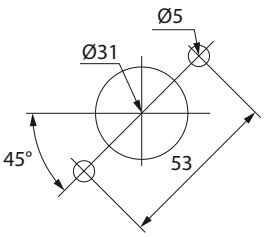
Installation of direct-mount rotary handle for 160-250A models



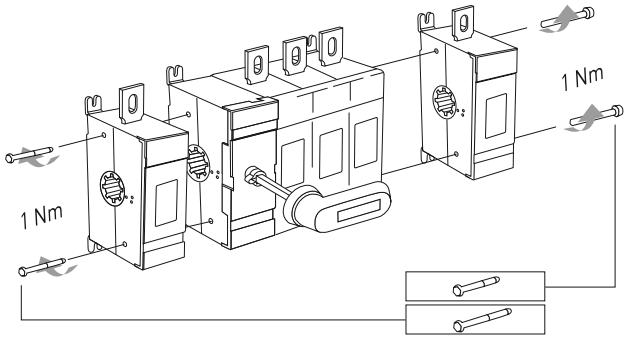
Installation of external pistol handle



Pistol handle mounting aperture dimensions



Additional pole installation (160-800A models)

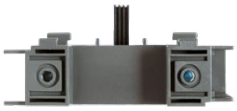
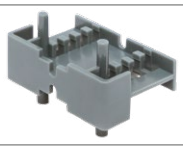


Delivery scope

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
	Switch disconnector 2000A 3P without handle TwinBlock EKF	2000	tb-s-2000-3p
	Switch disconnector 2500A 3P without handle TwinBlock EKF	2500	tb-s-2500-3p
	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
	Directly mounted rotary handle for switch disconnectors TwinBlock 1000-2500A EKF	–	tb-1000-2500-fh
	Directly mounted rotary handle for switch disconnectors TwinBlock 2000-4000A EKF	–	tb-2000-4000-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 switch disconnectors TwinBlock 2000-2500A EKF	–	tb-1000-2500-dh
	External pistol handle for switch disconnectors TwinBlock 2000-4000A EKF		tb-2000-4000-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 40-250A 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
	Extension shaft 280 mm for external pistol handle TwinBlock 2000-2500A EKF	–	tb-a-4-280
	Bridges for changeover switches (3pcs.) TwinBlock 160-250A EKF	–	tb-bar-160-250-rev
	Bridges for changeover switches (3pcs.) TwinBlock 315-400A EKF	–	tb-bar-315-400-rev
	Bridges for changeover switches (3pcs.) 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 40-250A 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 400 mm for external pistol handle TwinBlock 2000-2500A EKF	–	tb-a-4-400
	Extension shaft 520 mm for external pistol handle TwinBlock 40-250A 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
	Extension shaft 520 mm for external pistol handle TwinBlock 2000-2500A EKF	–	tb-a-4-520
	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
	Phase barrier for switch disconnectors TwinBlock 2000-2500A EKF	–	tb-fb-2000-2500
	Terminal shroud (short) 6 pcs. TwinBlock 160-250A EKF	–	tb-cvrshort-6-160-250
	Terminal shroud (short) 6 pcs. TwinBlock 315-400A EKF	–	tb-cvrshort-6-315-400
	Terminal shroud (short) 6 pcs. TwinBlock 630-800A EKF	–	tb-cvrshort-6-630-800
	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 (long) 6 pcs. TwinBlock 630-800A EKF	–	tb-cvrlong-6-630-800
	Terminal shroud (short) 8 pcs. TwinBlock 160-250A EKF	–	tb-cvrshort-8-160-250
	Terminal shroud (short) 8 pcs. TwinBlock 315-400A EKF	–	tb-cvrshort-8-315-400
	Terminal shroud (short) 8 pcs. TwinBlock 630-800A EKF	–	tb-cvrshort-8-630-800
	Terminal shroud (long) 8 pcs. TwinBlock 160-250A EKF	–	tb-cvrlong-8-160-250
	Terminal shroud (long) 8 pcs TwinBlock 315-400A EKF	–	tb-cvrlong-8-315-400
	Terminal shroud (long) 8 pcs. TwinBlock 630-800A EKF	–	tb-cvrlong-8-630-800

Fuse links PPN EKF

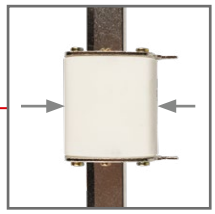
The fuse links PPN EKF are designed to protect cable lines and industrial electrical installations against overloads and short circuits in 50/60 Hz AC circuits with voltage up to 660V and are used in LV distribution equipment, e.g. switchboards, distribution panels, etc.

Standard: IEC 60947-3

Ceramic housing. Filled with fine silica sand

Contact blades rounded on both sides to facilitate installation

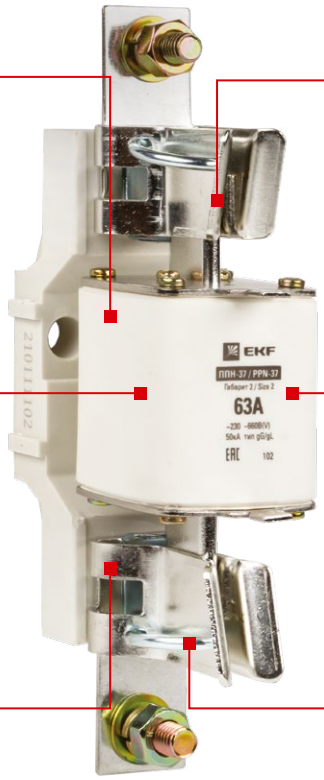
Wider blades for extended contact area



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.

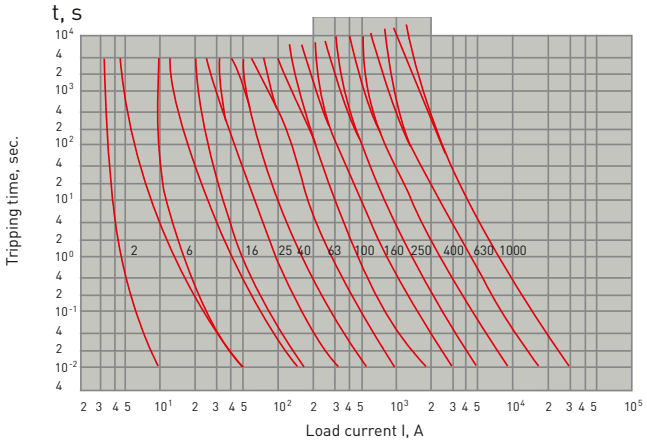
TECHNICAL DATA

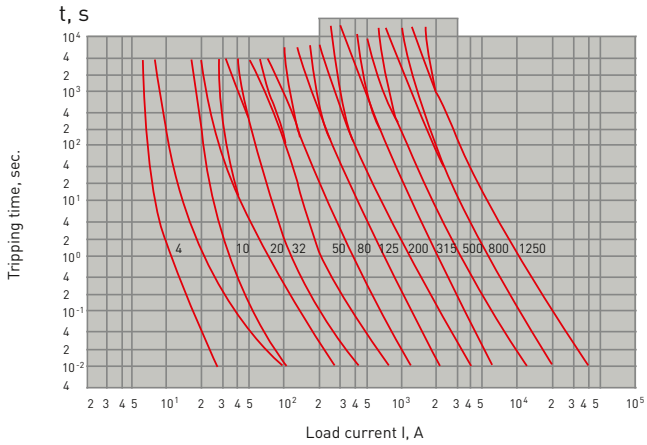
Selectivity control

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

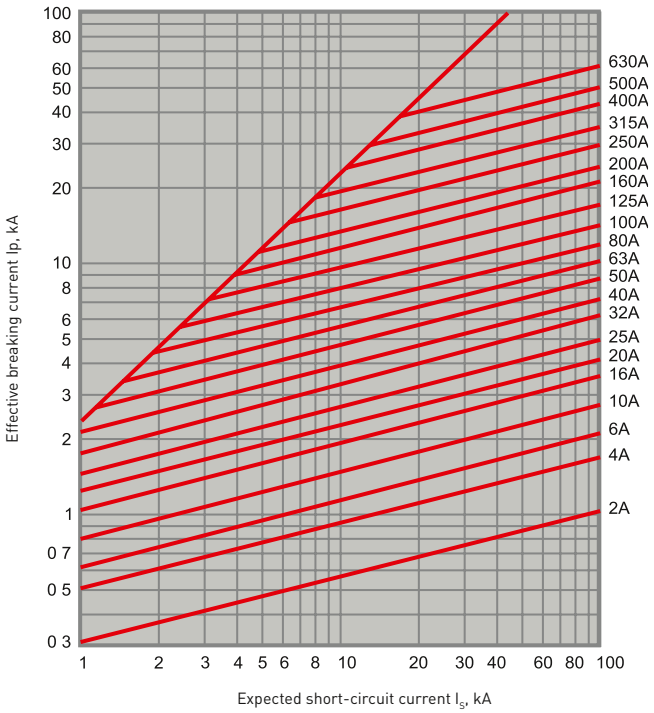
In, upper fuse link (A)	In, lower fuse link (A)	
	PPN	PN
25	8	16
32	10	20
35	12	20
40	12	25
50	16	32
63	20	40
80	25	50
100	36	63
125	40	80
160	63	100
200	80	125
250	125	160
315	125	200
400	160	250
500	200	315
630	250	400
800	315	500
1000	400	630

Tripping characteristics





Current limiting factor

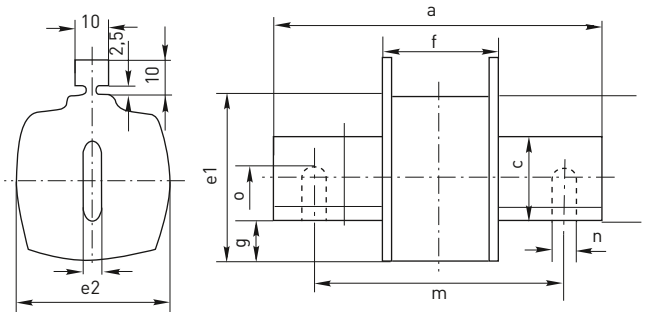


Delivery scope

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

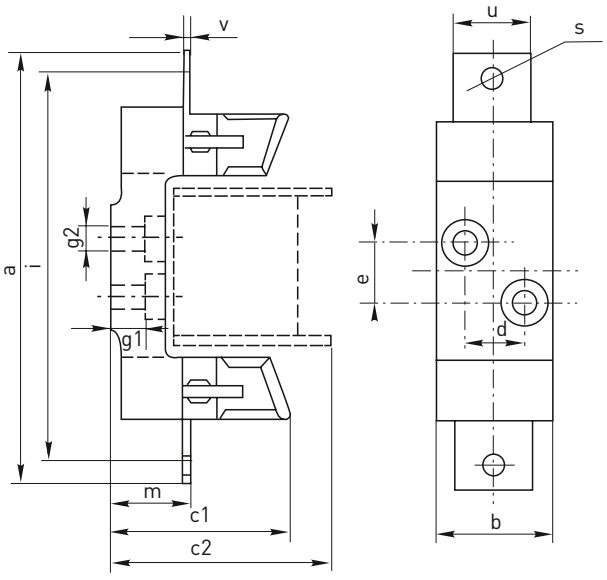
Overall and installation dimensions (mm)

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

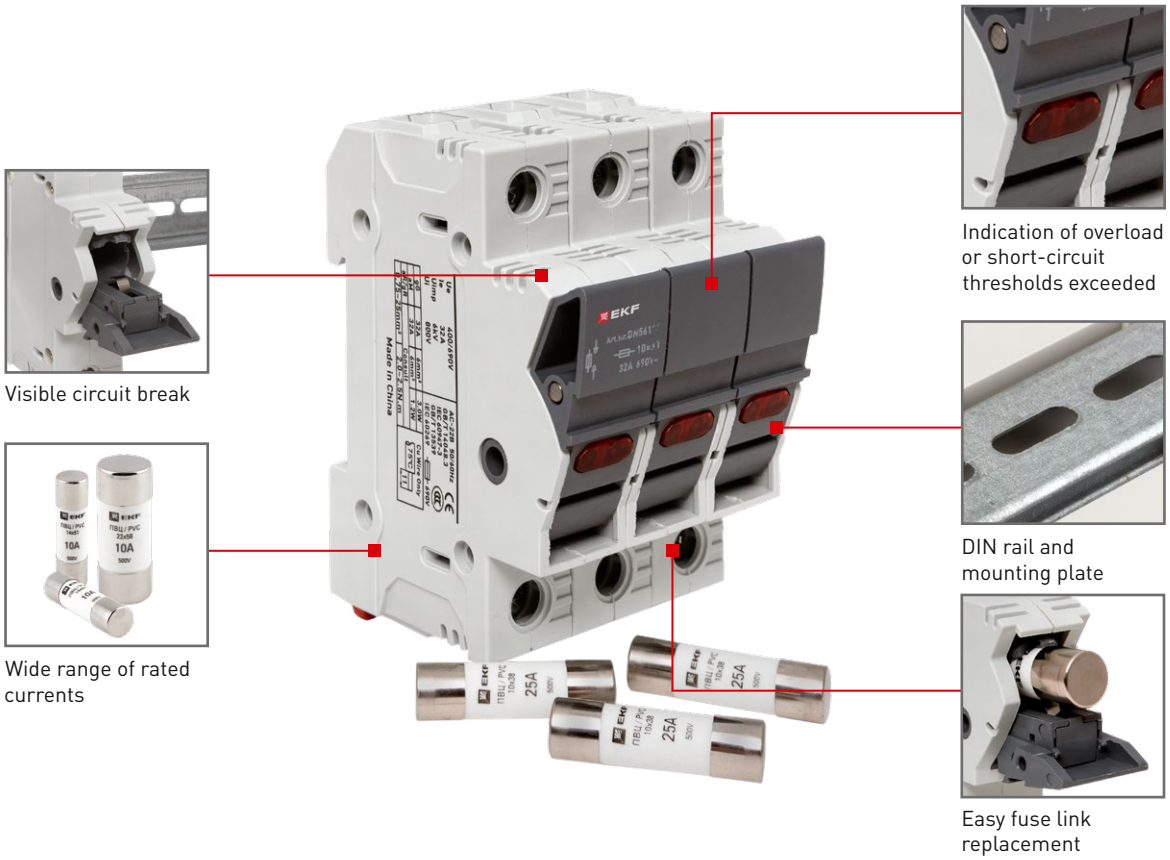
Fuse link NH (PPN) replacement handle EKF

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 60947-3



APPLICATION

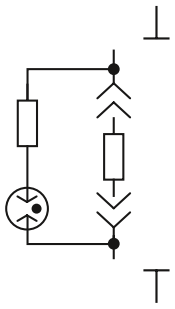
Fuse links and fuse disconnectors are designed to protect cable lines from overload and short-circuit current:

- household appliances;
- industrial equipment.

TECHNICAL DATA

Parameters	Size		
	10×38	14×51	22×58
Fuse disconnectors			
Rated current at 690 V AC 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		1600
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

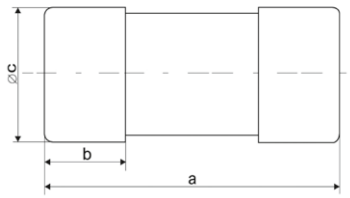


Operation

The LED lights up, when disconnector trips

Overall and installation dimensions (mm)

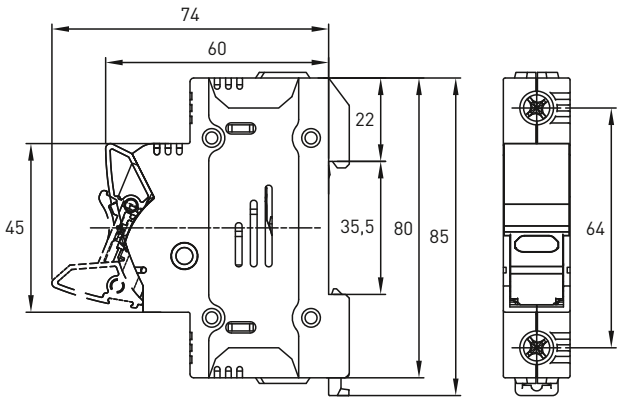
Cylindrical fuse links



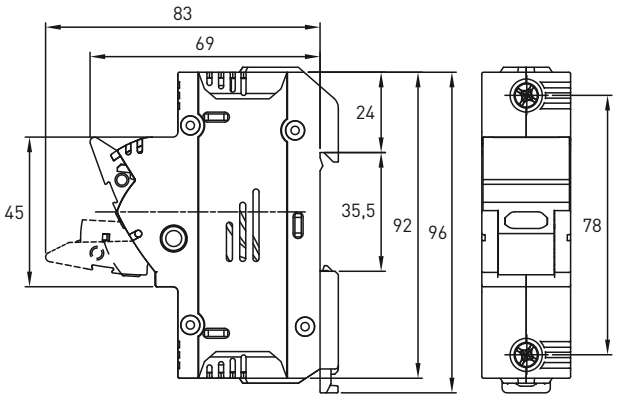
Size	a	b	c
10x38	38	10	10,3
14x51	51	12	14,3
22x58	58	16	22,2

Fuse disconnectors

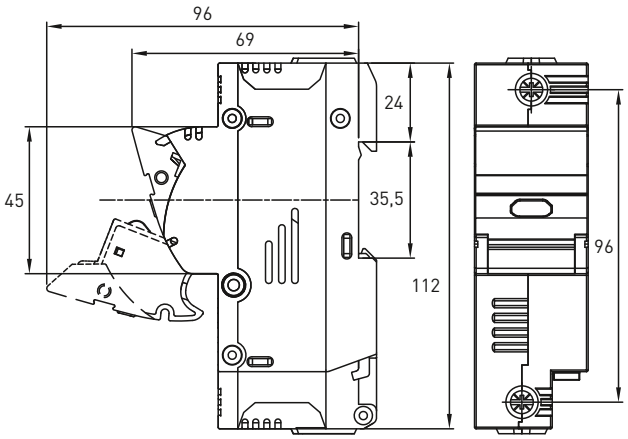
DF 10×38



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 (type CFL) EKF	500	50/60	8	3	df101-e	df102-e	df103-e	df104-e
Fuse disconnector DF 14x51 (type CFL) EKF			20	5	df141-e	df142-e	df143-e	df144-e
Fuse disconnector DF 22x58 (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

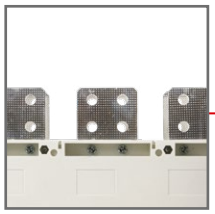
Switch disconnectors PowerSwitch up to 4000A EKF

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.

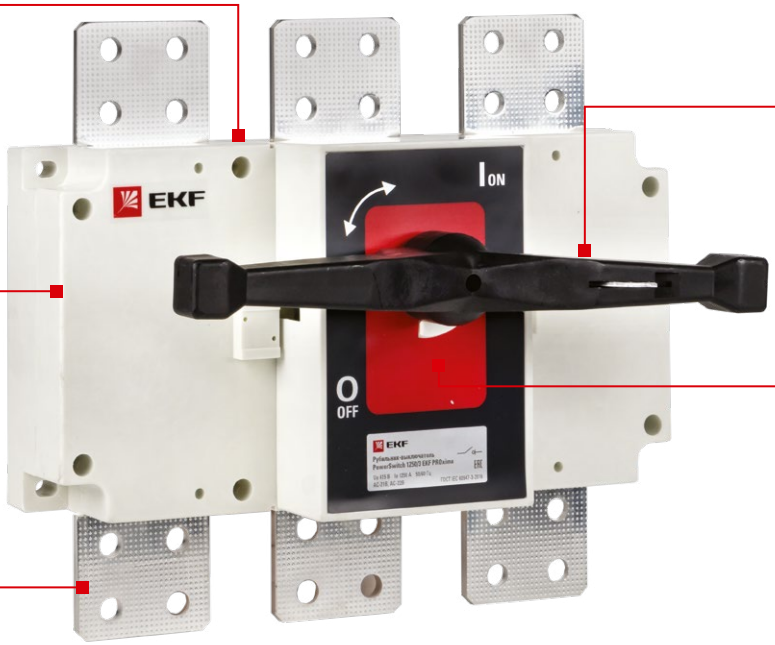
Standard: IEC 60947-3

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

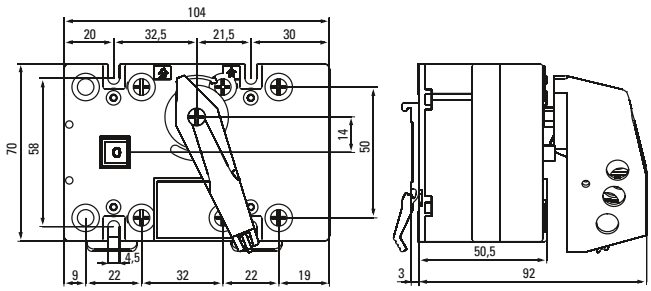
Manual electric circuit switching in:

- Power distribution systems;
- Industrial applications;
- Commercial buildings;
- Motor control centers;
- Railway systems.

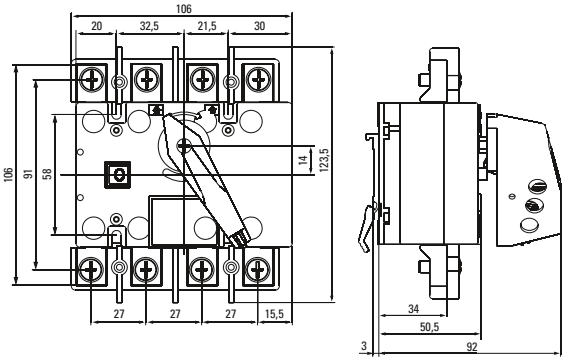
TECHNICAL DATA

Overall and installation dimensions (mm)

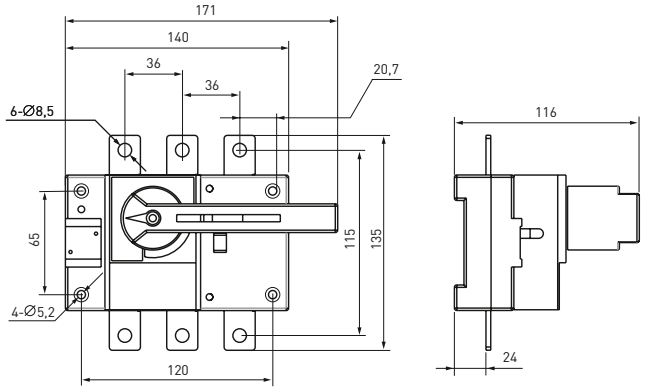
Switch disconnector PowerSwitch 63 A



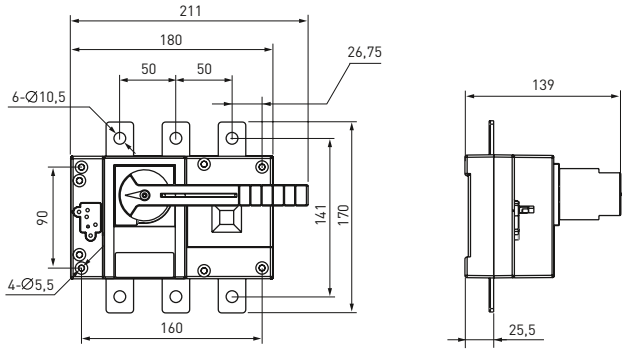
Switch disconnector PowerSwitch 100 A



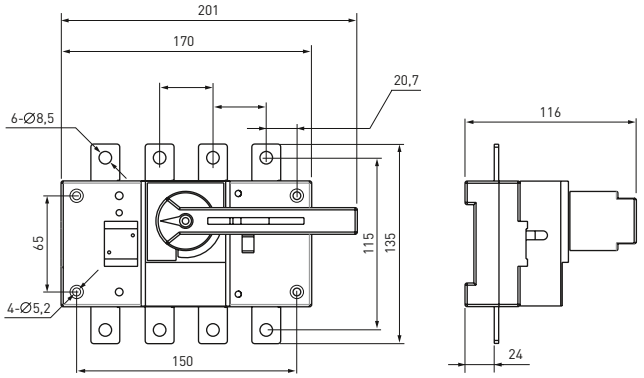
Switch disconnector PowerSwitch 160 A 3P



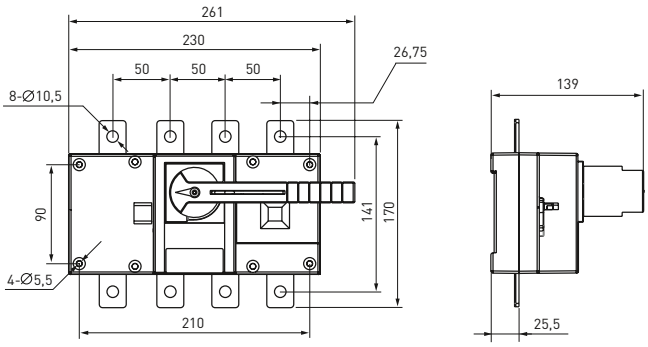
Switch disconnector PowerSwitch 250 A 3P



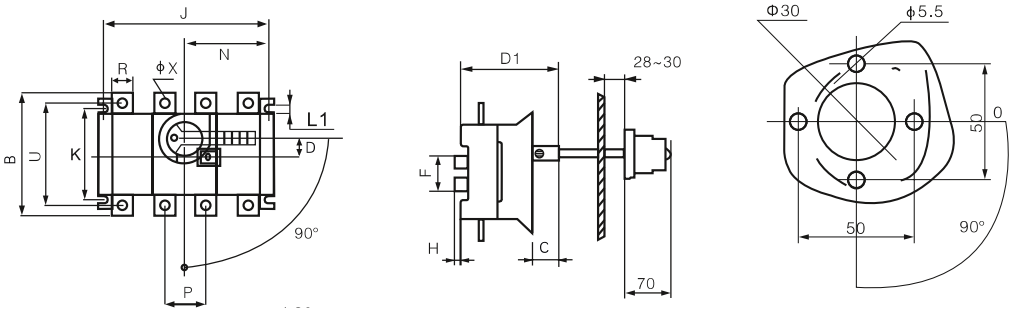
Switch disconnector PowerSwitch 160 A 4P



Switch disconnector PowerSwitch 250 A 4P

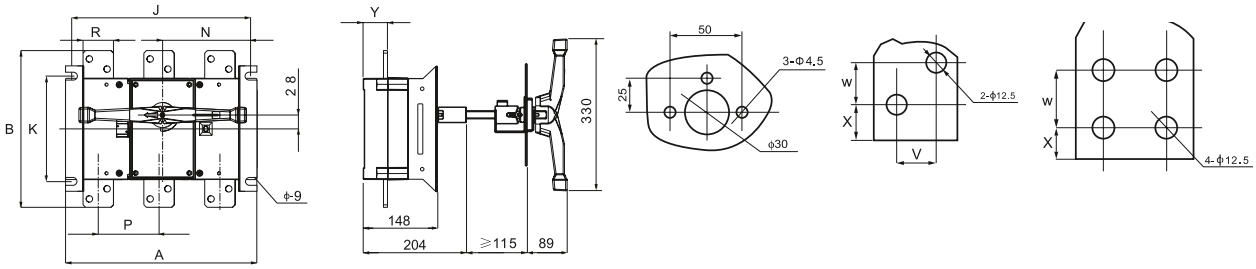


Switch disconnector PowerSwitch 400-630 A



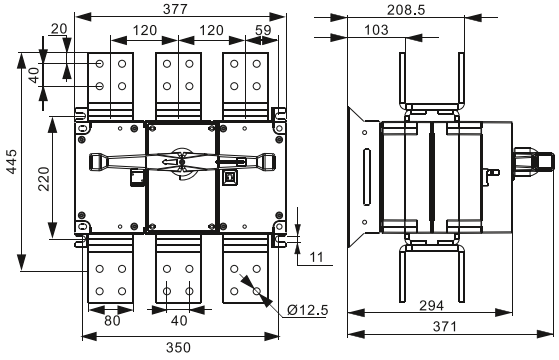
Specifications	Overall dimensions, mm												Installation dimensions, mm		
In	A	B	C	D	D1	N	P	R	U	ØX	F	H	J	K	L1
400A/3	230	240	20	30	137	135	65	32	206	11	95	20	210	135	11
400A/4	290	240	20	30	137	135	65	32	206	11	95	20	210	135	11
630A/3	230	260	20	30	137	135	65	40	220	13	95	20	210	135	11
630A/4	290	260	20	30	137	135	65	40	220	13	95	20	210	135	11

Switch disconnector PowerSwitch 1000-1600 A

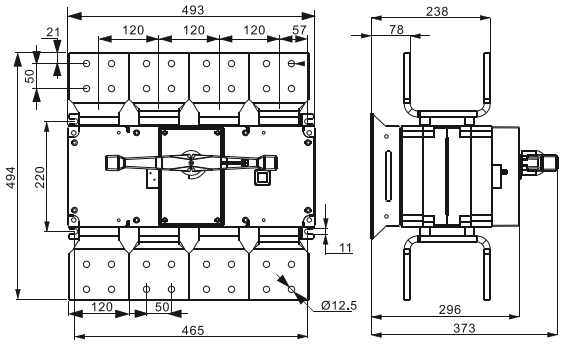


Specifications	Overall dimensions, mm									Installation dimensions, mm	
In	A	B	N	P	R	V	W	X	Y	J	K
1000A/3	378	308	174	120	60	35	20	16,5	49	350	220
1000A/4	493	310	235	120	60	40	35	16	48	471	220
1250A/3	378	336	174	120	80	40	35	16	49	350	220
1250A/4	493	338	235	120	80	40	35	16	48	471	220
1600A/3	378	336	174	120	80	40	35	16	50	350	220
1600A/4	493	338	235	120	80	40	35	16	49	471	220

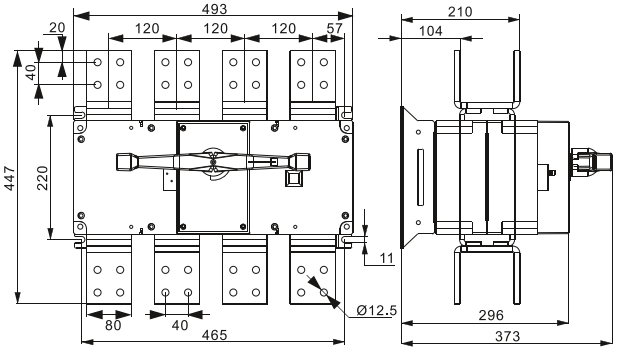
Switch disconnector PowerSwitch 2000 A 3P



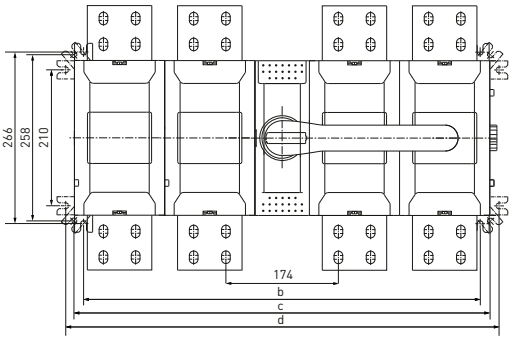
Switch disconnector PowerSwitch 2500 A 4P



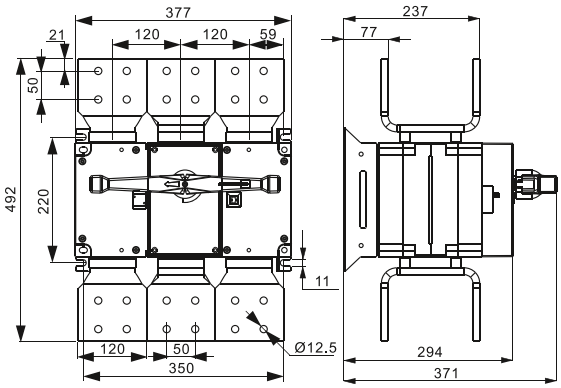
Switch disconnector PowerSwitch 2000 A 4P



Switch disconnector PowerSwitch 4000 A

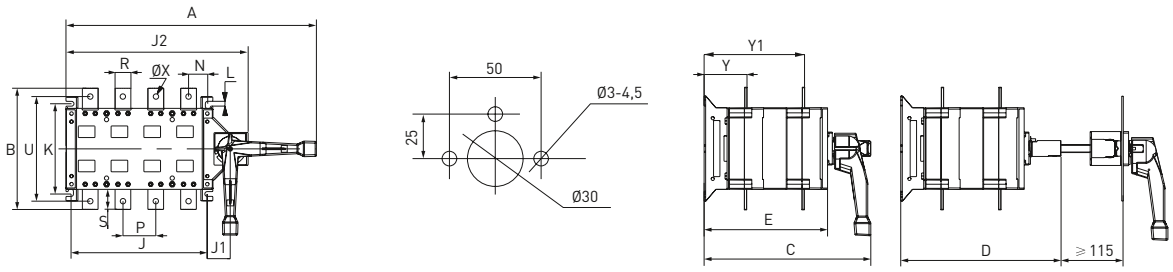


Switch disconnector PowerSwitch 2500 A 3P



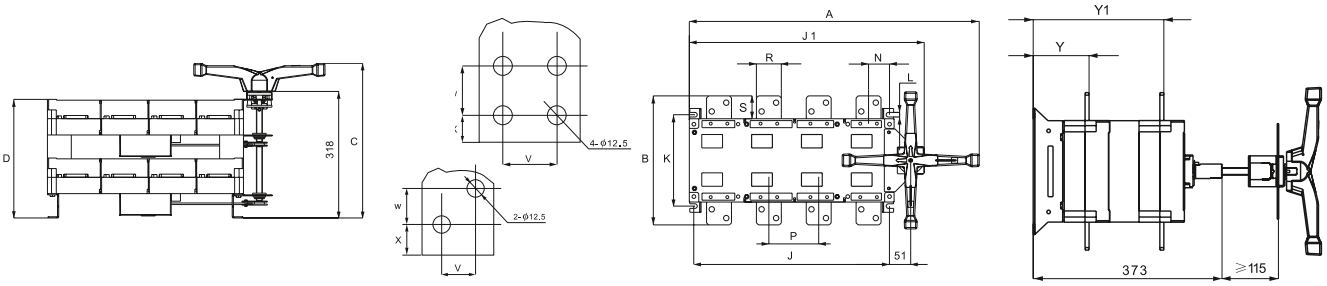
Specifications	Overall dimensions, mm			
In	a	b	c	d
3150A/4, 4000A/4	656	615	646	672

Changeover switch PowerSwitch 100-630 A



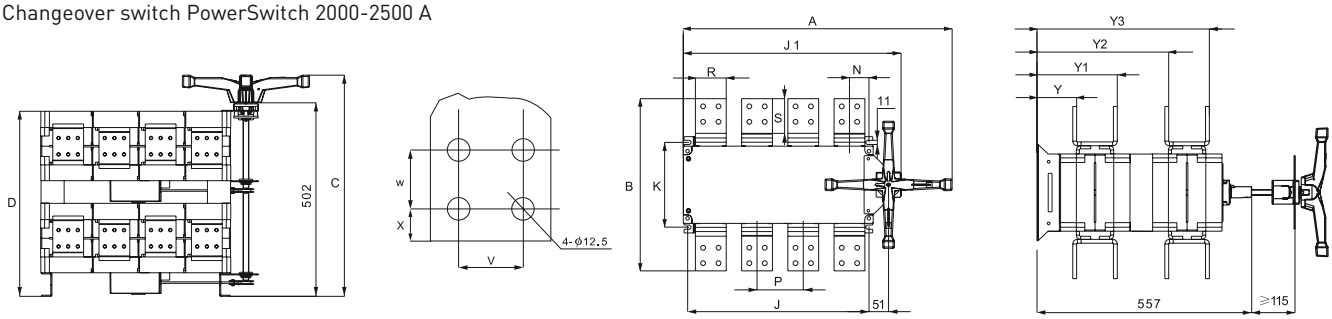
Specifications	Overall dimensions, mm															Installation dimensions, mm		
In	A	B	C	D	E	J1	J2	N	P	R	S	U	fX	Y	Y1	J	K	L
100A/3.4	277	107	166	170	106	40	194	12,5	30	14	18	90	6,5	39,5	90,5	115	84	7
160A/3	273	135	212	221	153	29	195	28	36	20	25	115	8,5	55	120	120	95	7
160A/4	303	135	212	221	153	29	225	22	36	20	25	115	8,5	55	120	150	95	7
250A/3	345	170	251	250	182	30	235	33	50	25	30	140	11	64	144	160	116	9
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. making current, A	Item code
			380–415 V			690 V							
			AC-21B	AC-22B	AC-23B	AC-21B	AC-22B	AC-23B	380-415V	690V			
	Switch disconnector 63A 3P with directly mounted rotary handle PowerSwitch EKF	63	63	63	50	50	32	25	25	22	2	630	psds-63-3
	Switch disconnector 100A 3P with directly mounted rotary handle PowerSwitch EKF	100	100	80	80	80	50	40	40	33	2	1000	psds-100-3
	Switch disconnector 160A 3P with directly mounted rotary handle PowerSwitch EKF	160	160	160	160	160	160	80	80	75	6	1600	psds-160-3
	Switch disconnector 250A 3P with directly mounted rotary handle PowerSwitch EKF	250	250	250	250	250	160	125	132	110	9	2500	psds-250-3
	Switch disconnector 400A 3P with directly mounted rotary handle PowerSwitch EKF	400	400	400	400	400	315	–	220	185	12,6	4000	psds-400-3
	Switch disconnector 630A 3P with directly mounted rotary handle PowerSwitch EKF	630	630	630	630	500	315	–	315	185	12,6	6300	psds-630-3
	Switch disconnector 1000A 3P with directly mounted rotary handle PowerSwitch EKF	1000	1000	1000	–	1000	800	–	560	475	30	1500	psds-1000-3

Picture	Name	Rated current, A	Rated operating current, A						Rated power AC-23, kW		Rated short-time withstand current Icw, kA	Max. making current, A	Item code
			380–415 V			690 V							
			AC-21B	AC-22B	AC-23B	AC-21B	AC-22B	AC-23B	380-415V	690V			
	Switch disconnector 1250A 3P with directly mounted rotary handle PowerSwitch EKF	1250	1250	1250	–	1000	800	–	560	475	30	1875	psds-1250-3
	Switch disconnector 1600A 3P with directly mounted rotary handle PowerSwitch EKF	1600	1600	1600	–	1600	800	–	560	475	30	2400	psds-1600-3
	Switch disconnector 2000A 3P with directly mounted rotary handle PowerSwitch EKF	2000	2000	1000	–	2000	750	–	710	750	50	3000	psds-2000-3
	Switch disconnector 2500A 3P with directly mounted rotary handle PowerSwitch EKF	2500	2500	1250	–	2500	–	–	710	750	50	3750	psds2500-3
	Switch disconnector 3150A 3P with directly mounted rotary handle PowerSwitch EKF	3150	3150	-	-	3150	-	-	710	750	50	4725	psds-3150-3
	Switch disconnector 4000A 3P with directly mounted rotary handle PowerSwitch EKF	4000	4000	-	-	4000	-	-	710	750	50	5000	psds-4000-3

Picture	Name	Rated current, A	Rated operating current, A						Rated power AC-23, kW		Rated short-time withstand current Icw, kA	Max. making current, A	Item code
			380–415 V			690 V							
			AC-21B	AC-22B	AC-23B	AC-21B	AC-22B	AC-23B	380-415V	690V			
	Changeover switch 100A 3P with directly mounted rotary handle PowerSwitch EKF	100	100	100	100	100	50	40	40	33	2	150	pscs-100-3
	Changeover switch 160A 3P with directly mounted rotary handle PowerSwitch EKF	160	160	160	160	160	160	80	80	75	6	1600	pscs-160-3
	Changeover switch 250A 3P with directly mounted rotary handle PowerSwitch EKF	250	250	250	250	250	160	125	132	110	9	2500	pscs-250-3
	Changeover switch 400A 3P with directly mounted rotary handle PowerSwitch EKF	400	400	400	400	400	315	–	220	185	12,6	4000	pscs-400-3
	Changeover switch 630A 3P with directly mounted rotary handle PowerSwitch EKF	630	630	630	630	500	315	–	315	185	12,6	6300	pscs-630-3
	Changeover switch 1000A 3P with directly mounted rotary handle PowerSwitch EKF	1000	1000	1000	–	1000	800	–	560	475	30	1500	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. making current, A	Item code
			380–415 V			690 V							
			AC-21B	AC-22B	AC-23B	AC-21B	AC-22B	AC-23B	380-415V	690V			
	Changeover switch 1250A 3P with directly mounted rotary handle PowerSwitch EKF	1250	1250	1250	–	1000	800	–	560	475	30	1875	pscs-1250-3
	Changeover switch 1600A 3P with directly mounted rotary handle PowerSwitch EKF	1600	1600	1600	–	1600	800	–	560	475	30	2400	pscs-1600-3
	Changeover switch 2000A 3P with directly mounted rotary handle PowerSwitch EKF	2000	2000	–	–	2000	750	–	710	750	50	3000	pscs-2000-3
	Changeover switch 2500A 3P with directly mounted rotary handle PowerSwitch EKF	2500	2500	–	–	2500	750	–	710	750	50	3750	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	6	1600	psds-160-4
	Switch disconnector 250A 4P with directly mounted rotary handle PowerSwitch EKF	250	250	250	250	250	160	125	132	110	9	2500	psds-250-4
	Switch disconnector 400A 4P with directly mounted rotary handle PowerSwitch EKF	400	400	400	400	400	315	–	220	185	12,6	4000	psds-400-4
	Switch disconnector 630A 4P with directly mounted rotary handle PowerSwitch EKF	630	630	630	630	500	315	–	315	185	12,6	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. making current, A	Item code
			380–415 V			690 V							
			AC-21B	AC-22B	AC-23B	AC-21B	AC-22B	AC-23B	380-415V	690V			
	Switch disconnector 1000A 4P with directly mounted rotary handle PowerSwitch EKF	1000	1000	1000	–	1000	800	–	560	475	30	1500	psds-1000-4
	Switch disconnector 1250A 4P with directly mounted rotary handle PowerSwitch EKF	1250	1250	1250	–	1000	800	–	560	475	30	1875	psds-1250-4
	Switch disconnector 1600A 4P with directly mounted rotary handle PowerSwitch EKF	1600	1600	1600	–	1600	800	–	560	475	30	2400	psds-1600-4
	Switch disconnector 2000A 4P with directly mounted rotary handle PowerSwitch EKF	2000	2000	1000	–	2000	750	–	710	750	50	3000	psds-2000-4
	Switch disconnector 2500A 4P with directly mounted rotary handle PowerSwitch EKF	2500	2500	1250	-	2500	-	-	710	750	50	3750	psds-2500-4
	Switch disconnector 3150A 4P with directly mounted rotary handle PowerSwitch EKF	3150	3150	-	-	3150	-	-	710	750	50	4725	psds-3150-4
	Switch disconnector 4000A 4P with directly mounted rotary handle PowerSwitch EKF	4000	4000	-	-	4000	-	-	710	750	50	5000	psds-4000-4
	Changeover switch 100A 4P with directly mounted rotary handle PowerSwitch EKF	100	100	100	100	100	50	40	40	33	2	150	pscs-100-4
	Changeover switch 160A 4P with directly mounted rotary handle PowerSwitch EKF	160	160	160	160	160	160	80	80	75	6	1600	pscs-160-4
	Changeover switch 250A 4P with directly mounted rotary handle PowerSwitch EKF	250	250	250	250	250	160	125	132	110	9	2500	pscs-250-4
	Changeover switch 400A 4P with directly mounted rotary handle PowerSwitch EKF	400	400	400	400	400	315	–	220	185	12,6	4000	pscs-400-4
	Changeover switch 630A 4P with directly mounted rotary handle PowerSwitch EKF	630	630	630	630	500	315	–	315	185	12,6	6300	pscs-630-4

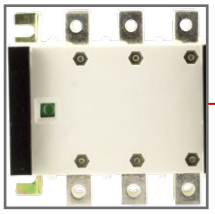
Picture	Name	Rated current, A	Rated operating current, A						Rated power AC-23, kW		Rated short-time withstand current Icw, kA	Max. making current, A	Item code
			380–415 V			690 V							
			AC-21B	AC-22B	AC-23B	AC-21B	AC-22B	AC-23B	380-415V	690V			
	Changeover switch 1000A 4P with directly mounted rotary handle PowerSwitch EKF	1000	1000	1000	–	1000	800	–	560	475	30	1500	pscs-1000-4
	Changeover switch 1250A 4P with directly mounted rotary handle PowerSwitch EKF	1250	1250	1250	–	1000	800	–	560	475	30	1875	pscs-1250-4
	Changeover switch 1600A 4P with directly mounted rotary handle PowerSwitch EKF	1600	1600	1600	–	1600	800	–	560	475	30	2400	pscs-1600-4
	Changeover switch 2000A 4P with directly mounted rotary handle PowerSwitch EKF	2000	2000	–	–	2000	750	–	710	750	50	3000	pscs-2000-4
	Changeover switch 2500A 4P with directly mounted rotary handle PowerSwitch EKF	2500	2500	–	–	2500	750	–	710	750	50	3750	pscs-2500-4

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

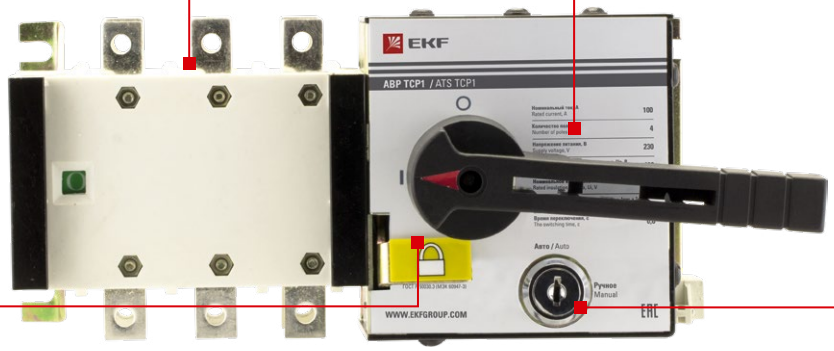
Automatic transfer switches TCP1 EKF

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

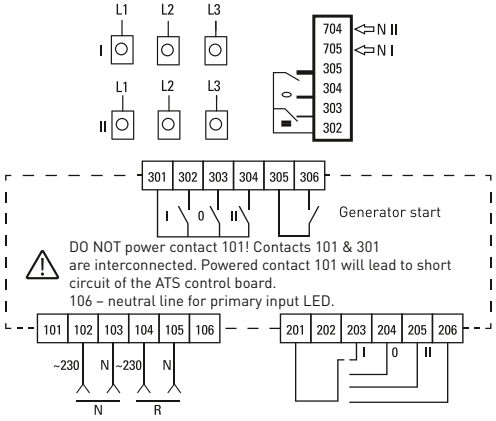
Power supply redundancy for critical load:

- 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

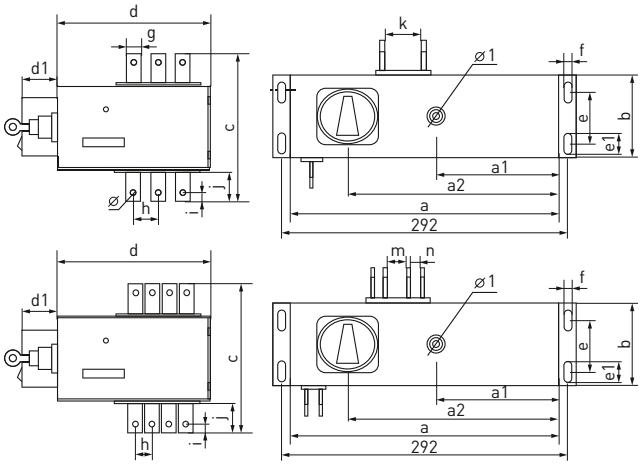
Parameters			ATS TCP1 32A	ATS TCP1 40A	ATS TCP1 63A	ATS TCP1 80A	ATS TCP1 100A	ATS TCP1 125A	ATS TCP1 160A	ATS TCP1 200A	ATS TCP1 250A	ATS TCP1 400A	ATS TCP1 630A
Rated thermal current Ith, A			32A	40A	63A	80A	100A	125A	160A	200A	250A	400A	630A
Rated insulation voltage Ui, V			750									1000	
Insulation 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, AC-23 380–415 V			250	320	500	640	800	1000		1600		3200	
Rated breaking capacity Icm, AC-23 380–415 V			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	AC-21	5000					1500				750	
	Cosφ = 0,65	AC-22	3000					1000				500	
	Cosφ = 0,35	AC-23	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	

Wiring diagrams



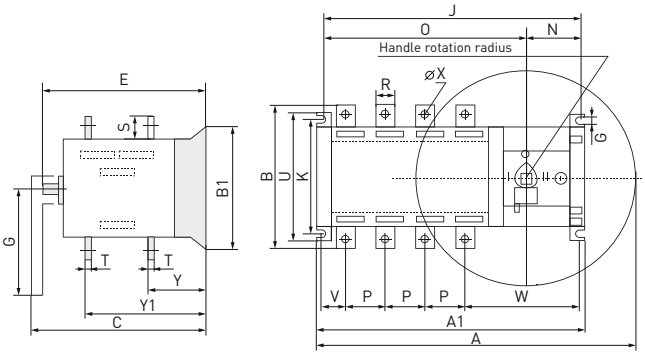
Overall and installation dimensions (mm)

TCP1 32A-100A



	32A		40A		63A		80A		100A	
	3p	4p	3p	4p	3p	4p	3p	4p	3p	4p
a	275	275	275	275	275	275	275	275	275	275
b	94	104	94	104	94	104	94	104	94	104
c	158	164	158	164	158	164	158	164	158	164
d	145	160	145	160	145	160	145	160	145	160
a1	126	128	126	128	126	128	126	128	126	128
a2	218	217	218	217	218	217	218	217	218	217
d1	35	35	35	35	35	35	35	35	35	35
e	62	62	62	62	62	62	62	62	62	62
e1	15	15	15	15	15	15	15	15	15	15
f	7	7	7	7	7	7	7	7	7	7
g	17	15	17	15	17	15	17	15	17	15
h	25	17	25	17	25	17	25	17	25	17
i	10	10	10	10	10	10	10	10	10	10
j	25	25	25	25	25	25	25	25	25	25
k	37	–	37	–	37	–	37	–	37	–
l	–	17	–	17	–	17	–	17	–	17
m	–	54	–	54	–	54	–	54	–	54
n	–	25	–	25	–	25	–	25	–	25
∅	6	6	6	6	6	6	6	6	6	6
∅1	20	20	20	20	20	20	20	20	20	–

TCP1 125A-630A



	125A		160A		200A		250A		400A		630A	
	3p	4p	3p	4p	3p	4p	3p	4p	3p	4p	3p	4p
A	376	406	376	406	416	466	416	466	455	515	455	515
A1	283,5	316	283,5	316	323,5	373,5	323,5	373,5	378,5	438,5	378,5	438,5
B	135	135	134	134	170	170	170	170	240	240	240	240
B1	134	134	134	134	134	134	134	134	208	208	208	208
C	261	261	261	261	261	261	261	261	333	333	333	333
E	208	208	208	208	208	208	208	208	270	270	270	270
G	166	166	166	166	166	166	166	166	166	166	166	166
J	262,5	295	262,5	295	302,5	353	302,5	353	358,5	418,5	358,5	418,5
K	78/108	78/108	78/108	78/108	78/108	78/108	78/108	78/108	176	176	176	176
L	7	7	7	7	7	7	7	7	11	11	11	11
N	87	87	87	87	87	87	87	87	103,5	103,5	103,5	103,5
O	175,5	207	175,5	207	215,5	266	215,5	266	255	315	255	315
P	36	36	36	36	50	50	50	50	65	65	65	65
R	20	20	20	20	25	25	25	25	32	32	40	40
S	25	25	25	25	30	30	30	30	40	40	50	50
T	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	5	5	6	6
U	134	134	134	134	134	134	134	134	208	208	208	208
V	33,5	33,5	33,5	33,5	40	40	40	40	31	31	31	31
W	155	155	155	155	164	164	164	164	191	182,5	191	182,5
∅X	9	9	9	9	11	11	11	11	12	12	12	12
Y	56	56	56	56	60	60	60	60	83	83	84	84
Y1	141	141	141	141	145	145	145	145	193	193	19	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.

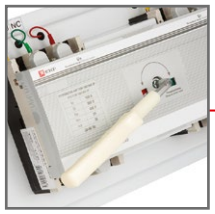
Name	Rated current, A	Control	Item code	
			3P	4P
ATS TCP1 32A 230V EKF	32	Relay	ats-tsr1-32A-3p-pro	ats-tsr1-32A-4p-pro
ATS TCP1 40A 230V EKF	40		ats-tsr1-40A-3p-pro	ats-tsr1-40A-4p-pro
ATS TCP1 50A 230V EKF	50		ats-tsr1-50A-3p-pro	ats-tsr1-50A-4p-pro
ATS TCP1 63A 230V EKF	63		ats-tsr1-63A-3p-pro	ats-tsr1-63A-4p-pro
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

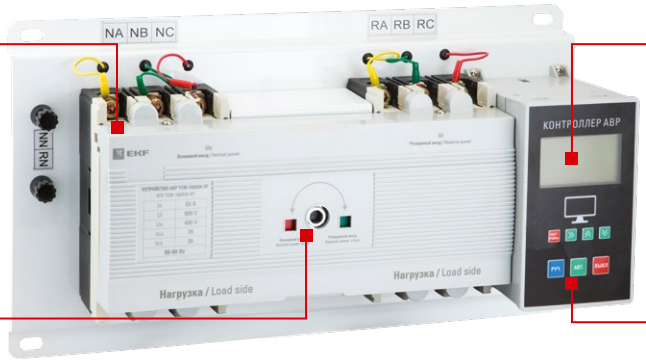
Automatic transfer switches TCM EKF are designed for backup power supply of equipment connected to power supply systems with primary and secondary inputs. The ATS automatically connects the secondary power line if the primary power line fails. Copper and aluminum wire connections are supported.
ATS TCM 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.

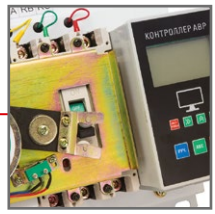
Compact monoblock design



Manual and automatic mode



Configurable security and access settings



Integrated short circuit and overload protection

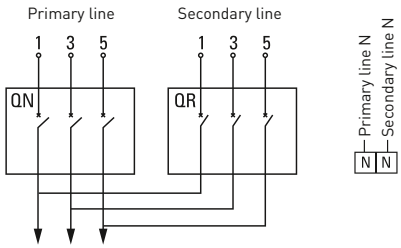
APPLICATION

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.

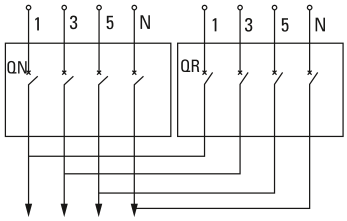
TECHNICAL DATA

External connections

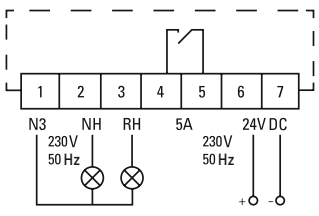
Three-pole ATS connection

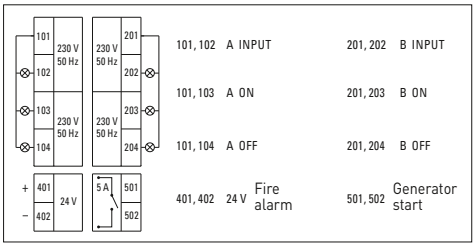


Four-pole ATS connection



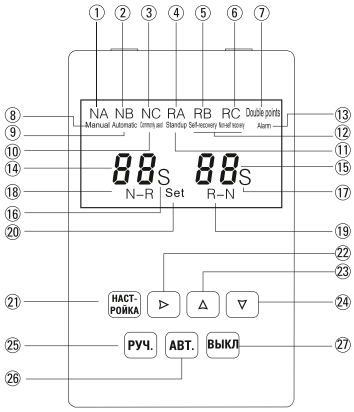
Control conductors connected to controller





Parameters	TCM-100	TCM-225	TCM-400	TCM-630
Rated current*, A	(25); (32); (40); (50); 63; (80); 100	(100); (125); 160; (180); 200; (225)	(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	35	35
Rated max. short-circuit current Imc, kA	105	187	143	143
Control	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			

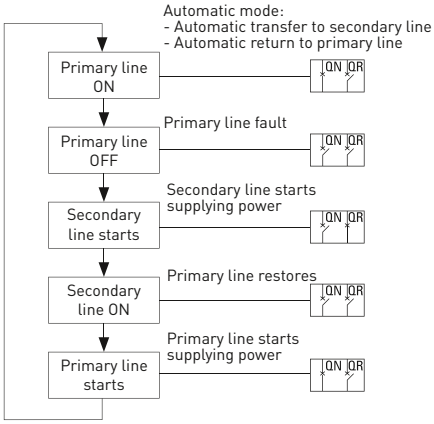
Controller LSD screen



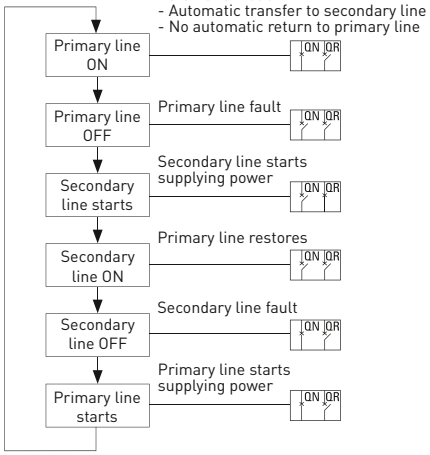
1. NA – primary power supply phase A voltage is OK. Not displayed, if phase A voltage exceeds the limits or is absent.
2. NB – primary power supply phase B voltage is OK. Not displayed, if phase B voltage exceeds the limits or is absent.
3. NC – primary power supply phase C voltage is OK. Not displayed, 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

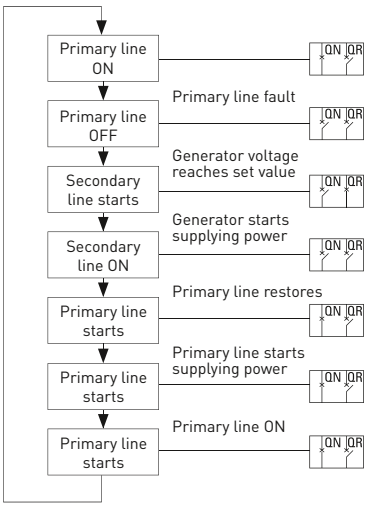
Mains - Mains



Mains - Mains



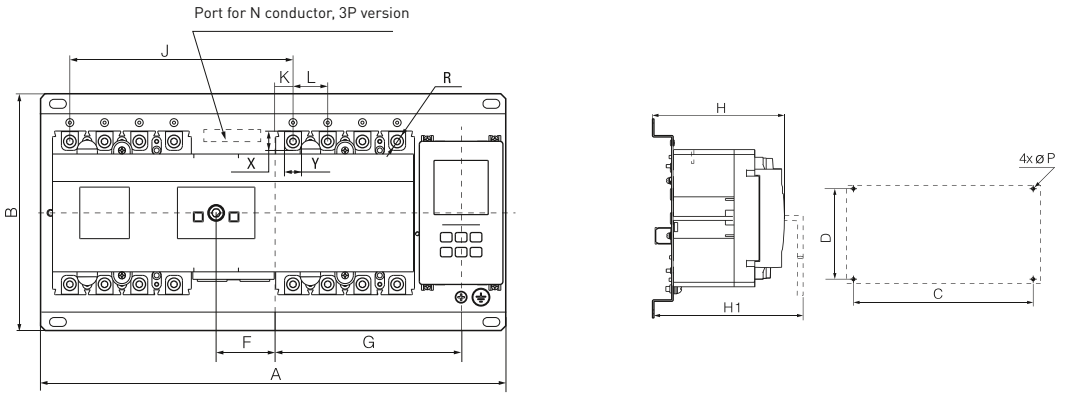
Mains - Generator



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

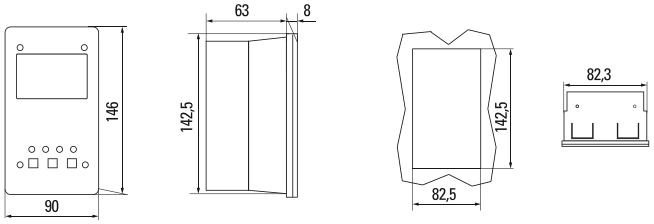
Overall and installation dimensions (mm)

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	⌀8	16,1	18,7	⌀8
TCM-225	470	470	240	385	735	220	160	190	152	60	18	36	225	⌀8	19,8	23,9	⌀9,6
TCM-400	615	615	330	435	555	300	200	227	195	78	26	48	305	⌀10	28	34	⌀12
TCM-630	740	740	330	555	680	300	200	232	232	102	32	60	385	⌀10	28	44	⌀12,8

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

* 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.

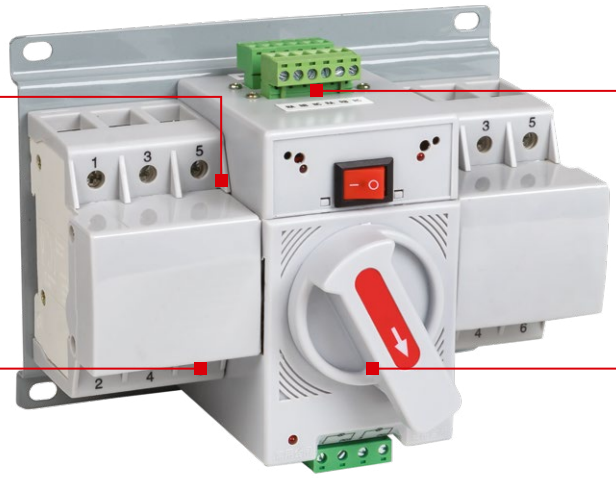
Picture	Name	Length, m	Item code
	Cable for ATS TCM controller 1,5 m EKF	1,5	ats-tsm-k-1.5
	Cable for ATS TCM controller 2 m EKF	2	ats-tsm-k-2

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

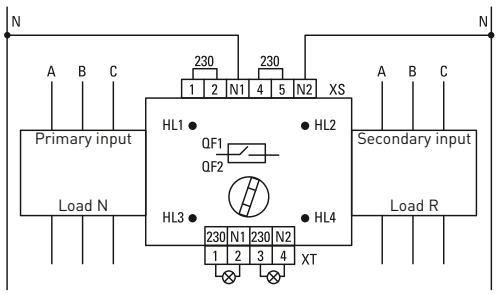
Automatic transfer switches MCB EKF are used for utilization category II applications:

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

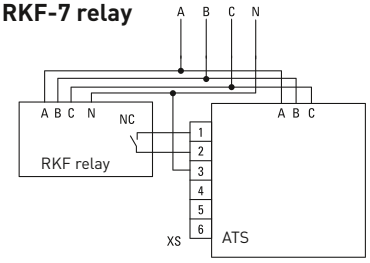
TECHNICAL DATA

Parameters	Values
Rated operating current, A	16–63
Trip curves	C
Utilization category	AC-1, AC-3
Trip current	5~10 In
Rated operating voltage Ue, V	400 (3-pole)
Rated frequency, Hz	50 / 60
Max. breaking capacity Icn, kA	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

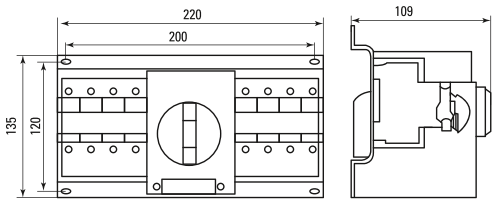
External connections



Option with RKF-7 relay



Overall and installation dimensions



All electrical works must 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	item code
ATS MCB 16A	3P	16	ats-mcb-16c-3p-pro
ATS MCB 20A		20	ats-mcb-20c-3p-pro
ATS MCB 25A		25	ats-mcb-25c-3p-pro
ATS MCB 32A		32	ats-mcb-32c-3p-pro
ATS MCB 40A		40	ats-mcb-40c-3p-pro
ATS MCB 50A		50	ats-mcb-50c-3p-pro
ATS MCB 63A		63	ats-mcb-63c-3p-pro

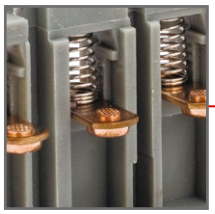
* 4-pole models - on order

Motor Management Components

Contactors KME 9-95A EKF

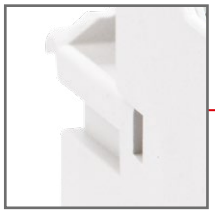
The contactors KME EKF are switching devices, consisting of electromagnetic coil, movable and fixed contacts, enclosed in a housing. When the coil is energized, the generated magnetic field attracts the movable contact, compressing the spring, establishing the electrical connection. When the coil is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

Standard: IEC 60947-4-1

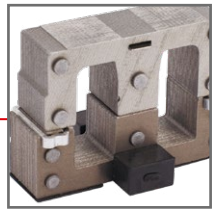


Hemispherical, spring-loaded self-positioning movable contacts. Bridge contact for faster arc extinguishing

Auxiliary contacts with textured surface for improved conductivity and reliable connection



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



High-grade electrical steel core coil for contacts securely engaged at rated voltage. Rubber dampers for noise free operation

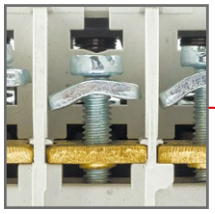
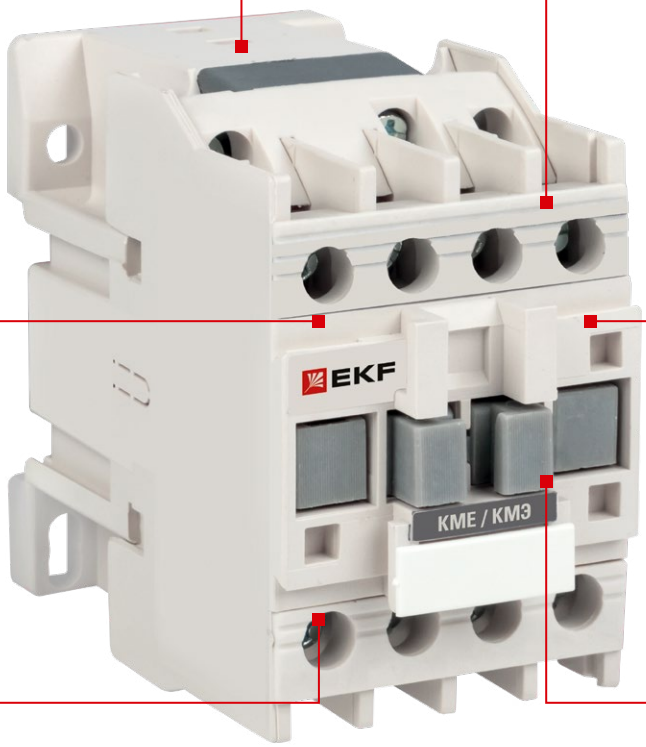


Plate-type terminals for secure wire connection

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



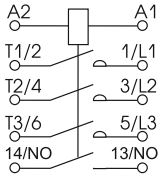
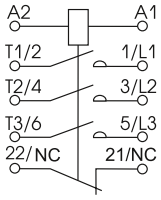
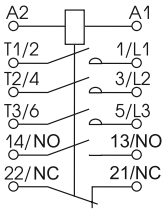
APPLICATION

The contactors KME EKF 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

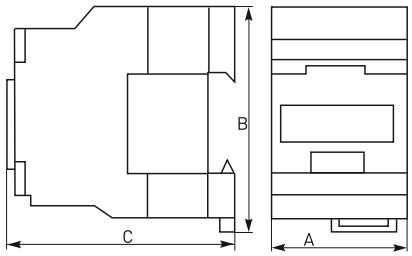
Wiring diagrams

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
		

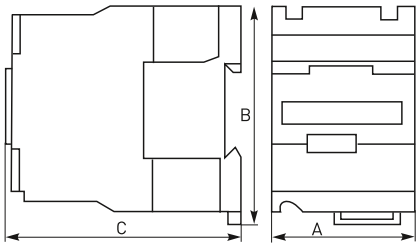
Parameters			KME 9A	KME 12A	KME 18A	KME 25A	KME 32A	KME 40A	KME 50A	KME 65A	KME 80A	KME 95A
Rated operating voltage Ue, V AC			220–240, 380–415, 660–690									
Rated frequency, Hz			50 / 60									
Rated power, kW	< +40°C, 220–240V	AC-3	2,2	3	4	5,5	7,5	11	15	18,5	22	25
	< +40°C, 380–415V		4	5,5	7,5	11	15	18,5	22	30	37	45
	< +40°C, 660–690V		5,5	7,5	10	15	18,5	30	33	37	45	45
Rated operating current, A	< +40°C, 380–415V	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									
Available auxiliary contacts			1NO or 1NC					1NO + 1NC				
Maximum short-time load (t<1 sec.), A			162	216	324	450	576	720	900	1170	1440	1710
Rated impulse withstand voltage Uimp, kV			8									
Rated insulation voltage Ui, V			690									
Conventional short-circuit current Inc, kA			1		3							5
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			24 / 36 / 110 / 220-240 / 380-415									
Control voltage ranges		Inrush	(0,8-1,1)Uc									
		Release	(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
Response 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
Connection of power circuit, mm		Stranded cable	1-4	1-4	1,5-6	1,5-6	2,5-6	6-16	10-25	10-25	16-35	16-35
		Solid 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		Stranded cable	1-4									
		Solid cable	1-4									
		Tightening torque, nm	1,5									
Compatible accessories		Auxiliary contact block	PKE 2NC; PKE 2NO; PKE 2NO+2NC; PKE 4NC; PKE 4NO; PKE NO+NC									
		Pneumatic time delay attachment	PVE 0,1-30 sec. ON delay; PVE 0,1-3 sec. ON delay; PVE 10-180 sec. ON delay. PVE 0,1-30 sec. OFF delay; PVE 0,1-3 sec. OFF delay; PVE 10-180 sec. OFF delay.									
		Interlocking devices	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

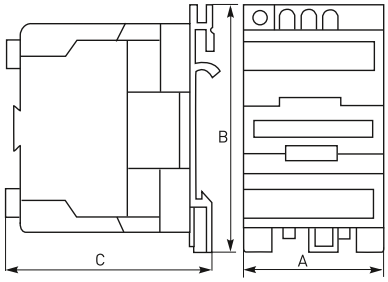
1NC or 1NO: KME 9A; KME 12A; KME 18A



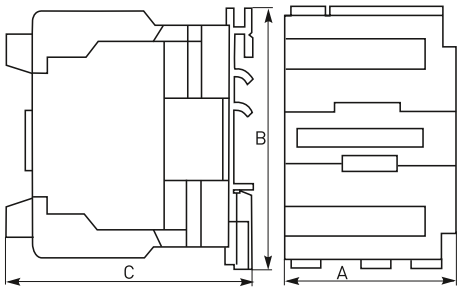
1NC or 1NO: KME 25A; KME 32A



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

*On order

Contactors KTE 115-630A EKF

The contactors KTE EKF 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, establishing the electrical connection. When the coil is de-energized, the spring pushes the movable contact back to its original position. Reversing contactors KTE (rev) are two contactors KTE installed on a single rail with a mechanical interlock to prevent accidental simultaneous operation of both contactors. Power contacts are connected by compatible busbars.

Standard: IEC 60947-4-1

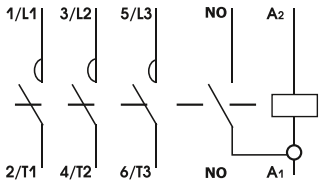
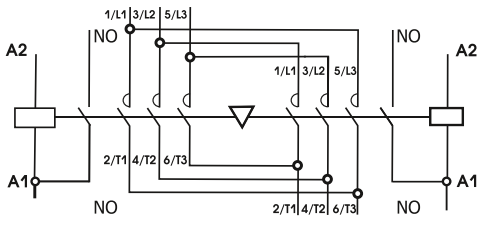
APPLICATION

The contactors KME EKF 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

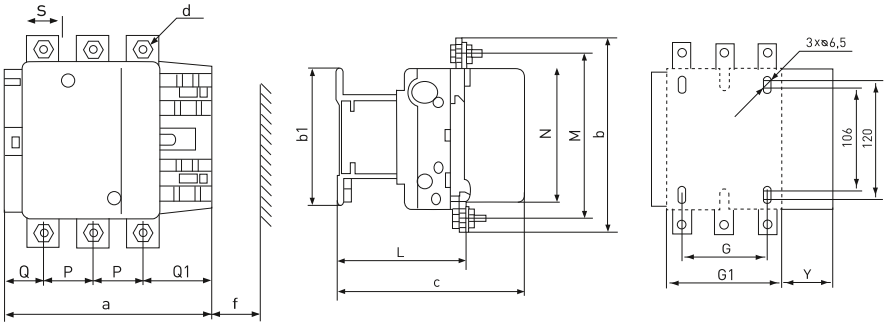
Wiring diagrams

KTE	KTE rev
	

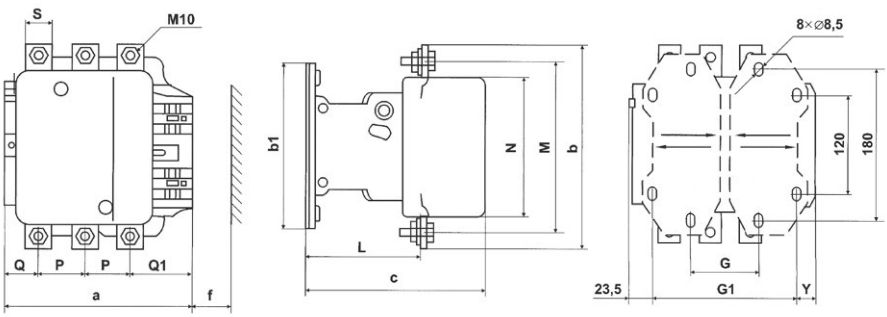
Parameters		KTE 115A	KTE 150A	KTE 185A	KTE 225A	KTE 265A	KTE 330A	KTE 400A	KTE 500A	KTE 630A
Rated operating voltage Ue, V AC		220-240, 380-415, 660-690								
Rated frequency, Hz		50 / 60								
Auxiliary contacts		1NO								
Conventional thermal current, A	AC-1	200	250	275	315	350	400	500	700	1000
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, kA		5	10				18			
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, V AC		220-240 / 380-415								
Control voltage range	Operate	(0,8–1,1) × Uc								
	Release	(0,3–0,6) × Uc								
Power consumption at 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
Stranded 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								
Stranded 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

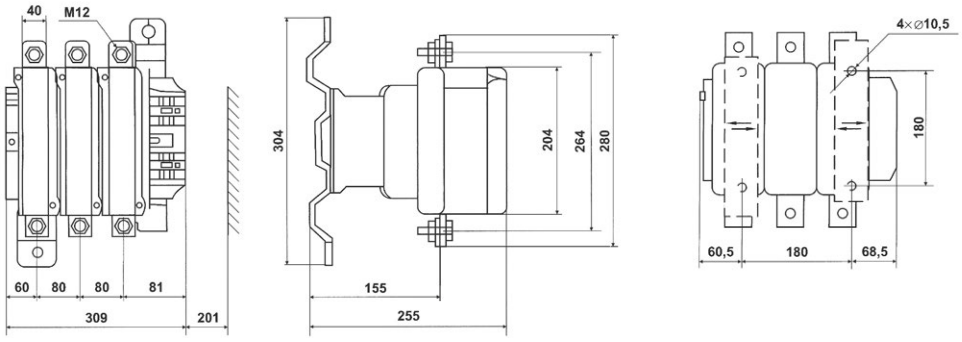


KTE 400A; KTE 500A

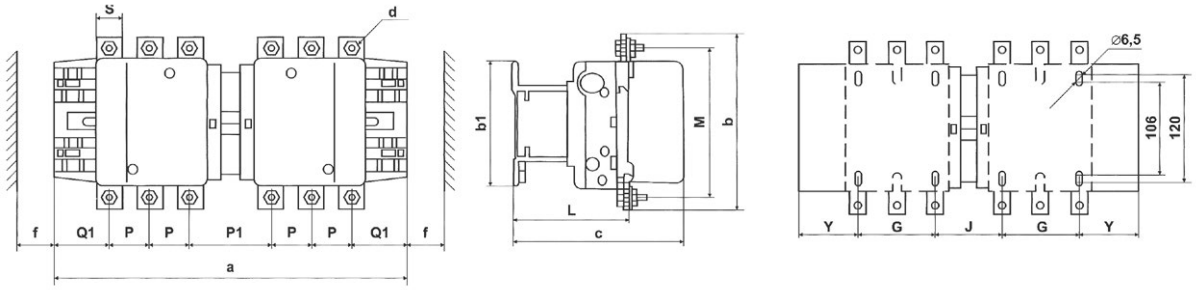


Dimensions, mm	KTE 115 A	KTE 150 A	KTE 185 A	KTE 225 A	KTE 265 A	KTE 330 A	KTE 400 A	KTE 500 A
a	163,5	163,5	168,5	168,5	201,5	213	213	233
P	37	40	40	48	48	48	48	55
Q	29,5	26	29	21	39	43	43	46
Q1	60	57,5	59,5	51,5	66,5	74	74	77
S	20	20	20	25	25	25	25	30
d	M6	M8	M8	M10	M10	M10	-	-
f	131	131	130	130	147	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

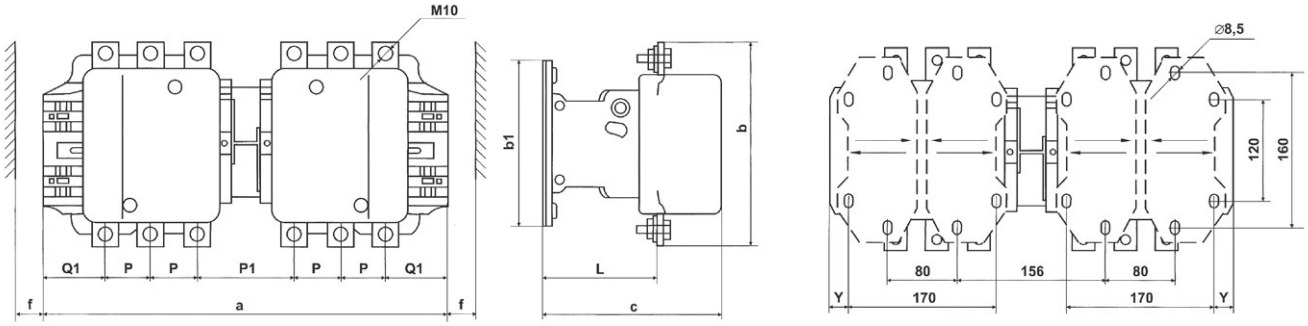
KTE 630 A



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

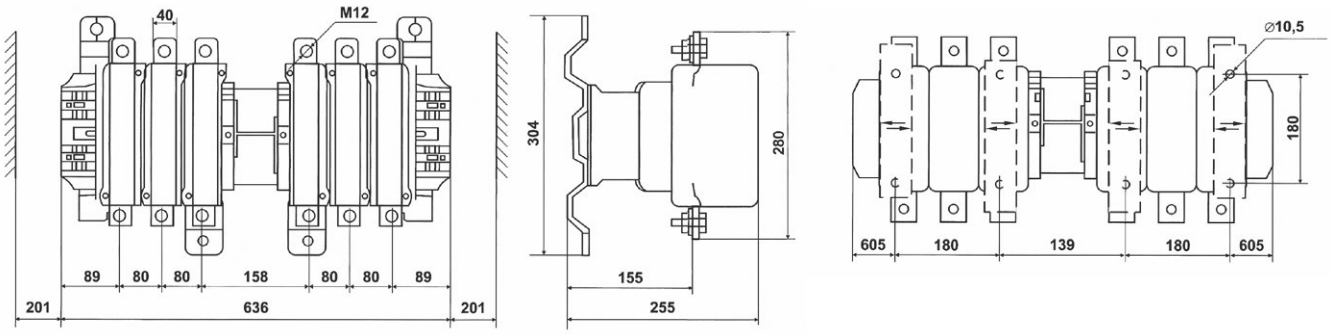


KTE rev 400 A; KTE rev 500 A

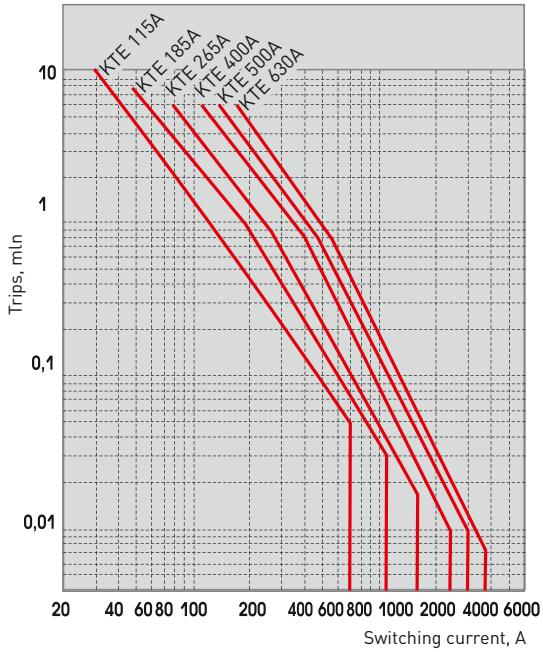


Dimensions, mm	KTE rev 115 A	KTE rev 150 A	KTE rev 185 A	KTE rev 225 A	KTE rev 265 A	KTE rev 330 A	KTE rev 400 A	KTE rev 500 A
a	346	346	357	357	424	445	445	485
P	37	40	40	48	48	48	48	55
P1	78	72	78	62	99	105	105	111
Q1	60	57,5	59,5	51,5	66,5	74	74	77
S	20	20	20	25	25	25	25	30
d	M6	M8	M8	M10	M10	M10	–	–
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:
1. Auxiliary contact block PKE EKF
2. Pneumatic time delay attachment PVE EKF
3. Replaceable control coil EKF

Copper and aluminum wire connections are supported.

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

*On order

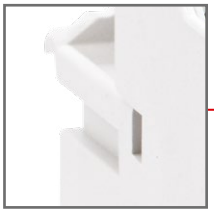
Contactors KMEp 9-95A EKF

The contactors KMEp EKF 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, establishing the electrical connection. When the coil is de-energized, the spring pushes the movable contact back to its original position. Copper and aluminum wire connection options are supported.

Standard: IEC 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

High-grade electrical steel core coil for contacts securely engaged at rated voltage. Rubber dampers for noise free operation

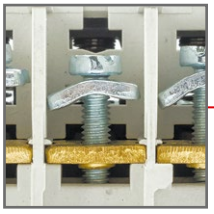


Plate-type terminals for secure wire connection

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

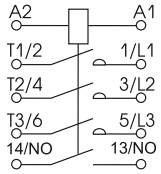
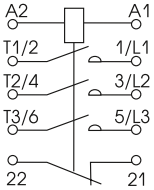
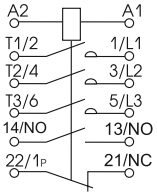
APPLICATION

The contactors KMEp EKF 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

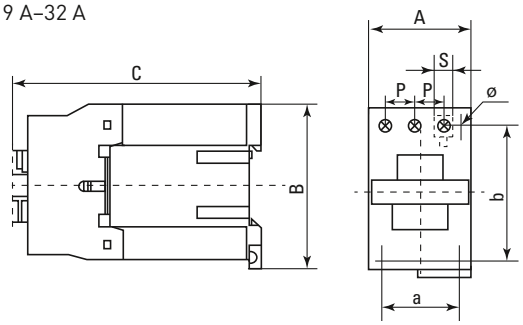
Wiring diagrams

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

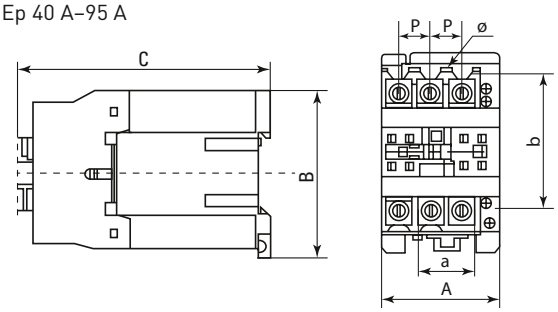
Contactor type			KMEp 9 A	KMEp 12 A	KMEp 18 A	KMEp 25 A	KMEp 32 A	KMEp 40 A	KMEp 50 A	KMEp 65 A	KMEp 80 A	KMEp 95 A
Rated operating voltage Ue, V AC			220 / 230 / 240 / 380 / 400 / 415 / 660 / 690									
Rated frequency, Hz			50 / 60									
Rated operating current, A	380-415 V	AC-3	9	12	18	25	32	40	50	65	80	95
		AC-4	3,5	5	7,7	8,8	12	18,5	24	28	37	44
	660 / 690 V	AC-3	6,6	8,9	12	18	21	34	39	42	49	55
		AC-4	1,5	2	3,8	4,4	7,5	9	12	14	17,3	21,3
Rated thermal current, A			25	25	32	40	50	60	80	80	125	125
Rated power, kW	220-240 V		2,2	3	4	5,5	7,5	11	15	18,5	22	25
	380-400 V		4	5,5	7,5	11	15	18,5	22	30	37	45
	415 V		4	5,5	9	11	15	22	30	37	45	45
	500 V		5,5	7,5	10	15	18,5	22	30	37	55	55
	660 / 690 V		5,5	7,5	10	15	18,5	30	33	37	45	55
Number of poles			3P									
Rated insulation voltage Ui, V			690									
Mechanical endurance, O-C mln cycles			10				8				6	
Electrical endurance, O-C mln cycles	AC-3		1				0,8				0,6	
	AC-4		0,2					0,15		0,1		
Rated operating voltage of control coil, V DC			24, 110, 220									
Control voltage range	Operate		(0,85–1,1) Us									
	Release		(0,1–0,75) Us									
Auxiliary contacts			1NO					1NO+1NC				
Degree of protection			IP20									
Power circuit connection, mm	Stranded cable		1–2,5		1,5–4		2,5–6	6–16		10–25		16–35
	Solid 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	Stranded cable		1–4									
	Solid cable		1-4									
	Tightening torque, N·m		1,2									
Accessories	Auxiliary contact block		PKE 2NC; PKE 2NO; PKE 2NO+2NC; PKE 4NC; PKE 4NO; PKE NO+NC									
	Time relay		PVE 0,1-30 sec. ON delay; PVE 0,1-3 sec. ON delay; PVE 10-180 sec. ON delay. PVE 0,1-30 sec. OFF delay; PVE 0,1-3 sec. OFF delay; PVE 10-180 sec. OFF delay.									
	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

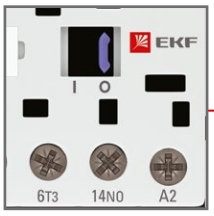
1. Contactors KMEp EKF are supplied in an individual package.
2. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Name	Contact configuration	Rated power at 380-415 V AC, kW	Rated current, A		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-pm*	ctr-s-9-110-1nc-pm*	ctr-s-9-220-1nc-pm*
	1NO				ctr-s-9-24-pm	ctr-s-9-110-pm*	ctr-s-9-220-pm*
KMEp 12 A EKF	1NC	5,5	12	27	ctr-s-12-24-1nc-pm*	ctr-s-12-110-1nc-pm*	ctr-s-12-220-1nc-pm*
	1NO				ctr-s-12-24-pm	ctr-s-12-110-pm*	ctr-s-12-220-pm*
KMEp 18 A EKF	1NC	7,5	18	32	ctr-s-18-24-1nc-pm*	ctr-s-18-110-1nc-pm*	ctr-s-18-220-1nc-pm*
	1NO				ctr-s-18-24-pm	ctr-s-18-110-pm*	ctr-s-18-220-pm*
KMEp 25 A EKF	1NC	11	25	43	ctr-s-25-24-1nc-pm*	ctr-s-25-110-1nc-pm*	ctr-s-25-220-1nc-pm*
	1NO				ctr-s-25-24-pm	ctr-s-25-110-pm*	ctr-s-25-220-pm*
KMEp 32 A EKF	1NC	15	32	55	ctr-s-32-24-1nc-pm*	ctr-s-32-110-1nc-pm*	ctr-s-32-220-1nc-pm*
	1NO				ctr-s-32-24-pm	ctr-s-32-110-pm*	ctr-s-32-220-pm*
KMEp 40 A EKF	1NO + 1NC	18,5	40	60	ctr-s-40-24-nc-pm*	ctr-s-40-110-nc-pm*	ctr-s-40-220-nc-pm*
KMEp 50 A EKF		22	50	100	ctr-s-50-24-nc-pm*	ctr-s-50-110-nc-pm*	ctr-s-50-220-nc-pm*
KMEp 65 A EKF		30	65	115	ctr-s-65-24-nc-pm*	ctr-s-65-110-nc-pm*	ctr-s-65-220-nc-pm*
KMEp 80 A EKF		37	80	133	ctr-s-80-24-nc-pm*	ctr-s-80-110-nc-pm*	ctr-s-80-220-nc-pm*
KMEp 95 A EKF		45	95	145	ctr-s-95-24-nc-pm*	ctr-s-95-110-nc-pm*	ctr-s-95-220-nc-pm*

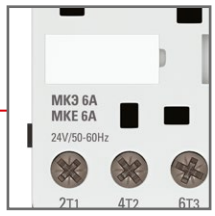
Mini contactors MKE 6-16A EKF

The mini contactors MKE EKF 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, establishing the electrical connection. When the coil is de-energized, the spring pushes the movable contact back to its original position. Copper and aluminum wire connections are supported.

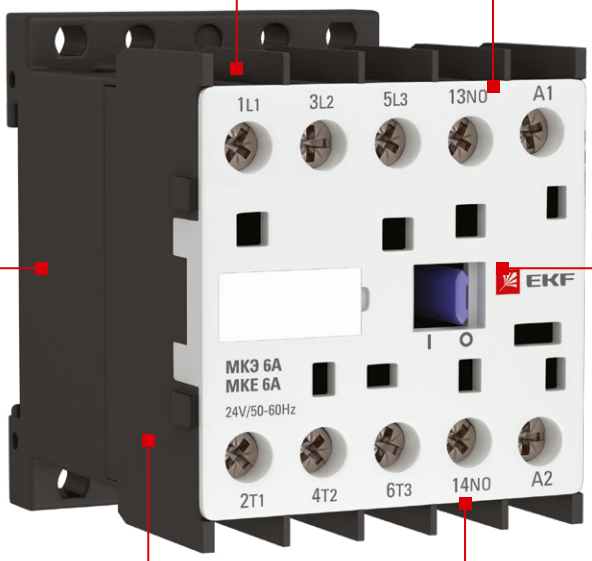
Standard: IEC 60947-4-1

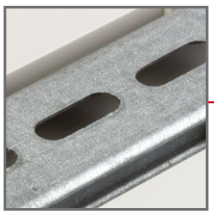


Auxiliary contacts for mini contactors to be used in automation systems

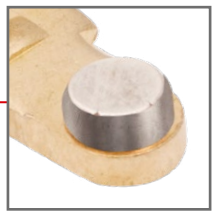


Dedicated labeling area for quick identification of contactors





DIN rail & mounting plate options



High endurance silver-plated contacts

Compact size

Plate-type terminals for secure wire connection

APPLICATION

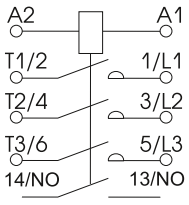
MKE contactors are a perfect solution for limited-space applications:

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

TECHNICAL DATA

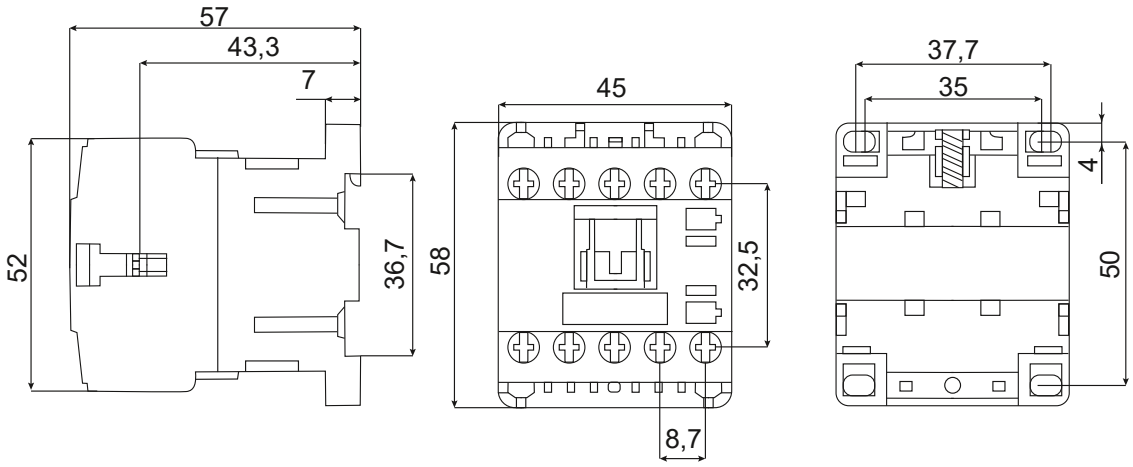
Wiring diagrams

MKE 6-16A



Parameters		MKE 6 A	MKE 9 A	MKE 12 A	MKE 16 A
Rated operating voltage Ue, V AC		220-240 / 380-415 / 660-690			
Rated frequency, Hz		50 / 60			
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, 220-240, 380-415			
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	220-240 V	1,5	2,2	3	4
	380-415 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			
Mounting type		35mm DIN rail			

Overall and installation dimensions (mm)



Delivery scope

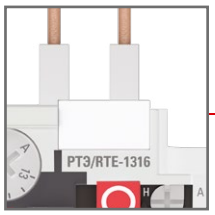
1. Mini contactors MKE EKF are supplied in an individual package.
2. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Name	Rated operating current, A	Rated power AC-3, kW			Item code		
		220-240 V	380-415 V	690 V	Rated voltage of control coil, V		
					24	220-240	380-415
Mini contactor MKE 6A 1NO EKF	6	1,5	2,2	3	mctr-s-6-24	mctr-s-6-230	mctr-s-6-400
Mini contactor MKE 9A 1NO EKF	9	2,2	4	4	mctr-s-9-24	mctr-s-9-230	mctr-s-9-400
Mini contactor MKE 12A 1NO EKF	12	3	5,5	4	mctr-s-12-24	mctr-s-12-230	mctr-s-12-400
Mini contactor MKE 16A 1NO EKF	16	4	7,5	4	mctr-s-16-24	mctr-s-16-230	mctr-s-16-400

Thermal overload relays RTE EKF

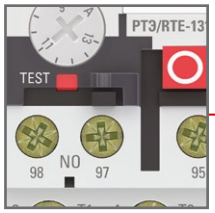
Thermal overload relays RTE EKF are designed to protect three-phase squirrel-cage asynchronous motors against prolonged overload and overcurrent, including those caused by phase loss fault. RTE-1XXX – RTE-3XXX models are compatible with contactors KME EKF. RTE-4XXX – RTE-5XXX models are compatible with contactors KTE EKF.

Standard: IEC 60947-4-1

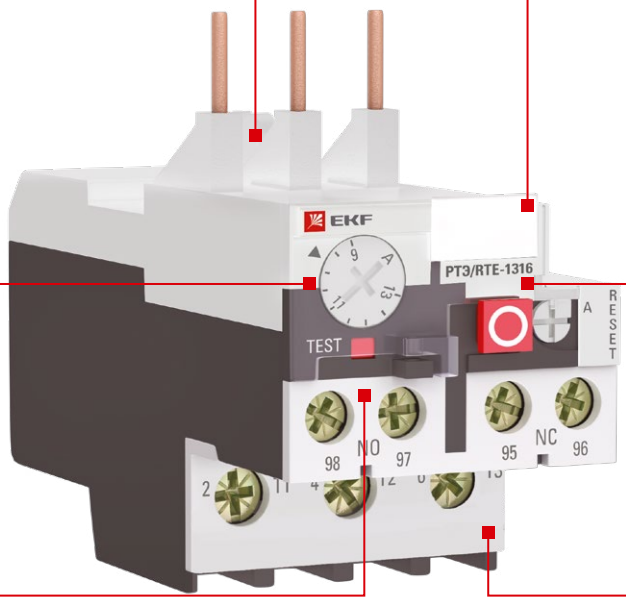


Dedicated labelling space for quicker and easier identification

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	Compatible 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.

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 60947-4-1

Picture	Name	Compatible relay	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 60947-4-1

Picture	Name	Number of contacts	Rated voltage, V AC	Thermal resistance current Ith, A	Degree of protection	Item code
	PKE 2NC EKF	2NC	690	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 60947-4-1

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

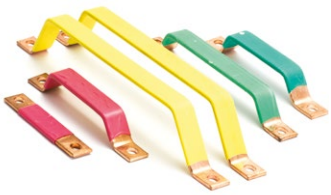
Mechanical interlock for contactor KME EKF

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

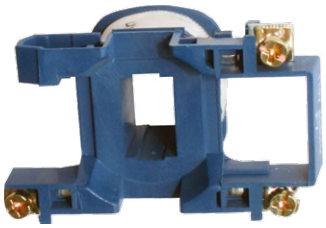
Motor protection relay MPR EKF

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-24m*
	Control coil for contactor KME 09-18A 36V EKF	36	ctr-k-09-18a-36m*
	Control coil for contactor KME 09-18A 110V EKF	110	ctr-k-09-18a-110m*
	Control coil for contactor KME 09-18A 220-240V EKF	220-240	ctr-k-09-18a-240m
	Control coil for contactor KME 09-18A 380-415V EKF	380-415	ctr-k-09-18a-415m
	Control coil for contactor KME 25-32A 24V EKF	24	ctr-k-25-32a-24m*
	Control coil for contactor KME 25-32A 36V EKF	36	ctr-k-25-32a-36m*
	Control coil for contactor KME 25-32A 110V EKF	110	ctr-k-25-32a-110m*
	Control coil for contactor KME 25-32A 220-240V EKF	220-240	ctr-k-25-32a-240m
	Control coil for contactor KME 25-32A 380-415V EKF	380-415	ctr-k-25-32a-415m
	Control coil for contactor KME 40-95A 24V EKF	24	ctr-k-40-95a-24m*
	Control coil for contactor KME 40-95A 36V EKF	36	ctr-k-40-95a-36m*
	Control coil for contactor KME 40-95A 110V EKF	110	ctr-k-25-32a-110m*
	Control coil for contactor KME 40-95A 220-240V EKF	220-240	ctr-k-40-95a-240m
	Control coil for contactor KME 40-95A 380-415V EKF	380-415	ctr-k-40-95a-415m

*On order

Control coil for contactor KTE EKF

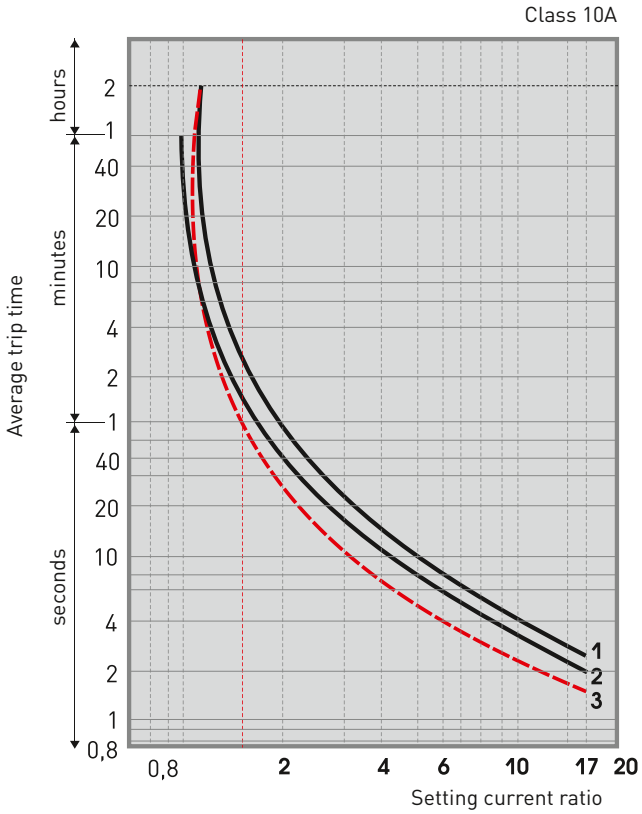
Control coils KTE are used for contactor control by applying voltage to the coil.

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 185A-225A 220V EKF	230	ctr-k-b-185/220
	Control coil for contactor KTE F 185A-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

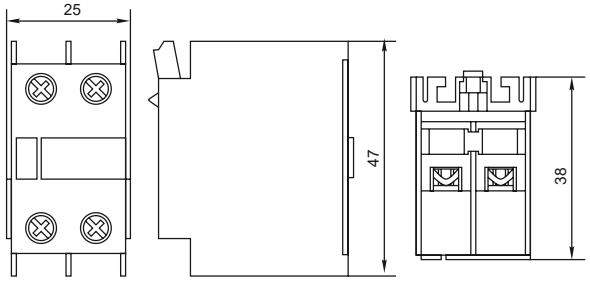
Tripping characteristics

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).

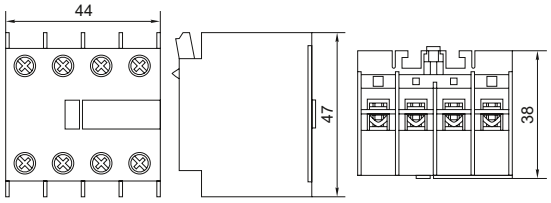


Overall and installation dimensions (mm)

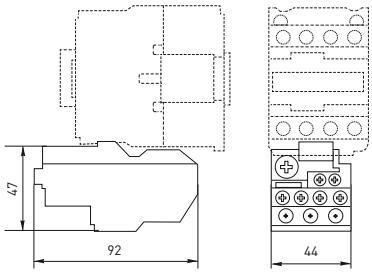
Auxiliary contact block PKE
PKE 2NC, PKE 2NO , PKE NO+NC



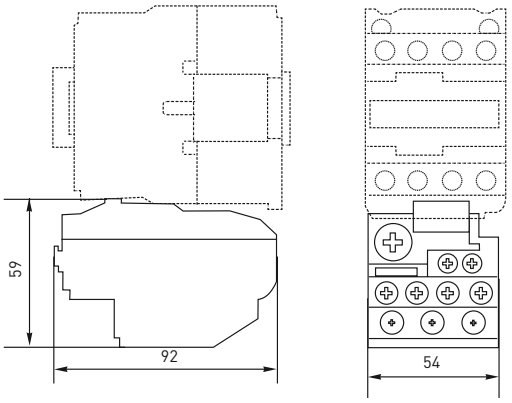
PKE 2NO+2NC, PKE 4NC, PKE 4NO



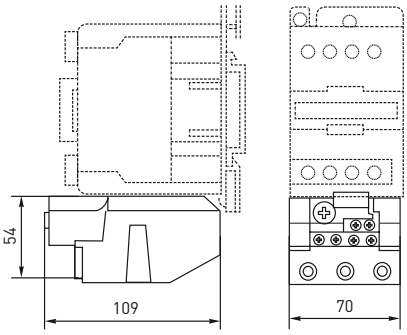
Thermal overload relays RTE
RTE-1304, RTE-1305, RTE-1306, RTE-1307, RTE-1308, RTE-1310, RTE-1312, RTE-1314, RTE-1316, RTE-1321, RTE-1322



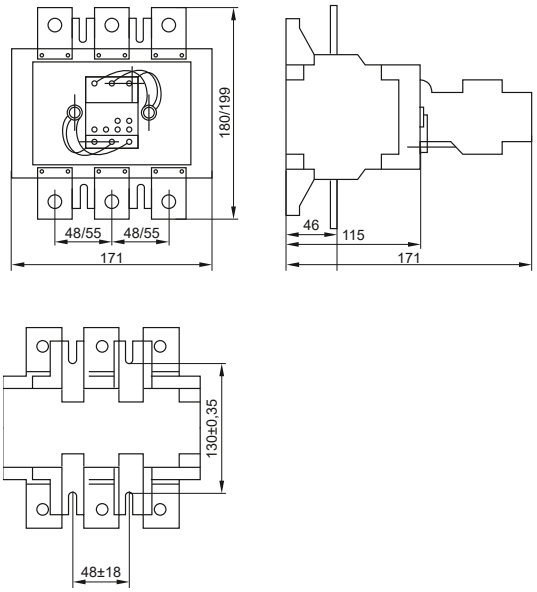
RTE-2353, RTE-2355



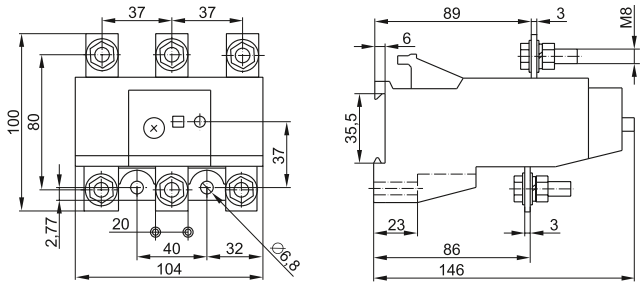
RTE-3353, RTE-3355, RTE-3357, RTE-3359, RTE-3361, RTE-3363, RTE-3365



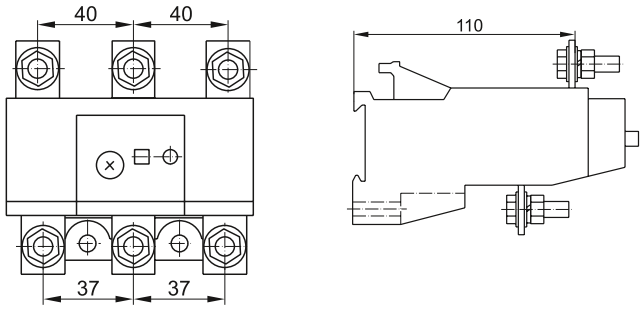
RTE-53125



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

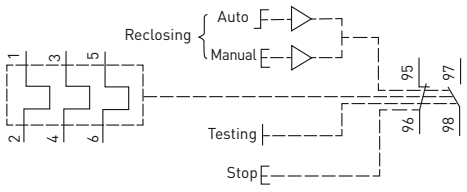


RTE-4355...RTE-4315
Option 2 (max. configuration)

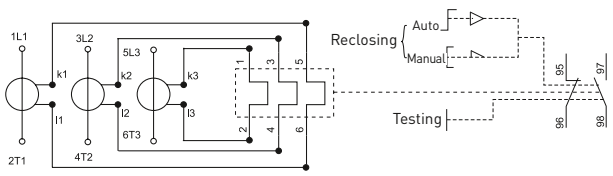


Wiring diagrams

Auxiliary contact block	
PKE 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 0,1-30 sec. ON delay PVE 0,1-3 sec. ON delay PVE 10-180 sec. ON delay	PVE 0,1-30 sec. OFF delay PVE 0,1-3 sec. OFF delay PVE 10-180 sec. OFF delay
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.

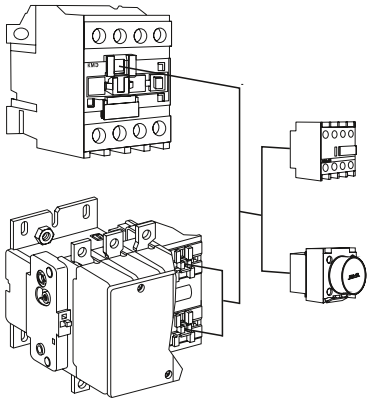


Figure 1

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

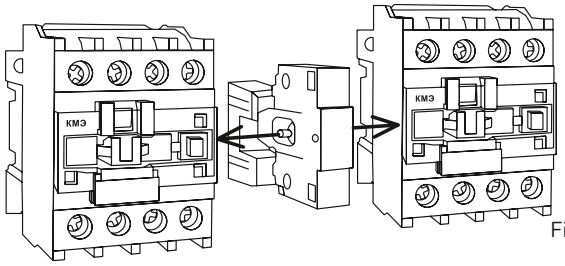


Figure 2

3. Thermal overload relays RTE

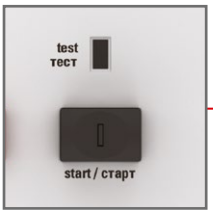
Relay setpoints are user-configurable. To change the trip setpoint, open the transparent cover on the relay housing. Set the required relay trip current by turning the adjustment dial on the left, lining up the desired current value (A) on the dial with the marking on the housing. The cover may be sealed 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

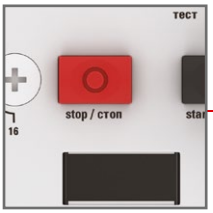
Motor starters APD-32, APD-80, GV2P with thermomagnetic release are designed for switching 50/60 Hz AC circuits up to 690 V, and for control and protection of three-phase asynchronous motors against overload, phase loss fault, and short circuit.

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

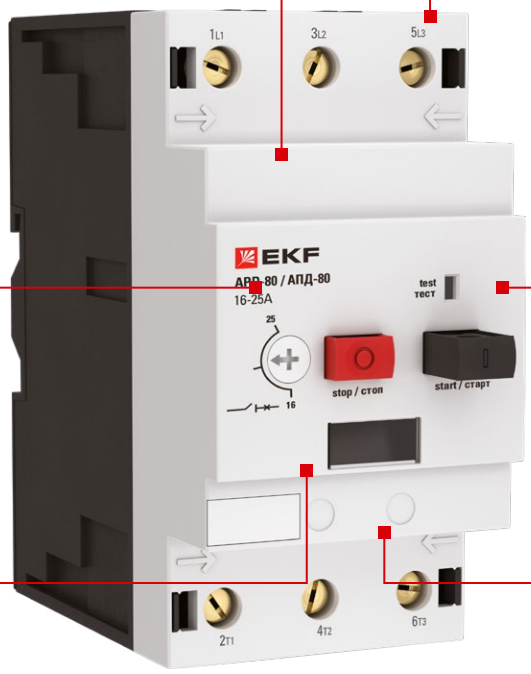
Easy configuration of thermal release with ampere scale



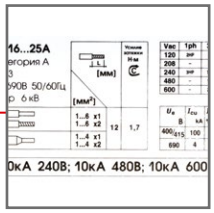
Test button to check release operation



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

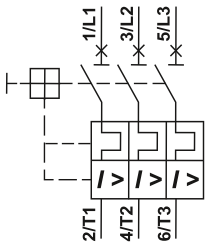
Motor starters can be used for remote control and protection of electric motors in a wide variety of applications:

- 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	380-690	
Rated insulation voltage Ui, V	690	
Rated impulse withstand voltage Uimp, kV	6	
Rated frequency, Hz	50 / 60	
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, mm^2	35	
Thermal release class, A	10	

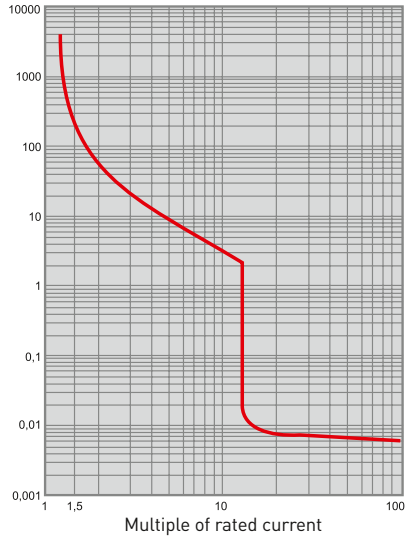
Breaking capacity

Rated operating current, A	Ultimate breaking capacity Icu & service breaking capacity Ics					
	380-415 V		500 V		660-690 V	
	Icu, кА	Ics, %Icu	Icu, кА	Ics, %Icu	Icu, кА	Ics, %Icu
APD-32, GV2P						
0,1–1,6	100	100	100	100	–	–
0,16–0,25	100	100	100	100	–	–
0,25–0,4	100	100	100	100	–	–
0,4–0,63	100	100	100	100	–	–
0,63–1	100	100	100	100	–	–
1–1,6	100	100	100	100	–	–
1,6–2,5	100	100	100	100	3	75
2,5–4	100	100	100	100	3	75
4–6,3	100	100	50	100	3	75
6–10	100	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

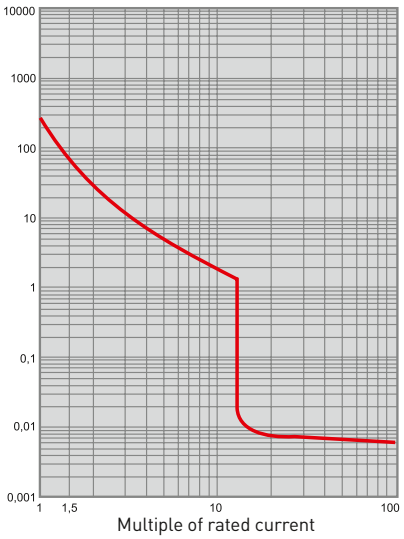
Tripping characteristics

Tripping time @ 20 °C by multiple of rated current

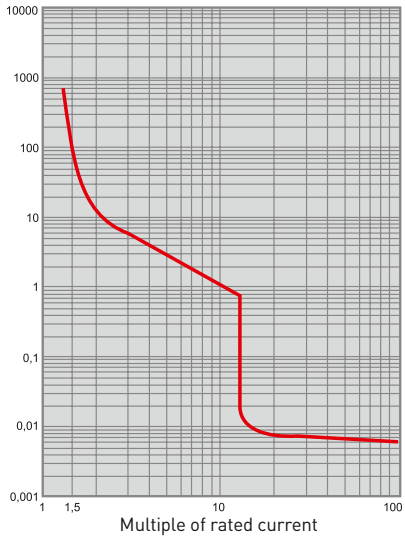
1 – three poles from cold position



2 – two poles from cold position

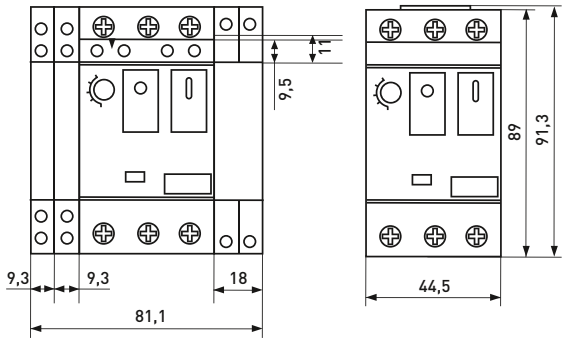


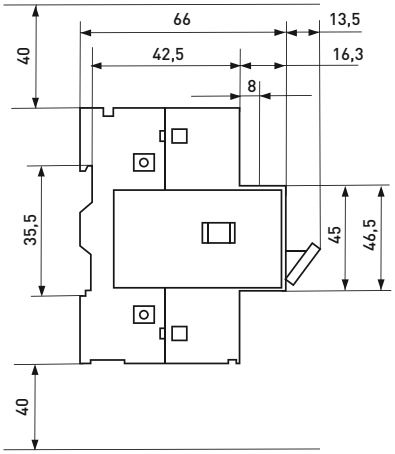
3 – three poles from hot position



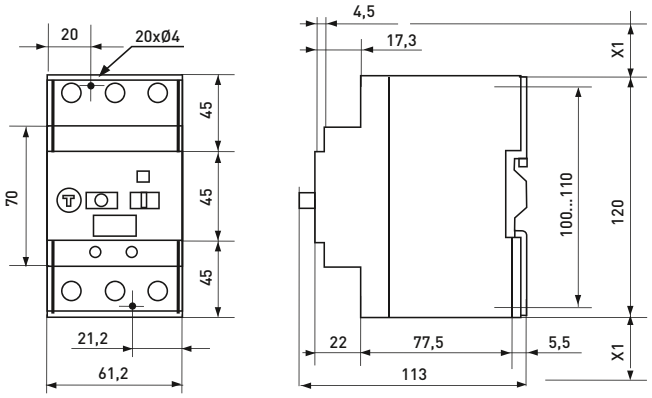
Overall and installation dimensions (mm)

APD-32



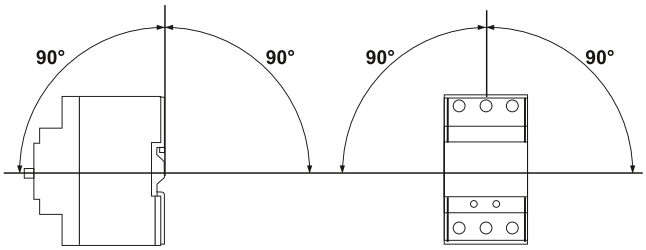


APD-80

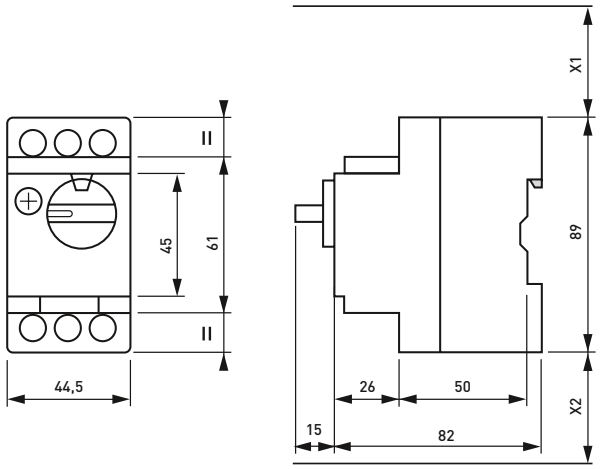


X1 – minimum distance between live parts	40 mm for Ue < 500 V
	50 mm for Ue < 690 V

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

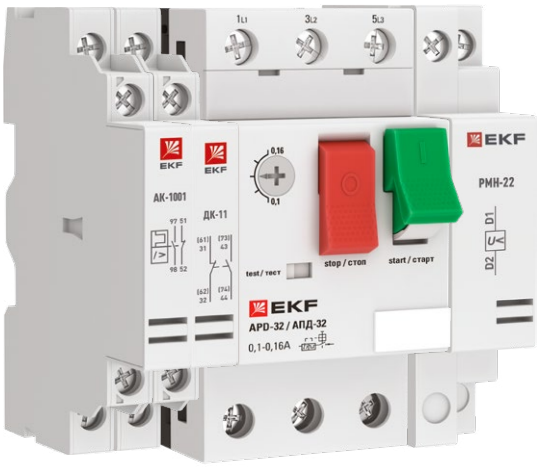
1. Motor starters GV2P, APD-32 (APD-80) are supplied in an individual package.
2. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Picture	Name	Setting range of thermal release Ir, A	Three-phase electric motor power, kW AC-3, 50/60Hz		Item code
			380-415 V	660-690 V	
	GV2P 0,4-0,63 A EKF	0,4-0,63	0,18	0,37	gv2pm-0.63-m
	GV2P 0,63-1,0 A EKF	0,63-1,0	0,25	0,55	gv2pm-1-m*
	GV2P 1,0-1,6 A EKF	1,0-1,6	0,55	1,1	gv2pm-1.6-m
	GV2P 1,6-2,5 A EKF	1,6-2,5	0,75	1,5	gv2pm-2.5-m
	GV2P 2,5-4 A EKF	2,5-4	1,5	3	gv2pm-4-m
	GV2P 4-6,3 A EKF	4-6,3	2,2	4	gv2pm-6.3-m
	GV2P 6-10 A EKF	6-10	4	7,5	gv2pm-10-m
	GV2P 9-14 A EKF	9-14	5,5	11	gv2pm-14-m
	GV2P 13-18 A EKF	13-18	7,5	15	gv2pm-18-m
	GV2P 17-23 A EKF	17-23	9	18,5	gv2pm-23-m
	GV2P 20-25 A EKF	20-25	11	–	gv2pm-25-m
	GV2P 24-32 A EKF	24-32	15	22	gv2pm-32-m

Picture	Name	Setting range of thermal release Ir, A	Three-phase electric motor power, kW		Item code
			AC-3, 50/60Hz		
			380-415 V	660-690 V	
	APD-32 0,1-0,16 A EKF	0,1–0,16	0,02	0,04	apd-me-0.16-m
	APD-32 0,16-0,25 A EKF	0,16–0,25	0,06	0,11	apd-me-0.25-m
	APD-32 0,25-0,4 A EKF	0,25–0,4	0,09	0,18	apd-me-0.4-m
	APD-32 0,4-0,63 A EKF	0,4–0,63	0,18	0,37	apd-me-0.63-m
	APD-32 0,63-1,0 A EKF	0,63–1	0,25	0,55	apd-me-1.0-m
	APD-32 1,0-1,6 A EKF	1–1,6	0,55	1,1	apd-me-1.6-m
	APD-32 1,6-2,5 A EKF	1,6–2,5	0,75	1,5	apd-me-2.5-m
	APD-32 2,5-4 A EKF	2,5–4	1,5	3	apd-me-4.0-m
	APD-32 4-6,3 A EKF	4–6,3	2,2	4	apd-me-6.3-m
	APD-32 6-10 A EKF	6–10	4	7,5	apd-me-10-m
	APD-32 9-14 A EKF	9–14	5,5	11	apd-me-14-m
	APD-32 13-18 A EKF	13–18	7,5	15	apd-me-18-m
	APD-32 17-23 A EKF	17–23	9	18,5	apd-me-23-m
	APD-32 20-25 A EKF	20-25	11	–	apd-me-25-m
	APD-32 24-32 A EKF	24-32	15	22	apd-me-32-m
	APD-80 16-25 A EKF	16-25	11	18,5	apd80-me-25-m
	APD-80 25-40 A EKF	25-40	18,5	30	apd80-me-40-m
	APD-80 40-63 A EKF	40-63	30	45	apd80-me-63-m
	APD-80 56-80 A EKF	56-80	37	55	apd80-me-80-m

Accessories for motor starters EKF

Accessories are designed to be used in electrical equipment control circuits based on motor starters. 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

Supported accessories

Motor starters can be complemented with shunt and undervoltage releases, auxiliary, alarm and EPO contacts.

Name	Contacts	Item code
Auxiliary and EPO alarm contact AK-0101 NC(alr)+NC(aux) for motor starter APD/GV2 EKF	NC+NC	apd-ad0101
Auxiliary and EPO alarm contact AK-0110 NC(alr)+NO(aux) for motor starter APD/GV2 EKF	NC+NO	apd-ad0110
Auxiliary and EPO alarm contact AK-1001 NO(alr)+NC(aux) for motor starter APD/GV2 EKF	NO+NC	apd-ad1001
Auxiliary and EPO alarm contact AK-1010 NO(alr)+NO(aux) for motor starter APD/GV2 EKF	NO+NO	apd-ad1010
Auxiliary side contact DKB-11 NO+NC for motor starter APD-80 EKF	NO+NC	apd80-a01
Auxiliary side contact DKB-20 2NO for motor starter APD-80 EKF	2NO	apd80-a02
Auxiliary side contact DKB-11 NO+NC for motor starter APD/GV2 EKF	NO+NC	apd-an-11
Auxiliary side contact DKB-20 2NO for motor starter APD/GV2 EKF	2NO	apd-an-20
Auxiliary front contact DKP-11 NO+NC for motor starter APD/GV2 EKF	NO+NC	apd-ae-11
Auxiliary front contact DKP-20 2NO for motor starter APD/GV2 EKF	2NO	apd-ae-20
Short-circuit alarm contact AK-1NC for motor starter APD/GV2 EKF	1NC	apd-am11

Name	Operating voltage, V	Item code
Undervoltage release RMN 110V for motor starter APD/GV2 EKF	110	apd-au110
Undervoltage release RMN 220V for motor starter APD/GV2 EKF	220-240	apd-au220
Undervoltage release RMN 380V for motor starter APD/GV2 EKF	380-400	apd-au380
Undervoltage release RMN 415V for motor starter APD/GV2 EKF	415	apd-au415
Shunt release RN 110V for motor starter APD/GV2 EKF	110	apd-sh110
Shunt release RN 230V for motor starter APD/GV2 EKF	220-240	apd-sh220
Shunt release RN 380V for motor starter APD/GV2 EKF	380-400	apd-sh380
Shunt release RN 415V for motor starter APD/GV2 EKF	415	apd-sh415

Name	Item code
Connecting busbar 2X45 for motor starter APD/GV2 EKF	apd-cb245
Connecting busbar 3X45 for motor starter APD/GV2 EKF	apd-cb345
Connecting busbar 4X45 for motor starter APD/GV2 EKF	apd-cb445
Connecting busbar 5X45 for motor starter APD/GV2 EKF	apd-cb545
Connection module for motor starter APD/GV2 EKF	apd-cb
Combination starter connection module APD/GV2 EKF	apd-af
External handle black for motor starter GV2 EKF	apd-APN01
Enclosure for motor starter APD EKF	apd-mc

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

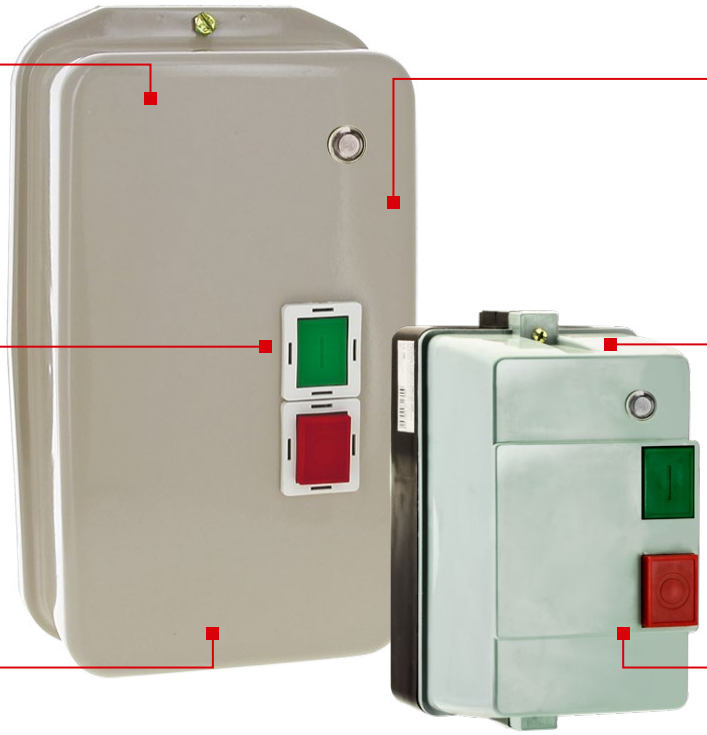
Enclosed direct-on-line starters with indication KME comprise contactor, thermal overload relay and control buttons mounted in a sealed IP65 housing. The starters are designed for remote start (by directly connecting the load to the power supply) and stop of three-phase squirrel-cage asynchronous electric 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 60947-4-1

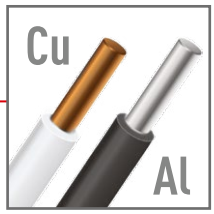
Motor overload protection

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

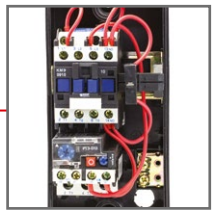
LED motor start indication



Start & Stop buttons on front panel



Copper and aluminum wire connections supported



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

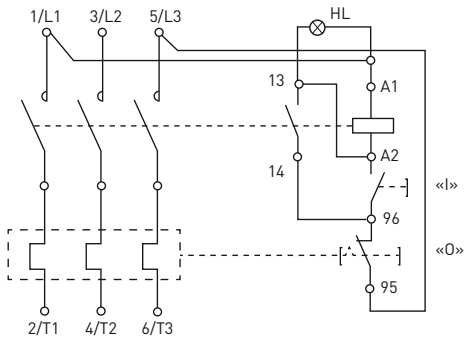
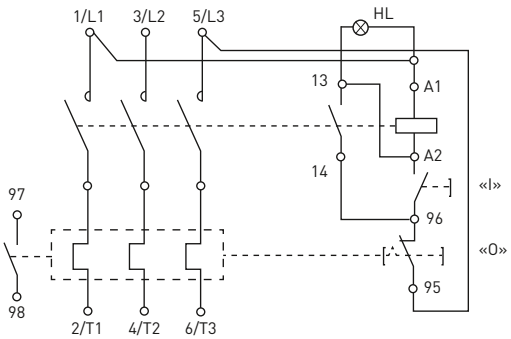
APPLICATION

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.
- Pump control circuits.
- Lifting and hoisting equipment.

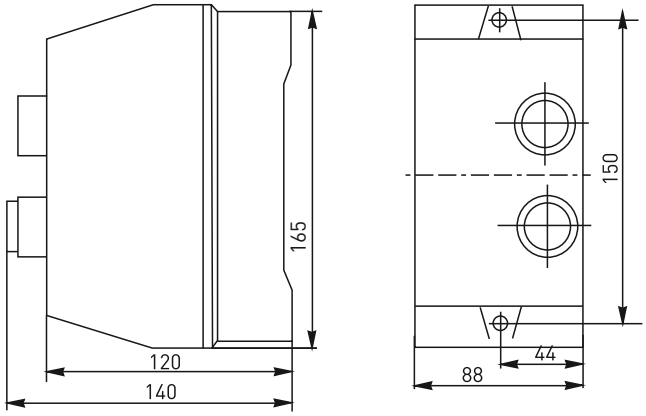
TECHNICAL DATA

Wiring diagrams

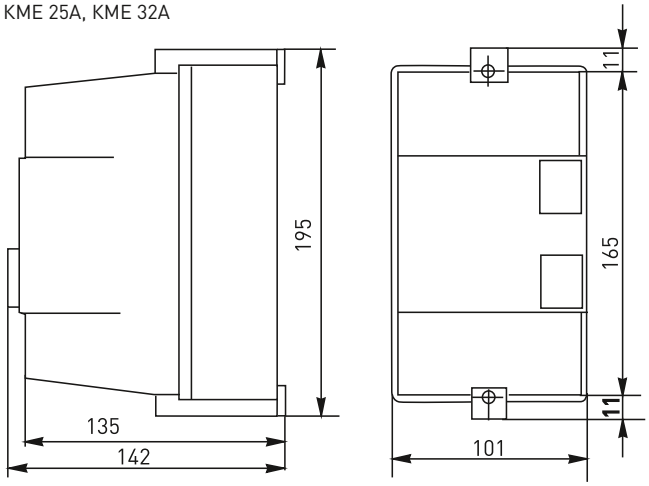
Enclosed direct-on-line starters KME 9 A – 32 A with indication	Enclosed direct-on-line starters KME 40 A – 95 A with indication
	

Overall and installation dimensions (mm)

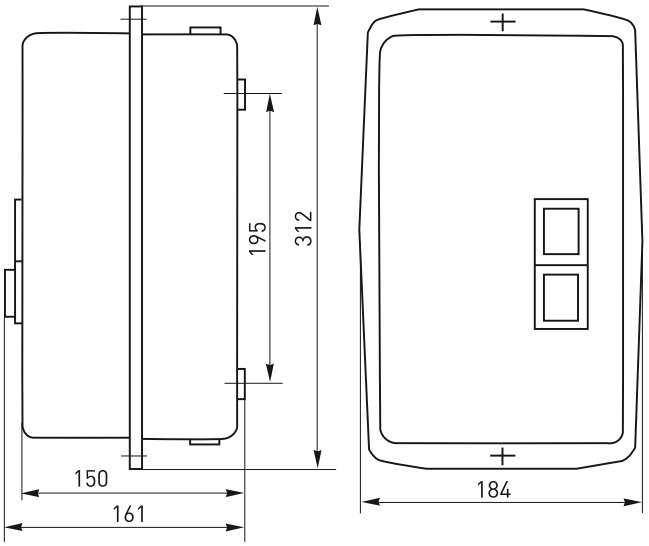
KME 09A, KME 12A, KME 18A



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 the inside 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 220-240V with thermal overload relay Ir-7-10A 50°C and indication IP65 EKF	Plastic	9	4	220-240	7-10	ctrp-r-9-240-led-m
KME 9A 380-415V with thermal overload relay Ir-7-10A 50°C and indication IP65 EKF		9	4	380-415	7-10	ctrp-r-9-415-led-m
KME 12A 220-240V with thermal overload relay Ir-9-13A 50°C and indication IP65 EKF		12	5,5	220-240	9-13	ctrp-r-12-240-led-m
KME 12A 380-415V with thermal overload relay Ir-9-13A 50°C and indication IP65 EKF		12	5,5	380-415	9-13	ctrp-r-12-415-led-m
KME 18A 220-240V with thermal overload relay Ir-12-18A 50°C and indication IP65 EKF		18	7,5	220-240	12-18	ctrp-r-18-240-led-m
KME 18A 380-415V with thermal overload relay Ir-12-18A 50°C and indication IP65 EKF		18	7,5	380-415	12-18	ctrp-r-18-415-led-m
KME 25A 220-240V with thermal overload relay Ir-17-25A 50°C and indication IP65 EKF		25	11	220-240	17-25	ctrp-r-25-240-led-m
KME 25A 380-415V with thermal overload relay Ir-17-25A 50°C and indication IP65 EKF		25	11	380-415	17-25	ctrp-r-25-415-led-m
KME 32A 220-240V with thermal overload relay Ir-23-32A 50°C and indication IP65 EKF		32	15	220-240	23-32	ctrp-r-32-240-led-m
KME 32A 380-415V with thermal overload relay Ir-23-32A 50°C and indication IP65 EKF		32	15	380-415	23-32	ctrp-r-32-415-led-m
KME 40A 220-240V with thermal overload relay Ir-30-40A 50°C and indication IP65 EKF	Metal	40	18,5	220-240	30-40	ctrp-r-40-240-led-m
KME 40A 380-415V with thermal overload relay Ir-30-40A 50°C and indication IP65 EKF		40	18,5	380-415	30-40	ctrp-r-40-415-led-m
KME 50A 220-240V with thermal overload relay Ir-37-50A 50°C and indication IP65 EKF		50	22	220-240	37-50	ctrp-r-50-240-led-m
KME 50A 380-415V with thermal overload relay Ir-37-50A 50°C and indication IP65 EKF		50	22	380-415	37-50	ctrp-r-50-415-led-m
KME 65A 220-240V with thermal overload relay Ir-48-65A 50°C and indication IP65 EKF		65	30	220-240	48-65	ctrp-r-65-240-led-m
KME 65A 380-415V with thermal overload relay Ir-48-65A 50°C and indication IP65 EKF		65	30	380-415	48-65	ctrp-r-65-415-led-m
KME 80A 220-240V with thermal overload relay Ir-63-80A 50°C and indication IP65 EKF		80	37	220-240	63-80	ctrp-r-80-240-led-m
KME 80A 380-415V with thermal overload relay Ir-63-80A 50°C and indication IP65 EKF		80	37	380-415	63-80	ctrp-r-80-415-led-m
KME 95A 220-240V with thermal overload relay Ir-80-93A 50°C and indication IP65 EKF		95	45	220-240	80-93	ctrp-r-95-240-led-m
KME 95A 380-415V with thermal overload relay Ir-80-93A 50°C and indication IP65 EKF		95	45	380-415	80-93	ctrp-r-95-415-led-m

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 60947-4-1

IP44 metal housing

Motor overload protection

Reversible motor control

Start, Stop & Reverse buttons at front panel

APPLICATION

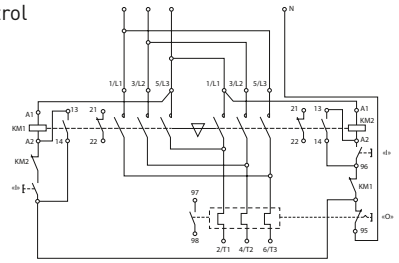
Reversible motor starters can be used for remote control and protection of electric motors in a wide variety of applications where a forward/reverse operation of the motor is mandated:

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

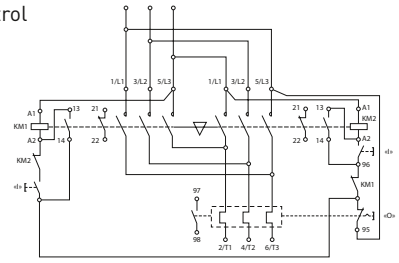
TECHNICAL DATA

Wiring diagrams

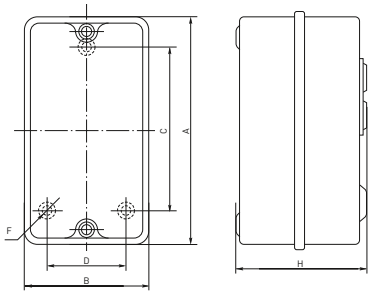
KME with control coil 220-240 V



KME with control coil 380-415 V



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	
				220-240	380-415
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 supported.

- Two motor control modes: scalar control (V/f) and open loop 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.
- Detachable operator panel that can be mounted onto the panel door to prevent unauthorised access to the panel internals.

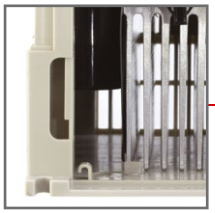
Standards: IEC 61800-5-1, IEC 61800-3

Ribbon cable for extenal control panel installation included

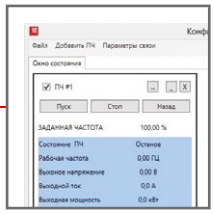
Standard cooling fan size and connector

Multilayer conformal PCB coating

Detachable control panel with two-line LED display



Internal structure facilitates cooling air flow



Free device management and control software

APPLICATION

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

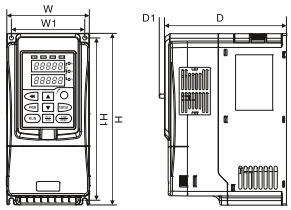
- Soft start, rotation speed control and overload protection of electric motors;
- Reduction of inrush current;
- Single-phase to three-phase conversion (single-phase converters).

TECHNICAL DATA

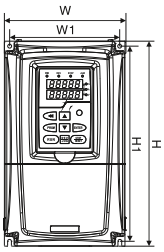
Parameters	Values
Minimum single-phase power (1x230), kW	0,4
Maximum single-phase power (1x230), kW	2,2
Minimum three-phase power (3x400), kW	0,75
Maximum three-phase power (3x400), kW	360
Output frequency, Hz	600
Output voltage @ 3x380 input, V	400
Carrier frequency, kHz	16
Starting torque, %	SVC – 150 @ 0,5 Hz; V/F – 150 @ 1 Hz
Overload capacity, %	150 for 60 s; 180 for 20 s
Open loop 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



b



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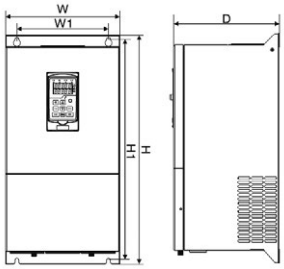
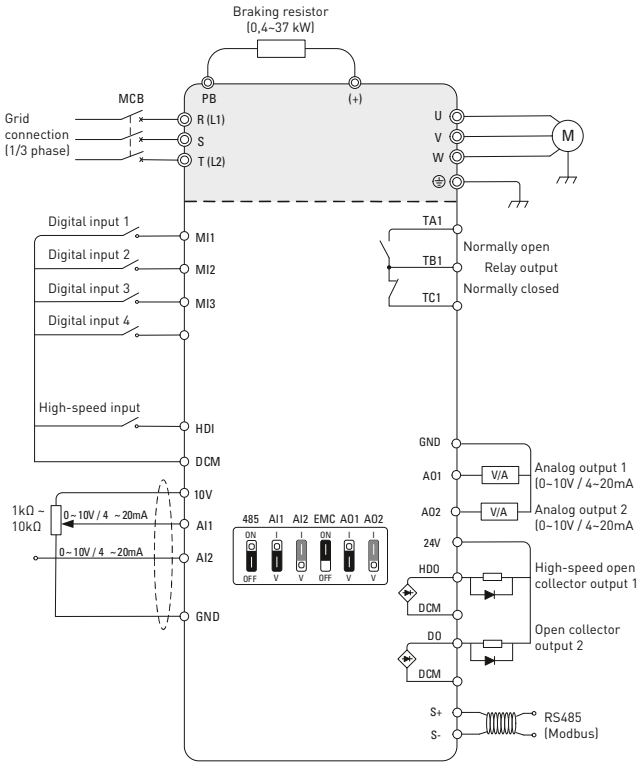


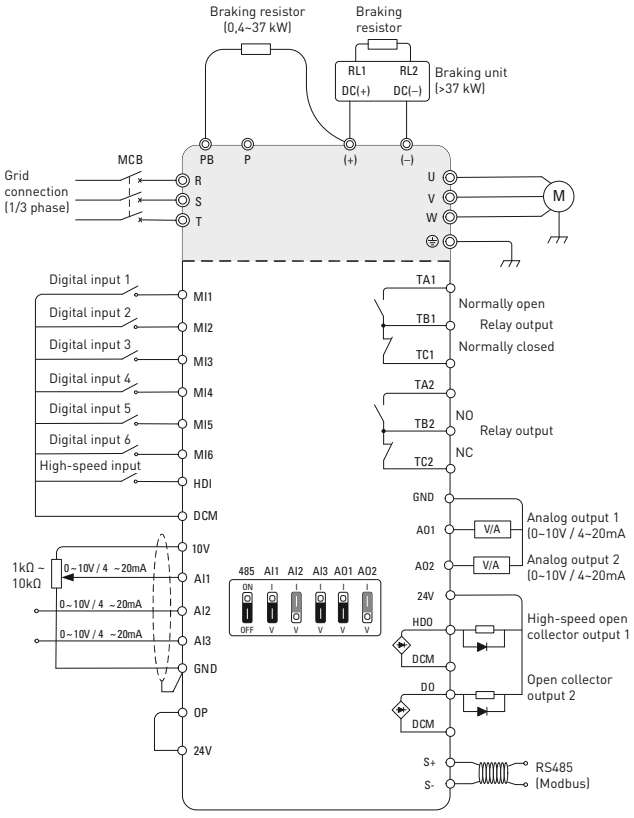
Item code	W	W1	H1	H	D	Fig.
	mm					
VT100-0R4-1(B)	90	80	177	187	133	a
VT100-0R7-1(B)						
VT100-1R5-1(B)						
VT100-2R2-1B						
VT100-0R7-3(B)						
VT100-1R5-3(B)						
VT100-2R2-3B						
VT100-4R0-3B	100	90	197	207	142	
VT100-5R5-3B	130	115	236,5	247	162	
VT100-7R5-3B						
VT100-011-3B	160	146	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

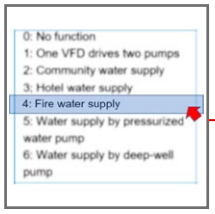
Name	Rated motor power, kW	Rated pump and fan drive power, kW	Rated input current, A	Rated output current, A	Item code
Single-phase, 230 V ± 20%					
Frequency converter VECTOR-100 0,4/0,75kW 1x230V EKF	0,4	0,75	5,4	2,3	VT100-0R4-1B
Frequency converter VECTOR-100 0,75/1,5kW 1x230V EKF	0,75	1,5	8,2	4	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 PRO-Drive 90 EKF

The PRO-Drive 90 EKF frequency converter is ideally suited for controlling a wide range of loads that do not require high-precision torque control, such as fans, pumps, and conveyors. It can handle motors from 1,5 to 400 kW at 400 V voltage.

- Two motor control modes: scalar (V/f) and open-loop vector control
- High resistance to voltage fluctuations: -15% sags and +20% surges
- Overload capacity of 150% for 60 seconds, enabling operation on difficult starts
- Wall-to-wall installation and operation at maximum temperatures without output derating
- Operational ambient temperature range: -10 to +40 °C, suitable for crowded control cabinet
- Remote display for control cabinet door installation, limiting service personnel access
- Built-in RS-485 interface with Modbus RTU protocol support for control system integration

Standards: IEC 61800-5-1, IEC 61800-3



Water pump macros

Multilayer conformal PCB coating

Side-by-side installation

Mounting kit included

Detachable control panel with two-line LED display

Easy-to-mount standard-size fan

APPLICATION

PRO-Drive 90 frequency converters are designed for use in light to medium-duty applications across various industries. They are particularly well-suited for HVAC systems, water treatment facilities, and small-scale manufacturing processes. These versatile devices offer:

- Precise motor speed control and energy optimization in fan and pump systems;
- Enhanced process control in food and beverage production lines;
- Improved efficiency in textile manufacturing equipment;
- Smooth operation of packaging and material handling systems.

TECHNICAL DATA

Parameters	Values
Min. three-phase power (3×400V), kW	1,50
Max. three-phase power (3×400V), kW	710
Output frequency, Hz	Vector control: 0–500 Scalar (V/f) control: 0–2000
Output voltage (3×400 V mains input), V	0–rated input voltage
Carrier frequency, kHz	0,5–16,0, controlled automatically depending on temperature and load profile
Breakaway torque, %	0,25 Hz / 150% (OLV); 0,5 Hz / 150% (V/f)
Permissible overload	G models: 150% / 60 sec, 180% / 3 sec P models: 120% / 60sec, 150% / 3 sec
Open-loop vector control (SVC)	Yes
Scalar (V/f) control	Yes
Digital inputs	DI1 - DI6, DI5 can be used as a high-speed pulse input
Analog inputs	AI1, AI2: (voltage 0-10V or current 4–20mA signal)

Parameters	Values
Digital outputs	2 open collector, FM can be used as a high-speed pulse output 0–100 kHz
Analog outputs	AO1, AO2: (voltage 0–10V or current 4–20mA signal)
Relay outputs	2
Braking resistor	1,5–37 kW models: built-in 45 kW + models: external braking module
RS-485, Modbus RTU	Yes
PID controller	Yes
Programmable frequency curve	Yes
Cooling	Cooling fan
Ambient temperature, °C	-10 to +40
Service life, years	Over 10
Warranty, years	3

Overall and installation dimensions

Fig. A

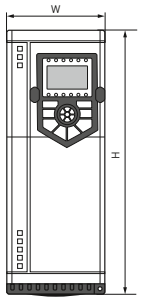
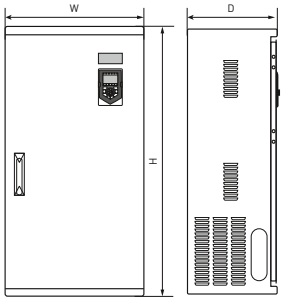
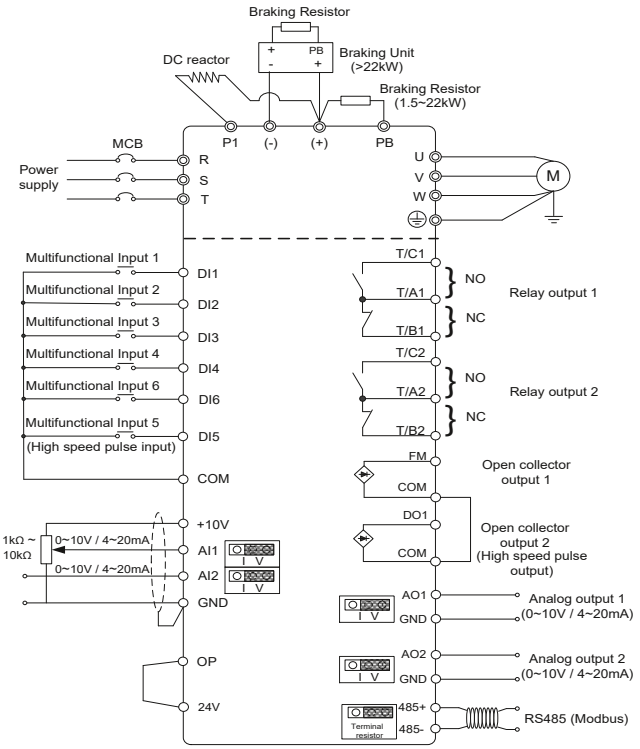


Fig. B



Item code	H	W	D	Fig.
	mm			
PD-90-FC-1K5-3-B	200	86	185	A
PD-90-FC-2K2-3-B				
PD-90-FC-4K0-3-B	238	97	185	
PD-90-FC-5K5-3-B				
PD-90-FC-7K5-3-B	320	116	210	
PD-90-FC-11K0-3-B				
PD-90-FC-15K0-3-B	383	142	257	
PD-90-FC-18K5-3-B				
PD-90-FC-22K0-3-B				
PD-90-FC-30K0-3-B	445	189	252	
PD-90-FC-37K0-3				
PD-90-FC-45K0-3	565	240	315	
PD-90-FC-55K0-3				
PD-90-FC-75K0-3				
PD-90-FC-93K0-3	638	268	350	
PD-90-FC-110K0-3				
PD-90-FC-132K0-3	738	350	405	
PD-90-FC-160K0-3				B
PD-90-FC-185K0-3	1025	525	350	
PD-90-FC-200K0-3				
PD-90-FC-220K0-3				
PD-90-FC-250K0-3	1150	555	355	
PD-90-FC-280K0-3				
PD-90-FC-315K0-3				
PD-90-FC-355K0-3	1450	650	390	
PD-90-FC-400K0-3				
PD-90-FC-450K0-3				
PD-90-FC-500K0-3	1800	800	550	
PD-90-FC-560K0-3				
PD-90-FC-630K0-3	1800	800	700	
PD-90-FC-710K0-3				

Wiring diagrams



Delivery scope

1. Frequency converter
2. Technical manual
3. Operation manual
4. External operator panel cable
5. Operator panel mounting frame

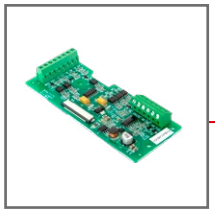
Name	Rated motor power, kW	Rated output current, A	Item code
Frequency converter 1,5kW 400V PRO-Drive 90 EKF	1,5	3,8	PD-90-FC-1K5-3-B
Frequency converter 2,2kW 400V PRO-Drive 90 EKF	2,2	5,1	PD-90-FC-2K2-3-B
Frequency converter 4kW 400V PRO-Drive 90 EKF	4	9	PD-90-FC-4K0-3-B
Frequency converter 5,5kW 400V PRO-Drive 90 EKF	5,5	13	PD-90-FC-5K5-3-B
Frequency converter 7,5kW 400V PRO-Drive 90 EKF	7,5	17	PD-90-FC-7K5-3-B
Frequency converter 11kW 400V PRO-Drive 90 EKF	11	25	PD-90-FC-11K0-3-B
Frequency converter 15kW 400V PRO-Drive 90 EKF	15	32	PD-90-FC-15K0-3-B
Frequency converter 18,5kW 400V PRO-Drive 90 EKF	18,5	37	PD-90-FC-18K5-3-B
Frequency converter 22kW 400V PRO-Drive 90 EKF	22	45	PD-90-FC-22K0-3-B
Frequency converter 30kW 400V PRO-Drive 90 EKF	30	60	PD-90-FC-30K0-3-B
Frequency converter 37kW 400V PRO-Drive 90 EKF	37	75	PD-90-FC-37K0-3
Frequency converter 45kW 400V PRO-Drive 90 EKF	45	91	PD-90-FC-45K0-3
Frequency converter 55kW 400V PRO-Drive 90 EKF	55	112	PD-90-FC-55K0-3
Frequency converter 75kW 400V PRO-Drive 90 EKF	75	152	PD-90-FC-75K0-3
Frequency converter 93kW 400V PRO-Drive 90 EKF	93	176	PD-90-FC-93K0-3
Frequency converter 110kW 400V PRO-Drive 90 EKF	110	210	PD-90-FC-110K0-3
Frequency converter 132kW 400V PRO-Drive 90 EKF	132	253	PD-90-FC-132K0-3
Frequency converter 160kW 400V PRO-Drive 90 EKF	160	304	PD-90-FC-160K0-3
Frequency converter 185kW 400V PRO-Drive 90 EKF	185	350	PD-90-FC-185K0-3
Frequency converter 200kW 400V PRO-Drive 90 EKF	200	380	PD-90-FC-200K0-3
Frequency converter 220kW 400V PRO-Drive 90 EKF	220	426	PD-90-FC-220K0-3
Frequency converter 250kW 400V PRO-Drive 90 EKF	250	465	PD-90-FC-250K0-3
Frequency converter 280kW 400V PRO-Drive 90 EKF	280	520	PD-90-FC-280K0-3
Frequency converter 315kW 400V PRO-Drive 90 EKF	315	585	PD-90-FC-315K0-3
Frequency converter 350kW 400V PRO-Drive 90 EKF	350	650	PD-90-FC-355K0-3
Frequency converter 400kW 400V PRO-Drive 90 EKF	400	725	PD-90-FC-400K0-3
Frequency converter 450kW 400V PRO-Drive 90 EKF	450	820	PD-90-FC-450K0-3
Frequency converter 500kW 400V PRO-Drive 90 EKF	500	900	PD-90-FC-500K0-3
Frequency converter 560kW 400V PRO-Drive 90 EKF	560	1000	PD-90-FC-560K0-3
Frequency converter 630kW 400V PRO-Drive 90 EKF	630	1100	PD-90-FC-630K0-3
Frequency converter 710kW 400V PRO-Drive 90 EKF	710	1250	PD-90-FC-710K0-3

Frequency Converters PRO-Drive 150 EKF

The PRO-Drive 150 EKF is a versatile frequency converter suitable for a wide range of applications. It is ideal for solutions requiring higher torque control on the motor shaft, enabling the construction of more technologically advanced systems. The converter supports various control methods: U/f (scalar), OLV (open loop vector), and CLV (closed loop vector).

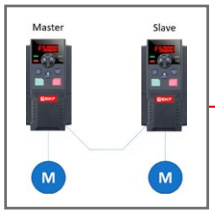
- Three motor control modes: U/f (scalar), OLV (open loop vector), and CLV (closed loop vector)
- High speed accuracy: ⩽±0.3%
- Rapid load response: ⩽40ms
- Overload capacity of 180% for 5 seconds
- Protocol expansion cards: CanOpen, Profinet, Profibus, EtherCat
- Operational ambient temperature range: -10 to +40 °C, suitable for control cabinets with numerous additional equipment
- Detachable LCD display for control cabinet door installation, limiting unauthorized personnel access to the panel internals
- Built-in RS-485 interface with Modbus RTU protocol support for control system integration

Standards: IEC 61800-5-1, IEC 61800-3

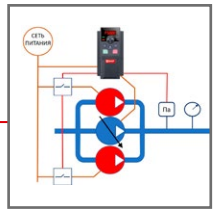


Expansion card compatibility

Fire operation mode

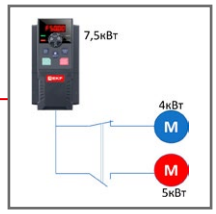


Alternating operation of 2 motors



Cascade pump control

LCD display



Master-Slave operation mode

APPLICATION

PRO-Drive 150 frequency converters are engineered for more demanding applications in industrial and commercial settings. They excel in sectors such as petrochemical processing, heavy manufacturing, and large-scale infrastructure projects. These robust converters are ideal for:

- Controlling high-power motors in oil and gas drilling operations;
- Optimizing performance of industrial compressors and centrifuges;
- Managing complex conveyor systems in mining and quarrying;
- Enhancing efficiency of large cooling towers and industrial refrigeration units.

TECHNICAL DATA

Parameters	Values
Min. single phase power (1×230V), kW	0,40
Max. single phase power (1×230V), kW	5
Min. three-phase power (3×400V), kW	1,50
Max. three-phase power (3×400V), kW	710
Output frequency, Hz	Vector control: 0–600 Scalar (V/f) control: 0–1200
Output voltage (3×400 V mains input), V	0 – rated input voltage
Carrier frequency, kHz	1–15,0, controlled automatically depending on temperature and load profile
Breakaway torque, %	0,5 Hz / 180% (OLV)
Permissible overload	G models: 150% / 60 sec, 180% / 3 sec P models: 120% / 60sec, 150% / 3 sec
Open-loop vector control (OLV)	Yes
Closed-loop vector control (CLV)	Yes
Scalar (V/f) control	Yes
Digital inputs	DI1–DI5, DI5 can be used as a high-speed pulse input (50 kHz)
Analog inputs	AI1, AI2: (voltage 0–10V or current 4–20mA signal)

Parameters	Values
Digital outputs	Open collector
Analog outputs	AO1, AO2: (voltage 0–10V or current 4–20mA signal); AO2 can be used as FM high-speed pulse output (100 kHz)
Relay outputs	2 relay outputs (models up to 2,2 kW) 1 relay output (models 2,2 kW and up)
Braking resistor	230 V models: built in 400V models: 1,5–75 kW built in; 75 kW and up - external braking module
RS-485, Modbus RTU	Yes
PID controller	Yes
Programmable frequency curve	Yes
Cooling	Cooling fan
Ambient temperature, °C	-10 to 50 (40 to 50 range is output derated, we recommend selecting an appropriate output model for harsher conditions)
Service life, years	Over 10
Warranty, years	3

Overall and installation dimensions

Figure A, models below 30 kW

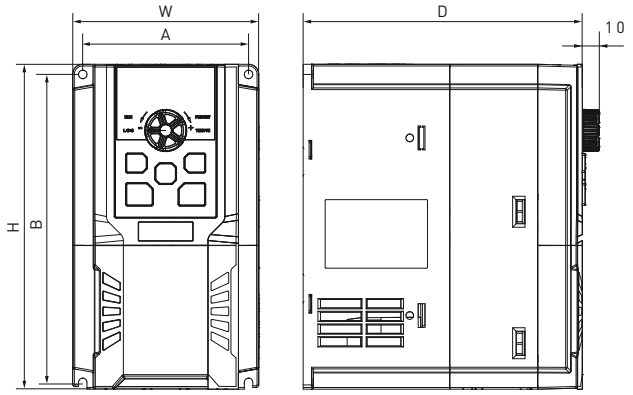


Figure B, models 30 kW to 132 kW

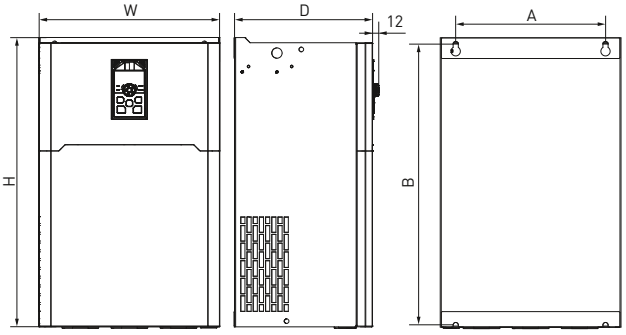
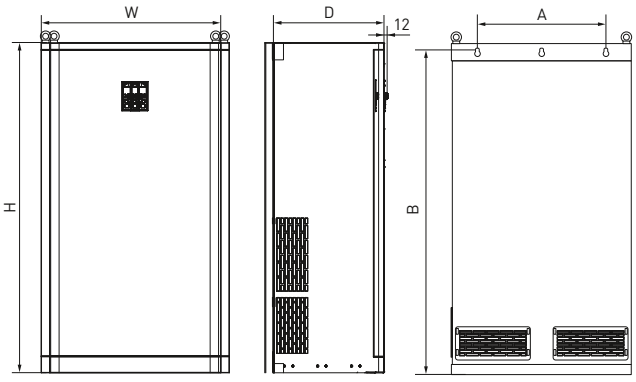


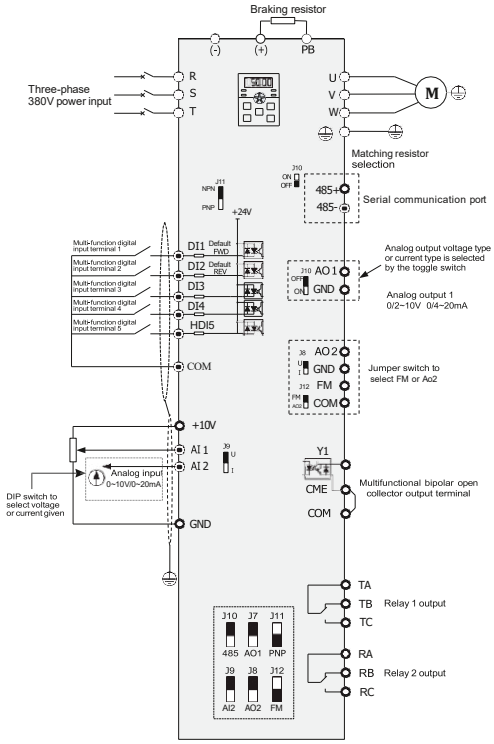
Figure C, models 160 kW and up



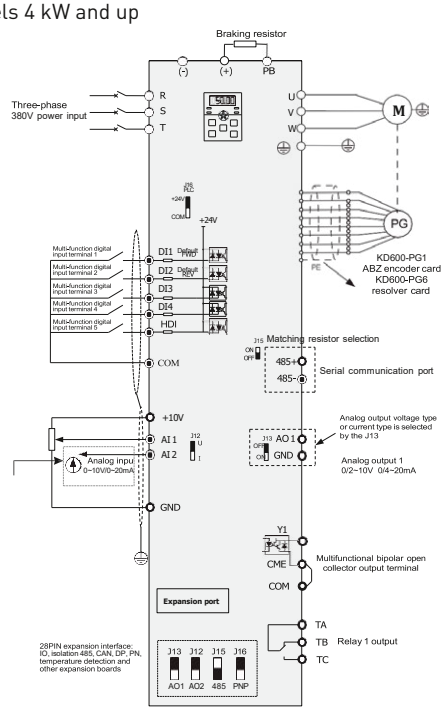
Item code	H	W	D	Fig.
	mm			
Single phase 230 V				
PD-150-FC-0K4-21-B	149	83	111	A
PD-150-FC-0K7-21-B				
PD-150-FC-1K5-21-B				
PD-150-FC-2K2-21-B	170	98	124	
PD-150-FC-4K0-21-B				
PD-150-FC-5K5-21-B	228	135	160	
Three-phase, 400 V				
PD-150-FC-0K7-43-B EKF	165	86	140	A
PD-150-FC-1K5-43-B EKF				
PD-150-FC-2K2-43-B EKF				
PD-150-FC-4K0-43-B EKF	192	110	165	
PD-150-FC-5K5-43-B EKF				
PD-150-FC-7K5-43-B EKF	234	123	176	
PD-150-FC-11K-43-B EKF	275	160	186	
PD-150-FC-15K-43-B EKF				
PD-150-FC-18K-43-B EKF	330	189	186	
PD-150-FC-22K-43-B EKF				
PD-150-FC-30K-43-B EKF	425	255	206	B
PD-150-FC-37K-43-B EKF				
PD-150-FC-45K-43-B EKF	534	310	258	
PD-150-FC-55K-43-B EKF				
PD-150-FC-75K-43-B EKF	560	350	268	
PD-150-FC-93K-43 EKF				
PD-150-FC-110K-43 EKF	695	410	295	
PD-150-FC-132K-43 EKF				
PD-150-FC-160K-43 EKF	1050	480	330	C
PD-150-FC-185K-43 EKF				
PD-150-FC-200K-43 EKF				
PD-150-FC-220K-43 EKF	1200	590	365	
PD-150-FC-250K-43 EKF				
PD-150-FC-280K-43 EKF				
PD-150-FC-315K-43 EKF	1290	700	400	
PD-150-FC-355K-43 EKF				
PD-150-FC-400K-43 EKF				
PD-150-FC-450K-43 EKF				
PD-150-FC-500K-43 EKF	1800	1000	500	
PD-150-FC-550K-43 EKF				
PD-150-FC-630K-43 EKF				
PD-150-FC-710K-43 EKF	2200	1200	600	

Wiring diagrams

Models up to 2,2 kW



Models 4 kW and up



Delivery scope

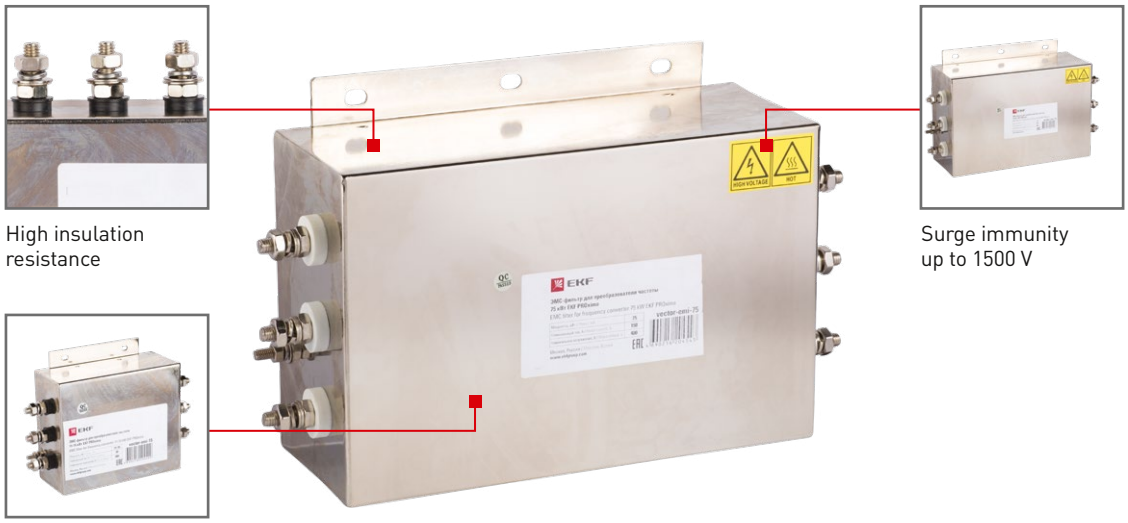
1. Frequency converter
2. Technical manual
3. Operation manual
4. External operator panel cable
5. Operator panel mounting frame

Name	Rated motor power, kW	Rated input current, A	Rated output current, A	Net weight, kg	Item code
Single phase 230 V					
Frequency converter 0,4kW 230V PRO-Drive 150 EKF	0,4	5,4	2,3	0,9	PD-150-FC-0K4-21-B
Frequency converter 0,7kW 230V PRO-Drive 150 EKF	0,7	8,2	4	0,9	PD-150-FC-0K7-21-B
Frequency converter 1,5kW 230V PRO-Drive 150 EKF	1,5	14	7	0,9	PD-150-FC-1K5-21-B
Frequency converter 2,2kW 230V PRO-Drive 150 EKF	2,2	23	9,6	1,3	PD-150-FC-2K2-21-B
Frequency converter 4kW 230V PRO-Drive 150 EKF	4	32	17	1,3	PD-150-FC-4K0-21-B
Frequency converter 5,5kW 230V PRO-Drive 150 EKF	5,5	45	15	3,5	PD-150-FC-5K5-21-B
Three-phase, 400 V					
Frequency converter 0,7kW 400V PRO-Drive 150 EKF	0,7	3,4	2,1	1,5	PD-150-FC-0K7-43-B EKF
Frequency converter 1,5kW 400V PRO-Drive 150 EKF	1,5	5	3,8	1,5	PD-150-FC-1K5-43-B EKF
Frequency converter 2,2kW 400V PRO-Drive 150 EKF	2,2	5,8	5,1	1,5	PD-150-FC-2K2-43-B EKF
Frequency converter 4kW 400V PRO-Drive 150 EKF	4	10,5	9	2,9	PD-150-FC-4K0-43-B EKF
Frequency converter 5,5kW 400V PRO-Drive 150 EKF	5,5	14,6	13	2,9	PD-150-FC-5K5-43-B EKF
Frequency converter 7,5kW 400V PRO-Drive 150 EKF	7,5	20,5	17	3,1	PD-150-FC-7K5-43-B EKF
Frequency converter 11kW 400V PRO-Drive 150 EKF	11	26	25	4,8	PD-150-FC-11K-43-B EKF
Frequency converter 15kW 400V PRO-Drive 150 EKF	15	35	32	4,8	PD-150-FC-15K-43-B EKF
Frequency converter 18kW 400V PRO-Drive 150 EKF	18	38,5	37	6,7	PD-150-FC-18K-43-B EKF
Frequency converter 22kW 400V PRO-Drive 150 EKF	22	46,5	45	6,7	PD-150-FC-22K-43-B EKF
Frequency converter 30kW 400V PRO-Drive 150 EKF	30	62	60	14,1	PD-150-FC-30K-43-B EKF
Frequency converter 37kW 400V PRO-Drive 150 EKF	37	76	75	14,1	PD-150-FC-37K-43-B EKF
Frequency converter 45kW 400V PRO-Drive 150 EKF	45	92	90	25	PD-150-FC-45K-43-B EKF
Frequency converter 55kW 400V PRO-Drive 150 EKF	55	113	110	25	PD-150-FC-55K-43-B EKF
Frequency converter 75kW 400V PRO-Drive 150 EKF	75	157	152	40	PD-150-FC-75K-43-B EKF
Frequency converter 93kW 400V PRO-Drive 150 EKF	93	180	176	40	PD-150-FC-93K-43 EKF
Frequency converter 110kW 400V PRO-Drive 150 EKF	110	214	210	58	PD-150-FC-110K-43 EKF
Frequency converter 132kW 400V PRO-Drive 150 EKF	132	256	253	58	PD-150-FC-132K-43 EKF
Frequency converter 160kW 400V PRO-Drive 150 EKF	160	307	304	106	PD-150-FC-160K-43 EKF
Frequency converter 185kW 400V PRO-Drive 150 EKF	185	345	340	106	PD-150-FC-185K-43 EKF
Frequency converter 200kW 400V PRO-Drive 150 EKF	200	385	380	106	PD-150-FC-200K-43 EKF
Frequency converter 220kW 400V PRO-Drive 150 EKF	220	430	426	154	PD-150-FC-220K-43 EKF
Frequency converter 250kW 400V PRO-Drive 150 EKF	250	468	465	154	PD-150-FC-250K-43 EKF
Frequency converter 280kW 400V PRO-Drive 150 EKF	280	525	520	154	PD-150-FC-280K-43 EKF
Frequency converter 315kW 400V PRO-Drive 150 EKF	315	590	585	200	PD-150-FC-315K-43 EKF
Frequency converter 355kW 400V PRO-Drive 150 EKF	355	665	650	200	PD-150-FC-355K-43 EKF
Frequency converter 400kW 400V PRO-Drive 150 EKF	400	785	725	200	PD-150-FC-400K-43 EKF
Frequency converter 450kW 400V PRO-Drive 150 EKF	450	883	820	200	PD-150-FC-450K-43 EKF
Frequency converter 500kW 400V PRO-Drive 150 EKF	500	920	900	366	PD-150-FC-500K-43 EKF
Frequency converter 550kW 400V PRO-Drive 150 EKF	550	1020	1000	366	PD-150-FC-550K-43 EKF
Frequency converter 630kW 400V PRO-Drive 150 EKF	630	1120	1100	366	PD-150-FC-630K-43 EKF
Frequency converter 710kW 400V PRO-Drive 150 EKF	710	1315	1250	410	PD-150-FC-710K-43 EKF

EMI filters for frequency converters EKF

EMI filters for EKF frequency converters 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.

Standard: IEC 61800-3



High insulation resistance

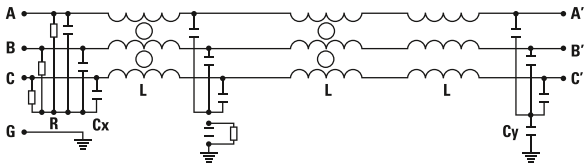
Surge immunity up to 1500 V

Single-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.

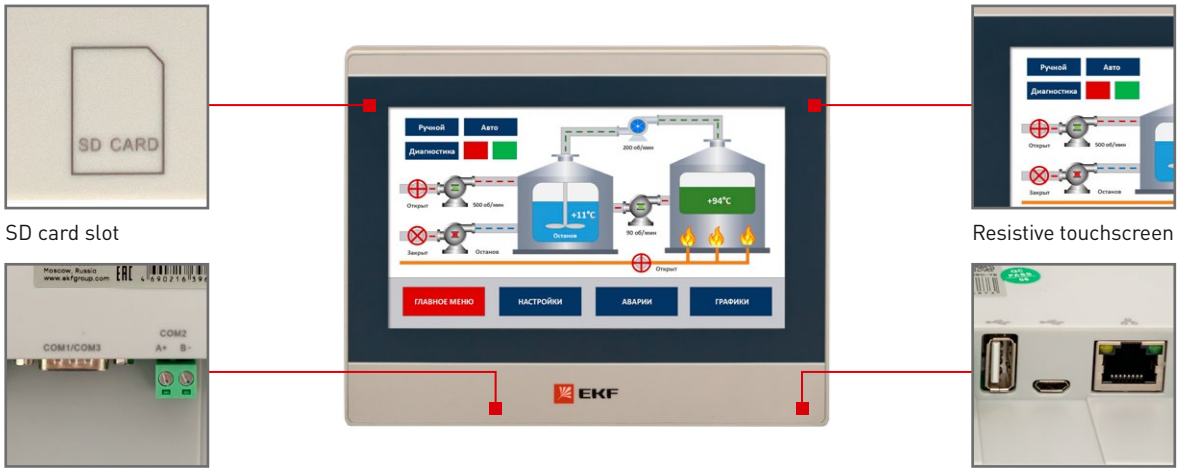
Model	Rated current, A	Frequency converter power, kW	Dimensions, mm			Item code
			Length	Width	Height	
EMI filter for frequency converter 0,75–1,5 kW EKF	5	0,75–1,5	136	105	42	vector-emi-1R5
EMI filter for frequency converter 2,2–4,0 kW EKF	10	2,2–4,0	136	105	42	vector-emi-4R0
EMI filter for frequency 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 30–37 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

PRO-Screen Operator Touch Panel

PRO-Screen is a human-machine interface (HMI) 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 any third-party devices and can be configured and programmed with the free PRO-Screen Master software.

Standard: IEC 61131-2



SD card slot

Resistive touchscreen

RS232/RS485/
RS422 interfaces

Ethernet & USB ports

APPLICATION

PRO-Screen is used in monitoring and control systems for a variety of applications:

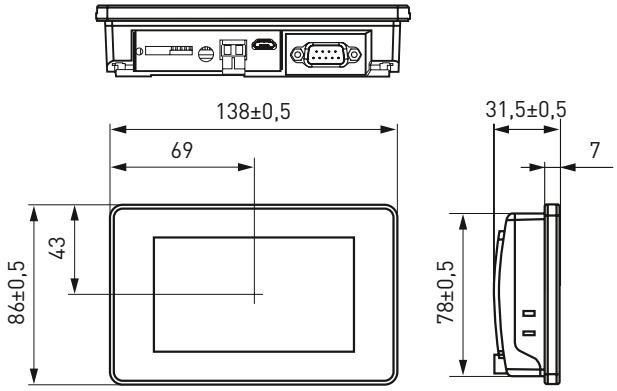
- Heating, ventilation & air-conditioning;
- Water treatment, supply & sewerage;
- Machine building;
- Production processes.

TECHNICAL DATA

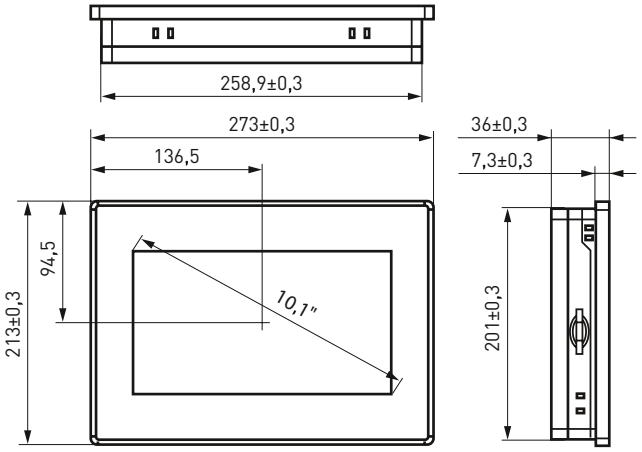
Parameters	Values					
	RSC-4-M	RSC-4E-M	RSC-7-M	RSC-7E-M	RSC-10E-M	RSC-15E-M
Hardware specifications						
Processor	720MHz ARM9	1 GHz Cortex A7	600MHz ARM Cortex-A8			1GHz ARM Cortex A8
Flash storage, Mb	128					256
Program memory, Mb	64	128				512
Real-time clock (RTC)	Yes					
Display						
Type	4-wire resistive TFT LCD					
Size	4,3" (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
Backlight MTBF	50 000 hours at 25 °C					
Ports and interfaces						
COM-ports	COM1: RS232/RS485/RS422 COM3: RS232		COM1/COM3: RS232/RS485/RS422 COM2: RS485			COM1/COM3: RS232/RS485/RS422 COM2: RS485/RS422
Ethernet	No	10M/100M	No	10M/100M Ethernet		
Supported protocols	Modbus RTU (Master/Slave), Modbus ASCII (Master)	Modbus RTU (Master/Slave), Modbus ASCII (Master), Modbus TCP (Master/Slave)	Modbus RTU (Master/Slave), Modbus ASCII (Master)	Modbus RTU (Master/Slave), Modbus ASCII (Master), Modbus TCP (Master/Slave)		
USB Device	1×USB 2.0 Slave		1×USB 2.0 Slave, 1×USB 2.0 Host			
SD card slot	No		Yes			
Power supply						
Supply voltage	24 V DC					
Voltage range, V	9...28					18...28
Power consumption, max., W	2,5		7		10	18
General specifications						
Degree of protection by IEC 60529	IP65 – front side, IP20 – back side					
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)

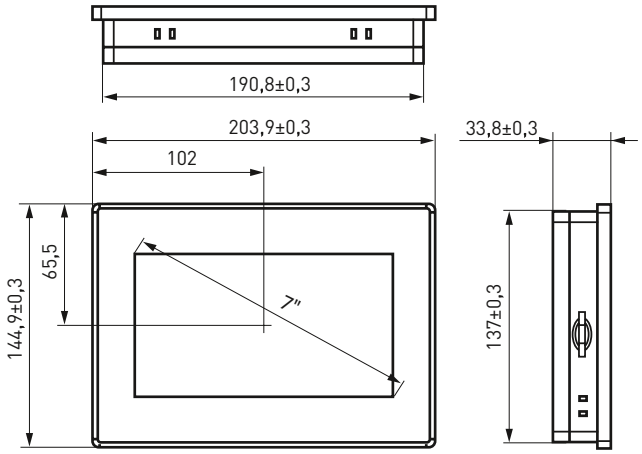
RSC-4-M & RSC-4E-M overall dimensions



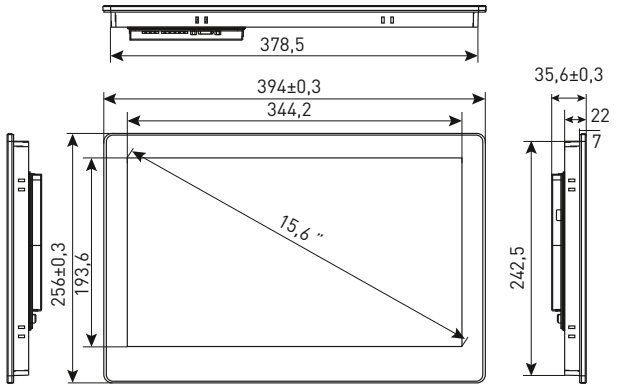
RSC-10E-M overall dimensions



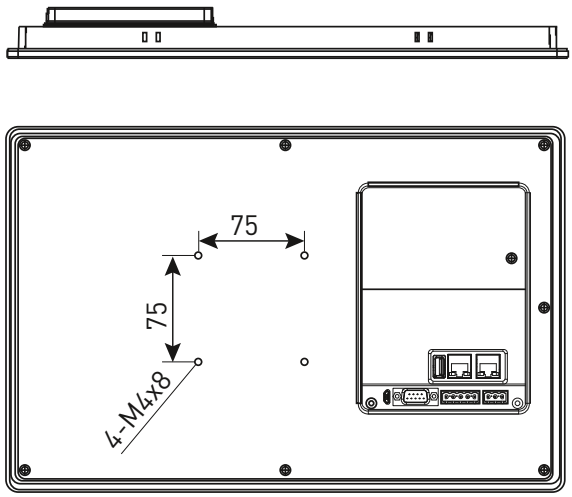
RSC-7-M & RSC-7E-M overall dimensions



RSC-15E-M overall dimensions



VESA mount 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.

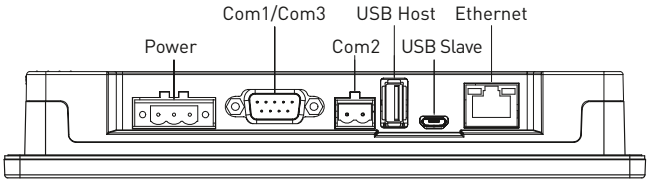
Installation and operation

Power supply

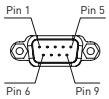
HMI shall be powered from distributed power mains with 24 V DC rated voltage or from a local power supply. When powered from distributed network, install a surge protector upstream of HMI.

Ports and interfaces

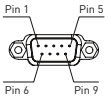
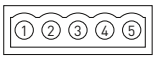
HMI supports various peripherals. Refer to figure and table below.



RSC-4-M, RSC-4E-M, RSC-7-M, RSC-7E-M, RSC-10E-M

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-M

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

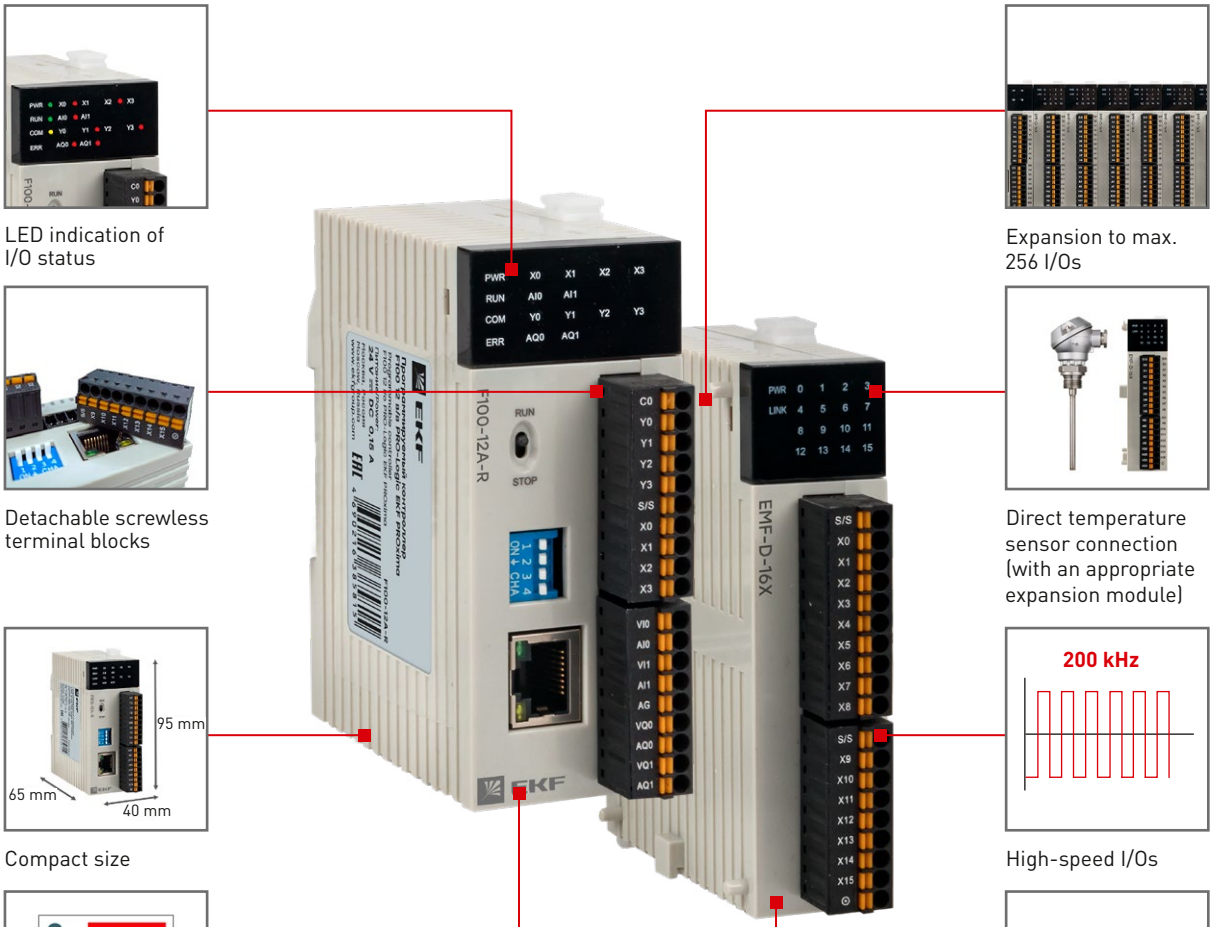
Delivery scope

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-M
HMI PRO-Screen 4E EKF			RSC-4E-M
HMI PRO-Screen 7 EKF	7" (16:9)	1024×600	RSC-7-M
HMI PRO-Screen 7E EKF			RSC-7E-M
HMI PRO-Screen 10E EKF	10,1" (16:9)		RSC-10E-M
HMI PRO-Screen 15E EKF	15,6" (16:9)	1920×1080	RSC-15E-M

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

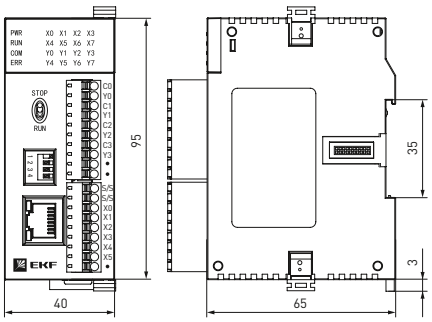
- Initial data processing from field equipment.
- Direct control of production processes and their variables by sensors (composition and weight, flow rate, pressure, temperature, rotation speed, etc.).
- Control of actuating mechanisms (actuators, motors, gates and valves, nozzles, heaters, etc.).
- Data transfer to the supervisory level for display, analysis and control (HMI, OPC-server, SCADA).

TECHNICAL DATA

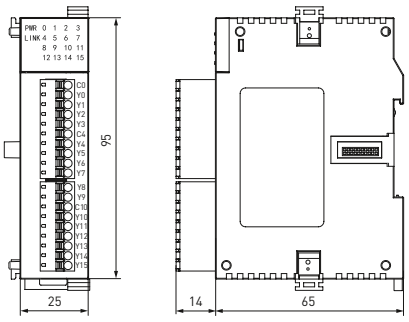
Parameters		Values			
Power supply					
Voltage, V DC		24 (20,4...28,8)			
Power consumption, W		<4,8 (per single module)			
Max. operating time after power failure, ms		10			
Environmental conditions					
Operating temperature, °C		0 to 55			
Storage temperature, °C		-20 to 70			
Humidity, % RH		5-95 (non-condensing)			
Degree of protection		IP20			
Digital Inputs (DI)					
Signal type		Voltage or PNP / NPN			
Filter		6,4 ms (default), adjustable 0,8 to 51,2 ms			
Insulation type		Optocoupler 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		Optocoupler 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		Optocoupler 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

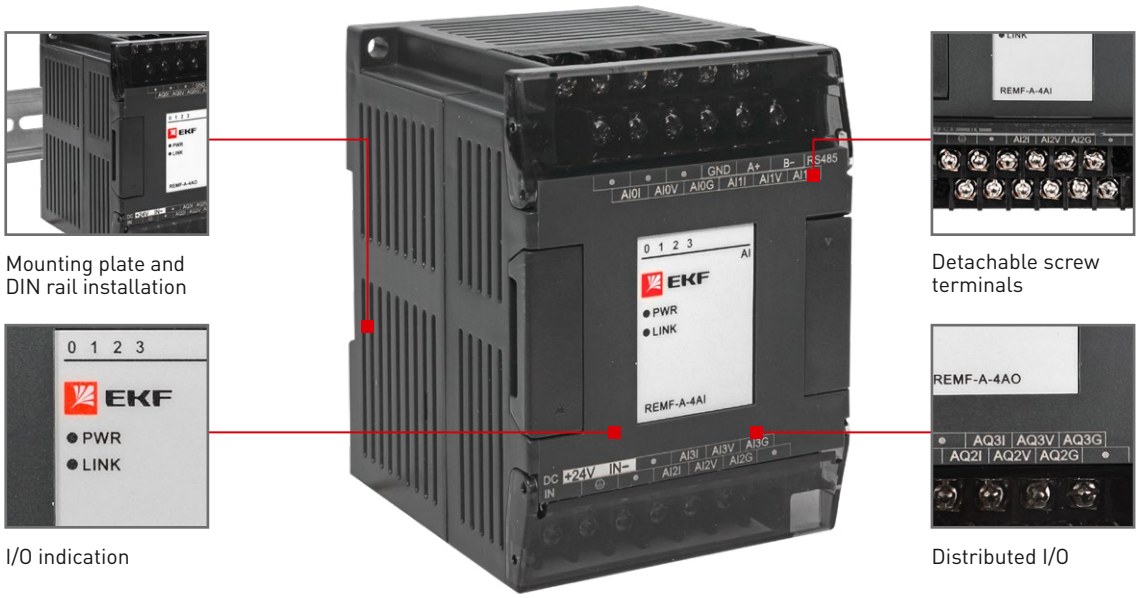
Connected sensors	Item code
4 thermocouples	EMF-T-4TC
4 RTDs	EMF-T-4TR
8 thermocouples	EMF-T-8TC

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

PRO-Logic I/O modules with RS-485 EKF

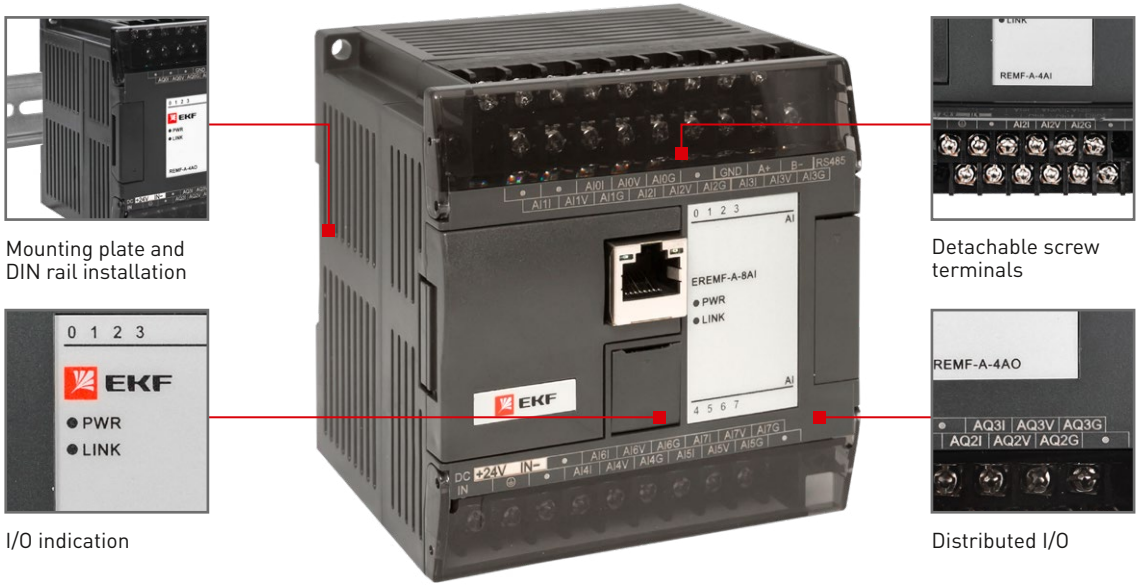
PRO-Logic I/O modules are designed to establish automated monitoring & control systems. PRO-Logic modules are used as:
- Remote expansion modules for PRO-Logic PLC.
- I/O modules for PRO-Screen HMI.
- I/O modules for SCADA and supervisory level control systems.
- I/O modules for communication with any type of devices supporting RS-485 Modbus RTU/ASCII.



PRO-Logic I/O modules 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 control systems.
- I/O modules for communication with any type of devices supporting RS-485 Modbus TCP & Modbus RTU/ASCII.

RS-485 & Ethernet interfaces can be used for data transmission independently.



APPLICATION

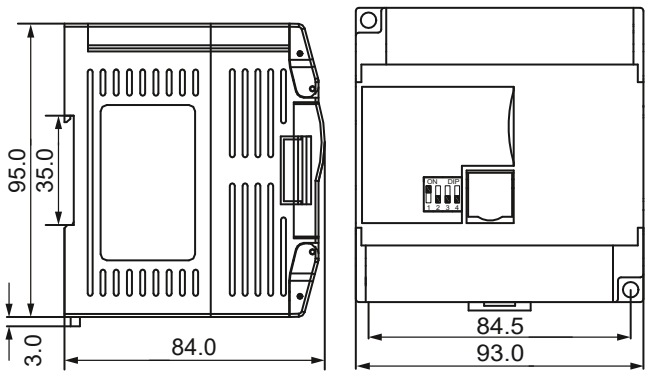
PRO-Logic I/O modules are widely used in ventilation & heating, water supply & treatment, machinery & machine tool building, power engineering.

TECHNICAL DATA

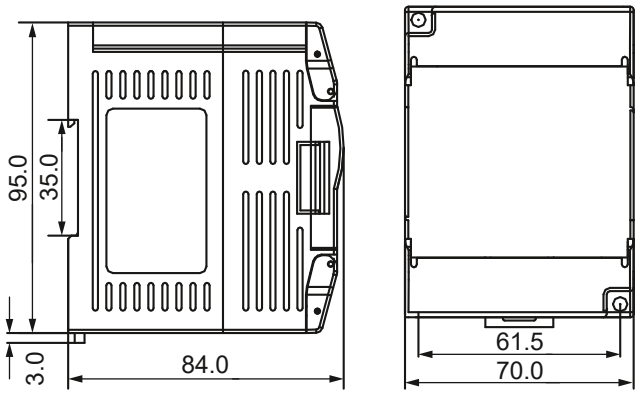
Parameters		Values				
Power supply						
Voltage, V DC		24 (20,4...28,8)				
Max. operating time after power failure, ms		10				
Environmental conditions						
Operating temperature, °C		0 to 55				
Storage temperature, °C		-20 to 70				
Humidity, % RH		5-95 (non-condensing)				
Degree of protection		IP20				
Digital inputs (DI)						
Signal type		Digital, PNP / NPN				
Resistance, kOhm		4,3				
Max. current, mA		10				
Filter		6,4 ms (default), configurable from 0,8 to 51,2 ms				
Insulation type		Optocoupler 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				Optocoupler 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		Optocoupler 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		Optocoupler 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		Optocoupler 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

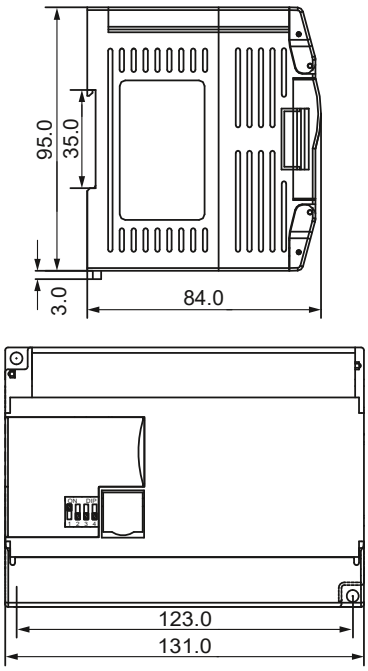
EREMF-D-24X, EREMF-D-12X12Y-R, EREMF-D-12X12Y-N, EREMF-A-8AI, EREMF-A-8AO, EREMF-T-8TR



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

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 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. 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 into the enclosure front panel.

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 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

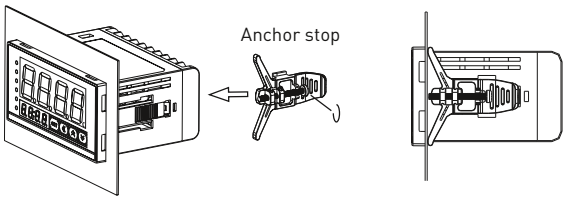
Parameters		Values
Insulation resistance (inputs - outputs - power supply - interface), MOhm		20
Interference immunity		±2500 VAC, ±1000 VDC
Operating temperature, °C		-20...+50
Storage temperature, °C		-20...+60
Humidity		10...85% RH (non-condensing)
Weight, kg	TER101-S-M1A, TER101-S-M1A-R, TER101-S-CV-M1A, 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	K1	-50~1200	1°C	0,5%F.S.	>500 kOhm	0
K2	K2	-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

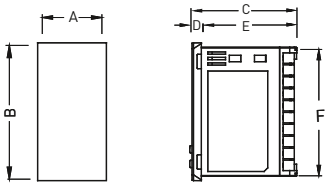
Installation and operation

The device is installed into the enclosure/panel with anchor stops supplied with the device.

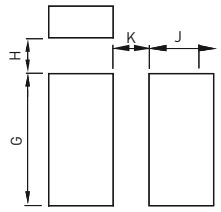


Overall and installation dimensions

Overall dimensions



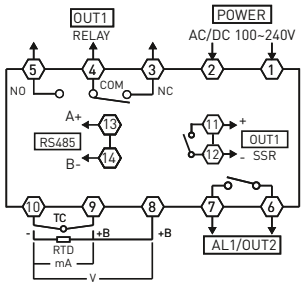
Mounting dimensions



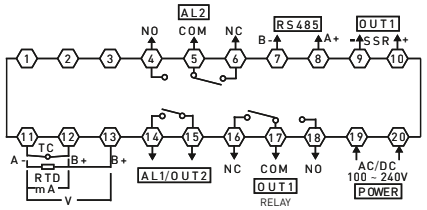
Housing	A	B	C	D	E	F	G	H	J	K
Type S	48	48	73	6,5	66,5	44	45	25	45	25
Type M	96	48	73	6,5	66,5	90	91,5	25	45	25
Type L	96	96	73	6,5	66,5	90	91,5	25	91,5	25

Wiring diagrams

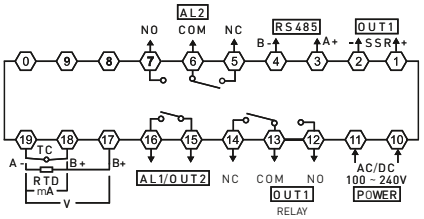
TER101-S



TER101-M



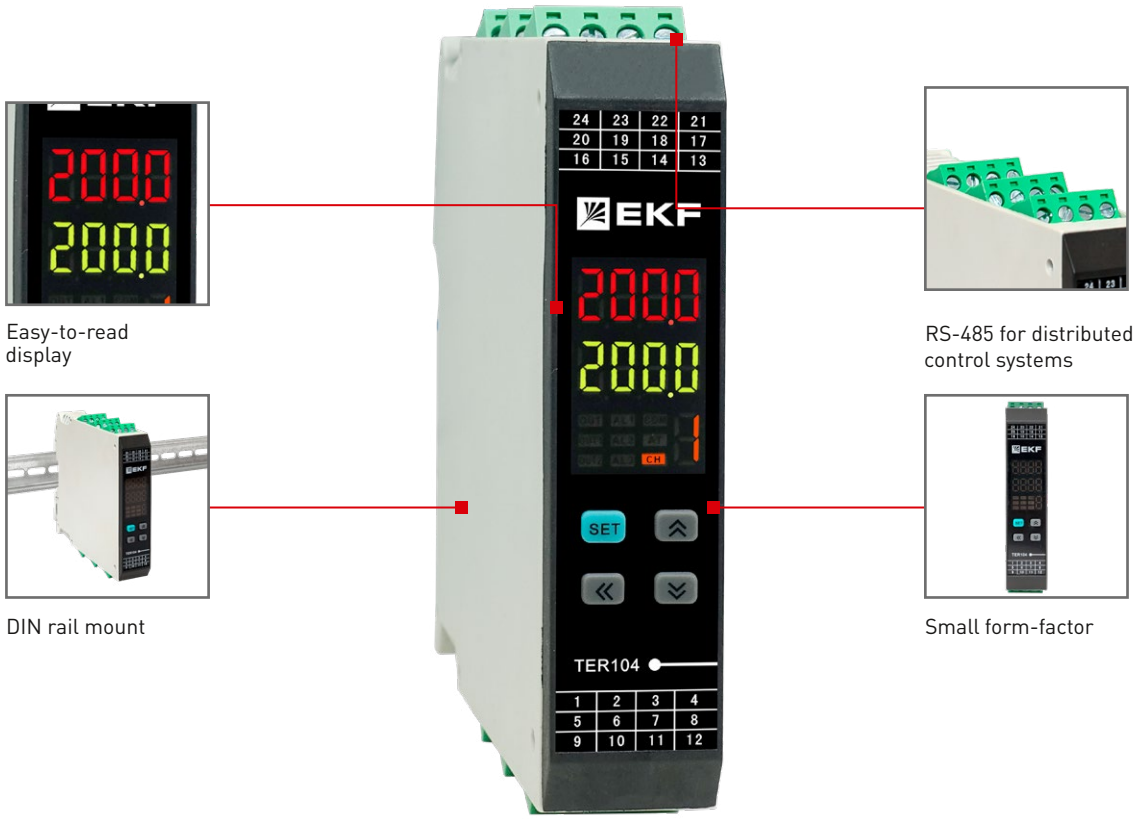
TER101-L



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 onto 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

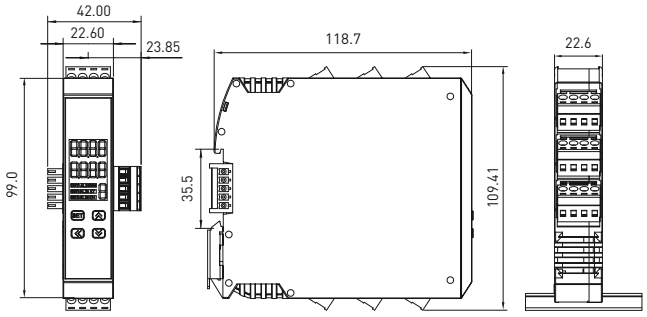
Parameters		Values
Insulation resistance (inputs - outputs - power supply - interface), MOhm		20
Interference immunity		±2500 VAC, ±1000 VDC
Operating temperature, °C		-20...+50
Storage temperature, °C		-20...+60
Humidity		10...85% RH (non-condensing)
Degree of protection by IEC 60529		IP20
Weight, kg	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

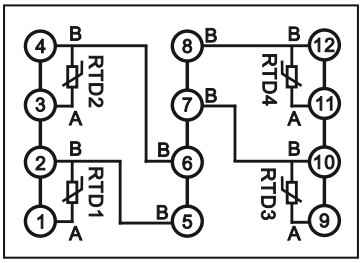
Overall and installation dimensions (mm)

The indicator-controller shall be mounted onto 35mm DIN rail.

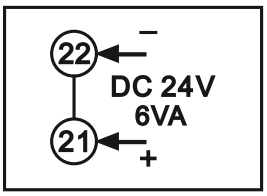


Wiring diagrams

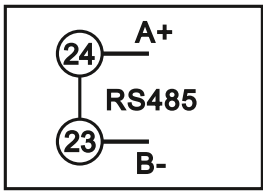
Sensor connection



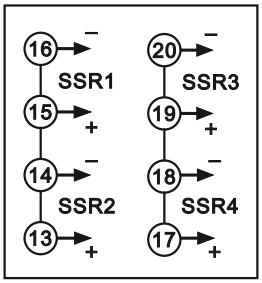
Power supply connection

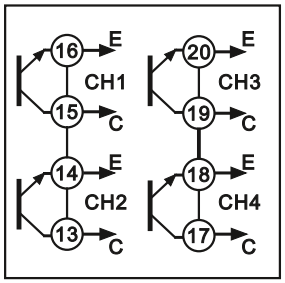


RS-485 interface connection



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

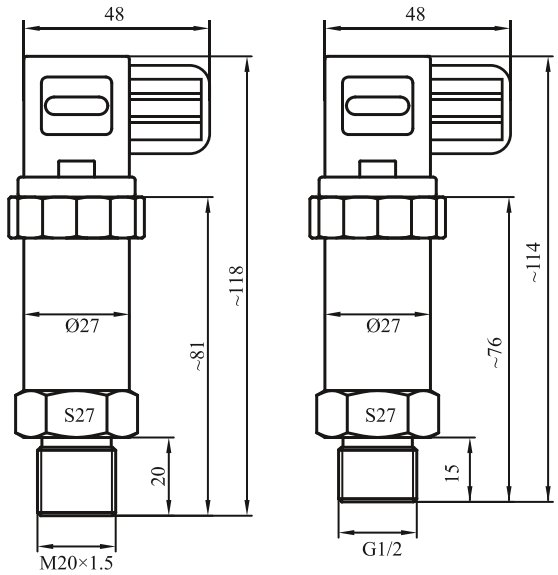
- Heating, ventilation and air conditioning (HVAC).
- Pumping stations.
- Water treatment.

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

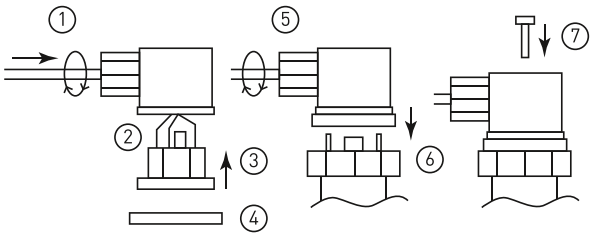
Mounting

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.

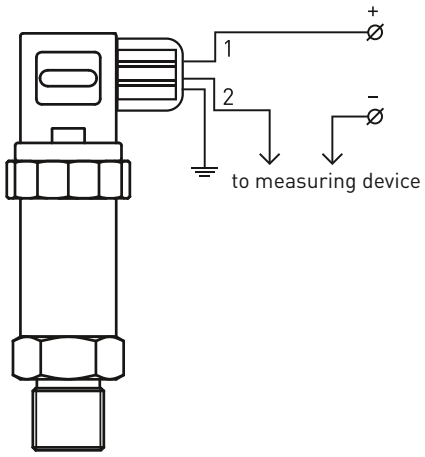
Electrical connection

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 %	Mechanical connection	Item code
Pressure transmitter PRT-100 EKF	1,6	1,0	M20×1,5	PRT-100-1,6-1,0-M20
			G1/2	PRT-100-1,6-1,0-G2
	1,0		M20×1,5	PRT-100-1,0-1,0-M20
			G1/2	PRT-100-1,0-1,0-G2
	0,6		M20×1,5	PRT-100-0,6-1,0-M20
			G1/2	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

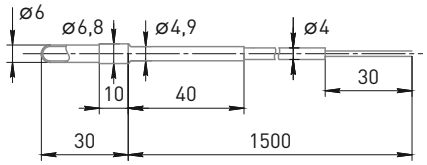
TECHNICAL DATA

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

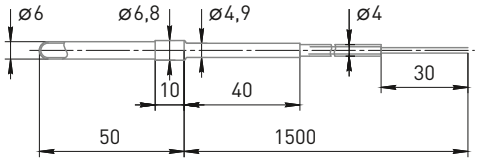
Operation conditions:
- Premises with non-regulated climatic conditions and (or) awnings;
- Air pressure: from 84 to 106,7 kPa;
- Air temperature: from -50 to +90 °C (-20...+50 °C for RTD30);
- 95% RH for max.+35 °C, non-condensing

Overall and installation dimensions (mm)

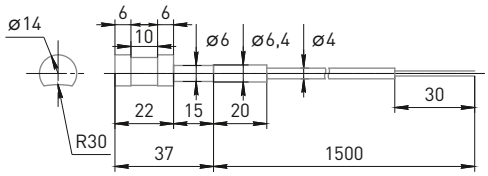
RTD10-OVH30



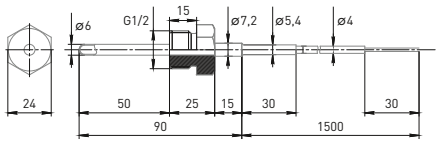
RTD10-OVH50



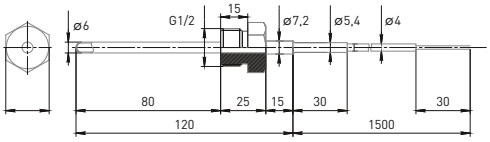
RTD10-OVH01



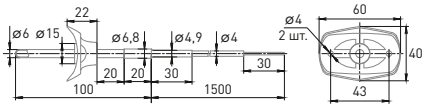
RTD10-SCR50



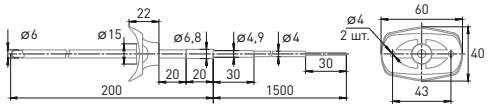
RTD10-SCR80



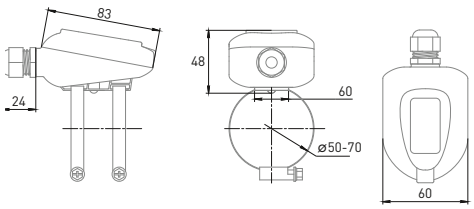
RTD10-CH100



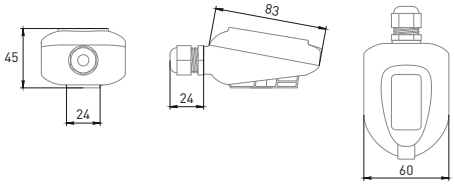
RTD10-CH200



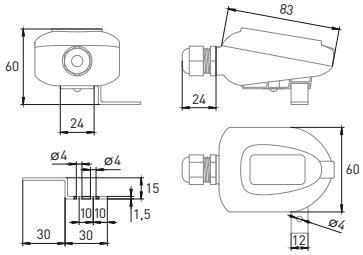
RTD20-OVH



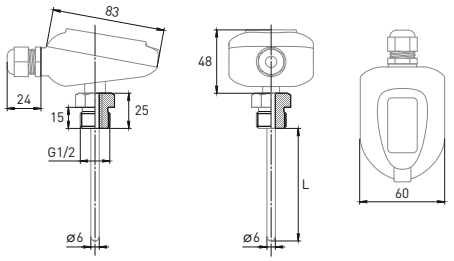
RTD20-OUT1



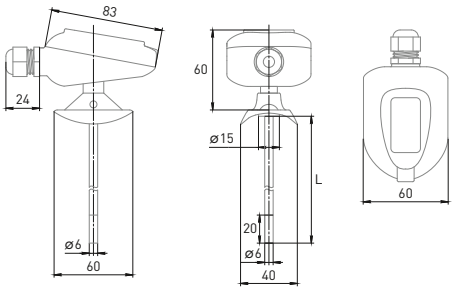
RTD20-OUT2



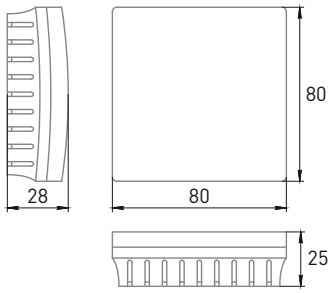
RTD20-SCR (L=50 or 80 mm)



RTD20-CH (L=50, 100, 150, 200 mm)



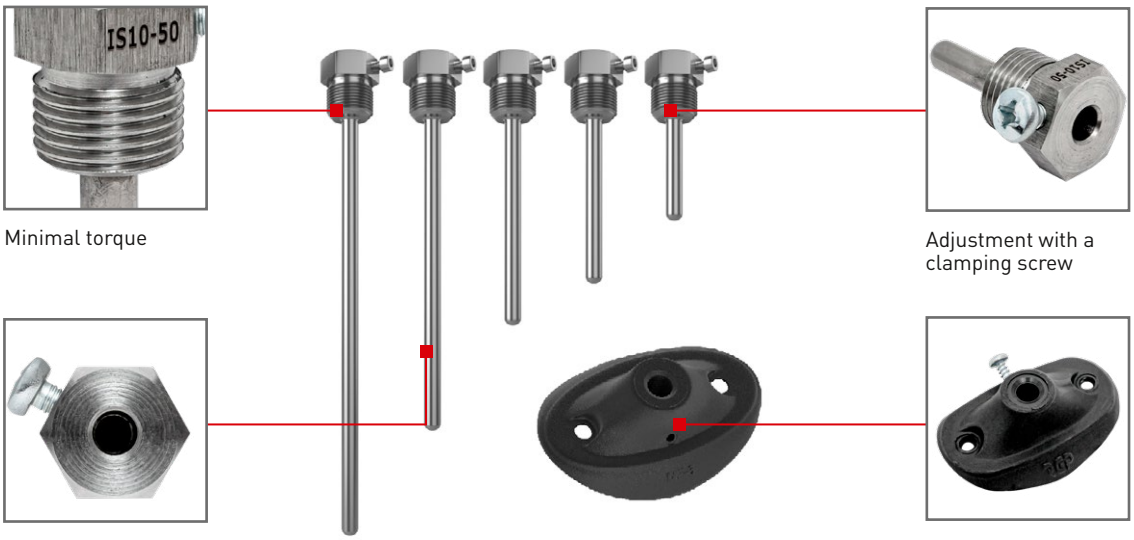
RTD30-IN



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). 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 for use in heating, ventilation & air conditioning systems.

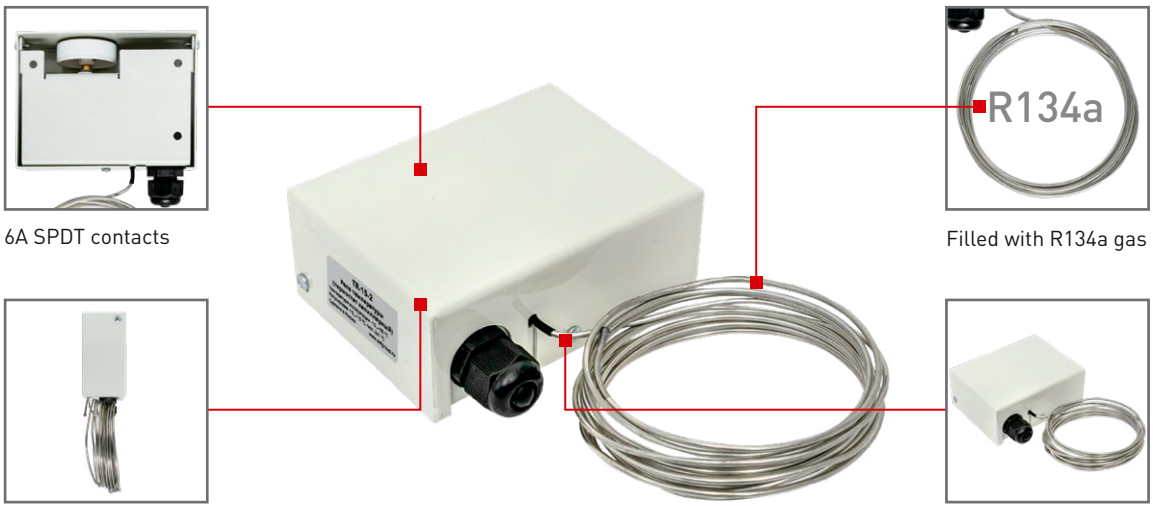
TECHNICAL DATA

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 temperature in ventilation and air conditioning systems to prevent their rupture caused by freezing and expanding coolant.
Thermostat indicates actuation with an SPDT contact and is used to initiate safety functions in HVAC control systems.



APPLICATION

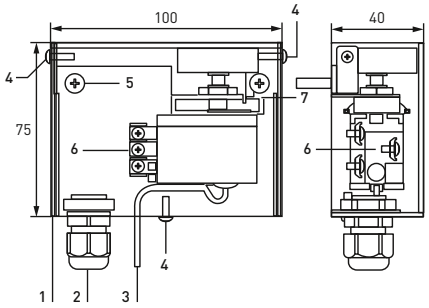
TR15 EKF capillary thermostats are used to initiate safety functions in HVAC control systems, e.g.:

- 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)



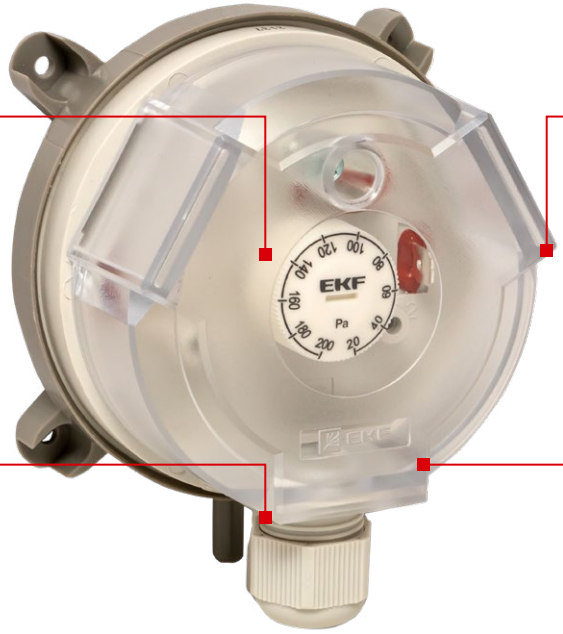
1 – Thermostat housing
2 – Cable gland M16x1,5
3 – Copper capillary
4 – Fastening screws
5 – Fastening holes
6 – SPDT contacts
7 – Adjustment opening

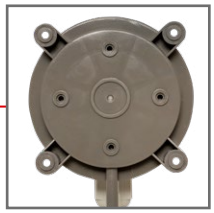
Name	Item code
Capillary thermostat (temperature control) TR15 2m EKF	TR-15-2
Capillary thermostat (temperature control) TR15 3m EKF	TR-15-3
Capillary thermostat (temperature control) TR15 4m EKF	TR-15-4
Capillary thermostat (temperature control) TR15 6m EKF	TR-15-6

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

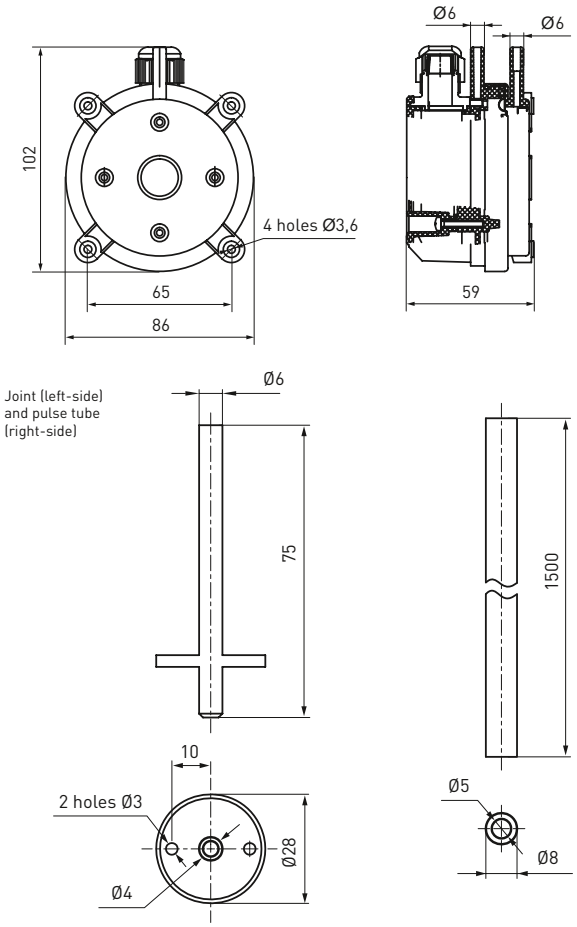
APPLICATION

RVG-10 EKF is a perfect solution for pressure monitoring in heating, ventilation & air conditioning systems.

TECHNICAL DATA

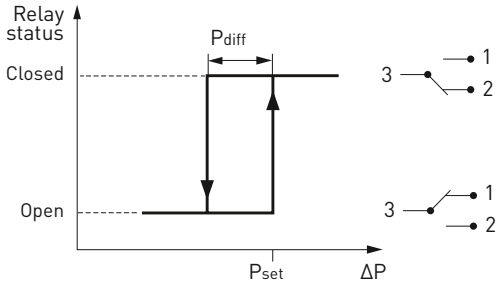
Parameters	Values			
	RVG-10-200	RVG-10-400	RVG-10-500	RVG-10-1000
Operation environment	Air, non-corrosive gases			
Differential pressure setting range, Pa	20–200	40–400	50–500	200–1000
Max. differential, Pa	10	20	20	100
Max. pressure differential between P1 & P2, kPa	10			
Max. operating error, %	15			
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, downward facing joint			
Degree of protection by IEC 60529	IP54			

Overall and installation dimensions (mm)

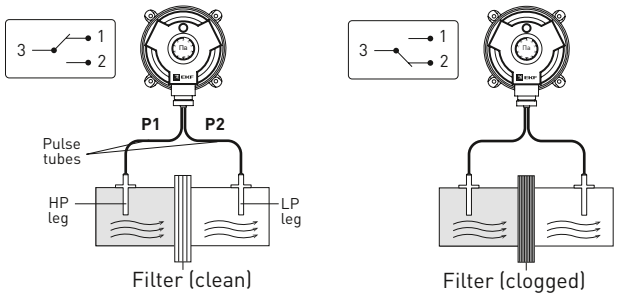


Installation and operation

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



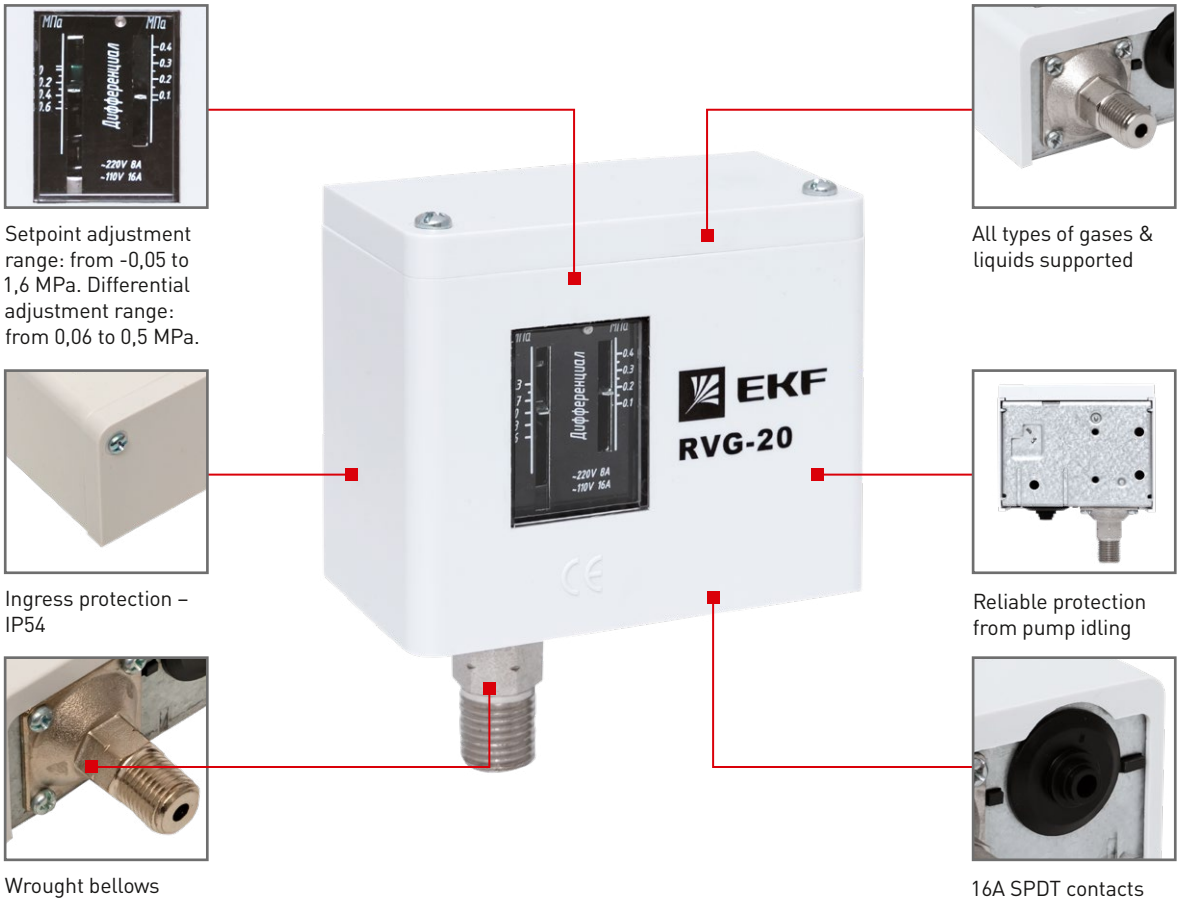
Delivery scope

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.



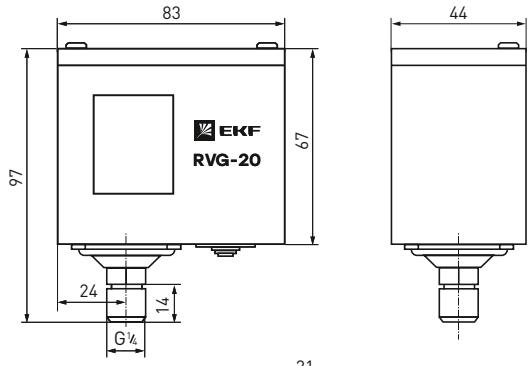
APPLICATION

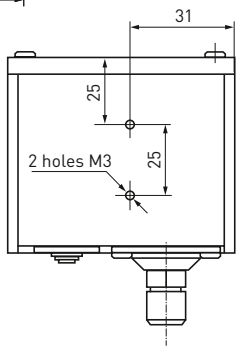
- Heating, ventilation & air-conditioning systmes;
- Refrigiration units;
- Water supply systems.

TECHNICAL DATA

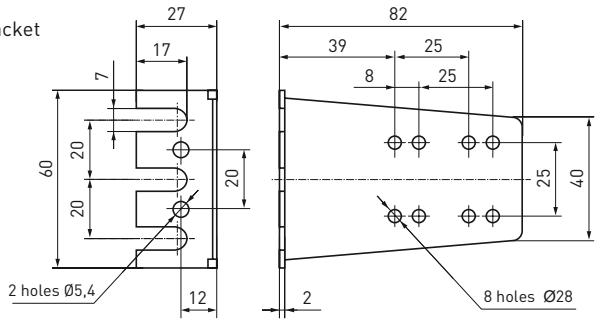
Parameters	Values	
	RVG-20-0,6	RVG-20-1,6
Operation environment	Water, liquids, oils, coolants, steam, gases and their mixtures	
Pressure setting range, Pa	-0,05–0,6	0,5–1,6
Differential, MPa	0,06–0,4	0,2–0,5
Max. operating pressure, MPa	1,65	3,5
Response error, %	± 15	
Measured media fitting	G1/4	
Diameter 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)





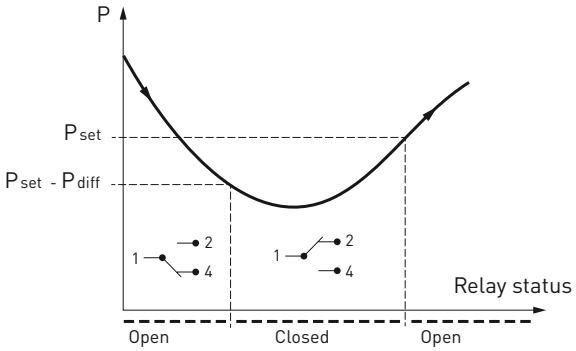
Bracket



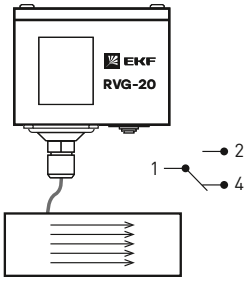
Installation and operation

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.

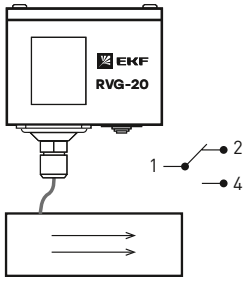
Switch operation diagram



Example: RVG-20 controlling pump operation in a pumping plant



Normal pressure



Pressure drop

Delivery scope

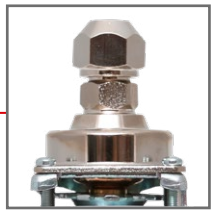
1. Overpressure switch
2. Mounting bracket
3. Set of mounting screws
4. Technical manual

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

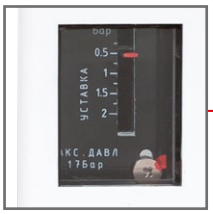
Differential pressure switches RVG-30 EKF

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, switch SPDT contact.

10A SPDT contacts



Stainless steel



Differential pressure setpoint adjustment

Compatible with different liquids, gases & oils

APPLICATION

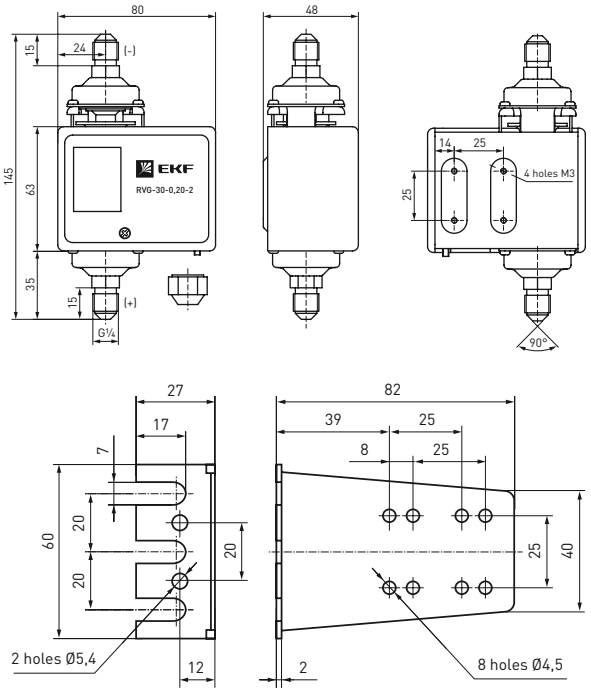
Differential pressure switches RVG-30 are used for:

- 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					

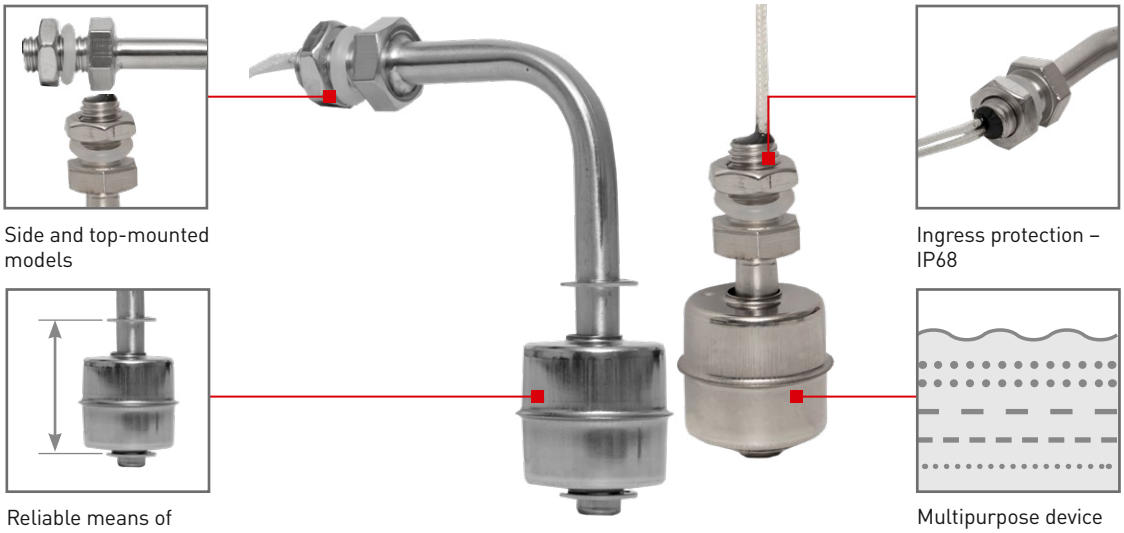
Overall and installation dimensions (mm)



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.



Side and top-mounted models

Ingress protection – IP68

Reliable means of level indication

Multipurpose device

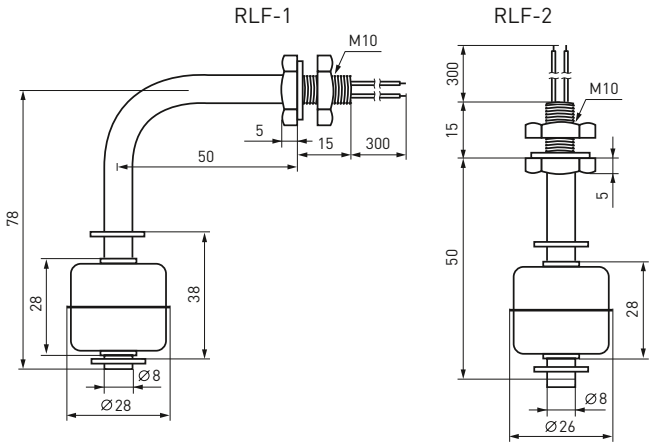
APPLICATION

- pumping stations
- chemical industry
- water treatment & sewerage systems
- storm water treatment plants

TECHNICAL DATA

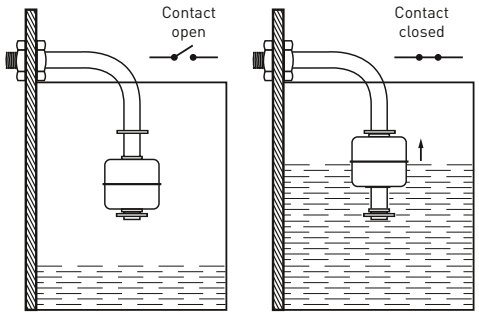
Parameters	Values	
	RLF-1-NO	RLF-2-NO
Maximum switching voltage, V	DC 180; AC 240	
Maximum switching current, A	DC 0,7; AC 0,5	
Maximum switching power, W	50	
Signal type	NO	
Stem, float, and retainer material	Stainless steel AISI 304	
Gasket material	Rubber	
Cross-section of connected wires, mm^2	0,35	
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, brown water, domestic sewage, liquid manure, washing and alkaline solutions, organic acids, alcohols, emulsions with fuel, fats and oils.

APPLICATION

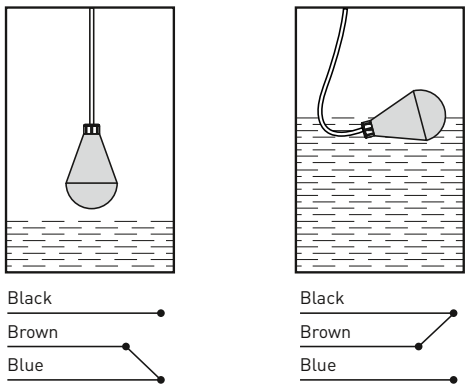
- pumping stations
- chemical industry
- water treatment & sewerage systems
- storm water treatment plants

TECHNICAL DATA

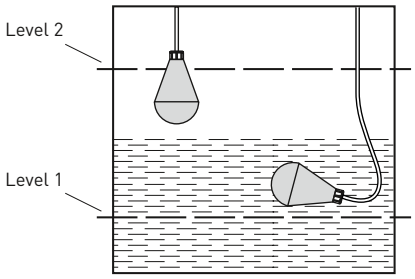
Parameters	Values
Rated switching AC voltage, V	220–240
Rated switching DC voltage, V	24
Maximum switching current, A	16
Switching angle, °	50 (±10)
Signal type	SPDT contact (NO or NC)
Housing material	Polypropylene (PP)
Cable material	Polyvinyl chloride (PVC)
Outer cable diameter, mm	6,5
Cross-section 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

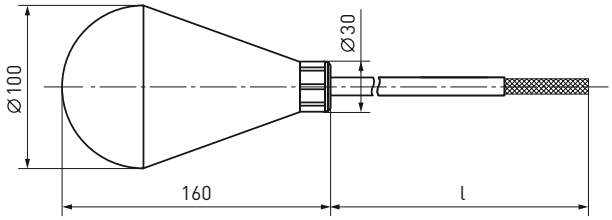
A change in orientation of the RL-1 housing, when submerged in a liquid, will trigger the integrated switch (relay). It will switch (open or close) the circuit, sending the signal to the controlled device (pump, valve, etc.).



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.

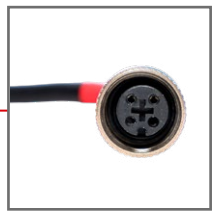
Inductive proximity sensors PROXIS-2 EKF are used as limit switches in transportation, steel industry, industrial automation, as well as in mechanical engineering and machinery. Inductive sensors are most widely used for control of automated lines and conveyors, position of metal objects in space, shaft 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 diameter options

Optical models available in diffuse, reflective & through-beam versions

APPLICATION

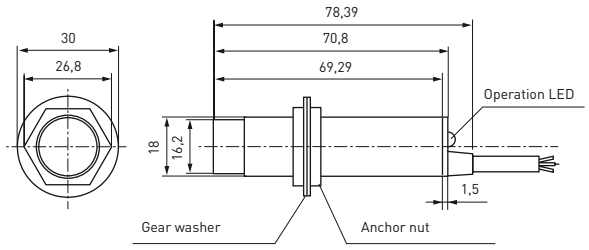
- Production lines & conveying systems;
- Machinery & mechanical engineering;
- Metal & wood works;
- Pharmaceuticals, food & beverage industries.

TECHNICAL DATA

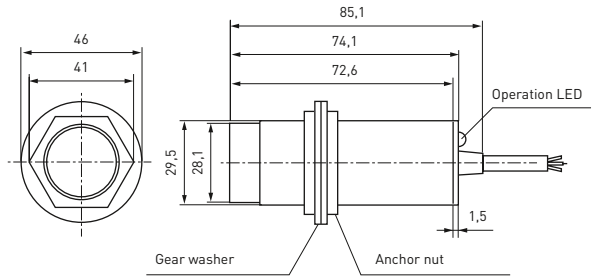
Parameters	Values		
	Capacitive PROXIS-1	Inductive PROXIS-2	Optical PROXIS-3
Supply voltage, V	10...30 DC (rated value - 24)		
Max. current consumption, mA	200		
Max. leakage current, mA	0,15		0,30
Max. voltage drop, V	6		1,5
Reverse polarity protection	Available		
Wiring diagram	3-wire, PNP or NPN		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 with housings)

Overall and installation dimensions (mm)

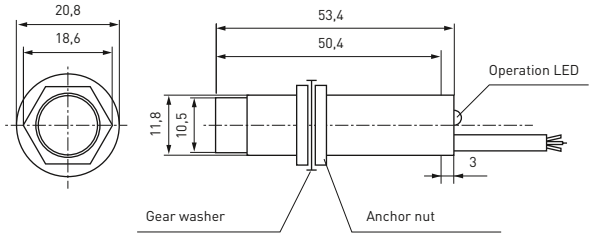
PROXIS-1-18



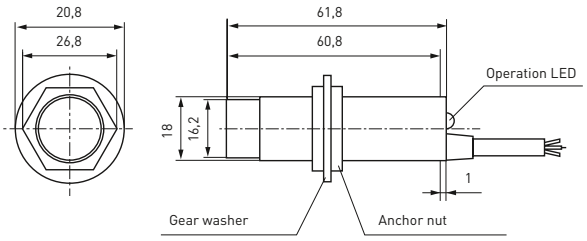
PROXIS-1-30



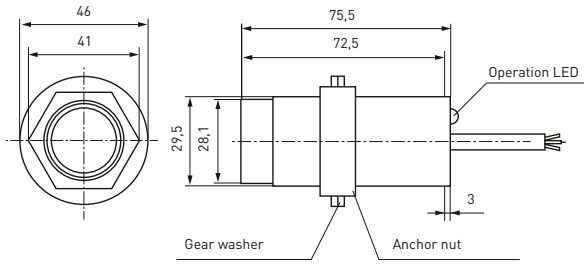
PROXIS-2-12



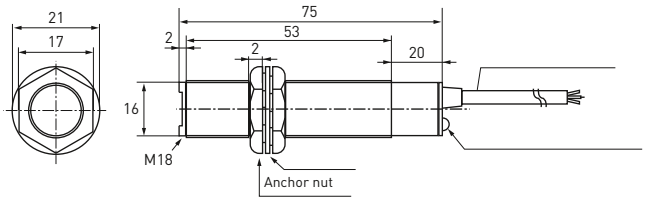
PROXIS-2-18



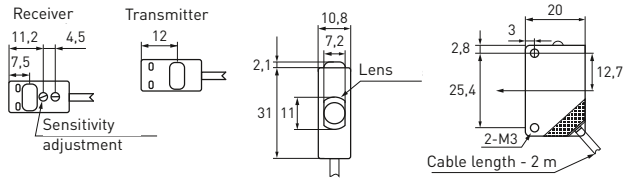
PROXIS-2-30



PROXIS-3D-18



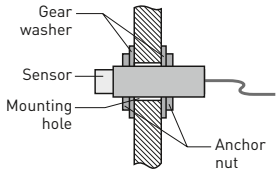
PROXIS-3D(3T)-20



Installation and operation

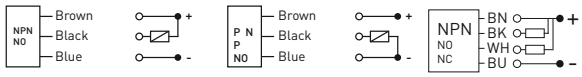
Mounting

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

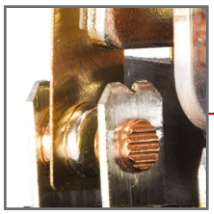
1. Sensor – 1 pc.
2. Mounting kit – 1 pc.
3. Reflector 50x50 - 1 pc. (only for reflective types)

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

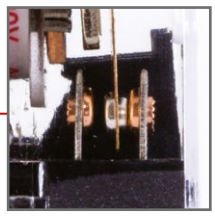
Interface relays RP EKF

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 mounted on a 35mm DIN rail. Relay sockets carry terminals for outputs, switching contacts and relay coil.

Standard: IEC 60947-5-1

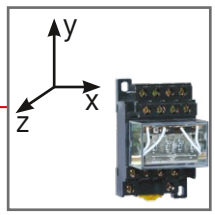


Silver-plated contacts for longer service life

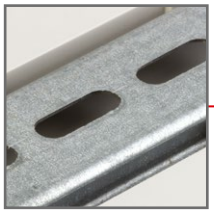


High rated current of contacts (10A circuits)

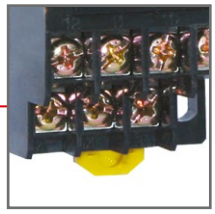
Compact size



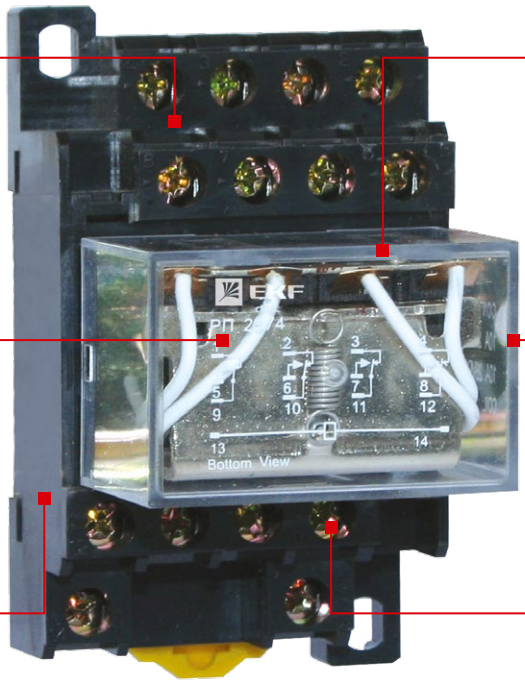
Any position in space



DIN rail mounting option



Mounting plate option (with RM modular sockets)



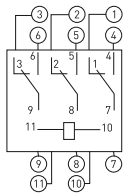
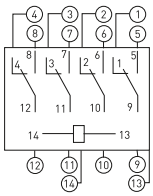
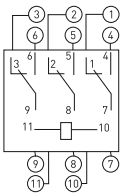
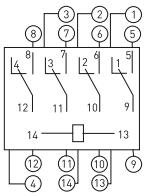
APPLICATION

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

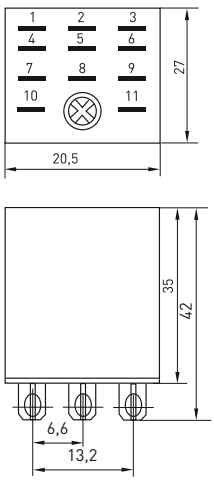
Wiring diagrams

RM 22/3	RM 22/4	RM 25/3	RM 25/4
			

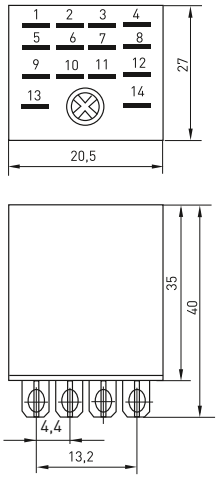
Parameters	Values	
	Interface relay	Relay socket
Electrical endurance, O-C cycles	100 000	–
Mechanical endurance, O-C cycles	10 000 000	–
Degree of protection	IP40	IP20
Cross-section of connected wires, mm²	–	0,75–2,5
Operating temperature, °C	-20...+40	-20...+40

Overall and installation dimensions (mm)

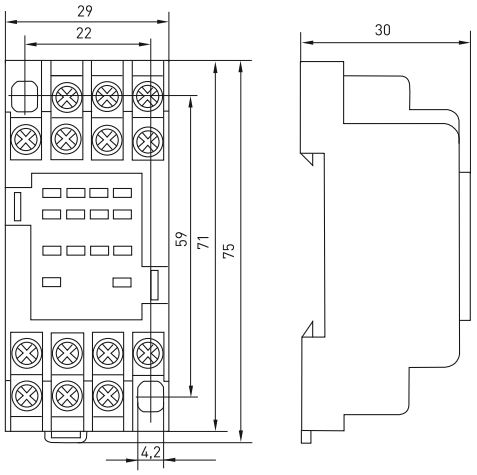
Interface relay RP 22/3



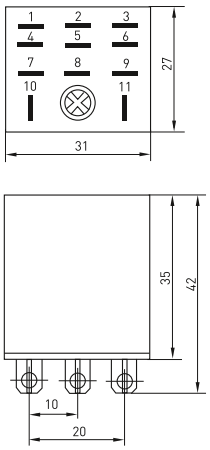
Interface relay RP 22/4



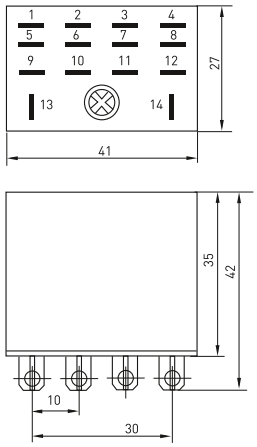
Relay socket RM 22/4



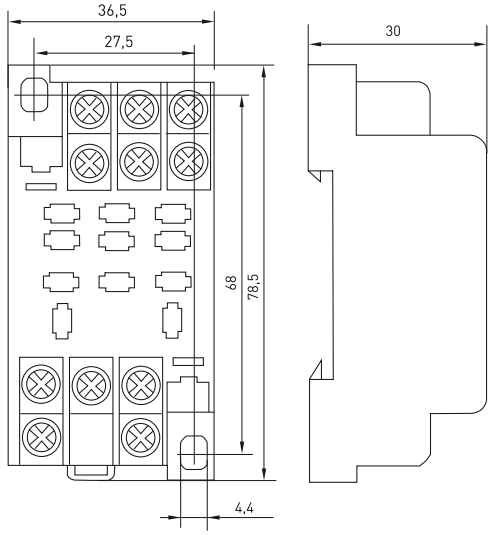
Interface relay RP 25/3



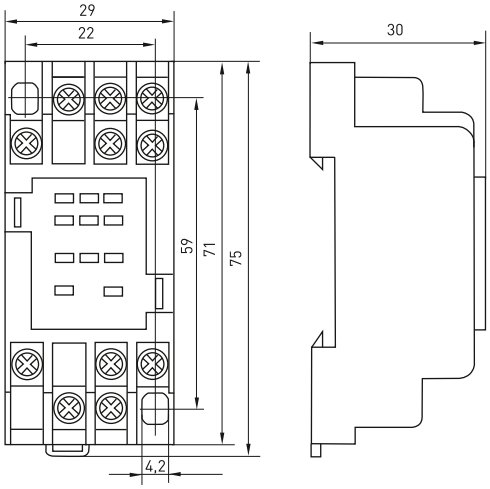
Interface relay RP 25/4



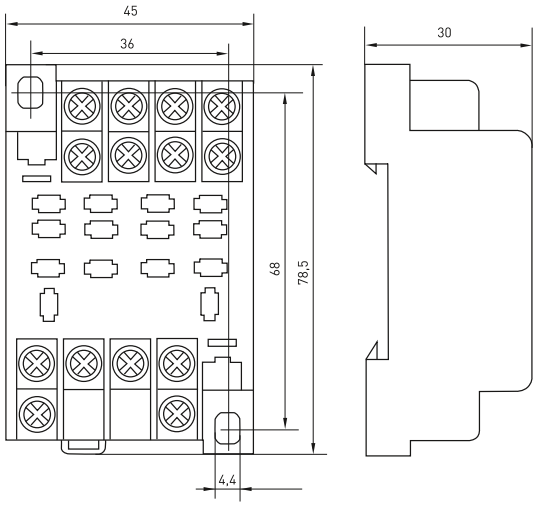
Relay socket RM 25/3



Relay socket RM 22/3



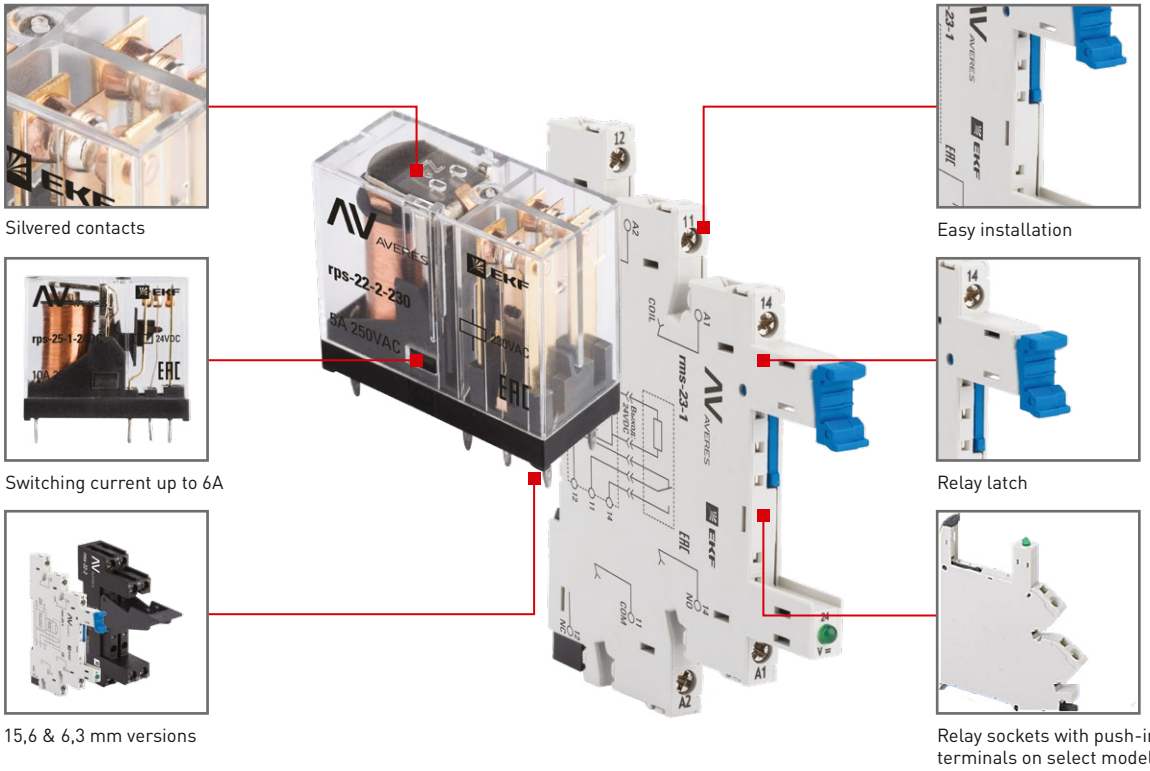
Relay socket RM 25/4



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. Featuring compact size, RP Slim relays can be mounted onto a 35mm DIN rail using RM Slim relay sockets. Relay sockets carry terminals for outputs, switching contacts and relay coil. Copper and aluminum wire connections are supported.



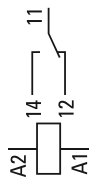
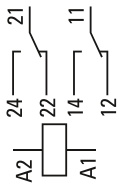
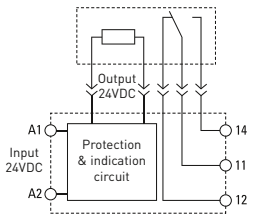
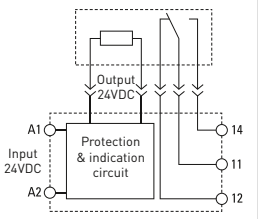
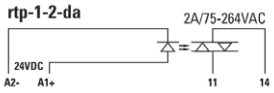
APPLICATION

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
				

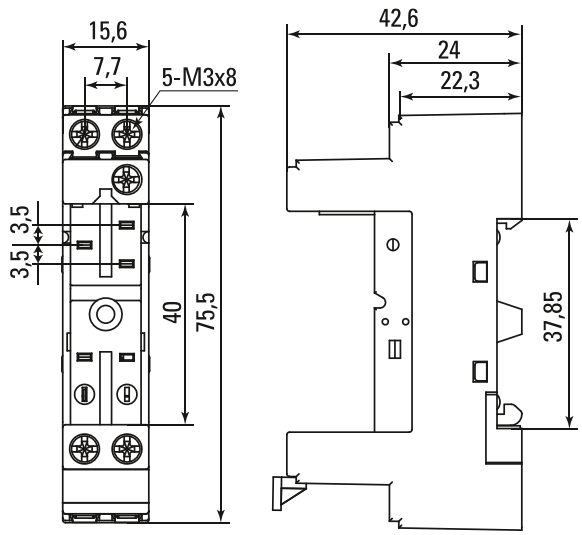
Parameters	Values		
Rated contact current, A	5	6	10
Rated voltage of control coil, V	220V DC; 230V AC	220V DC; 60V DC	220V DC; 230V AC
Number of switching contact groups	2	1	1
Max. operate time, ms	20	8	20
Max. release time, ms	10	4	10
Electrical endurance, cycles	100 000		
Mechanical endurance, cycles	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

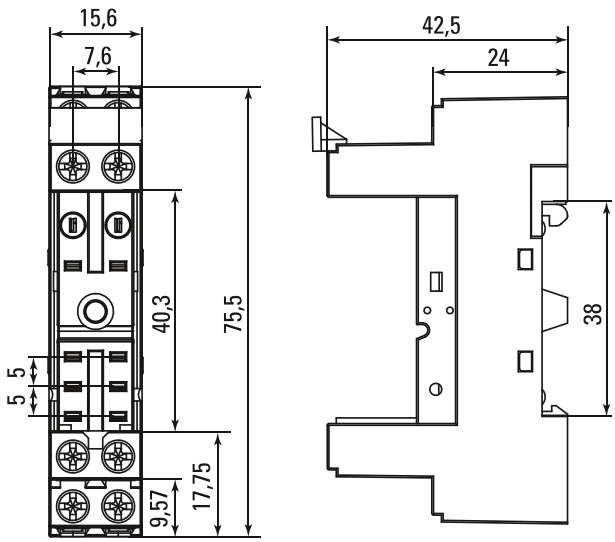
* Models rated 240V AC are available on request.

Overall and installation dimensions (mm)

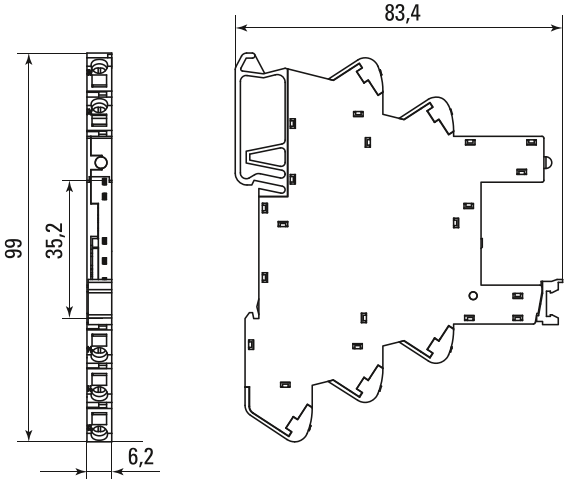
Relay socket RM Slim 25/1 AVERES EKF



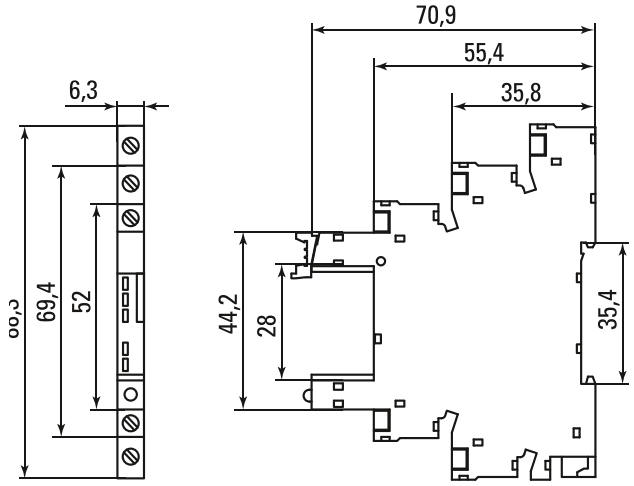
Relay socket RM Slim 22/2 AVERES EKF



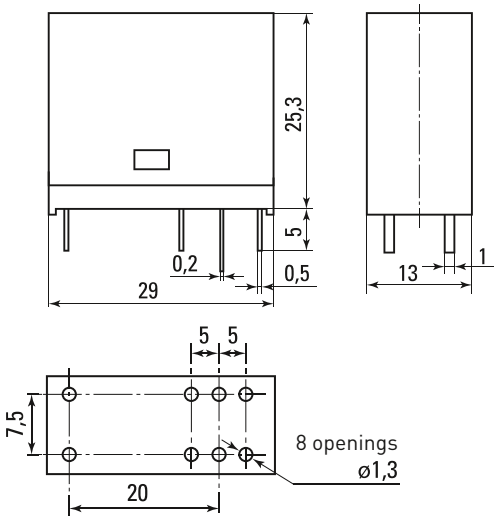
Relay socket RM slim 23/1 Push-in AVERES EKF



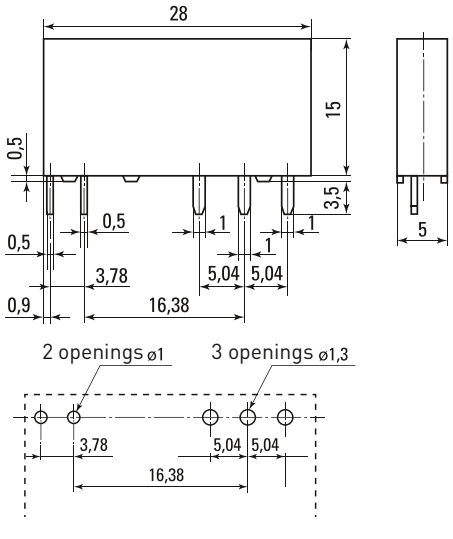
Relay socket RM Slim 23/1 AVERES EKF



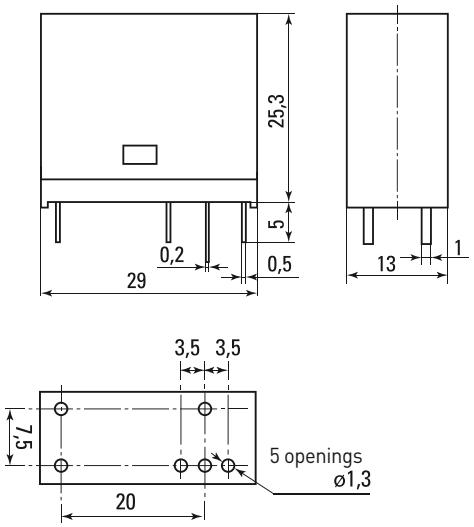
Interface relay RP Slim 25/1 AVERES EKF



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.

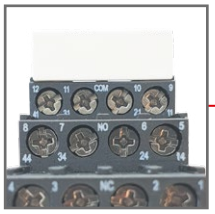
Picture	Name	Rated contact current In, A	Rated voltage of control coil Uc, V	Item code
	Interface relay RP slim 25/1 10A 24V DC AVERES EKF	10	24 DC	rps-25-1-24DC
	Interface relay RP slim 25/1 10A 230V AC AVERES EKF		230 AC	rps-25-1-230
	Interface relay RP slim 22/2 5A 12V DC AVERES EKF	5	12 DC	rps-22-2-12DC
	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

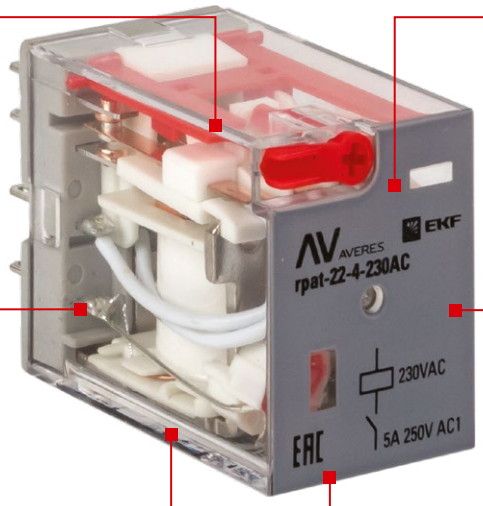
Interface relays RPA AVERES EKF are accessories used in AC control circuits with voltages up to 240* V for galvanic isolation and transmission of control commands by the end devices between power and control circuits. RPA are mounted on a 35mm DIN rail with relay sockets RM4 and RM5. Relay sockets carry terminals for outputs, switching contacts and relay coil.

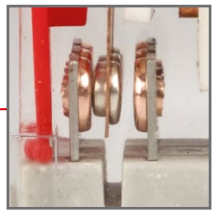
Manual contact switching

LED indication panel



Labeled terminals




Silver impregnated contacts

Position indicator

Relay sockets with push-in terminals on select models

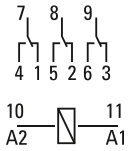
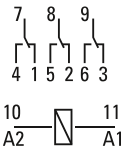
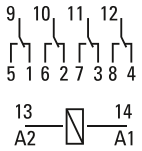
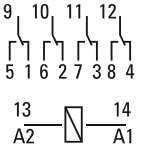
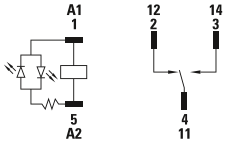
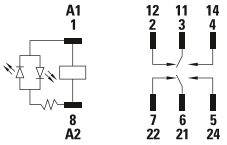
APPLICATION

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

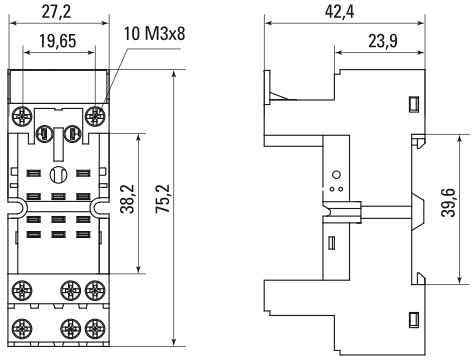
RPA 22/3 6A	RPAt 22/3 10A
	
RPAt 22/4 5A	**RPA 22/4 5A**
	
RPAt 25/1 12A	**RPAt 25/2 8A**
	

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	100 000	
Mechanical endurance, O-C cycles	10 000 000	
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

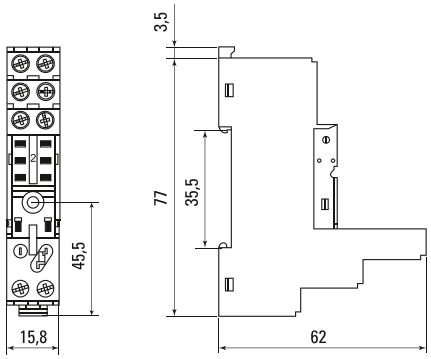
* Models rated 240V AC are available on request.

Overall and installation dimensions (mm)

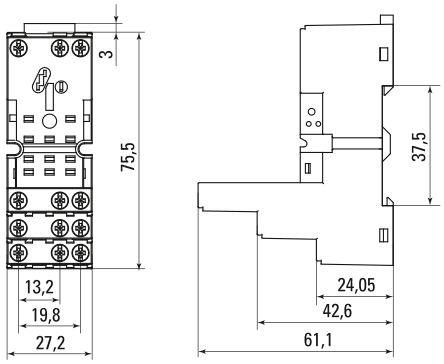
Relay socket RM4 22/3 AVERES EKF



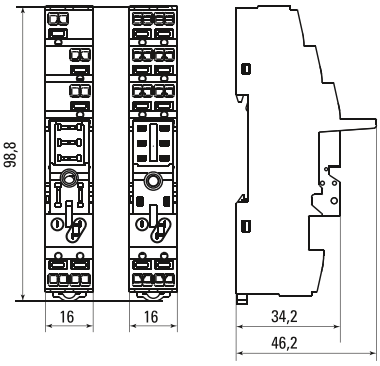
Relay socket RM5 22/2 AVERES EKF



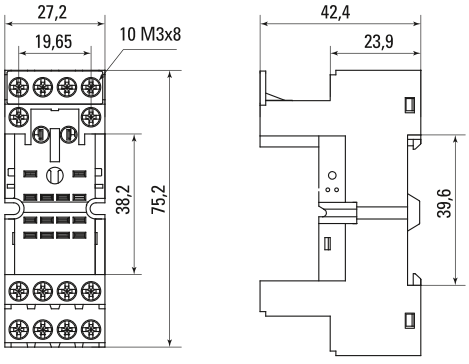
Relay socket RM5 22/3 AVERES EKF



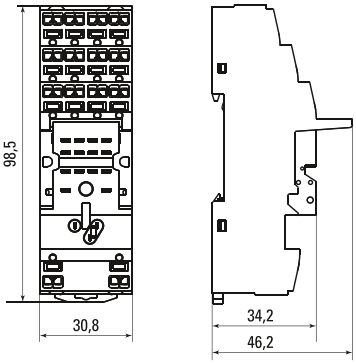
Relay sockets RM5 25/1 & 22/2 Push-in AVERES EKF



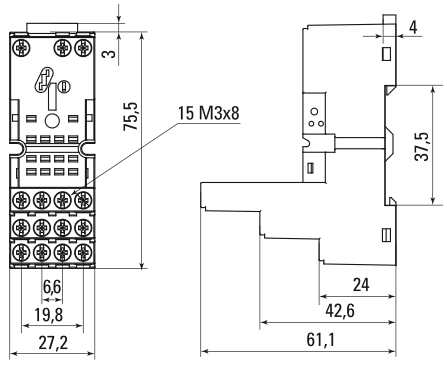
Relay socket RM4 22/4 AVERES EKF



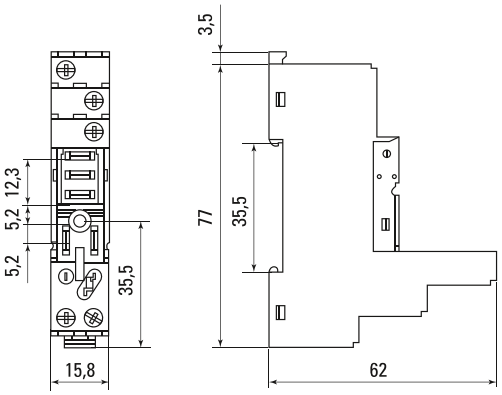
Relay socket RM5 22/4 AVERES EKF



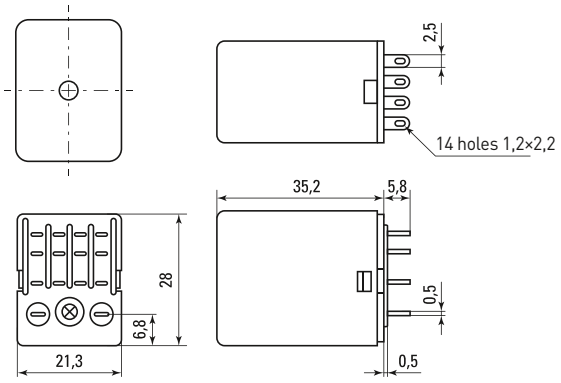
Relay socket RM5 22/5 AVERES EKF



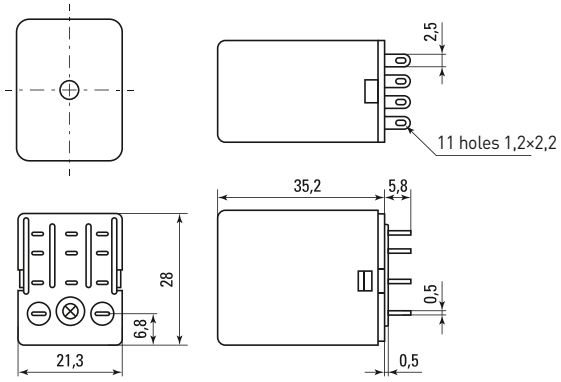
Relay socket RM5 22/1 AVERES EKF



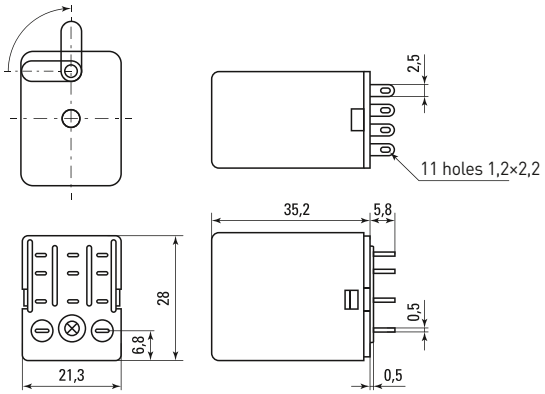
Interface relay RPA 22/4 5A AVERES EKF



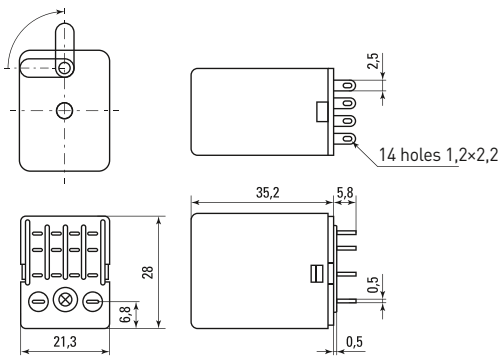
Interface relay RPA 22/3 6A AVERES EKF



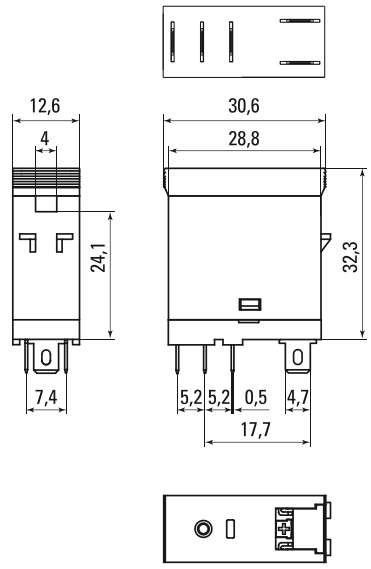
Interface relay RPAt 22/3 10A AVERES EKF



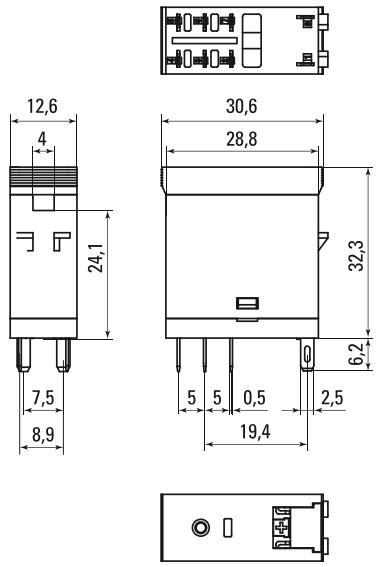
Interface relay RPAt 22/4 5A AVERES EKF



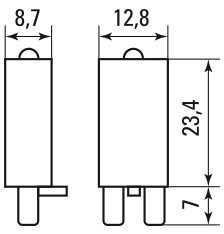
Interface relay RPA(t) 25/1 AVERES EKF



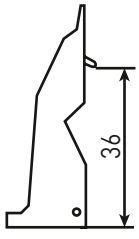
Interface relay RPA(t) 22/2 AVERES EKF



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.

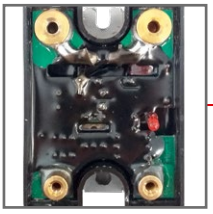
Picture	Name	Rated contact current In, A	Rated voltage of control coil Uc, V	Item code
	Interface relay RPA 22/3 6A 230V AC AVERES EKF	6	230 AC	rpa-22-3-230AC
	Interface relay RPA 22/4 5A 230V AC AVERES EKF	5		rpa-22-4-230AC
	Interface relay RPA 22/3 6A 24V DC AVERES EKF	6	24 DC	rpa-22-3-24DC
	Interface 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.

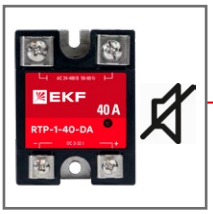


Epoxy potted for additional moisture, dust and overheating protection

No voltage surge during switching

Any position in space

Operation LED



Noiseless operation

No sparks

APPLICATION

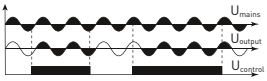
The solid-sate relay RTP EKF is used for smooth load regulation, switching of power circuits and AC control circuits up to 480 V. It is used in automation systems and control cabinets.

- 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		

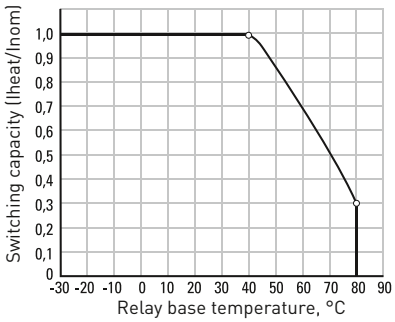
Operating procedure for zero-cross switching relays (DA & AA)

Function diagram	Description
	Load current in RTP-X-XX-DA and RTP-X-XX-AA relays is switched at zero crossing

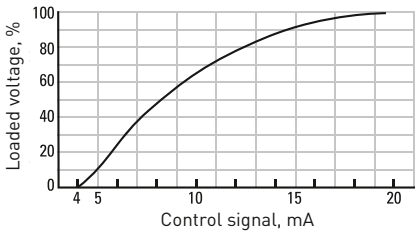
Operating procedure of phase control relay (LA)

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



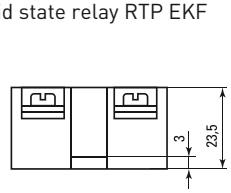
Output voltage/4-20mA input signal ratio

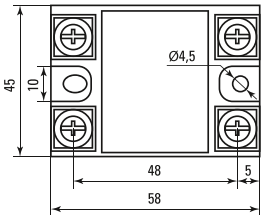


Output voltage/4-20mA input signal ratio for phase control (LA) relays

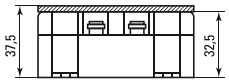
Overall and installation dimensions (mm)

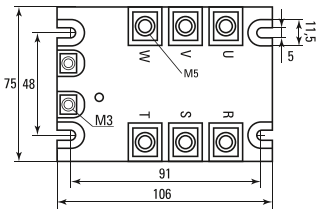
Solid state relay RTP EKF



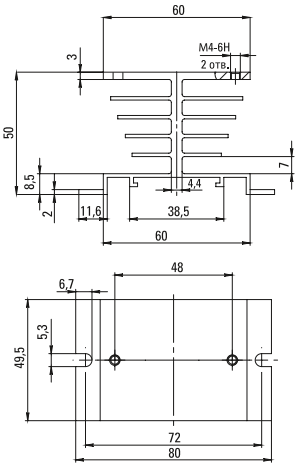


Three-phase solid state relay RTP EKF

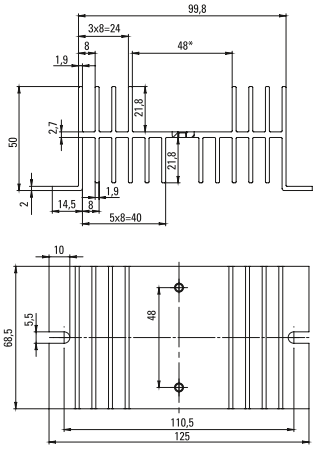




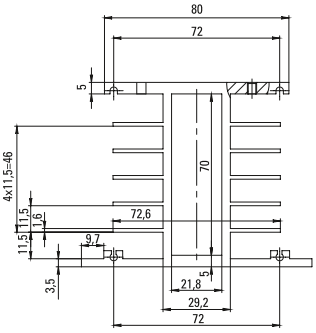
Cooling element for solid state relay 25A EKF



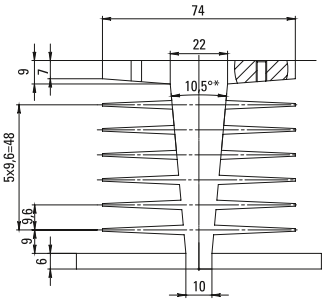
Cooling element for solid state relay 40A EKF

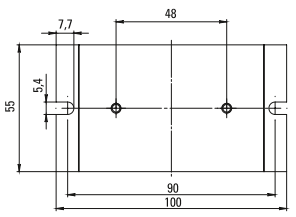


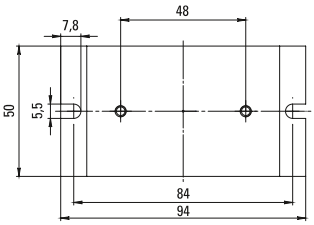
Cooling element for solid state relay 60A EKF



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-mn
		40	24	15	400	rtp-1-40-da-mn
		40	24	15	400	RTP-3-40-DA
		60	36	20	600	rtp-1-60-da-mn
		60	36	20	600	RTP-3-60-DA
		80	70	25	800	rtp-1-80-da-mn
		80	70	25	800	RTP-3-80-DA
	90-250 V AC	25	20	10	250	rtp-1-25-aa-mn
		40	32	15	400	rtp-1-40-aa-mn
		40	32	15	400	RTP-3-40-AA
		60	50	20	600	rtp-1-60-aa-mn
		60	50	20	600	RTP-3-60-AA
		80	70	25	800	rtp-1-80-aa-mn
		80	70	25	800	RTP-3-80-AA
	4-20 mA (analog input)	25	20	10	250	rtp-1-25-la-mn
		40	32	15	400	rtp-1-40-la-mn
		60	50	20	600	rtp-1-60-la-mn
		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 60730-1

IP40 on the front panel side

DIN rail mounting

Flame-retardant plastic housing

Up to 16 programmable scenarios

Easy to read LCD

Scenario keeping time at loss of power up to 150 hours

APPLICATION

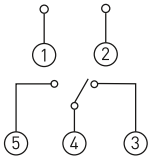
Digital timer with LCD TE-15 EKF is used in industrial and household applications; in lighting, ventilation and heating systems, as well as in industrial equipment. Designed for:

- 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 endurance, cycles	10 000 000
Electrical endurance, cycles	100 000
Degree of protection	IP20
Rated voltage, V	220-240
Operating temperature, °C	-25 to +50

Installation and operation

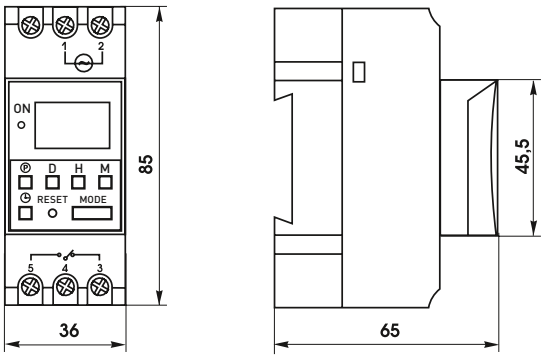
1. Design and operation

The microprocessor of the timer enables simultaneous storage and execution of 16 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 "MODE" button.
To reset all settings, press the "RESET" button.

Overall and installation dimensions (mm)



Delivery scope

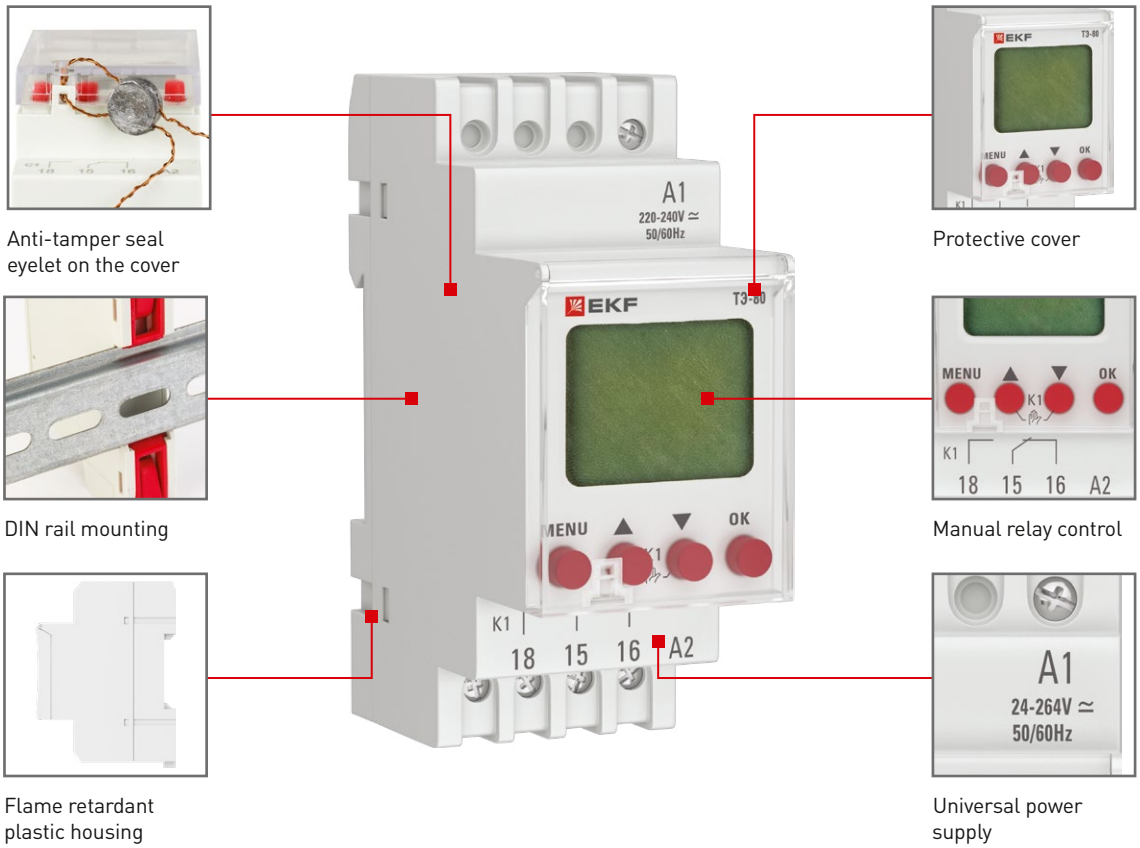
1. Digital timer TE-15 EKF

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 60730-2-7



Anti-tamper seal eyelet on the cover

DIN rail mounting

Flame retardant plastic housing

Protective cover

Manual relay control

Universal power supply

APPLICATION

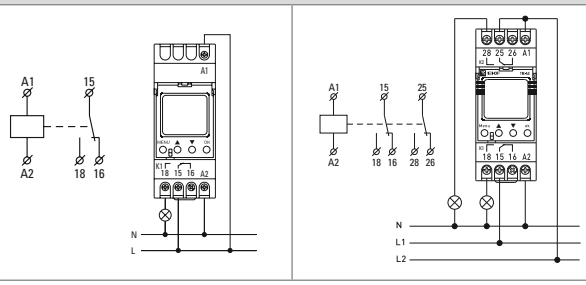
Digital timer with LCD TE-80 EKF is used in industrial and household applications; in lighting, ventilation and heating systems, as well as in industrial equipment. Designed for:

- 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

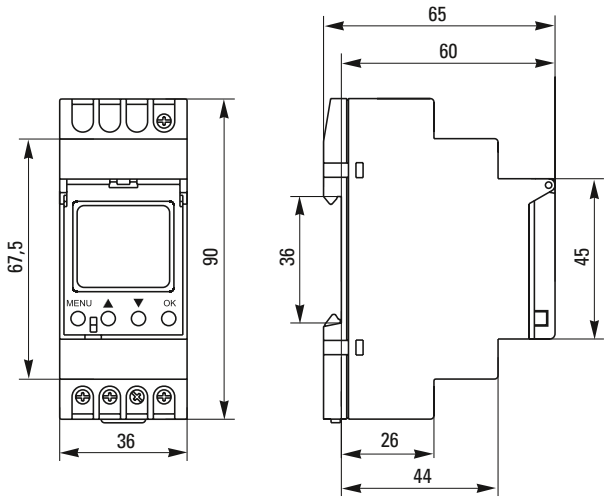


Parameters		Values
Rated frequency, Hz		50 / 60
Insulation voltage Ui, V		250
Maximum switching current, A	at power factor = 1	16
	at power factor = 0,7	10
Maximum number of scenarios		80
Utilization category		AC1
Tightening torque, N·m		0,5
Maximum switching power		4000VA/AC; 384W/DC
Max. time error, s/day		±1
Max. power consumption, W		2
Electrical endurance, cycles		100 000
Mechanical endurance, cycles		1 000 000
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

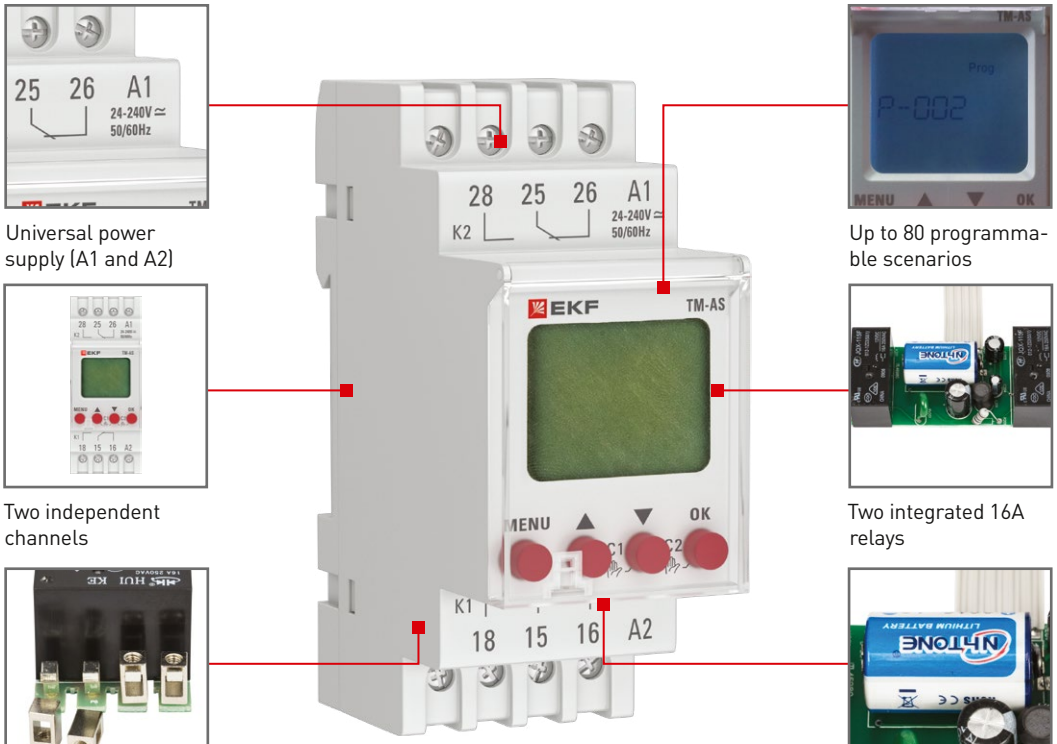
1. Digital timer TE-80 EKF

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 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

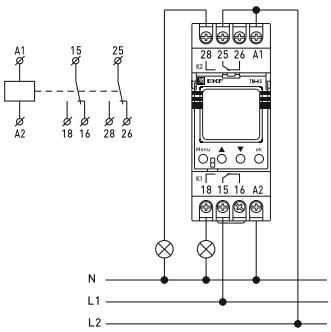
Astro digital timer TM-AS EKF is used in industrial and household applications: in lighting systems (streets, squares, courtyards, driveways, billboards), ventilation and heating. Designed for:

- 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

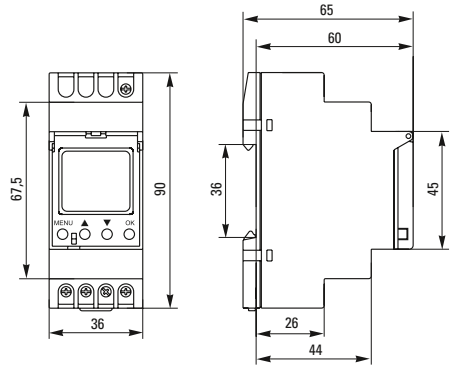


Parameters		Values
Rated frequency, Hz		50 / 60
Rated control circuit voltage, V		220-240
Insulation voltage Ui, V		250
Maximum switching current, A	at power factor = 1	16
	at power factor = 0,7	10
Utilization category		AC-1
Tightening torque, N•m		0,5
Maximum switching power		4000VA/AC1; 384W/DC
Max. time error, s/day		±1
Max. battery life, years		10
Max. power consumption, VA		2
Electrical endurance, cycles		100 000
Mechanical endurance, cycles		1 000 000
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 is 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

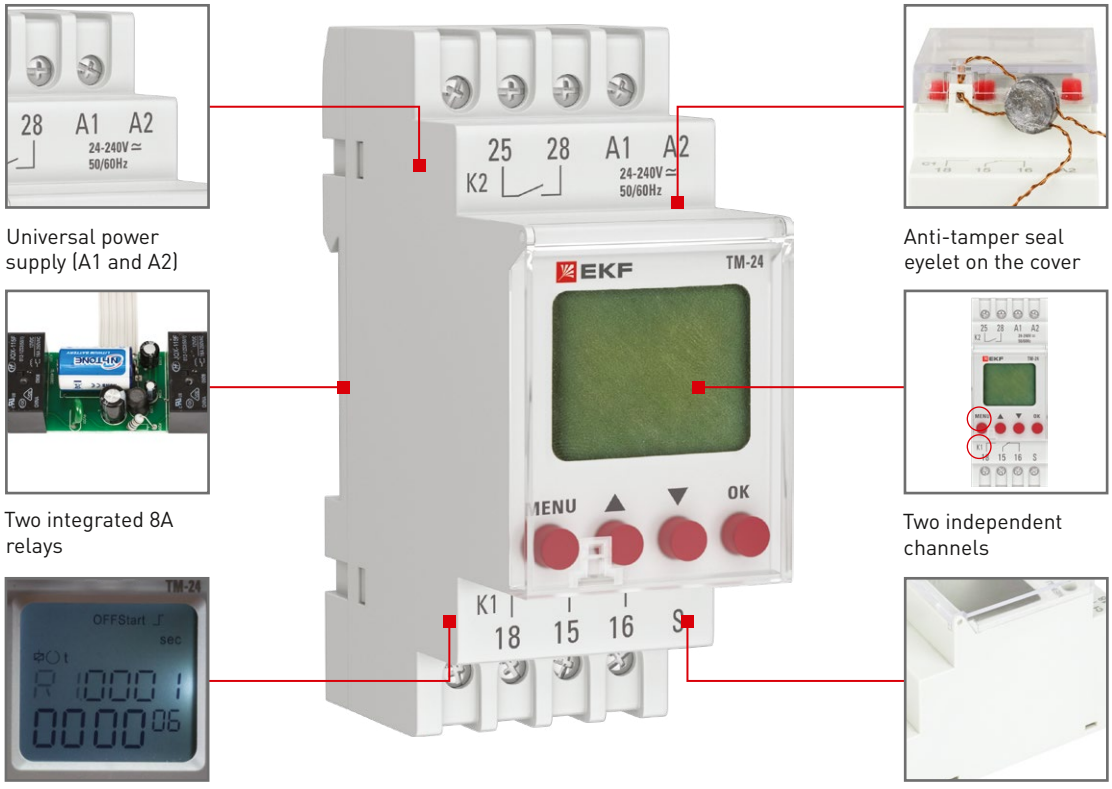
1. Astro digital timer TM-AS EKF

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 60947-1; IEC 60947-5-1



Universal power supply (A1 and A2)

Anti-tamper seal eyelet on the cover

Two integrated 8A relays

Two independent channels

Easy to read LCD

Molded front panel

APPLICATION

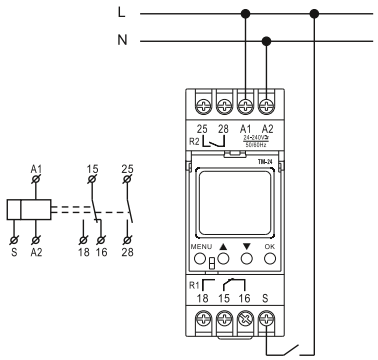
The multi-function timer TM-24 EKF is used in industrial and household applications: in lighting systems, ventilation and heating, industrial automation. Designed for:

- 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 endurance, cycles	100 000
Mechanical endurance, cycles	1 000 000
Max. altitude above sea level, m	2000
Degree of protection	IP20
Pollution degree	3
Operating temperature, °C	-5 to +50
Storage temperature °C	- 25 to +75
Position in space	Free
Mounting	35mm DIN rail
Cross-section of connected wires, mm²	1,5

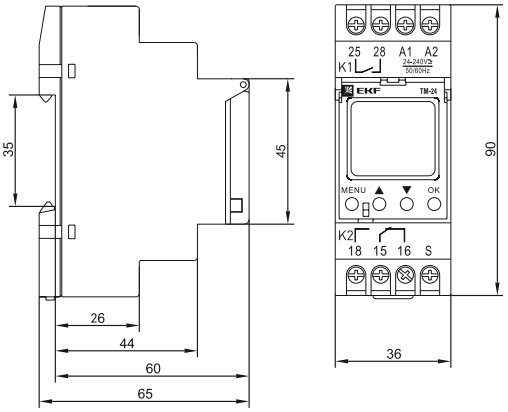
Installation and operation

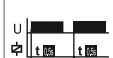
The device is installed onto a 35 mm DIN rail in a distribution enclosure.
To avoid interference, false tripping, or malfunctioning of the relay, do not route the relay power supply wires along with the power wiring. If necessary, use shielded cable.
Copper and aluminum wire connections are supported (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

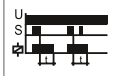
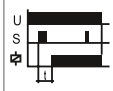
1. Multifunctional digital timer with display TM-24 EKF

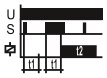
Overall and installation dimensions (mm)



	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.

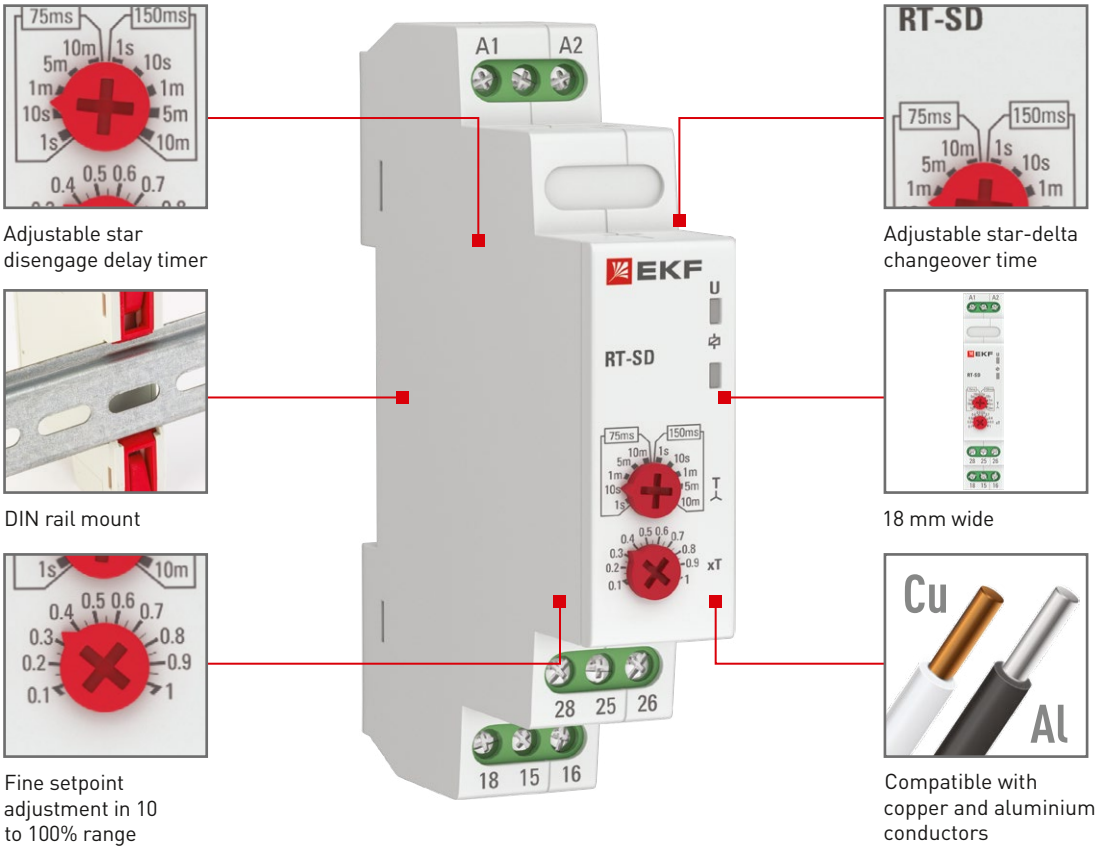
	Function diagram	Description
20		**Delay On (Leading edge, ≥T1) / Delay Off (Trailing edge, no repeat countdown)** After relay is energized, it remains in a steady state until a signal (S) is detected. After the signal (S) is detected, a countdown (T1) is started. Once the countdown (T1) is finished, 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 60947-5-1



Adjustable star disengage delay timer

Adjustable star-delta changeover time

DIN rail mount

18 mm wide

Fine setpoint adjustment in 10 to 100% range

Compatible with copper and aluminium conductors

APPLICATION

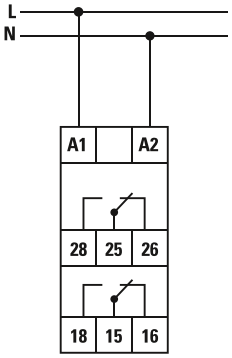
The RT-SD EKF time relay is designed for high-power industrial electric motors with high inrush currents. The relay performs the following functions:

- 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 endurance, cycles	100 000
Mechanical endurance, 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 +50
Storage temperature °C	-25 to +75

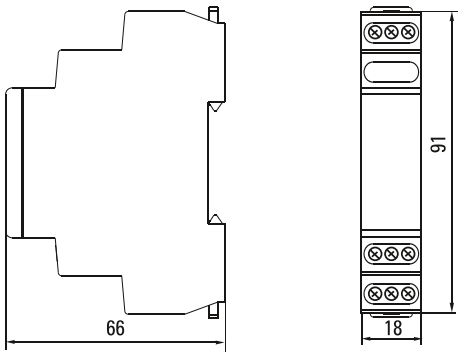
Installation and operation

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)

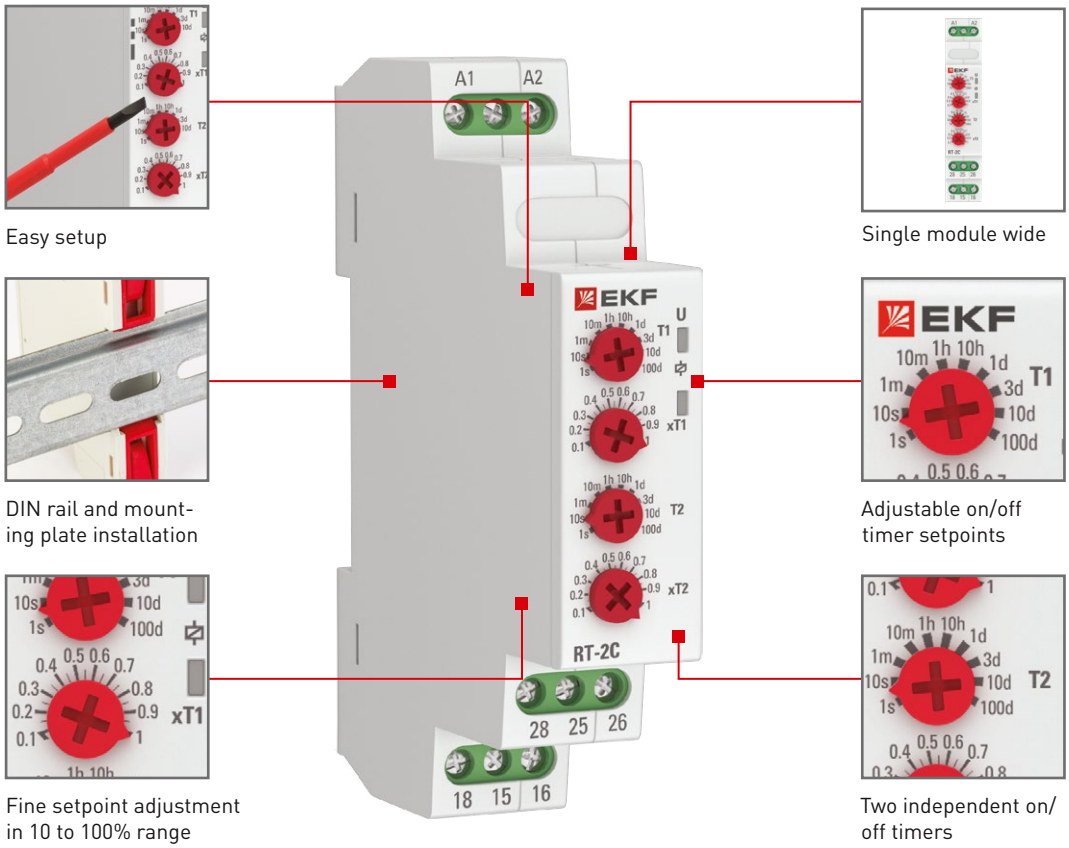


Name	Supply voltage, V	Mounting	Item code
Time relay RT-SD star-delta EKF	24-240 AC/DC	35 mm DIN rail	rt-sd
Time relay RT-SD 12-240V star-delta EKF	12-240 AC/DC		rt-sd-12-240

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 60947-5-1



Easy setup

Single module wide

DIN rail and mount-ing plate installation

Adjustable on/off timer setpoints

Fine setpoint adjustment in 10 to 100% range

Two independent on/ off timers

APPLICATION

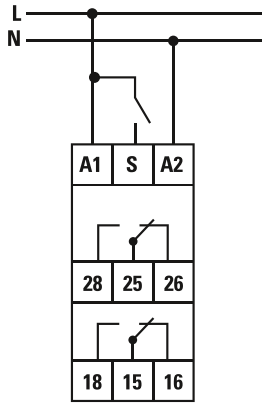
RT-2C EKF time relays are used in industrial and civil applications, where a time delay or cyclical equipment operation is required. Functions:

- control of switching equipment (contactors, starters, relays);
- two independent timer scenarios;
- cyclical equipment operation.

TECHNICAL DATA

Wiring diagrams

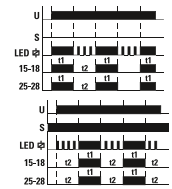
RT-2C



Contacts 16–15–18 and 26–25–28 are linked, and when switching, they work in conjunction with each other.

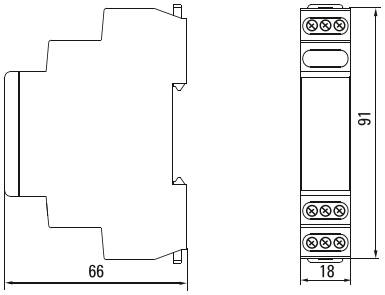
Installation and operation

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	415 AC
Power consumption	AC: ⩽1,5 VA; DC: ⩽1 W
Time delay range	0,1s to 10 days
Set-point error, %	⩽5
Repeatability error, %	⩽0,2
Power interruption, ms	min. 200
Electrical endurance, cycles	100 000
Mechanical endurance, 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 +50
Storage temperature °C	-25 to +75
Tightening torque, N·m	0,5
Mounting	35 mm DIN rail

Overall and installation dimensions (mm)



Delivery scope

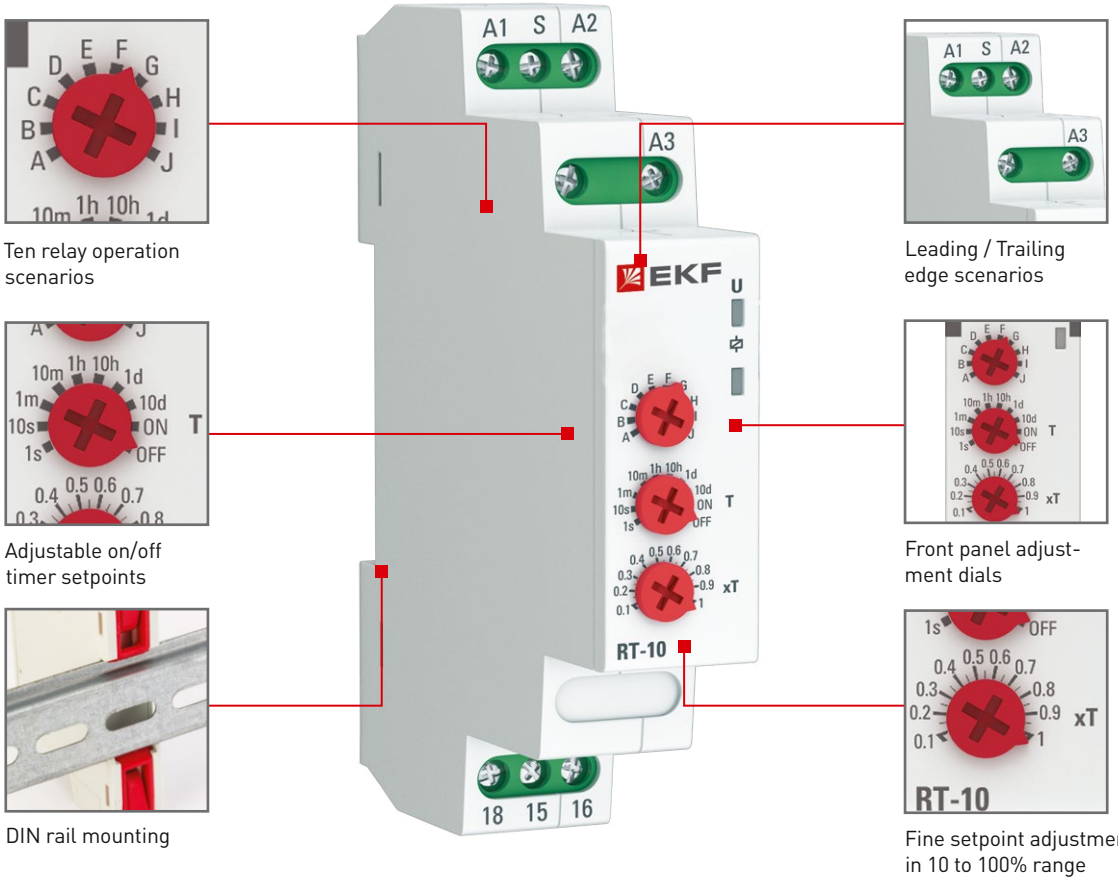
1. Time relay RT-2C EKF - 1 pc.

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 60947-5-1



APPLICATION

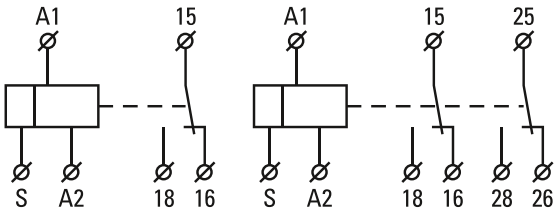
The RT-10 EKF multifunctional time relay is used in industrial, administrative, and residential buildings to control equipment, where a time delay or cyclical equipment operation is required. Functions:

- control of switching equipment;
- two independent timer scenarios;
- cyclical equipment operation;
- load control by input signal;
- pulse mode operation.

TECHNICAL DATA

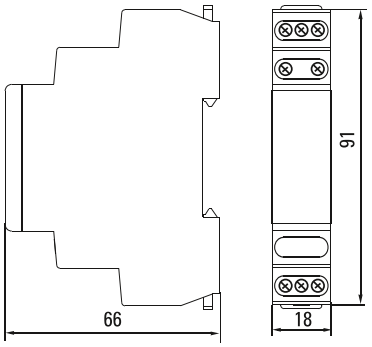
Wiring diagrams

RT-10



Parameters	Values
Rated impulse voltage, V AC	415
Power consumption	AC: ≤1,5 VA; DC: ≤1 W
Time delay range	From 0,1s to 10 days
Set-point accuracy, %	≤5
Repeatability, %	≤0,2
Power interruption, ms	min. 200
Electrical endurance, cycles	100 000
Mechanical endurance, cycles	1 000 000
Rated load current, A	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 +50
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)

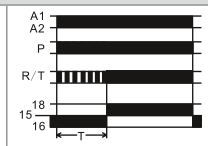
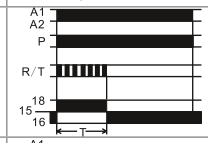
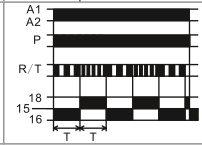
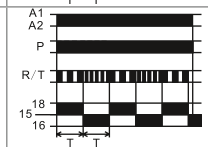
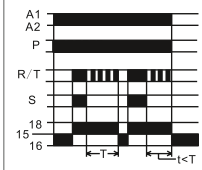
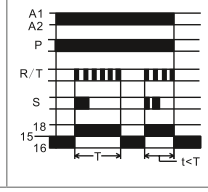


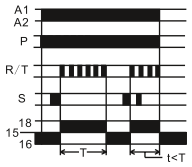
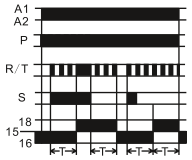
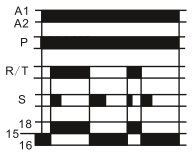
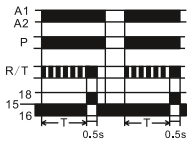
Installation and operation

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.

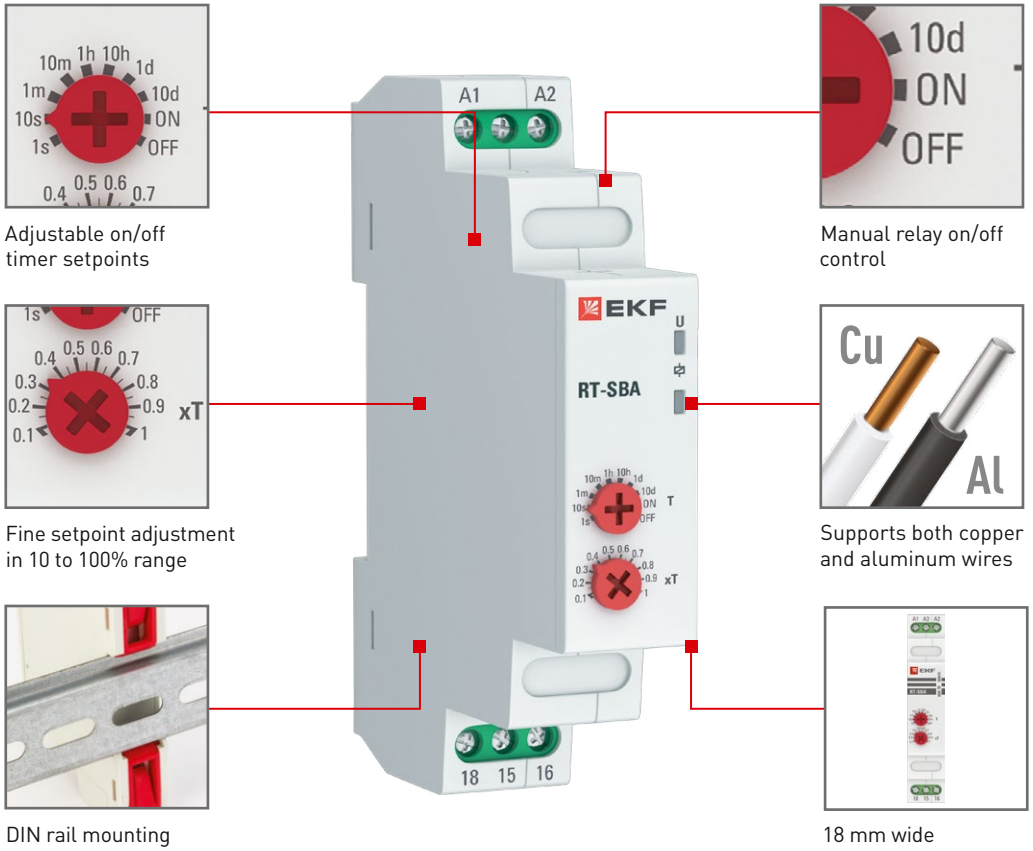
	Function diagram	Description
G		**Delay Off (Trailing edge)** After relay is energized, it remains in a steady state until a signal (S) is detected and disappears. As soon as the signal disappears, contacts 15-16 open, contacts 15-18 close, and the countdown (T) is started. Once the countdown is finished, 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 60947-5-1



APPLICATION

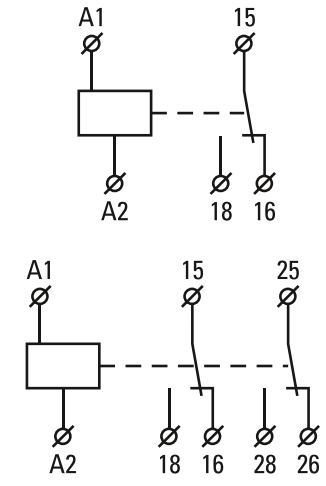
The RT-SBA EKF time relay can be used in industrial, office, and residential buildings for the equipment control, where it is necessary to turn the equipment on at the leading edge of the control signal with a time delay, and/or turn the equipment off with a time delay. Function:

- turn on the load at receiving the control signal, after time delay;
- control of switching equipment;
- adjustable countdown timer.

TECHNICAL DATA

Wiring diagrams

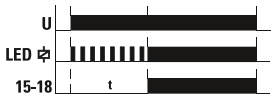
RT-SBA



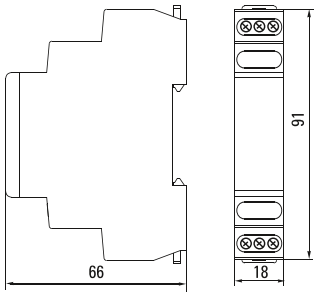
Parameters	Values
Rated pulse voltage, V AC	415
Power consumption	AC: ⩽1,5 VA; DC: ⩽1 W
Time delay range	From 0,1s to 10 days
Set-point error, %	⩽5
Repeatability error, %	⩽0,2
Power interruption, ms	min. 200
Electrical endurance, cycles	100 000
Mechanical endurance, cycles	1 000 000
Rated load current, A	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 +50
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)

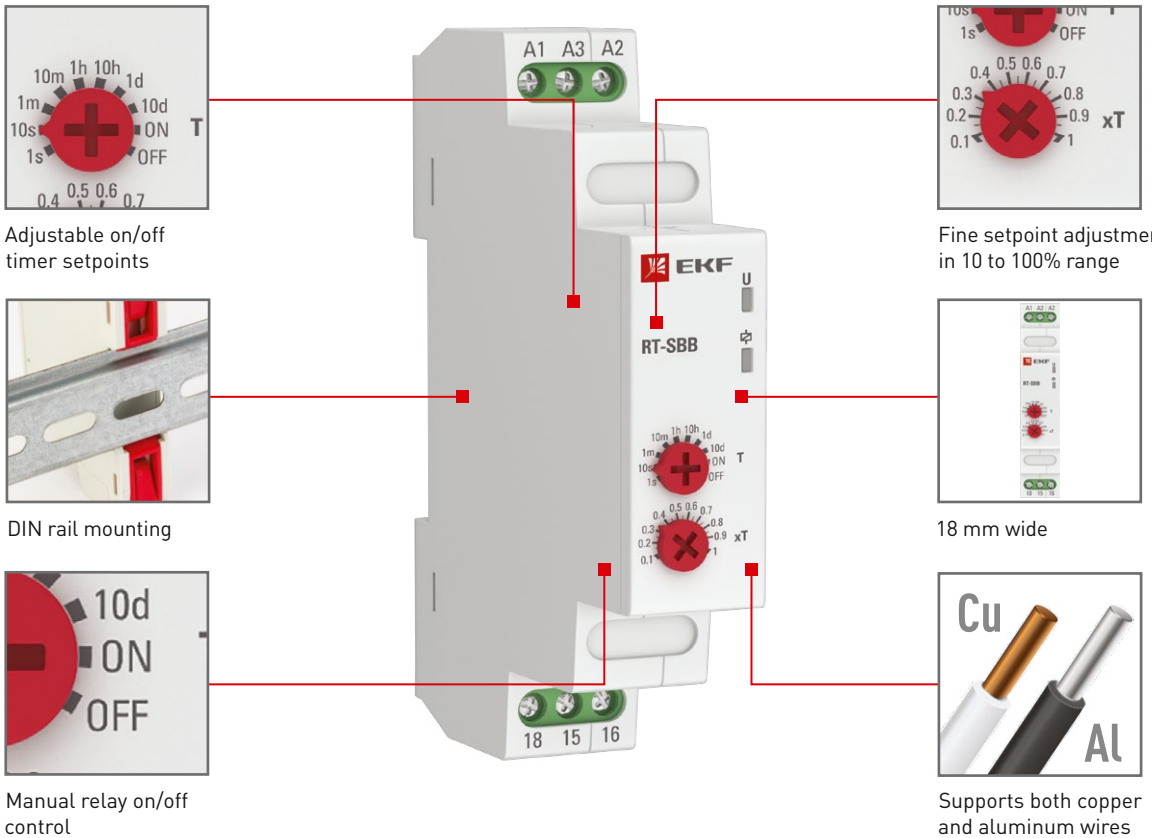


Name	Supply voltage, V	Contacts	Item code
Time relay RT-SBA delay on EKF	24-240 AC/DC	1C/O (one change-over)	rt-sba
Time relay RT-SBA-2 delay on EKF		2 C/O (two change-over)	rt-sba-2
Time relay RT-SBA-2 12-240V delay on EKF	12-240 AC/DC	1C/O (one change-over)	rt-sba-12-240

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 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

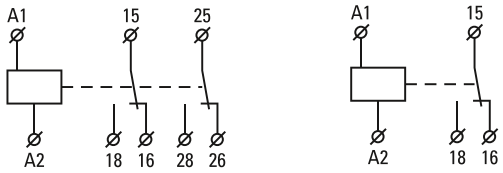
The RT-SBB EKF time relay can be used in industrial, office, and residential buildings for the equipment control, where a one-shot pulse functionality is desired. Function:

- variable-length pulse signal generation on energizing the relay;
- control of switching equipment;
- adjustable timer.

TECHNICAL DATA

Wiring diagrams

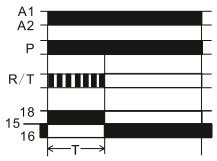
RT-SBB



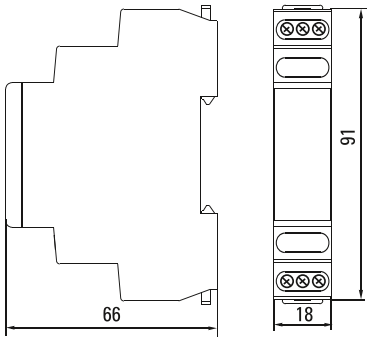
Parameters	Values
Rated pulse voltage, V AC	415
Power consumption	AC: ≤1,5 VA; DC: ≤1 W
Time delay range	From 0,1s to 10 days
Set-point error, %	≤5
Repeatability error, %	≤0,2
Power interruption, ms	min. 200
Electrical endurance, cycles	100 000
Mechanical endurance, cycles	1 000 000
Rated load current, A	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 +50
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

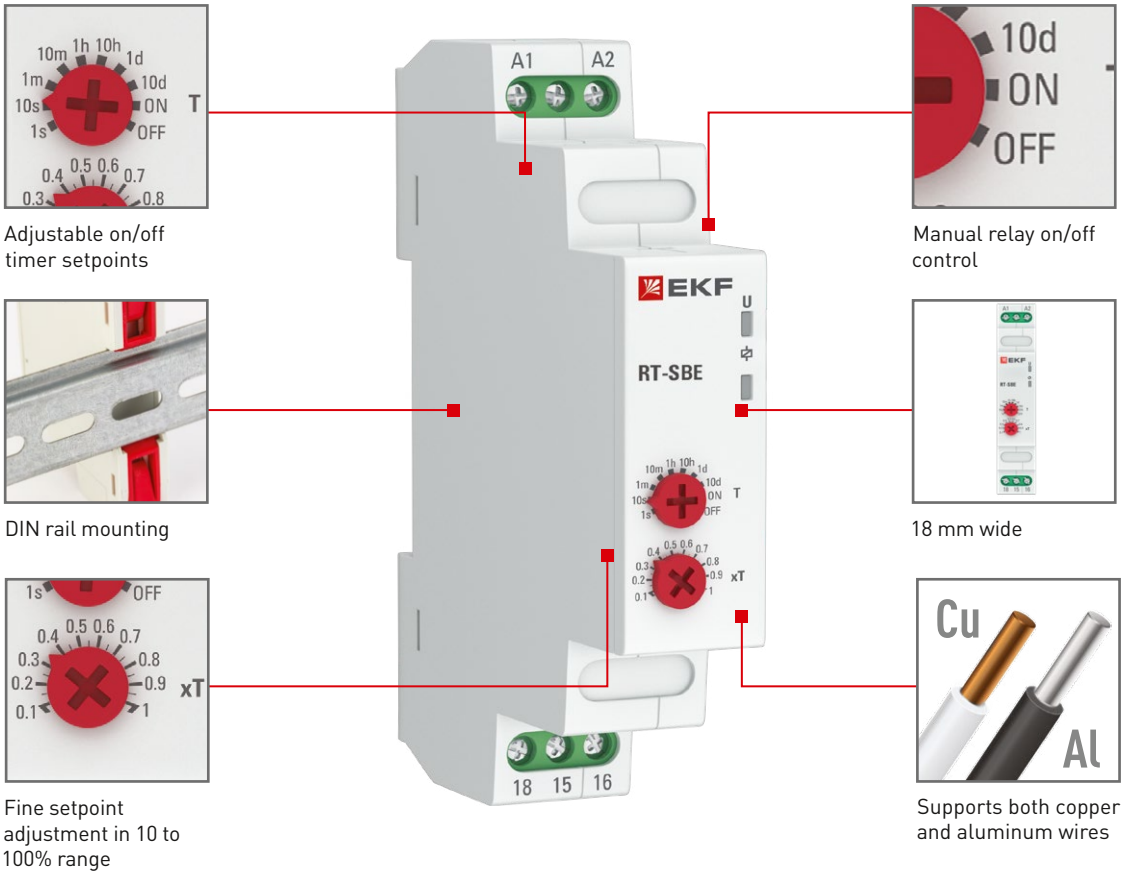
1. Time relay RT-SBB EKF.

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 60947-5-1



APPLICATION

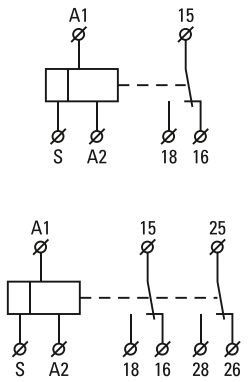
The RT-SBE EKF time relay can be used in industrial, office, and residential buildings for the equipment control, where a delayed off trailing edge functionality is desired. Examples:

- 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

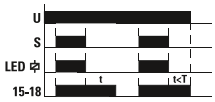
RT-SBE



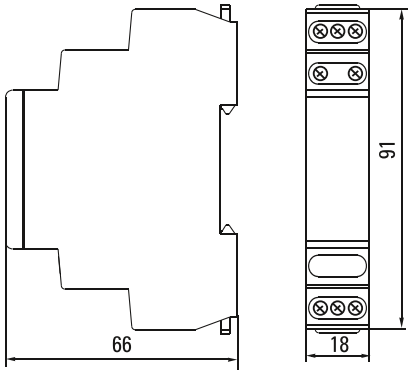
Parameters	Values
Rated pulse voltage, V AC	415
Power consumption	AC: ≤1,5 VA; DC: ≤1 W
Time delay range	From 0,1s to 10 days
Set-point error, %	≤5
Repeatability error, %	≤0,2
Power interruption, ms	min. 200
Electrical endurance, cycles	100 000
Mechanical endurance, cycles	1 000 000
Rated load current, A	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	-5 to +50
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

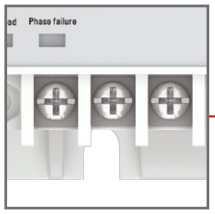
Motor protection relays MPR EKF

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.

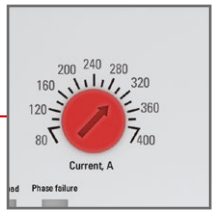
Standard: IEC 60947-5-1

Easy setup

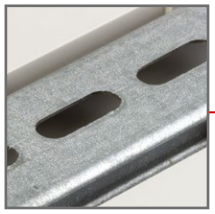
Trip class: 5-30



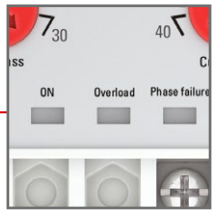
Convenient terminals for easy wire connection



Control of motors with rated current up to 400A



DIN rail mounting clamp for lower power models



Trip mode indicators

APPLICATION

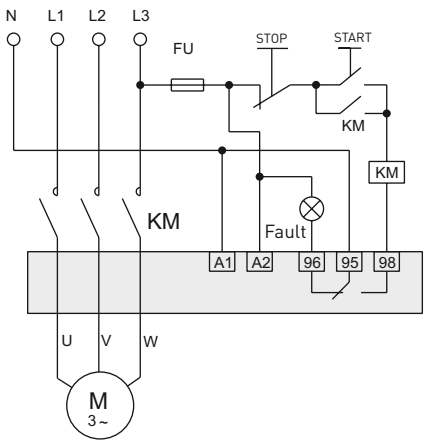
Motor protection relay MPR EKF is used in the industrial sector to protect high-power electric motors with rated currents up to 400 A and performs the following functions:

- motor overload protection;
- protection against load asymmetry;
- protection in the event of phase conductor interruption.

TECHNICAL DATA

Wiring diagrams

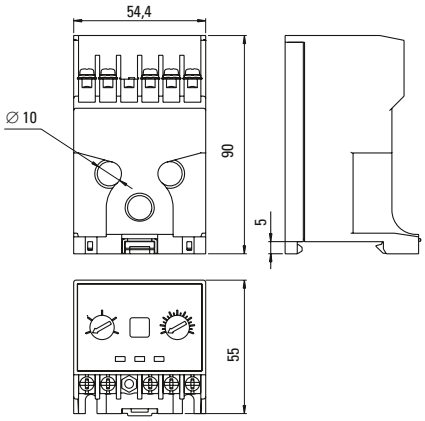
MPR



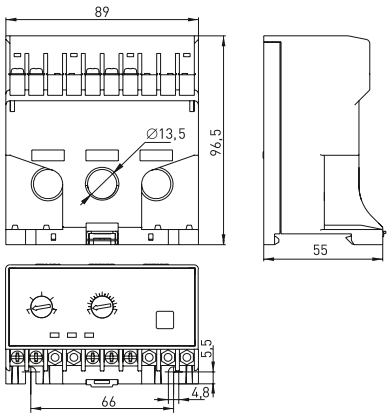
Parameters	Values			
	MPR-20	MPR-80	MPR-200	MPR-400
Rated supply voltage, V	220-240			
Rated power circuit voltage, V	400			
Rated frequency, Hz	50 / 60			
Rated insulation voltage, V	690			
Number and type of contacts	1 C/O (change-over)			
Rated relay contact current at 240V, A	1,5			
Thermal resistance 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 endurance, cycles	100 000			
Mechanical endurance, cycles	1 000 000			
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)

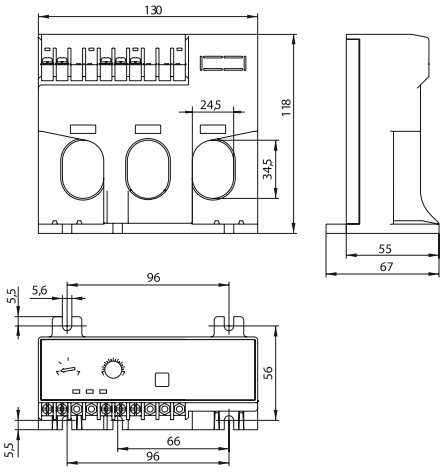
MPR-20



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

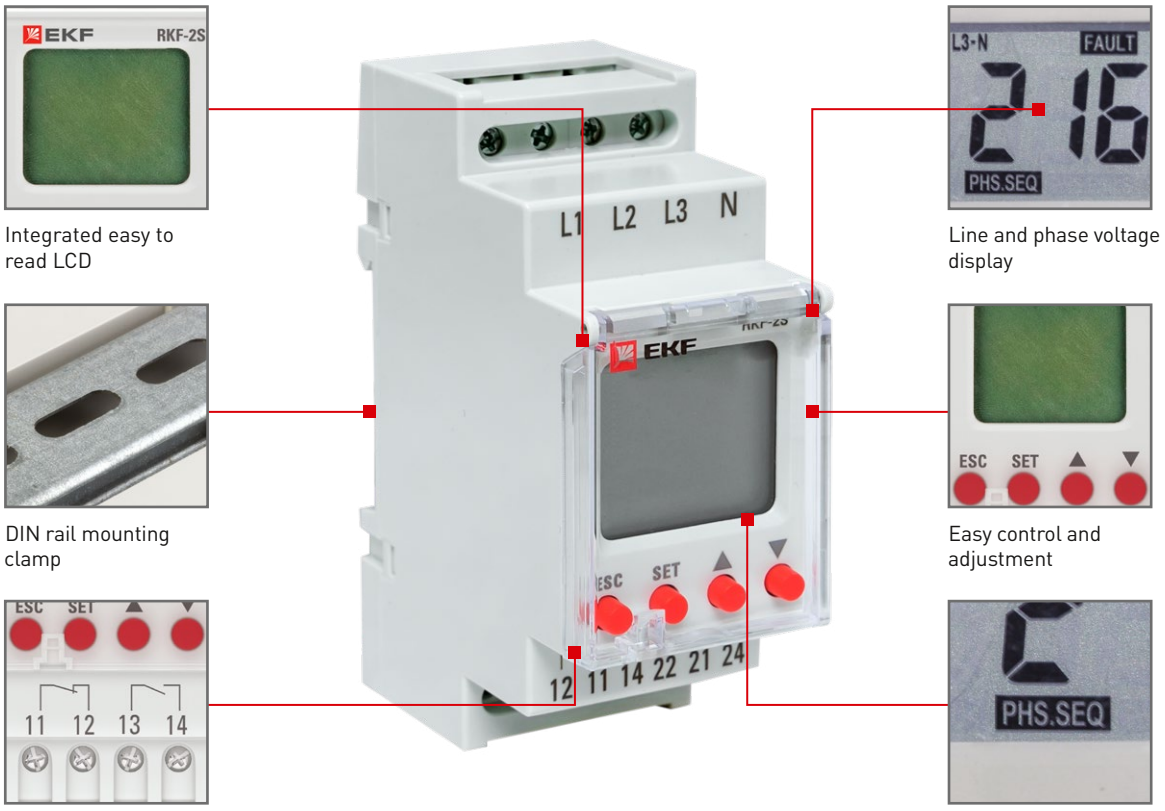
1. Motor protection relay MPR EKF
2. Technical manual

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 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.

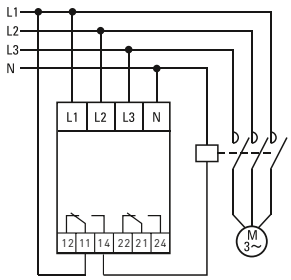
TECHNICAL DATA

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 endurance, cycles	100 000
Mechanical endurance, 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 +50
Storage temperature °C	-25 to +55
Connection	Screw terminals, max. conductor cross-section 1,5mm^2

Wiring diagrams

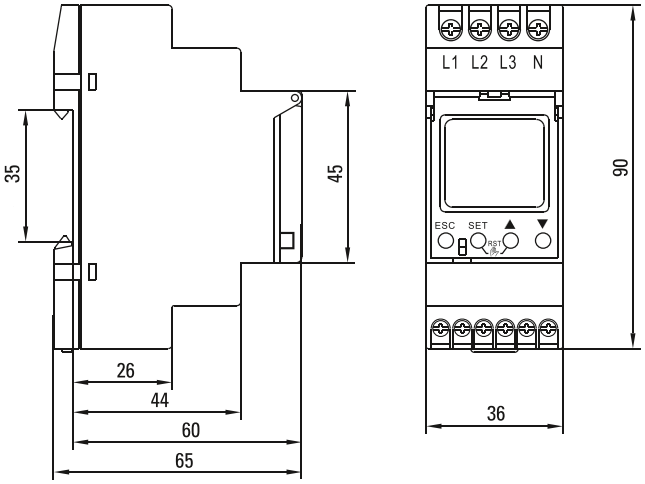
RKF-2S



Installation and operation

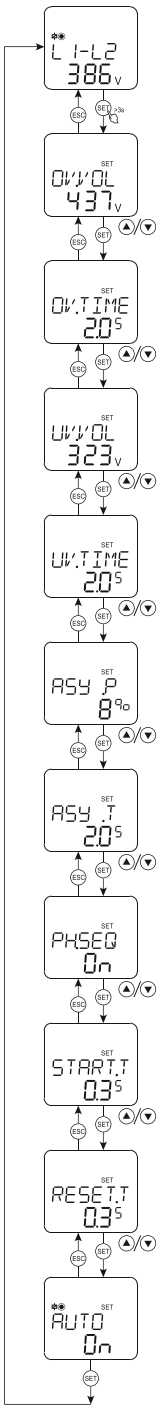
1. Install and secure the relay in the intended location.
2. Connect the relay as per wiring diagram.
3. Set the desired voltage setpoints.
4. Set the desired trip conditions and timing.

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)

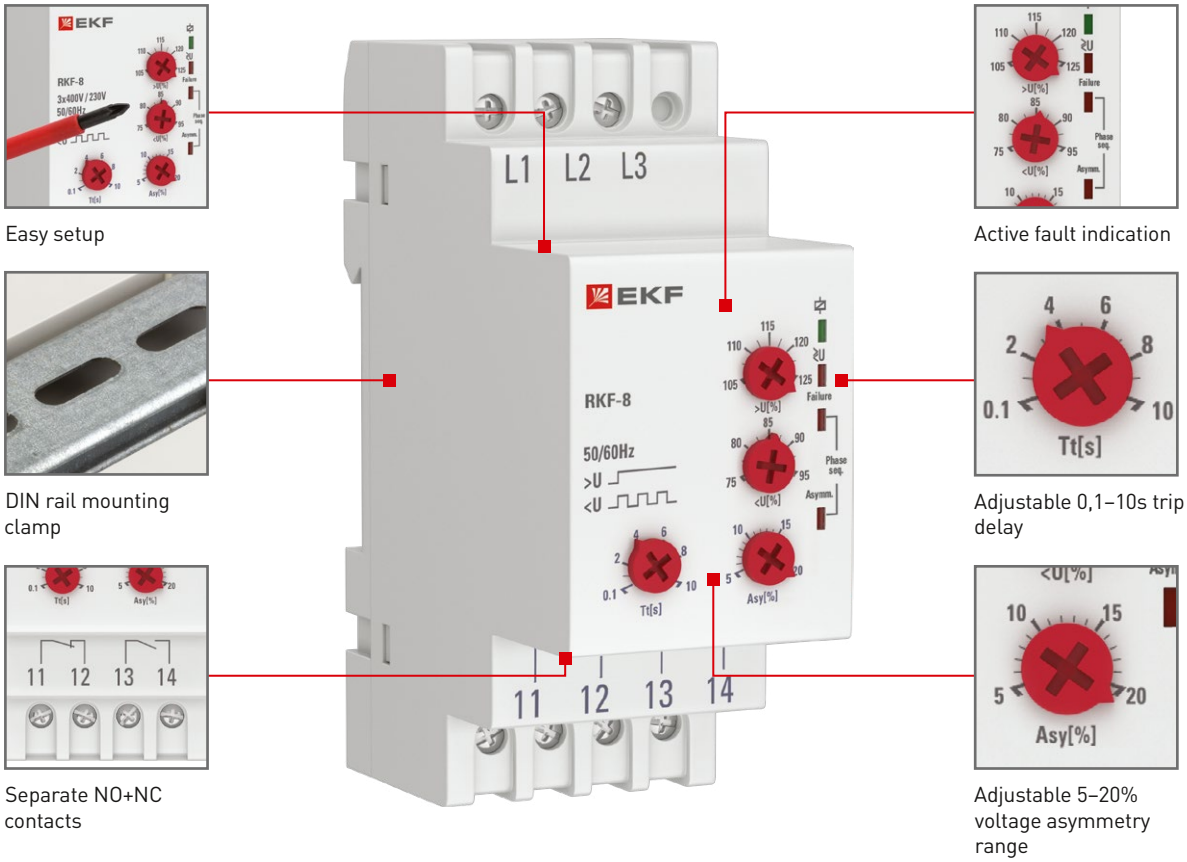
On→OFF

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 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.

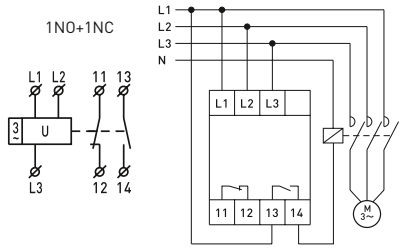
TECHNICAL DATA

Parameters	Values
Supply voltage (Ue), V	380 / 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

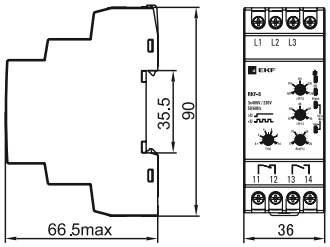
Parameters	Values
Contacts	NO + NC
Degree of protection	IP20
Pollution degree	3
Electrical endurance, cycles	100 000
Mechanical endurance, cycles	1 000 000
Rated contact current, A	8 (AC-1)
Rated load current, A	2 x 8 at 230 V (AC-1)
Max. power consumption, VA	2
Max. altitude above sea level, m	2000
Operating temperature, °C	-5 to +50
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

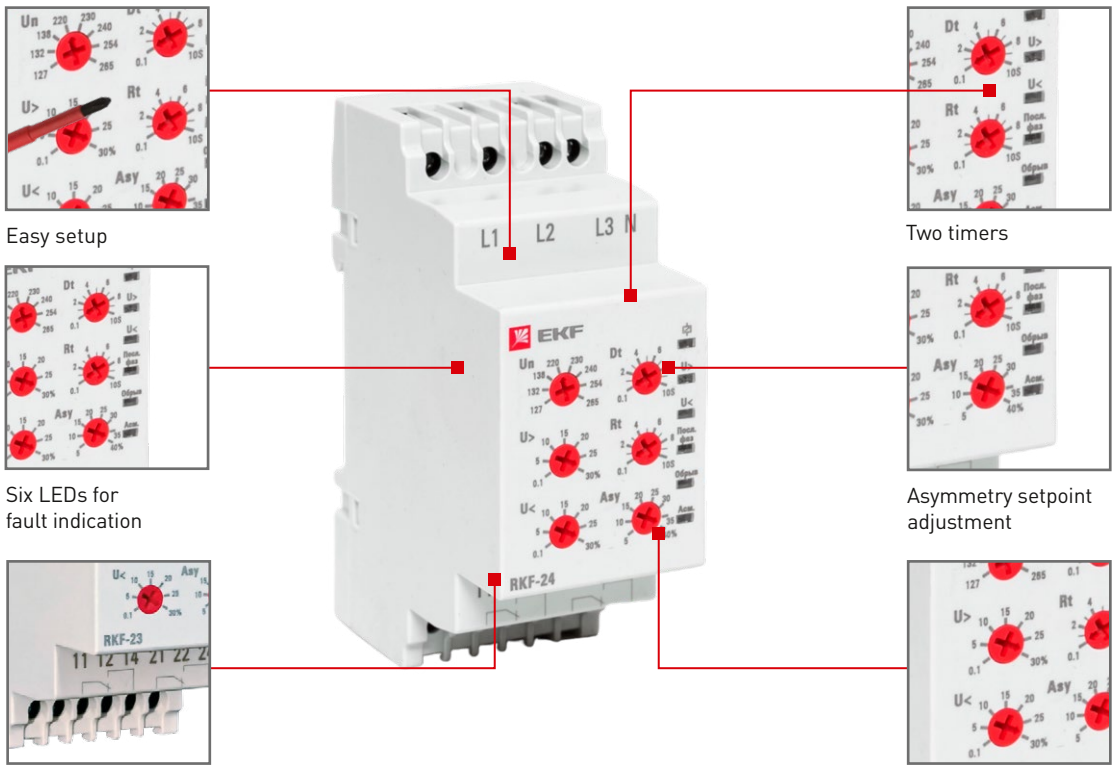
Multifunctional phase monitoring relay RKF-8 EKF.

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 60947-5-1

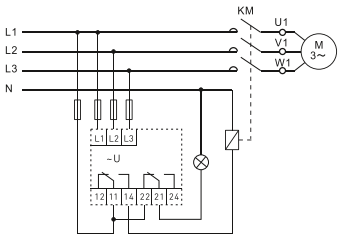


TECHNICAL DATA

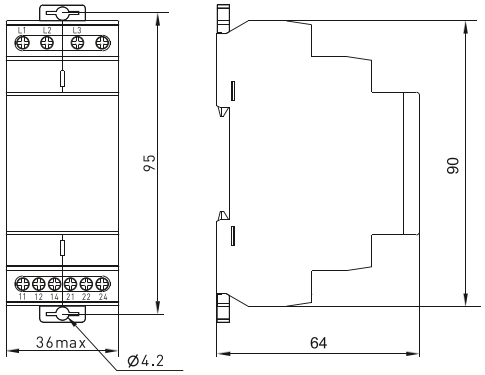
Parameters	Values	
	rkf-24	rkf-23
Supply voltage (Ue), V	127 / 132 / 138 / 220 / 230 / 240 / 254 / 265	220 /230 / 240 / 380 / 400 / 415 / 440 /459
Rated frequency, Hz	45–65	
Overvoltage range	(1,02-1,3)*Ue	
Undervoltage range	(0,7-0,98)*Ue	
Asymmetry adjustment range, %	5 - 40	
Voltage hysteresis, %	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 endurance, cycles	100 000	
Mechanical endurance, cycles	1 000 000	
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

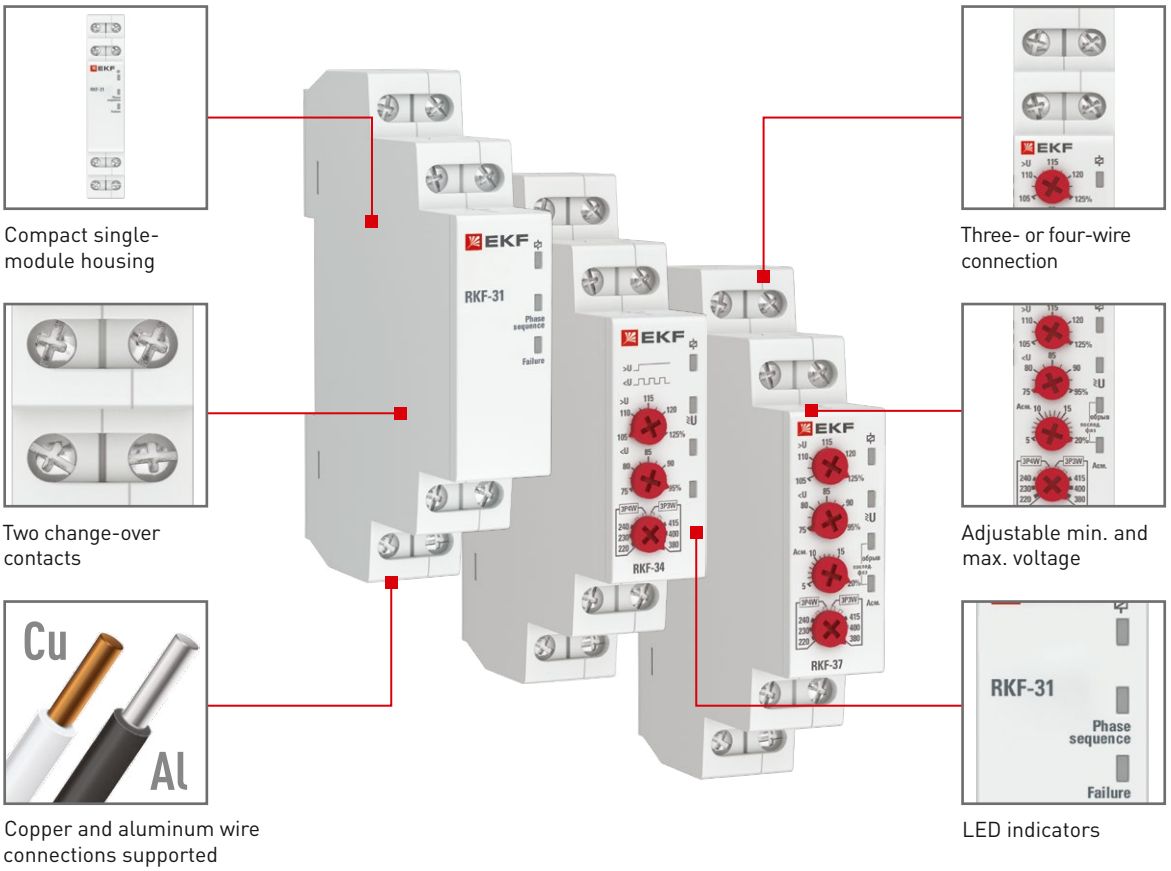
1. Multifunctional phase monitoring relay RKF-23/24 EKF.

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.

Standard: IEC 60947-5-1



APPLICATION

Phase monitoring relays are designed for use in relay automation systems for monitoring of and protection against the following faults:

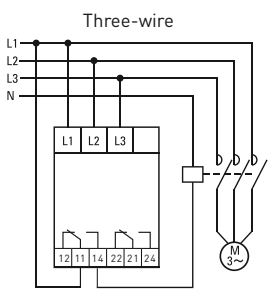
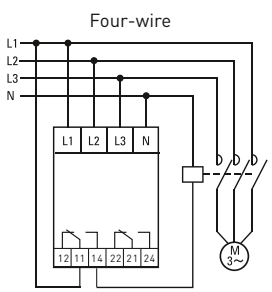
- phase loss;
- undervoltage with delayed response time;
- overvoltage with delayed response time;
- voltage asymmetry with delayed response time.

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 AC-1
Electrical endurance, cycles	100 000
Mechanical endurance, 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

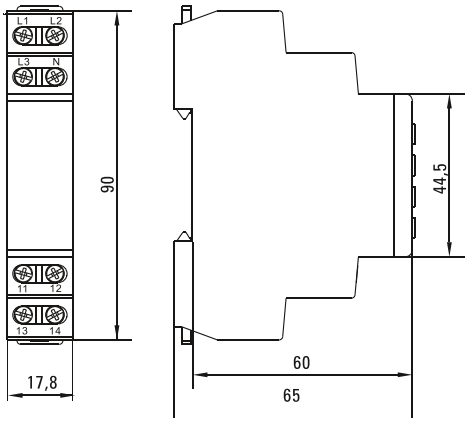
Three-wire diagram	Four-wire diagram
	

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 event of undervoltage 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

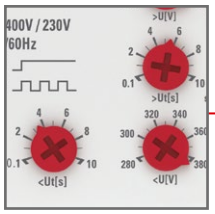
Name	Overvoltage, U>	Undervoltage, U<	Phase loss	Phase sequence fault	Voltage asymmetry	Item code
Phase monitoring relay RKF-31 EKF	–	–	+	+	–	RKF-31
Phase monitoring relay RKF-34 EKF	+	+	+	–	–	RKF-34
Phase monitoring relay RKF-37 EKF	+	+	+	+	+	RKF-37

Phase monitoring relay RKF-11m EKF

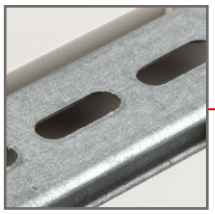
Phase monitoring relay RKF-11m EKF is designed for monitoring electric circuits and protecting electric motors and equipment. The following parameters can be set via adjustment dials on the front panel of the device:

- 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.

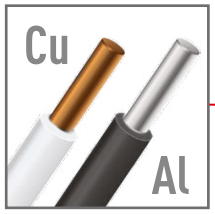
Standard: IEC 60947-5-1



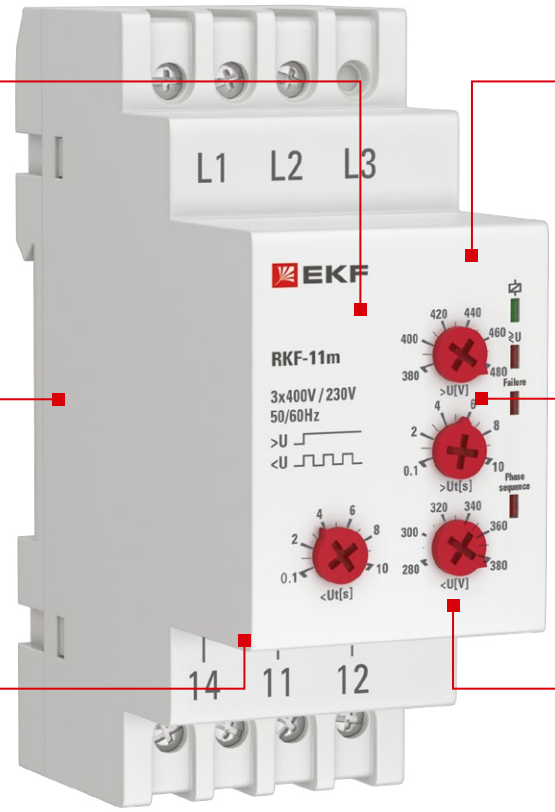
Over- and undervoltage trip delay adjustment

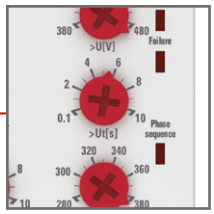


DIN rail mounting clamp

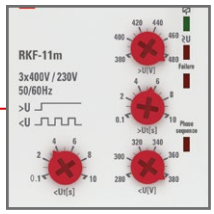


Copper and aluminum wire connections supported

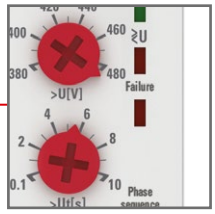




Over- and undervoltage setpoint adjustment



Easy adjustment, multiple settings



Active fault indication

APPLICATION

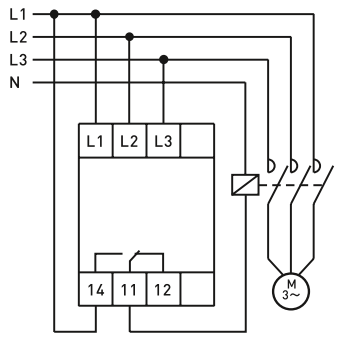
RKF-11m EKF phase monitoring relay is designed for use in relay automation systems for monitoring of and protection against the following faults:

- phase loss;
- undervoltage with delayed response time;
- overvoltage with delayed response time;
- phase sequence.

TECHNICAL DATA

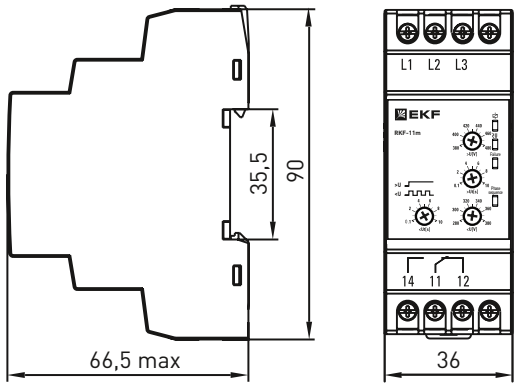
Wiring diagrams

RKF-11m



Parameters	Values
Electrical endurance, cycles	100 000
Mechanical endurance, cycles	1 000 000
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 +50
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

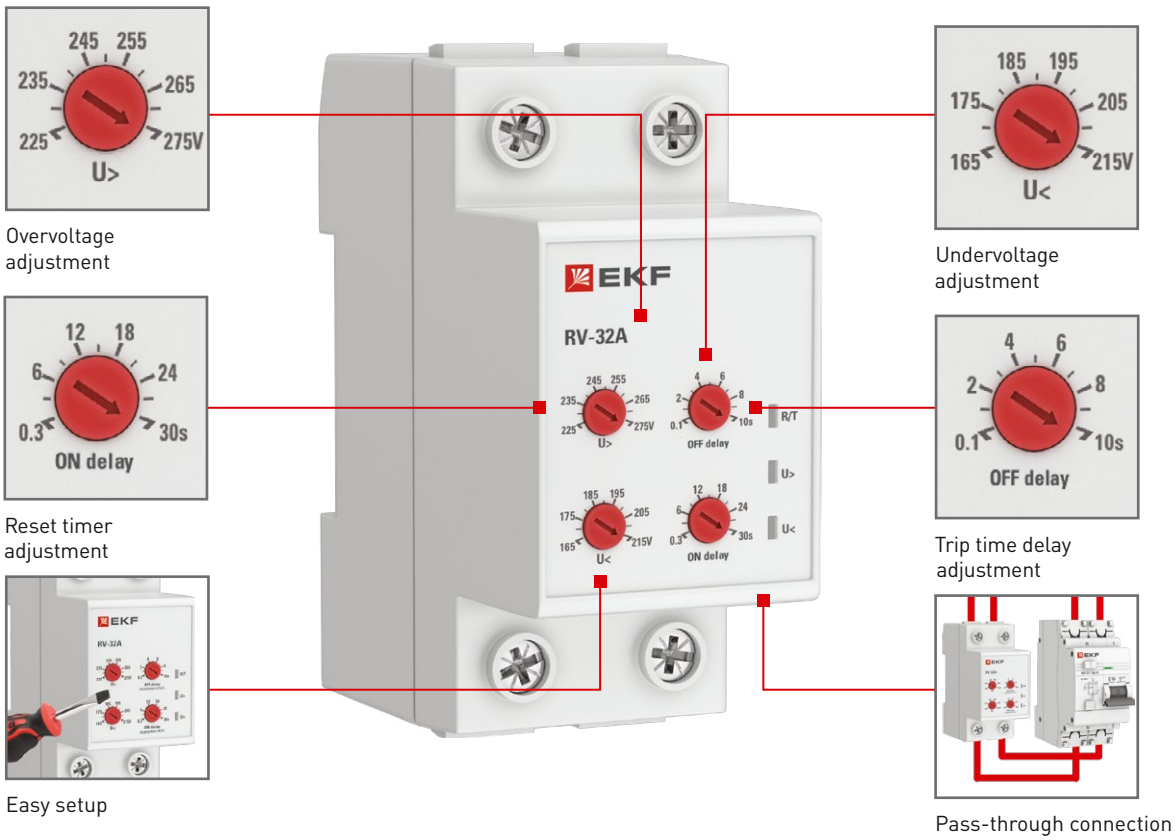
1. Phase monitoring relay RKF-11m EKF

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 incoming 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 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:

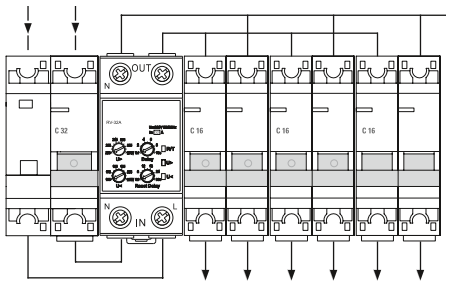
- undervoltage;
- overvoltage;
- loss of neutral.

TECHNICAL DATA

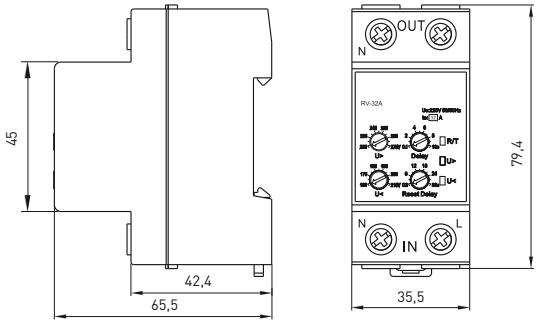
Parameters	Values
Supply voltage Ue, V	220 / 230 / 240
Rated frequency, Hz	50
Maximum load current, A	32
Max. total capacity, kVA	7
Overvoltage range, V AC	225–265
Relay resets at	0,97 of the voltage setpoint
Undervoltage range, V AC	165-215
Relay resets at	1,03 of the voltage setpoint
Trip delay range, 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 endurance, cycles	100 000
Mechanical endurance, cycles	1 000 000
Max. altitude above sea level, m	2000
Operating temperature, °C	-5 to +50
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

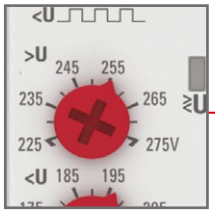
1. Voltage monitoring relay (1P+N) RV-32A EKF.
2. Technical manual

Name	Supply voltage (Ue), V	Tightening torque, N·m	Mounting	Item code
Voltage monitoring relay (1P+N) RV-32A EKF	AC 220-240	0,5	35 mm DIN rail	rv-32a

Voltage monitoring relay (parallel connection) RV-5A EKF

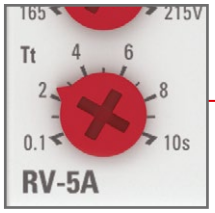
Voltage monitoring relay RV-5A EKF is a microprocessor-controlled switching device designed for continuous voltage monitoring in single-phase AC networks to protect electrical installations against voltage fluctuations.
The relay monitors the voltage in a preset range and trips after a preset time delay 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 60947-5-1

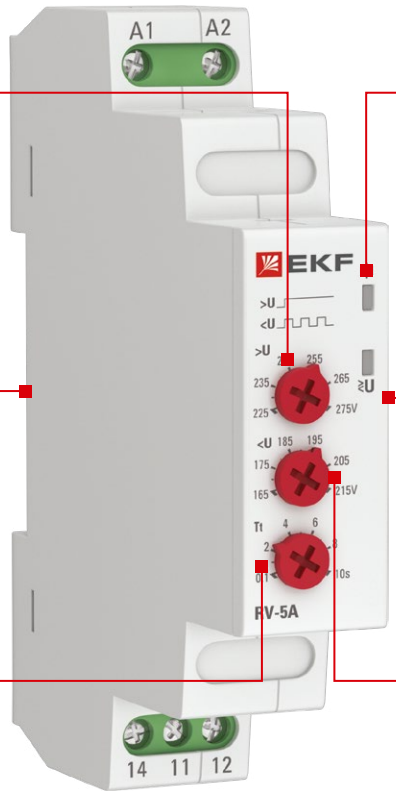


Overvoltage setpoint adjustment

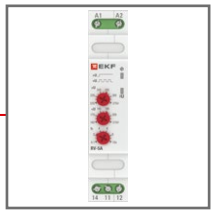
DIN rail mounting clamp



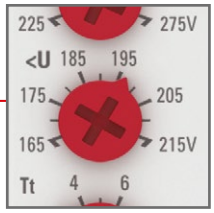
Trip delay time adjustment



Easy setup



18 mm wide



Undervoltage setpoint adjustment

APPLICATION

RV-5A EKF voltage monitoring relays are used in administrative, industrial, and residential buildings for protection of single-phase circuits against:

- undervoltage;
- overvoltage.

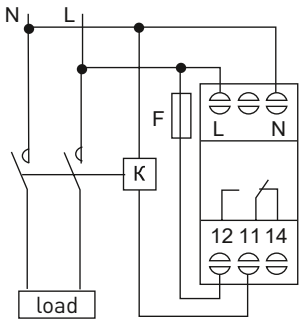
TECHNICAL DATA

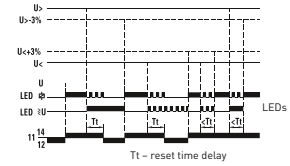
Parameters	Values
Supply voltage (Ue), V	220 / 230 / 240
Rated frequency, Hz	50 / 60
Overvoltage range, V AC	225–275
Undervoltage range, V AC	165-215
Hysteresis, %	3
Trip delay range, s	0, 1–10
Voltage measurement accuracy, %	<1 (full scale)
Trip delay accuracy, %	±10
Set-point accuracy, %	1% full scale
Rated insulation voltage, V	460
Contacts	1 C/O
Degree of protection	IP20
Pollution degree	3

Parameters	Values
Electrical endurance, cycles	100 000
Mechanical endurance, cycles	1 000 000
Conventional enclosed current	5 A
Utilization category	AC-15
Rated load current, A	8 at 230 V AC-1
Max. power consumption, VA	2
Max. altitude above sea level, m	2000
Operating temperature, °C	-5 to +50
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.

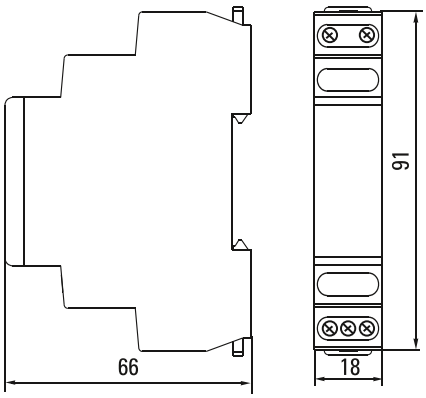
LED indication

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

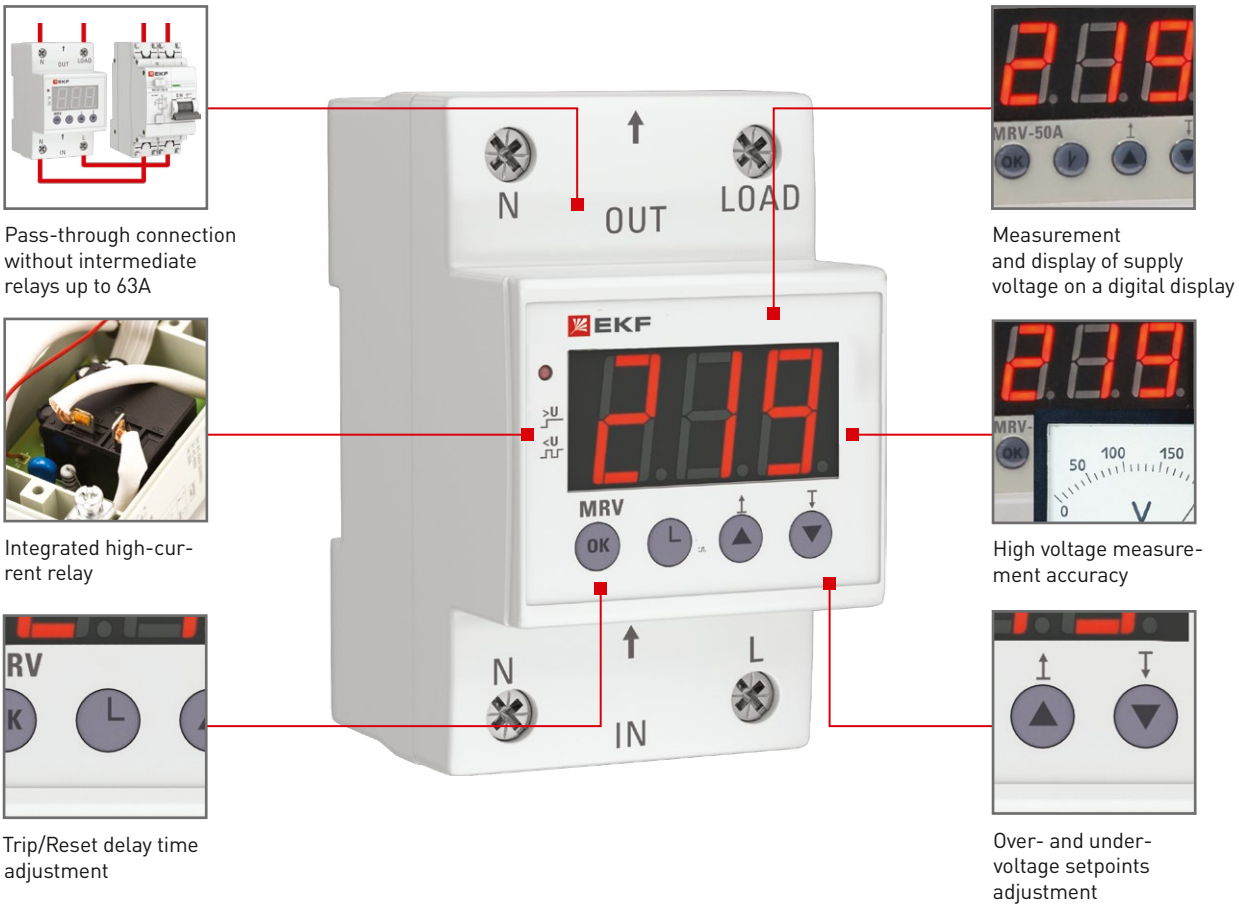
1. Voltage monitoring relay (parallel connection) RV-5A EKF
2. Technical manual

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 60947-5-1



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.

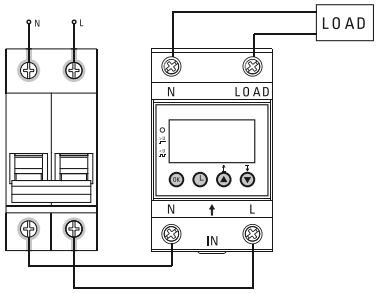
TECHNICAL DATA

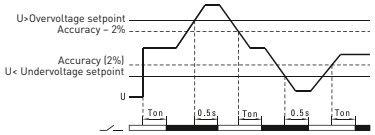
Parameters	Values
Rated supply voltage, V AC	230 / 240
Rated frequency, Hz	50 / 60
Adjustment range over-voltage, V	230~300
Adjustment range under-voltage, V	120~210
Hysteresis, %	2
Overvoltage tripping time, s	<285 V: 0,1; ≥285 V: 0,02
Time delay adjustment range, s	5~600
Undervoltage tripping time, s	≥120 V: 0,5; <120 V: <0,1
Voltage measurement error, %	≤1
Rated insulation voltage, V	400
Output contacts	1NO
Degree of protection	IP20

Parameters	Values
Pollution degree	3
Electrical endurance, cycles	100 000
Mechanical endurance, 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 +50
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

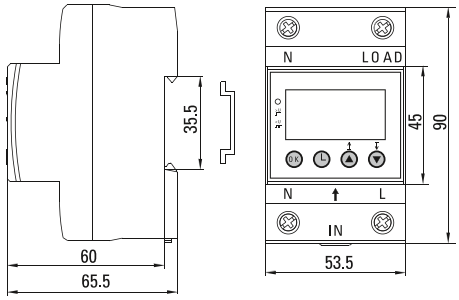


Function diagram	Description
	1. Undervoltage setpoint 120-200 (1V steps, 170V by default) 2. Overvoltage setpoint 210-270 (1V steps, 250V by default) 3. Reset time delay, Ton 5–600s (15s – by default).

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

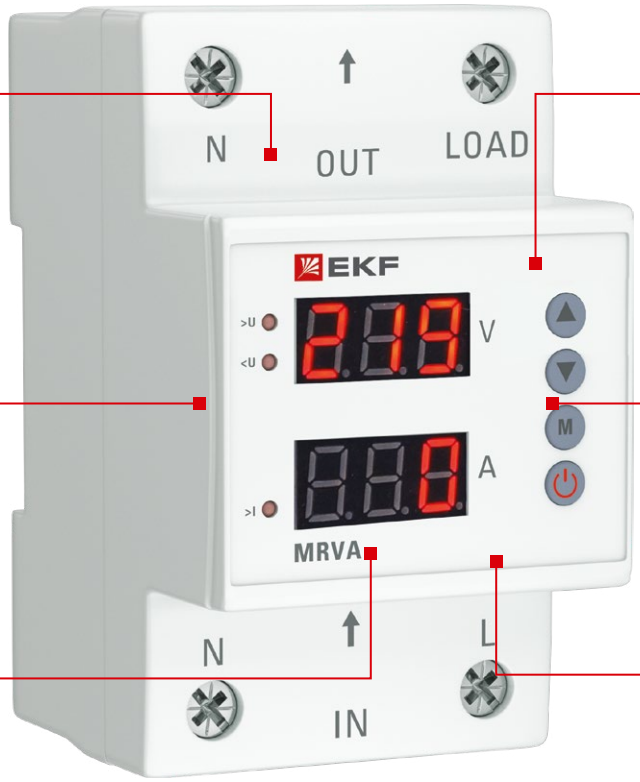
Voltage and current monitoring relay MRVA EKF is a microprocessor-controlled switching device designed for continuous voltage and current monitoring and control in single-phase AC networks. The device measures and displays supply current and voltage on the numeric display. Switching is performed by an 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.

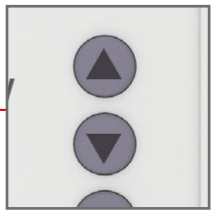
Standard: IEC 60947-5-1

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:

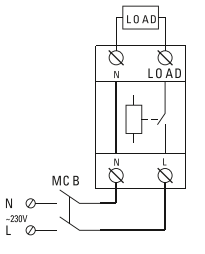
- loss of neutral;
- undervoltage;
- overvoltage;
- overcurrent.

TECHNICAL DATA

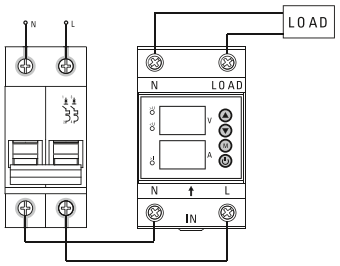
Parameters	Values
Rated supply voltage, V AC	220 / 230 / 240
Rated frequency, Hz	50 / 60
Adjustment range over-voltage, V	230~300
Adjustment range under-voltage, V	120~210
Hysteresis, %	2
Overvoltage tripping time, s	<285V: 0,1; ≥285V: 0,02
Time delay adjustment range, s	5–600
Undervoltage tripping time, 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 endurance, cycles	100 000
Mechanical endurance, 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 +50
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

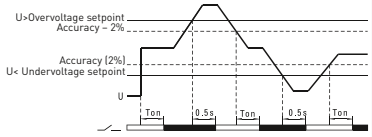
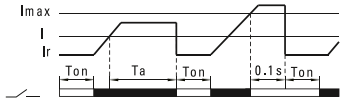
MRVA



Connection logic



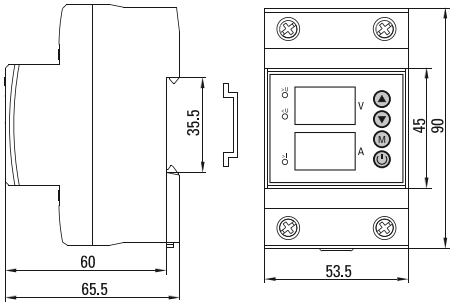
Wiring diagram

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

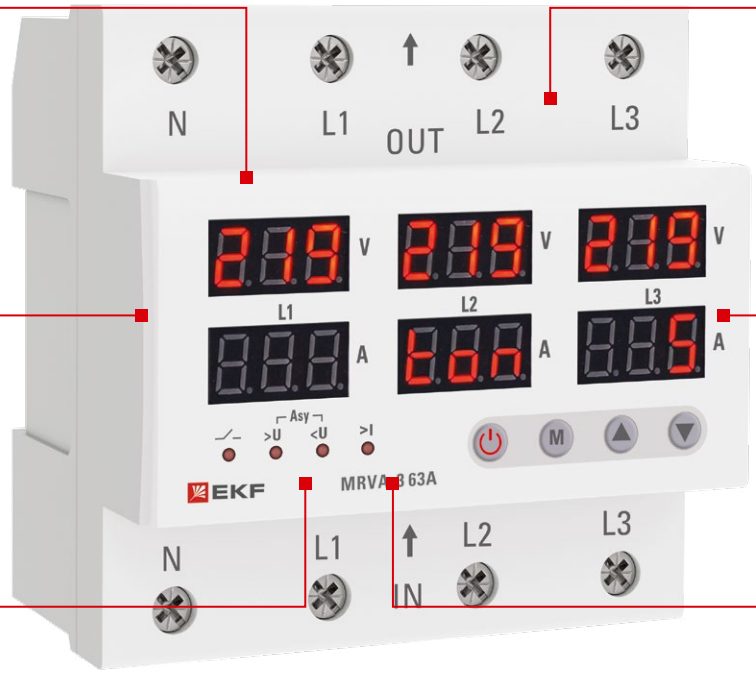
Three-phase voltage and current monitoring relay MRVA 63A EKF is designed to trip and disconnect downstream load if the supply voltage or current is out of bounds. An embedded microcontroller constantly monitors supply voltage and current and outputs them on integrated LCDs. Switching is performed by 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 60947-5-1

Over- and under-voltage setpoints adjustment

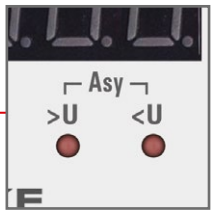
Active fault indication

Measurement and indication of supply voltage and current per each 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.

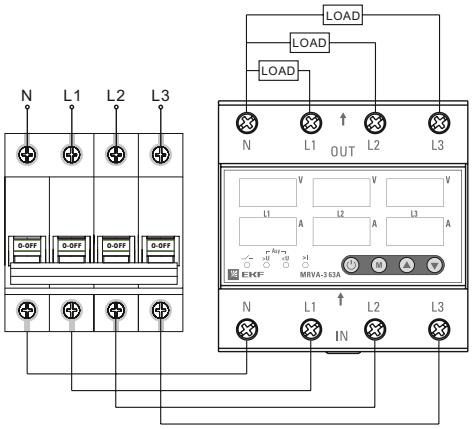
TECHNICAL DATA

Parameters	Values
Rated phase-to-neutral supply voltage Un, V AC	220 / 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 (120 V); <0,1 (>120 V)
Overvoltage tripping time, s	<0,1 (Us< Umea< 350 V); <0,02 (≥350 V)
Asymmetry tripping time, s	10
Overcurrent tripping time, s	5–600 (Is< Imea< 80 A); 0,1 (Imea≥80)
Reset time delay, s	5–600
Hysteresis, overvoltage and asymmetry, V	5

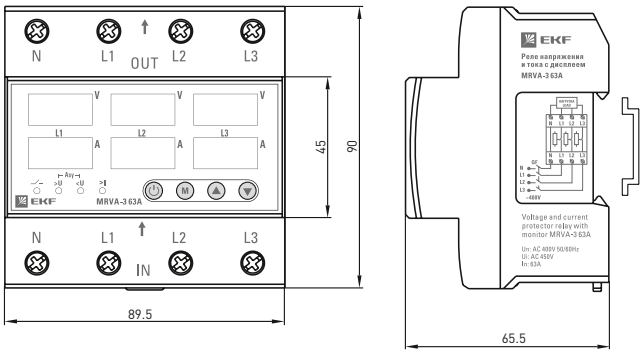
Parameters	Values
Hysteresis, undervoltage, V	3
Voltage measurement error, %	≤1
Rated insulation voltage, V	450
Output contacts	3NO
Degree of protection	IP20
Pollution degree	3
Electrical endurance, cycles	100 000
Mechanical endurance, cycles	1 000 000
Max. altitude above sea level, m	2000
Operating temperature, °C	-5 to +50
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

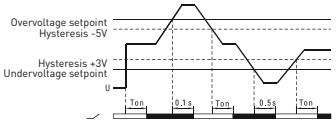
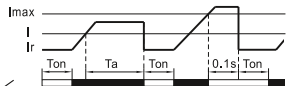
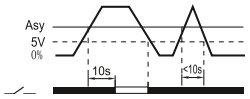
MRVA 63A



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

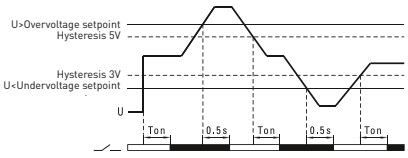
MRVs-16 EKF socket-mounted digital voltage monitoring relays can be used for:
- protection of sensitive equipment and appliances from damage caused by over- or undervoltage at the individual socket level;
- monitoring of power supply quality;
- display of circuit voltage.

TECHNICAL DATA

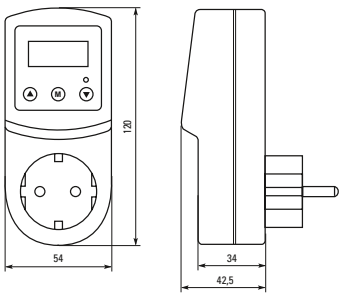
Parameters	Values
Rated supply voltage, V AC	220 / 230 / 240
Operating voltage, V AC	100-400
Rated frequency, Hz	50 / 60
Overvoltage range, V	220–280
Undervoltage range, V	160–210
Hysteresis, undervoltage, V	3
Hysteresis, overvoltage, V	5
Undervoltage tripping time, s	0,5
Overvoltage tripping time, s	0,5 (<285V); 0,1 (≥285V); <0,02 (≥380V)
Voltage measurement error, %	≤1
Output contacts	1NO
Degree of protection	IP20
Pollution degree	3
Electrical endurance, cycles	100 000
Mechanical endurance, 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

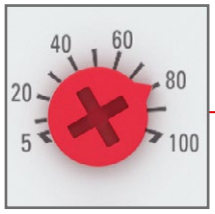
1. Digital voltage monitoring relay MRVs-16
2. Technical manual

Name	Rated current, A	Rated power, kW	Plug/Socket type	Item code
Digital socket voltage monitoring relay MRVs-16 EKF	16	3,5	Schuko	MRVs-16

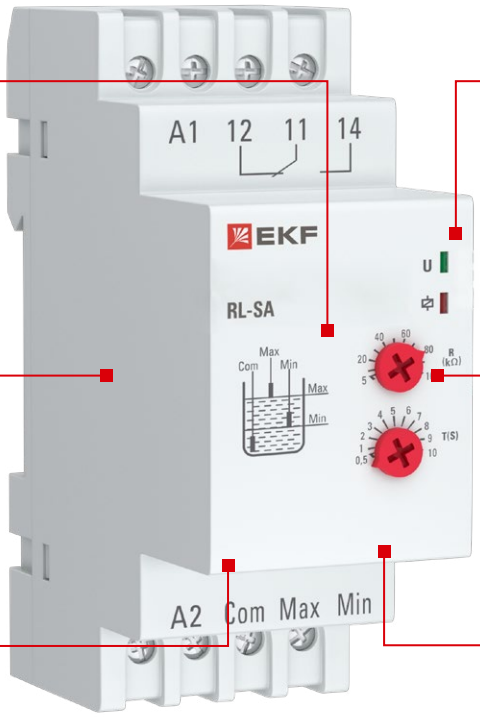
Level monitoring relay (universal, 1 or 2 levels) RL-SA EKF

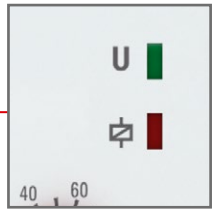
Level monitoring relay RL-SA EKF is an electronic switching device with an embedded microcontroller, designed to monitor the level of conductive liquids and to control electric pump motors. The relay can be used both for filling and emptying the reservoirs with a delay off timer. The relay can accept control signal from either two or three sensors (see wiring diagrams). **WARNING!** Do not use the relay with flammable or explosive liquids. **PLEASE NOTE:** Level sensors are not included.

Standard: IEC 60947-5-1

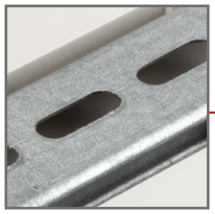


Compatible with wide variety of liquids

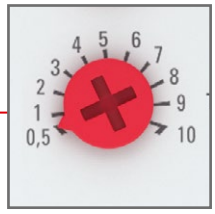




LED status indicator on the front panel

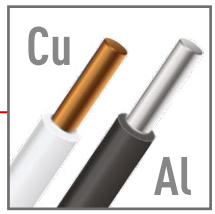


DIN rail mounting clamp



Timer adjustment

Easy setup



Copper and aluminum wire connections supported

APPLICATION

The relay is used in industrial equipment to control the level of various conductive liquids:

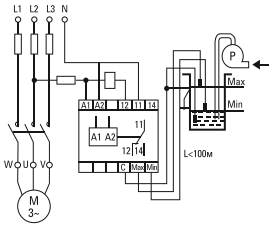
- control of the minimum liquid level;
- control of the maximum liquid level;
- control of switching equipment.

TECHNICAL DATA

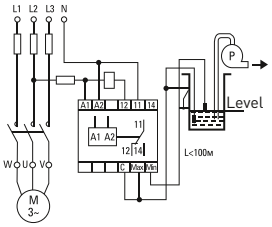
Parameters	Values
Rated voltage, V	220 / 230 / 240 at 50/60 Hz
Rated impulse voltage, V AC	380
Power consumption, VA	⩽ 1,5
Sensitivity, kOhm	5 to 100
Set-point accuracy, %	⩽ 5
Repeatability, %	⩽ 0,2
Electrical endurance, cycles	100 000
Mechanical endurance, cycles	1 000 000
Conventional thermal current, 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 +50
Storage temperature °C	-25 to +75
Connection	Screw terminals, max. conductor cross-section 2,5 mm²

Wiring diagrams

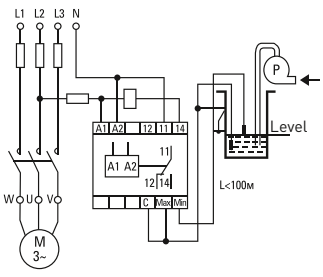
Three contacts (fill)



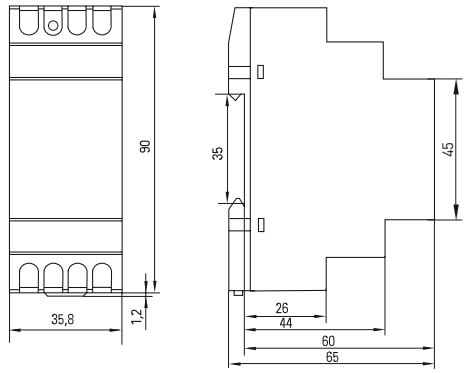
Two contacts (empty)



Two contacts (fill)



Overall and installation dimensions (mm)



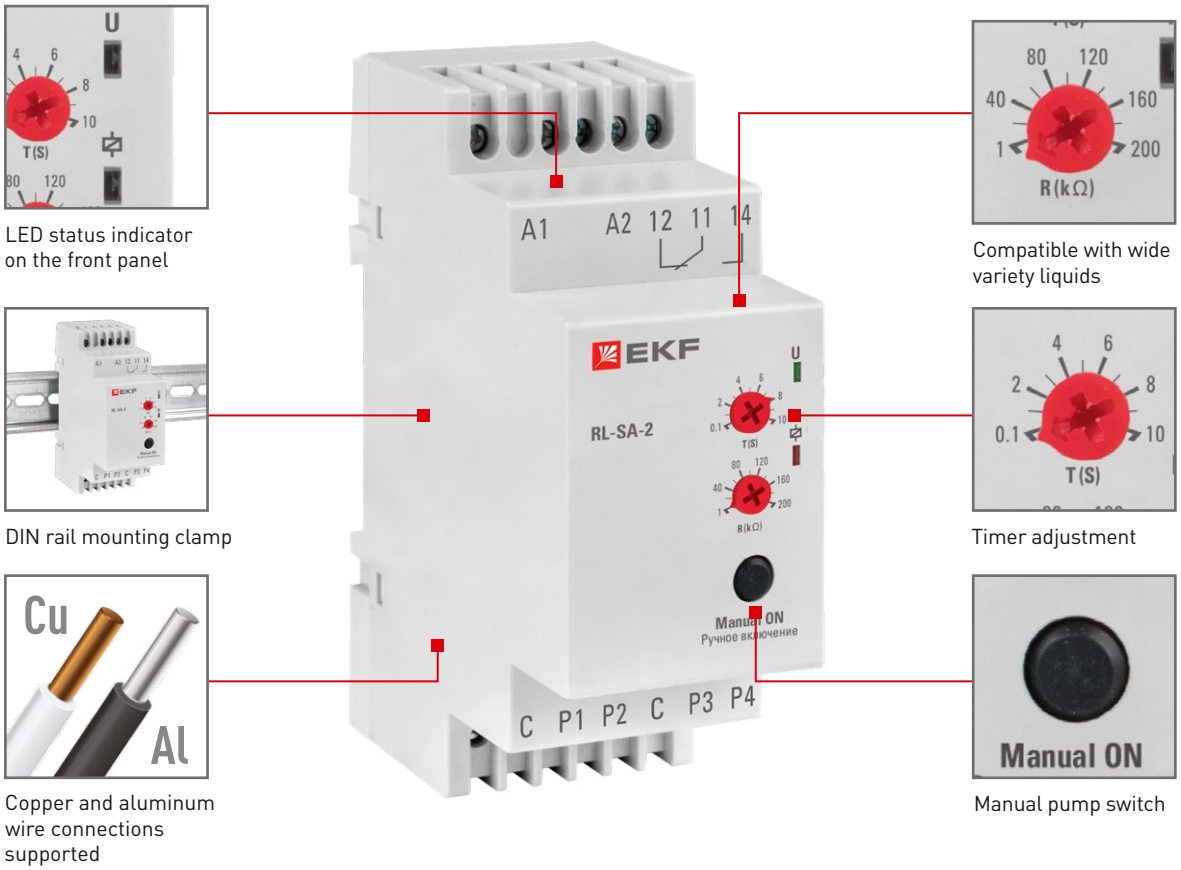
Delivery scope

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. **PLEASE NOTE:** Level sensors are not included.



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.

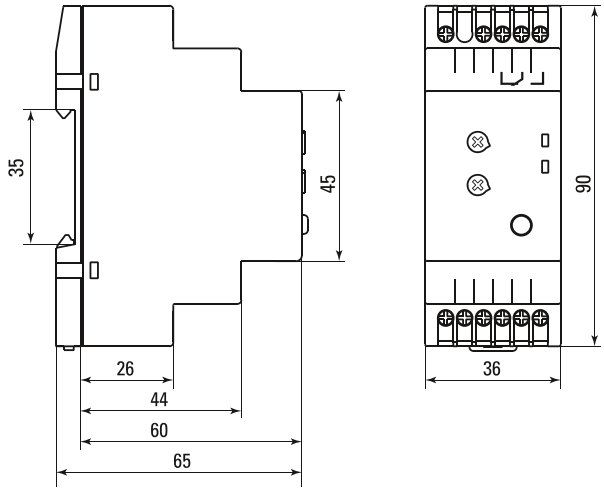
TECHNICAL DATA

Parameters	Values
Rated supply voltage, V AC	220 / 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 endurance, cycles	100 000
Mechanical endurance, 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)



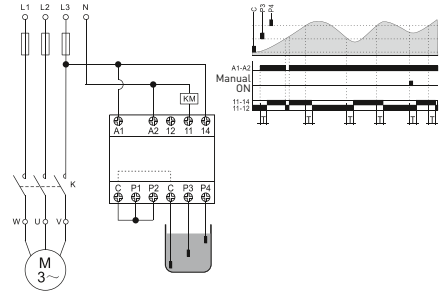
Delivery scope

1. Level monitoring relay for two tanks RL-SA-2 EKF

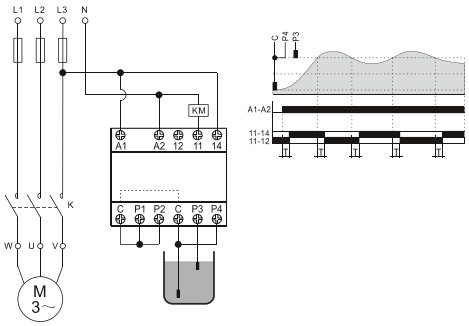
Name	Mounting	Item code
Level monitoring relay for two tanks RL-SA-2 EKF	35 mm DIN rail	rl-sa-2

Wiring diagrams

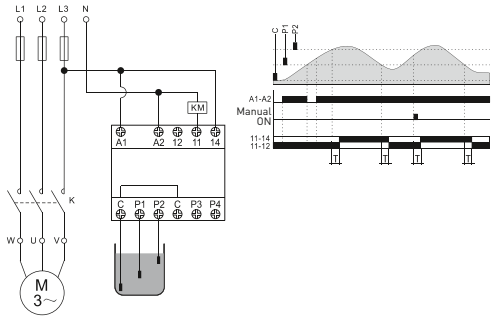
Single tank. Three sensors (fill)



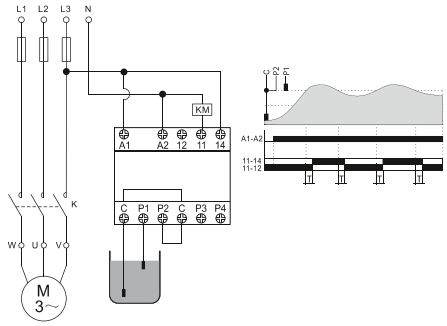
Single tank. Two sensors (fill)



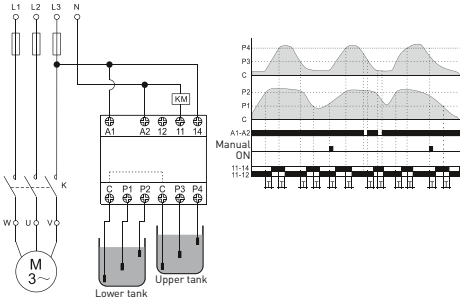
Single tank. Three sensors (empty)



Single tank. Two sensors (empty)



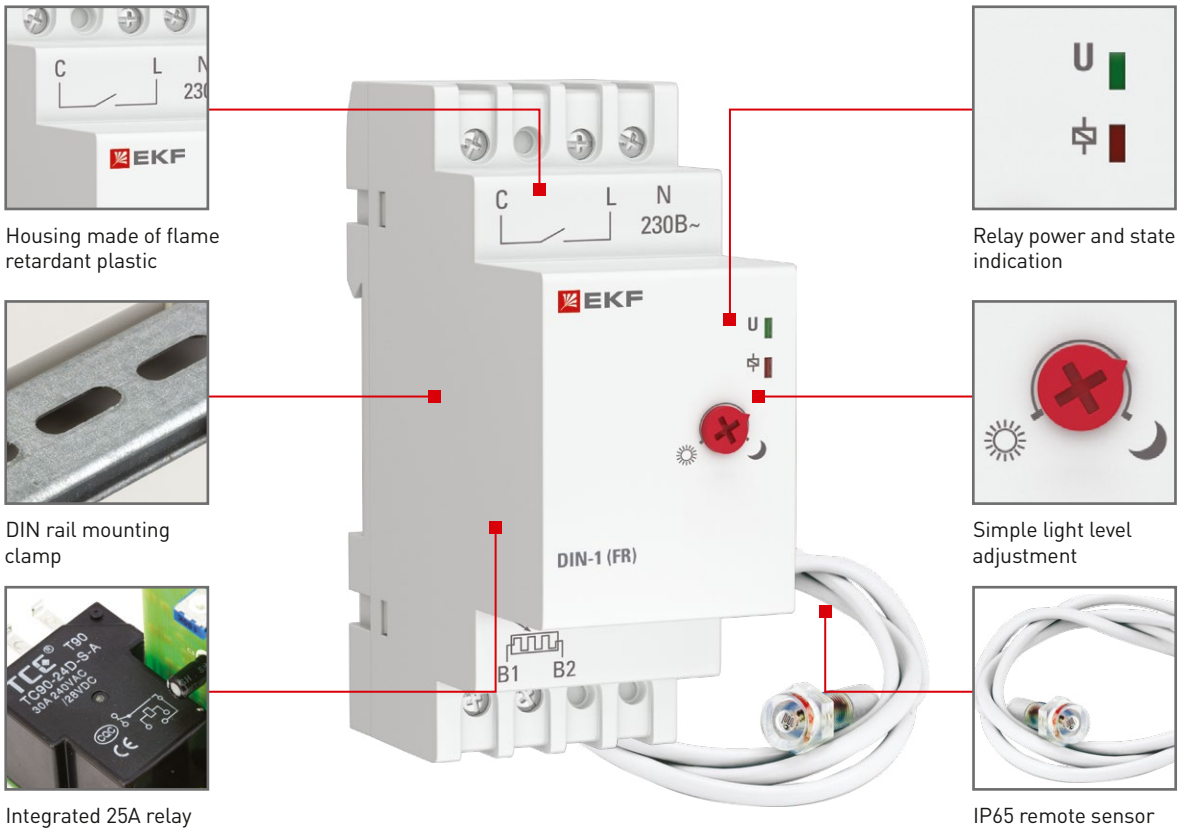
Two tanks. Two sensors (empty)



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 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:

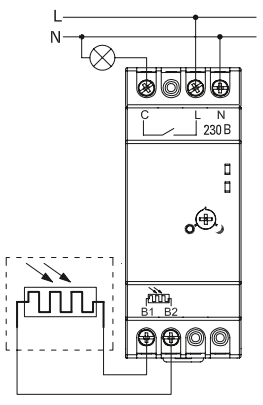
- illumination control;
- lighting control (up to 25 A).

TECHNICAL DATA

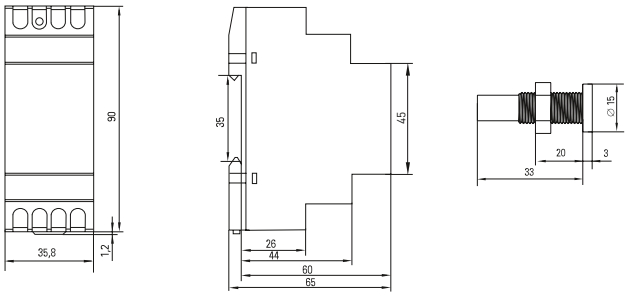
Parameters	Values		
Rated voltage, V	220 / 230 / 240		
Rated frequency, Hz	50 / 60		
Maximum load current, A	25		
Switching threshold, lux	2-100 (adjustable)		
Delay on, s	2 - 5		
Delay off, s	10-15		
Recommended total load	Incandescent light	Halogen light	Fluorescent light
Load, W	3000	3000	1300
Degree of protection	IP65 (remote sensor); IP20 (relay housing)		
Hysteresis, lux	1,2		
Operating temperature, °C	-25 to +50		
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

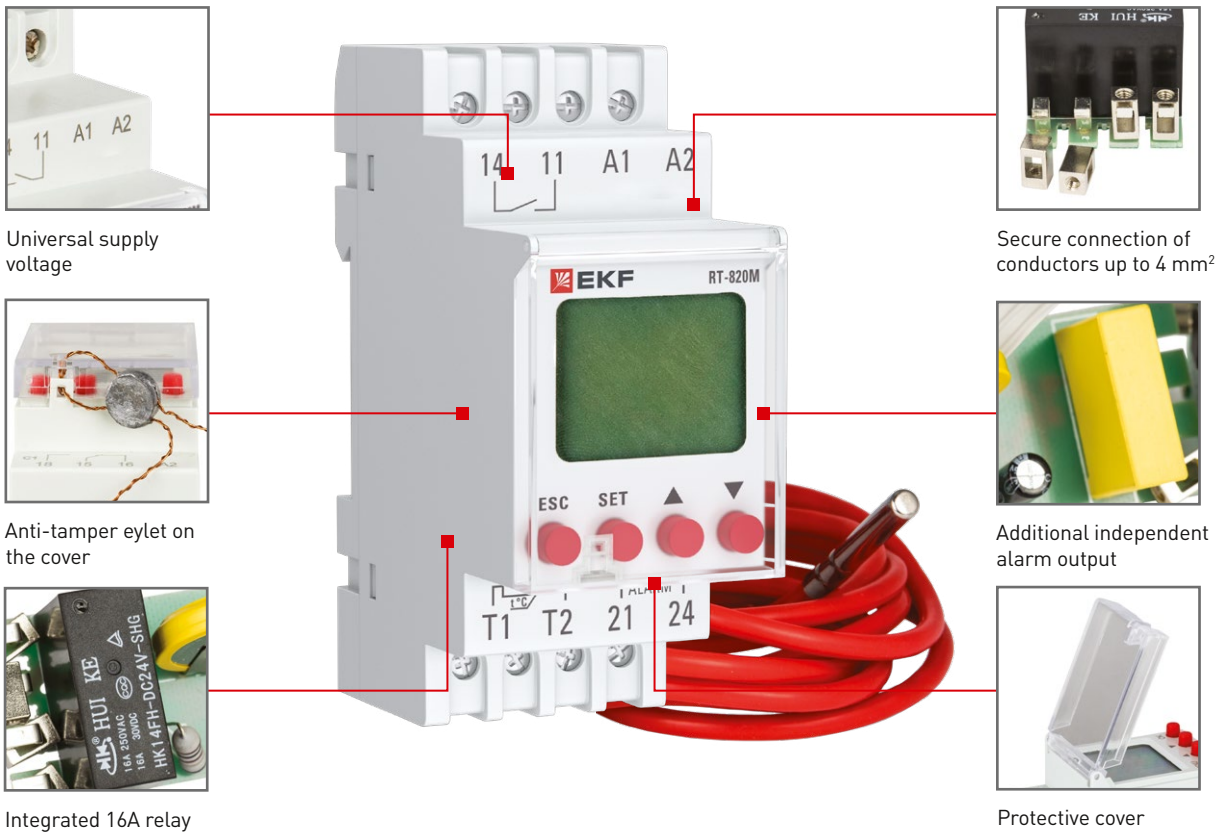
1. Twilight relay with remote sensor DIN-1 (FR) 2-100Lx 25A 3000W EKF
2. Remote light sensor with cable (2m).

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 -25 to +130 °C thermocouple and is equipped with an additional alarm contact.

Standards: IEC 60947-1; IEC 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:

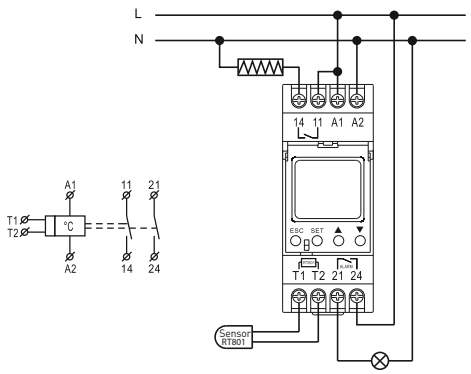
- activation and shutdown of the load when the temperature threshold is reached;
- display of the current temperature value;
- critical temperature alarm signaling;
- direct switching of single-phase load (up to 16 A);
- contactor and starter control.

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	AC-1
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 endurance, cycles	100 000
Mechanical endurance, cycles	1 000 000
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

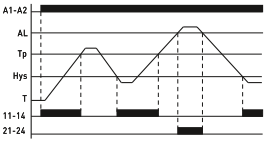
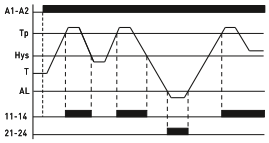
Wiring diagrams

RT-820M

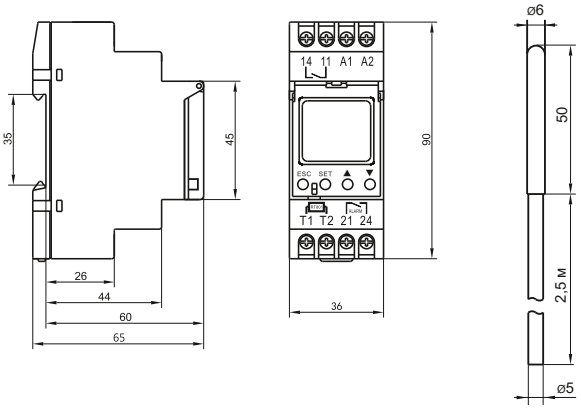


Installation and operation

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

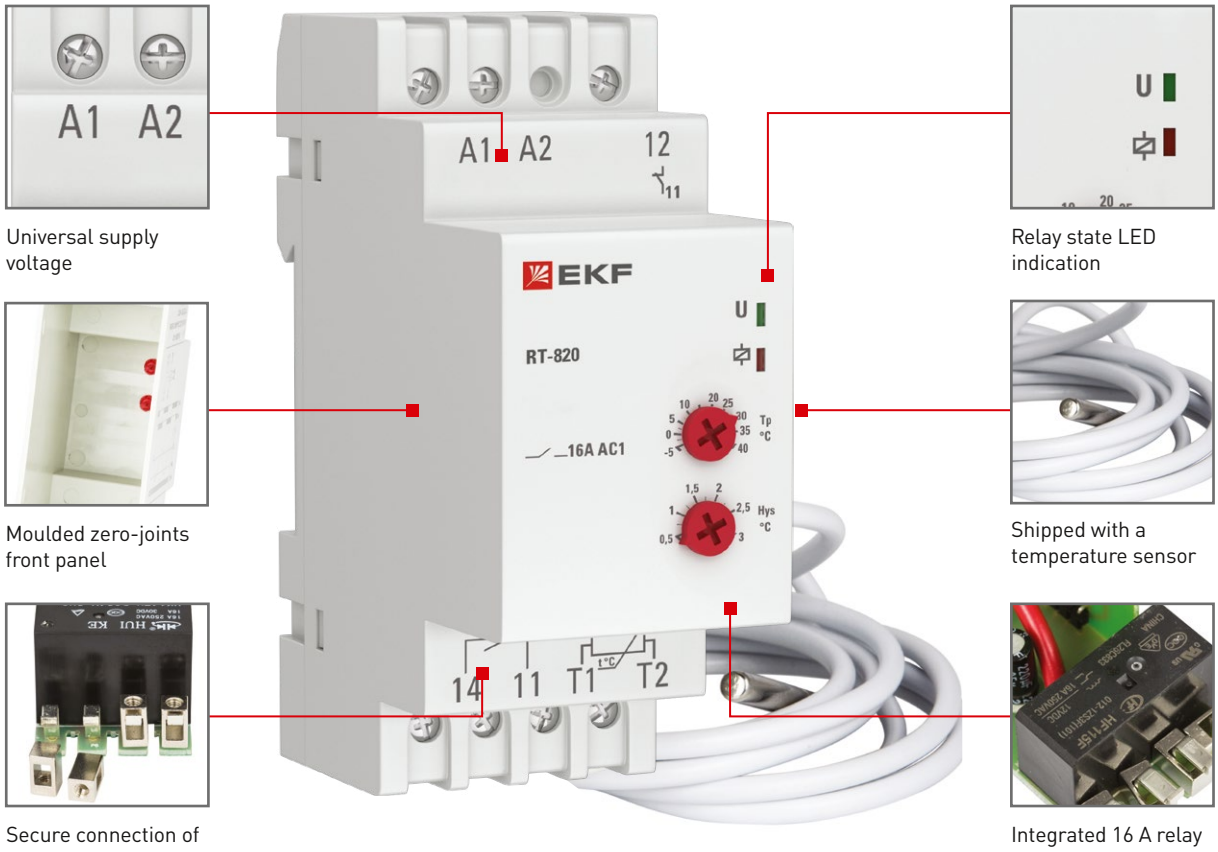
For all available documentation, scan the QR-code on the insert or on the inside of the package.

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 60947-1; IEC 60947-5-1



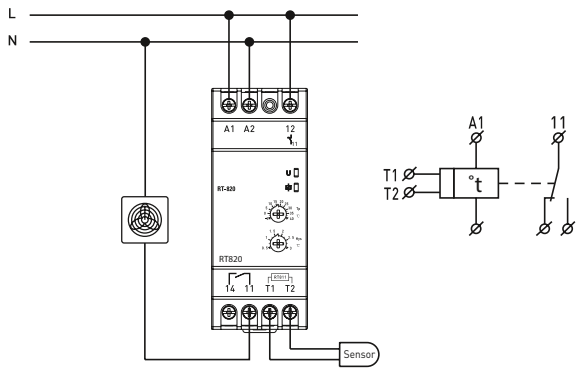
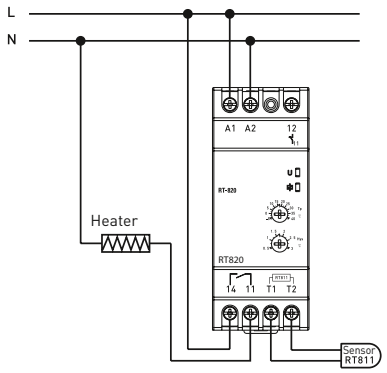
APPLICATION

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:

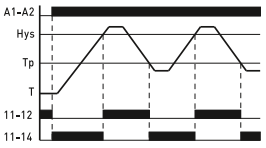
- activation and shutdown of the load when the temperature threshold is reached;
- direct switching of single-phase load (up to 16 A);
- contactor and starter control.

TECHNICAL DATA

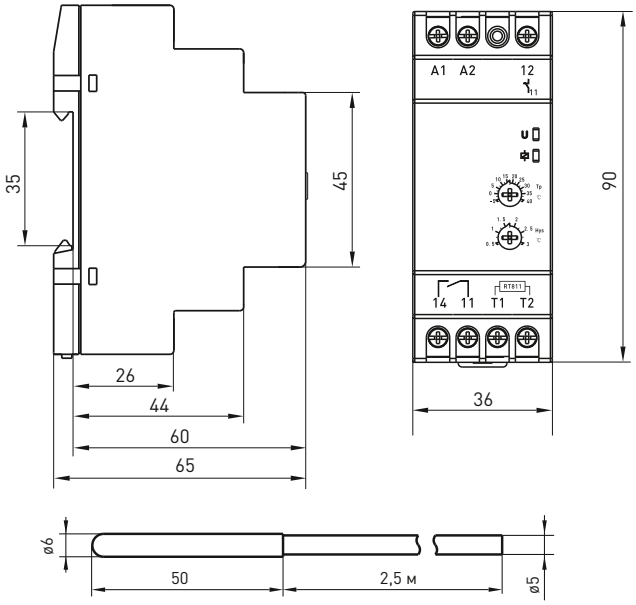
Wiring diagrams

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	AC-1
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 endurance, cycles	100 000
Mechanical endurance, cycles	1 000 000 000
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

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)



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.

Delivery scope

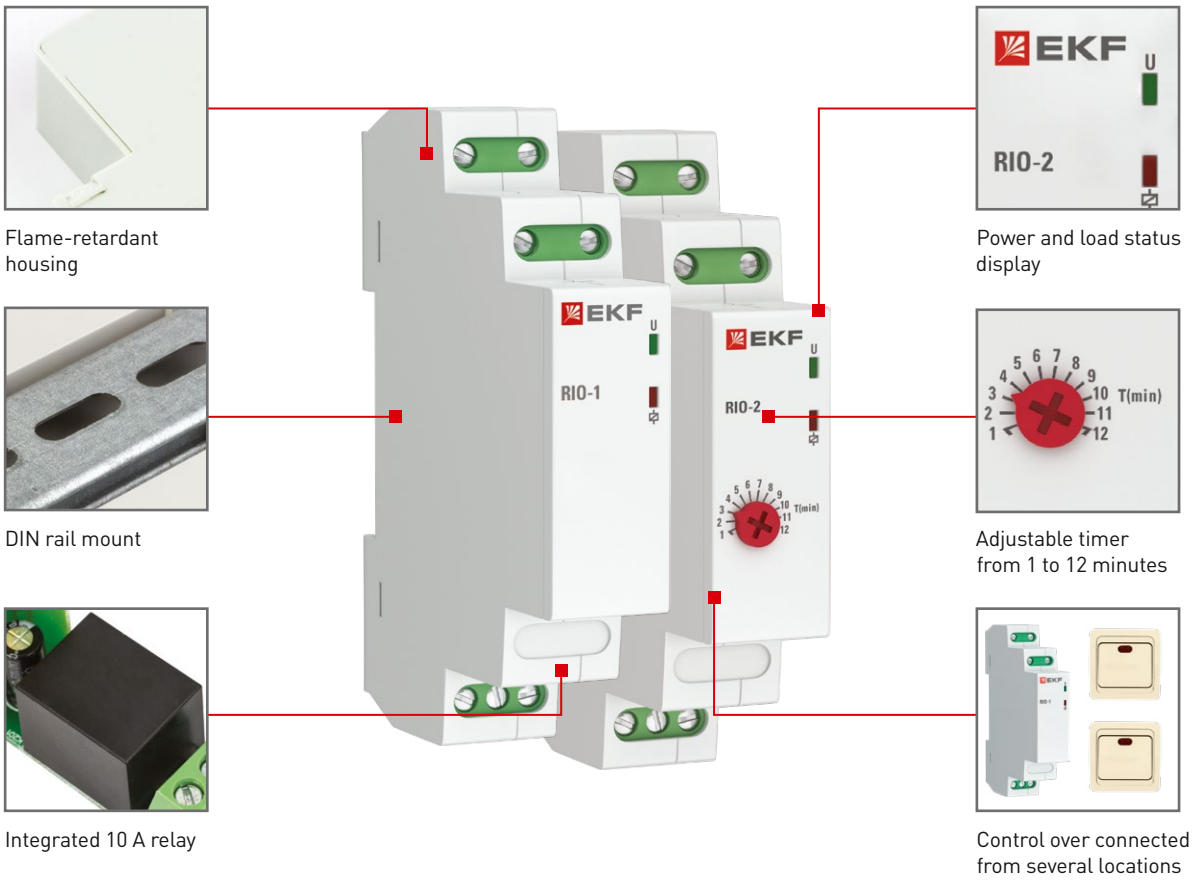
1. Temperature monitoring relay RT-820 EKF.
2. Remote temperature sensor.

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 60947-1; IEC 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

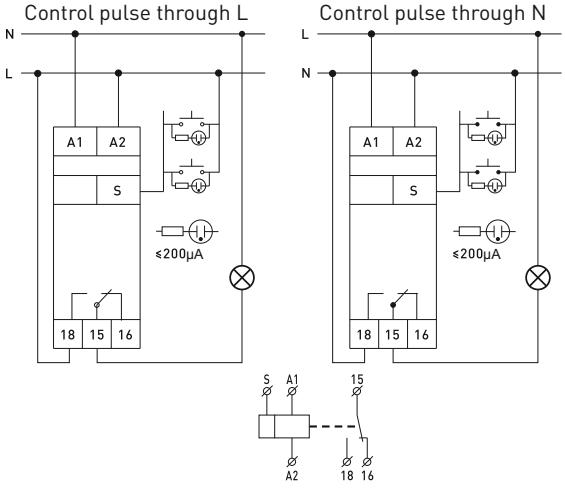
Pulse relays are used in industrial, administrative, and residential buildings:

- to control the lighting in staircases, halls, lobbies, and outdoors;
- to control domestic exhaust fans;
- emergency lighting systems.

TECHNICAL DATA

Wiring diagrams

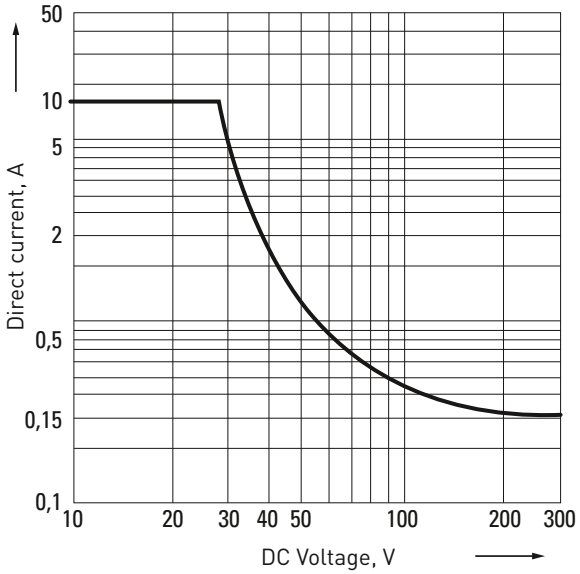
RIO

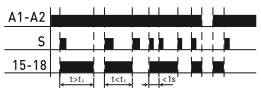


Parameters	Values
Rated supply voltage Un, V AC	220 / 230 / 240
Rated frequency, Hz	50 / 60
Rated control circuit voltage, V	230
Rated contact current, (AC-1) A	10
Insulation voltage Ui, V	250
Utilization category	AC-1
Type and number of contacts	1 C/O
Control current, mA	≤1
Max. power consumption, VA	0,8
Electrical endurance, cycles	100 000
Mechanical endurance, cycles	1 000 000
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 +50
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

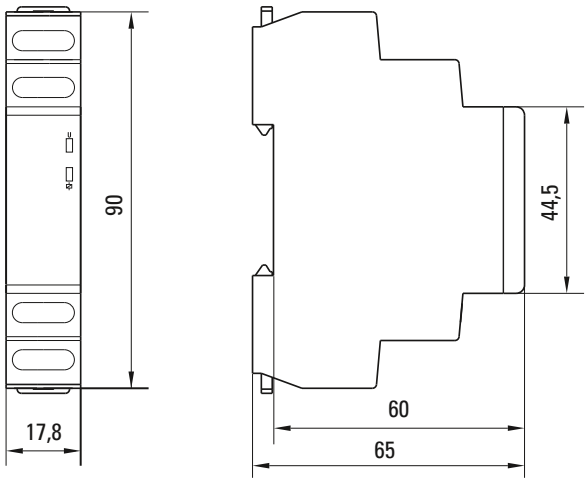
Installation and operation

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.

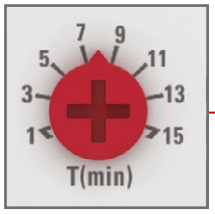
Name	Delay time	Tightening torque, N·m	Item code
Pulse relay RIO-1 EKF	–	0,5	rio-1
Pulse relay with off delay RIO-2 EKF	1-12 min	0,5	rio-2

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 60947-1; IEC 60947-5-1

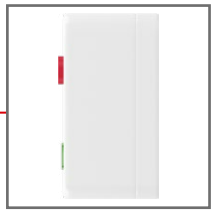
For junction box installation



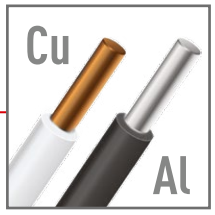
Adjustable timer from 1 to 15 minutes

Integrated 16 A relay

Control load from different locations



Flame retardant plastic housing



Copper and aluminum wire connections supported

APPLICATION

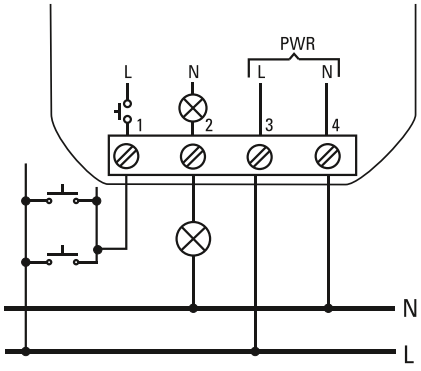
Pulse relays are used in industrial, administrative, and residential buildings:

- 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

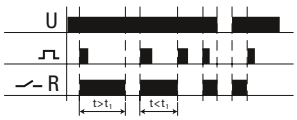
Wiring diagrams

RIO compact

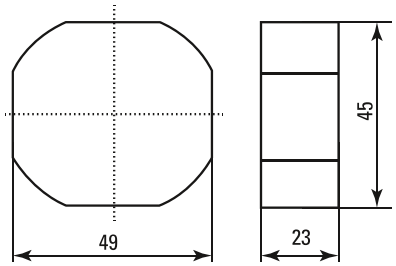


Parameters	Values
Rated supply voltage Un, V AC	220 / 230 / 240
Rated frequency, Hz	50 / 60
Rated control circuit voltage, V	230
Insulation voltage Ui, V	250
Utilization category	AC1
Type and number of contacts	1 NO
Control current, mA	≤1
Max. power consumption, VA	0,8
Electrical endurance, cycles	100 000
Mechanical endurance, cycles	1 000 000
Max. conductor cross-section, mm²	1,5
Tightening torque, N·m	0,5
Degree of protection	IP20
Max weight, g	50
Operating temperature, °C	-5 to +50
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

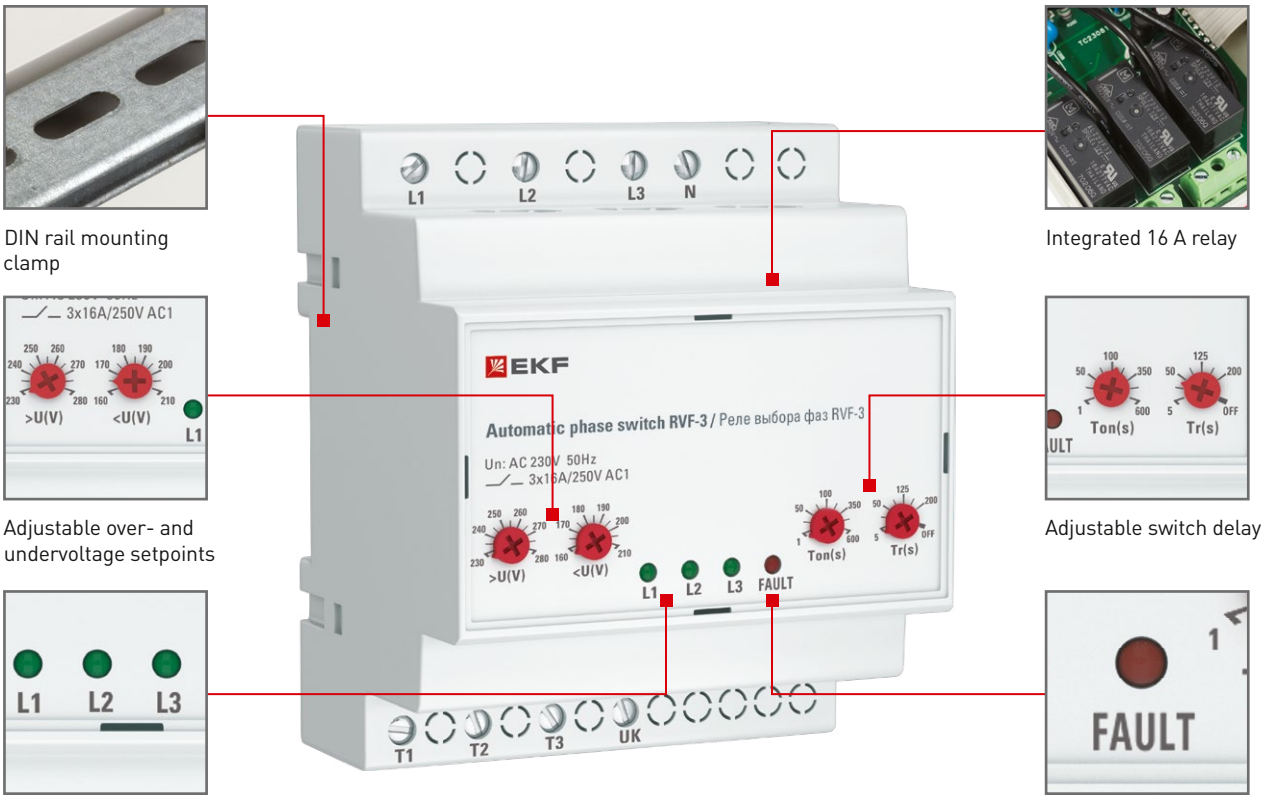
1. Pulse relay RIO compact EKF
2. For all available documentation, scan the QR-code on the insert or on the inside of the package.

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 60947-1; IEC 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.

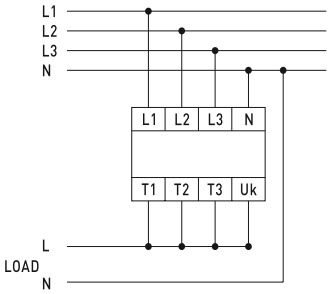
TECHNICAL DATA

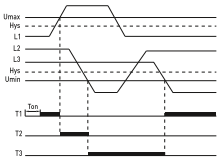
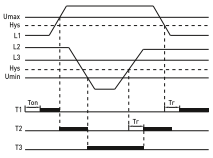
Parameters	Values
Input terminals	N, L1, L2, L3
Rated supply voltage, V	AC 3 × 230(N-L1/L2/L3)
Rated frequency, Hz	50 / 60
Overvoltage setpoint range, V	230–280
Undervoltage setpoint range, V	160–210
Automatic re-closing time delay, s	1–600
Return to priority phase delay, s	5–200
Backup phase switching 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 (AC-1)
Pollution degree	3
Electrical endurance, cycles	100 000
Mechanical endurance, cycles	1 000 000
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

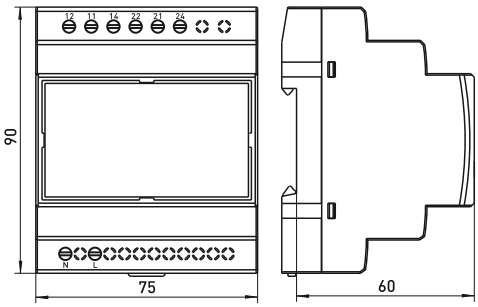
Installation and operation

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.

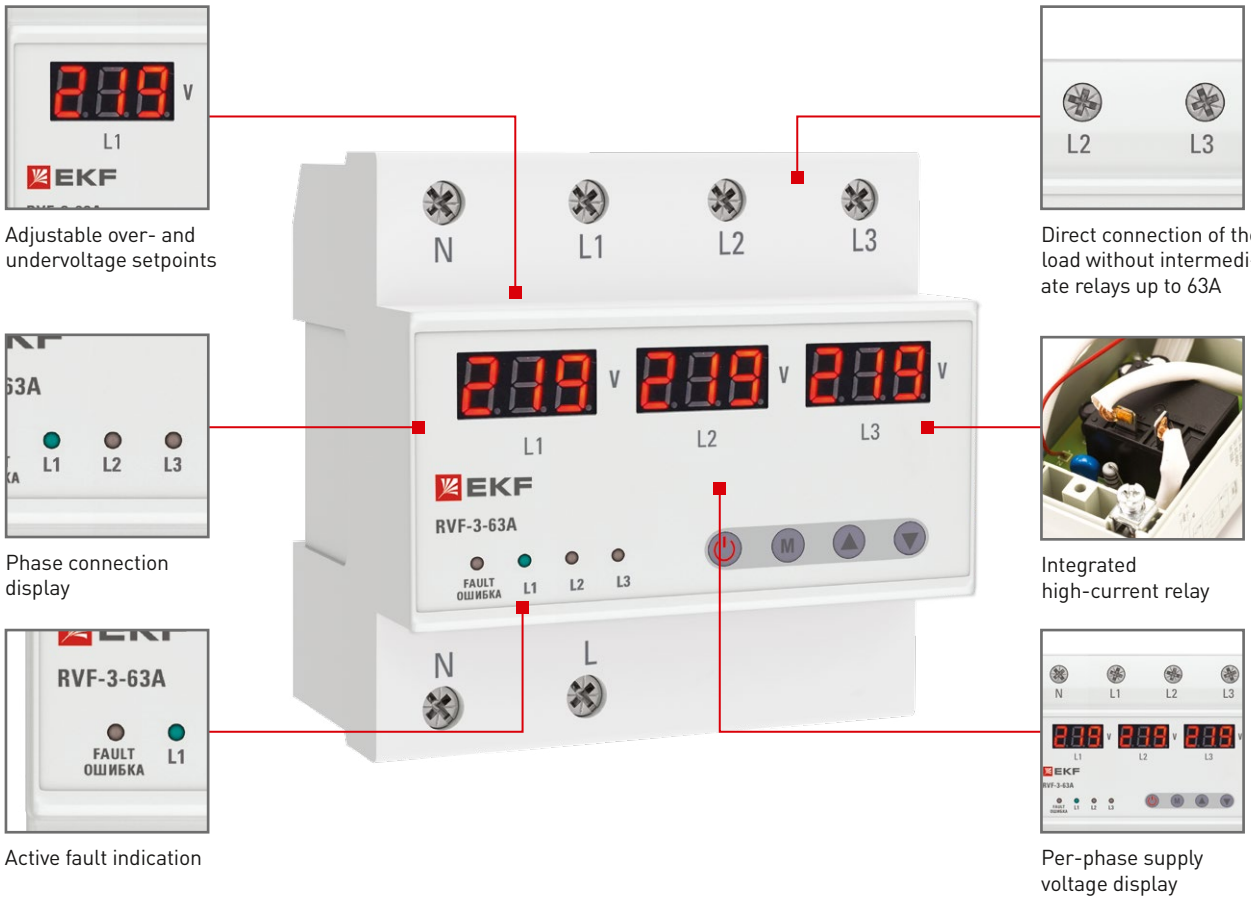
Overall and installation dimensions (mm)



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

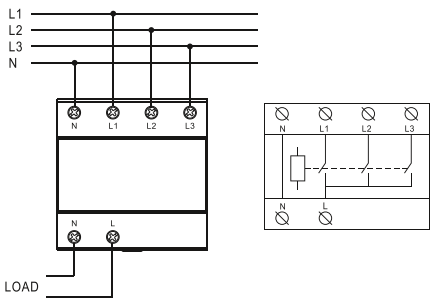
RVF-3-63A EKF automatic phase switch is used in single-phase power circuits that require increased reliability (telecom equipment racks, lighting, ventilation, etc.) and performs the following functions:

- undervoltage monitoring;
- overvoltage monitoring;
- phase loss monitoring;
- automatic load transfer to available phase.

TECHNICAL DATA

Wiring diagrams

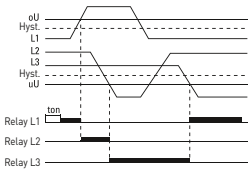
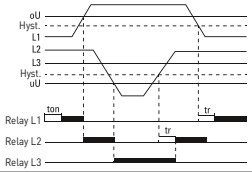
RVF-3



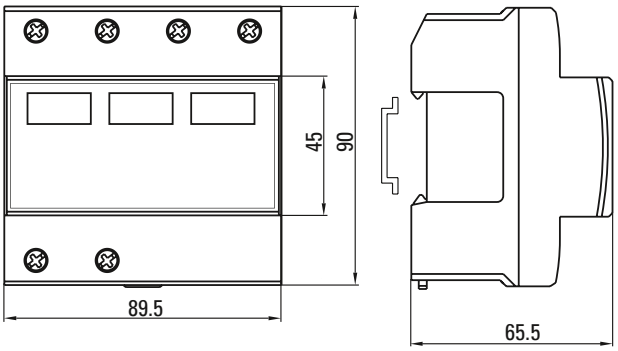
Parameters	Values
Rated supply voltage, V	AC 3 × 230 (N-L1/L2/L3)
Rated frequency, Hz	50 / 60
Backup phase switching delay, s	<0,2
Voltage hysteresis, V	5
Voltage measurement accuracy, %	<2
Maximum operating voltage, V	415
Minimum operating voltage, V	50
Maximum impulse withstand voltage, V	450
Pollution degree	3
Electrical endurance, cycles	100 000
Mechanical endurance, cycles	1 000 000
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

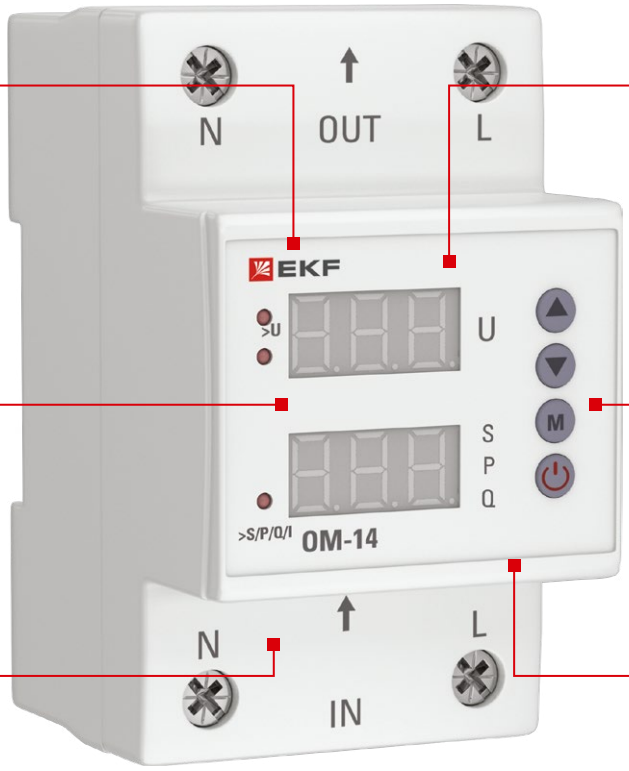
Power limiter OM-14 EKF

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.

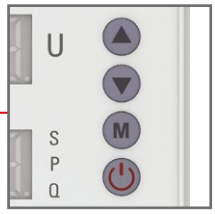
Real-time voltage, current and power display

LED indication of faults

Load up to 14 kVA



Active, reactive and apparent power measurement



Manual relay control

Integrated relay up to 80A

APPLICATION

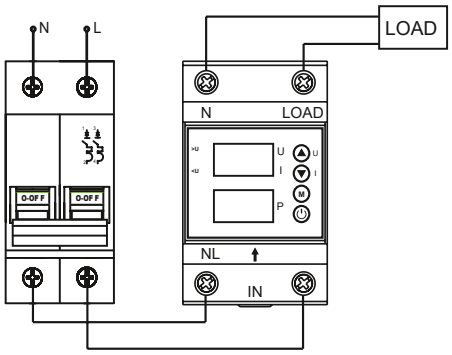
OM-14 EKF power limiter is used in administrative, industrial and residential buildings and performs the following functions:

- overvoltage, undervoltage protection;
- load shedding when the power consumption threshold is exceeded;
- display of voltage, current, and power values.

TECHNICAL DATA

Wiring diagrams

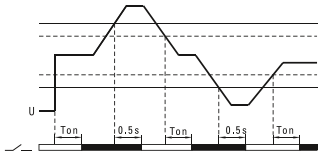
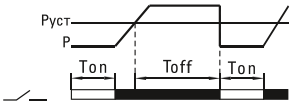
OM-14



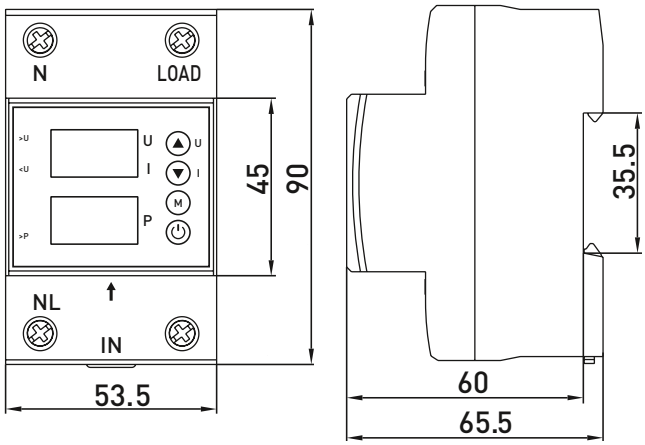
Parameters	Values
Supply voltage Un, V AC	80–320
Rated frequency, Hz	50 / 60
Adjustable power range, kVA	0,1–14,0
Overvoltage range, V	220–280
Undervoltage range, V	120–210
Maximum load current, A	80
Utilization category	AC-1
Hysteresis, V	2
Turn-on/reset delay, s	5–300
Switching delay, s	5–600
Overvoltage 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 endurance, cycles	100 000
Electrical endurance, cycles	1 000 000
Altitude above sea level, m	2000
Operating temperature, °C	-5 to +50
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)



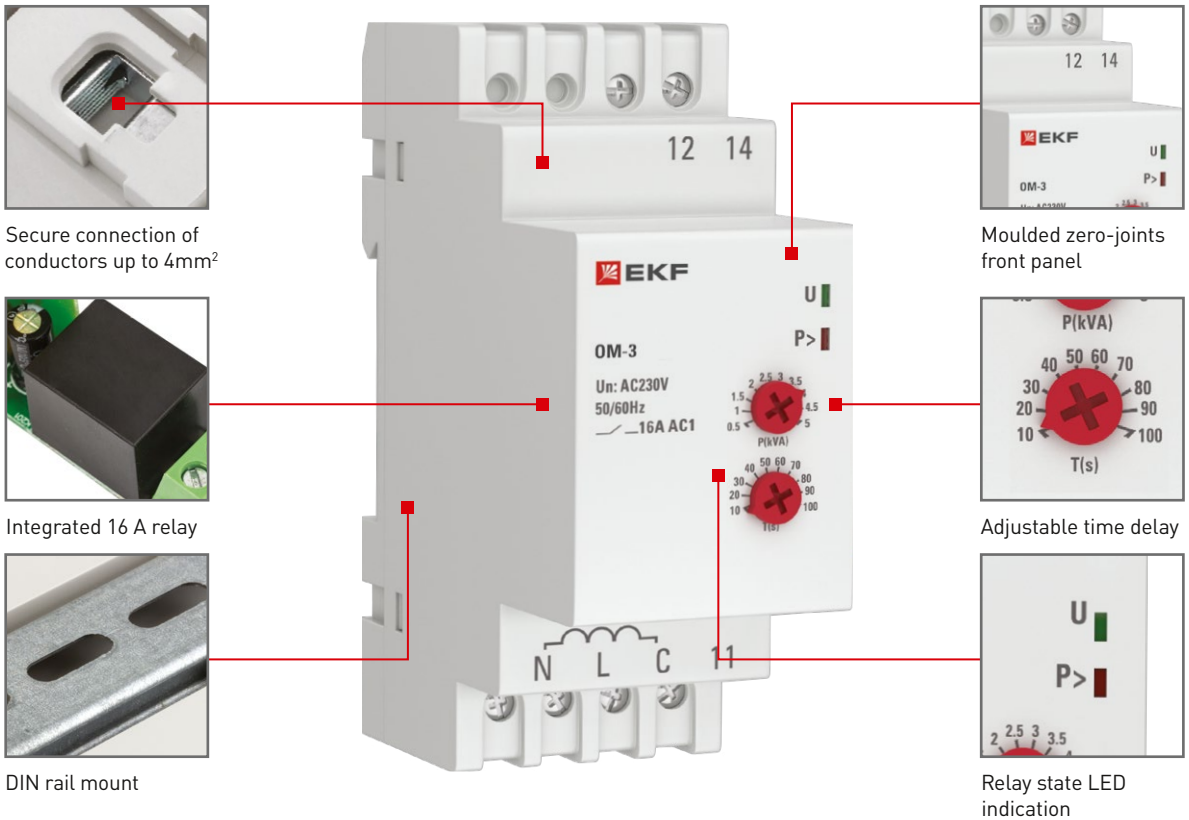
Delivery scope

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 80-320	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.



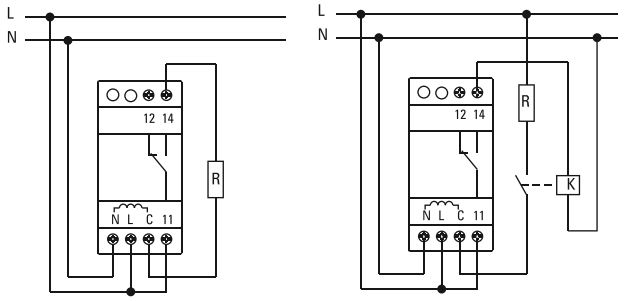
APPLICATION

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	220 / 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

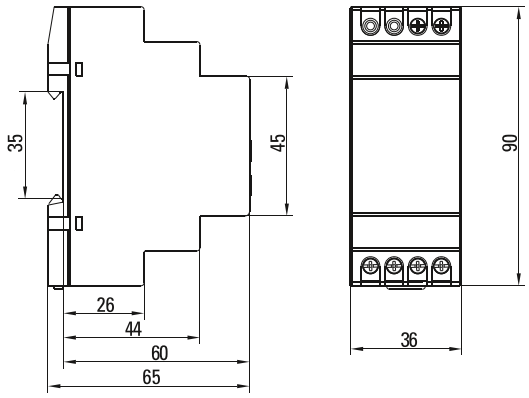
Installation and operation

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.

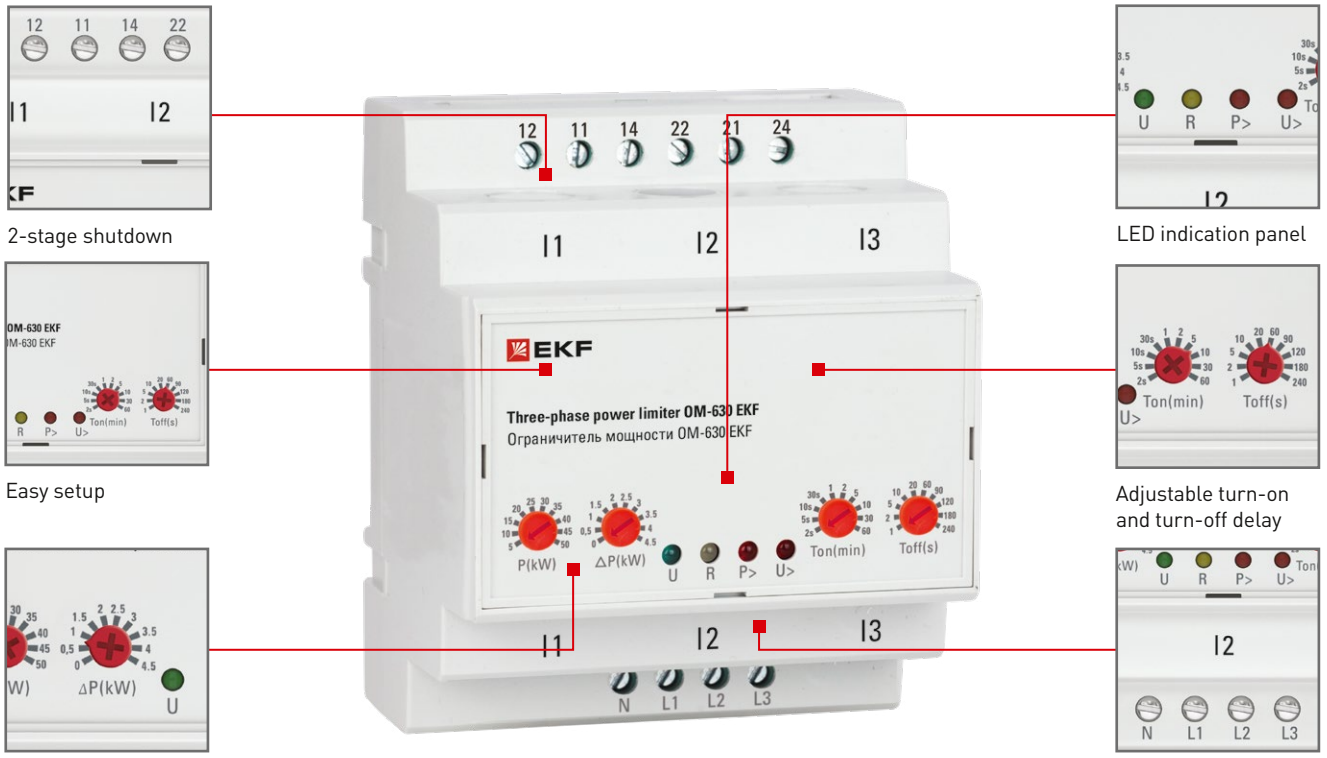
Overall and installation dimensions (mm)



Name	Supply voltage, V	Tightening torque, N·m	Mounting	Item code
Power limiter OM-3 EKF	AC 220-230	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

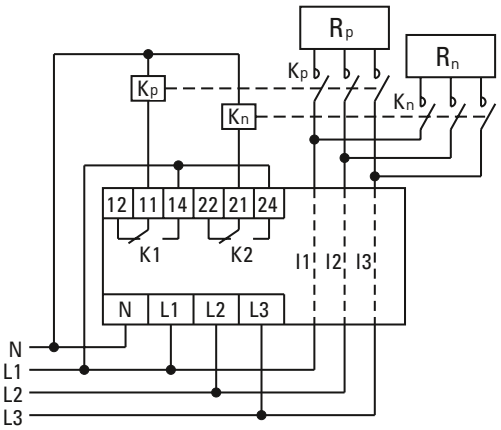
OM-630 EKF power limiter is designed for power consumption monitoring in single-phase circuits and automatic load shedding in the event of:

- power consumption in excess of the setpoint value;
- downstream short circuit fault;
- detected unauthorized 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

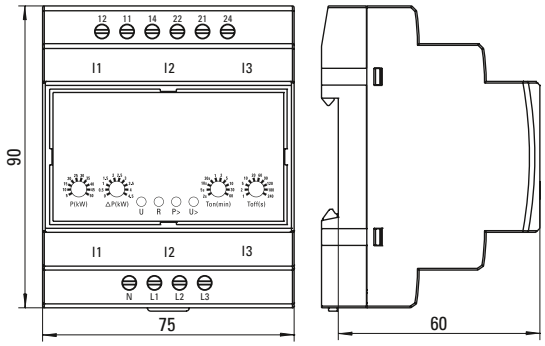
The device shall be mounted and connected by qualified electrical personnel only. The product must be connected to a three-phase network observing all applicable rules and regulations. Make sure that the conductors are not live before beginning the installation.

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)



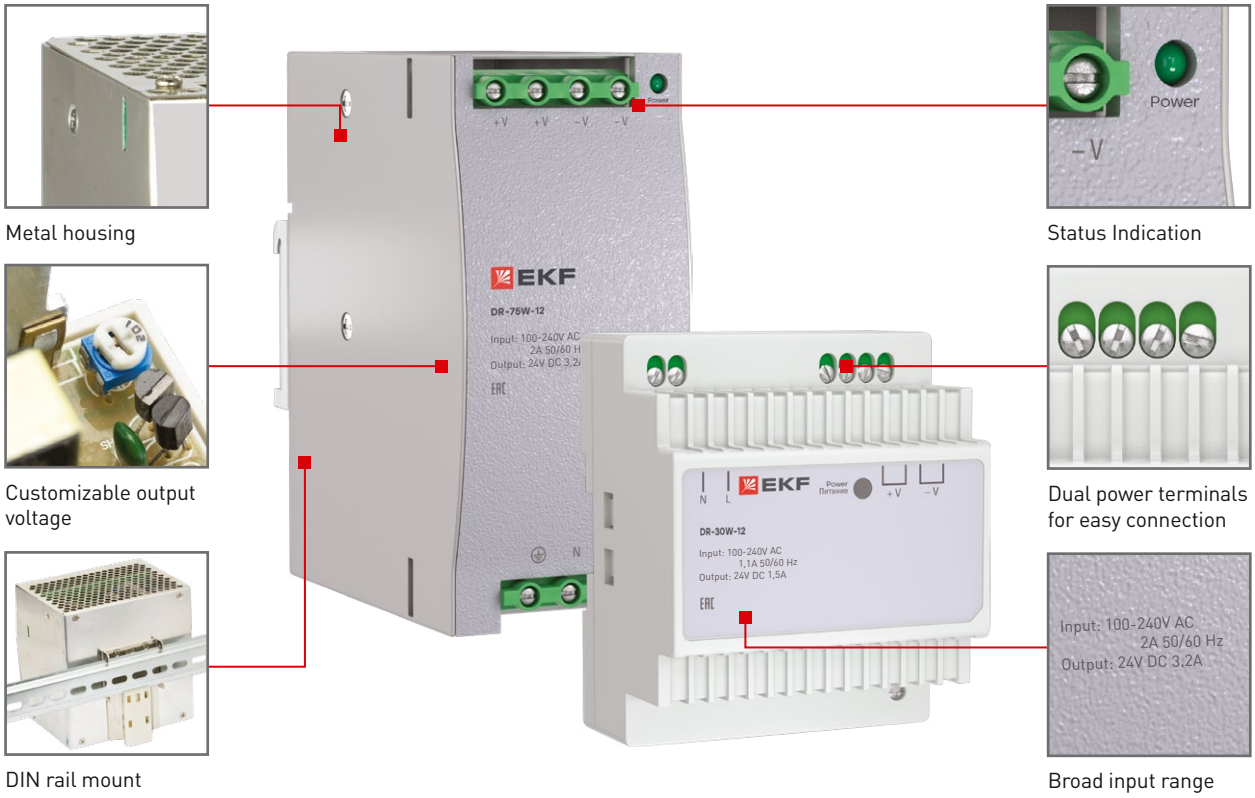
Delivery scope

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

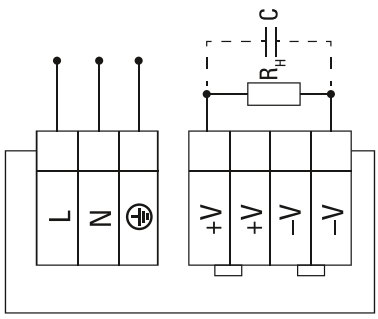
DR(P) EKF power supplies are used for power supply of motors, sensors, controllers and other equipment:

- home automation equipment;
- industrial equipment;
- standby power supply;
- video surveillance equipment;
- security alarm equipment.

TECHNICAL DATA

Wiring diagram

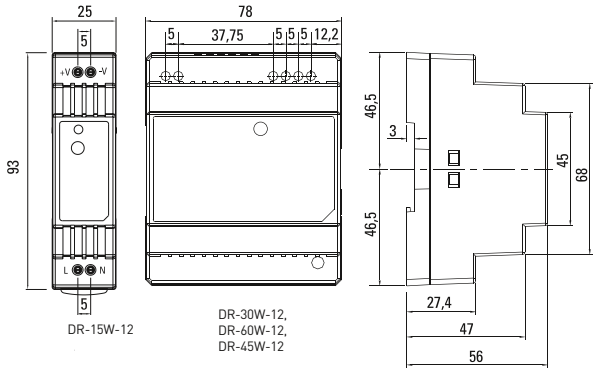
DR(P)



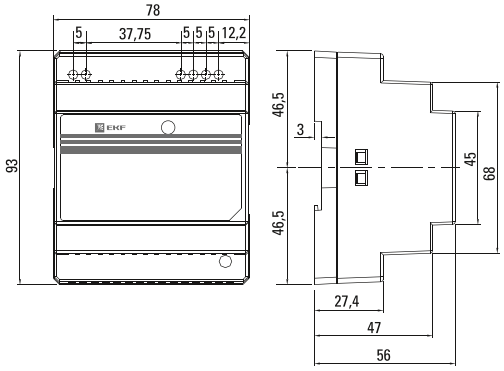
Parameters	Values	
	12 V power supply	24 V power supply
Output		
Rated output voltage, V DC	12	24
Output voltage range, V	10,8–13,2	21,6–26,4
Maximum output voltage error, %	±1,0	
Input		
Input voltage, V AC	85–264 (35–150 W); 180–264 / 90–132 (200–350 W)	
Input frequency, Hz	47–63	
Protection		
Overload 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)

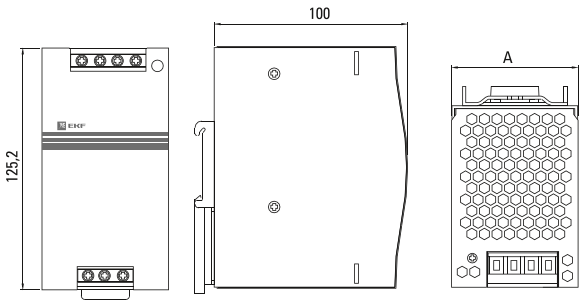
DR-15W



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

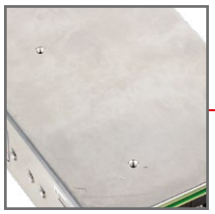
1. DIN rail power supply 24V DR EKF
2. Technical manual.

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

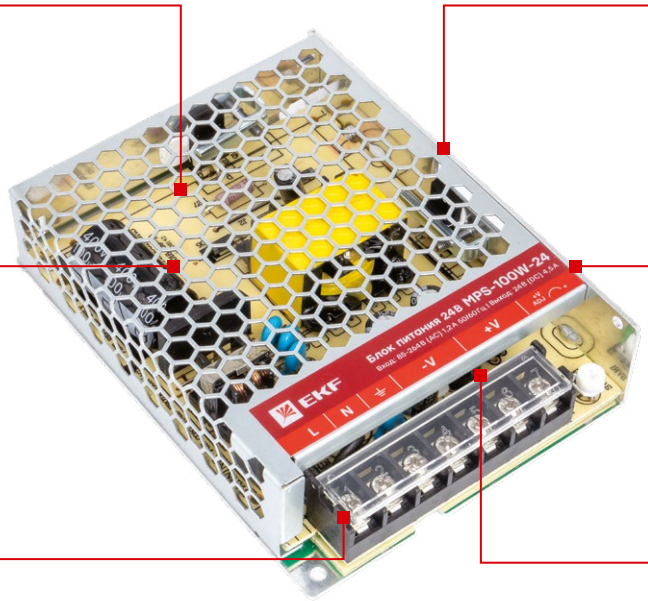
Enclosed power supply MPS EKF is a switched-mode power supply that converts input AC voltage into a stabilized DC voltage. The power supply features compact size as well as overload and short circuit protection. Power supply units are installed onto a mounting plate.

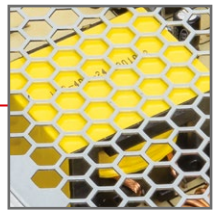
Status Indication



Mounting plate installation

Dual power terminals for easy connection





Galvanic isolation

Customizable output voltage

Perforated housing for better heat dissipation

APPLICATION

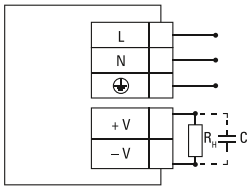
MPS EKF power supplies are used for power supply of motors, sensors, controllers and other equipment:

- home automation equipment;
- industrial equipment;
- standby power supply;
- video surveillance equipment;
- security alarm equipment.

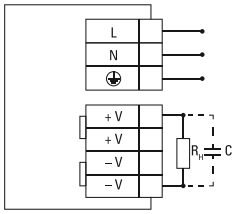
TECHNICAL DATA

Wiring diagrams

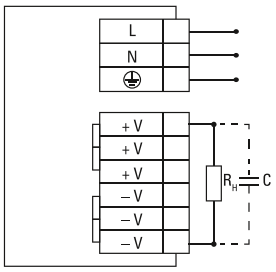
MPS-35W, MPS-50W, MPS-75W



MPS-100W, MPS-150W



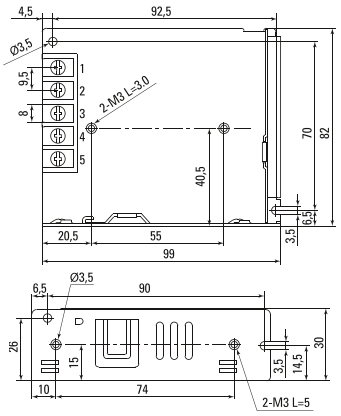
MPS-200W, MPS-350W



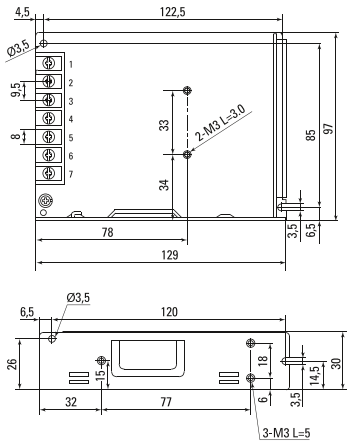
Parameters	Values	
	12 V power supply	24 V power supply
Output		
Rated output voltage, V DC	12	24
Output voltage range, V	10,2–13,8	21,6–26,4
Maximum output voltage error, %	±1,0	
Input		
Input voltage, V AC	85–264 (35–150 W) 180–264 / 90–132 (200–350 W)	
Input frequency, Hz	47–63	
Protection		
Overload 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)

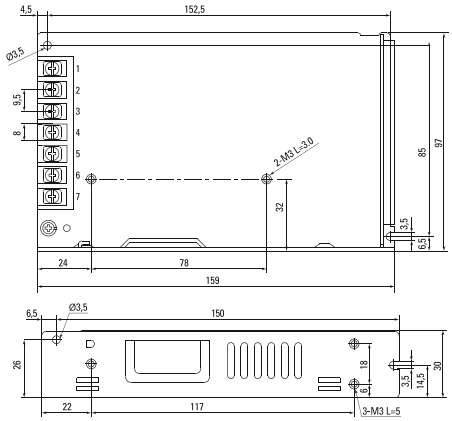
MPS-35W, MPS-50W



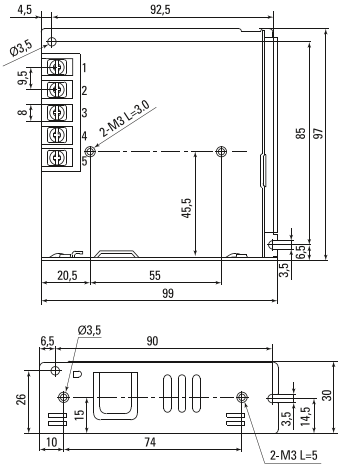
MPS-100W



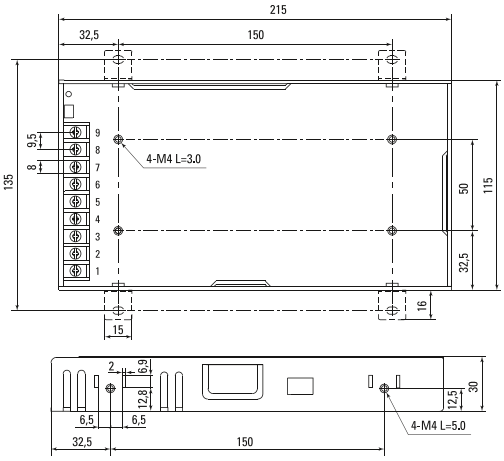
MPS-150W



MPS-75W



MPS-200W, MPS-350W



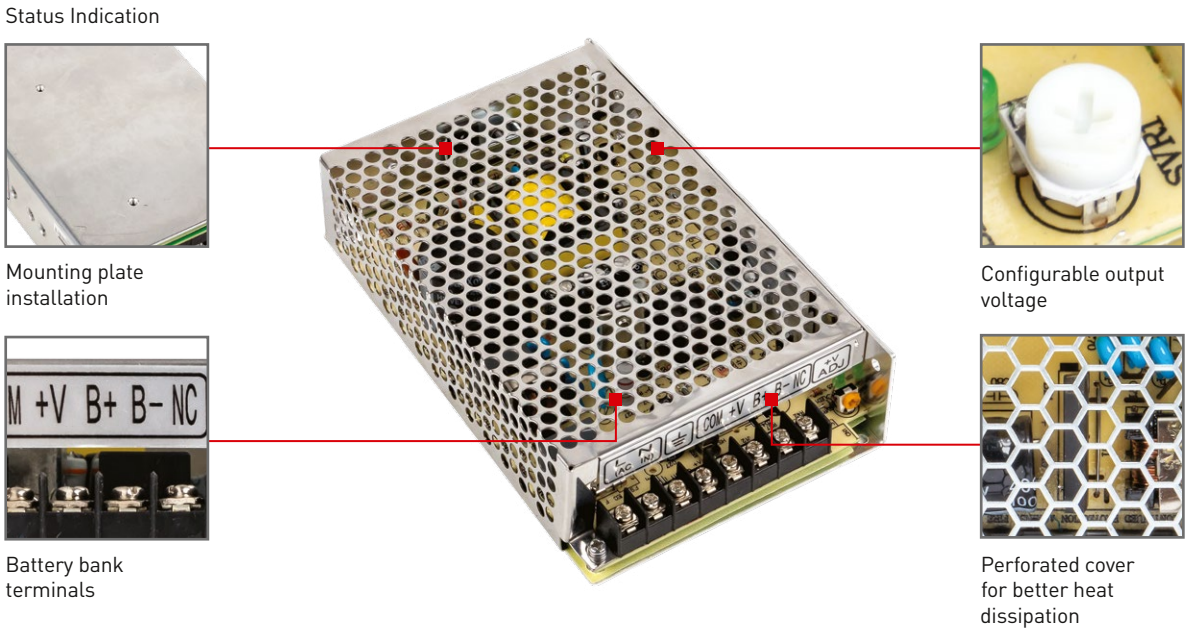
Delivery scope

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

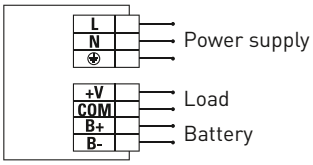
Power supplies 24V with UPS function MPSu EKF

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.



TECHNICAL DATA

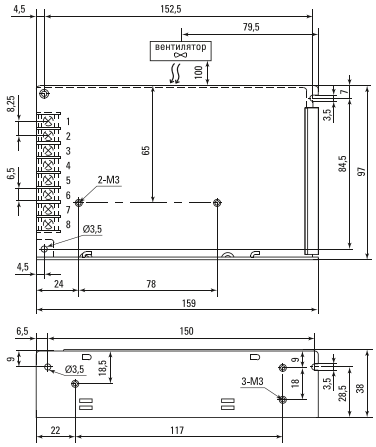
Wiring diagram



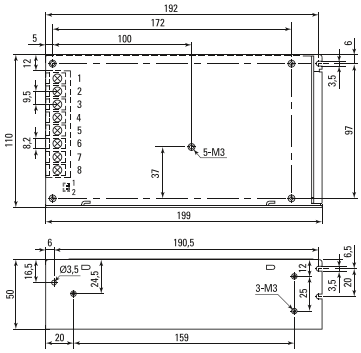
Parameters		Values	
Output	Output voltage range (+V COM), V	23,5–29	
	Rated output voltage (BAT+ BAT-), V	26,5	27,1
	Rated output current (BAT+ BAT-), A	0,16	0,50
	Recommended battery capacity, mAh	2000	5000
	Output voltage time, ms	800	1000
	Battery transfer time, ms	80	100
	Maximum output voltage error, %	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

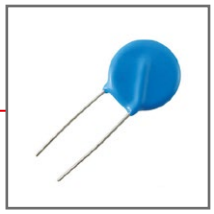
The relay-based AC voltage stabilizer is designed to provide stable single-phase sine wave power that meets the requirements of EN 50160 to industrial loads when the mains power quality is substandard. The stabilizer filters out interference and does not distort the voltage waveform. If the mains voltage 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

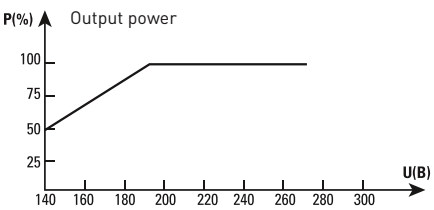
APPLICATION

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

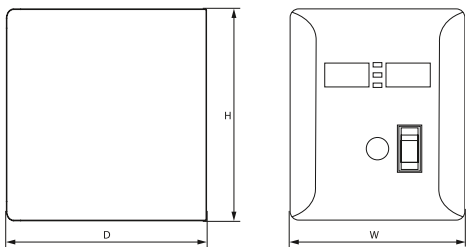
Parameters	Values
Input voltage range, V	140–260
Output voltage, V	220±8%
Mains frequency, Hz	45-65
Efficiency, %	>95
Time delay, s	6/180
Storage temperature, °C	-20 to +40
Operating temperature, °C	-20 to +40
Degree of protection	IP21
Overheat protection	Yes
Overvoltage protection	Yes (lowers the output 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.

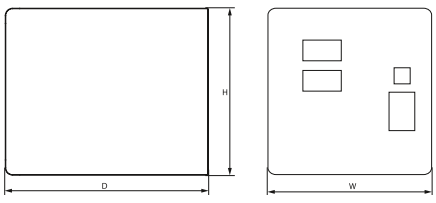
Overall and installation dimensions (mm)

F-500 – F-5000



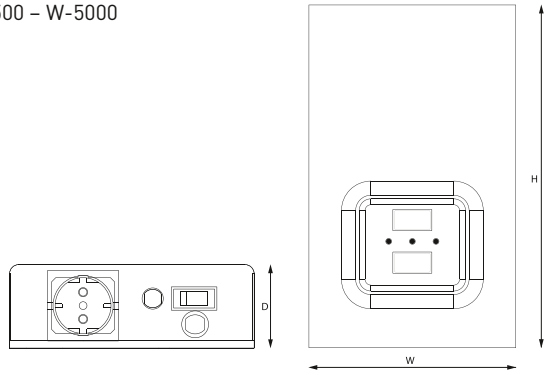
Name	D	H	W
Titan-F-500, Titan-F-1000	237	161	120
Titan-F-1500, Titan-F-2000	263	188	140
Titan-F-3000, Titan-F-5000	310	176	220

F-8000 – F-12000



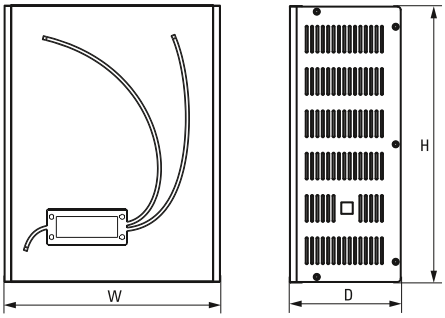
Name	D	H	W
Titan-F-8000 Titan-F-1000 Titan-F-12000	431	318	264

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 the total power draw 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	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	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 appliances with AC motors.**

Microprocessor control

Temperature controlled 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

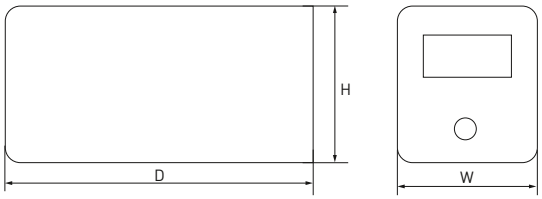
Parameters	Values
Input	
Rated input voltage, V	220 / 230 / 240
Input voltage range, V	162 – 295
Rated frequency, Hz	50 / 60 (automatic selection)
Input frequency tolerance, %	±10
Output	
Output voltage, V	220 / 230 / 240
Output voltage range	± 10% when operating on mains power ± 1% in battery mode
Output frequency, Hz	50 / 60 ± 1% (automatic selection)
Output frequency range	± 1% in battery mode
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. 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

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

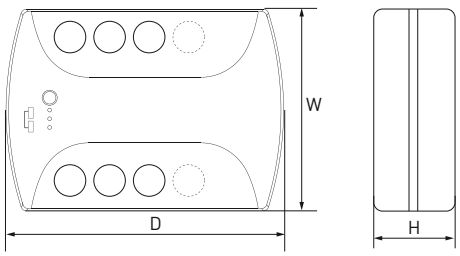
Parameters	Values
Input	
Rated input voltage, V	230
Input voltage range, V	162 – 295
Rated frequency, Hz	50 / 60 (automatic selection)
Input frequency tolerance, %	±10
Output	
Output voltage, V	220 / 230 / 240
Output voltage range	± 10% when operating on mains power ± 1% in battery mode
Output frequency, Hz	50 / 60 ± 1% (automatic selection)
Output frequency range	± 1% in battery mode
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)



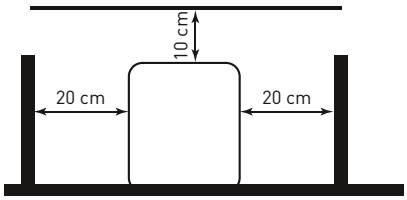
Name	D	H	W
E-Power Home 800 VA	280	94	185
E-Power Home 1000 VA	285	94	205

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 provide adequate ventilation away 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

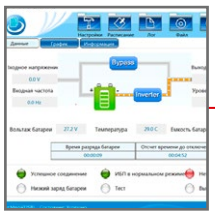
1. Uninterrupted power supply (UPS) unit.
2. Local monitoring cable.
3. Technical manual.

Uninterruptible power supplies E-Power PSW600 EKF

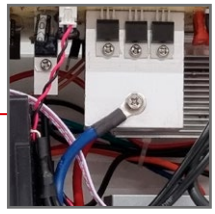
PSW600 are line-interactive uninterruptible power supply (UPS) units in a metal enclosure with a rated power of 500 to 3000 VA. The PSW600 series includes UPS models with built-in battery banks and models connected to an external power bank with a powerful charger, designed for an extended operation. 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

Easy to use and reliable design. Automatic UPS diagnostics on start-up



Extensive remote monitoring and control features



Protection against overload and short-circuit. Automatic battery charging

Improved power factor of 0,8 at the output. Wide range of input voltages and frequencies

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

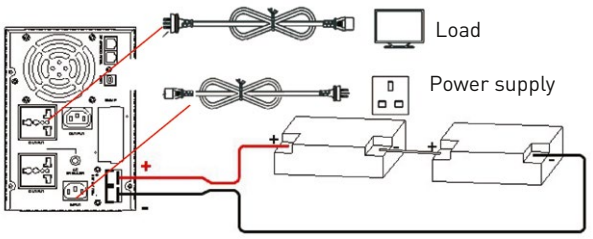
Battery capacity	Load, W											
	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
	Battery operation time, min											
4 pcs. x 65 Ah	76	69	64	59	55	51	48	45	43	40	38	36
4 pcs. x 90 Ah	112	102	94	87	81	76	71	67	63	59	56	54
4 pcs. x 100 Ah	127	116	107	99	92	86	80	76	71	67	64	61
4 pcs. 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				

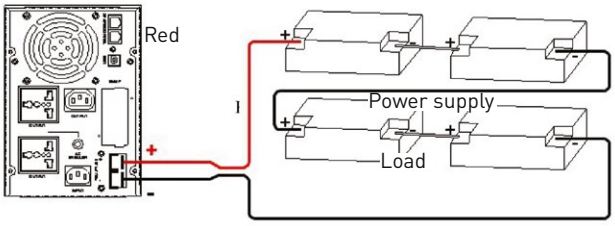
* TB – freestanding tower case with built-in battery bank.
* T – freestanding tower case with an improved charger, designed for operation with an external battery bank.
* RTB – universal rack-mounted or freestanding tower case.
** User-configurable, depending on the battery bank.
*** Recommended temperature 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 within 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 bank connection diagram.
DC voltage U = 24 V



Tower case. Battery bank 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

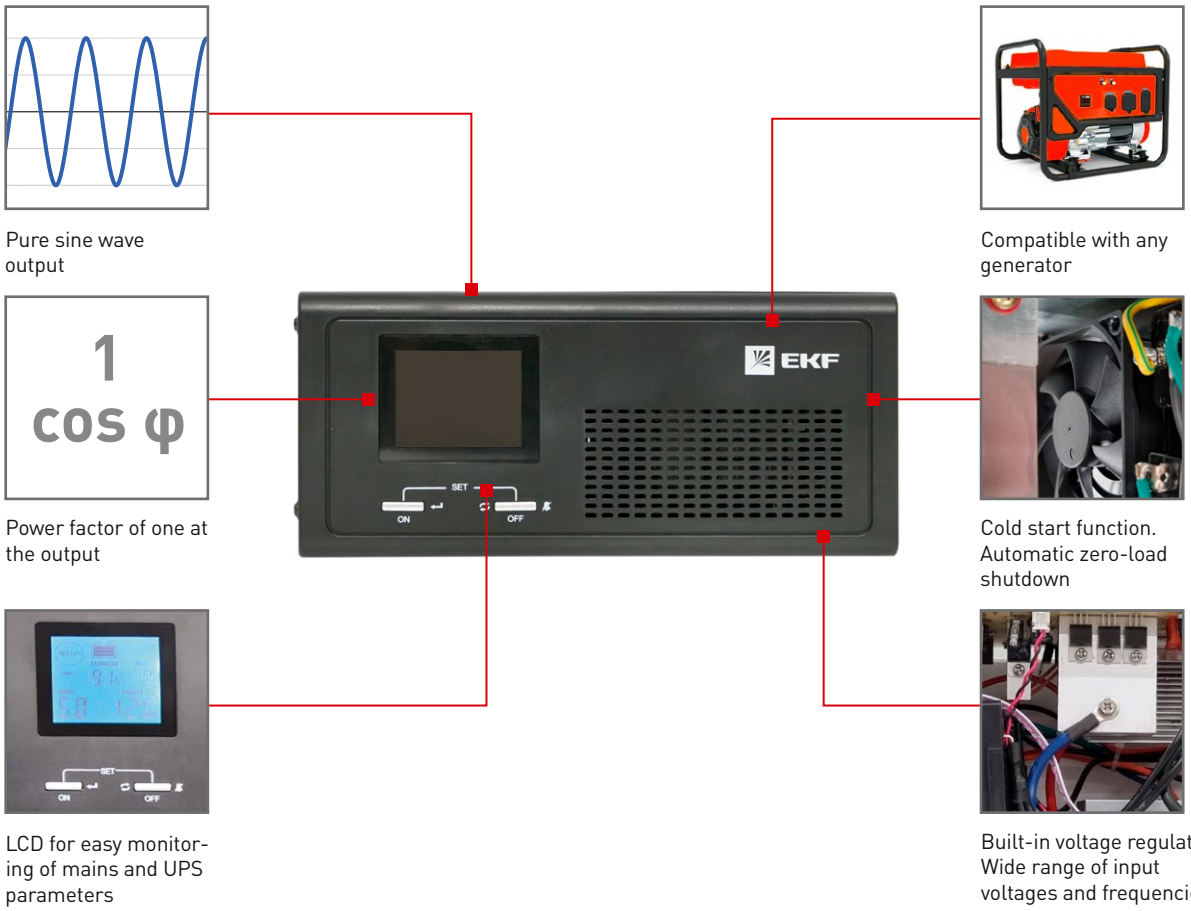
Overall and installation dimensions

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 an extended battery runtime 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 fire-fighting 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

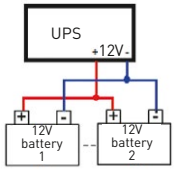
E-Power PSW-HW30

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

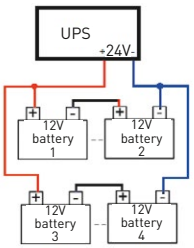
Battery voltage, V	Full UPS load						
	10 min	15 min	30 min	1 hour	2 hours	3 hours	4 hours
	Number and capacity of batteries in the battery bank						
12	1 x 1 x 17 Ah	1 x 1 x 24 Ah	1 x 1 x 38 Ah	1 x 1 x 65 Ah	1 x 1 x 100 Ah	1 x 1 x 150 Ah	1 x 1 x 200 Ah
	1 x 1 x 38 Ah	1 x 1 x 65 Ah	1 x 1 x 65 Ah	2 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



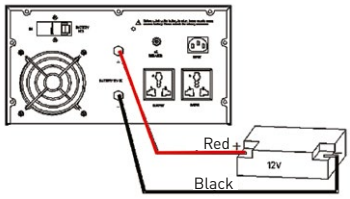
Parameters		Values					
Model		PSW-H05/ PSW-HW05	PSW-H06/PSW-HW06	PSW-H10	PSW-H16	PSW-HW25	PSW-HW30
Rated power, VA		500	600	1000	1600	2500	3500
Active power, W		500	600	1000	1600	2500	3500
Version		H - freestanding/ HW - wall-mounted	H - freestanding/ HW - wall-mounted	Freestanding	Freestanding	Wall-mounted	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

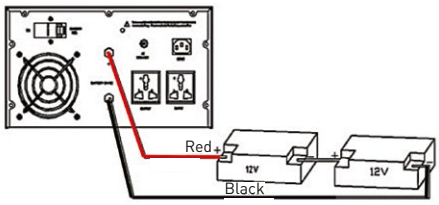
- UPS must be installed in a well-ventilated location, away from water, flammable and corrosive substances. The minimum distance to the nearest objects must be at least 150 mm.
- Connect the UPS to an electrical outlet (make sure that the outlet is grounded properly).
- The UPS will charge batteries 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.

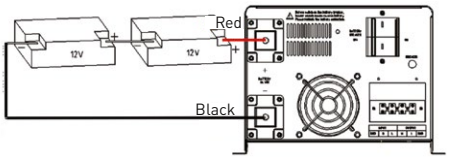
The UPS is equipped with an alarm to indicate incorrect battery bank connection. In the event of a polarity error, the UPS will emit an alarm sound.



Battery connection diagram, U=12V. PSW-H 300-1000W



Battery connection diagram, U=24V. PSW-H 1600W

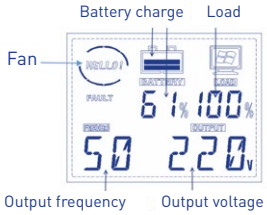


Battery connection diagram, U=24V. PSW-H 2500-3500W

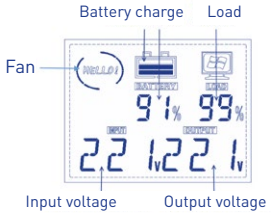
Recommended cable cross-section for connecting the battery to the UPS

Name	Cable cross-section
PSW-H 2500W	35 mm²
PSW-H 3500W	50 mm²

LCD interface



Display in battery mode



Display in normal mode

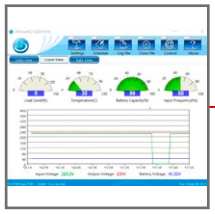
Overall and installation dimensions

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

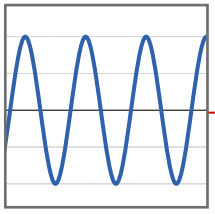
Uninterruptible power supplies E-Power SW900PRO-RT/RTB EKF

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 operation time, 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)					

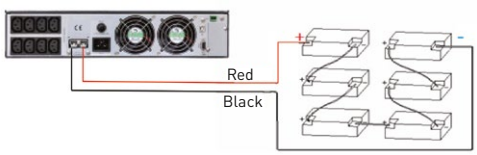
Installation and operation

- 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 runtime (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.



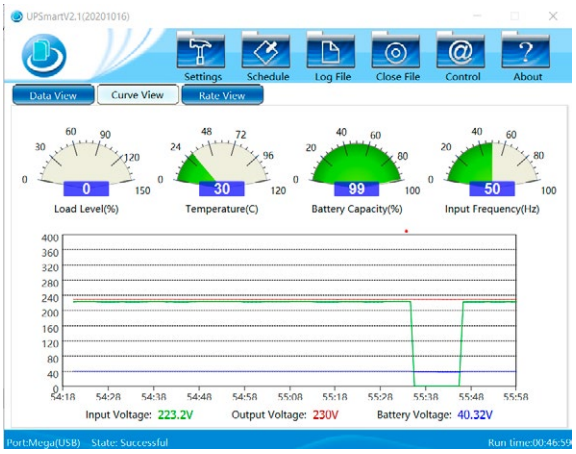
Connecting an external battery bank to a 2 kVA UPS.

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.

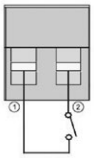


Communication interfaces

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 included.

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

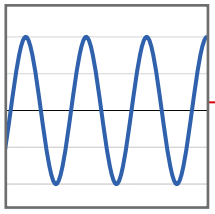
Parameters	SW900 Pro-RTB 1kVA	SW900 Pro-RT 1kVA	SW900 Pro-RTB 2kVA	SW900 Pro-RT 2kVA	SW900 Pro-RTB 3kVA	SW900 Pro-RT 3kVA
UPS dimensions (W×D×H), mm	144 × 336 × 214			191 × 418 × 332		
Net weight, kg	9,5	6	18	10,5	22,5	11
Packaged dimensions (W×D×H), mm	232 × 420 × 318			318 × 533 × 471		
Gross weight, 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 runtime, 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

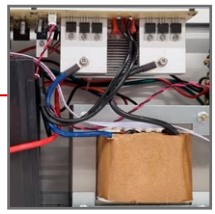


True double conversion, always pure sine wave output. Minimal THDv at the output

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)					

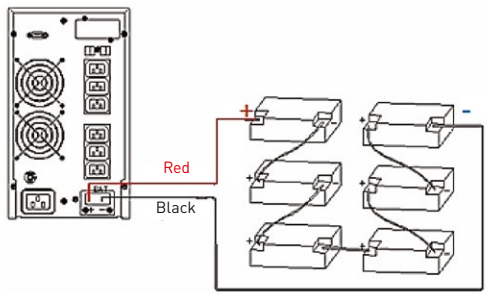
Installation and operation

- 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 operation time (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.

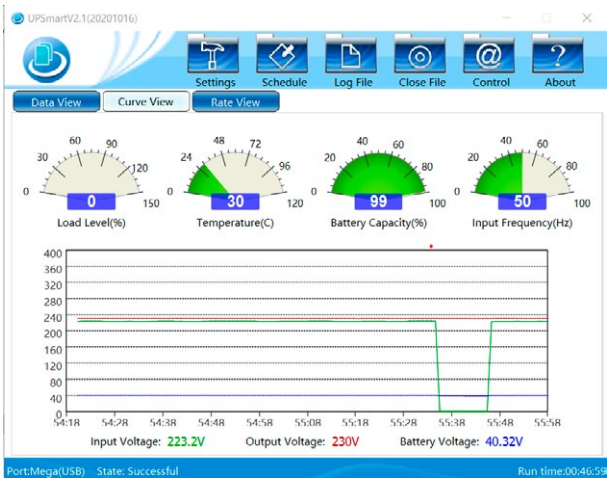


Connecting an external battery bank to a 2 kVA UPS

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.

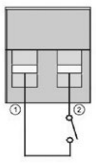


Communication interfaces

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
External 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

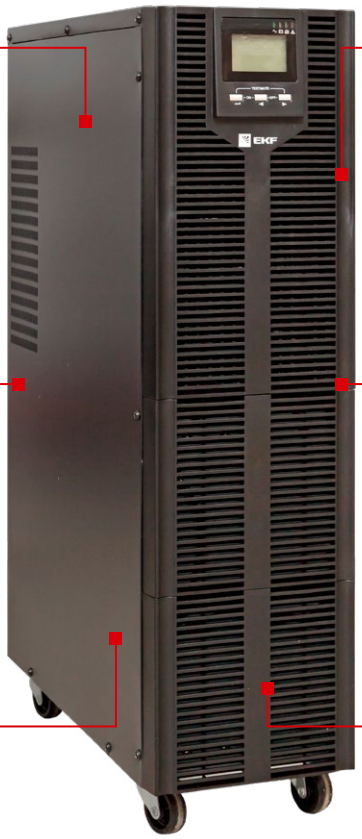
Uninterruptible power supplies E-Power SW900G4 6000-1000 VA EKF

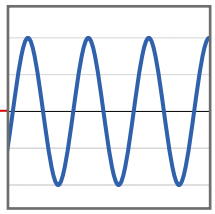
A new generation of uninterruptible power supply (UPS) with improved performance and an input and output power factor of 1. The UPS utilizes double conversion design. The output voltage parameters are constantly monitored and maintained with high level of accuracy thanks to a microprocessor-based control. 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

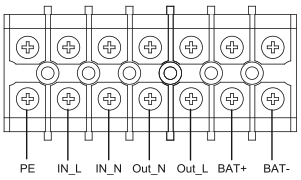
Parameters	Values							
Model	SW960G4-T	SW960G4-T-B	SW901G4-T	SW910G4-T-B	SW960G4-RT	SW960G4-RT-B	SW901G4-RT	SW901G4-RT-B
Rated power, VA	6000		10 000		6000		10 000	
Active power, W	6000		10 000		6000		10 000	
Input								
Rated input voltage, V AC	208/220/230/240 1P + N+ Gnd							
Input voltage range, 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 operation time (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.



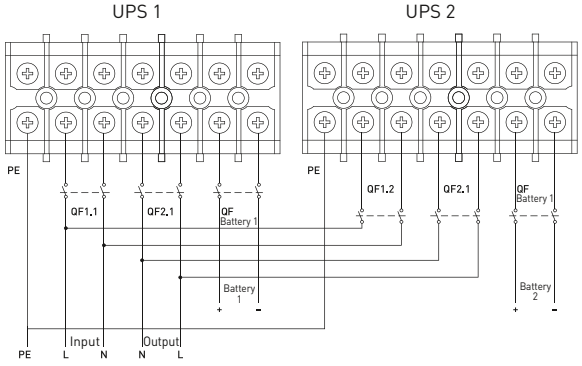
UPS terminal block 1:1 connection

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;

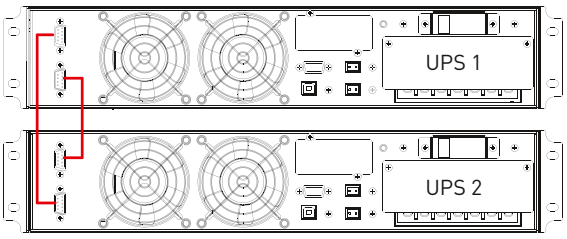
Parallel UPS connection

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.

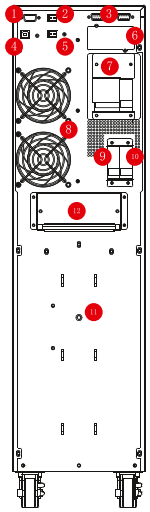


Parallel UPS 1:1 connection

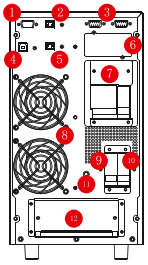


Connecting communication cables to two UPSes

UPS back panel

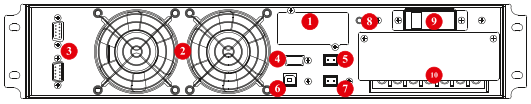


Model TB

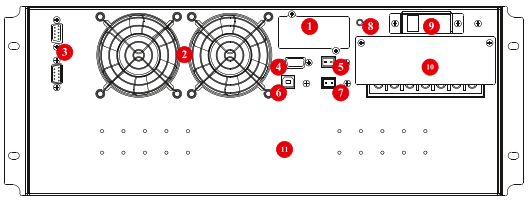


Model T

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)

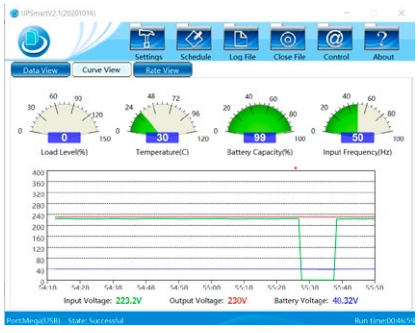


SW900G4-RTB-6/10 kVA (1:1)

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

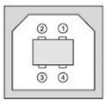
Extensive remote control and monitoring capabilities
Programmable start-up: automatic self-diagnostics, soft shutdown at low battery, scheduled shutdown and reboot, event log, error log.



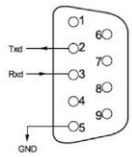
Communication interfaces

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

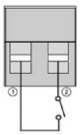
Contacts		Description
1		+ 5V
2		Data +
3		Data –
4		Ground

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

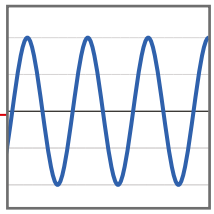
Icons	Name	Description
	Overload indicator	Blinks when the load is higher than the nominal
	Alarm indicator	Blinks when the UPS beeps (synchronously)
	Fan	Shows the status of the fans. The fan icon rotates when the fan is running. The fan icon constantly on indicates fan failure
	Fault indicator	The 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 improved level of redundancy.

3 to 1-phase operation. Input power factor higher than 0,99. Low level of electromagnetic interference



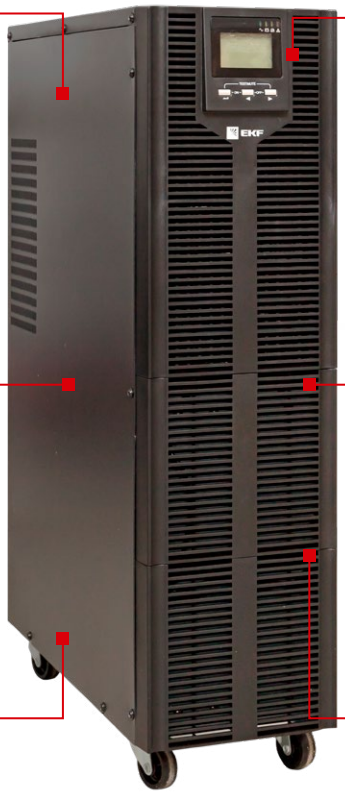
Double conversion, pure sine wave at the output. Minimal THDv at the output

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

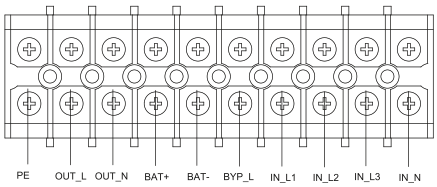
* The time to full charge is more than 10 hours.

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 operation time (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.



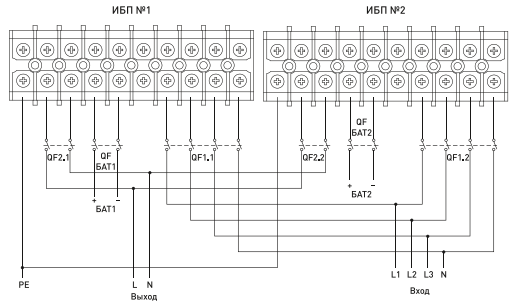
UPS terminal block 3:1 connection

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

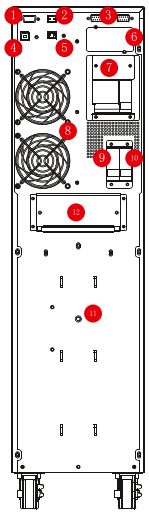
For parallel operation, the UPS must have parallel boards installed (optional).

- 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.

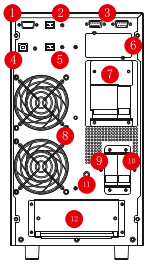


3:1 UPS parallel connection

UPS back panel

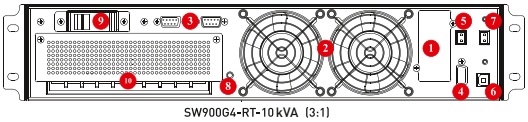


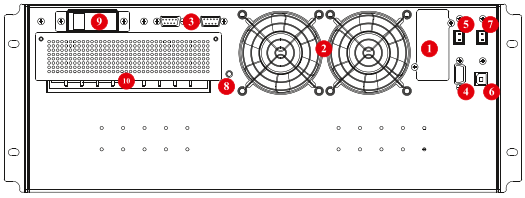
1 - RS232 port
2 - Emergency Power Off (EPO)
3 - parallel operation extension board (optional)
4 - USB port (optional)
5 - battery temperature compensation sensor port (optional)
6 - expansion card slot
7 - manual bypass or a battery breaker mounting spot



8 - cooling fans
9 - static bypass input breaker
10 - input circuit breaker
11 - ground connection
12 - power cable terminals

Model TB Model T

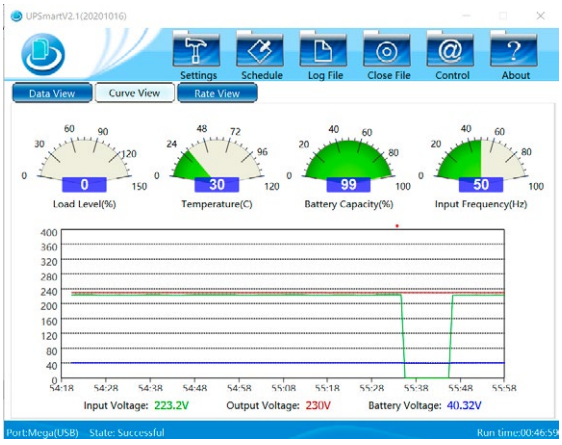




1 - expansion card slot
2 - cooling fans
3 - parallel operation extension board (optional)
4 - RS232 port
5 - Emergency Power Off (EPO)
6 - USB port
7 - battery temperature compensation sensor port (optional)
8 - ground connection
9 - static bypass input breaker
10 - power cable terminals
11 — battery compartment

Monitoring

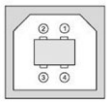
Extensive remote control and monitoring capabilities
Programmable start-up: automatic self-diagnostics, soft shutdown at low battery, scheduled shutdown and reboot, event log, error log.



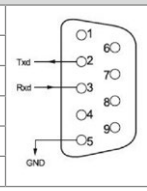
Communication interfaces

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

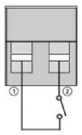
Contacts		Description
1		+ 5V
2		Data +
3		Data –
4		Ground

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 SNMP 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 card 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 and are 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 60947-5-1

Versatile design. Can be taken apart for faster assembly

22 & 16 mm mounting diameters

Auxiliary NO & NC 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:

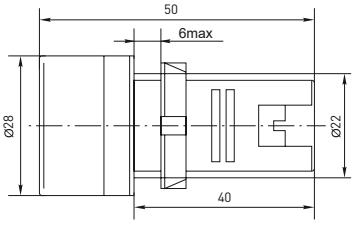
- manual control (switching) of electrical equipment;
- light signaling & alarm.

TECHNICAL DATA

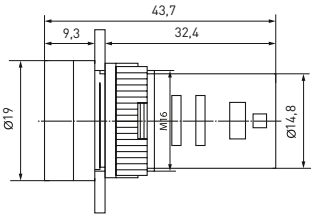
Parameters	Values									
	Altrenating current (AC)					Direct current (DC)				
Rated voltage, V	660	380-415	220-240	110	48	440	230	110	48	24
Rated current, A:										
Utilization category AC-12	2,5	4,5	7,5	10	10	–	–	–	–	–
Utilization category AC-15	1,5	2,5	4,5	6	6	–	–	–	–	–
Utilization category DC-12	–	–	–	–	–	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 mln. cycles	Key switches and stay put/turn to release buttons – 0,1. Other models – 0,6									
Mounting hole diameter Ø, mm	22									
Operating temperature, °C	from -10 to +50									

Overall and installation dimensions (mm)

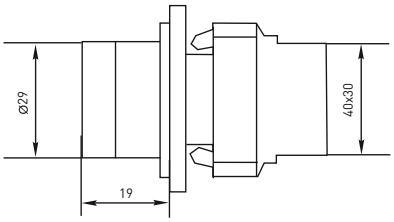
Pilot lights
AD16-22HS
ED16-22



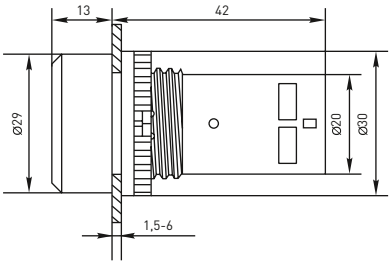
Pilot lights AD16-16S



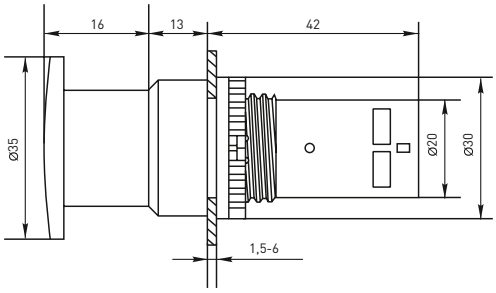
Pilot lights BV



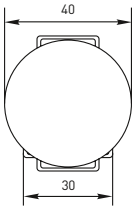
Push buttons
SW2C-11
SW2C-10D

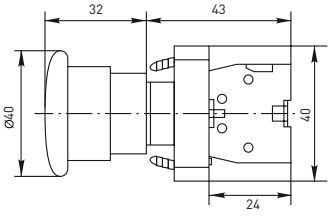


Push buttons
SW2C-MD
SW2C-11MZ

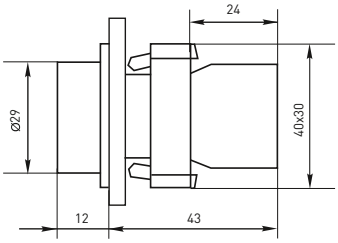


Push buttons
BS542, BC42

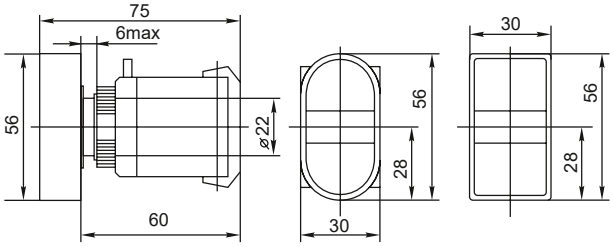




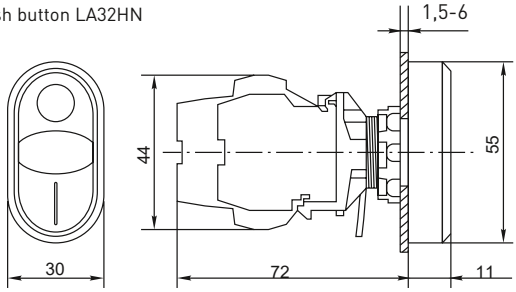
Push buttons
BA



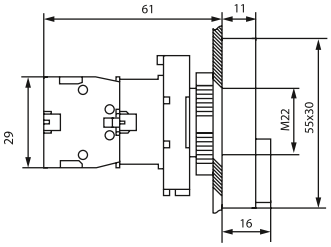
Push buttons APBB-22N, AS-22N



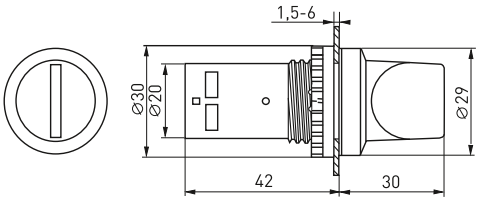
Push button LA32HN



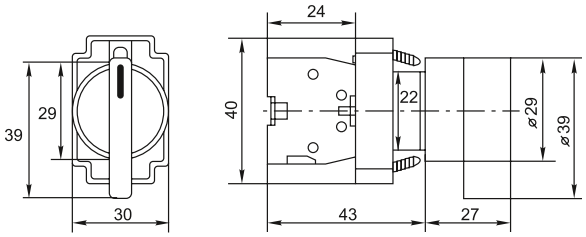
Push button LAY5-BW8465



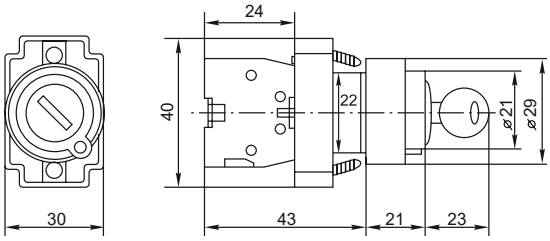
Switches SW2C-11X/2, SW2C-20X/3



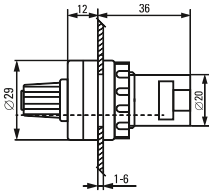
Selector switches BJ21 2P, BJ33 3P, BD21 2P, BD33 3P



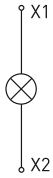
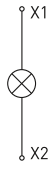
Selector switches BG21 2P, BG3 3P, BG61 2P, BG73 3P



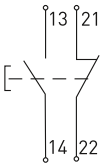
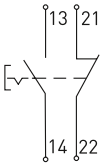
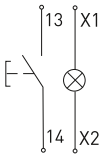
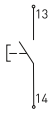
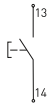
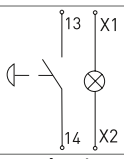
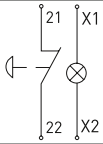
Potentiometer

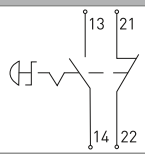
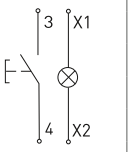
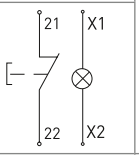
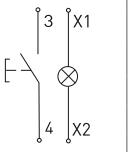
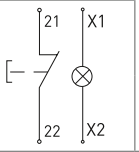
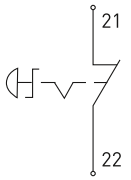
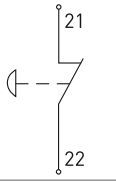
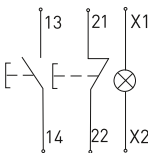


Pilot lights

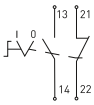
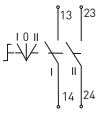
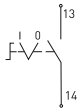
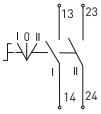
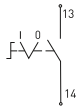
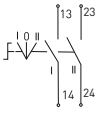
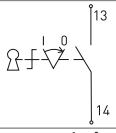
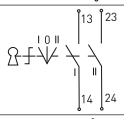
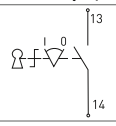
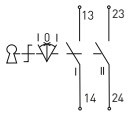
Picture	Name	Wiring diagram	Degree of protection	Color	Rated voltage, V	Item code
Plastic one-piece housing. Flat light lens. 22m.	LED Pilot light AD16-22HS EKF		IP54	White	220-240	ledm-ad16-w
					12	ledm-ad16-w-12
					24	ledm-ad16-w-24
					380-415	ledm-ad16-w-400
				Yellow	220-240	ledm-ad16-o
					12	ledm-ad16-y-12
					24	ledm-ad16-o-24
					380-415	ledm-ad16-o-400
				Green	220-240	ledm-ad16-g
					12	ledm-ad16-g-12
					24	ledm-ad16-g-24
					380-415	ledm-ad16-g-400
				Red	220-240	ledm-ad16-r
					12	ledm-ad16-r-12
					24	ledm-ad16-r-24
					380-415	ledm-ad16-r-400
				Blue	220-240	ledm-ad16-b
					12	ledm-ad16-b-12
					24	ledm-ad16-b-24
					380-415	ledm-ad16-b-400
			IP65	White	220-240	ledm-ad16-w-65
					24	ledm-ad16-w-24-65
				Yellow	220-240	ledm-ad16-y-65
					24	ledm-ad16-y-24-65
				Green	220-240	ledm-ad16-g-65
					24	ledm-ad16-g-24-65
				Red	220-240	ledm-ad16-r-65
					24	ledm-ad16-r-24-65
				Blue	220-240	ledm-ad16-b-65
					24	ledm-ad16-b-24-65
Plastic housing. Flat lens. 16 mm	LED Pilot light AD16-16HS EKF		P54	White	220-240	ledm-ad16-16-w
					24	ledm-ad16-24-w
				Red	220-240	ledm-ad16-16-r
					24	ledm-ad16-24-r
				Yellow	220-240	ledm-ad16-16-y
					24	ledm-ad16-24-y
				Blue	220-240	ledm-ad16-16-b
					24	ledm-ad16-24-b
				Green	220-240	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-mn
					220-240	ed16-22bm-mn
				Red	24	ed16-22bms-24-mn
					220-240	ed16-22bms-mn
Plastic one-piece housing	Voltage indicator pilot light ED16-22 EKF		IP54	Yellow	70-500	ed16-22vd-y-mn
				Green		ed16-22vd-g-mn
				Red		ed16-22vd-r-mn
Metal housing. Cylindrical light lens. Can be taken apart.	Pilot light BV65 EKF		IP54	Yellow	220-240	xb2-bv65-mn
					24	xb2-bv65-24-mn
				Green	220-240	xb2-bv63-mn
					24	xb2-bv63-24-mn
				Red	220-240	xb2-bv64-mn
					24	xb2-bv64-24-mn
				Blue	220-240	xb2-bv66-mn
					24	xb2-bv66-24-mn
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-mn
				Green		ed16-22avd-g-mn
				Red		ed16-22avd-r-mn
Plastic one-piece housing, digital indication of temperature	Temperature indicator pilot light white ED16-22C EKF		IP54	White	220-240	ed16-22c-w-mn

Push buttons

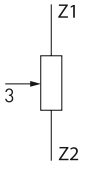
Picture	Name	Wiring diagram	Degree of protection	Color	Rated voltage, V	Item code
Spring return, one-piece, NO+NC, non-illuminated	Push button SW2C-11S EKF		IP54	Black	220-240	sw2c-11s-mn
				Yellow		sw2c-11s-y-mn
				Green		sw2c-11s-g-mn
				Red		sw2c-11s-r-mn
				Blue		sw2c-11s-b-mn
Stay put, one piece, NO+NC, non-illuminated	Push button SW2C-11F EKF		IP54	Green	220-240	sw2c-11f-g-mn
				Red		sw2c-11f-r-mn
				Yellow		sw2c-11f-y-mn
				Black		sw2c-11f-mn
Stay put, one piece, NO+NC, non-illuminated	Illuminated push button SW2C-10D EKF		IP54	Yellow	220-240	sw2c-md-y
					24	sw2c-md-y-24
				Green	220-240	sw2c-md-g
					24	sw2c-md-g-24
				Red	220-240	sw2c-md-r
					24	s w2c-md-r-24
				Blue	220-240	sw2c-md-b
					24	sw2c-md-b-24
Spring return, NO, non-illuminated, can be taken apart	Push button BA EKF		IP40	Red	220-240	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	220-240	xb2-ba41-65
				Yellow		xb2-ba51-65
				Green		xb2-ba31-65
				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	220-240	sw2c-md-gg
					24	sw2c-md-gg-24
Spring return, one-piece, NC, illuminated (neon light)				Red	220-240	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	220-240	sw2c-mz-r
Spring return, can be taken apart, NO, illuminated (LED)	Illuminated push button BA EKF		IP40	White	220-240	xb2-bw21-230
					24	xb2-bw21-24
				Yellow	220-240	xb2-bw51-230
					24	xb2-bw51-24
				Green	220-240	xb2-bw31-230
					24	xb2-bw31-24
				Blue	220-240	xb2-bw61-230
					24	xb2-bw61-24
Spring return, can be taken apart, NC, illuminated (LED)				Red	220-240	xb2-bw42-230
					24	xb2-bw42-24
Spring return, can be taken apart, NO, illuminated (LED)			IP65	Yellow	220-240	xb2-bw51-230-65
					24	xb2-bw51-24-65
				Green	220-240	xb2-bw31-230-65
					24	xb2-bw31-24-65
				Blue	220-240	xb2-bw61-230-65
					24	xb2-bw61-24-65
Spring return, can be taken apart, NC, illuminated (LED)				Red	220-240	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	220-240	xb2-bs542
			IP65			xb2-bs542-65
Spring return, NC, non-illuminated, can be taken apart	Mushroom head push button BC42 EKF		IP40	Red	220-240	xb2-bc42
			IP65			xb2-bc42-65
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	220-240	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	220-240	pbn-as-rec-mn
					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	220-240	la32hnd
					24	la32hnd-24
Spring return, rectangular, can be taken apart, NO+NC, illuminated (LED	Push button LAY5-BW8465 "I-0" rectangular 230V NO+NC EKF		IP40	Red-green	220-240	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	220-240	sw2c-11x/2-mn
Three positions, 2NO, one-piece, non-illuminated	Selector switch head SW2C-20X/3 3P 2NO EKF					sw2c-20x/3-mn
Two positions, long handle, NO, can be taken apart, non-illuminated	Selector switch head BJ21 2P long handle NO EKF		IP40		220-240	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	220-240	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	220-240	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-mn
Plastic one-piece housing, 10 kOhm						PT22-10K-mn

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

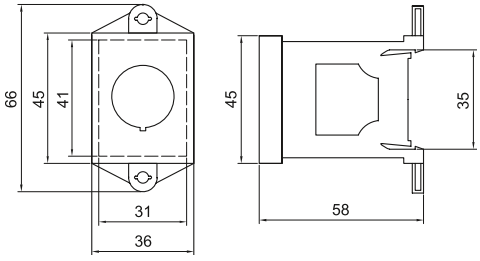
TECHNICAL DATA

Wiring diagrams

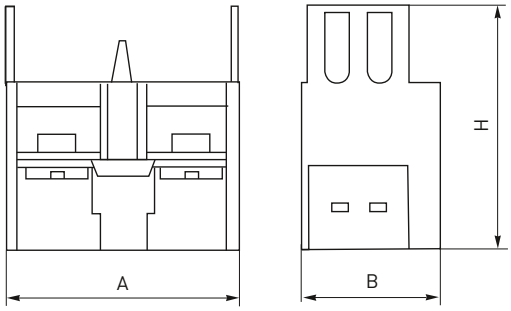
Aux. contact XB-2 NC red and aux. contact NC burgundy	Aux. contact XB-2 NO green and aux. contact NO black

Overall and installation dimensions (mm)

DIN rail mount adapter

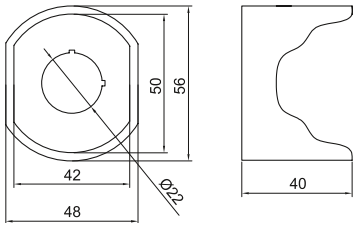


Auxiliary contact NC

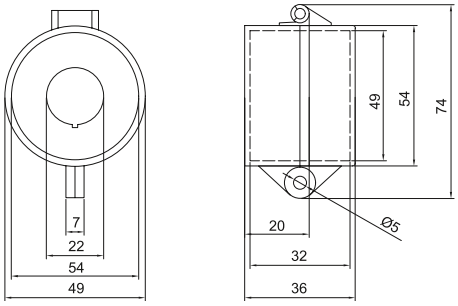


Characteristics	Dimensions, mm		
	A	B	H
NC Burgundy	30	18,5	31
NO Black	30	18,5	31
XB-2 NC Red	40	15	24
XB-2 NO Green	40	15	24

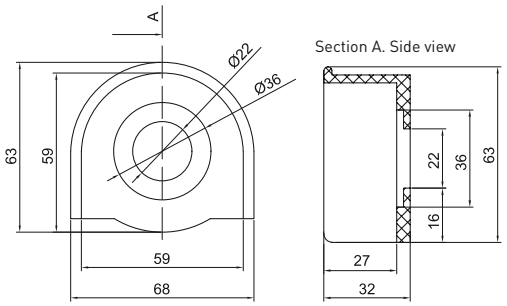
U-shaped protective casing for emergency stop push buttons



Protective casing with sealing cap for push buttons

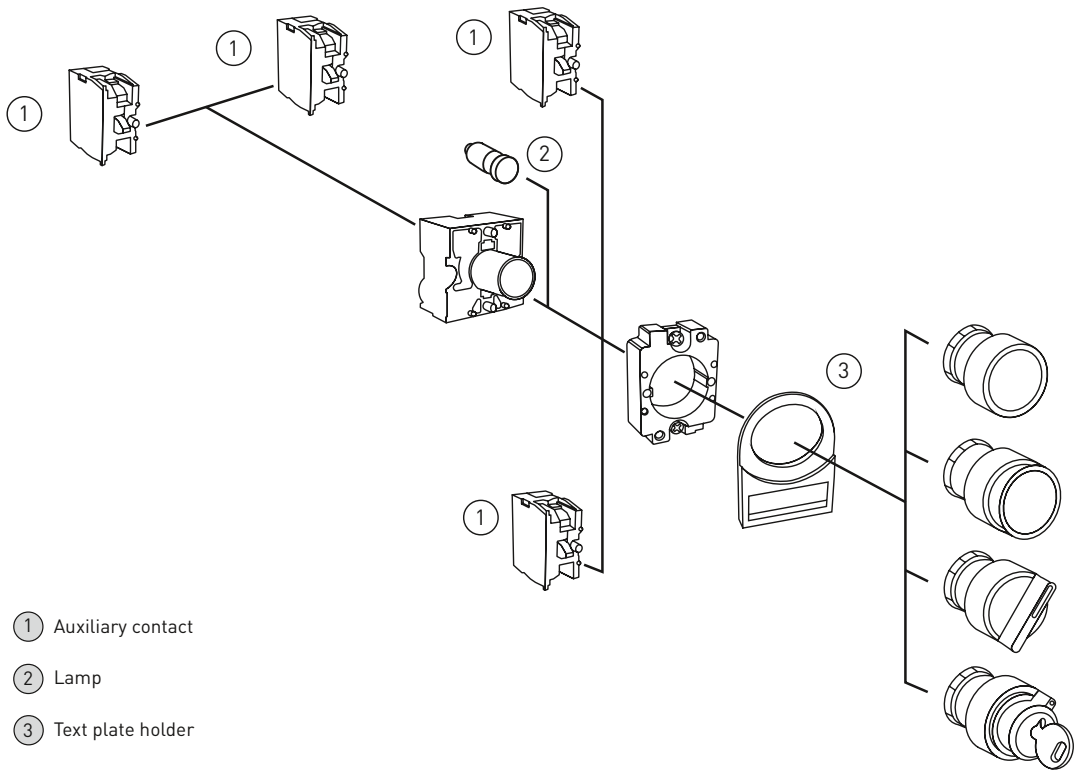


C-shaped protective casing for emergency stop push buttons

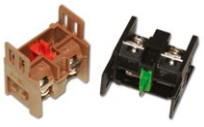


Installation and operation

Assembly diagram of BA, BJ, BG, BD, BV, BS542, BC42 with a metal base.



1. Auxiliary contact
2. Lamp
3. Text plate holder

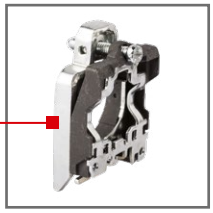
Picture	Name	Options	Color	Rated voltage, V	Item code
	Replacement neon lamp BA9S EKF	Neon light	White	220-240	la-220
				380-415	la-380
				24	la-24
	Replacement LED lamp BA9S EKF	LED	White	220-240	BA9SA/W-220V-mn
				24	BA9SA/W-24V-mn
	Auxiliary contact XB-2 NC red EKF	Normally closed	Red	–	pbn-xb-2-nc
	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.

Same modular button heads can be utilized for any voltage or contacts configurations



Metal mounting base for installing components

Up to three accessories side by side

Easy mounting with a single screw

Easy assembly/ disassembly of accessories

Options to add extra contacts

APPLICATION

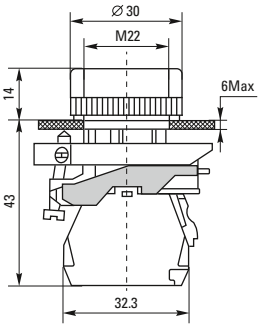
The XB4 series of push buttons, pilot lights & selector switches are ubiquitous control and signalling devices, used in electrical panels, enclosures, wired control station enclosures for:
- manual control (switching) of electrical equipment;
- light signaling & alarm.

TECHNICAL DATA

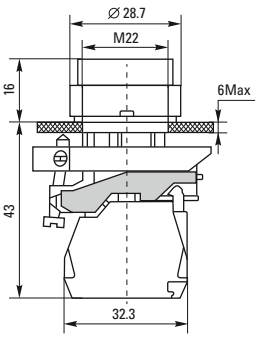
Parameters	Values
Operating temperature, °C	from -25 to +70
Storage temperature, °C	from –40 to +70
Humidity, % RH	Max. 90 (non-condensing)
Altitude above sea level, m	<2000
Lamp operating voltage range	0,85 Un ≤ U ≤ 1,1Un
Lamp service life, hours	>30 000
Lamp type	LED (Light-emitting diode)
Rated thermal 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)

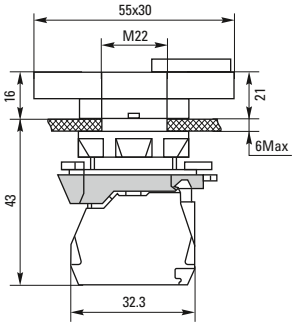
Lamp lens XB4BV6



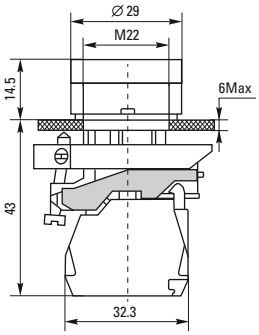
Push buttons XB4BL



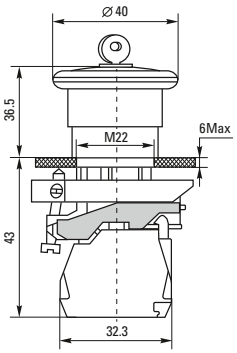
Push buttons XB4BL & XB4BW



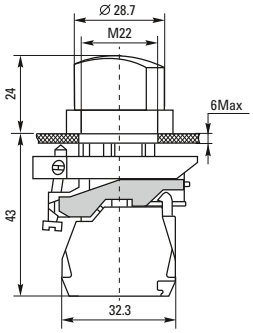
Push buttons XB4BW3



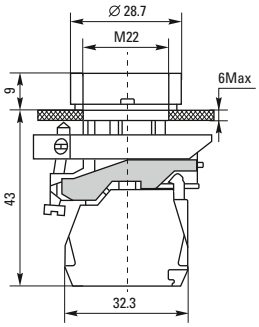
Push buttons XB4BA1



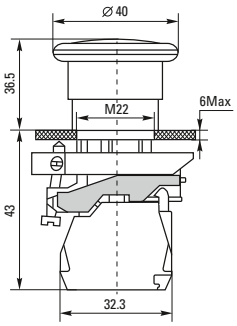
Selector switches XB4BD



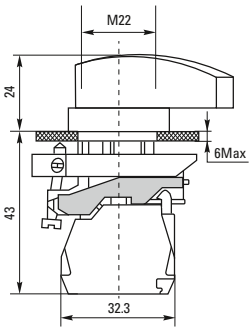
Push buttons XB4BA



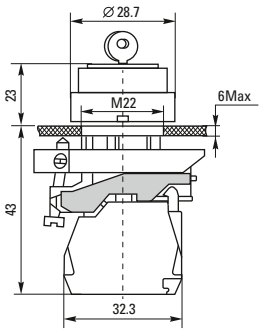
Push buttons XB4BC, XB-4BTC, XB4BS, XB4BGL

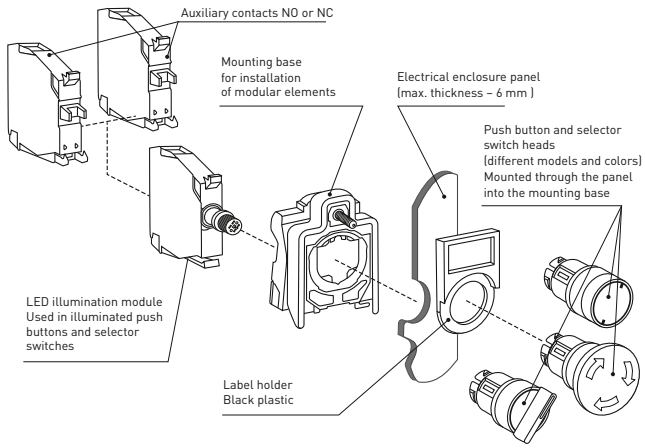


Selector switches XB4BJ



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

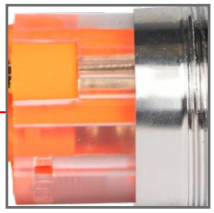
Accessories

Picture	Mechanism	Color	Voltage, V	Item code
	Mounting collar for electrical block XB4 metal EKF	–	–	XB4BZ01
	Light block XB4 EKF	White	24	XB4-ESL-W
			220-240	XB4-EML-W
			380-415	XB4-ELL-W
		Yellow	24	XB4-ESL-Y
			220-240	XB4-EML-Y
			380-415	XB4-ELL-Y
		Green	24	XB4-ESL-G
			220-240	XB4-EML-G
			380-415	XB4-ELL-G
		Red	24	XB4-ESL-R
			220-240	XB4-EML-R
			380-415	XB4-ELL-R
		Blue	24	XB4-ESL-B
			220-240	XB4-EML-B
			380-415	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

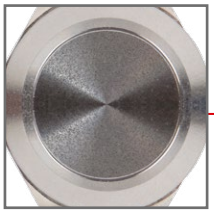
Pilot lights and push buttons S-Pro67 EKF

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 opening.

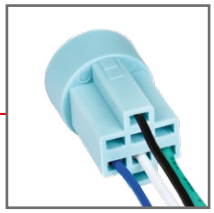
IP67 rating



Silver plated contacts



AISI 304 stainless steel body



Wiring harness 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:

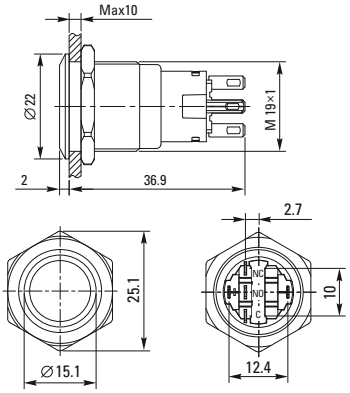
- industrial and manufacturing facilities;
- food processing industry;
- outdoor installations.

TECHNICAL DATA

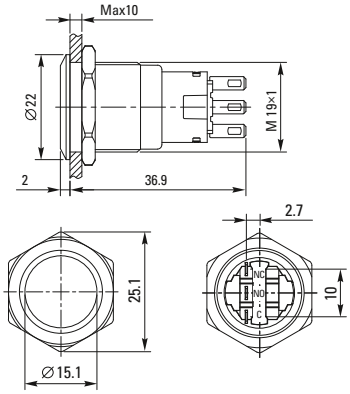
Parameters	Values									
	Alternating current (AC) 50 / 60 Hz					Direct current (DC)				
Rated operating voltage, V	660	380-415	220-240	110	48	440	230	110	48	24
Rated operating current, A	1	1,5	3	6	6	0,2	0,5	1	2	3
Mechanical endurance, cycles	>200 000									
Mounting hole diameter, mm	19									
Operating temperature, °C	from –20 to +55									

Overall and installation dimensions (mm)

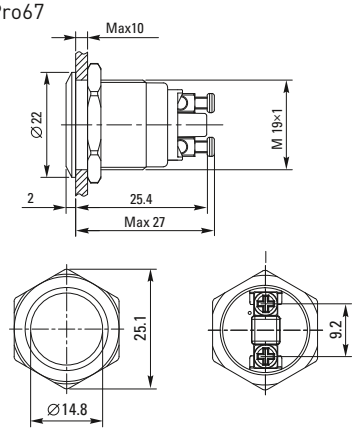
Illuminated push buttons S-Pro67



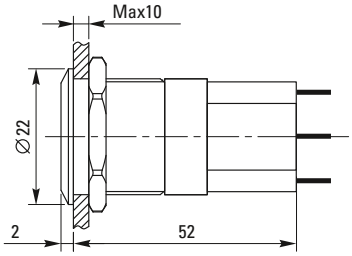
Non-illuminated push buttons S-Pro67



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	220-240 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	220-240 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	220-240 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-2K is a cam switch and protective enclosure assembly with an ingress protection rating of IP65;
- PK-3 is a three-phase cam switch in an IP54 protective box (switch disconnector).

PK-1 and PK-2 switches are front-mounted into an opening in the front panel of distribution enclosures, control panels, etc.
PK-2K and 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.

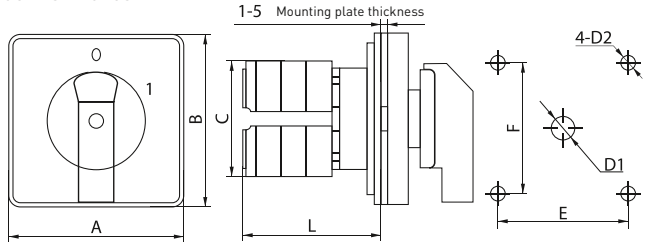
TECHNICAL DATA

Parameters		Values			
		PK-1	PK-2	PK-2K	PK-3
Degree of protection	front side	IP20/IP65	IP20/IP65	IP65	IP54
	back side	IP00	IP00		
Rated insulation voltage Ui, V		690			
Rated operating voltage Ue, V		220-240, 380-415			
Mechanical endurance, cycles		min. 100 000			
Electrical endurance, cycles		min. 30 000			
Operating temperature, °C		-25 to +50			
Attitude above sea level, m		max. 2000			

Parameters	Values											
Conventional thermal current Ith, A	10		16		25		32		40		63	
Rated operating voltage Ue, V	220-240	380-415	220-240	380-415	220-240	380-415	220-240	380-415	220-240	380-415	220-240	380-415
PK-1 and PK-3 models												
Rated current Ie, A												
AC-21, AC-22	10		16		25		32		40		63	
AC-23	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 Pe, kW												
AC-23	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 and PK2-K models												
Rated current Ie, A												
AC-21, AC-22	16		25		40		63		100		63	
AC-23	15		22		30		43		70		57	
AC-3	11,7		15		22		36		57		57	
Rated power Pe, kW												
AC-23	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)

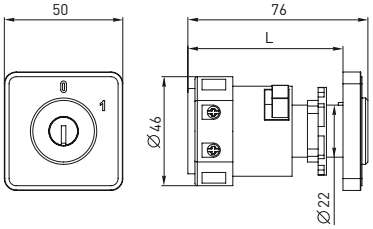
Cam switches PK-1



Name	Dimensions, mm							
	A	B	L	C	E	F	D1	D2
PK-1-11 10A 1P 0-1	48	48	30	43	36	36	8,5	
PK-1-11 10A 1P 0-1 IP65								
PK-1-11 25A 1P 0-1	48	48	35	45,2	36	36	8,5	
PK-1-11 25A 1P 0-1 IP65								
PK-1-12 10A 2P 0-1	48	48	30	43	36	36	8,5	
PK-1-12 10A 2P 0-1 IP65								
PK-1-12 25A 2P 0-1	48	48	35	45,2	36	36	8,5	
PK-1-12 25A 2P 0-1 IP65								
PK-1-13 10A 3P 0-1	48	48	38	43	36	36	8,5	
PK-1-13 10A 3P 0-1 IP65								
PK-1-13 25A 3P 0-1	48	48	48	45,2	36	36	8,5	
PK-1-13 25A 3P 0-1 IP65								
PK-1-13 32A 3P 0-1	64	64	55	58	48	48	10	
PK-1-13 32A 3P 0-1 IP65								
PK-1-13 63A 3P 0-1	64	64	55	66	48	48	10	
PK-1-13 63A 3P 0-1 IP65								
PK-1-14 10A 4P 0-1	48	48	38	43	36	36	8,5	
PK-1-14 10A 4P 0-1 IP65								
PK-1-14 25A 4P 0-1	48	48	48	45,2	36	36	8,5	
PK-1-14 25A 4P 0-1 IP65								
PK-1-21 10A 1P 1-0-2	48	48	30	43	36	36	8,5	
PK-1-21 10A 1P 1-0-2 IP65								
PK-1-21 25A 1P 1-0-2	48	48	35	45,2	36	36	8,5	4,5
PK-1-21 25A 1P 1-0-2 IP65								
PK-1-22 10A 2P 1-0-2	48	48	38	43	36	36	8,5	
PK-1-22 10A 2P 1-0-2 IP65								
PK-1-22 25A 2P 1-0-2	48	48	48	45,2	36	36	8,5	
PK-1-22 25A 2P 1-0-2 IP65								
PK-1-23 10A 3P 1-0-2	48	48	36	43	36	36	8,5	
PK-1-23 10A 3P 1-0-2 IP65								
PK-1-23 25A 3P 1-0-2	48	48	60	45,2	36	36	8,5	
PK-1-23 25A 3P 1-0-2 IP65								
PK-1-23 32A 3P 1-0-2	64	64	68	48	48	48	10	
PK-1-23 32A 3P 1-0-2 IP65								
PK-1-23 63A 3P 1-0-2	64	64	65	66	48	48	10	
PK-1-23 63A 3P 1-0-2 IP65								
PK-1-24 10A 4P 1-0-2	48	48	54	43	36	36	8,5	
PK-1-24 10A 4P 1-0-2 IP65								
PK-1-24 25A 4P 1-0-2	48	48	73	45,2	36	36	8,5	
PK-1-24 25A 4P 1-0-2 IP65								
PK-1-31 10A 1P 1-2	48	48	30	43	36	36	8,5	
PK-1-31 10A 1P 1-2 IP65								
PK-1-31 25A 1P 1-2	48	48	35	45,2	36	36	8,5	
PK-1-31 25A 1P 1-2 IP65								
PK-1-41 10A 1P 1-0-2	48	48	30	43	36	36	8,5	
PK-1-41 10A 1P 1-0-2 IP65								

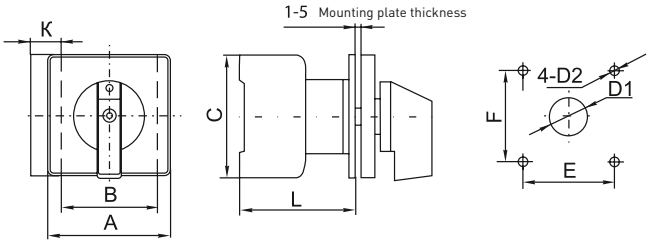
Name	Dimensions, mm							
	A	B	L	C	E	F	D1	D2
PK-1-41 25A 1P 1-0-2	48	48	35	45,2	36	36	8,5	
PK-1-41 25A 1P 1-0-2 IP65								
PK-1-42 10A 2P 1-0-2	48	48	38	43	36	36	8,5	
PK-1-42 10A 2P 1-0-2 IP65								
PK-1-42 25A 2P 1-0-2	48	48	48	45,2	36	36	8,5	
PK-1-42 25A 2P 1-0-2 IP65								
PK-1-43 10A 3P 1-0-2	48	48	46	43	36	36	8,5	
PK-1-43 10A 3P 1-0-2 IP65								
PK-1-43 25A 3P 1-0-2	48	48	60	45,2	36	36	8,5	
PK-1-43 25A 3P 1-0-2 IP65								
PK-1-43 32A 3P 1-0-2	64	64	68	48	48	48	10	
PK-1-43 32A 3P 1-0-2 IP65								
PK-1-43 63A 3P 1-0-2	64	64	65	66	48	48	10	
PK-1-43 63A 3P 1-0-2 IP65								
PK-1-51 10A 1P 1-2	48	48	30	43	36	36	8,5	
PK-1-51 10A 1P 1-2 IP65								
PK-1-51 25A 1P 1-2	48	48	35	45,2	36	36	8,5	
PK-1-51 25A 1P 1-2 IP65								
PK-1-52 10A 2P 1-2	48	48	38	43	36	36	8,5	
PK-1-52 10A 2P 1-2 IP65								
PK-1-52 25A 2P 1-2	48	48	48	45,2	36	36	8,5	
PK-1-52 25A 2P 1-2 IP65								
PK-1-53 10A 3P 1-2	48	48	46	43	36	36	8,5	
PK-1-53 10A 3P 1-2 IP65								
PK-1-53 25A 3P 1-2	48	48	60	45,2	36	36	8,5	
PK-1-53 25A 3P 1-2 IP65								
PK-1-53 32A 3P 1-2	64	64	68	48	48	48	10	
PK-1-53 32A 3P 1-2 IP65								
PK-1-53 63A 3P 1-2	64	64	65	66	48	48	10	
PK-1-53 63A 3P 1-2 IP65								
PK-1-64 10A for voltmeter	48	48	46	45,2	36	36	8,5	4,5
PK-1-64 10A for voltmeter IP65								
PK-1-73 10A for voltmeter (line voltage)	48	48	38	43	36	36	8,5	
PK-1-73 10A for voltmeter (line voltage) IP65								
PK-1-84 10A for voltmeter (phase voltage)	48	48	38	43	36	36	8,5	
PK-1-84 10A for voltmeter (phase voltage) IP65								
PK-1-94 10A for ammeter	48	48	38	43	36	36	8,5	
PK-1-94 10A for ammeter IP65								
PK-1-194 10A 4P with key for ammeter IP65	48	48	38	43	36	36	8,5	
PK-1-101 10A 0-1-2-3	48	48	38	43	36	36	8,5	
PK-1-101 10A 0-1-2-3 IP65								
PK-1-101 25A 0-1-2-3	48	48	48	45,2	36	36	8,5	
PK-1-101 25A 0-1-2-3 IP65								
PK-1-101 32A 0-1-2-3	64	64	55	58	48	48	10	
PK-1-101 32A 0-1-2-3 IP65								
PK-1-102 10A 0-1-2-3	48	48	38	43	36	36	8,5	
PK-1-102 10A 0-1-2-3 IP65								
PK-1-102 25A 0-1-2-3	48	48	48	45,2	36	36	8,5	
PK-1-102 25A 0-1-2-3 IP65								
PK-1-102 32A 0-1-2-3	64	64	55	58	48	48	10	
PK-1-102 32A 0-1-2-3 IP65								
PK-1-103 10A 0-1-2-3	48	48	63,6	43	36	36	8,5	
PK-1-103 10A 0-1-2-3 IP65								
PK-1-103 25A 0-1-2-3	48	48	85,8	45,2	36	36	8,5	
PK-1-103 25A 0-1-2-3 IP65								
PK-1-103 32A 0-1-2-3	64	64	93,6	48	48	48	10	
PK-1-103 32A 0-1-2-3 IP65								
PK-1-121 10A 0-1-2-3	48	48	38	43	36	36	8,5	
PK-1-121 10A 0-1-2-3 IP65								
PK-1-121 25A 0-1-2-3	48	48	48	45,2	36	36	8,5	
PK-1-121 25A 0-1-2-3 IP65								

Cam switches PK-1 with key



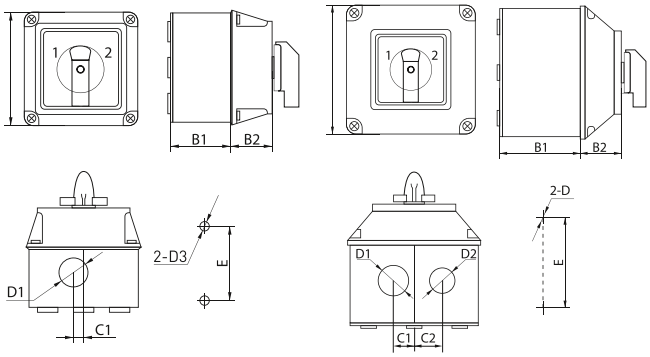
Name	L, mm
PK-1-112 10A 0-1 with key	65,5
PK-1-112 25A 0-1 with key	70,5
PK-1-113 10A 0-1 with key	75,1
PK-1-113 25A 0-1 with key	83,3

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				

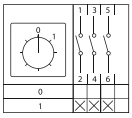
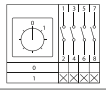
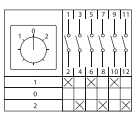
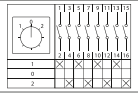
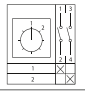
Cam switches PK-3

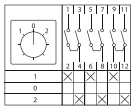
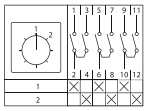
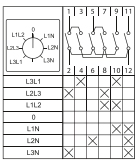
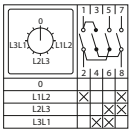
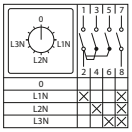
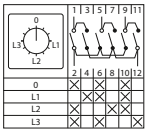


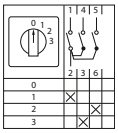
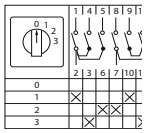
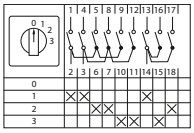
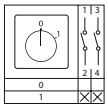
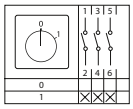
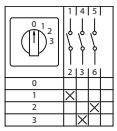
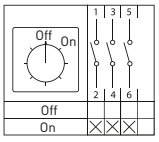
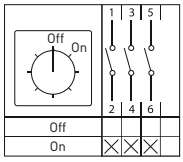
Item code	Dimensions, mm								
	AxA	B1	B2	C1	C2	D1	D2	D3	E
pk-3-13-16	69 x 69	45	25,5	6,5	–	18	–	5	44
pk-3-13-25									
pk-3-13-40	113 x 113	70,5	35,5	18	23,5	27	21		78
pk-3-13-63									

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
	PK-1-11 10A 1P 0-1	10		pk-1-11-10
	PK-1-11 10A 1P 0-1 IP65			pk-1-11-10-65
	PK-1-11 25A 1P 0-1	25		pk-1-11-25
	PK-1-11 25A 1P 0-1 IP65			pk-1-11-25-65
	PK-1-12 10A 2P 0-1	10		pk-1-12-10
	PK-1-12 10A 2P 0-1 IP65			pk-1-12-10-65
	PK-1-12 25A 2P 0-1	25		pk-1-12-25
	PK-1-12 25A 2P 0-1 IP65			pk-1-12-25-65
	PK-1-13 10A 3P 0-1	10		pk-1-13-10
	PK-1-13 10A 3P 0-1 IP65			pk-1-13-10-65
	PK-1-13 25A 3P 0-1	25		pk-1-13-25
	PK-1-13 25A 3P 0-1 IP65			pk-1-13-25-65
	PK-1-13 32A 3P 0-1	32		pk-1-13-32
	PK-1-13 32A 3P 0-1 IP65			pk-1-13-32-65
	PK-1-13 63A 3P 0-1	63		pk-1-13-63
	PK-1-13 63A 3P 0-1 IP65			pk-1-13-63-65
	PK-1-14 10A 4P 0-1	10		pk-1-14-10
	PK-1-14 10A 4P 0-1 IP65			pk-1-14-10-65
	PK-1-14 25A 4P 0-1	25		pk-1-14-25
	PK-1-14 25A 4P 0-1 IP65			pk-1-14-25-65
	PK-1-21 10A 1P 1-0-2	10		pk-1-21-10
	PK-1-21 10A 1P 1-0-2 IP65			pk-1-21-10-65
	PK-1-21 25A 1P 1-0-2	25		pk-1-21-25
	PK-1-21 25A 1P 1-0-2 IP65			pk-1-21-25-65
	PK-1-22 10A 2P 1-0-2	10		pk-1-22-10
	PK-1-22 10A 2P 1-0-2 IP65			pk-1-22-10-65
	PK-1-22 25A 2P 1-0-2	25		pk-1-22-25
	PK-1-22 25A 2P 1-0-2 IP65			pk-1-22-25-65
	PK-1-23 10A 3P 1-0-2	10		pk-1-23-10
	PK-1-23 10A 3P 1-0-2 IP65			pk-1-23-10-65
	PK-1-23 25A 3P 1-0-2	25		pk-1-23-25
	PK-1-23 25A 3P 1-0-2 IP65			pk-1-23-25-65
	PK-1-23 32A 3P 1-0-2	32		pk-1-23-32
	PK-1-23 32A 3P 1-0-2 IP65			pk-1-23-32-65
	PK-1-23 63A 3P 1-0-2	63		pk-1-23-63
	PK-1-23 63A 3P 1-0-2 IP65			pk-1-23-63-65
	PK-1-24 10A 4P 1-0-2	10		pk-1-24-10
	PK-1-24 10A 4P 1-0-2 IP65			pk-1-24-10-65
	PK-1-24 25A 4P 1-0-2	25		pk-1-24-25
	PK-1-24 25A 4P 1-0-2 IP65			pk-1-24-25-65
	PK-1-31 10A 1P 1-2	10		pk-1-31-10
	PK-1-31 10A 1P 1-2 IP65			pk-1-31-10-65
	PK-1-31 25A 1P 1-2	25		pk-1-31-25
	PK-1-31 25A 1P 1-2 IP65			pk-1-31-25-65

Picture	Name	Rated current, A	Wiring diagram	Item code
	PK-1-41 10A 1P 1-0-2	10		pk-1-41-10
	PK-1-41 10A 1P 1-0-2 IP65			pk-1-41-10-65
	PK-1-41 25A 1P 1-0-2	25		pk-1-41-25
	PK-1-41 25A 1P 1-0-2 IP65			pk-1-41-25-65
	PK-1-42 10A 2P 1-0-2	10		pk-1-42-10
	PK-1-42 10A 2P 1-0-2 IP65			pk-1-42-10-65
	PK-1-42 25A 2P 1-0-2	25		pk-1-42-25
	PK-1-42 25A 2P 1-0-2 IP65			pk-1-42-25-65
	PK-1-43 10A 3P 1-0-2	10		pk-1-43-10
	PK-1-43 10A 3P 1-0-2 IP65			pk-1-43-10-65
	PK-1-43 25A 3P 1-0-2	25		pk-1-43-25
	PK-1-43 25A 3P 1-0-2 IP65			pk-1-43-25-65
	PK-1-43 32A 3P 1-0-2	32		pk-1-43-32
	PK-1-43 32A 3P 1-0-2 IP65			pk-1-43-32-65
	PK-1-43 63A 3P 1-0-2	63		pk-1-43-63
	PK-1-43 63A 3P 1-0-2 IP65			pk-1-43-63-65
	PK-1-51 10A 1P 1-2	10		pk-1-51-10
	PK-1-51 10A 1P 1-2 IP65			pk-1-51-10-65
	PK-1-51 25A 1P 1-2	25		pk-1-51-25
	PK-1-51 25A 1P 1-2 IP65			pk-1-51-25-65
	PK-1-52 10A 2P 1-2	10		pk-1-52-10
	PK-1-52 10A 2P 1-2 IP65			pk-1-52-10-65
	PK-1-52 25A 2P 1-2	25		pk-1-52-25
	PK-1-52 25A 2P 1-2 IP65			pk-1-52-25-65
	PK-1-53 10A 3P 1-2	10		pk-1-53-10
	PK-1-53 10A 3P 1-2 IP65			pk-1-53-10-65
	PK-1-53 25A 3P 1-2	25		pk-1-53-25
	PK-1-53 25A 3P 1-2 IP65			pk-1-53-25-65
	PK-1-53 32A 3P 1-2	32		pk-1-53-32
	PK-1-53 32A 3P 1-2 IP65			pk-1-53-32-65
	PK-1-53 63A 3P 1-2	63		pk-1-53-63
	PK-1-53 63A 3P 1-2 IP65			pk-1-53-63-65
	PK-1-64 10A for voltmeter	10		pk-1-64-10
	PK-1-64 10A for voltmeter IP65			pk-1-64-10-65
	PK-1-73 10A for voltmeter (line voltage)	10		pk-1-73-10
	PK-1-73 10A for voltmeter (line voltage) IP65			pk-1-73-10-65
	PK-1-84 10A for voltmeter (phase voltage)	10		pk-1-84-10
	PK-1-84 10A for voltmeter (phase voltage) IP65			pk-1-84-10-65
	PK-1-94 10A for ammeter	10		pk-1-94-10
	PK-1-94 10A for ammeter IP65			pk-1-94-10-65
	PK-1-194 10A 4P with key for ammeter			pk-1-194-10

Picture	Name	Rated current, A	Wiring diagram	Item code
	PK-1-101 10A 0-1-2-3	10		pk-1-101-10
	PK-1-101 10A 0-1-2-3 IP65			pk-1-101-10-65
	PK-1-101 25A 0-1-2-3	25		pk-1-101-25
	PK-1-101 25A 0-1-2-3 IP65			pk-1-101-25-65
	PK-1-101 32A 0-1-2-3	32		pk-1-101-32
	PK-1-101 32A 0-1-2-3 IP65			pk-1-101-32-65
	PK-1-102 10A 0-1-2-3	10		pk-1-102-10
	PK-1-102 10A 0-1-2-3 IP65			pk-1-102-10-65
	PK-1-102 25A 0-1-2-3	25		pk-1-102-25
	PK-1-102 25A 0-1-2-3 IP65			pk-1-102-25-65
	PK-1-102 32A 0-1-2-3	32		pk-1-102-32
	PK-1-102 32A 0-1-2-3 IP65			pk-1-102-32-65
	PK-1-103 10A 0-1-2-3	10		pk-1-103-10
	PK-1-103 10A 0-1-2-3 IP65			pk-1-103-10-65
	PK-1-103 25A 0-1-2-3	25		pk-1-103-25
	PK-1-103 25A 0-1-2-3 IP65			pk-1-103-25-65
	PK-1-103 32A 0-1-2-3	32		pk-1-103-32
	PK-1-103 32A 0-1-2-3 IP65			pk-1-103-32-65
	PK-1-112 10A 2P 0-1 with key EKF	10		pk-1-112-10
	PK-1-112 25A 2P 0-1 with key EKF	25		pk-1-112-25
	PK-1-113 10A 3P 0-1 with key EKF	10		pk-1-113-10
	PK-1-113 25A 3P 0-1 with key EKF	25		pk-1-113-25
	PK-1-121 10A 0-1-2-3	10		pk-1-121-10
	PK-1-121 10A 0-1-2-3 IP65			pk-1-121-10-65
	PK-1-121 25A 0-1-2-3	25		pk-1-121-25
	PK-1-121 25A 0-1-2-3 IP65			pk-1-121-25-65
	PK-2-13 16A 3P ON-OFF	16		pk-2-13-16
	PK-2-13 16A 3P ON-OFF IP65			pk-2-13-16-65
	PK-2-13 25A 3P ON-OFF	25		pk-2-13-25
	PK-2-13 25A 3P ON-OFF IP65			pk-2-13-25-65
	PK-2-13 40A 3P ON-OFF	40		pk-2-13-40
	PK-2-13 40A 3P ON-OFF IP65			pk-2-13-40-65
	PK-2-13 63A 3P ON-OFF	63		pk-2-13-63
	PK-2-13 63A 3P ON-OFF IP65			pk-2-13-63-65
	PK-2-13 100A 3P ON-OFF	100		pk-2-13-100
	PK-2-13 100A 3P ON-OFF IP65			pk-2-13-100-65
	PK-3-13 16A 3P ON-OFF IP54 EKF	16		pk-3-13-16
	PK-3-13 25A 3P ON-OFF IP54 EKF	25		pk-3-13-25
	PK-3-13 40A 3P ON-OFF IP54 EKF	40		pk-3-13-40
	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.

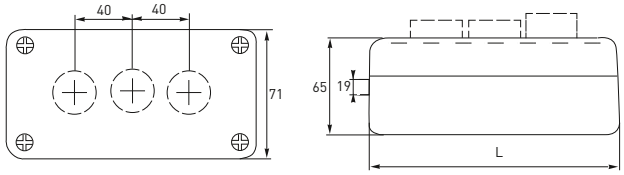
APPLICATION

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)

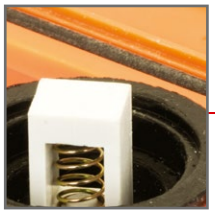


Name	Dimensions, mm
	L
Control station KP101 plastic 1 push button EKF	77
Control station KP102 plastic 2 push buttons EKF	112
Control station KP103 plastic 3 push buttons EKF	152
Control station KP104 plastic 4 push buttons EKF	192
Control station KP105 plastic 5 push buttons EKF	232
Control station 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-mn
	Control station KP102 plastic 2 push buttons white EKF		2			cpb-102-w-mn
	Control station KP103 plastic 3 push buttons white EKF		3			cpb-103-w-mn
	Control station KP104 plastic 4 push buttons white EKF		4			cpb-104-w-mn
	Control station KP105 plastic 5 push buttons white EKF		5			cpb-105-w-mn
	Control station KP106 plastic 6 push buttons white EKF		6			cpb-106-w-mn
	Control station KP101 plastic 1 push button yellow EKF		1		Yellow	cpb-101-o-mn
	Control station KP102 plastic 2 push buttons yellow EKF		2			cpb-102-o-mn
	Control station KP103 plastic 3 push buttons yellow EKF		3			cpb-103-o-mn
	Control station KP104 plastic 4 push buttons yellow EKF		4			cpb-104-o-mn
	Control station KP105 plastic 5 push buttons yellow EKF		5			cpb-105-o-mn
	Control station KP106 plastic 6 push buttons yellow EKF		6			cpb-106-o-mn

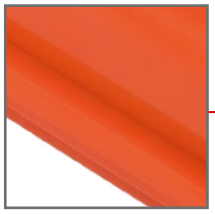
Pendant control stations PKT IP54 EKF

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

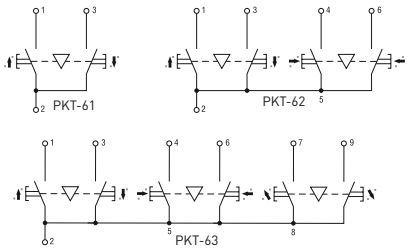
APPLICATION

IP54 pendant control stations act as mobile control assemblies for hoisting and lifting equipment:
- electric chain hoists;
- overhead cranes;
- jib cranes.

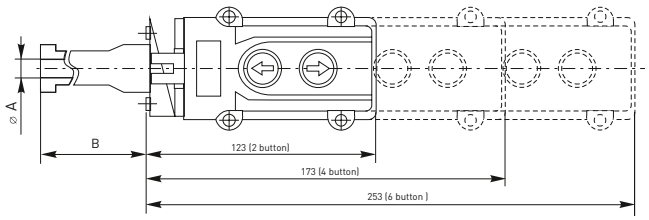
TECHNICAL DATA

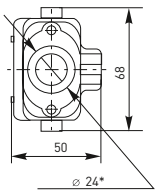
Parameters		Values		
Model		PKT-61	PKT-62	PKT-63
Number of push buttons		2	4	6
Push button functions		Start up ↑	Start up ↑	Start up ↑
		Start down ↓	Start down ↓	Start down ↓
		–	Start right →	Start right →
		–	Start left ←	Start left ←
		–	–	Start forward ↖
		–	–	Start back ↘
Conventional enclosed 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

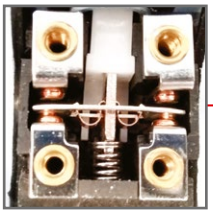
Delivery scope

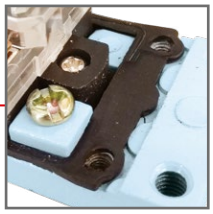
1. Pendant control station PKT IP54 EKF
2. For all available documentation, scan the QR-code on the insert or on the inside of the package.

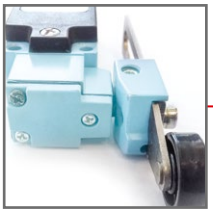
Name	Rated current, A	Voltage, V	IP	Item code
Pendant control station PKT-61 2 push buttons IP54 EKF	5	AC400	54	pkt-61
Pendant control station PKT-62 4 push buttons IP54 EKF				pkt-62
Pendant control station PKT-63 6 push buttons IP54 EKF				pkt-63

Limit switches TZ-8 EKF

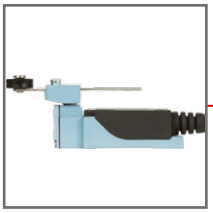
Limit switches TZ-8 EKF are designed for switching 50/60 Hz AC electrical circuits by actuating at defined points of the controlled object travel. These compact and accurate limit switches with excellent dust and moisture resistance can be used in harsh industrial applications.

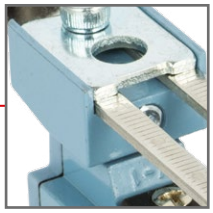

Instantaneous switching

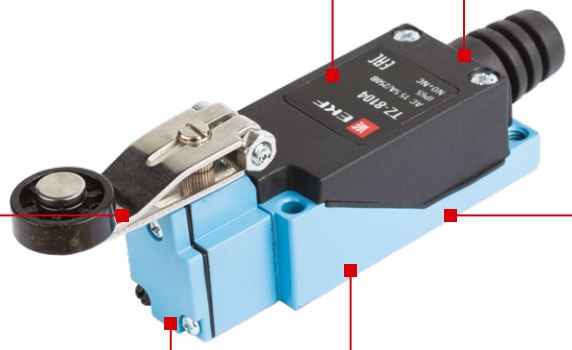

Dust- and water-proof design


90/180/270 degrees rotatable lever

Two contact groups (NO, NC)


Compact design


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

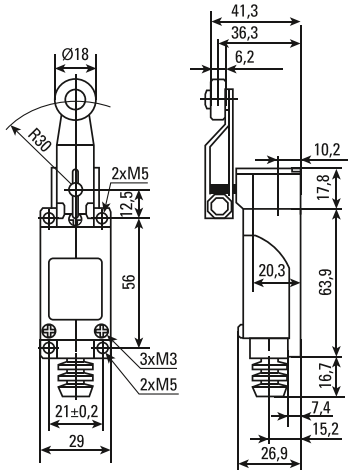
Parameters	Values
Maximum switching current, A	5
Rated insulation voltage, V	Up to 660
Rated frequency, Hz	50 / 60
Electrical endurance, cycles	500 000
Contacts	NO+NC
Reset	Spring return
Cross-section of connected wires, mm^2	max. 2,5
Degree of protection	IP65
Operating temperature, °C	-25...+50

Installation and operation

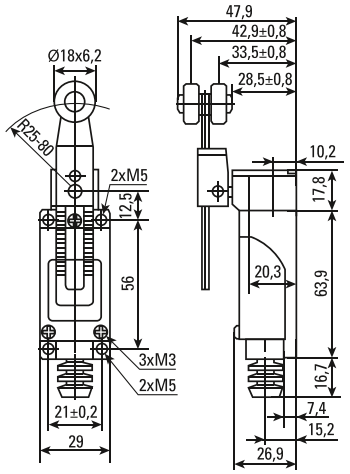
1. Limit switch TZ-8 EKF must be installed and connected by qualified electrical personnel.
2. WARNING! Make sure the power is off before installation, connection and setup!
3. Install the switch on the base, remove the cover, connect wires through the gland, close the cover. Check that rubber O-rings 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)

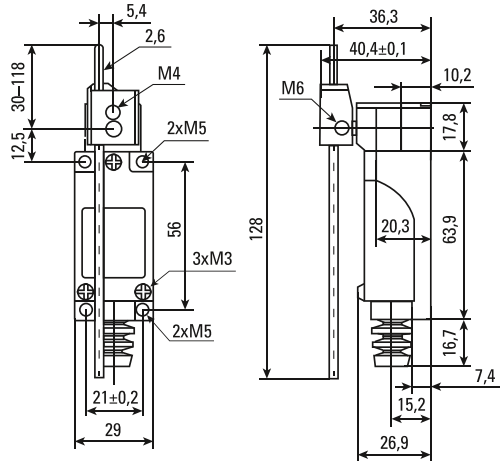
TZ-8104



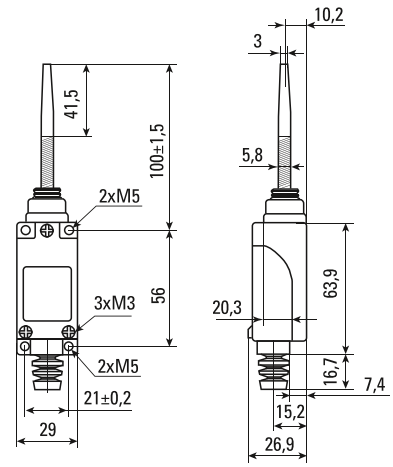
TZ-8108



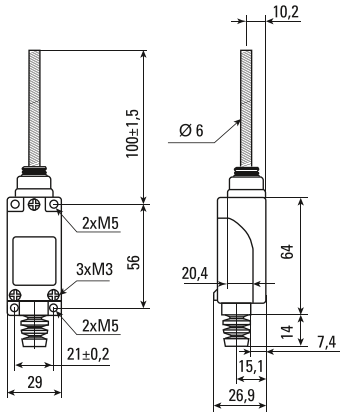
TZ-8107



TZ-8166



TZ-8167



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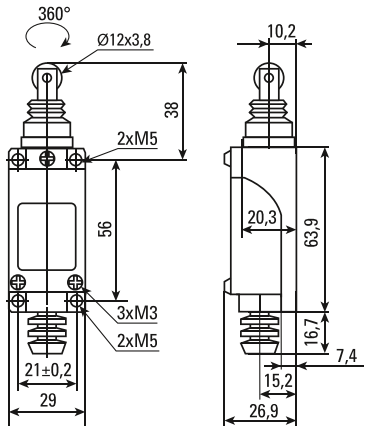

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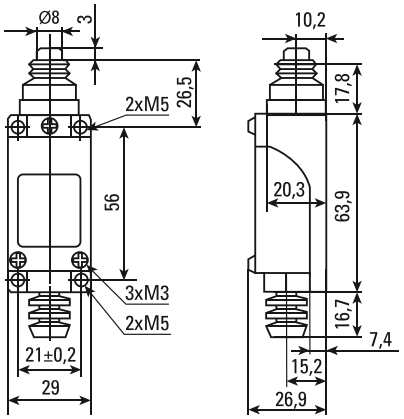

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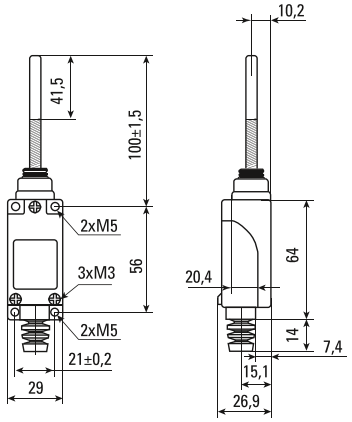

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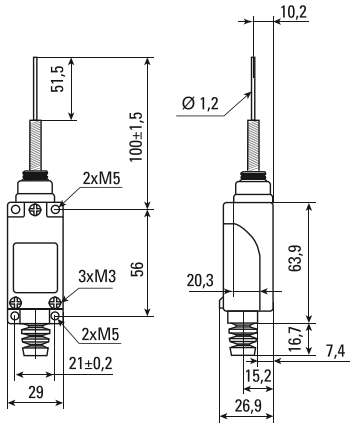


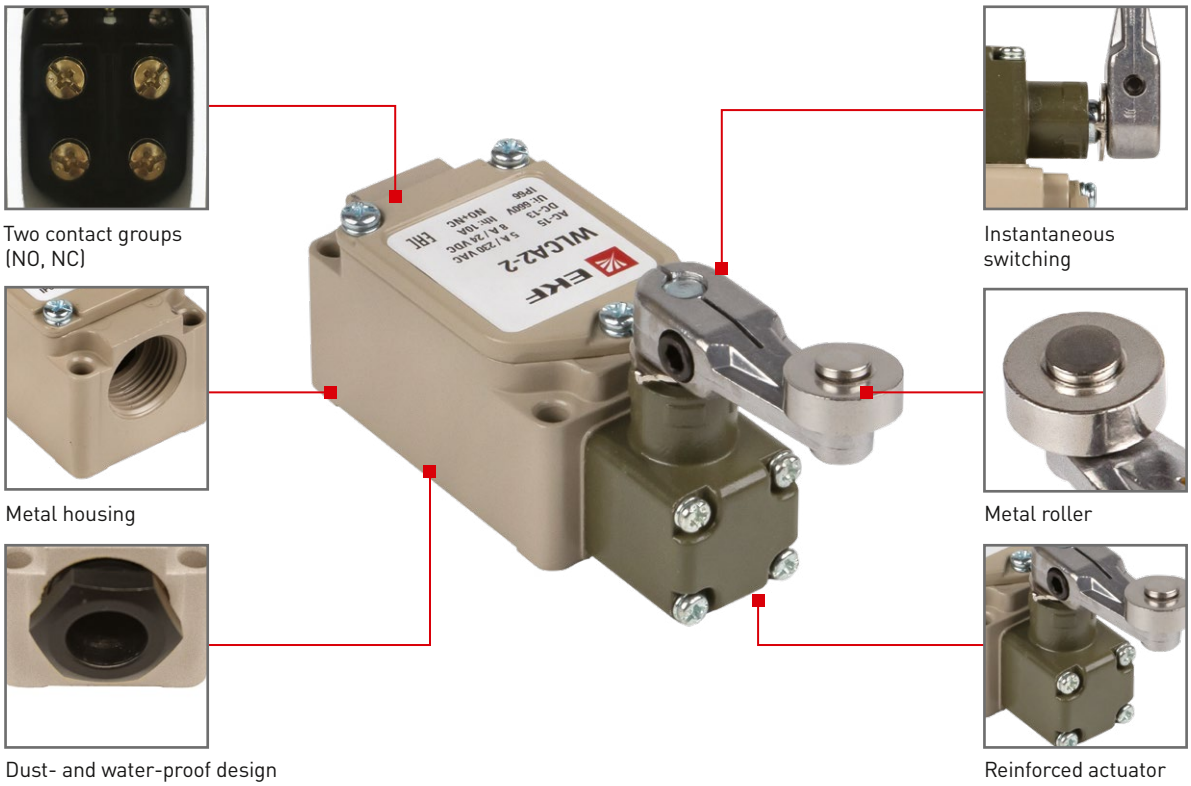
Delivery scope

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	Adjustable length lever with 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	Whisker 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 circuits as a sensor for signalling and controlling the relative positions of 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.

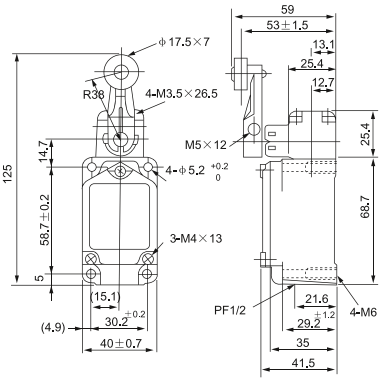
TECHNICAL DATA

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, V	660
Rated frequency, Hz	50 / 60
Mechanical endurance, cycles	15 000 000
Electrical endurance, cycles	500 000
Return	Spring 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

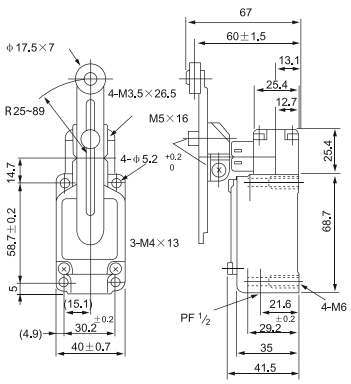
Model	Max. actuation force (OF)	Max. release force (RF)	Rated travel (PT)	Overtravel (OT)	Travel deviation, mm (MD)
WLCA2-2	1360	227	20°	30°	12°
WLCA12-2-Q	1360	227	20°	30°	12°
WLCA32-41	1200	–	55°	35°	–
WLCL	142	28	20°	30°	12°
WLD	2720	910	1,7mm	6,4 mm	1 mm
WLD1	2720	910	1,7mm	5,6 mm	1 mm
WLD2	2720	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)

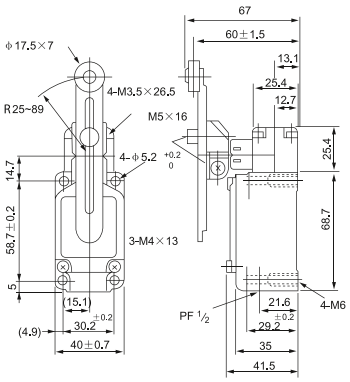
WLCA2-2



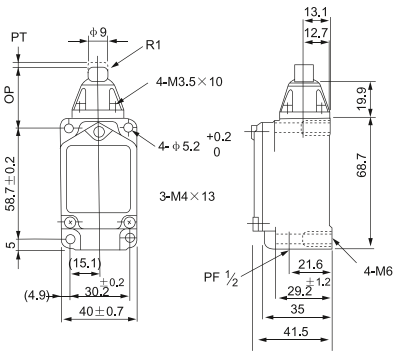
WLCA32-41



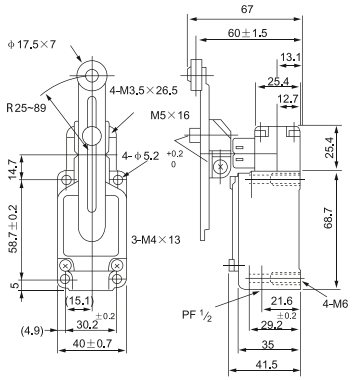
WLCA12-2-Q



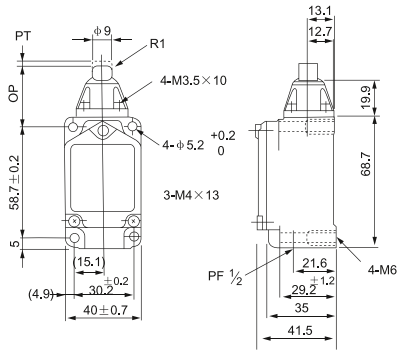
WLD



WLCL



WLD2



Delivery scope

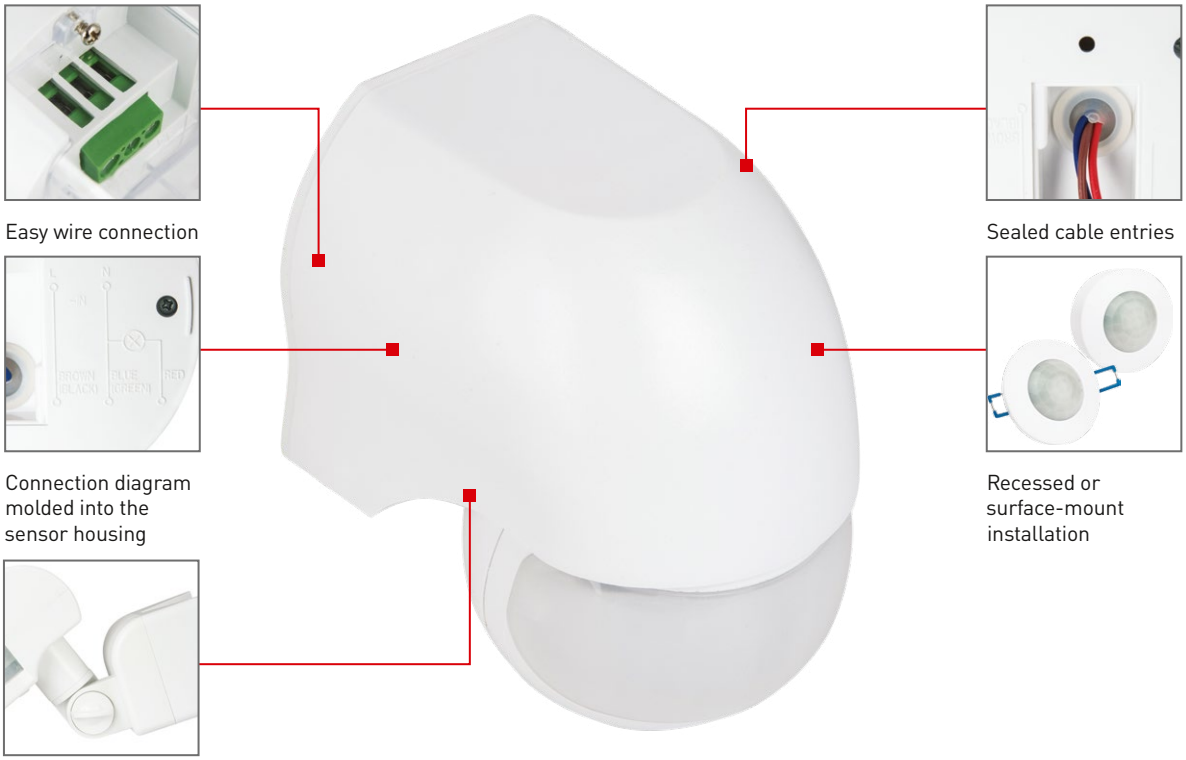
1. Limit switch WL EKF
For all available documentation, scan the QR-code on the insert or on the inside of the package.

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	Adjustable length lever with roller		LSE-WLCA12-2-Q
	Limit switch WLCA32-41 EKF	Forked lever with twin 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.

Standards: IEC 60669-2-1, IEC 60669-1



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

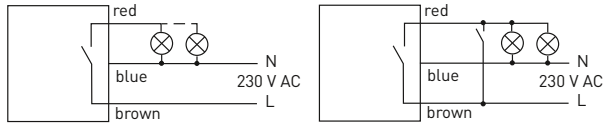
Recommended total load by type, W

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

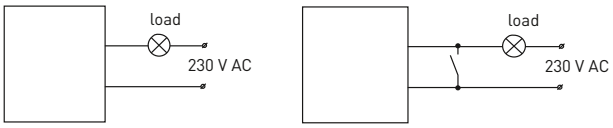
Parameters	Values
Rated voltage, V	220–240
Rated frequency, Hz	50 / 60
Operating temperature, °C	-20 to +50
Max. humidity, %	93
Object movement speed, m/s	0,6...1,5
Power consumption, VA	0,45...1
Illumination sensor threshold, lux (adjustable)	10...2000
Shutdown delay time, sec.	10–420, 10–300 (for MS-E27)

Wiring diagrams

MS-39, MS-16C, MS-48B, MS-118B,
MS-20B, MS-28A, MS-40, MS-38, MS-22B

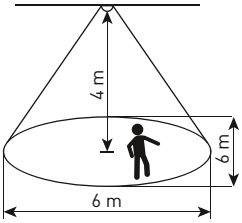


MS-2000



Detection zones

MS-20B, MS-22B,
MS-24B, MS-28A



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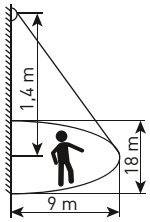
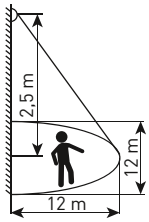
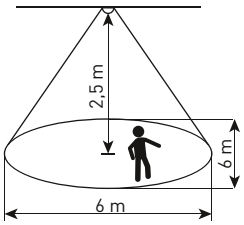


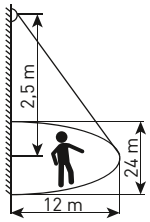
MS-38, MS-40



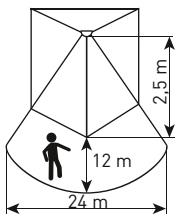
E-27



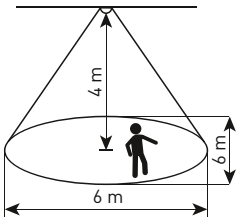
MS-39, MS-38, MS-40,
MS-16C, MS-118B



MS-48B

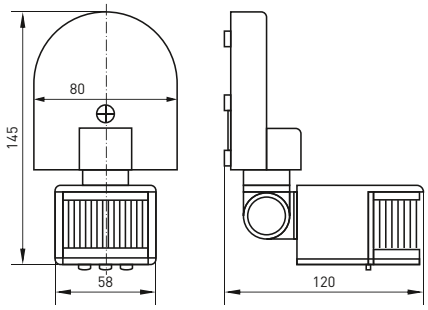


MS-100, MS-200

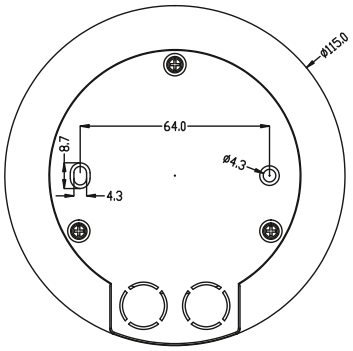


Overall and installation dimensions (mm)

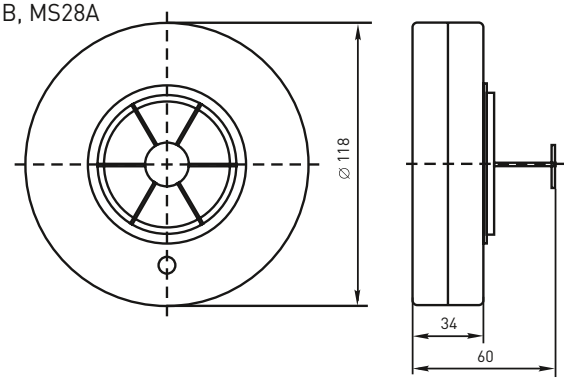
MS-16C



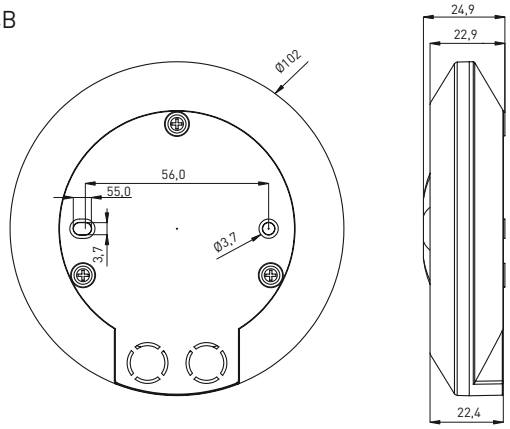
MS-22B



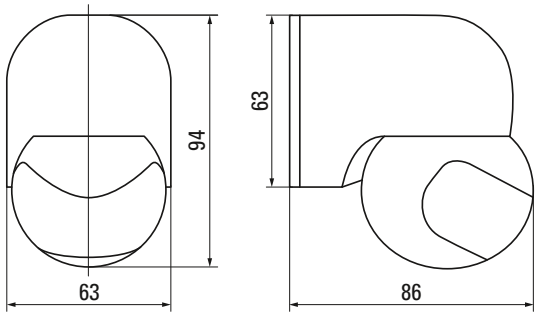
MS-20B, MS28A



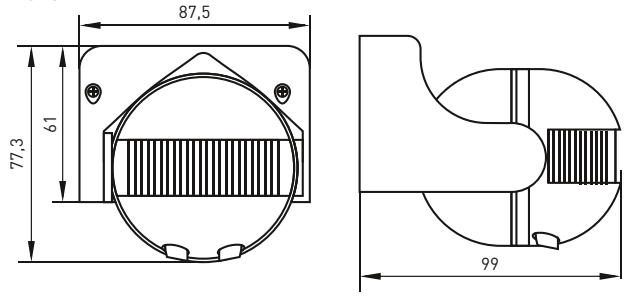
MS-24B



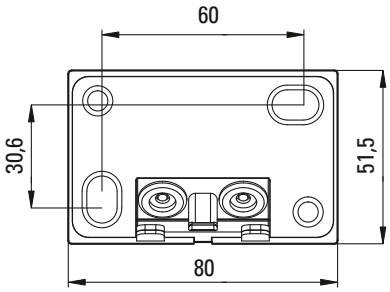
MS-38



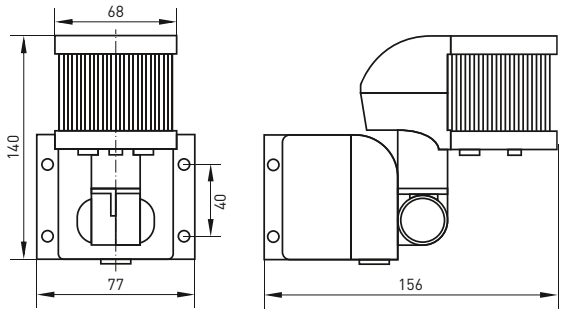
MS-39



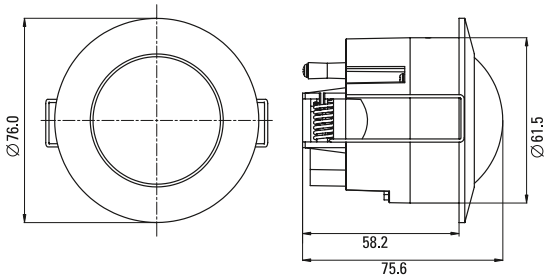
MS-40



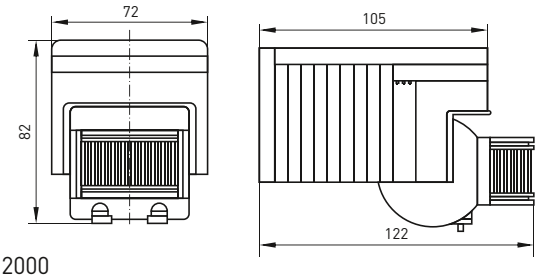
MS-48B



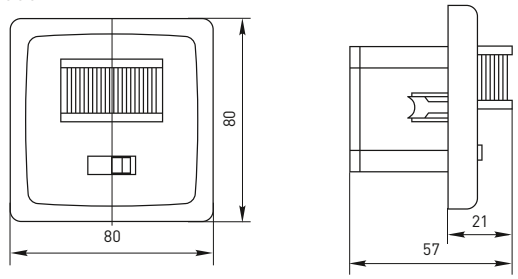
MS-100



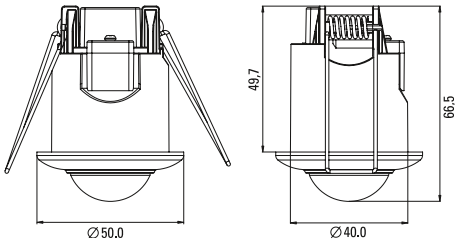
MS-118B



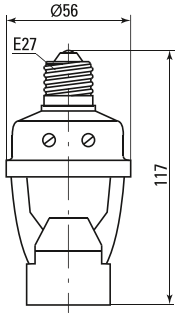
MS-2000



MS-200



MS-E27



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*, m	Recommended installation height, m	Degree of protection	Item code
	MS-39 white EKF	Wall-mounted	1200 / 300	180°	12×24	1,8–3	IP44	dd-ms-39
	MS-39B black EKF							dd-ms-39b
	MS-16C white EKF				12×24	1,8–3		dd-ms-16C
	MS-16CB black EKF							dd-ms-16Cb

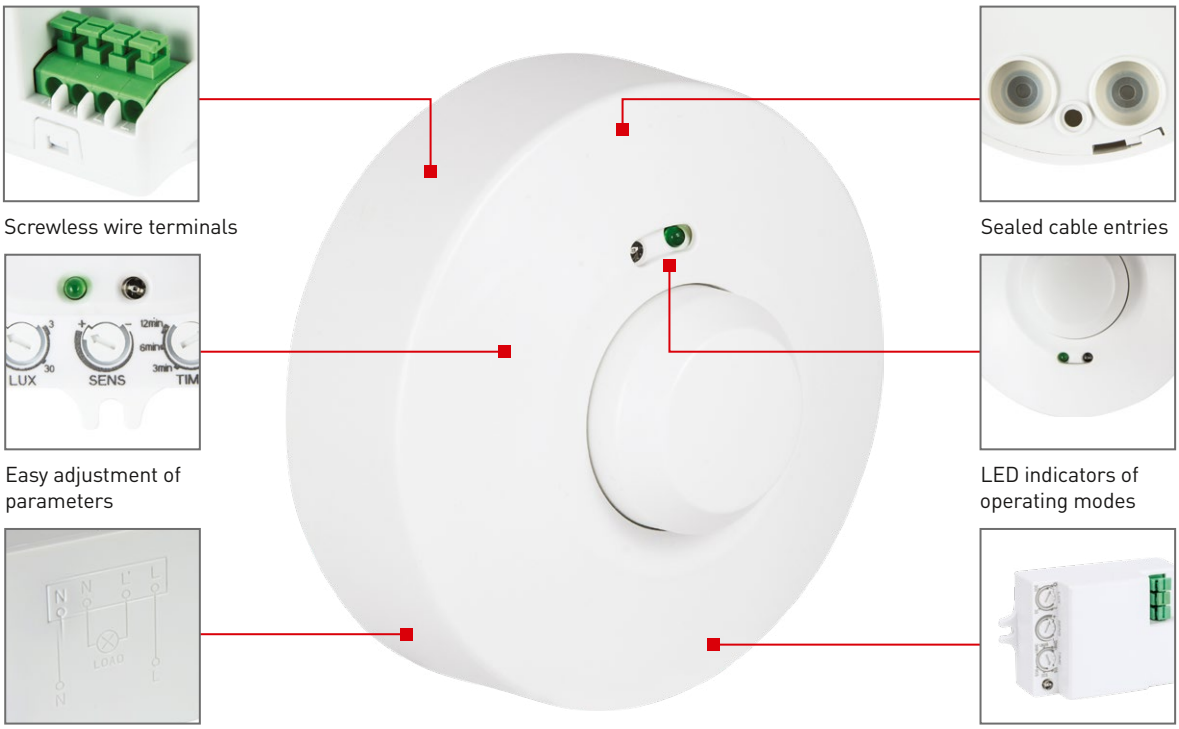
* The detection zone is based on the maximum recommended installation height. If the installation height changes, or if there are obstacles or thermal interference, the diameter of the detection zone may change.

Picture	Name	Mounting type	Maximum load (for incandescent/ LED lamps), W	Field of view	Detection zone*, m	Recommended installation height, m	Degree of protection	Item code
	MS-40 EKF	Wall-mounted	1200 / 300	180°	12×24	1,8–3	IP44	dd-ms-40
	MS-38 EKF		800 / 400					dd-ms-38
	MS-118B EKF		1200 / 300				IP20	dd-ms-118B
	MS-20B EKF	Overhead surface-mounted	1200 / 300	360°	6×6	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		6×6	2,2–4	IP20	dd-ms-100
	MS-200 EKF		800 / 400					dd-ms-200
	MS-2000 EKF	Wall-mounted recessed	200 / 100	160°	9×18	0,8–1,6	IP20	dd-ms-2000
	MS-48B EKF	Corner-mounted	1200 / 300	220°	12×24	1,8–3	IP44	dd-ms-48B
	MS-E27 EKF	E27 light socket	60	360°	3×6		IP20	dd-ms-e27

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.

Standards: IEC 60669-2-1, IEC 60669-1



Screwless wire terminals

Sealed cable entries

Easy adjustment of parameters

LED indicators of operating modes

Connection diagram molded into the sensor housing

Ultra-compact models available

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.

TECHNICAL DATA

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

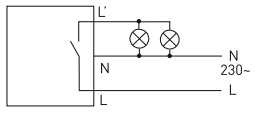
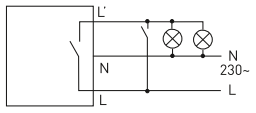
Sensor detection range depending on the type of obstacle

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

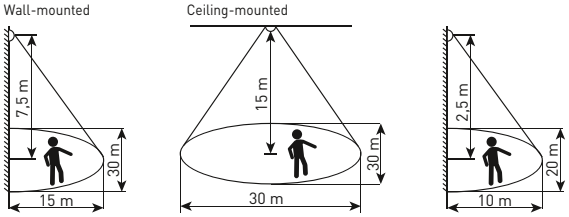
Incandescent lamps	Halogen lamps	LED lights	Compact fluorescent lamps	Luminescent lamps
60	60	60	20	–
500	–	–	–	–
600	600	600	150	300
800	800	800	200	400
1100	1100	1100	270	550
1200	1200	1200	300	600
2000	2000	2000	500	1000

Wiring diagrams

MW-700	MW-701, MW-702, MW-703, MW-704, MW-705
	

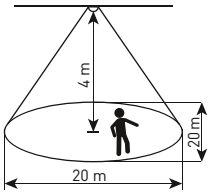
Detection zones

MW-707

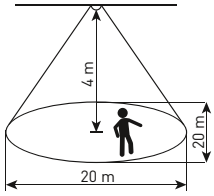


MW-702, MW-704

MW-700, MW-703, MW-705, MW-706

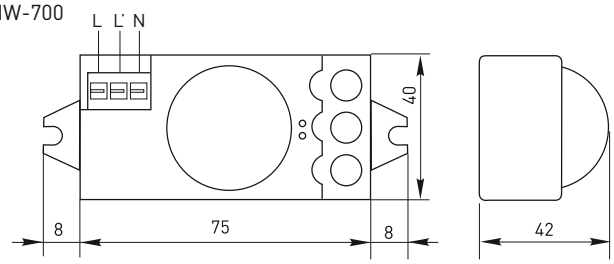


MW-701

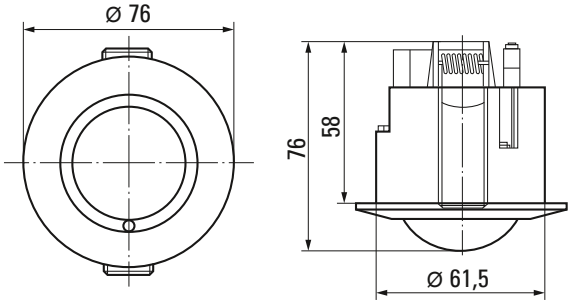


Overall and installation dimensions (mm)

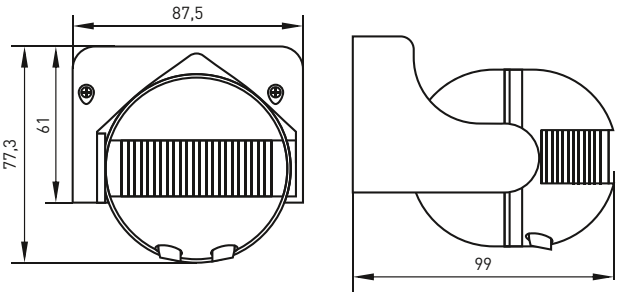
MW-700



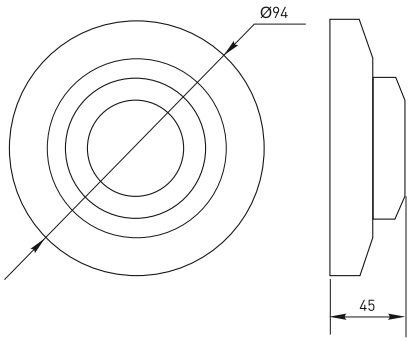
MW-701



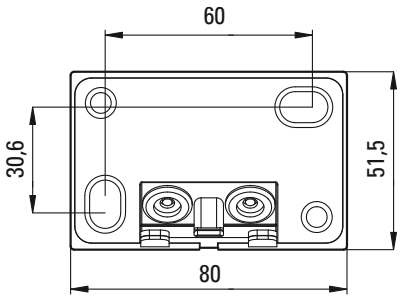
MW-702



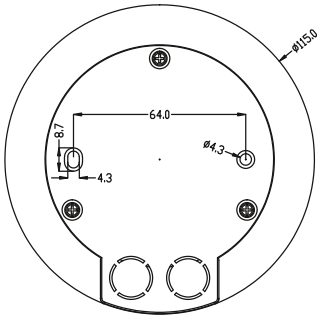
MW-703



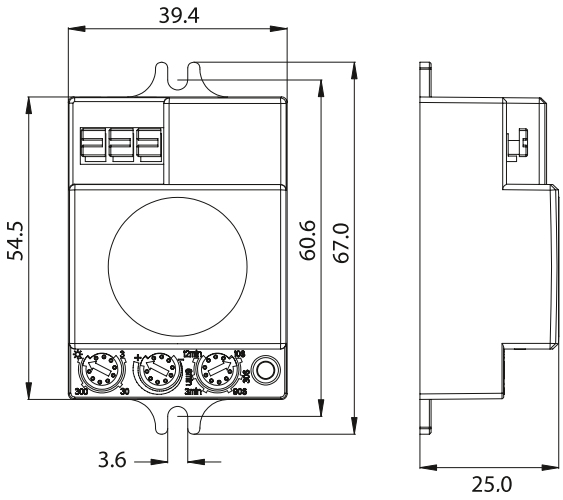
MW-704



MW-705

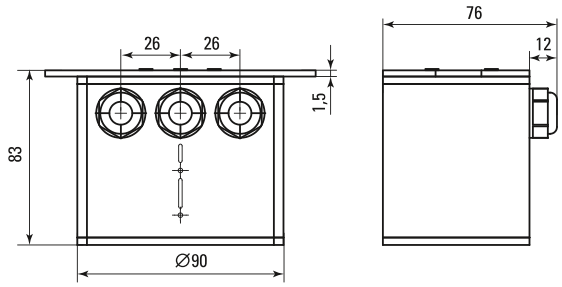


MW-706

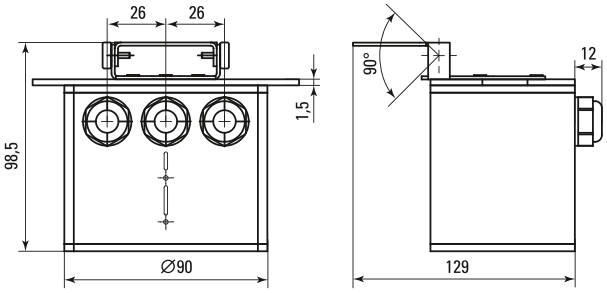


MW-707

Ceiling-mounted



Wall-mounted



Delivery scope

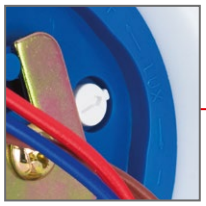
1. Motion sensor MS EKF.
2. Mounting kit.
3. Technical manual.

Picture	Name	Mounting type	Maximum load (for incandescent/ LED lamps), W	Field of view	Detection zone*, m	Recommended installation height, m	Degree of protection	Item code
	MW-700 EKF	Universal (luminaire, ceiling, wall)	1200 / 300	180/ 360°	20×20	1,5 – 3,5	IP20	dd-mw-700
	MW-706 EKF							dd-mw-706
	MW-702 EKF	Surface-mounted, wall		180°	10×20		IP54	dd-mw-702
	MW-704 EKF	Surface-mounted, wall					IP65	dd-mw-704
	MW-703 EKF	Surface-mounted, ceiling		360°	20×20		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		30×30 / 15×30	4 – 15	IP65	dd-mw-707

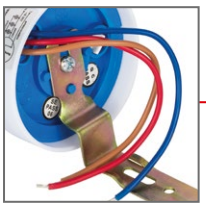
Twilight relays PS EKF

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.

Standards: IEC 60669-2-1, IEC 60669-1

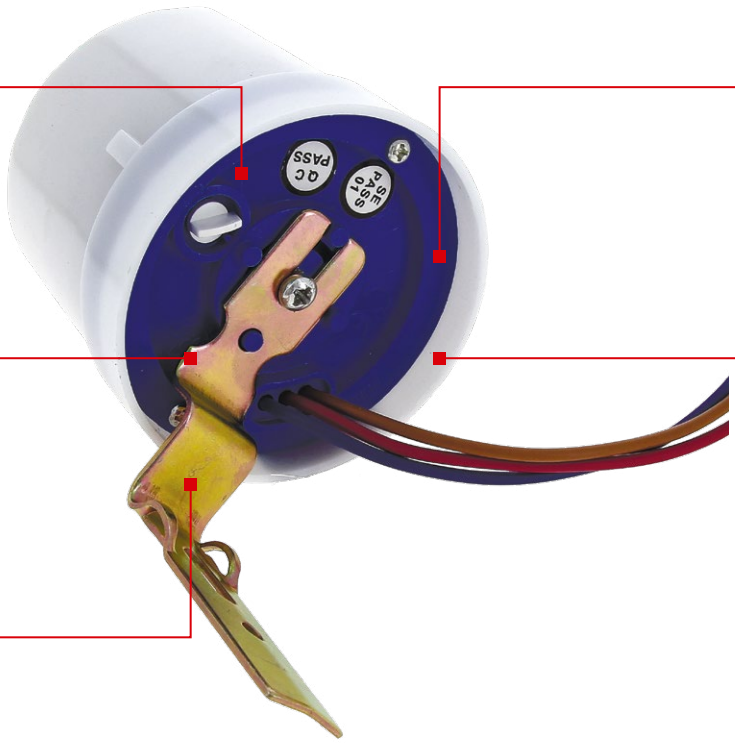


Customizable light level threshold



Connection wires routed to the outside of the device

Installation bracket is included in the kit



High degree of ingress protection IP66/IP44

Connection diagram label on the sensor housing

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.

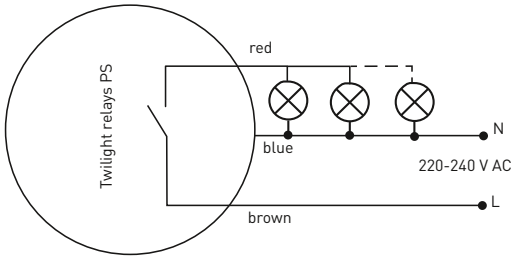
TECHNICAL DATA

Recommended total load by type, W

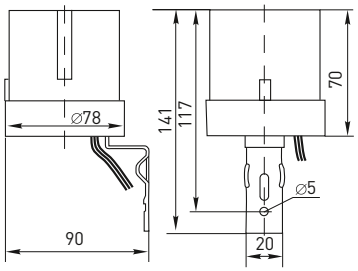
Relay contact current, A	Incandescent lamps	Halogen lamps	LED lights	Compact fluorescent lamps	Luminescent lamps
1	100	100	100	60	–
6	750	750	750	188	375
10	1300	1300	1300	320	630
25	3125	3125	3125	785	1545

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



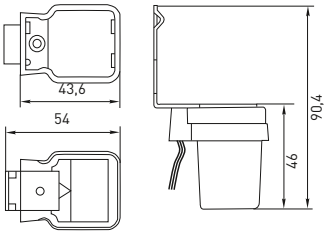
Mounted base-down



fr-ps-2-10

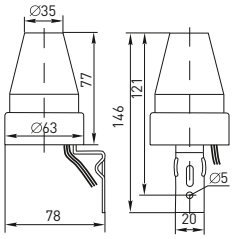
Overall and installation dimensions (mm)

Mounted base-up



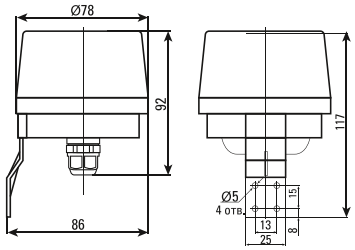
fr-ps-1-6

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

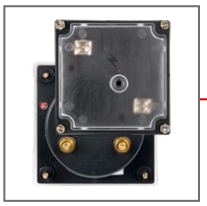
Analogue ammeters and voltmeters EKF

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.

Standards: IEC 60051-1, IEC 60051-2, IEC 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

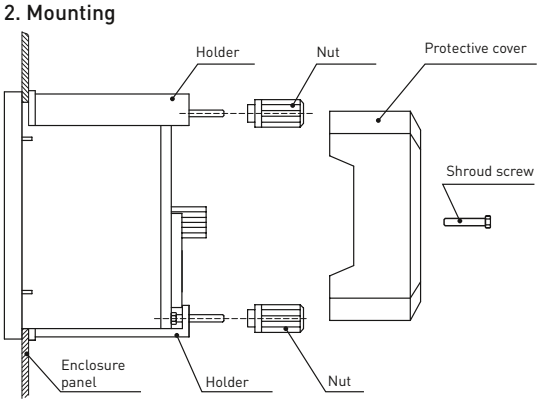
Parameters	Values	
	AMA-961, AMA-721, VMA-961, VMA-721	AMA-801, VMA-801
Mounting type	Front panel, square cutout	Front panel, round cutout
Accuracy class	1,5	2,5
Rated operating voltage, V max.		
For ammeters	400	
For voltmeters	500	
Min. insulation resistance, MOhm		
Under normal conditions (temperature 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.

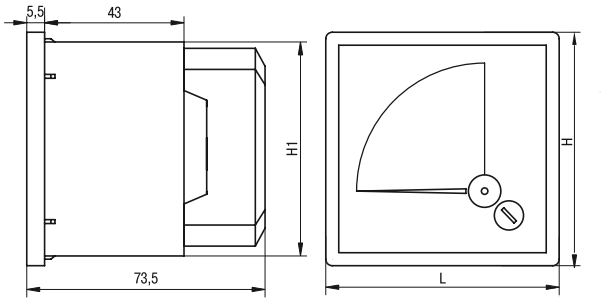
4. Operating principle
The principle of operation of the devices is based on the interaction of the magnetic field in a fixed coil with a moving ferromagnetic core. When the measured current flows through the fixed coil, the magnetic field created in the coil applies torque to the moving ferromagnetic 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

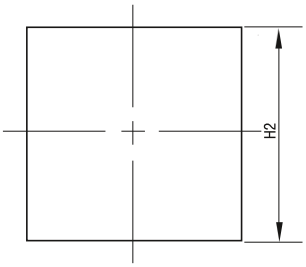
1. Device (ammeter or voltmeter) EKF. Mounting kit.
2. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Overall and installation dimensions

AMA-721, AMA-961, VMA-721, VMA-961

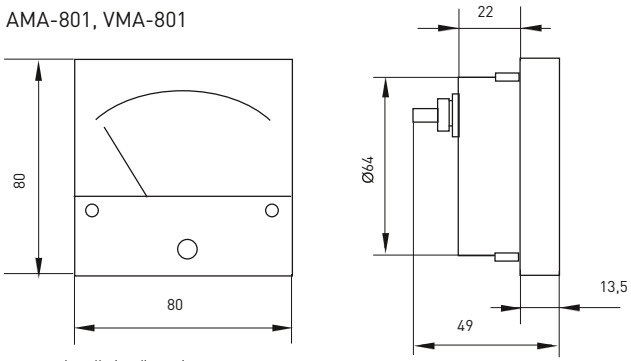


Installation dimensions (cutout size)



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-721-10m*
	Analogue ammeter AMA-721 panel mount (72x72) square cut 50A direct connection EKF				ama-721-50m*
	Analogue voltmeter VMA-721 panel mount (72x72) square cut 300V direct connection EKF			72 × 72	vma-721-300m
	Analogue voltmeter VMA-721 panel mount (72x72) square cut 500V direct connection EKF				vma-721-500m

Picture	Name	Accuracy class	Connection type	Front panel size, mm	Item code
	Analogue ammeter AMA-961 panel mount (96x96) square cut 10A direct connection EKF	1,5	Direct	96 × 96	ama-961-10m*
	Analogue ammeter AMA-961 panel mount (96x96) square cut 50A direct connection EKF				ama-961-50m*
	Analogue voltmeter VMA-961 panel mount (96x96) square cut 300V direct connection EKF				vma-961-300m
	Analogue voltmeter VMA-961 panel mount (96x96) square cut 500V direct connection EKF				vma-961-500m
	Analogue ammeter AMA-801 panel mount (80x80) round cut 10A direct connection EKF	2,5	Direct	80 × 80	ama-801-10m*
	Analogue ammeter AMA-801 panel mount (80x80) round cut 50A direct connection EKF				ama-801-50m*
	Analogue ammeter AMA-801 panel mount (80x80) round cut 100A transformer connection EKF		Transformer		ama-801-100m*
	Analogue ammeter AMA-801 panel mount (80x80) round cut 200A transformer connection EKF				ama-801-200m*
	Analogue ammeter AMA-801 panel mount (80x80) round cut 300A transformer connection EKF				ama-801-300m*
	Analogue ammeter AMA-801 panel mount (80x80) round cut 400A transformer connection EKF				ama-801-400m*
	Analogue ammeter AMA-801 panel mount (80x80) round cut 600A transformer connection EKF				ama-801-600m*
	Analogue ammeter AMA-801 panel mount (80x80) round cut 1000A transformer connection EKF				ama-801-1000m*
	Analogue ammeter AMA-801 panel mount (80x80) round cut 1500A transformer connection EKF				ama-801-1500m*
	Analogue voltmeter VMA-801 panel mount (80x80) round cut 300V direct connection EKF		Direct		vma-801-300m*
	Analogue voltmeter VMA-801 panel mount (80x80) round cut 500V direct connection EKF				vma-801-500m*

* On order

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.

Standards: IEC 61010-1, IEC 61000-2-11, IEC 60068-2-30

Flame retardant plastic housing

Easy installation

Extended period between mandatory verifications

Can be set up to work with any measuring transformer

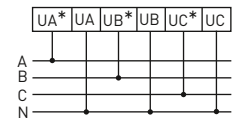
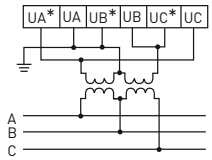
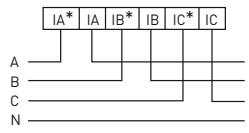
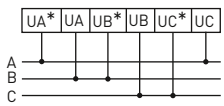
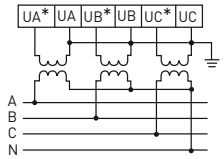
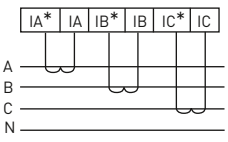
APPLICATION

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-721, VD-721, AD-961, VD-961	AD-723, VD-723, AD-963, VD-963
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	
Maximum 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	

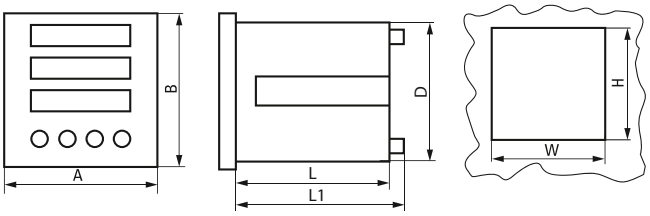
Installation and operation

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-721, VD-721, AD-723, VD-723	72	72	68	68	51	67	65
AD-961, VD-961, AD-963, VD-963	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-721m
	Digital ammeter AD-961 panel mount (96x96) 1-phase EKF			96 × 96	ad-961m
	Digital voltmeter VD-721 panel mount (72x72) 1-phase EKF		Direct / Transformer	72 × 72	vd-721m
	Digital voltmeter VD-961 panel mount (96x96) 1-phase EKF			96 × 96	vd-961m
	Digital ammeter AD-723 panel mount (72x72) 3-phase EKF		Transformer	72 × 72	ad-723m
	Digital ammeter AD-963 panel mount (96x96) 3-phase EKF			96 × 96	ad-963m
	Digital voltmeter VD-723 panel mount (72x72) 3-phase EKF		Direct / Transformer	72 × 72	vd-723m
	Digital voltmeter VD-963 panel mount (96x96) 3-phase EKF			96 × 96	vd-963m

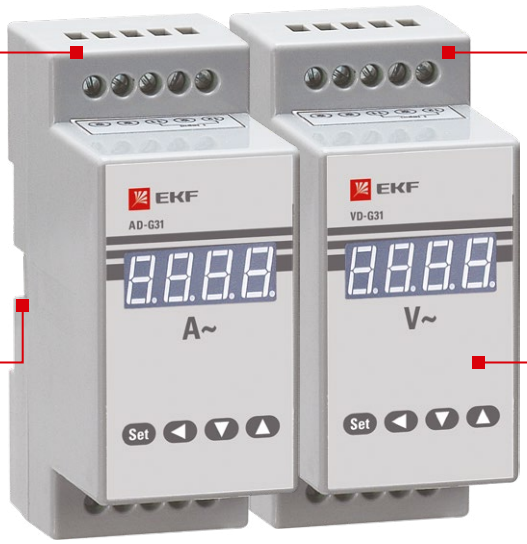
DIN rail digital ammeters and voltmeters

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.

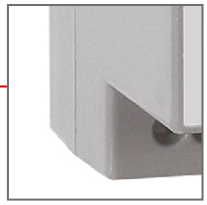
Standards: IEC 61010-1, IEC 61000-2-11, IEC 60068-2-30

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

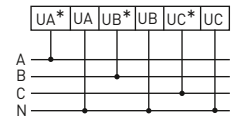
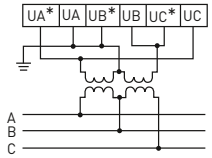
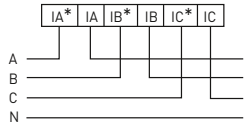
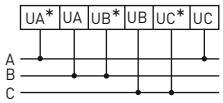
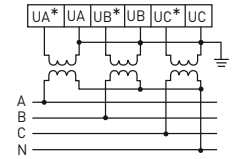
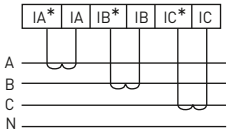
APPLICATION

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	
Maximum 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	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

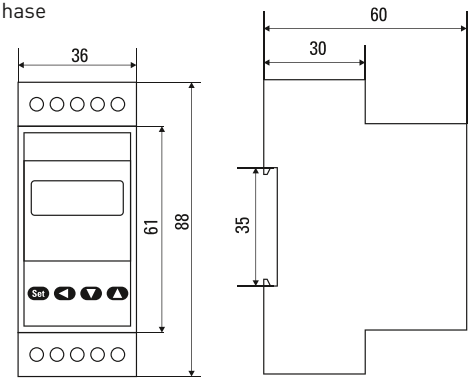
AD-G31
Zero point adjustment.
Transformer ratio selection for current transformers (CTs).
AD-G33
Output display precision selection (number of decimal places).
Upper measurement limit selection.
VD-G31
Transformer ratio selection for current transformers (CTs).
Input filter setting (instrument response time).
VD-G33
Transformer ratio selection for voltage transformers (VTs).
Input filter setting (instrument response time).

Delivery scope

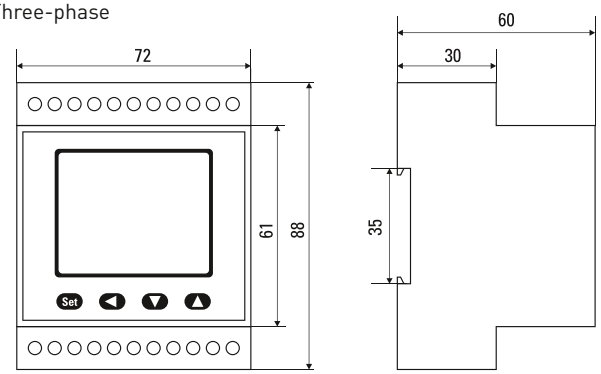
1. Device (ammeter or voltmeter).
2. Technical manual.

Overall and installation dimensions

Single-phase



Three-phase



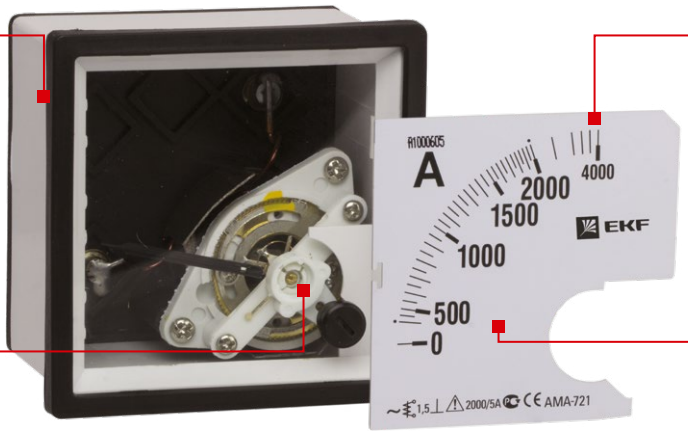
Picture	Name	Accuracy class	Connection type	Number of phases	Mounting type	Item code
	Digital ammeter AD-G31 DIN rail 1-phase EKF	0,5	Transformer	Single-phase	DIN rail	ad-g31m*
	Digital ammeter AD-G33 DIN rail 3-phase EKF			Three-phase		ad-g33*
	Digital voltmeter VD-G31 DIN rail 1-phase EKF		Transformer / 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.

Standards: 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

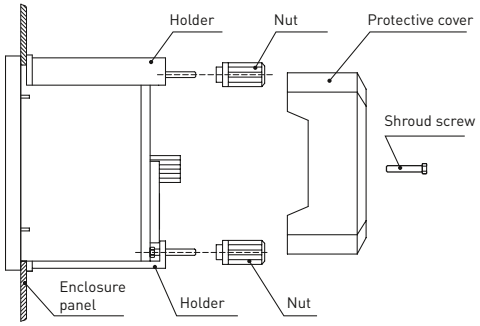
Installation and operation

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.



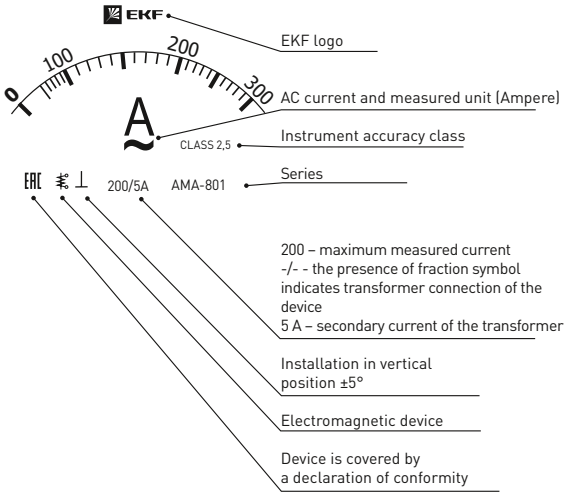
Design

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.

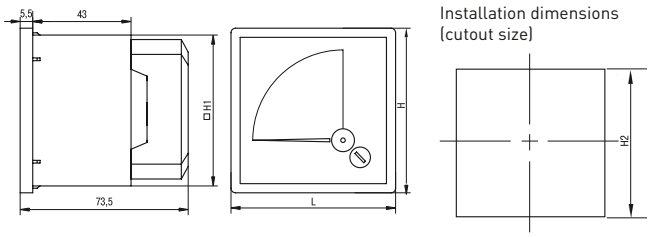
Operating principle

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



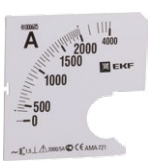
Overall and installation dimensions



Item code	Front panel size, mm	H, mm	L, mm	H1, mm	H2, mm
ama-721m	72 × 72	72	72	66	68
ama-961m	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-a721-10m
	Replacement scale for A721 100/5A-1,5 EKF	s-a721-100m
	Replacement scale for A721 1000/5A-1,5 EKF	s-a721-1000m
	Replacement scale for A721 1200/5A-1,5 EKF	s-a721-1200m
	Replacement scale for A721 125/5A-1,5 EKF	s-a721-125m
	Replacement scale for A721 15/5A-1,5 EKF	s-a721-15m
	Replacement scale for A721 150/5A-1,5 EKF	s-a721-150m
	Replacement scale for A721 1500/5A-1,5 EKF	s-a721-1500m
	Replacement scale for A721 1600/5A-1,5 EKF	s-a721-1600m
	Replacement scale for A721 20/5A-1,5 EKF	s-a721-20m
	Replacement scale for A721 200/5A-1,5 EKF	s-a721-200m
	Replacement scale for A721 2000/5A-1,5 EKF	s-a721-2000m
	Replacement scale for A721 25/5A-1,5 EKF	s-a721-25m
	Replacement scale for A721 250/5A-1,5 EKF	s-a721-250m
	Replacement scale for A721 2500/5A-1,5 EKF	s-a721-2500m
	Replacement scale for A721 30/5A-1,5 EKF	s-a721-30m
	Replacement scale for A721 300/5A-1,5 EKF	s-a721-300m
	Replacement scale for A721 3000/5A-1,5 EKF	s-a721-3000m
	Replacement scale for A721 40/5A-1,5 EKF	s-a721-40m
	Replacement scale for A721 400/5A-1,5 EKF	s-a721-400m
	Replacement scale for A721 4000/5A-1,5 EKF	s-a721-4000m
	Replacement scale for A721 5/5A-1,5 EKF	s-a721-5m
	Replacement scale for A721 50/5A-1,5 EKF	s-a721-50m
	Replacement scale for A721 500/5A-1,5 EKF	s-a721-500m
	Replacement scale for A721 5000/5A-1,5 EKF	s-a721-5000m
	Replacement scale for A721 60/5A-1,5 EKF	s-a721-60m
	Replacement scale for A721 600/5A-1,5 EKF	s-a721-600m
	Replacement scale for A721 75/5A-1,5 EKF	s-a721-75m
	Replacement scale for A721 750/5A-1,5 EKF	s-a721-750m
	Replacement scale for A721 80/5A-1,5 EKF	s-a721-80m
	Replacement scale for A721 800/5A-1,5 EKF	s-a721-800m

Picture	Name	Item code
96 × 96		
	Replacement scale for A961 10/5A-1,5 EKF	s-a961-10m
	Replacement scale for A961 100/5A-1,5 EKF	s-a961-100m
	Replacement scale for A961 1000/5A-1,5 EKF	s-a961-1000m
	Replacement scale for A961 1200/5A-1,5 EKF	s-a961-1200m
	Replacement scale for A961 125/5A-1,5 EKF	s-a961-125m
	Replacement scale for A961 15/5A-1,5 EKF	s-a961-15m
	Replacement scale for A961 150/5A-1,5 EKF	s-a961-150m
	Replacement scale for A961 1500/5A-1,5 EKF	s-a961-1500m
	Replacement scale for A961 1600/5A-1,5 EKF	s-a961-1600m
	Replacement scale for A961 20/5A-1,5 EKF	s-a961-20m
	Replacement scale for A961 200/5A-1,5 EKF	s-a961-200m
	Replacement scale for A961 2000/5A-1,5 EKF	s-a961-2000m
	Replacement scale for A961 25/5A-1,5 EKF	s-a961-25m
	Replacement scale for A961 250/5A-1,5 EKF	s-a961-250m
	Replacement scale for A961 2500/5A-1,5 EKF	s-a961-2500m
	Replacement scale for A961 30/5A-1,5 EKF	s-a961-30m
	Replacement scale for A961 300/5A-1,5 EKF	s-a961-300m
	Replacement scale for A961 3000/5A-1,5 EKF	s-a961-3000m
	Replacement scale for A961 40/5A-1,5 EKF	s-a961-40m
	Replacement scale for A961 400/5A-1,5 EKF	s-a961-400m
	Replacement scale for A961 4000/5A-1,5 EKF	s-a961-4000m
	Replacement scale for A961 5/5A-1,5 EKF	s-a961-5m
	Replacement scale for A961 50/5A-1,5 EKF	s-a961-50m
	Replacement scale for A961 500/5A-1,5 EKF	s-a961-500m
	Replacement scale for A961 5000/5A-1,5 EKF	s-a961-5000m
	Replacement scale for A961 60/5A-1,5 EKF	s-a961-60m
	Replacement scale for A961 600/5A-1,5 EKF	s-a961-600m
	Replacement scale for A961 75/5A-1,5 EKF	s-a961-75m
	Replacement scale for A961 750/5A-1,5 EKF	s-a961-750m
	Replacement scale for A961 80/5A-1,5 EKF	s-a961-80m
	Replacement scale for A961 800/5A-1,5 EKF	s-a961-800m

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.

Standards: IEC 62053-22, IEC 62053-23, GB/T13850-1998, IEC 61010-1, IEC 61000-2-11, IEC 60068-2-30

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

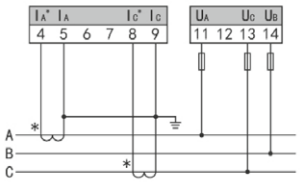
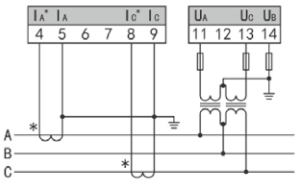
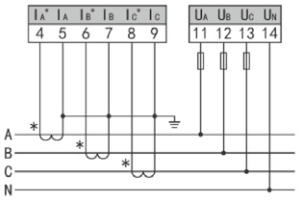
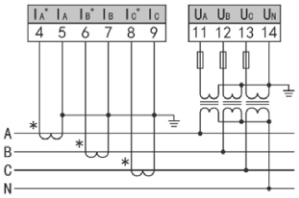
Measured parameters

Function	Symbol	Accuracy	Range	Display range
SM-E				
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
Apparent 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	0,5S	–	0–99 999 999 MW·h
Reactive energy	EQ	2	–	0–99 999 999 Mvar·h
Limit value	–	0,5	–	–
Power consumption	–	0,5	–	–
SM-H, SM-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
Apparent power	S	0,5	0–5,7	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	0,5S	–	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

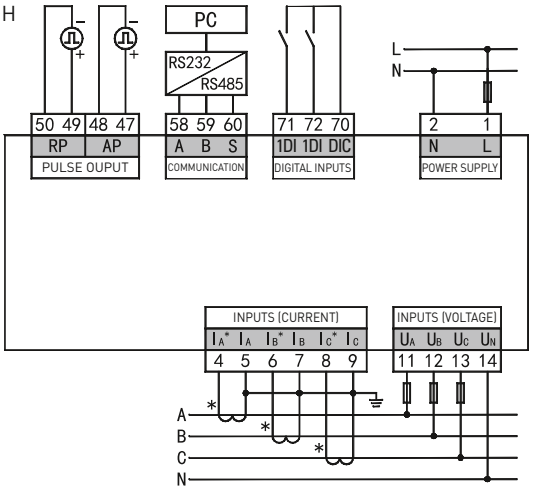
SM-E, SM-H, SM-G33H

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	3 phases and 4 wires, 3 current transformers, 3 voltage transformers
			

Parameters		Values		
		SM-H	SM-E	SM-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		

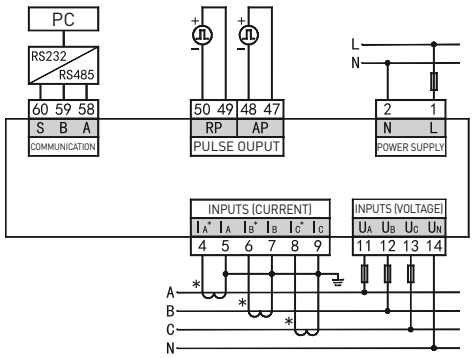
Terminal legend

SM-H



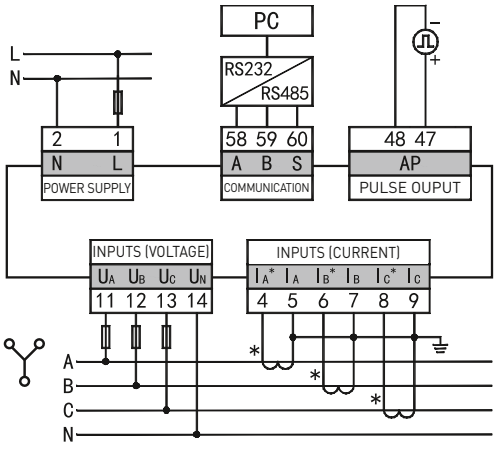
Parameters	Terminal number	Description
Power supply	1, 2	Alternating current, direct current: 80–270 V
Current terminals	4, 5, 6, 7, 8, 9	Three-phase current input
Voltage terminals	11, 12, 13, 14	Three-phase voltage input
Pulse outputs	47, 48, 49, 50	Active / reactive power output pulse
RS-485	58, 59, 60	A, B, G
Digital output	70–72	2 digital outputs, 70 - common

SM-E

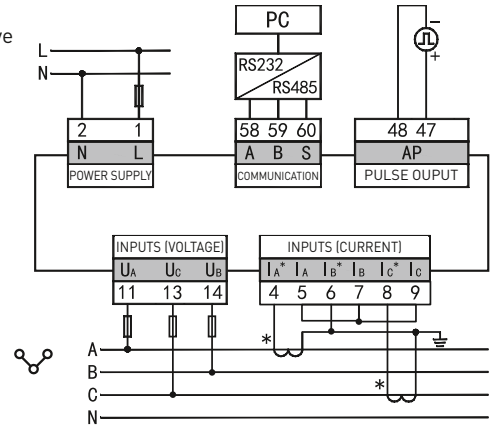


Parameters	Terminal number	Description
Power supply	1, 2	Alternating current, direct current: 80 - 270 V
Current terminals	4, 5, 6, 7, 8, 9	Three-phase current input
Voltage terminals	11, 12, 13, 14	Three-phase voltage input
Pulse outputs	47, 48, 49, 50	Active / reactive power output pulse
RS-485	58, 59, 60	A, B and G

SM-G33H
Full Wye

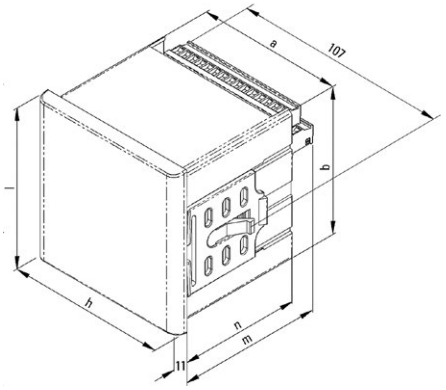


SM-G33H
Partial Wye



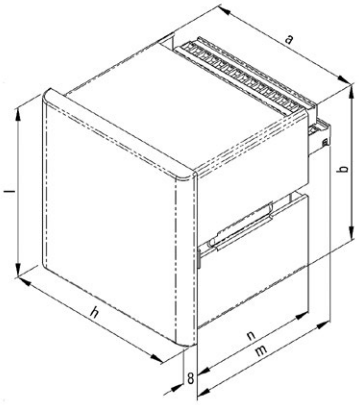
Overall and installation dimensions

SM-H



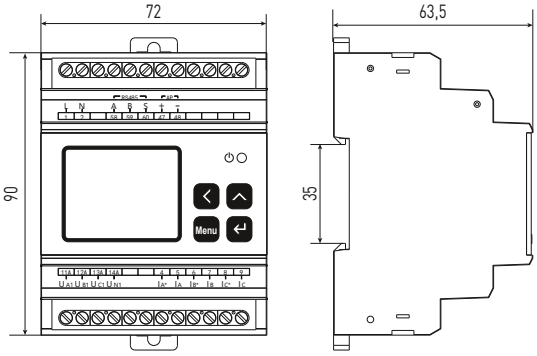
Instrument panel l × h, mm	Installation dimensions a × b, mm	Panel cutout, mm	Total length, mm	
			n	m
96 × 96	90 × 90	91 × 91	75	96

SM-E



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

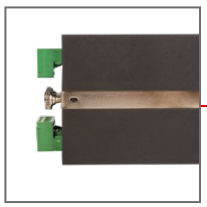
1. Digital multifunctional meter
2. Mounting kit.
3. Technical manual.

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-963hm*
	Digital multifunctional meter SM-E with LED display		Light-emitting diode (LED)			sm-963em*
	Digital multifunctional meter SM-G33H with LCD DIN rail		LCD		DIN rail	sm-g33hm*

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, IEC 62053-23, 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
Apparent 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

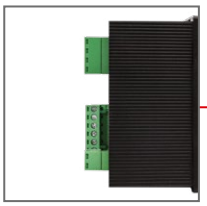
Parameters		Values
Measurement error		
Current / Voltage		±0,5%
Active / Reactive / Apparent power		±0,5%
Frequency		±0,1 Hz
Power factor		±0,1
Active energy		Accuracy class: 1
Reactive energy		Accuracy class: 2
Power supply		
Range		85–264 V AC/DC
Power consumption		≤5 VA
Input parameters		
Grid connection		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-963bm
	Digital multifunctional meter SM-B-72 panel mount 72x72 EKF		LCD		72 × 72	sm-723bm

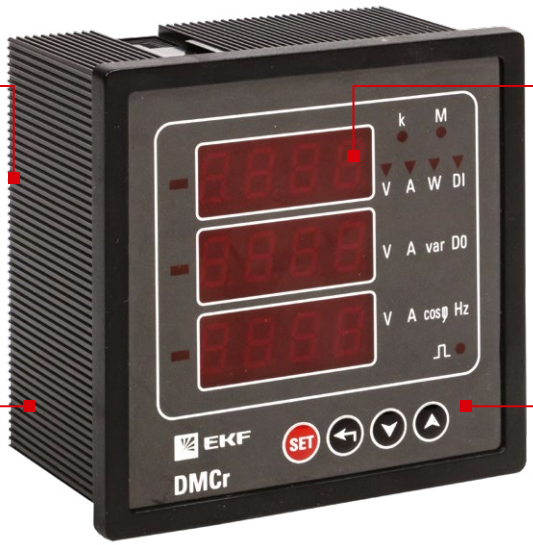
Digital multifunctional meters EKF

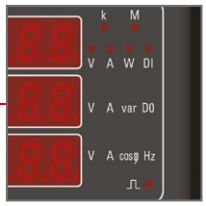
Digital multifunctional meters DMC and DMCr EKF are the latest iteration of digital programmable devices for low-voltage distribution systems. They are designed for measuring the parameters of three-phase three- or four-wire circuits with symmetrical and asymmetrical loads, direct display of measured values and their digital transmission. The devices enable control, analysis and optimization of energy equipment, systems and industrial networks.

Compact size, affordable and efficient

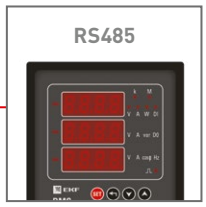


Easy, quick and convenient installation on the front panel of the electrical enclosure





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
Apparent 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 / Apparent 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-963m*
	Digital multifunctional meter DMC-R panel mount 96x96 square cut RS-485 EKF	Reactive energy: 2,0		Available		DMC-963rm*

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).

Standards: IEC 61869-1, IEC 61869-2

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 additionally protected by an anti-tamper sticker to prevent access to the secondary winding.

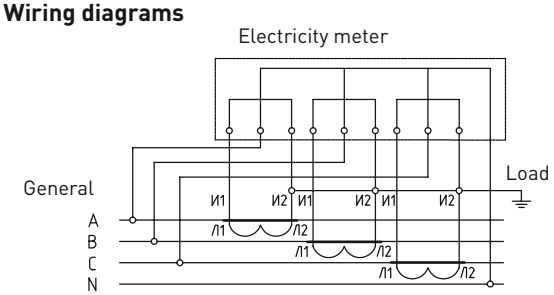
An integrated tinned copper busbar of the TTE-A models enables connection to both aluminium and copper busbars

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

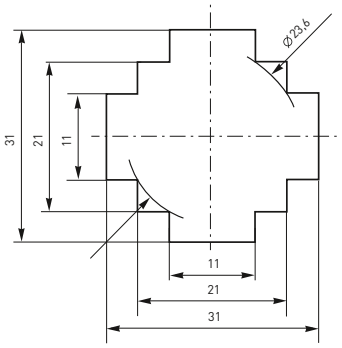


Accuracy class	Primary current, % of rated	Ratio error			Burden, % of rated
		Current, %	Phase displacement, min		
0,5	5	±1,5	±90'	±2,7 crad	25–100
	20	±0,75	±45'	±1,35 crad	
	100–120	±0,5	±30'	±0,9 crad	
0,5S	1	±1,5	±90'	±2,7 crad	
	5	±0,75	±45'	±1,35 crad	
	20	±0,5	±30'	±0,9 crad	
	100-120	±0,5	±30'	±0,9 crad	

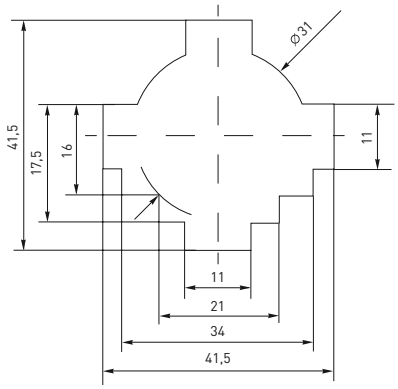
Parameters	Values						
	TTE-A	TTE-30	TTE-40	TTE-60	TTE-85	TTE-100	TTE-125
Rated voltage Un, kV	0,66						
Maximum operating voltage, kV	0,72						
Rated frequency, Hz	50 / 60						
Rated primary current, A	5, 10, 15, 20, 25, 30, 40, 50, 60, 75, 80, 100, 120, 125, 150, 200, 250, 300, 400, 500, 600, 750, 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-40



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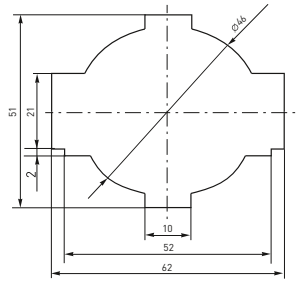
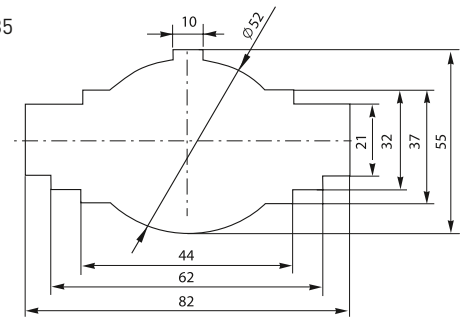
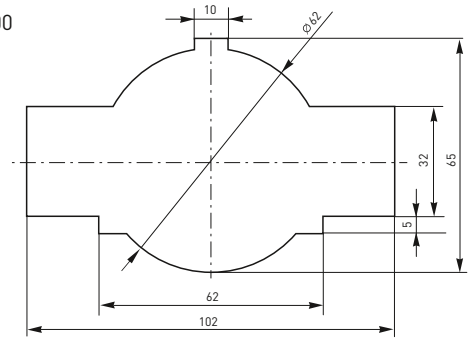


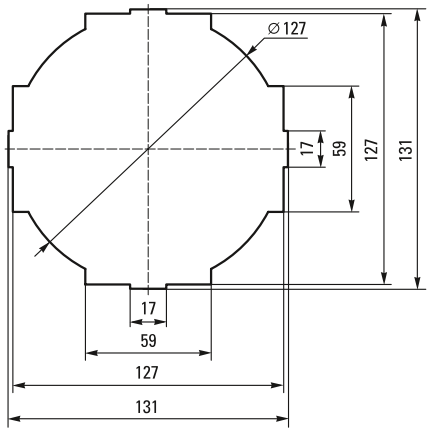
TTE-85



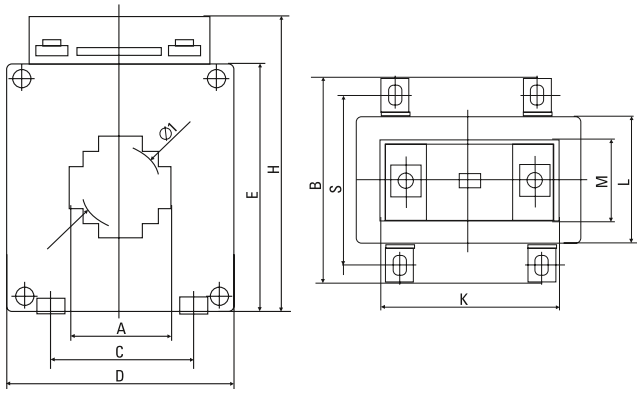
TTE-100



TTE-125 (big housing)

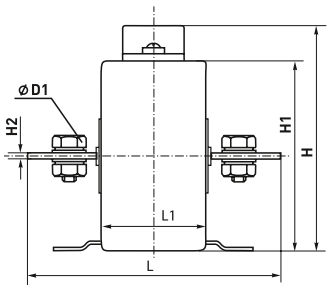


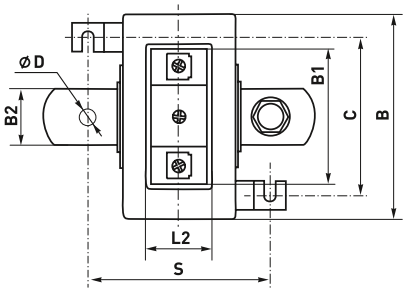
TTE



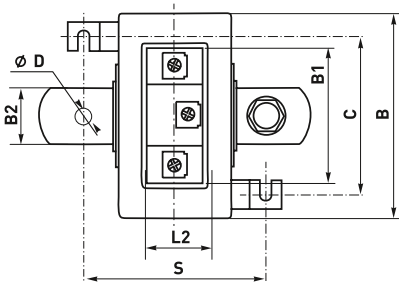
Name	Overall dimensions, mm										
	A	B	C	D	E	H	I	K	L	M	S
TTE-30	31	71	45	75	82	98	23,6	60	42	32	60
TTE-40	41	71	45	75	82	98	31	60	42	32	60
TTE-60	62	71	50	101	111	127	46	60	42	32	60
TTE-85	82	71	62	128	145	161	52	60	42	32	60
TTE-100	102	73	78,5	144	136	152	62	60	45	32	60
TTE-125 big housing	127	72	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 5/5A to 300/5A	87	62	25	103	87	3	120	48	34	57	60	8,5	M8 x 16
TTE-A from 400/5A to 500/5A	87	62	40	103	87	3	118	48	34	57	60	8,5	M8 x 20
TTE-A from 600/5A 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 to 125B models 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-30-100/5A EKF	100	5	tte-30-100m	tte-30-100-0.5Sm*
	TTE 30-150/5A EKF	150		tte-30-150-0.5m	tte-30-150-0.5Sm*
	TTE 30-200/5A EKF	200		tte-30-200-0.5m	tte-30-200-0.5Sm*
	TTE 30-250/5A EKF	250		tte-30-250-0.5m	tte-30-250-0.5Sm*
	TTE 30-300/5A EKF	300		tte-30-300-0.5m*	tte-30-300-0.5Sm*
	TTE 40-300/5A EKF	300		tte-40-300-0.5m*	tte-40-300-0.5Sm*
	TTE 40-400/5A EKF	400		tte-40-400-0.5m	tte-40-400-0.5Sm*
	TTE 40-500/5A EKF	500		tte-40-500-0.5m*	tte-40-500-0.5Sm*
	TTE 40-600/5A EKF	600		tte-40-600-0.5m	tte-40-600-0.5Sm*
	TTE 60-300/5A EKF	300		tte-60-300-0.5m*	tte-60-300-0.5Sm*
	TTE 60-400/5A EKF	400		tte-60-400-0.5m*	tte-60-400-0.5Sm*
	TTE 60-500/5A EKF	500		tte-60-500-0.5m*	tte-60-500-0.5Sm*
	TTE 60-600/5A EKF	600		tte-60-600-0.5m	tte-60-600-0.5Sm*
	TTE 60-750/5A EKF	750		tte-60-750-0.5m*	tte-60-750-0.5Sm*
	TTE 60-800/5A EKF	800		tte-60-800-0.5m	tte-60-800-0.5Sm*
	TTE 60-1000/5A EKF	1000		tte-60-1000-0.5m*	tte-60-1000-0.5Sm*
	TTE 85-750/5A EKF	750		tte-85-750-0.5m*	tte-85-750-0.5Sm*
	TTE 85-800/5A EKF	800		tte-85-800-0.5m*	tte-85-800-0.5Sm*
	TTE 85-1000/5A EKF	1000		tte-85-1000-0.5m*	tte-85-1000-0.5Sm*
	TTE 85-1200/5A EKF	1200	10	tte-85-1200-0.5m*	tte-85-1200-0.5Sm*
	TTE 85-1500/5A EKF	1500		tte-85-1500-0.5m*	tte-85-1500-0.5Sm*

Picture	Name	Rated primary current, A	Rated secondary burden, VA	Item code	
				Accuracy class	
				0,5	0,5 S
	TTE 100-800/5A EKF	800	10	tte-100-800-0.5m*	tte-100-800-0.5Sm*
	TTE 100-1000/5A EKF	1000		tte-100-1000-0.5m*	tte-100-1000-0.5Sm*
	TTE 100-1200/5A EKF	1200		tte-100-1200-0.5m*	tte-100-1200-0.5Sm*
	TTE 100-1500/5A EKF	1500		tte-100-1500-0.5m*	tte-100-1500-0.5Sm*
	TTE 100-1600/5A EKF	1600		tte-100-1600-0.5m*	tte-100-1600-0.5Sm*
	TTE 100-2000/5A EKF	2000		tte-100-2000-0.5m*	tte-100-2000-0.5Sm*
	TTE 100-2250/5A EKF	2250	15	tte-100-2250-0.5m*	tte-100-2250-0.5Sm*
	TTE 100-2500/5A EKF	2500		tte-100-2500-0.5m*	tte-100-2500-0.5Sm*
	TTE 100-3000/5A EKF	3000		tte-100-3000-0.5m*	tte-100-3000-0.5Sm*
	TTE-125-1500/5A big housing EKF	1500	10	tte-125B-1500-0.5m*	tte-125B-1500-0.5Sm*
	TTE-125-2000/5A big housing EKF	2000	20	tte-125B-2000-0.5m*	tte-125B-2000-0.5Sm*
	TTE-125-2500/5A big housing EKF	2500		tte-125B-2500-0.5m*	tte-125B-2500-0.5Sm*
	TTE-125-3000/5A big housing EKF	3000	25	tte-125B-3000-0.5m*	tte-125B-3000-0.5Sm*
	TTE-125-4000/5A big housing EKF	4000	30	tte-125B-4000-0.5m*	tte-125B-4000-0.5Sm*
	TTE-125-5000/5A big housing EKF	5000		tte-125B-5000-0.5m*	tte-125B-5000-0.5Sm*
	TTE-A-5/5A EKF	5	5	tte-a-5-0.5m*	tte-a-5-0.5Sm*
	TTE-A-10/5A EKF	10		tte-a-10-0.5m*	tte-a-10-0.5Sm*
	TTE-A-15/5A EKF	15		tte-a-15-0.5m*	tte-a-15-0.5Sm*
	TTE-A-20/5A EKF	20		tte-a-20-0.5m*	tte-a-20-0.5Sm*
	TTE-A-25/5A EKF	25		tte-a-25-0.5m*	tte-a-25-0.5Sm*
	TTE-A-30/5A EKF	30		tte-a-30-0.5m*	tte-a-30-0.5Sm*
	TTE-A-40/5A EKF	40		tte-a-40-0.5m*	tte-a-40-0.5Sm*
	TTE-A-50/5A EKF	50		tte-a-50-0.5m*	tte-a-50-0.5Sm*
	TTE-A-60/5A EKF	60		tte-a-60-0.5m*	tte-a-60-0.5Sm*
	TTE-A-75/5A EKF	75		tte-a-75-0.5m*	tte-a-75-0.5Sm*
	TTE-A-80/5A EKF	80		tte-a-80-0.5m*	tte-a-80-0.5Sm*
	TTE-A-100/5A EKF	100		tte-a-100-0.5m*	tte-a-100-0.5Sm*
	TTE-A-120/5A EKF	120		tte-a-120-0.5m*	tte-a-120-0.5Sm*
	TTE-A-125/5A EKF	125		tte-a-125-0.5m*	tte-a-125-0.5Sm*
	TTE-A-150/5A EKF	150		tte-a-150-0.5m*	tte-a-150-0.5Sm*
	TTE-A-200/5A EKF	200		tte-a-200-0.5m*	tte-a-200-0.5Sm*
	TTE-A-250/5A EKF	250		tte-a-250-0.5m*	tte-a-250-0.5Sm*
	TTE-A-300/5A EKF	300		tte-a-300-0.5m*	tte-a-300-0.5Sm*
	TTE-A-400/5A EKF	400		tte-a-400-0.5m*	tte-a-400-0.5Sm*
	TTE-A-500/5A EKF	500		tte-a-500-0.5m*	tte-a-500-0.5Sm*
	TTE-A-600/5A EKF	600		tte-a-600-0.5m*	tte-a-600-0.5Sm*
	TTE-A-750/5A EKF	750		tte-a-750-0.5m*	-
	TTE-A-800/5A EKF	800	10	tte-a-800-0.5m*	tte-a-800-0.5Sm*
	TTE-A-1000/5A EKF	1000		tte-a-1000-0.5m*	tte-a-1000-0.5Sm*
	TTE-A-100 with voltage terminal EKF	100	5	tte-S-100-0.5m*	tte-S-100-0.5Sm*
	TTE-A-150 with voltage terminal EKF	150		tte-S-150-0.5m*	tte-S-150-0.5Sm*
	TTE-A-200 with voltage terminal EKF	200		tte-S-200-0.5m*	tte-S-200-0.5Sm*
	TTE-A-250 with voltage terminal EKF	250		tte-S-250-0.5m*	tte-S-250-0.5Sm*
	TTE-A-300 with voltage terminal EKF	300		tte-S-300-0.5m*	tte-S-300-0.5Sm*
	TTE-A-400 with voltage terminal EKF	400		tte-S-400-0.5m*	tte-S-400-0.5Sm*
	TTE-A-500 with voltage terminal EKF	500		tte-S-500-0.5m*	tte-S-500-0.5Sm*
	TTE-A-600 with voltage terminal EKF	600		tte-S-600-0.5m*	tte-S-600-0.5Sm*
	TTE-A-750 with voltage terminal EKF	750		tte-S-750-0.5m*	tte-S-750-0.5Sm*
	TTE-A-800 with voltage terminal EKF	800	10	tte-S-800-0.5m*	tte-S-800-0.5Sm*
	TTE-A-1000 with voltage terminal EKF	1000		tte-S-1000-0.5m*	tte-S-1000-0.5Sm*

Distribution Enclosures & Climate Control

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

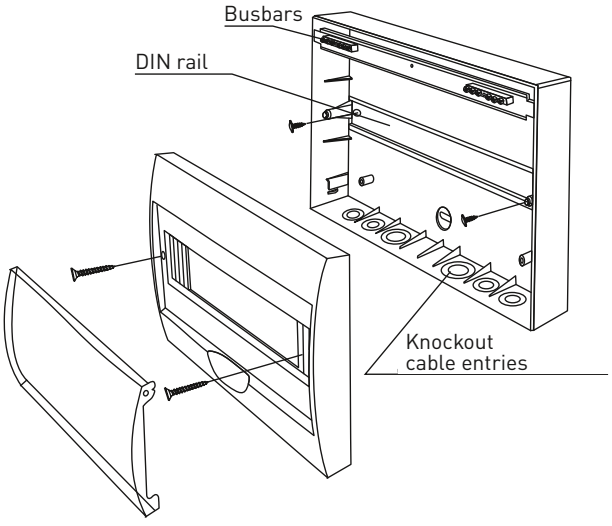
Electrical distribution enclosures are used in residential and commercial real estate:
- installation & protection of modular and low-voltage equipment from environmental factors and tampering.
- lead-in & distribution.
- protection of power & control circuits.

TECHNICAL DATA

Parameters	Values
Housing material	ABS plastic
Degree of protection by IEC 60529	IP41

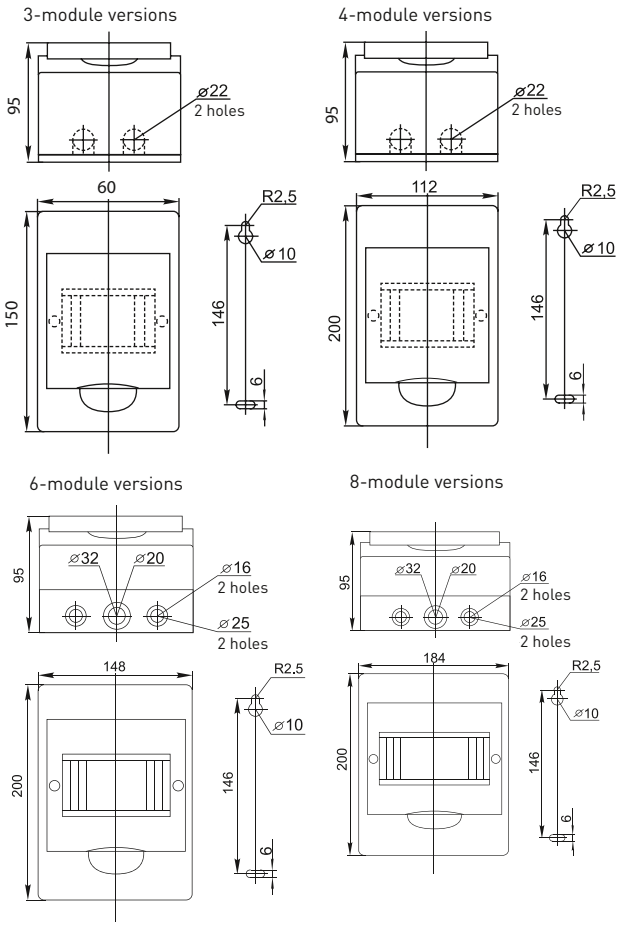
Installation and operation

Installation procedure:

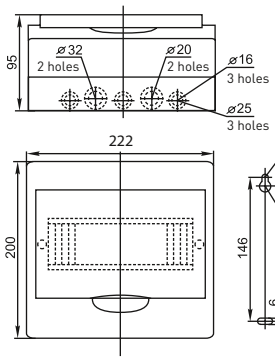


Overall and installation dimensions (mm)

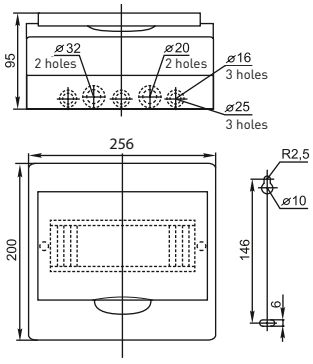
Wall-mounted plastic distribution enclosures



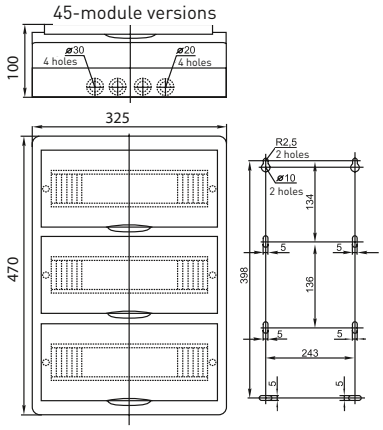
10-module versions



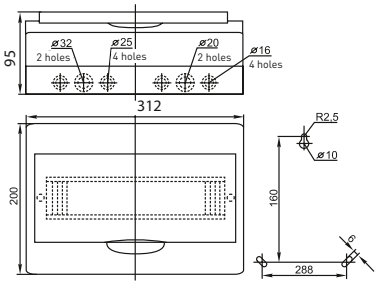
12-module versions



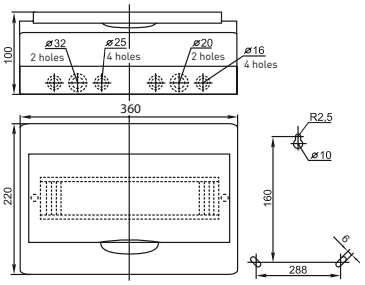
45-module versions



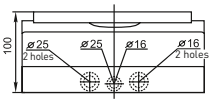
15-module versions

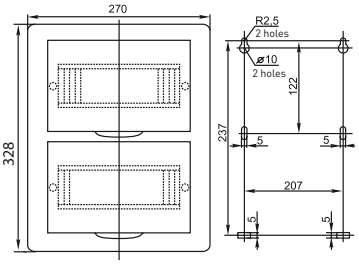


18-module versions

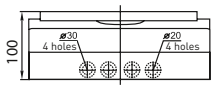


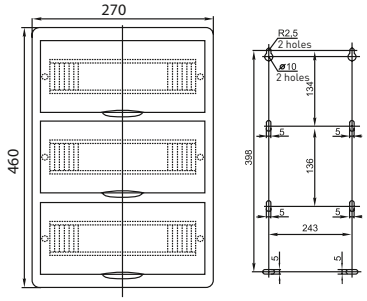
24-module versions





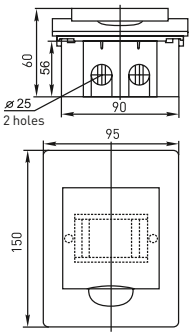
36-module versions



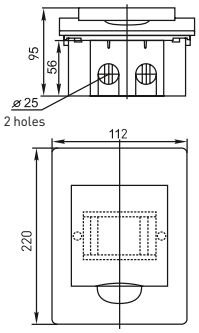


Flush-mounted plastic distribution enclosures

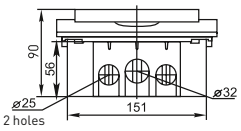
3-module versions

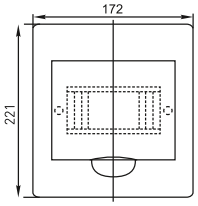


4-module versions

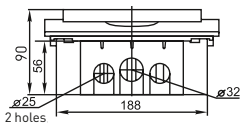


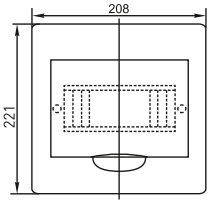
6-module versions



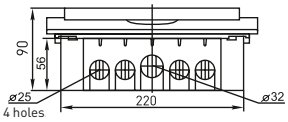


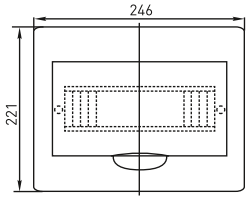
8-module versions



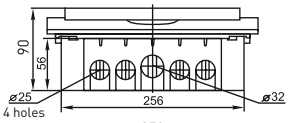


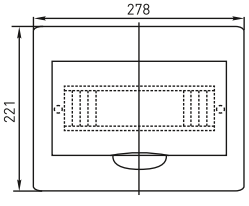
10-module versions



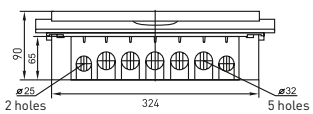


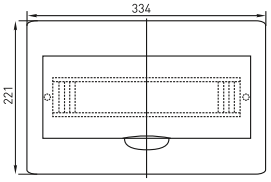
12-module versions



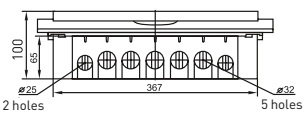


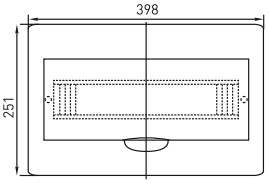
15-module versions



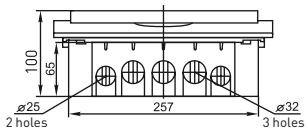


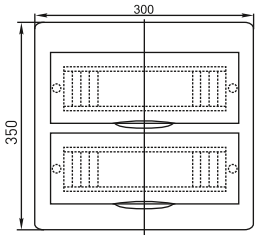
18-module versions



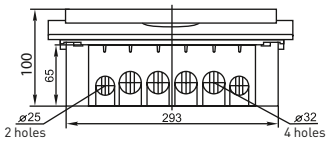


24-module versions

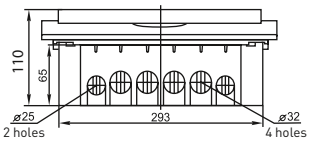


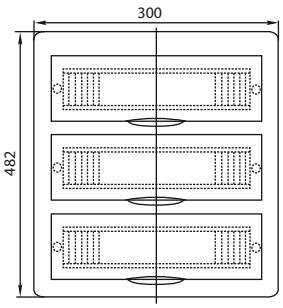


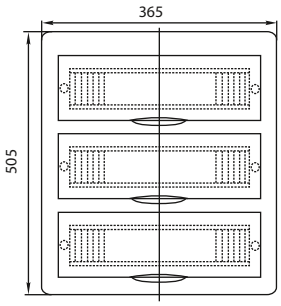
36-module versions



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

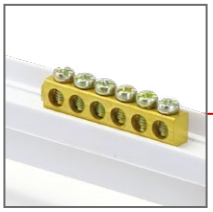
Delivery scope

1. Distribution enclosure PROXIMA EKF
2. N & PE busbars
3. DIN rail.

Name	Overall 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.



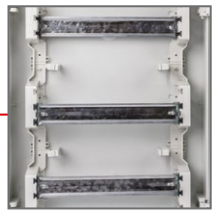
N & PE bars in the kit

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

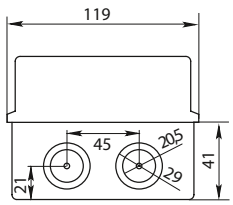
Electrical distribution enclosures are used in residential and commercial real estate:
- installation and protection of modular and low-voltage equipment from environmental factors and tampering.
- lead-in & distribution.
- protection of power & control circuits.

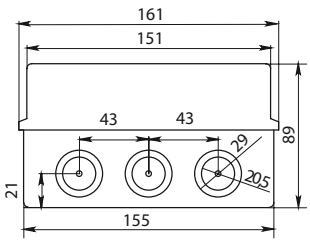
TECHNICAL DATA

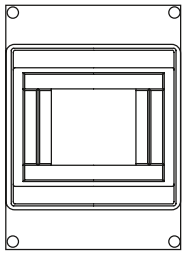
Parameters	Values
Housing material	ABS plastic
Housing color	White
Door color	Smoky
Cable entry	Top, bottom, left, right
Mounting type	Wall-mounted
Degree of protection by IEC 60529	IP65

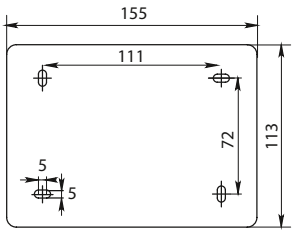
Overall and installation dimensions (mm)

5-module version

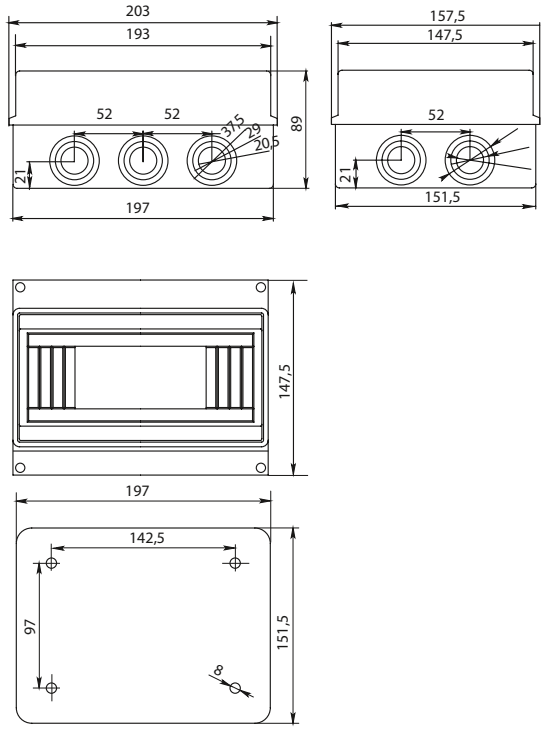




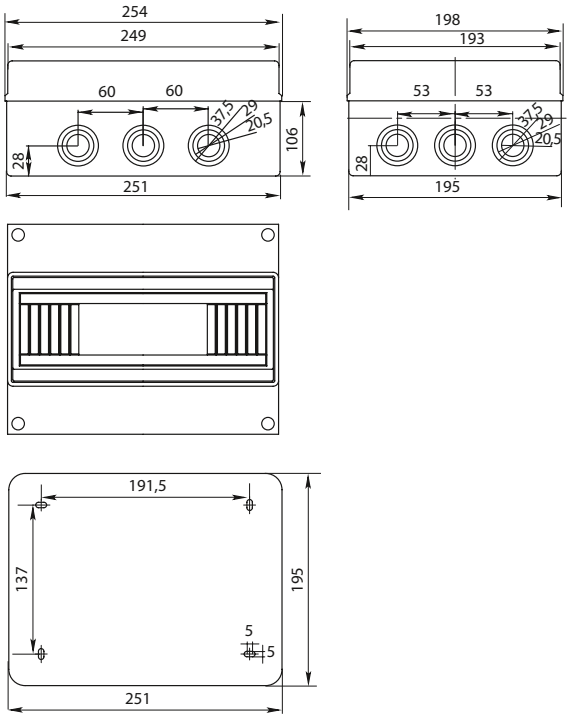




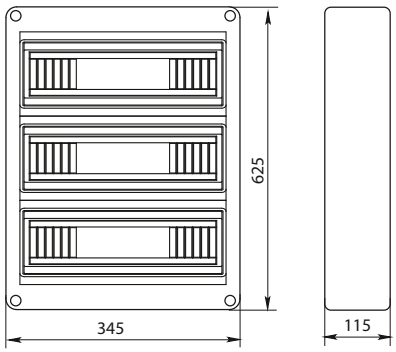
8-module version



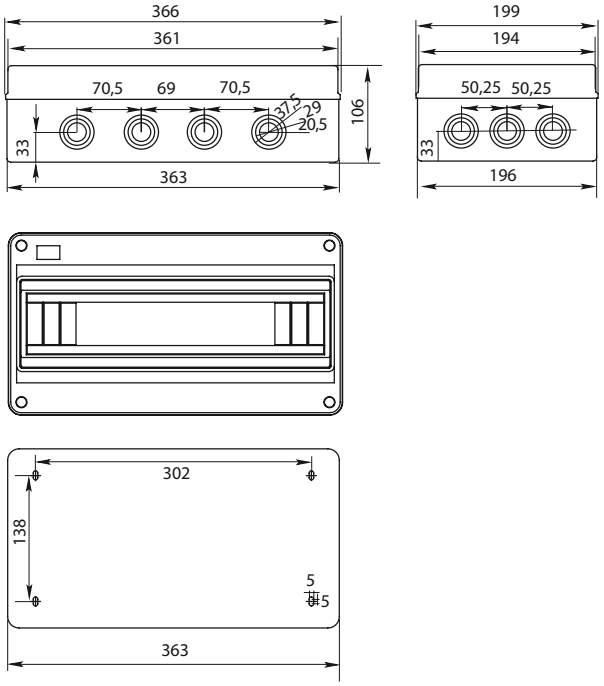
12-module version



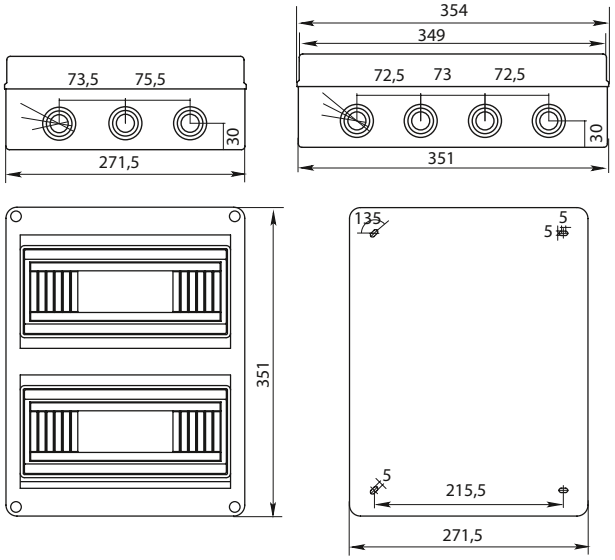
36-module version



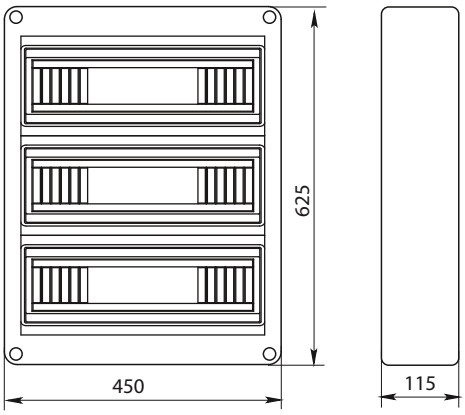
18-module version



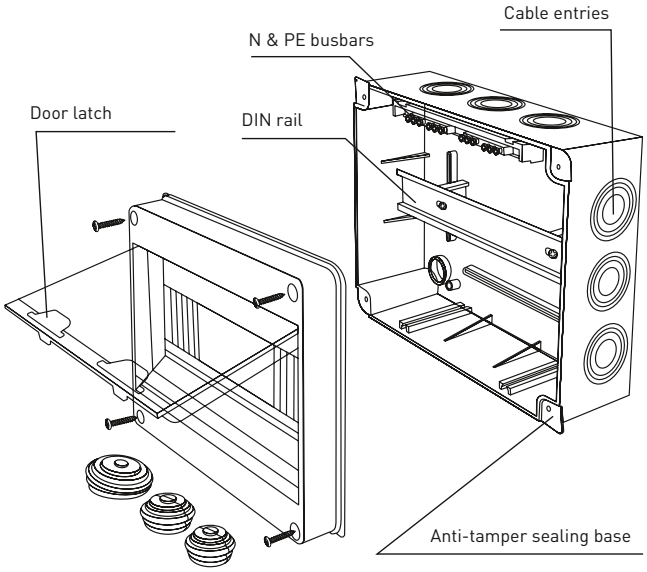
24-module version



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.

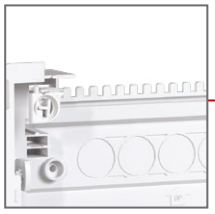
Name	Dimensions (H x W x D), mm	Max. number of modules	N / PE busbars	Number of DIN rails	Item code
Wall-mounted sealed plastic distribution enclosure 5 IP65 PROXIMA EKF	155 × 119 × 89	5	2 bars x 3 holes	1	pb65-n-pg-5
Wall-mounted sealed plastic distribution enclosure 8 IP65 PROXIMA EKF	147,5 × 203 × 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 bars 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 IP40 NOVA EKF

NOVA enclosures are designed for assembly of low-voltage (LV), extra-low-voltage (ELV) and combined 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 communication 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

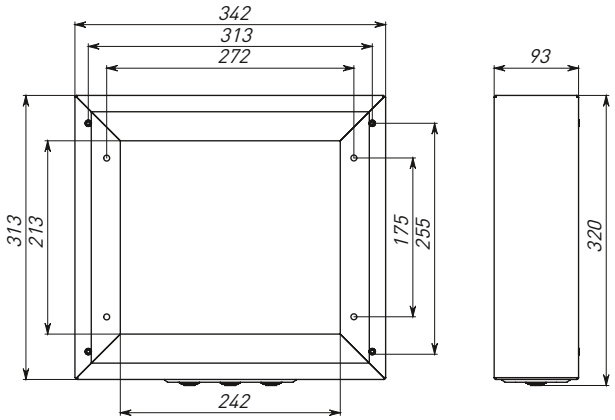
Electrical distribution enclosures are used in residential and commercial real estate:
- installation & protection of modular and low-voltage equipment from environmental factors and tampering.
- lead-in & distribution.
- protection of power & control circuits.

TECHNICAL DATA

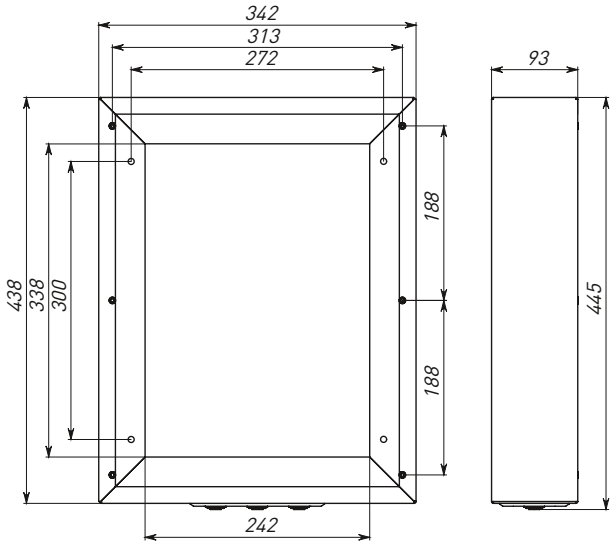
Parameters	nv-pbase-12	nv-pbase-24	nv-pbase-36	nv-pbase-48	nv-pbase-60	nv-mbase-2	nv-mbase-3	nv-mbase-4	nv-mbase-5	nv-cbase-1+2	nv-cbase-2+2	nv-cbase-3+1	nv-cbase-2+1
Rated current, A	63												
Max. number of modules	12+2	24+4	36+6	48+8	60+10	–	–	–	–	12+2	24+4	36+6	24+4
Mounting plates	–	–	–	–	–	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												
Compatible door types (ordered separately):													
Plastic	+	+	+			+	+			+	+		
Metal	+	+	+	+	+	+	+	+	+	+	+	+	+
Perforated metal		+	+	+	+	+	+	+	+	+	+	+	+

Overall and installation dimensions (mm)

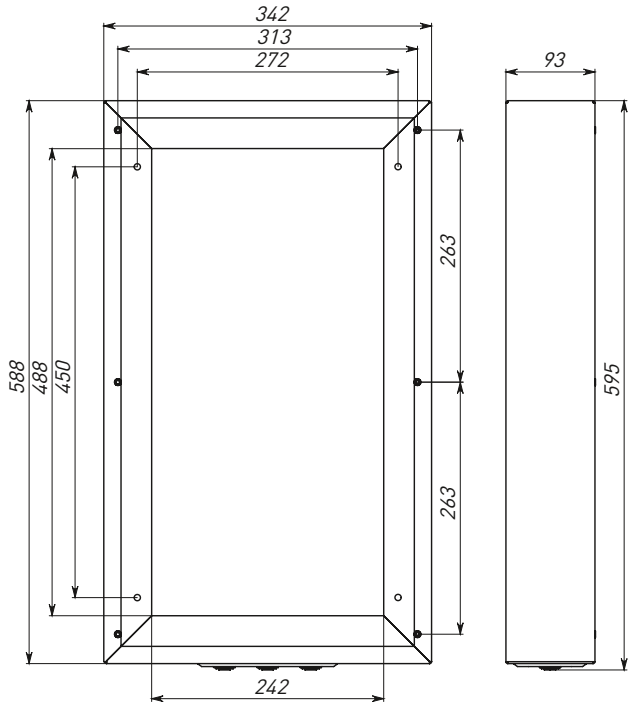
Nova 1



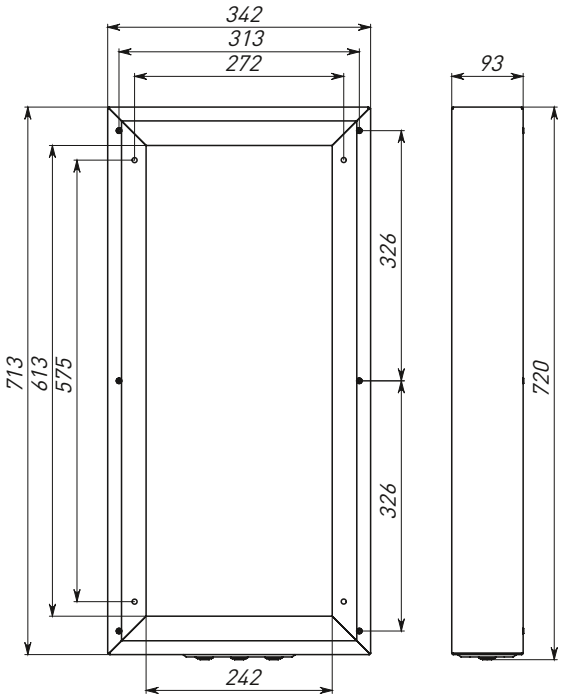
Nova 2



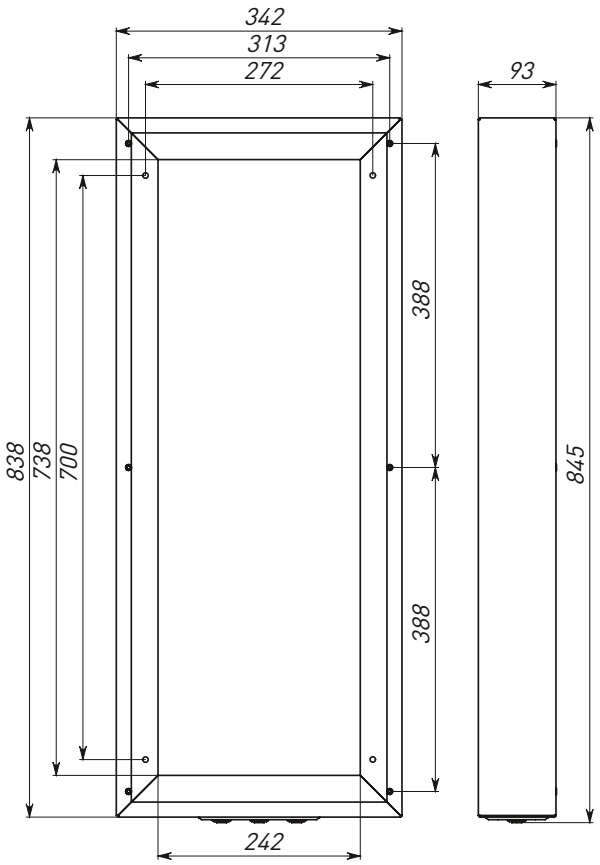
Nova 3



Nova 4

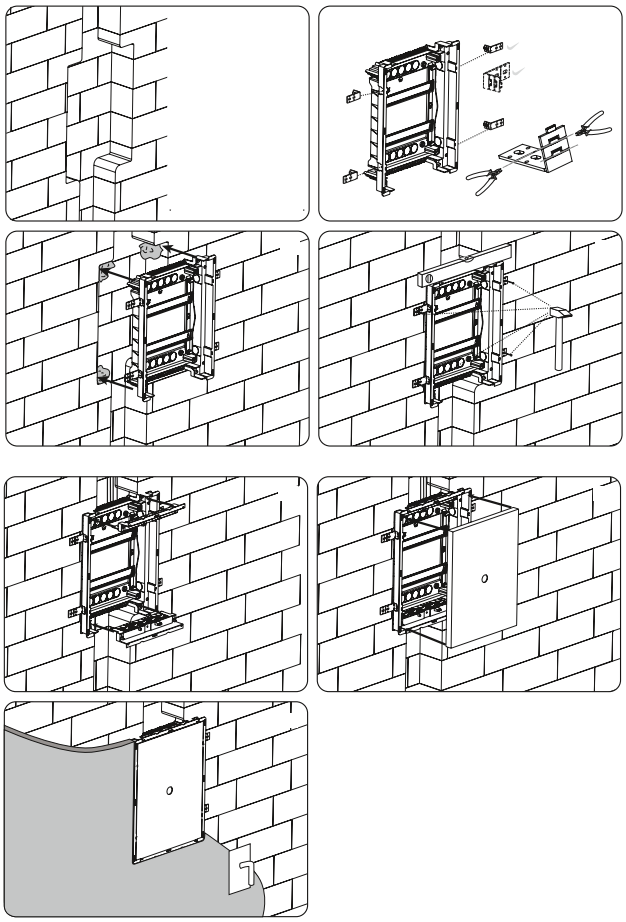


Nova 5

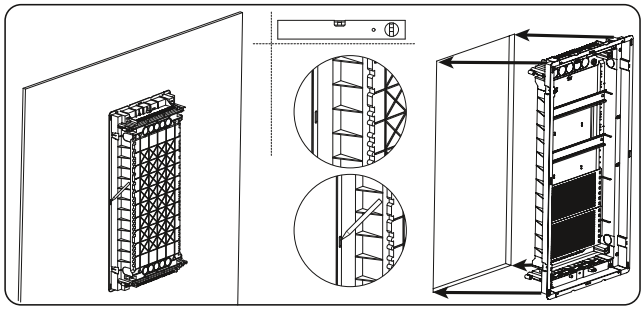


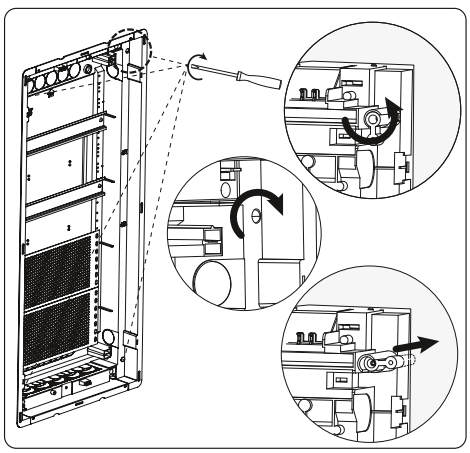
Installation and operation

1. Mounting into solid walls (concrete, brick, block).

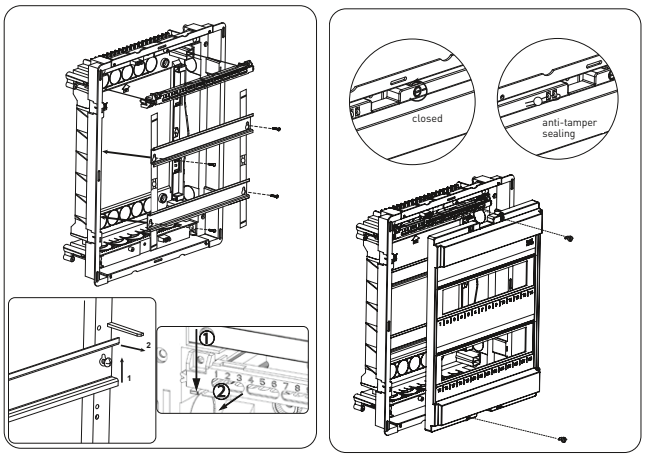


2. Mounting into plasterboard.

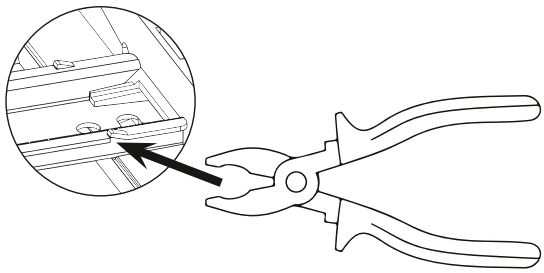




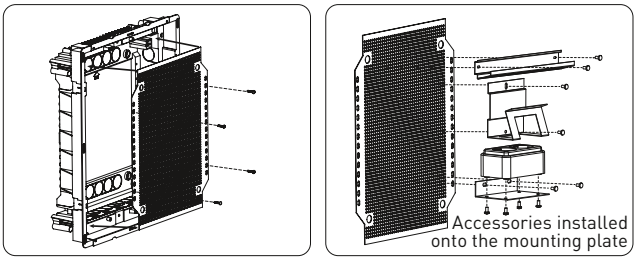
3. Equipment installation in enclosures.
Equipment installation in a LV distribution enclosure

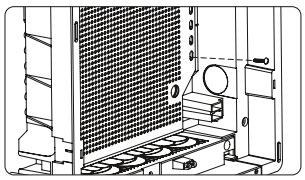


To install additional modules at the DIN rail sides, bend the tabs.

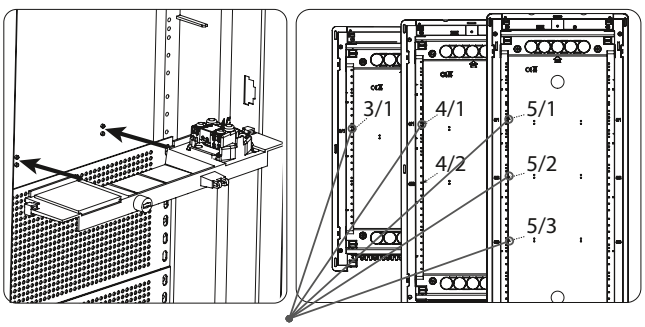


Installation of a mounting plate and accessories in an ELV or combined enclosure.

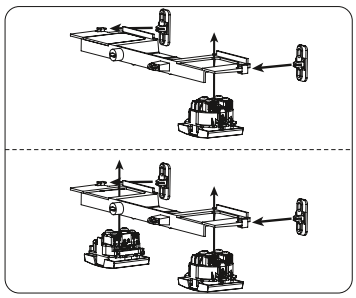




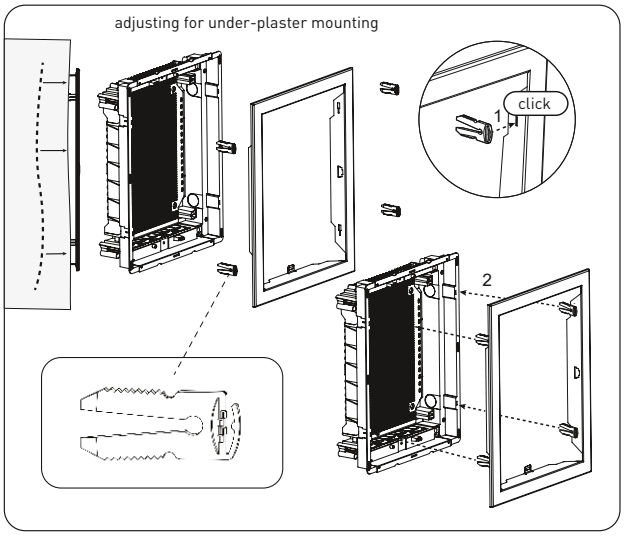
Installation of a partition and additional modular socket (ordered separately) in a combined enclosure.



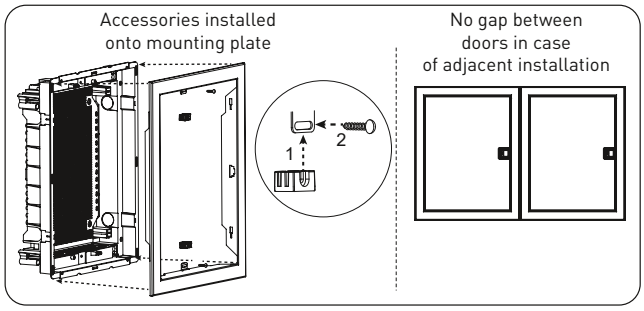
Partition installation



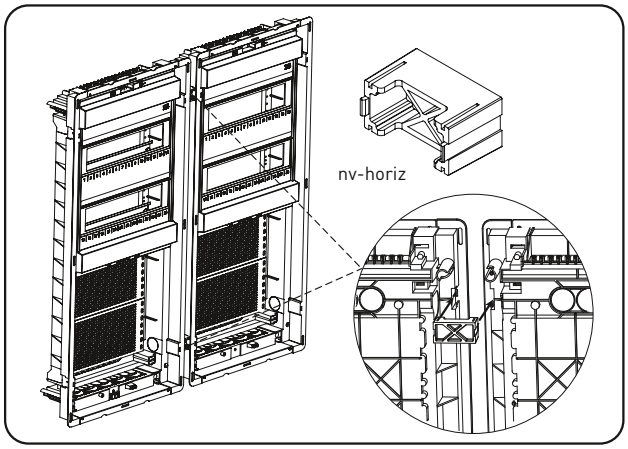
4. Door installation
Mounting of a door frame with 4 latches, adjustable depth to fit the base.



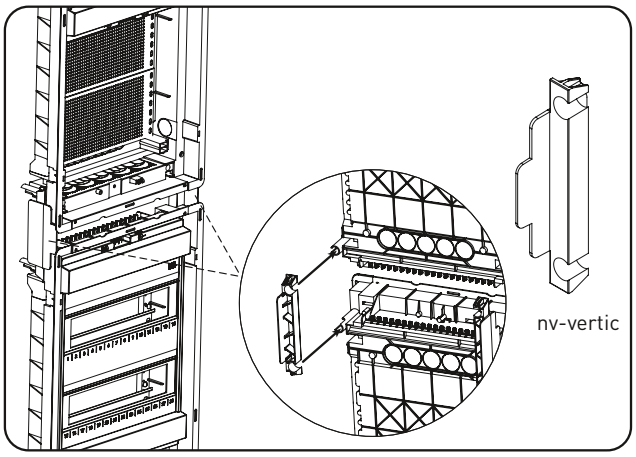
Extra door securing with 2-point fastening (with metal doors only).



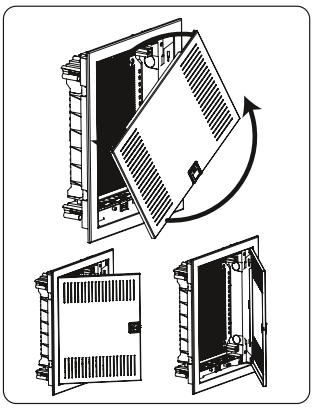
5. Interconnection of enclosures
Horizontal connection kit. Item code: nv-horiz.



Vertical connection kit. Item code: nv-vertic.



Both right- and left side door installation



Delivery scope

LV 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.

ELV 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 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	Overall dimensions (H x W x D), mm	Installation dimensions (H x W x D), mm	Item code
	Metal door for enclosure size 1 IP40 NOVA EKF	317 × 346 × 7	–	nv-door-m-1
	Metal door for enclosure size 2 IP40 NOVA EKF	442 × 346 × 7	–	nv-door-m-2
	Metal door for enclosure size 3 IP40 NOVA EKF	592 × 346 × 7	–	nv-door-m-3
	Metal door for enclosure size 4 IP40 NOVA EKF	717 × 346 × 7	–	nv-door-m-4
	Metal door for enclosure size 5 IP40 NOVA EKF	842 × 346 × 7	–	nv-door-m-5
	Perforated metal door for enclosure size 2 IP40 NOVA EKF	442 × 346 × 7	–	nv-door-pm-2
	Perforated metal door for enclosure size 3 IP40 NOVA EKF	592 × 346 × 7	–	nv-door-pm-3
	Perforated metal door for enclosure size 4 IP40 NOVA EKF	717 × 346 × 7	–	nv-door-pm-4
	Perforated metal door for enclosure size 5 IP40 NOVA EKF	842 × 346 × 7	–	nv-door-pm-5
	Plastic door for enclosure size 1 IP40 NOVA EKF	317 × 346 × 7	–	nv-door-p-1
	Plastic door for enclosure size 2 IP40 NOVA EKF	442 × 346 × 7	–	nv-door-p-2
	Plastic door for enclosure size 3 IP40 NOVA EKF	592 × 346 × 7	–	nv-door-p-3
	Plastic door for enclosure size 4 IP40 NOVA EKF	717 × 346 × 7	–	nv-door-p-4
	Base for LV distribution enclosure with DIN rails 12 modules size 1 IP40 NOVA EKF	317 × 346 × 92	272 × 311 × 90	nv-pbase-12
	Base for LV distribution enclosure with DIN rails 24 modules size 2 IP40 NOVA EKF	442 × 346 × 92	401 × 311 × 90	nv-pbase-24
	Base for LV distribution enclosure with DIN rails 36 modules size 3 IP40 NOVA EKF	592 × 346 × 92	555 × 311 × 90	nv-pbase-36
	Base for LV distribution enclosure with DIN rails 48 modules size 4 IP40 NOVA EKF	717 × 346 × 92	677 × 311 × 90	nv-pbase-48
	Base for LV distribution enclosure with DIN rails 60 modules size 5 IP40 NOVA EKF	842 × 346 × 92	799 × 311 × 90	nv-pbase-60
	Base for ELV enclosure with mounting plate size 2 IP40 NOVA EKF	442 × 346 × 92	401 × 311 × 90	nv-mbase-2
	Base for ELV enclosure with mounting plate size 3 IP40 NOVA EKF	592 × 346 × 92	555 × 311 × 90	nv-mbase-3
	Base for ELV enclosure with mounting plate size 4 IP40 NOVA EKF	717 × 346 × 92	677 × 311 × 90	nv-mbase-4
	Base for ELV enclosure with mounting plate size 5 IP40 NOVA EKF	842 × 346 × 92	799 × 311 × 90	nv-mbase-5
	Base for combined enclosure with 1 DIN rail + 2 mounting plates size 3 IP40 NOVA EKF	592 × 346 × 92	555 × 311 × 90	nv-cbase-1+2
	Base for combined enclosure with 2 DIN rails + 2 mounting plates size 4 IP40 NOVA EKF	717 × 346 × 92	677 × 311 × 90	nv-cbase-2+2
	Base for combined enclosure with 2 DIN rails + 3 mounting plates size 5 IP40 NOVA EKF	842 × 346 × 92	799 × 311 × 90	nv-cbase-2+3
	Base for combined enclosure with 3 DIN rails + 1 mounting plate size 5 IP40 NOVA 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 NOVA EKF	–	–	nv-cover
	Lock with key for nv-p & nv-m NOVA EKF	–	–	nv-lock
	Vertical connection kit for enclosure NOVA EKF	–	–	nv-vertic
	Horizontal connection kit for enclosure NOVA EKF	–	–	nv-horiz
	Modular socket 16A for enclosure NOVA EKF	–	–	nv-socket
	Patch panel RJ45 for 12 modules NOVA EKF	–	–	nv-pp12

Picture	Name	Overall dimensions (H x W x D), mm	Installation dimensions (H x W x D), mm	Item code
	Flush-mounted LV distribution enclosure 12 modules with plastic door IP40 NOVA EKF	325 × 354 × 95	272 × 311 × 90	nv-pb-pd-1
	Flush-mounted LV distribution enclosure 24 modules with plastic door IP40 NOVA EKF	457 × 354 × 95	401 × 311 × 90	nv-pb-pd-2
	Flush-mounted LV distribution enclosure 36 modules with plastic door IP40 NOVA EKF	600 × 354 × 95	555 × 311 × 90	nv-pb-pd-3
	Flush-mounted LV distribution enclosure 48 modules with plastic door IP40 NOVA EKF	677 × 354 × 95	677 × 311 × 90	nv-pb-md-4
	Flush-mounted LV distribution enclosure 60 modules with metal door IP40 NOVA EK	857 × 354 × 95	799 × 311 × 90	nv-pb-md-5
	Flush-mounted ELV enclosure size 2 with plastic door IP40 NOVA EKF	457 × 354 × 95	401 × 311 × 90	nv-mb-pd-2
	Flush-mounted ELV enclosure size 3 with plastic door IP40 NOVA EKF	600 × 354 × 95	555 × 311 × 90	nv-mb-pd-3
	Busbar holder N/PE without busbars NOVA EKF	-	-	nv-bh-1
	Double busbar holder N/PE without busbars NOVA EKF	–	–	nv-bh-2
	Case for wall-mounted enclosure size 1 NOVA EKF	320 × 342 × 93	–	nv-cover-1
	Case for wall-mounted enclosure size 2 NOVA EKF	445 × 342 × 93	–	nv-cover-2
	Case for wall-mounted enclosure size 3 NOVA EKF	595 × 342 × 93	–	nv-cover-3
	Case for wall-mounted enclosure size 4 NOVA EKF	720 × 342 × 93	–	nv-cover-4
	Case for wall-mounted enclosure size 5 NOVA 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 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 door installation

Anti-tamper sealing available

Mounting dimensions marked on the housing

Marking for cable entries printed on the housing

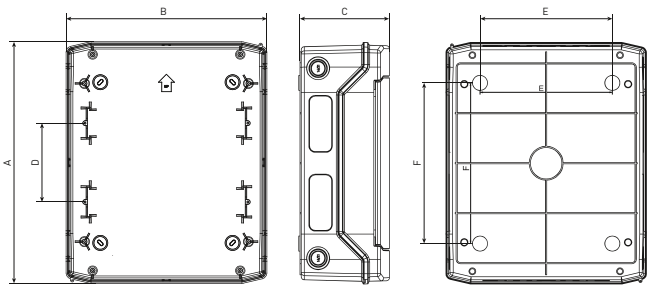
APPLICATION

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

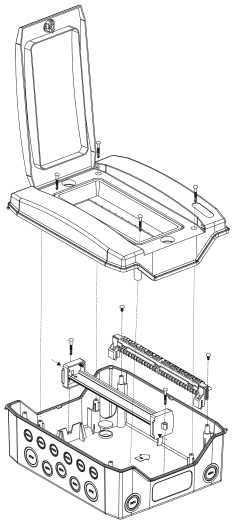


Installation and operation

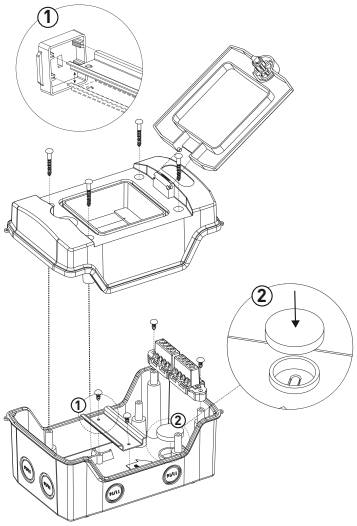
Distribution enclosures must be installed and connected by qualified electrical personnel.

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 access to live parts.

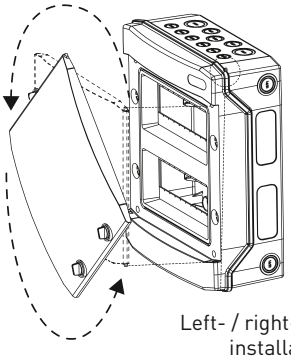
1. Install required electrical devices onto the DIN rail.
2. Connect internal electrical components.
3. Install the enclosure in the operation space and secure it through the holes provided.
4. Install the sealing caps (in the kit) into the fastening points inside the enclosure to ensure tightness.
5. 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 4 modules (210x128x120) IP65 Unix65 EKF	201	128	120	–	–	140	ux65-4-n
	Wall-mounted plastic distribution enclosure 8 modules (210x202x120) IP65 Unix65 EKF	201	202	120	–	100	140	ux65-8-n
	Wall-mounted plastic distribution enclosure 12 modules (259x319x144) IP65 Unix65 EKF	259	319	144	–	210	130	ux65-12-n
	Wall-mounted plastic distribution enclosure 18 modules (259x428x144) IP65 Unix65 EKF	259	428	144	–	259	130	ux65-18-n
	Wall-mounted plastic distribution enclosure 24 modules (384x319x144) IP65 Unix65 EKF	384	319	144	125	210	255	ux65-24-n
	Wall-mounted plastic distribution enclosure 36 modules (535x319x144) IP65 Unix65 EKF	535	319	144	125	210	380	ux65-36-n
	Wall-mounted plastic distribution enclosure 48 modules (664x319x144) IP65 Unix65 EKF	664	319	144	125	210	505	ux65-48-n
	Lock with key for plastic distribution enclosure Unix65 EKF	–	–	–	–	–	–	ux65-lock

Plastic distribution enclosures IP40 UNIX EKF

Plastic enclosures UNIX are designed for assembling low-voltage (LV), extra-low-voltage (ELV) and combined switchboards. UNIX enclosures serve to contain DIN rail modular devices; and antenna splitters, Wi-Fi routers, patch panels and other communication 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 models

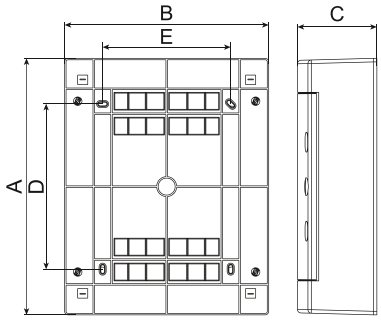
APPLICATION

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	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

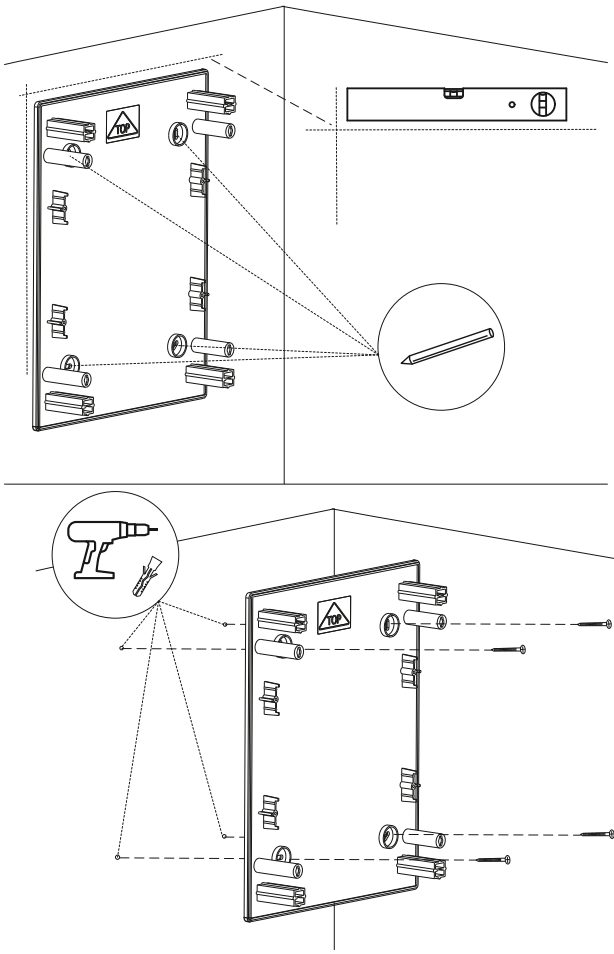
Overall and installation dimensions



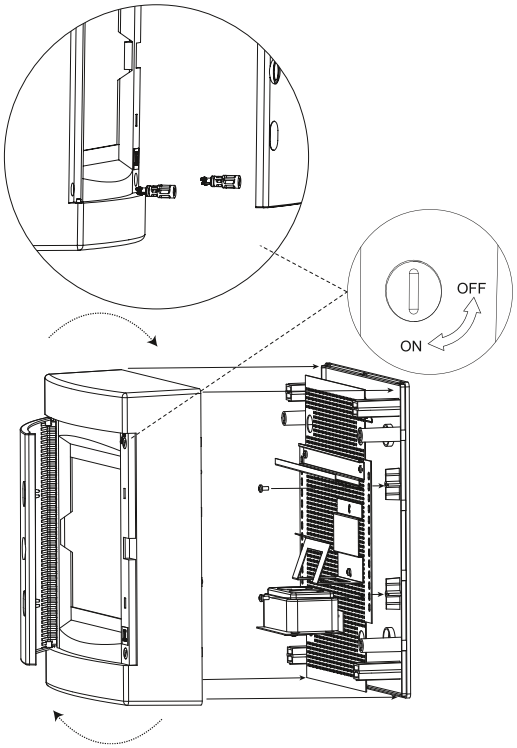
Item code	A mm	B mm	C mm	D mm	E mm
ux-2x12-n, ux-2x12-nw, ux-2m-n, ux-2m-nw	361	287	112	232	180
ux-3x12-n, ux-3x12-nw, ux-3m-n, ux-3m-nw	485	287	112	357	180
ux-4x12-n, ux-4x12-nw, ux-4m-n, ux-4m-nw, ux-2x12+1m-n, ux-2x12+1m-nw	652	287	112	482	180
ux-2x18-n, ux-2x18-nw, ux-2m-n-xl, ux-2m-nw-xl	361	396	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

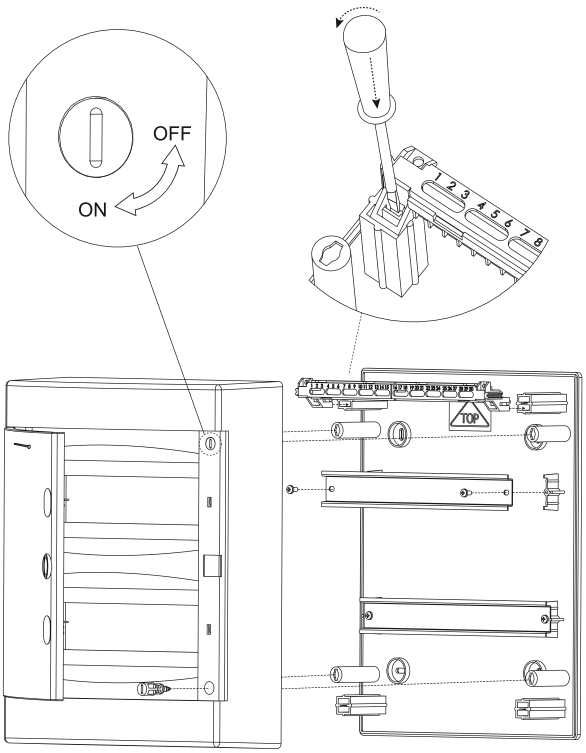
1. External mounting

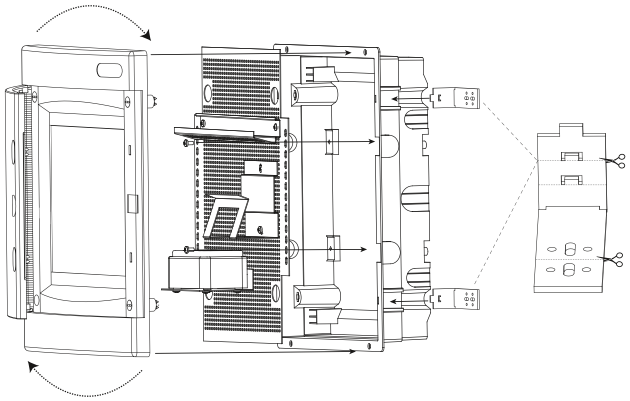


2. Internal mounting

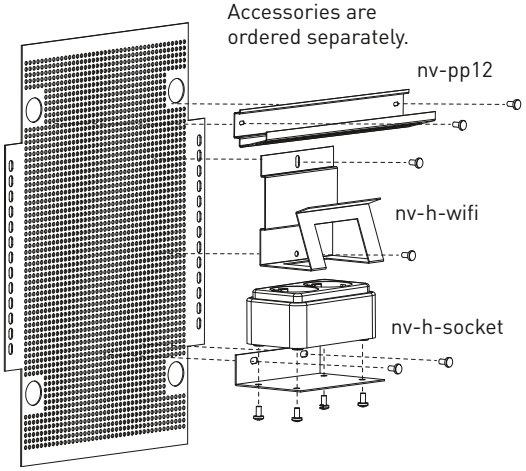


3. LV distribution enclosure





Accessories are ordered separately.



Delivery scope

Wall-mounted LV distribution enclosure
1. Base - 1 pc.
2. Protective (front) plate - 1pc.
3. Pre-installed DIN rails - 1; 2; 3; or 4 pcs. (depends on model)
4. Pre-installed case with N & PE bars - 1; 2; 3; or 4 pcs. (depends on model)
5. Wall mounting kit – 1 pc.

Wall-mounted ELV enclosure
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
1. Base - 1 pc.
2. Protective (front) plate - 1pc.
3. Pre-installed DIN rails - 1; 2; 3; or 4 pcs. (depends on model)
4. Protective (front) plate - 1pc.
5. Pre-installed case with N & PE bars - 1; 2; 3; or 4 pcs. (depends on model)
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 LV distribution enclosure 1x24 modules with transparent door IP40 UNIX EKF	24	7+7+8 / 15	–	Tinted transparent	236 × 503 × 112	ux-1x24-n
	Wall-mounted LV distribution enclosure 1x24 modules with white door IP40 UNIX EKF	24	7+7+8 / 15	–	White blank	236 × 503 × 112	ux-1x24-nw
	Wall-mounted LV distribution enclosure 2x12 modules with transparent door IP40 UNIX EKF	24	7+7+8 / 15	–	Tinted transparent	361 × 287 × 112	ux-2x12-n
	Wall-mounted LV distribution enclosure 2x12 modules with white door IP40 UNIX EKF	24	7+7+8 / 15	–	White blank	361 × 287 × 112	ux-2x12-nw
	Wall-mounted LV distribution enclosure 2x18 modules with transparent door IP40 UNIX EKF	36	8+4+4+10 / 26	–	Tinted transparent	361 × 396 × 112	ux-2x18-n
	Wall-mounted LV distribution enclosure 2x18 modules with white door IP40 UNIX EKF	36	8+4+4+10 / 26	–	White blank	361 × 396 × 112	ux-2x18-nw
	Wall-mounted LV distribution enclosure 3x12 modules with transparent door IP40 UNIX EKF	36	8+4+4+10 / 26	–	Tinted transparent	485 × 287 × 112	ux-3x12-n
	Wall-mounted LV distribution enclosure 3x12 modules with white door IP40 UNIX EKF	36	8+4+4+10 / 26	–	White blank	485 × 287 × 112	ux-3x12-nw
	Wall-mounted LV distribution enclosure 4x12 modules with transparent door IP40 UNIX EKF	48	8+8+8+8 / 30	–	Tinted transparent	653 × 287 × 112	ux-4x12-n
	Wall-mounted LV distribution enclosure 4x12 modules with white door IP40 UNIX EKF	48	8+8+8+8 / 30	–	White blank	653 × 287 × 112	ux-4x12-nw
	Wall-mounted LV distribution enclosure 3x18 modules with transparent door IP40 UNIX EKF	54	10+10+10+10 / 30	–	Tinted transparent	526 × 396 × 112	ux-3x18-n
	Wall-mounted LV distribution enclosure 3x18 modules with white door IP40 UNIX EKF	54	10+10+10+10 / 30	–	White blank	526 × 396 × 112	ux-3x18-nw
	Wall-mounted LV distribution enclosure 4x18 modules with transparent door IP40 UNIX EKF	72	13+13+13+13 / 30+30	–	Tinted transparent	651 × 396 × 112	ux-4x18-n
	Wall-mounted LV distribution enclosure 4x18 modules with white door IP40 UNIX EKF	72	13+13+13+13 / 30+30	–	White blank	651 × 396 × 112	ux-4x18-nw
	Wall-mounted ELV enclosure size 2 with transparent door IP40 UNIX EKF	-	-	1	Tinted transparent	361 × 287 × 112	ux-2m-n
	Wall-mounted ELV enclosure size 2 with white door IP40 UNIX EKF	-	-	1	White blank	361 × 287 × 112	ux-2m-nw
	Wall-mounted ELV enclosure size 2 extended with white door IP40 UNIX EKF	-	-	1	Tinted transparent	361 × 396 × 112	ux-2m-n-xl
	Wall-mounted ELV enclosure size 2 extended with transparent door IP40 UNIX EKF	-	-	1	White blank	361 × 396 × 112	ux-2m-nw-xl
	Wall-mounted ELV enclosure size 3 with transparent door IP40 UNIX EKF	-	-	1	Tinted transparent	485 × 287 × 112	ux-3m-n
	Wall-mounted ELV enclosure size 3 with white door IP40 UNIX EKF	-	-	1	White blank	485 × 287 × 112	ux-3m-nw
	Wall-mounted ELV enclosure size 3 extended with white door IP40 UNIX EKF	–	–	1	Tinted transparent	526 × 396 × 112	ux-3m-n-xl
	Wall-mounted ELV enclosure size 3 extended with transparent door IP40 UNIX EKF	–	–	1	White blank	526 × 396 × 112	ux-3m-nw-xl
	Wall-mounted ELV enclosure size 4 with transparent door IP40 UNIX EKF	–	–	1	Tinted transparent	653 × 287 × 112	ux-4m-n
	Wall-mounted ELV enclosure size 4 with white door IP40 UNIX EKF	–	–	1	White blank	653 × 287 × 112	ux-4m-nw
	Wall-mounted ELV enclosure size 4 extended with white door IP40 UNIX EKF	–	–	1	Tinted transparent	651 × 396 × 112	ux-4m-n-xl
	Wall-mounted ELV enclosure size 4 extended with transparent door IP40 UNIX EKF	–	–	1	White blank	651 × 396 × 112	ux-4m-nw-xl
	Wall-mounted combined enclosure 2x12 modules + 1 mounting plate size 4 with transparent door IP40 UNIX EKF	24	7+7+8 / 15	1	Tinted transparent	653 × 287 × 112	ux-2x12+1m-n
	Wall-mounted combined enclosure 2x12 modules + 1 mounting plate size 4 with white door IP40 UNIX EKF	24	7+7+8 / 15	1	White blank	653 × 287 × 112	ux-2x12+1m-nw
	Wall-mounted combined enclosure 2x18 modules + 1 mounting plate size 4 with transparent door IP40 UNIX EKF	36	8+4+4+10 / 26	1	Tinted transparent	651 × 396 × 112	ux-2x18+1m-n
	Wall-mounted combined enclosure 2x18 modules + 1 mounting plate size 4 with white door IP40 UNIX 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.

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

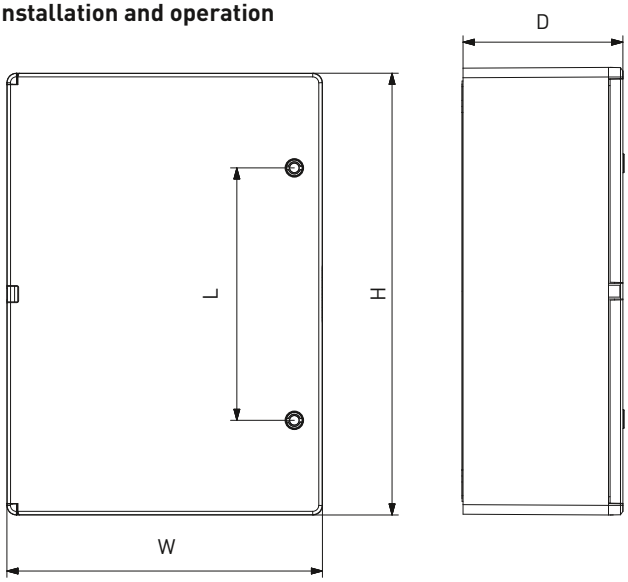
Parameters		Values
Mounting type		Wall-mounted
Material	Frame	ABS plastic
	Door	ABS plastic; polycarbonate (for transparent models)
	Mounting plate	Galvanized steel 0,8-1,2 mm
Sealing		Polyurethane
Impact resistance		IK10
Number of locks		2 pcs. (1 pc. – for 300x200x130 model; 3 pcs. – for 800x600x260 model)
Color		RAL-7035 (grey)
Lock		Twist, triangle
Degree of protection by IEC 60529		IP65

Installation and operation

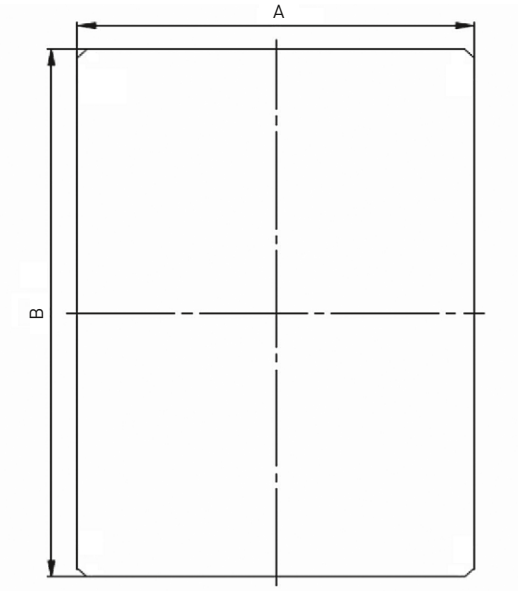
1. Do not operate distribution enclosures in explosive environment, containing conductive dust or chemically hazardous substances.
2. Removable mounting plate facilitates equipment installation.
3. For easier wall mounting, the rear panel features pre-drilled mounting holes and a mounting kit is included.

Installation procedure:
1. Install devices onto their operation point.
2. Install the pre-assembled module in the enclosure.
3. Use the mounting 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

DIN rail heaters IP20 EKF

DIN rail heaters IP20 EKF are designed to heat electrical devices within distribution enclosures, efficiently preventing condensation, corrosion, and temperature drops below acceptable levels, safeguarding electronic components from freezing. Built for long-term use, the aluminum profile design promotes natural air convection, ensuring consistent temperature distribution throughout.

Standard: IEC 60730-1

Lightweight anodized aluminium housing

DIN rail mount

APPLICATION

DIN rail heaters EKF provide a variety of applications, particularly in ensuring optimal operating conditions for sensitive electronic components and maintaining efficient performance in various environments:

- Electrical enclosures
- Control panels
- Telecommunications equipment
- Industrial automation
- HVAC & building automation

TECHNICAL DATA

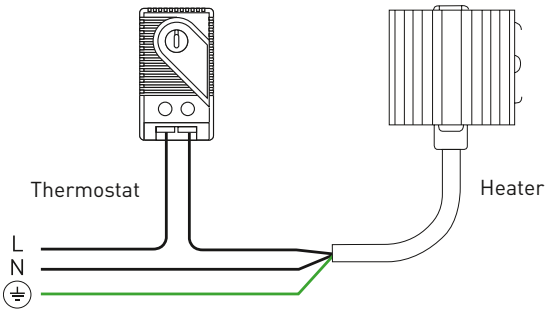
Installation and operation

The PTC thermistor does not require protection against heater overheating, but can not replace a thermostat (ordered separately) to control air temperature. The heater is installed vertically onto a DIN rail. To ensure proper air circulation, make a clearance of min. 50 mm between the radiator and the installed equipment or wiring. Do not operate the devices with visible mechanical damage.

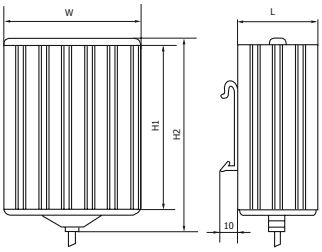
WARNING! Exercise caution when handling the heater. Do not cover the heater. Do not touch the operating heater to prevent burns. Do not use in harsh environment. Do not install onto wooden, plastic, and other flammable surfaces.

Parameters	Values
Rated voltage, V AC	120-240*
Heating element	PTC thermistor
Radiator	Anodized aluminum profile
Housing colour	Black
Connection	Cable 3x0,75 mm² (bottom)
Mounting type	35mm DIN rail
Mounting position	Vertical
Degree of protection as per IEC 60529	IP20
Electric shock protection class as per IEC 61140	I (PE wire)
Operating and storage temperature, °C	from -40 to +70
Operating and storage humidity, %	90, non-condensing
Radiator surface temperature, °C	100

* When the heater operates at a voltage below 140 V, the heating power is reduced by 10%.



Overall and installation dimensions (mm)



Item code	H1, mm	H2, mm	W, mm	L, mm
heater-15-20	65	85	70	50
heater-30-20	65	85	70	50
heater-60-20	140	160	70	50
heater-100-20	140	160	70	50
heater-150-20	220	240	70	50

Delivery scope

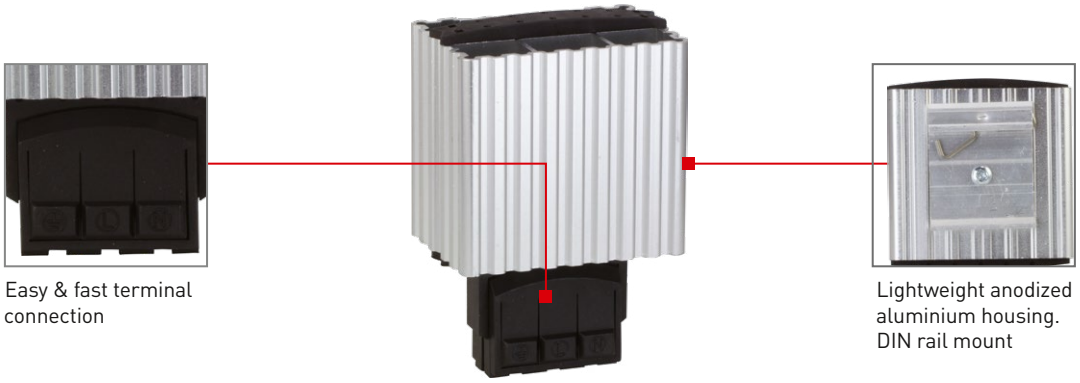
DIN rail heaters EKF are supplied in individual and group packages. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Name	Heating power, W	Net weight, kg	Item code
DIN rail heater 15W IP20 EKF	15	0,3	heater-15-20
DIN rail heater 30W IP20 EKF	30	0,3	heater-30-20
DIN rail heater 60W IP20 EKF	60	0,5	heater-60-20
DIN rail heater 100W IP20 EKF	100	0,5	heater-100-20
DIN rail heater 150W IP20 EKF	150	0,7	heater-150-20

DIN rail terminal connect heaters IP20 EKF

DIN rail terminal connect heaters IP20 EKF are designed to heat electrical devices within distribution enclosures, efficiently preventing condensation, corrosion, and temperature drops below acceptable levels, safeguarding electronic components from freezing. Built for long-term use, the aluminum profile design promotes natural air convection, ensuring consistent temperature distribution throughout.

Standard: IEC 60730-1



Easy & fast terminal connection

Lightweight anodized aluminium housing. DIN rail mount

APPLICATION

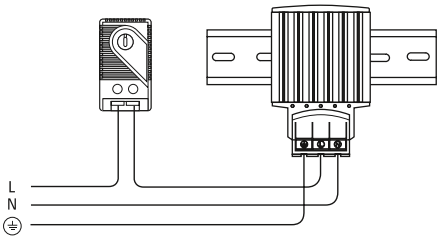
DIN rail heaters EKF provide a variety of applications, particularly in ensuring optimal operating conditions for sensitive electronic components and maintaining efficient performance in various environments:

- Electrical enclosures
- Control panels
- Telecommunications equipment
- Industrial automation
- HVAC & building automation

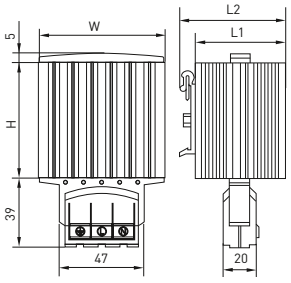
TECHNICAL DATA

Installation and operation

WARNING! Exercise caution when handling the heater.
Do not cover the heater. Do not touch the operating heater to prevent burns. Do not use in harsh environment. Do not install onto wooden, plastic, and other flammable surfaces.



Overall and installation dimensions (mm)



Item code	H, mm	W, mm	L, mm	L2, mm
heater-click-15-20	65	70	50	60
heater-click-30-20				
heater-click-45-20				
heater-click-60-20	140			
heater-click-75-20				
heater-click-100-20				
heater-click-150-20	220			

Parameters	Values
Rated voltage, V AC	120–240*
Heating element	PTC thermistor
Radiator	Anodized aluminum profile
Housing colour	Black
Connection	Three-pole terminal block, up to 2,5 mm²
Mounting type	35mm DIN rail
Mounting position	Vertical
Degree of protection as per IEC 60529	IP20
Electric shock protection class as per IEC 61140	I (PE wire)
Operating and storage temperature, °C	from -40 to +70
Operating and storage humidity, %	90, non-condensing
Radiator surface temperature, °C	100

* When the heater operates at a voltage below 140 V, the heating power is reduced by 10%.

Delivery scope

DIN rail heaters EKF are supplied in individual and group packages. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Name	Heating power, W	Net weight, kg	Item code
DIN rail terminal connect heater 15W IP20 EKF	15	0,3	heater-click-15-20
DIN rail terminal connect heater 30W IP20 EKF	30		heater-click-30-20
DIN rail terminal connect heater 45W IP20 EKF	45		heater-click-45-20
DIN rail terminal connect heater 60W IP20 EKF	60	0,4	heater-click-60-20
DIN rail terminal connect heater 75W IP20 EKF	75	0,5	heater-click-75-20
DIN rail terminal connect heater 100W IP20 EKF	100		heater-click-100-20
DIN rail terminal connect heater 150W IP20 EKF	150	0,7	heater-click-150-20

DIN rail fan heaters IP20 Quardo EKF

DIN rail fan heaters IP20 Quardo EKF are designed for heating and protection of electrical devices. The powerful resistor in the heaters acts as a heating element, ensuring that distribution enclosures remain at a stable temperature, preventing condensation, corrosion, and freezing.

Standard: IEC 60730-1

Integrated fan for fast heating of the enclosure space. Easy & fast terminal connection

DIN rail mount. Repositionable bracket for effortless installation

APPLICATION

DIN rail heaters Quadro EKF provide a variety of applications, particularly in ensuring optimal operating conditions for sensitive electronic components and maintaining efficient performance in various environments:

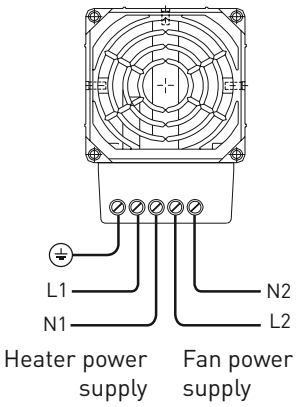
- Electrical enclosures
- Control panels
- Telecommunications equipment
- Industrial automation
- HVAC & building automation

TECHNICAL DATA

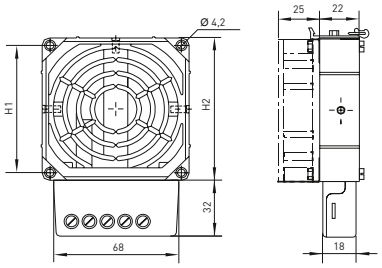
Installation and operation

The heater features overheating protection in case the fan fails, and auto-restart function. To adjust the temperature, a thermostat is required (ordered separately). Heaters must be installed and connected by qualified electrical personnel. The heater is installed vertically onto a DIN rail. For easier installation, a DIN rail mount can be repositioned to the opposite side of the heater. To ensure proper air circulation, make a clearance of min. 50 mm between the radiator and the installed equipment or wiring.

WARNING! Exercise caution when handling the heater. Do not cover the heater. Do not touch the operating heater to prevent burns. Do not use in harsh environment. Do not install onto wooden, plastic, and other flammable surfaces.



Overall and installation dimensions (mm)



DIN rail repositionable bracket

Parameters	Values
Rated voltage, V AC	220–240
Heating element	Resistor
Radiator	Cast aluminium
Housing colour	Black + silver
Connection	Screw clamp, 2,5 mm²
Mounting	35 mm DIN rail
Mounting position	Horizontal, fan downwards
Degree of protection	IP20
Electric shock protection	I (PE wire)
Operation and storage temperature, °C	-40 to +70
Operation and storage relative humidity, %	Max. 90, non-condensing
Radiator surface temperature, °C	100

Delivery scope

DIN rail heaters EKF are supplied in individual and group packages. For all available documentation, scan the QR-code on the insert or on the inside of the package.

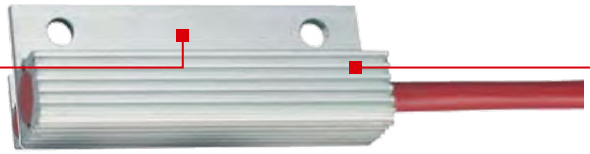
Name	Heating power, W	Fan capacity, m³/h	Net weight, kg	Item code
DIN rail fan heater 100W IP20 Quadro EKF	100	35	0,6	heater-vent-q-100-20
DIN rail fan heater 150W IP20 Quadro EKF	150			heater-vent-q-150-20
DIN rail fan heater 200W IP20 Quadro EKF	200	108	0,9	heater-vent-q-200-20
DIN rail fan heater 300W IP20 Quadro EKF	300			heater-vent-q-300-20
DIN rail fan heater 400W IP20 Quadro EKF	400			heater-vent-q-400-20

Mounting plate heater IP54 compact EKF

Dust and moisture-proof heaters IP54 compact EKF are designed for heating and protection of electrical devices, ensuring that distribution enclosures remain at a stable temperature, and preventing condensation, corrosion, and freezing. This model is suitable for use in high humidity and dusty conditions. Its compact dimensions allow for installation in tight or confined spaces.

Standard: IEC 60730-1

Lightweight anodized aluminium housing. Can be installed in any orientation



Overheating protection

APPLICATION

Mounting plate heaters EKF provide a variety of applications, particularly in ensuring optimal operating conditions for sensitive electronic components and maintaining efficient performance in various environments:

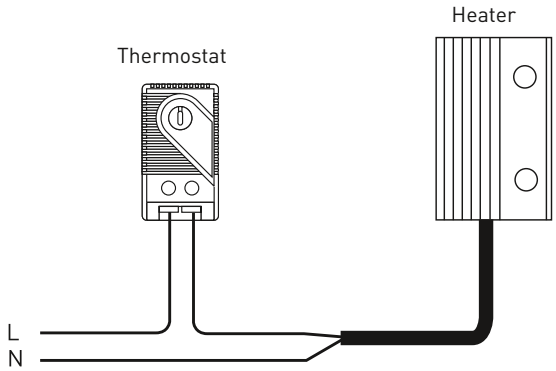
- Electrical enclosures
- Control panels
- Telecommunications equipment
- Industrial automation
- HVAC & building automation

TECHNICAL DATA

Installation and operation

The PTC thermistor does not require protection against heater overheating, but can not replace a thermostat (ordered separately) to control air temperature. Thermostat is ordered separately. Use screws to mount the device. Operating position - not designated. To ensure proper air circulation, make a clearance of min. 50 mm between the radiator and the installed equipment or wiring. Do not operate the devices with visible mechanical damage.

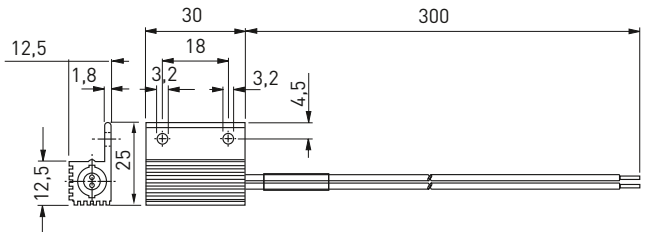
WARNING! Exercise caution when handling the heater. Do not cover the heater. Do not touch the operating heater to prevent burns. Do not use in harsh environment. Do not install onto wooden, plastic, and other flammable surfaces.



Parameters	Values
Rated voltage, V AC	120–240*
Heating element	PTC thermistor
Radiator	Anodized aluminum profile
Housing colour	Silver
Connection	Cable 2x0,75 mm², 30 cm
Mounting type	Mounting plate
Mounting position	not designated
Degree of protection as per IEC 60529	IP54
Electric shock protection class as per IEC 61140	II (protective insulation)
Operating and storage temperature, °C	from -40 to 70
Operating and storage humidity, %	Max. 90, non-condensing
Radiator surface temperature, °C	150

* When the heater operates at a voltage below 140 V, the heating power is reduced by 10%.

Overall and installation dimensions (mm)



Delivery scope

Mounting plate heaters EKF are supplied in individual and group packages. For all available documentation, scan the QR-code on the insert or on the inside of the package.

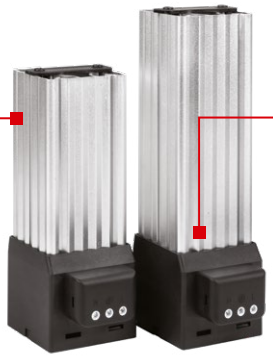
Name	Heating power, W	Net weight, kg	Item code
Mounting plate heater 8W IP54 compact EKF	8	0,02	heater-compact-8-54

Fan heaters IP20 Tower Plus EKF

Fan heaters IP20 Tower Plus EKF are designed for use in distribution enclosures to regulate air temperature, prevent condensation and corrosion, and maintain consistent temperatures. Featuring efficient fans for quick heating and even heat distribution, the heaters are engineered for continuous, long-term operation.

Standard: IEC 60730-1

Even heat distribution.
DIN rail mount



Compact housing.
Integrated fan for fast heating
of the enclosure space

APPLICATION

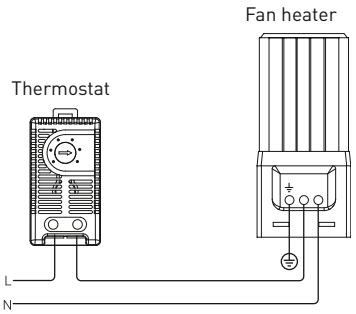
Fan heaters EKF provide a variety of applications, particularly in ensuring optimal operating conditions for sensitive electronic components and maintaining efficient performance in various environments:

- Electrical enclosures
- Control panels
- Telecommunications equipment
- Industrial automation
- HVAC & building automation

TECHNICAL DATA

Installation and operation

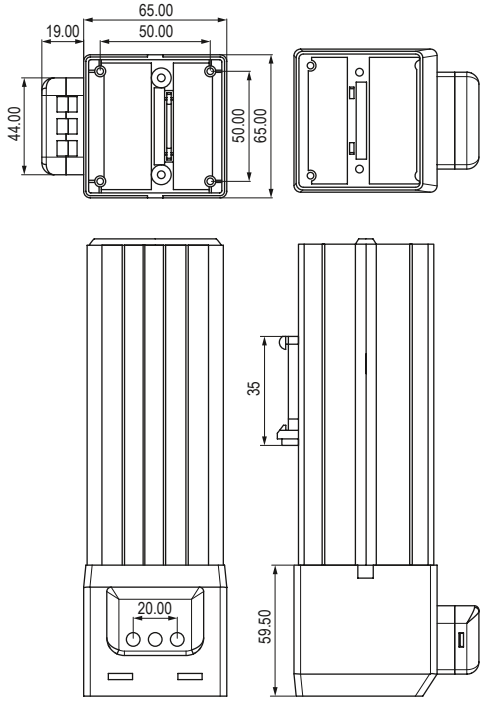
Heaters must be installed and connected by qualified electrical personnel. To ensure overheating protection, the heater requires connection via a thermostat.



Parameters	Values	
Heater		
Heating power*, W	250	400
Rated voltage Un, V AC	220–240	
Heating element	Resistive	
Mounting type	DIN rail	
Radiator	Anodized aluminium profile	
Mounting base material	Plastic UL94 V-0, black	
Mounting position	Vertical	
Operating temperature, °C	-45 to 70	
Degree of protection	IP20	
Max. operating and storage humidity, %	90	
Max. surface temperature, °C	75	
Fan		
Type	Axial fan with ball bearings	
Capacity	AC: 45 m³/h (50 Hz) or 54 m³/h (60 Hz) DC: 54 m³/h	
Service life	50 000 h at +25 °C (+77 °F)	

*at ambient temperature of 20 °C

Overall and installation dimensions (mm)



Delivery scope

Fan heaters EKF are supplied in individual and group packages. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Name	Length L, mm	Net weight, kg	Item code
Fan heater 250 W IP20 Tower Plus EKF	182	0,8	mk-heatfan-plus-250
Fan heater 400W IP20 Tower Plus EKF	222	1,2	mk-heatfan-plus-400

Insulated heaters with fan and thermostat EKF

Insulated heaters with fan and thermostat EKF are designed for use in distribution enclosures with 50/60 Hz AC electrical equipment to regulate air temperature, prevent condensation and corrosion, and maintain consistent temperatures. Featuring efficient fans for quick heating and even heat distribution, the heaters are engineered for continuous, long-term operation.

Standard: IEC 60730-1

DIN rail mounting.
Wide power range.
Compact design

Insulated housing.
Integrated thermostat
& fan

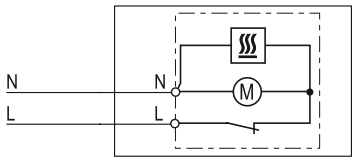
APPLICATION

Heaters EKF provide a variety of applications, particularly in ensuring optimal operating conditions for sensitive electronic components and maintaining efficient performance in various environments:

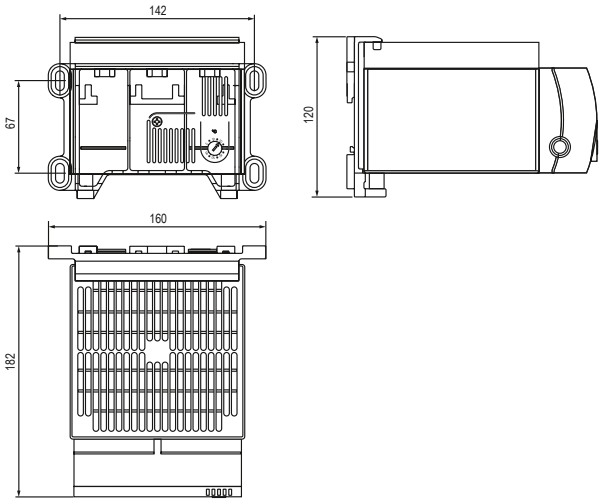
- Electrical enclosures
- Control panels
- Telecommunications equipment
- Industrial automation
- HVAC & building automation

TECHNICAL DATA

Parameters	Values			
Heating power, W	800	900	1000	1200
Rated voltage Un, V AC	220–240			
Heating element	Resistive			
Mounting type	DIN rail / mounting plate			
Mounting position	Vertical			
Connection	2 screw clamps, wire cross-section 2,5 mm², tightening torque 0,8 N·m			
Radiator	Anodized aluminium profile			
Housing material	Plastic UL94 V-0, black			
Configurable temperature, °C	From 0 to 60			
Fan capacity, m³/h	160			
Fan service life	50 000 h at +25 °C (+77 °F)			
Operating and storage temperature, °C	-45 to 70			
Degree of protection	IP20			
Max. operating and storage humidity, %	90			
Max. surface temperature, °C	75			
Weight, kg	1,3			
Dimensions, mm	182 × 160 × 120			



Overall and installation dimensions (mm)



Installation and operation

Heaters must be installed and connected by qualified electrical personnel. Do not operate the devices with visible mechanical damage.

WARNING! Exercise caution when handling the heater. Do not cover the heater. Do not touch the operating heater to prevent burns. Do not use in harsh environment. Do not install onto wooden, plastic, and other flammable surfaces.

Delivery scope

Heaters EKF are supplied in individual and group packages. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Name	Power, W	Net weight, kg	Item code
Insulated heater with fan and thermostat 800W EKF	800	1,3	HFT800C
Insulated heater with fan and thermostat 900W EKF	900	1,3	HFT900C
Insulated heater with fan and thermostat 1000W EKF	1000	1,3	HFT1000C
Insulated heater with fan and thermostat 1200W EKF	1200	1,3	HFT1200C

Fan heaters in protective housing EKF

Fan heaters in protective housing EKF are designed for use in distribution enclosures with 50/60 Hz AC electrical equipment to regulate air temperature, prevent condensation and corrosion, and maintain consistent temperatures. Featuring efficient fans for quick heating and even heat distribution, the heaters are engineered for continuous, long-term operation. The protective housing ensures safe maintenance while in operation by preventing contact with the heating element and live components.

Standard: IEC 60730-1

Integrated fan for fast heating of the enclosure space

Compact design up to 500 W. Secure and easy mounting

APPLICATION

Heaters EKF provide a variety of applications, particularly in ensuring optimal operating conditions for sensitive electronic components and maintaining efficient performance in various environments:

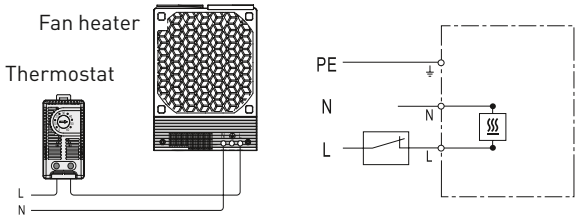
- Electrical enclosures
- Control panels
- Telecommunications equipment
- Industrial automation
- HVAC & building automation

TECHNICAL DATA

Installation and operation

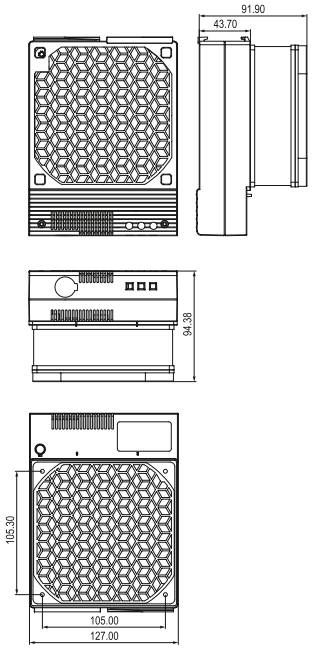
Heaters must be installed and connected by qualified electrical personnel. Do not operate the devices with visible mechanical damage.

WARNING! Exercise caution when handling the heater. Do not cover the heater. Do not touch the operating heater to prevent burns. Do not use in harsh environment. Do not install onto wooden, plastic, and other flammable surfaces.



Parameters	Values			
Heating power*, W	200	300	400	500
Rated voltage Un, V AC	220-240			
Heating element	Resistive			
Mounting type	DIN rail / mounting plate			
Mounting position	Vertical			
Connection	3 screw clamps, wire cross-section 2,5 mm², tightening torque 0,8 N·m			
Radiator	Anodized aluminium profile			
Housing material	Plastic UL94 V-0, black			
Configurable temperature, °C	From 0 to 60			
Fan capacity, m³/h	150			
Fan service life	50 000 h at +25 °C (+77 °F)			
Operating and storage temperature, °C	-45 to 70			
Degree of protection	IP20			
Max. operating and storage humidity, %	90			
Max. surface temperature, °C	75			
Weight, kg	1,3			
Dimensions, mm	169 × 127 × 89			

Overall and installation dimensions (mm)



Delivery scope

Heaters EKF are supplied in individual and group packages. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Name	Power, W	Net weight, kg	Item code
Fan heater in protective housing 200W EKF	200	1,3	HF200C
Fan heater in protective housing 300W EKF	300	1,3	HF300C
Fan heater in protective housing 400W EKF	400	1,3	HF400C
Fan heater in protective housing 500W EKF	500	1,3	HF500C

DIN rail heating (NC) & cooling (NO) thermostats EKF

Thermostats are designed to control heaters and fans to maintain temperature in a room and inside electrical distribution enclosures, and alert operator/user when the temperature limit is exceeded. A normally closed contact (NC) is used to regulate heaters. A normally open contact (NO) is used to control fans and to actuate alarm sensors when the limit temperature is exceeded.

Standard: IEC 60730-1

Wide setting range

DIN rail mounting

Compact design

Easy & fast terminal connection

APPLICATION

Thermostats are utilized in a variety of applications where temperature monitoring and control are critical.

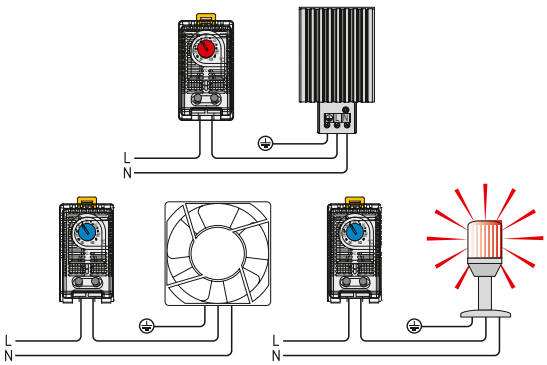
- Building automation systems
- Industrial control panels
- Electric heat control
- Telecommunications equipment

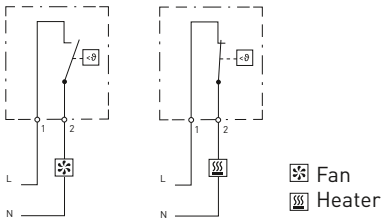
TECHNICAL DATA

Installation and operation

Thermostats must be installed and connected by qualified electrical personnel. Thermostats are installed to a DIN rail.

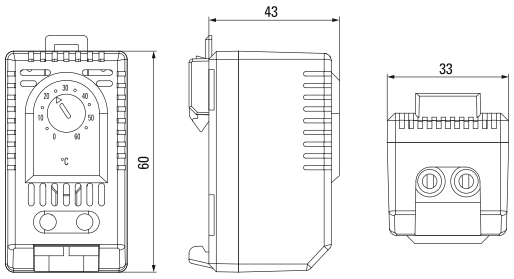
WARNING! Install the device in a safe distance from heat sources, direct sunlight, drafts, and door and window openings. Do not operate the devices with visible mechanical damage. Do not cover the thermostat! Do not use in harsh environment.





Parameters	Values
Rated voltage, V AC	220/230/240
Thermostat type	Mechanical
Rated contact current, A	10
Sensing element	Bimetal plate
Temperature control range, °C	-5 to 60
Trigger on deviation from set temperature	7 °C (± 4 °C error)
Connection	Screw clamp, max. 2,5mm^2
Degree of protection as per IEC 60529	IP20
Mounting type	35mm DIN rail
Mounting position	Vertical or horizontal
Housing colour	Light grey
Operating and storage temperature, °C	-10 to 50
Max. operating and storage humidity, %	80, non-condensing

Overall and installation dimensions (mm)



Delivery scope

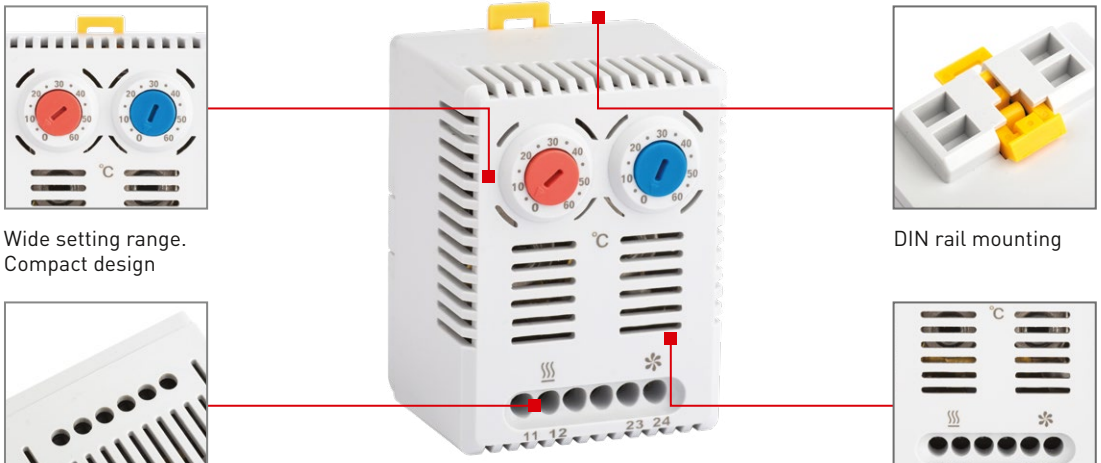
Thermostats EKF are supplied in individual and group packages. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Name	Contact type	Net weight, kg	Item code
DIN rail thermostat NC (heating) 10A IP20 EKF	NC (heating)	0,04	TNC10M
DIN rail thermostat NO (cooling) 10A IP20 EKF	NO (cooling)	0,04	TNO10M

DIN rail thermostat NO+NC (cooling and heating) EKF

Thermostats are designed to control heaters and fans to maintain temperature in a room and inside electrical distribution enclosures, and alert operator/user when the maximum temperature is exceeded. A normally closed contact (NC) is used to regulate heaters. A normally open contact (NO) is used to control fans and to actuate alarm sensors when the limit temperature is exceeded.

Standard: IEC 60730-1



Wide setting range.
Compact design

DIN rail mounting

Easy access
to terminals

Integrated heater &
fan control

APPLICATION

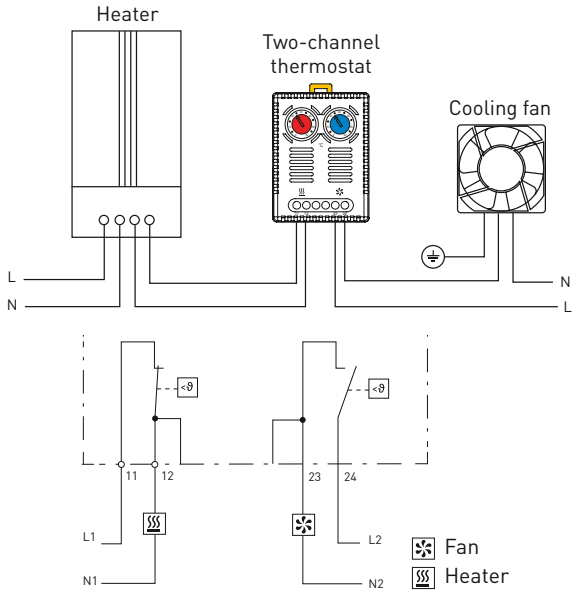
Thermostats are utilized in a variety of applications where temperature monitoring and control are critical.

- Building automation systems
- Industrial control panels
- Electric heat control
- Telecommunications equipment

TECHNICAL DATA

Installation and operation

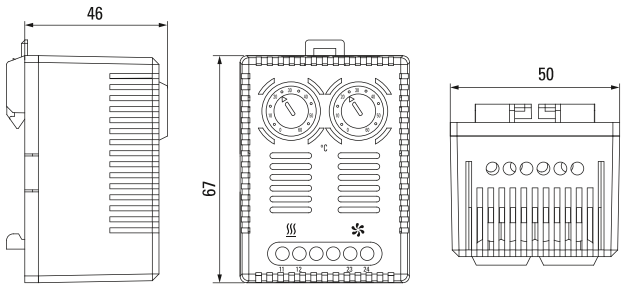
WARNING! Install the device in a safe distance from heat sources, direct sunlight, drafts, and door and window openings. Do not operate the devices with visible mechanical damage. Do not cover the thermostat! Do not use in harsh environment.



Name	Contact type	Net weight, kg	Item code
DIN rail thermostat NO+NC (cooling/heating) 10A IP20 EKF	NO+NC (cooling and heating)	0,09	T2C10M

Parameters	Values
Rated voltage, V AC	220–240
Thermostat type	Mechanical
Rated contact current, A	10
Sensing element	Bimetal plate
Temperature adjustment range, °C	0 to +60
Trigger on deviation from set temperature	7 °C (± 4 °C error)
Connection	Screw clamp, max. 2,5 mm²
Degree of protection	IP20
Mounting type	35 mm DIN rail
Mounting position	Vertical / Horizontal
Housing colour	Light grey
Operating & storage temperature, °C	-10 to +50 °C
Opertaing & storage humidity, %	80, non-condensing

Overall and installation dimensions (mm)



Delivery scope

Thermostats EKF are supplied in individual and group packages. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Surface-mounted thermostat NO/NC (cooling/heating) EKF

Thermostats are designed to control heaters and fans to maintain temperature in a room and inside electrical distribution enclosures, and alert operator/user when the temperature limit is exceeded.

Standard: IEC 60730-1

Easy connection & use

Compact design. Wide setting range

APPLICATION

Thermostats are utilized in a variety of applications where temperature monitoring and control are critical.

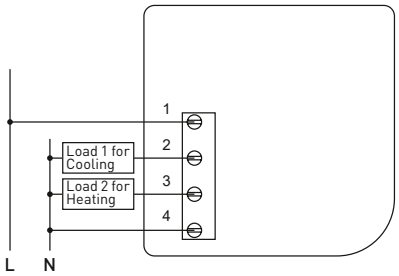
- Building automation systems
- Industrial control panels
- Electric heat control
- Telecommunications equipment

TECHNICAL DATA

Installation and operation

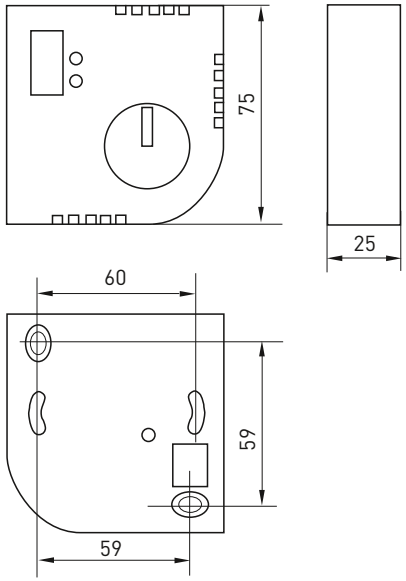
Thermostats must be installed and connected by qualified electrical personnel. The device is installed on a wall or mounting panel and secured with self-tapping screws. The thermostat is equipped with a LED indicator. For correct operation, the neutral wire must be connected to contact 4. Otherwise, the LED does not signal a heater being turned on or off.

WARNING! Install the device in a safe distance from heat sources, direct sunlight, drafts, and door and window openings. Do not operate the devices with visible mechanical damage. Do not cover the thermostat! Do not use in harsh environment.



Parameters	Values
Rated voltage, V AC	220/230/240
Thermostat type	Mechanical
Rated contact current, A	16
Sensing element	Bimetal plate
Temperature control range, °C	-5 to 35
Adjustment step	1°C
Trigger on deviation from set temperature	1°C (± 0,8°C error)
Connection	Screw clamp, max. 2,5mm²
Degree of protection as per IEC 60529	IP20
Mounting type	Surface-mounted
Mounting position	Vertical or horizontal
Housing colour	Light grey
Operating and storage temperature, °C	from -10 to 50
Max. operating and storage humidity, %	80, non-condensing

Overall and installation dimensions (mm)



Delivery scope

Thermostats EKF are supplied in individual and group packages. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Name	Contact type	Net weight, kg	Item code
Surface-mounted thermostat NO/NC (cooling/ heating) 16A IP20 EKF	NO/NC (cooling/heating)	0,08	thermo-no-nc-wall

DIN rail thermostat NO/NC (cooling / heating) EKF

Thermostats are designed to control heaters and fans to maintain temperature in a room and inside electrical distribution enclosures, and alert operator/user when the temperature limit is exceeded.

Standard: IEC 60730-1

Integrated fan & heater control.
Improved adjustment accuracy

DIN rail mounting.
Compact design

APPLICATION

Thermostats are utilized in a variety of applications where temperature monitoring and control are critical.

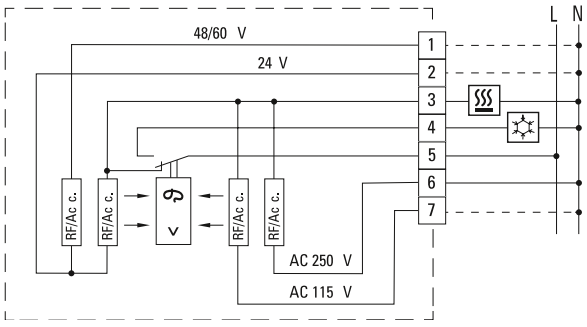
- Building automation systems
- Industrial control panels
- Electric heat control
- Telecommunications equipment

TECHNICAL DATA

Installation and operation

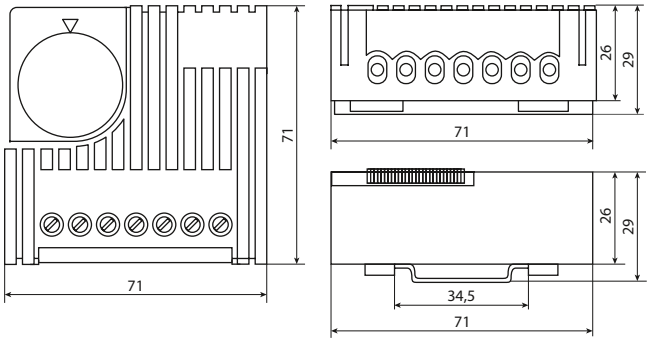
Thermostats must be installed and connected by qualified electrical personnel. Thermostats are installed to a DIN rail.

WARNING! Install the device in a safe distance from heat sources, direct sunlight, drafts, and door and window openings. Do not operate the devices with visible mechanical damage. Do not cover the thermostat! Do not use in harsh environment.



Parameters	Values
Rated voltage	24–240
Thermostat type	Electronic
Rated contact current, A	10
Sensing element	Integrated thermistor
Temperature adjustment range, °C	+5 to +60
Adjustment step	1 °C
Trigger on deviation from set temperature	1 °C (± 0.8 °C error)
Connection	Screw clamp, max. 2,5 mm²
Protection degree	IP20
Mounting type	35mm DIN rail
Mounting position	Vertical / horizontal
Housing colour	Light grey
Operating and storage temperature, °C	-10 to +50
Max. operating and storage humidity, %	80, non-condencing

Overall and installation dimensions (mm)



Delivery scope

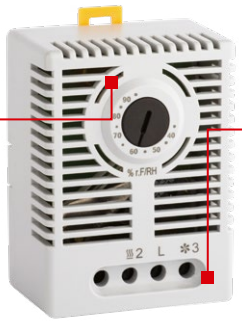
Thermostats EKF are supplied in individual and group packages. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Name	Contact type	Net weight, kg	Item code
DIN rail thermostat NO/NC (cooling/ heating) 5-10A IP20 EKF	NO/NC (cooling/ heating)	0,09	thermo-no-nc-din

DIN rail hygrostats EKF

Hygrostats are designed to control heaters and fans to maintain specified relative humidity and prevent condensing in electrical distribution enclosures.

DIN rail mounting.
Adjustable humidity



Easy access to teminals.
Compact design

APPLICATION

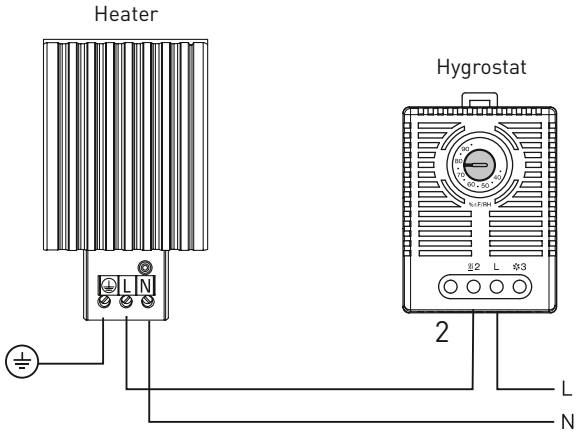
Hygrostats play an essential role in many industries and environments by providing effective humidity control and monitoring. Their versatility and ease of installation on DIN rails make them suitable for a wide range of applications, from HVAC and building automation systems to specialized industrial processes.

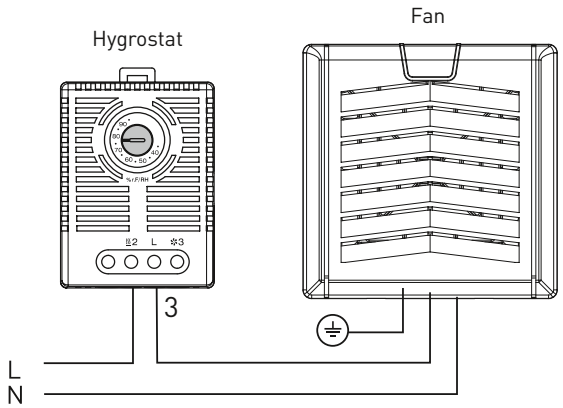
TECHNICAL DATA

Installation and operation

Hygrostats must be installed and connected by qualified electrical personnel. Hygrostats are installed to a DIN rail. The indicator LED is lit when the devices connected to the hygrostat are functioning.

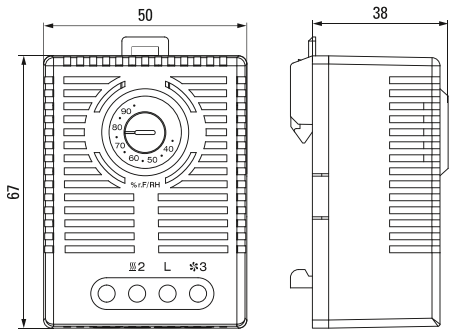
WARNING! Do not operate the devices with visible mechanical damage. Do not cover the hygrostat! Do not use in harsh environment.





Parameters	Values
Rated voltage, V AC	220/230/240
Hygrostat type	Mechanical
Max. air speed, m/s	15
Rated contact current, A	5
Humidity adjustment range, %	From 35 to 95
Trigger on deviation from set humidity	4% RH (±3% error)
Connection	Screw clamp, max. 2,5mm2
Degree of protection as per IEC 60529	IP20
Mounting type	35mm DIN rail
Mounting position	Vertical or horizontal
Housing colour	Light grey
Operating and storage temperature, °C	From 0 to 60
Max. operating and storage humidity, %	95, non-condensing

Overall and installation dimensions (mm)



Delivery scope

Hygrostats EKF are supplied in individual and group packages. For all available documentation, scan the QR-code on the insert or on the inside of the package.

Name	Contact type	Net weight, kg	Item code
DIN rail hygrostat 5A IP20 EKF	Changeover NO and NC	0,06	HC05EM

DIN rail electronic thermostat IP20 EKF

Thermostats are designed to control heaters and fans to maintain temperature in a room and inside electrical distribution enclosures, and alert operator/user when the temperature limit is exceeded.

Standard: IEC 60730-1

Wide adjustment range. Easy & fast terminal connection

DIN rail mounting. Compact design

APPLICATION

Thermostats are utilized in a variety of applications where temperature monitoring and control are critical.

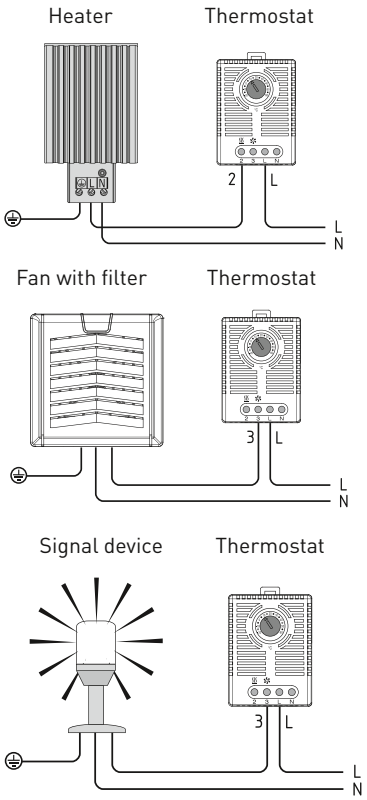
- Building automation systems
- Industrial control panels
- Electric heat control
- Telecommunications equipment

TECHNICAL DATA

Installation and operation

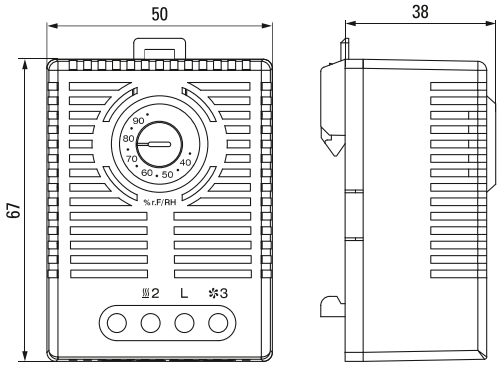
Thermostats must be installed and connected by qualified electrical personnel. Thermostats are installed to a DIN rail. The indicator LED is lit when the devices connected to the hygrostat are functioning.

WARNING! Do not operate the devices with visible mechanical damage. Do not cover the thermostat! Do not use in harsh environment.



Parameters	Values
Switching temperature differential	5K (-3/+2K error)
Sensing element	NTC
Contact type	Changeover (relay)
Service life, cycles	> 100 000
Max. switching capacity (relay output)	NC: 250V AC, 10 (4) A NO: 250V AC, 5 (2) A
Max. inrush current	AC 16A for 10 s
Connection	Four-pole terminal, maximum tightening torque 0,5 N·m; solid wire/stranded wire 2,5 mm² (AWG 14)
Mounting type	35 mm busbar clamp
Housing	Plastic UL94 V-0, light grey
Dimensions, mm	67 × 50 × 38
Degree of protection	IP20
Max. operating and storage humidity, %	90
Weight, g	60
Operating and storage temperature, °C	From -20 to +60
Mounting type	35mm DIN rail

Overall and installation dimensions (mm)



Delivery scope

1. DIN rail thermostat EKF
2. Technical manual.

Name	Contact type	Net weight, kg	Item code
DIN rail electronic thermostat 10A IP20 EKF	Changeover NO and NC	0,06	TCO10E

Filter fans and exit filters EKF

Filter fans EKF are used to maintain temperature and cool devices in distribution enclosures to ensure their optimal operation. They generate air flow that removes heat buildup and prevents overheating of components.

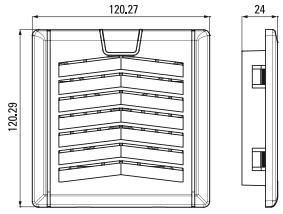
APPLICATION

Filter fans and exit filters play crucial roles in maintaining air quality, protecting equipment, and ensuring safe working conditions across various industries.

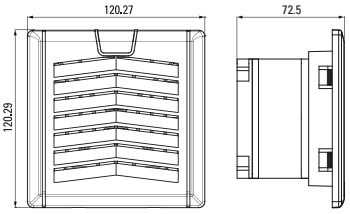
TECHNICAL DATA

Overall and installation dimensions (mm)

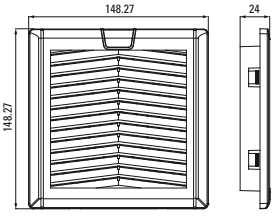
EXF19



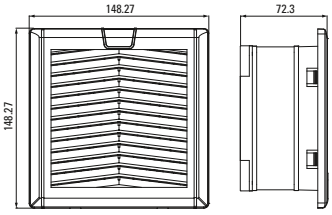
FAN19F



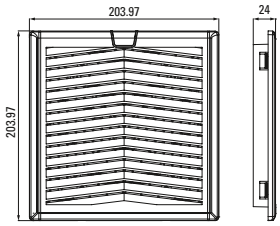
EXF52



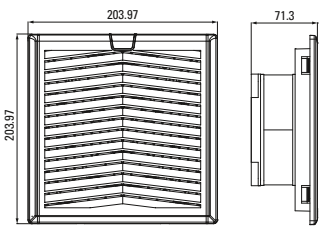
FAN52F



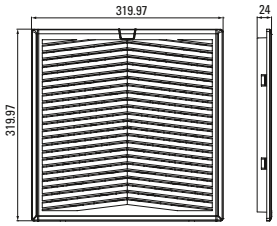
EXF 170



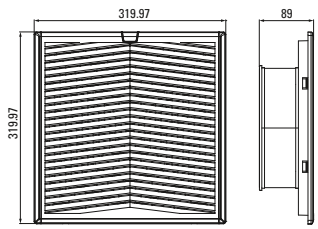
FAN102F, FAN170F



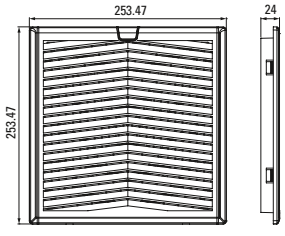
EXF433



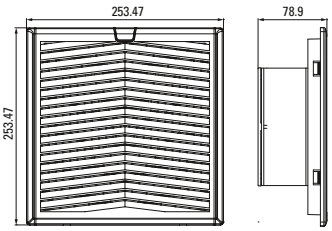
FAN433F



EXF305



FAN305F



Delivery scope

Filter fans and exit filters 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.

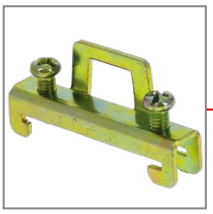
Parameters	Values						
	FAN19F	FAN52F	FAN102F	FAN170F	FAN305F	FAN433F	FAN850F
Rated frequency, Hz	50 / 60						
Rated voltage, V AC	220/230/240						
Fan housing material	Aluminium						
Filter housing material	Synthetic fiber, low flammability (F1), moisture resistance up to 100%, heat resistance up to 100 °C						
Mounting type	Clamps, self-tapping screws						
Storage temperature °C	-40 to +70						
Degree of protection	IP54						
Max. operating and storage humidity, %	90						
Service life, hours	50 000						
Operating temperature, °C	-25 to +65						
Connection	2 stranded conductors	2 stranded conductors	terminal clamps 2,5 mm2, 0,8 N·m				

Name	Power consumption, W	Fan capacity (with/without filter), m³/h	Mounting aperture, mm	Net weight, kg	Item code
Filter fan 19m3/h 92x92mm IP54 EKF	13	39/24	92*92	0,4	FAN19F
Filter fan 52m3/h 124x124mm IP54 EKF	21	138/100	124*124	0,6	FAN52F
Filter fan 170m3/h 176x176mm IP54 EKF	26	272/200	176*176	1,06	FAN102F
Filter fan 170m3/h 176x176mm IP54 EKF	26	272/200	176*176	1,06	FAN170F
Filter fan 305m3/h 223x223mm IP54 EKF	42	586/380	223*223	1,75	FAN305F
Filter fan 433m3/h 291x291mm IP54 EKF	63	800/400	291*291	2,05	FAN433F
Filter fan 850m3/h 291x291mm IP54 EKF	160	1200/850	291*291	4,1	FAN850F
Exit filter 92x92mm IP54 EKF	–	–	92*92	0,09	EXF19
Exit filter 124x124mm IP54 EKF	–	–	124*124	0,12	EXF52
Exit filter 176x176mm IP54 EKF	–	–	176*176	0,2	EXF170
Exit filter 223x223mm IP54 EKF	–	–	223*223	0,3	EXF305
Exit filter 291x291mm IP54 EKF	–	–	291*291	0,5	EXF433

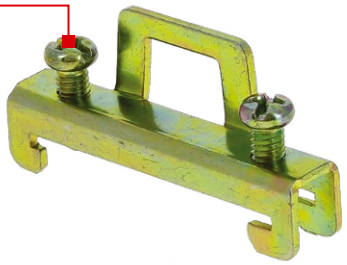
Distribution Enclosure Components & Electrical Installation Products

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 provide a standoff from the mounting plate to route wires behind the DIN rail. With angled brackets, terminal clamps can be mounted at an angle for easier wire routing and connection.

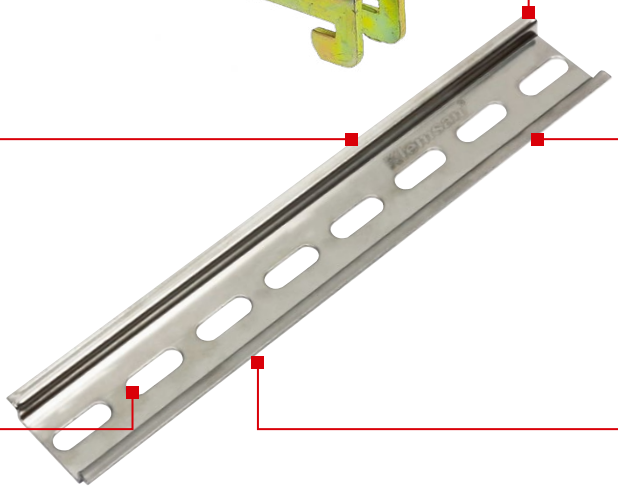


Clamps for secure fastening of modular devices and meters to DIN rails

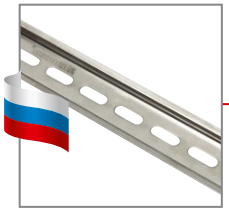


Perforations for easy DIN rail mounting

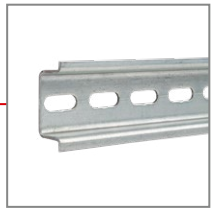
Corrosion-resistant galvanized coating



Individual UPS for piece ordering



Made in Russia



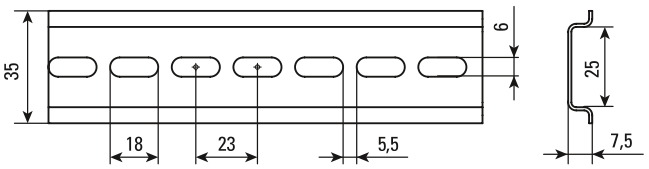
Reinforced 15mm-high 1,5 mm DIN rail

DIN rails 0,8 mm, perforated

TECHNICAL DATA

Parameters	Values
Material	Perforated galvanized steel
Width, mm	35
Height, mm	7,5
Thickness, mm	0,8

Overall and installation dimensions (mm)



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

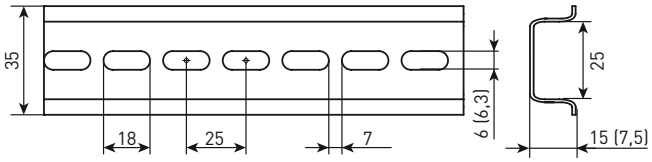
Name	DIN rail length, mm	Number of modules	Min. quantity in a pack, pcs.	Item code
Perforated DIN rail 500mm EKF	500	27	100	adr-50
Perforated DIN rail 600mm EKF	600	34	50	adr-60
Perforated DIN rail 800mm EKF	800	44	50	adr-80
Perforated DIN rail 1000mm EKF	1000	55	20	adr-1.0
Perforated DIN rail 1400mm EKF	1400	77	20	adr-1.4
Perforated DIN rail 2000mm EKF	2000	111	20	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

DIN rails 1 mm and 1,5 mm, perforated

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 (mm)



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 35x15x300mm EKF	300	16	50	tdr-0.3
Perforated DIN rail 1,5mm reinforced 35x15x600mm EKF	600	34	20	tdr-0.6
Perforated DIN rail 1,5mm reinforced 35x15x1000mm EKF	1000	55	10	tdr-1.0
Perforated DIN rail 1,5mm reinforced 35x15x1800mm EKF	1800	102	10	tdr-1.8
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 600mm EKF	600	34	50	adr1-6
Perforated DIN rail 1mm 1000mm EKF	1000	55	20	adr1-10
Perforated DIN rail 1mm 2000mm EKF	2000	111	20	adr1-20

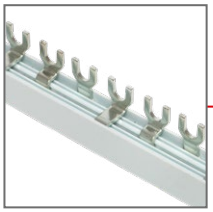
DIN rail clamps EKF

Clamps are used to secure modular equipment and terminal clamps on DIN rails.

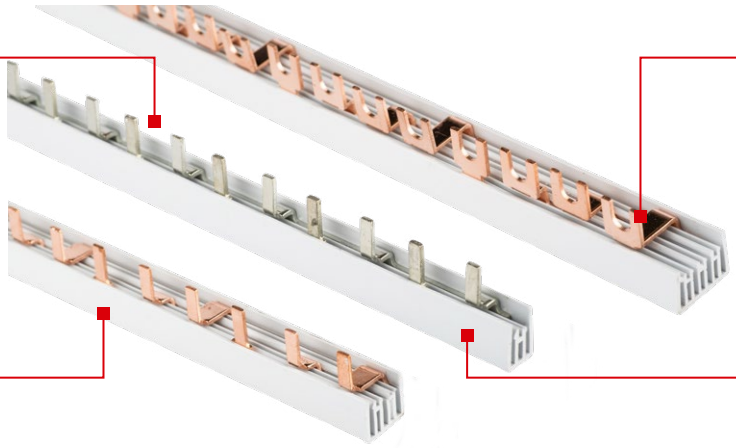
Picture	Name	Number of screws	Item code
	DIN rail clamp HDW-201 2 screws EKF	2	ahdw-201
	DIN rail clamp HDW-211 1 screw EKF	1	ahdw-211
	DIN rail plastic clamp EW 1 screw EKF	1	ahdw-ew

Fork- and pin-type modular busbars EKF

Busbars are copper strips (100 A rated busbars are made of tinned copper), secured in a flame-retardant dielectric housing, used to connect various types of modular equipment 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 compatible with aluminum wires



Electrolytic tough pitch copper (Cu-ETP)

Pin-type busbars are compatible with additional top-mounted distribution connector terminals

All relevant information is printed on busbar housing

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.

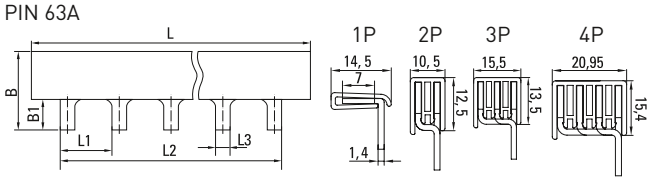
TECHNICAL DATA

Parameters		Values
Poles		1, 2, 3, 4
Rated voltage, V		220-240/380-415
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

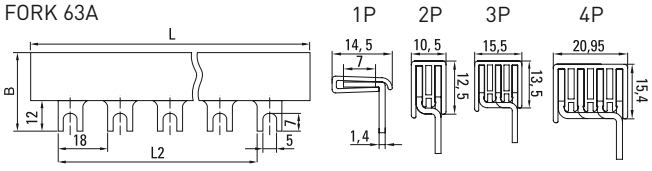
*Depending on the type. **For 1 sec.

Overall and installation dimensions (mm)

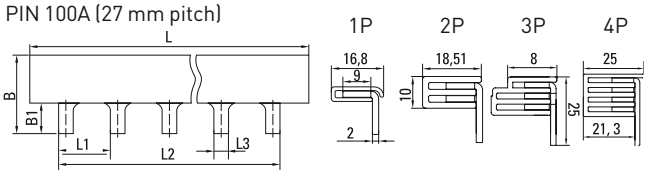
PIN 63A



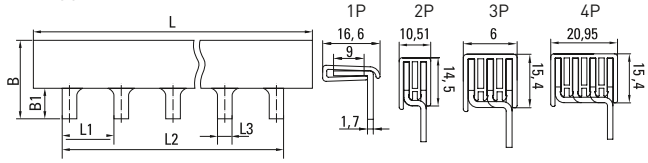
FORK 63A



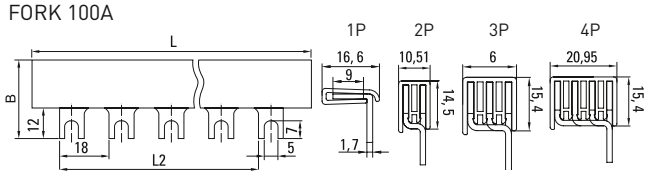
PIN 100A (27 mm pitch)



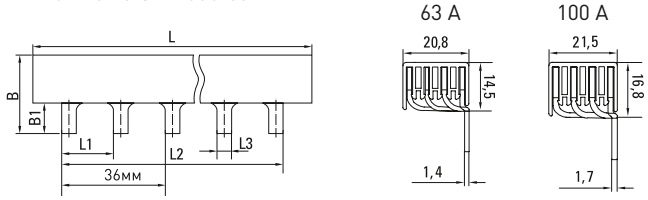
PIN 100A

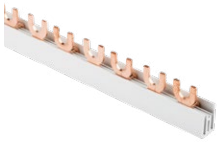
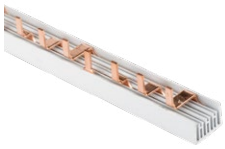
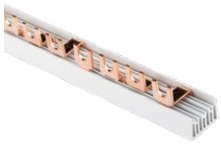
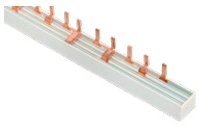


FORK 100A



PIN for RCBO 54 modules



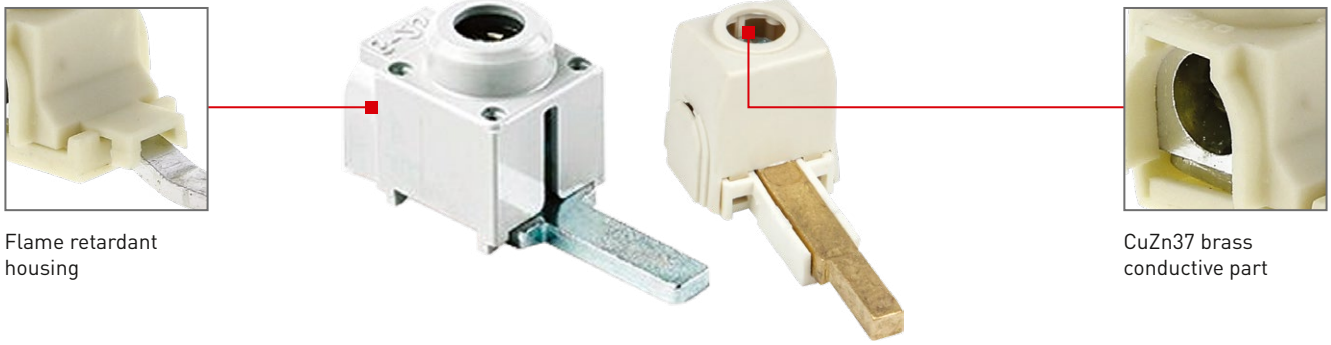
Picture	Name	Rated current, A	Max. number of connected devices, pcs.	Dimensions, mm						Item code
				L	L1	L2	L3	B	B1	
	1-phase pin-type busbar EKF	63	12	220	17,8	200	4	14,5	10,5	pin-01-63-12
	3-phase pin-type busbar EKF					205		25	11,5	pin-03-63-12
	1-phase pin-type busbar EKF		54	1000		948		14,5	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, pcs.	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

Picture	Name	Length, mm	Poles	Item code
	Connecting bridge 2P interlevel 125mm EKF	125	2	jbl-2-125
	Connecting bridge 3P interlevel 125mm EKF		3	jbl-3-125

Distribution connectors for pin-type busbars EKF

Distribution connectors are designed for connection of copper power supply wires to EKF pin-type busbars.



Flame retardant housing

CuZn37 brass conductive part

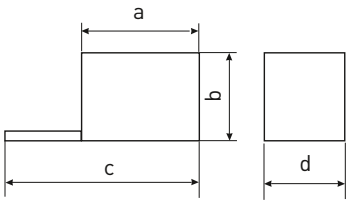
APPLICATION

EKF distribution connectors for modular busbars 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	Side	Front	Side/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

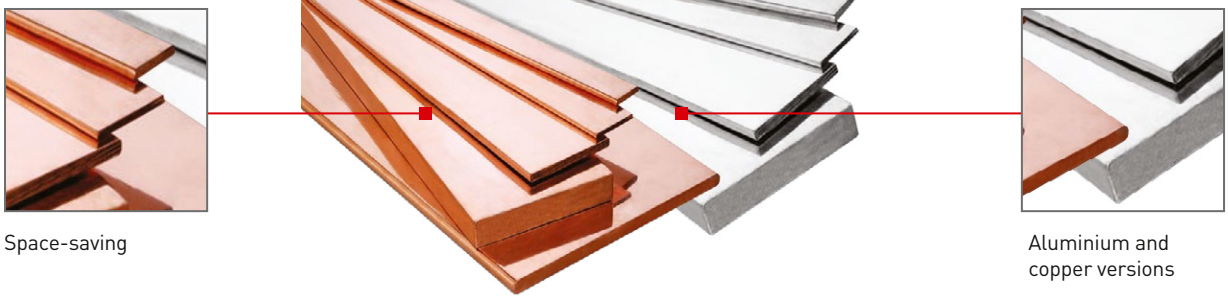


Item code	Dimensions, mm			
	a	b	c	d
ck-s / ck-s-r	13	18	34,5	13
ck-f / ck-f-r	17,5	17	32	13
ck-u-r	16	20,5	46	18

Picture	Name	Item code	
		100-pcs pack	20-pcs pack
	Distribution connector for pin-type busbar side entry EKF	ck-s	ck-s-r
	Distribution connector for pin-type busbar front entry EKF	ck-f	ck-f-r
	Distribution connector for pin-type busbar multi-entry 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

* 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

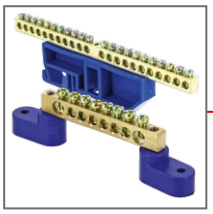
Busbars are commonly found in switchboards, distribution boards, substation equipment, and other power distribution systems.

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

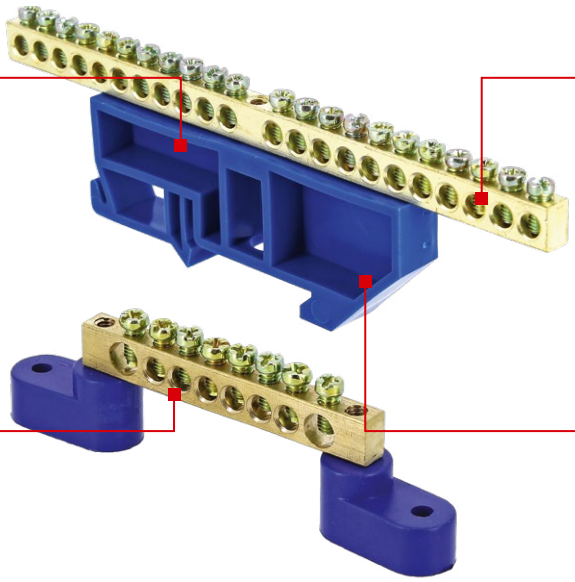
Name	Item code
Insulated flexible copper busbar 3x63x1 EKF	SMG-31
Insulated flexible copper busbar 10x24x1 EKF	SMG-32
Insulated flexible copper busbar 8x32x1 EKF	SMG-33
Insulated flexible copper busbar 6x40x1 EKF	SMG-34
Insulated flexible copper busbar 5x50x1 EKF	SMG-35
Insulated flexible copper busbar 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 earth and neutral terminal bars EKF

Earth and neutral terminal bars are designed to connect neutral conductors (N busbar) and ground (earth) conductors inside electrical enclosures. Earth and neutral terminal bars are installed on insulators (in the kit).



Wide selection of bar sizes for perfect compatibility. Flame retardant plastic insulators



Contact part: high-grade brass. Nickel-plated steel clamp screws

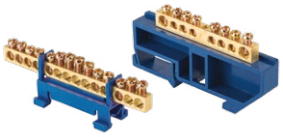
Rounded screw tip prevents wires from shearing when tightened

Retail sticker option

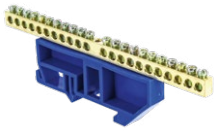
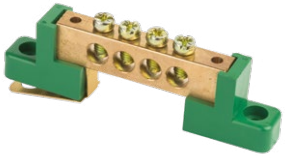
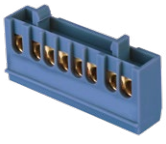
APPLICATION

- Distribution enclosures, switchgears, and control panels
- Electrical equipment and appliances.

Picture	Name	Mounting type	Screw connectors	Item code (6 × 9 mm)	Item code (8 × 12 mm)
	Earth and Neutral terminal bar	Side mounts	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 mount	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	Screw connectors	Insulator color	Item code (6 × 9 mm)	Item code (8 × 12 mm)
	Neutral terminal bar	DIN rail	4	Blue	sn0-63-04-d	sn0-125-4-d
			6		sn0-63-06-d*	sn0-125-6-d*
	Neutral terminal bar / Neutral terminal bar DIN rail standoff insulator		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

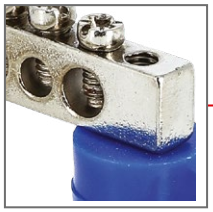
* SKU with "-r" in the item code can be ordered with individual UPS code.

Picture	Name	Mounting type	Screw connectors	Insulator color	Item code (6 × 9 mm)	Item code (8 × 12 mm)
	Neutral terminal bar	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	–
	Neutral terminal bar / Neutral terminal bar DIN rail standoff insulator	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	–
	Neutral terminal bar	Central 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	–
	Neutral terminal bar	Side 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
	Earth terminal bar 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
	Neutral terminal bar, 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
	Earth terminal bar, 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
	Neutral terminal bar, insulated housing		8	Blue	sn0-63-8-ib	–
			10		sn0-63-10-ib	–
			12		sn0-63-12-ib	–
	Earth terminal bar, insulated housing		8	Green	sn0-63-8-ig*	–
			10		sn0-63-10-ig	–
			12		sn0-63-12-ig*	–
	Phase terminal bar, insulated housing		8	Grey	sn0-63-8-is	–
			10		sn0-63-10-is	–
			12		sn0-63-12-is	–

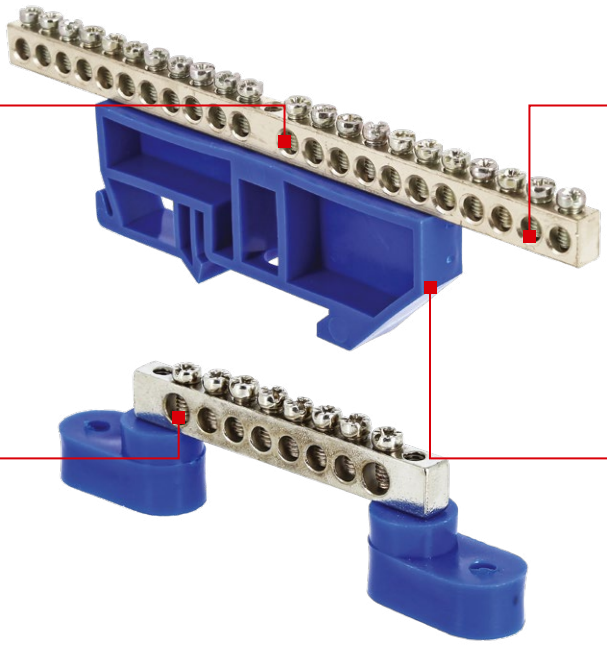
* SKU with "-r" in the item code can be ordered with individual UPS code.

Galvanized earth and neutral terminal bars EKF

Earth and neutral terminal bars are designed to connect neutral conductors (N busbar) and ground (earth) conductor. The galvanized terminal bars are installed on insulators (in the kit).

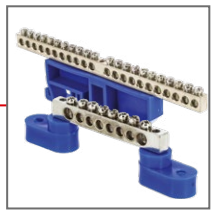


Rounded screw tip prevents wire shearing. Flame retardant plastic insulators



Galvanized steel clamp screws. Galvanized brass contact group

Galvanized coating for simultaneous connection of copper and aluminum wires



Wide selection of terminal bar sizes for perfect compatibility

APPLICATION

- Distribution enclosures, switchgears, and control panels
- Electrical equipment and appliances.

Picture	Name	Mounting type	Screw connectors	Insulator color	Item code (6 × 9 mm)
	Earth and Neutral terminal bar	Center mount	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 mounts	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
	Neutral terminal bar	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
		Central angle insulator	8		sn1-63-08-1
			10		sn1-63-10-1
			12		sn1-63-12-1
			14		sn1-63-14-1
		Side 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

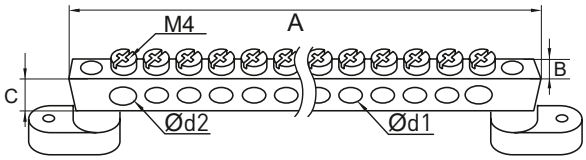
TECHNICAL DATA

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 (galvanized)	
Max. relative humidity, %	90	

* depending on product size

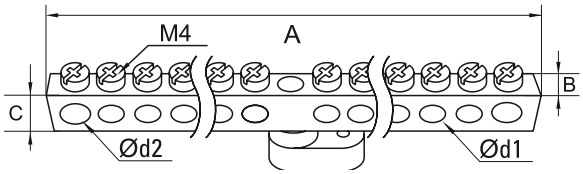
Overall and installation dimensions

Terminal bar with two angle insulators



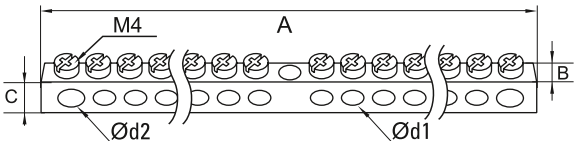
Item code		A	B	C	Ød1	Ød2
Brass	Galvanized brass					
6 x 9 terminal bar						
sn0-2-63-04	–	42	6	9	4,5	6
sn0-2-63-06	sn1-63-06-2	54				
sn0-63-08-2	sn1-63-08-2	66				
sn0-2-63-10	sn1-63-10-2	78				
sn0-63-12-2	sn1-63-12-2	90				
sn0-63-14-2	sn1-63-14-2	102				
sn0-2-63-16	–	114				
sn0-2-63-18	–	126				
sn0-2-63-20	sn1-63-20-2	138				
–	sn1-63-24-2	150				
–	–	162				
8 x 12 terminal bar						
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				

Terminal bar with one angle insulator



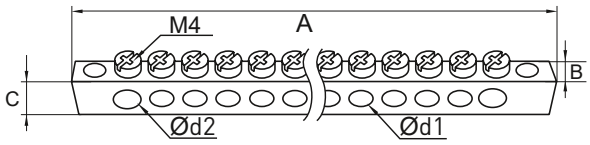
Item code		A	B	C	Ød1	Ød2
Brass	Galvanized brass					
6 x 9 terminal bar						
sn0-63-04-1	–	38	6	9	4,5	6
sn0-63-06-1	–	51				
sn0-63-08-1	sn1-63-08-1	64				
sn0-63-10-1	sn1-63-10-1	77				
sn0-63-12-1	sn1-63-12-1	90				
sn0-63-14-1	sn1-63-14-1	103				

Terminal bar without insulator, center mount



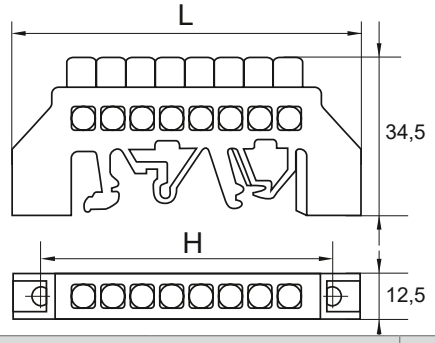
Item code		A	B	C	Ød1	Ød2
Brass	Galvanized brass					
6 x 9 terminal bar						
sn0-63-04	–	38	6	9	4,5	6
sn0-63-06	sn1-63-06	51				
sn0-63-08	sn1-63-08	64				
sn0-63-10	sn1-63-10	77				
sn0-63-12	sn1-63-12	90				
sn0-63-14	sn1-63-14	103				
sn0-63-16	–	116				
sn0-63-18	–	129				
sn0-63-20	sn1-63-20	142				
sn0-63-22	–	155				
sn0-63-24	sn1-63-24	168				
8 x 12 terminal bar						
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				

Terminal bar without insulator, side mounts



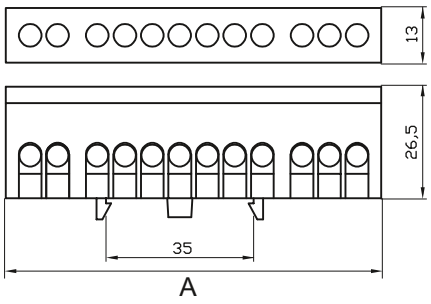
Item code		A	B	C	Ød1	Ød2
Brass	Galvanized brass					
6 x 9 terminal bar						
sn0-63-04-k	–	42	6	9	4,5	6
sn0-63-06-k	–	54				
sn0-63-08-k	sn1-63-08-k	66				
sn0-63-10-k	sn1-63-10-k	78				
sn0-63-12-k	sn1-63-12-k	90				
sn0-63-14-k	sn1-63-14-k	102				
sn0-63-16-k	sn1-63-16-k	114				
sn0-63-18-k	–	126				
sn0-63-20-k	–	138				
sn0-63-22-k	–	150				
sn0-63-24-k	sn1-63-24-k	162				
8 x 12 terminal bar						
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				

Terminal bar, nylon housing



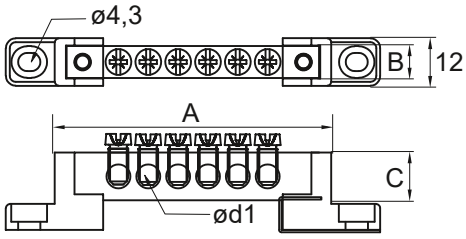
Item code		L	H
Yellow insulator	Blue insulator		
6 x 9 terminal bar			
–	sn0-63-06-dn	57,5	47,5
–	sn0-63-08-dn	78,2	66
–	sn0-63-10-dn	89	79
–	sn0-63-12-dn	102	92
8 x 12 terminal bar			
sn0-125-6-dpe	sn0-125-6-dn	78	66
sn0-125-8-dpe	sn0-125-8-dn	95	83
sn0-125-10-dpe	sn0-125-10-dn	116	92
sn0-125-12-dpe	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

Terminal bar, insulated housing



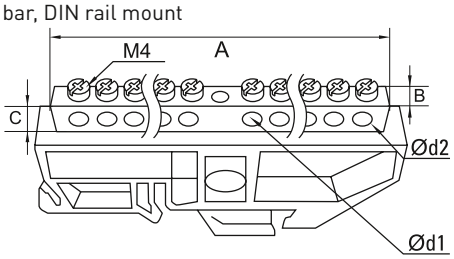
Item code			A	Dimensions		
Grey insulator	Blue insulator	Green insulator		B	C	Ød1
6 x 9 busbar						
sn0-63-8-is	sn0-63-8-ib	sn0-63-8-ig	60	6	9	5,2
sn0-63-10-is	sn0-63-10-ib	sn0-63-10-ig	76			
sn0-63-12-is	sn0-63-12-ib	sn0-63-12-ig	89			

Terminal bar with contact plate



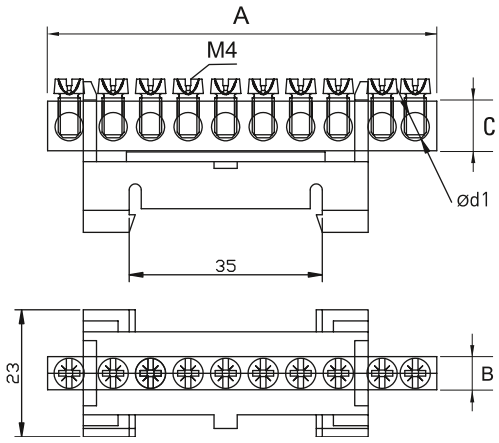
Item code	A	B	C	Ød1
Brass				
6 x 9 terminal bar				
sn0-63-04-2-pe	47	6	9	5,2
sn0-63-06-2-pe	59			
sn0-63-08-2-pe	67			
sn0-63-10-2-pe	83			
sn0-63-12-2-pe	91			
sn0-63-14-2-pe	103			
sn0-63-16-2-pe	119			
8 x 12 terminal bar				
sn0-125-04-2-pe	54	8	12	6,5
sn0-125-06-2-pe	68			
sn0-125-08-2-pe	77			
sn0-125-10-2-pe	91			
sn0-125-12-2-pe	105			
sn0-125-14-2-pe	119			
sn0-125-16-2-pe	138			

Terminal bar, DIN rail mount



Item code			A	B	C	Ød1	Ød2
Brass (blue)	Brass (yellow)	Galvanized brass					
6 x 9 terminal bar							
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 terminal bar							
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				

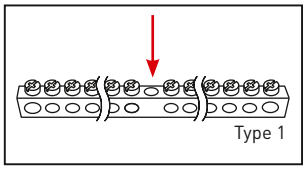
Terminal bar, DIN rail standoff insulator

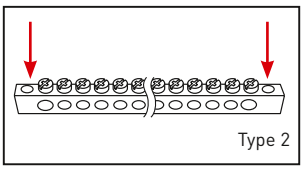


Item code		A	B	C	Ød1
Blue insulator	Yellow insulator				
6 x 9 terminal bar					
sn0-63-8-sb	sn0-63-8-sy	52	6	9	5,2
sn0-63-10-sb	sn0-63-10-sy	71			
sn0-63-12-sb	sn0-63-12-sy	84			
sn0-63-14-sb	sn0-63-14-sy	97			

Installation and operation

1. The terminal bars are mounted to the surface either through the terminal bar insulators, or directly to the enclosure panel (if used for earthing).
2. The terminal bars 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 terminal bar, terminate them with sleeve ferrules.





Screw distribution blocks EKF

Screw distribution blocks EKF are used in electrical distribution enclosures to connect neutral (N) and earth (PE) conductors, and can serve as phase conductors. You can connect an additional terminal bar 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 terminal bar for 160A distribution block available

DIN rail and mounting plate options.
Flame retardant plastic housing

Electrical brass contact part.
Terminal bars safely secured in the housing

APPLICATION

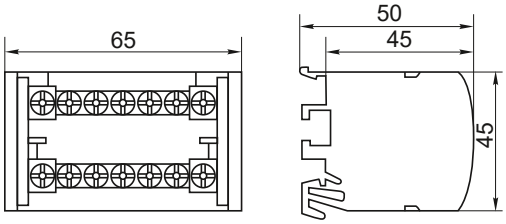
- Distribution enclosures, switchgears, and control panels
- Electrical equipment and appliances.

TECHNICAL DATA

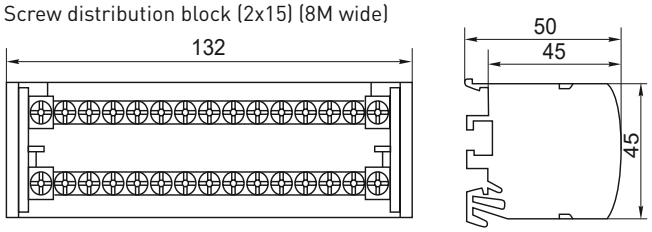
Parameters	Values								
	2 × 7	2 × 11	2 × 15	4 × 7	4 × 11	4 × 15	4 × 12	1 × 14	2 × 27
Rated voltage, V	400						690	–	-
Rated current, A	100	125	125	100	125	125	160	160	63
Rated peak withstand current Ipk, kA	20						35		20
Cross-section of connected terminated wires, mm²	1,5–6 6–16	1,5–6 6–16 10–16	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	1,5-16
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	2,5-25
Degree of protection	IP20								
Tightening torque, N·m	3						Input – 10 Outputs – 3	3	

Overall and installation dimensions (mm)

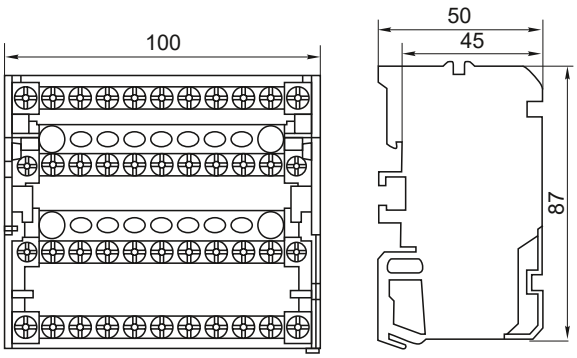
Screw distribution block (2x7) (4M wide)



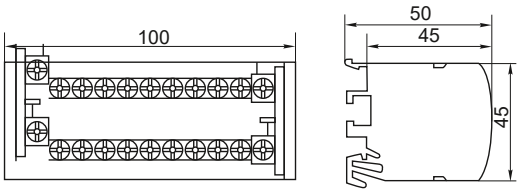
Screw distribution block (2x15) (8M wide)



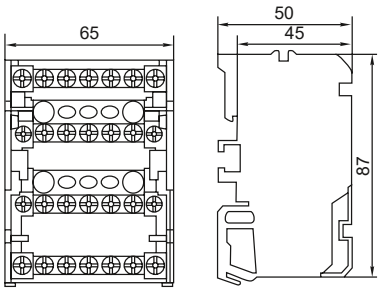
Screw distribution block (4x11) (6M wide)



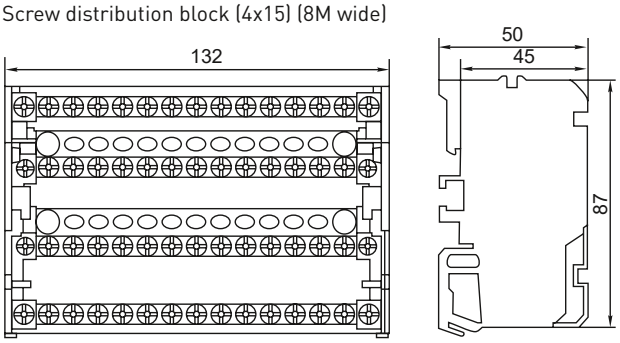
Screw distribution block (2x11) (6M wide)



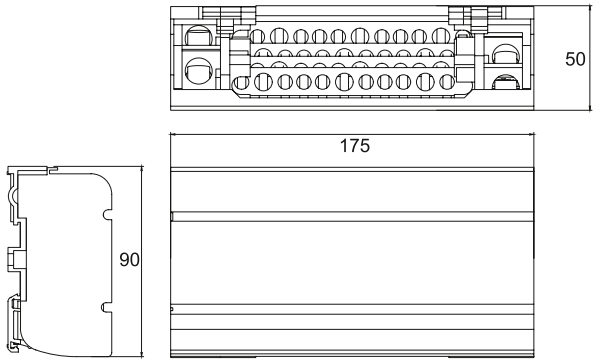
Screw distribution block (4x7) (4M wide)



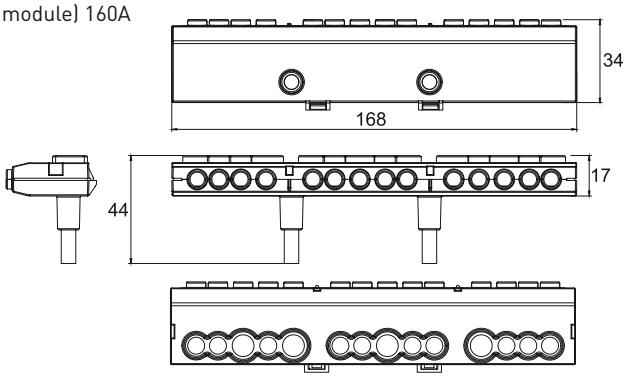
Screw distribution block (4x15) (8M wide)



Distribution block 160A 4 × 12



Additional terminal bar (14 holes) for distribution block (cross module) 160A



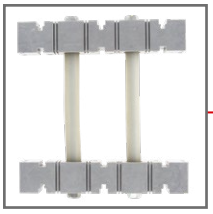
Installation and operation

Before connecting stranded copper wires to the distribution block, terminate them with sleeve ferrules.

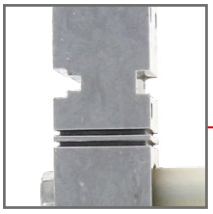
Picture	Name	Number (pcs.) and diameter of holes (mm) in each terminal block	Item code
	Screw distribution block (2x7) EKF	5 × Ø5,5; 2 × Ø7,5	sn0-2x7
	Screw distribution block (2x11) EKF	7 × Ø5,5; 2 × Ø7,5; 2 × Ø9,0	sn0-2x11
	Screw distribution block (2x15) EKF	11 × Ø5,5; 2 × Ø7,5; 2 × Ø9,0	sn0-2x15
	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 terminal bar (14 screw connections) for distribution block (cross module) 160A EKF	4 × Ø8,5; 10 × Ø7,2	eb-160-14
	Screw distribution block 63A (2x27) EKF	23 × Ø4,5; 4 × Ø5	bic-63-2x27

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.

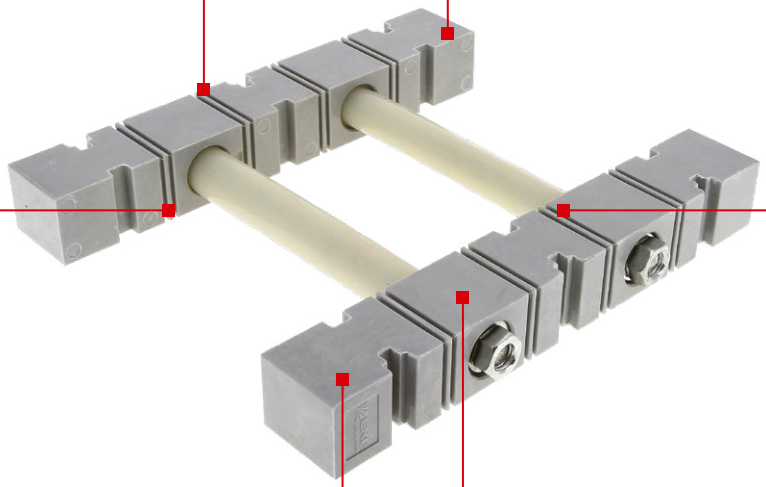


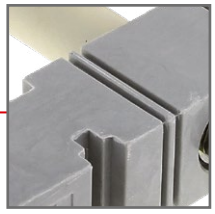
Secure and easy mounting



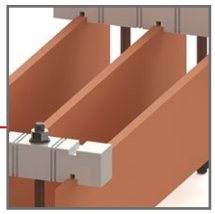
Three or two busbar sizes connected simultaneously

Complete kit for busbar system: insulators, studs, silicone insulating sleeves and fittings

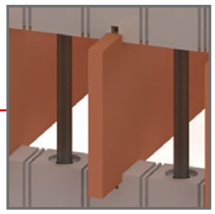




Impact resistant materials



Vertical busbar installation for improved cooling air flow



WIth adjustable distance between insulators, busbars up to 100 mm wide can be used

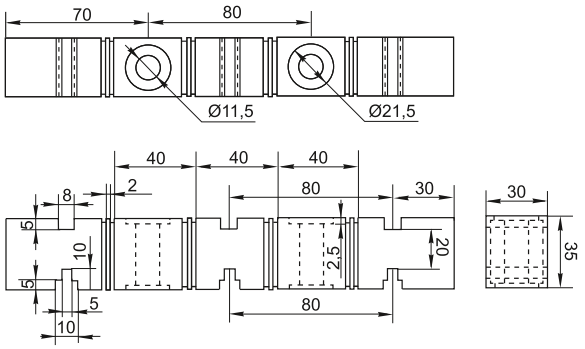
APPLICATION

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 (mm)



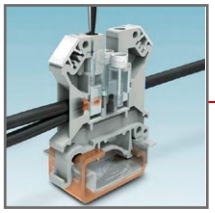
Delivery scope

1. Bus insulator bridge-type EKF – 2 pcs.
2. Interconnecting stud – 2 pcs.
3. Silicone insulating sleeve – 2 pcs.
4. Fittings: nut – 4 pcs., washer – 4 pcs.
5. Technical manual.

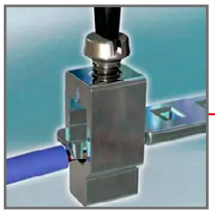
Name	Max. operating current, A	Item code
Busbar insulator bridge-type 3F 1610S EKF	2000	plc-br-3p-1610

Screw terminal blocks UT EKF

Universal screw-type terminal blocks are essential components widely used in automation, power supply, transportation, energy, and chemical industries. Our UT series terminal blocks utilize a unique, maintenance-free screw clamping technology that eliminates the need for periodic tightening of clamping screws. The conductive components are manufactured from high-quality, corrosion-resistant tin-plated brass alloys, securely fixed within the terminal housing, ensuring long-term stability. The housings are made of recyclable, high-quality polyamide 66, which resists drying out and cracking over time.

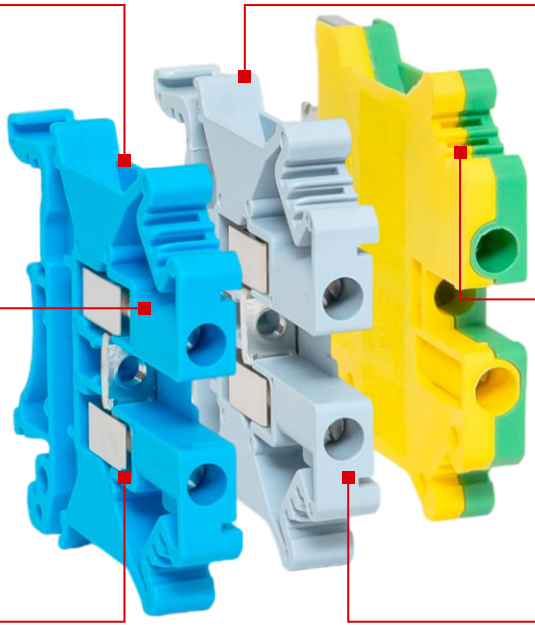


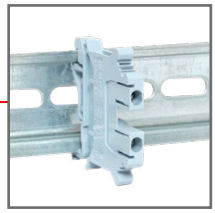
Multiple wire connection capability



Maintenance-free screw clamping technology

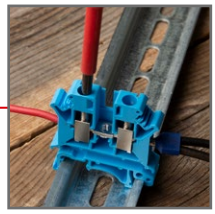
High-quality materials (tin-plated brass and polyamide 66)





Universal mounting on TH and G-type DIN rails

Large, clear labeling options for each terminal contact



Screw bridges with high current-carrying capacity

APPLICATION

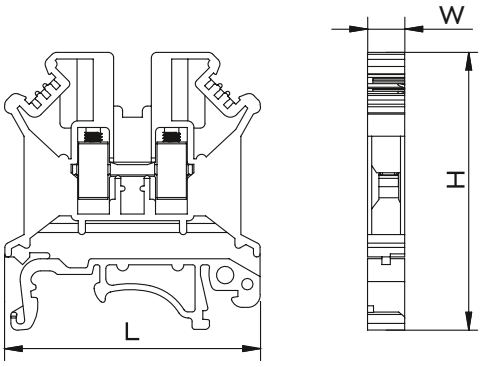
UT series universal screw-type terminal blocks are designed for versatile applications across various industrial sectors. These robust terminal blocks are ideal for:

- Organizing control wiring in complex transportation infrastructure projects;
- Facilitating reliable connections in renewable energy installations, such as wind turbines and solar farms;
- Maintaining stable electrical connections in high-vibration environments like manufacturing machinery.

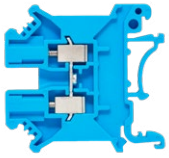
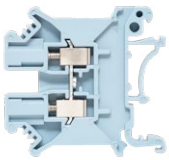
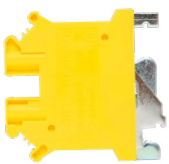
TECHNICAL DATA

Parameters		Values							
Degree of protection under IEC 60529		IP20							
Housing material		Polyamide 6.6							
Contacts material		Tinned brass							
Clamping frame material		Tinned brass							
Mounting type		DIN rail: 35 mm TH-type, G-type							
Connection type		Screwed							
Operating temperature, °C		- 40 ... 40							
Flammability		UL 94 V-0							
Rated impulse withstand voltage, kV		8							
Current-temperature derating	Ambient temperature, °C	40	45	50	55	60	65	70	75
	Derating factor	1	0,92	0,86	0,8	0,73	0,65	0,56	0,45

Overall and installation dimensions



Item code	Dimensions, mm		
	L	H	W
scr-ut-2,5-g / scr-ut-2,5-b / scr-ut-2,5-pe	42,5	47	5,2
scr-ut-4-g / scr-ut-4-b / scr-ut-4-pe	42,5	47	6,2
scr-ut-6-g / scr-ut-6-b / scr-ut-6-pe	42,5	47	8,2
scr-ut-10-g / scr-ut-10-b / scr-ut-10-pe	42,5	47,3	10,2
scr-ut-16-g / scr-ut-16-b / scr-ut-16-pe	42,5	54	12,2
scr-ut-35-g / scr-ut-35-b / scr-ut-35-pe	50,5	62	15,2
scr-ut-70-g / scr-ut-70-b / scr-ut-70-pe	70,5	80	20,2
scr-ut-95-g / scr-ut-95-b	83	90	25

Picture	Name	Conductor cross-section, mm²	Screw thread	Stripping length	Tightening torque, N·m	Rated current, A	Rated voltage, V	Solid conductor cross-section, mm²	Stranded conductor cross-section, mm²	Color	PE connection	Item code
	Screw terminal block 2,5 UT grey EKF	2,5	M3	8	0,6–0,8	32	800	0,2–4	0,2–2,5	Grey	N/A	scr-ut-2,5-g
	Screw terminal block 4 UT grey EKF	4	M3	8	0,6–0,8	41	800	0,2–6	0,2–4			scr-ut-4-g
	Screw terminal block 6 UT grey EKF	6	M4	10	1,5–1,8	57	800	0,2–10	0,2–6			scr-ut-6-g
	Screw terminal block 10 UT grey EKF	10	M4	10	1,5–1,8	76	800	0,5–16	0,5–10			scr-ut-10-g
	Screw terminal block 16 UT grey EKF	16	M4	11	1,5–1,8	101	800	2,5–25	4–16			scr-ut-16-g
	Screw terminal block 35 UT grey EKF	35	M6	16	3,2–3,7	150	1000	0,75–50	0,75–35			scr-ut-35-g
	Screw terminal block 70 UT grey EKF	70	M8	24	8–10	192	1000	16–95	25–70			scr-ut-70-g
	Screw terminal block 95 UT grey EKF	95	M8	33	15–20	232	1000	25–95	35–95			scr-ut-95-g
	Screw terminal block 2.5 UT blue EKF	2,5	M3	8	0,6–0,8	32	800	0,2–4	0,2–2,5	Blue		scr-ut-2,5-b
	Screw terminal block 4 UT blue EKF	4	M3	8	0,6–0,8	41	800	0,2–6	0,2–4			scr-ut-4-b
	Screw terminal block 6 UT blue EKF	6	M4	10	1,5–1,8	57	800	0,2–10	0,2–6			scr-ut-6-b
	Screw terminal block 10 UT blue EKF	10	M4	10	1,5–1,8	76	800	0,5–16	0,5–10			scr-ut-10-b
	Screw terminal block 16 UT blue EKF	16	M4	11	1,5–1,8	101	800	2,5–25	4–16			scr-ut-16-b
	Screw terminal block 35 UT blue EKF	35	M6	16	3,2–3,7	150	1000	0,75–50	0,75–35			scr-ut-35-b
	Screw terminal block 70 UT blue EKF	70	M8	24	8–10	192	1000	16–95	25–70			scr-ut-70-b
	Screw terminal block 95 UT blue EKF	95	M8	33	15–20	232	1000	25–95	35–95			scr-ut-95-b
	Screw terminal block 2.5 UT PE EKF	2,5	M3	7	0,6–0,8	32	–	0,2–4	0,2–2,5	Green	Available	scr-ut-2,5-pe
	Screw terminal block 4 UT PE EKF	4	M3	8	0,6–0,8	41		0,2–6	0,2–4			scr-ut-4-pe
	Screw terminal block 6 UT PE EKF	6	M4	10	1,5–1,8	57		0,2–10	0,2–6			scr-ut-6-pe
	Screw terminal block 10 UT PE EKF	10	M4	10	1,5–1,8	76		0,5–16	0,5–10			scr-ut-10-pe
	Screw terminal block 16 UT PE EKF	16	M4	11	1,5–1,8	101		2,5–25	4–16			scr-ut-16-pe
	Screw terminal block 35 UT PE EKF	35	M6	15	3,2–3,7	150		0,75–50	0,75–35			scr-ut-35-pe
	Screw terminal block 70 UT PE EKF	70	M8	24	8–10	192		16–95	25–70			scr-ut-70-pe

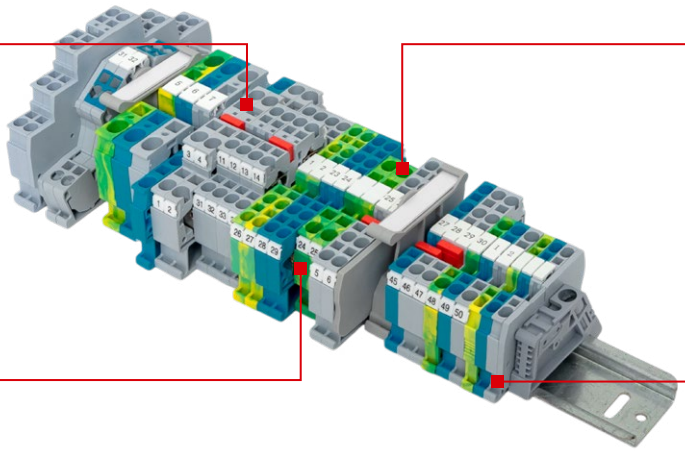
Accessories compatibility

UT Terminal block item code	Color	Item code									
		End cover	Bridge	Blank markers (500 pcs.)	Markers 1-10 (100 pcs.)	Markers 1-50 (100 pcs.)	Markers 50-100 (100 pcs.)	Markers 100-150 (100 pcs.)	Markers 150-200 (100 pcs.)	Markers A-B-C-N-PE (100 pcs.)	Markers L1- L2-L3-N-PE (100 pcs.)
scr-ut-2,5-g	Grey	scr-ut-sak-4/6/10-g	scr-ut-jum-2,5	zb-st-2.5-0	zb-st-2.5-1-10	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
scr-ut-4-g		scr-ut-sak-4/6/10-g	scr-ut-jum-4	zb-st-4-0	zb-st-4-1-10	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
scr-ut-6-g		scr-ut-sak-4/6/10-g	scr-ut-jum-6	zb-st-6-0	zb-st-6-1-10	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
scr-ut-10-g		scr-ut-sak-4/6/10-g	scr-ut-jum-10	scr-ut-mrk-10-90-0		scr-ut-mrk-10-90-1-50					
scr-ut-16-g		scr-ut-sak-16-g	scr-ut-jum-16	scr-ut-mrk-10-90-0		scr-ut-mrk-10-90-1-50					
scr-ut-35-g		-	scr-ut-jum-35	scr-ut-mrk-10-90-0	-	scr-ut-mrk-10-90-1-50	-	-	-	-	-
scr-ut-70-g			scr-ut-jum-95	scr-ut-mrk-10-90-0		scr-ut-mrk-10-90-1-50					
scr-ut-95-g			-	scr-ut-mrk-10-90-0		scr-ut-mrk-10-90-1-50					
scr-ut-2,5-b	Blue	scr-ut-sak-4/6/10-b	scr-ut-jum-2,5	zb-st-2.5-0	zb-st-2.5-1-10	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
scr-ut-4-b		scr-ut-sak-4/6/10-b	scr-ut-jum-4	zb-st-4-0	zb-st-4-1-10	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
scr-ut-6-b		scr-ut-sak-4/6/10-b	scr-ut-jum-6	zb-st-6-0	zb-st-6-1-10	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
scr-ut-10-b		scr-ut-sak-4/6/10-b	scr-ut-jum-10	scr-ut-mrk-10-90-0		scr-ut-mrk-10-90-1-50					
scr-ut-16-b		scr-ut-sak-16-b	scr-ut-jum-16	scr-ut-mrk-10-90-0		scr-ut-mrk-10-90-1-50					
scr-ut-35-b			scr-ut-jum-35	scr-ut-mrk-10-90-0	-	scr-ut-mrk-10-90-1-50	-	-	-	-	-
scr-ut-70-b		-	scr-ut-jum-95	scr-ut-mrk-10-90-0		scr-ut-mrk-10-90-1-50					
scr-ut-95-b			-	scr-ut-mrk-10-90-0		scr-ut-mrk-10-90-1-50					
scr-ut-2,5-pe	Yellow-green	-	scr-ut-jum-2,5	zb-st-2.5-0	zb-st-2.5-1-10	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
scr-ut-4-pe			scr-ut-jum-4	zb-st-4-0	zb-st-4-1-10	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
scr-ut-6-pe			scr-ut-jum-6	zb-st-6-0	zb-st-6-1-10	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
scr-ut-10-pe			scr-ut-jum-10	scr-ut-mrk-10-90-0		scr-ut-mrk-10-90-1-50					
scr-ut-16-pe			scr-ut-jum-16	scr-ut-mrk-10-90-0	-	scr-ut-mrk-10-90-1-50	-	-	-	-	-
scr-ut-35-pe			scr-ut-jum-35	scr-ut-mrk-10-90-0		scr-ut-mrk-10-90-1-50					
scr-ut-70-pe			scr-ut-jum-95	scr-ut-mrk-10-90-0		scr-ut-mrk-10-90-1-50					

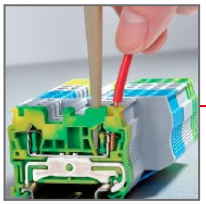
Spring-clamp terminal blocks JXB-ST EKF

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.

High-quality corrosion-resistant copper alloy conductive inserts



Double interconnect rows enable easy bridging of multiple terminals



High clamping force for reliable connection, resistant to vibrations

Flame-retardant polyamide housing that does not dry out or crack

APPLICATION

Terminal blocks are widely used in industrial control systems, electrical distribution panels and process equipment.

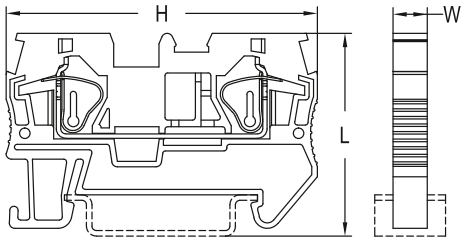
TECHNICAL DATA

Parameters		Values							
Rated voltage, V AC		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							
Current-temperature derating	Ambient temperature, °C	40	45	50	55	60	65	70	75
	Derating factor	1	0,92	0,86	0,8	0,73	0,65	0,56	0,45

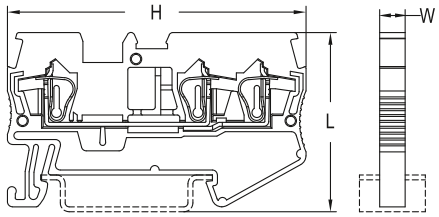
Name	Dimensions, mm		
	L	H	W
JXB-ST-1,5 / JXB-ST-1,5 ground	36,9	48,9	4,2
JXB-ST-2,5 / JXB-ST-2,5 ground	36,9	48,9	5,2
JXB-ST-4 / JXB-ST-4 ground	36,9	56,4	6,2
JXB-ST-6 / JXB-ST-6 ground	44,2	70,3	8,2
JXB-ST-1,5 3 outputs / JXB-ST-1,5 3 outputs ground	36,5	60,8	4,2
JXB-ST-2,5 3 outputs / JXB-ST-2,5 3 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

Overall and installation dimensions

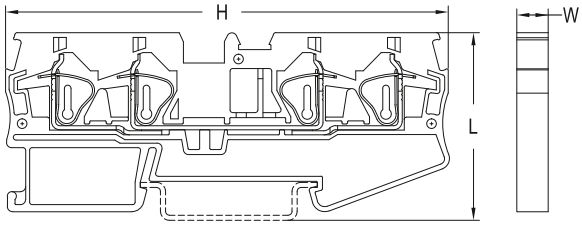
JXB-ST, 2 outputs



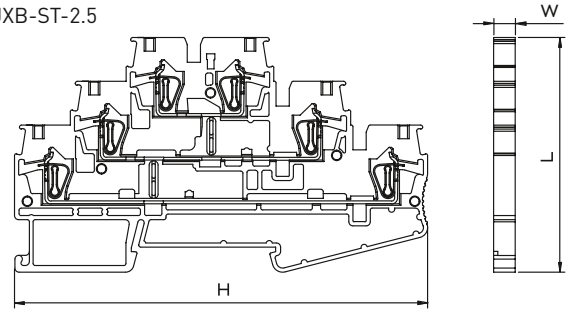
JXB-ST 3, outputs



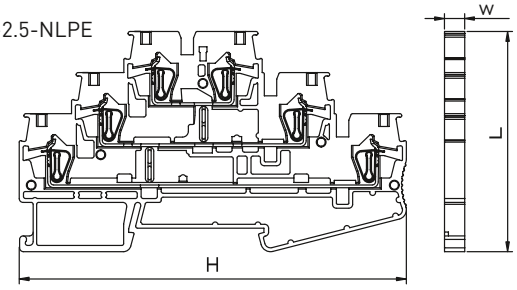
JXB-ST, 4 outputs



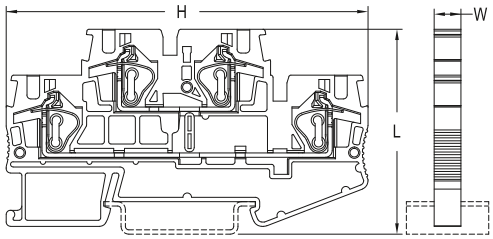
JXB-ST-2.5



JXB-ST-2.5-NLPE



Double JXB-ST



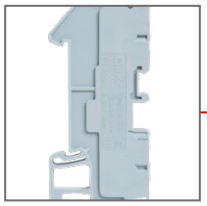
Picture	Name	Cross-section, mm²	Rated current, A	Cross-section of solid wire, mm²	Cross-section of stranded wire, mm²	Stripping length, mm	Number of levels	Color	PE connection	Number of contact sockets	Item code
	Terminal block (spring clamp) JXB-ST-1.5 17,5A EKF	1,5	17,5	0,14–2,5	0,14–1,5	10	1	Grey	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
	Terminal block (spring clamp) triple JXB-ST-2.5 28A grey EKF	2,5	28	0,2-4	0,2-2,5	10	3	Grey	N/A	2	plc-st-2.5-6-3
	Terminal block (spring clamp) N/L/PE JXB-ST-2.5 30A grey EKF	2,5	30	0,2-4	0,2-2,5	10	3	Grey	Yes	2	plc-jxb-st-2.5-nlpe

Accessories compatibility chart

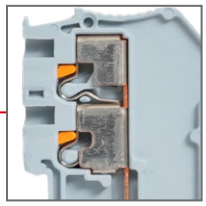
Name	Color	Item code														
		End cover	Bridge 2-pin (red)	Bridge 3-pin (red)	Blank markers (500 pcs.)	Markers 1–50 (100 pcs.)	Markers 50–100 (100 pcs.)	Markers 100–150 (100 pcs.)	Markers 150–200 (100 pcs.)	Markers A-B-C-N-PE (100 pcs.)	Markers L1-L2-L3-N-PE (100 pcs.)	Marking holder for terminal 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-L1-3				
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-L1-3				
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-L1-3				
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-L1-3				
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-L1-3				
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-L1-3				
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-L1-3				
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-L1-3				
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-L1-3				
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-L1-3				
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-L1-3	ahdw-2-38	ahdw-211	ahdw-201	ahdw-ew
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-L1-3				
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-L1-3				
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-L1-3				
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-L1-3				
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-L1-3				
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-L1-3				
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-L1-3				
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-L1-3				
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-L1-3				
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-L1-3				
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-L1-3				

Push-in terminal blocks

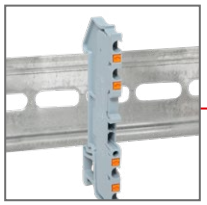
Push-in terminal blocks enable quick and easy connection of 1,5 to 6 mm² conductors without the need for any additional tools. Shaped contact springs facilitate insertion and securely hold the conductors in place. When a solid or stranded conductor is inserted, the contact spring is pushed back, creating the required clamping force. In order to remove the conductor, push the associated button to retract the spring. Push-in terminal blocks enable rapid wiring and reliable operation of control panels, while their two-level interconnects enable bridging of multiple inputs and outputs. While our push-in terminals support stranded conductors, we recommend using cord end ferrules, especially for more flexible, higher gauge wires.



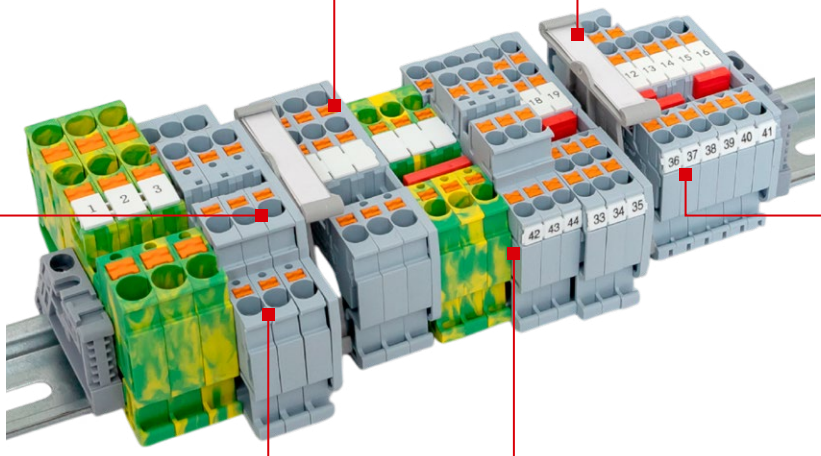
Flame-retardant polyamide housing that does not dry out or crack



High-quality corrosion-resistant copper alloy conductive inserts

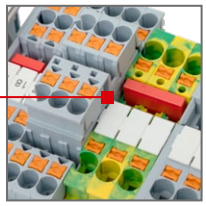


Compact size and top cable entry are an ideal solution for often cramped control panels



Large, clear labeling options for each terminal contact

Rapid tool-less connections 50% lower force of insertion enables quick connection of both solid and stranded wires



Double interconnect rows enable easy bridging of multiple terminals

APPLICATION

Push-in terminal blocks are engineered for efficient and reliable electrical connections across a wide range of industrial and commercial applications. These terminal blocks are ideal for:

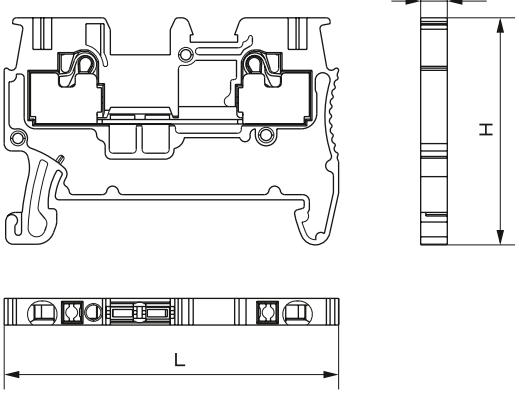
- Streamlining control panel wiring in factory automation systems;
- Optimizing space utilization in densely packed telecommunications equipment;
- Simplifying installation and maintenance of building automation systems

TECHNICAL DATA

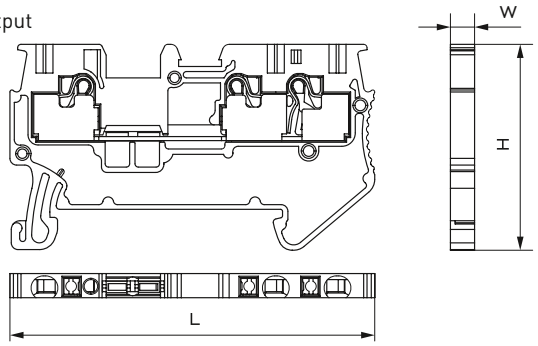
Parameters		Values							
Degree of protection under IEC 60529		IP20							
Housing material		Polyamide 6.6							
Contacts material		Tinned brass							
Clamping frame material		Tinned brass							
Mounting type		DIN rail, 35mm TH profile							
Connection type		Spring							
Operating temperature, °C		- 40 ... 40							
Flammability		UL 94 V-0							
Impulse withstand voltage	for 1,5 mm² conductor, kV	6							
	for 2,5-6 mm² conductor, kV	8							
Current-temperature derating	Ambient temperature, °C	40	45	50	55	60	65	70	75
	Derating factor	1	0,92	0,86	0,8	0,73	0,65	0,56	0,45

Overall and installation dimensions

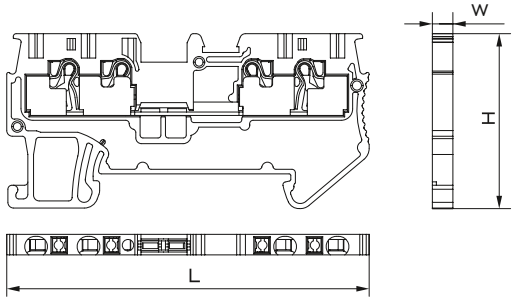
Two-output models



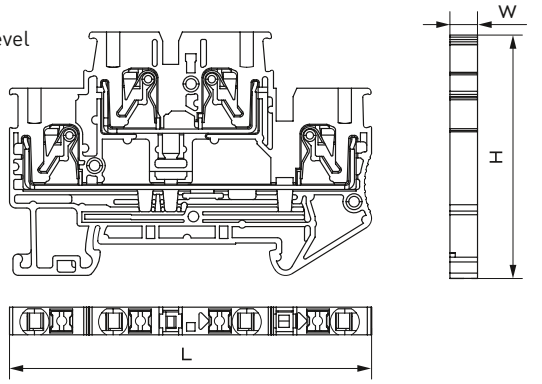
Three-output models



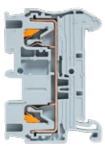
Four-output models

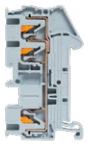
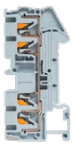
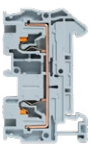


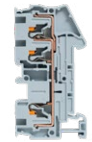
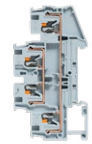
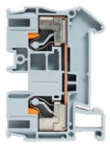
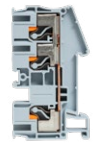
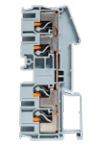
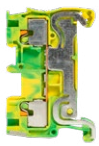
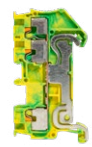
Double-level models

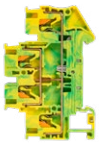


Item code	Dimensions, mm		
	L	H	W
PIT-1,5	30,5	45	3,5
PIT-1,5-3	30,5	54	3,5
PIT-1,5-4	30,5	63,2	3,5
PIT-2,5	35,3	48,6	5,2
PIT-2,5-3	35,3	60,5	5,2
PIT-2,5-4	35,3	72,2	5,2
PIT-2,5-double	45,8	68	5,2
PIT-4	35,3	56	6,2
PIT-4-3	35,3	66,5	6,2
PIT-4-4	35,3	77	6,2
PIT-4-double	47,5	83,5	6,2
PIT-6	42,2	57,7	8,2
PIT-6-3	42,2	74,2	8,2
PIT-6-4	42,2	90,5	8,2
PIT-1,5-pe	30,5	45	3,5
PIT-1,5-3-pe	30,5	54	3,5
PIT-1,5-4-pe	30,5	63,2	3,5
PIT-2,5-pe	35,3	48,6	5,2
PIT-2,5-3-pe	35,3	60,5	5,2
PIT-2,5-4-pe	35,3	72,2	5,2
PIT-2,5-double-pe	45,8	68	5,2
PIT-4-pe	35,3	56	6,2
PIT-4-3-pe	35,3	66,5	6,2
PIT-4-4-pe	35,3	77	6,2
PIT-6-pe	42,2	57,7	8,2
PIT-6-3-pe	42,2	74,2	8,2
PIT-6-4-pe	42,2	90,5	8,2

Picture	Name	Conductor cross-section, mm²	Rated current, A	Rated voltage, V	Stranded conductor cross-section, mm²	Stripping length, mm	Color	Item code
	Push-in terminal block 1,5 grey	1,5	17,5	500	0,14-1,5	8-10	Grey	PIT-1,5
	Push-in terminal block 1,5 3 outputs grey	1,5	17,5	500	0,14-1,5	8-10		PIT-1,5-3
	Push-in terminal block 1,5 4 outputs grey	1,5	17,5	500	0,14-1,5	8-10		PIT-1,5-4
	Push-in terminal block 2,5 grey	2,5	24	800	0,14-2,5	8-10		PIT-2,5

Picture	Name	Conductor cross-section, mm²	Rated current, A	Rated voltage, V	Stranded conductor cross-section, mm²	Stripping length, mm	Color	Item code
	Push-in terminal block 2,5 3 outputs grey	2,5	24	800	0,14-2,5	8-10	Grey	PIT-2,5-3
	Push-in terminal block 2,5 4 outputs grey	2,5	24	800	0,14-2,5	8-10		PIT-2,5-4
	Push-in terminal block double-level 2,5 grey	2,5	22	500	0,14-2,5	8-10		PIT-2,5-double
	Push-in terminal block 4 grey	4	32	800	0,2-4	10-12		PIT-4

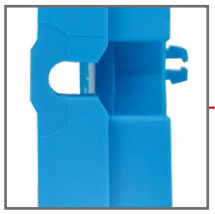
Picture	Name	Conductor cross-section, mm²	Rated current, A	Rated voltage, V	Stranded conductor cross-section, mm²	Stripping length, mm	Color	Item code
	Push-in terminal block 4 3 outputs grey	4	32	800	0,2-4	10-12	Grey	PIT-4-3
	Push-in terminal block 4 4 outputs grey	4	32	800	0,2-4	10-12		PIT-4-4
	Push-in terminal block double-level 4 grey	4	28	500	0,2-4	10-12		PIT-4-double
	Push-in terminal block 6 grey	6	41	1000	0,5-6	10-12		PIT-6
	Push-in terminal block 6 3 outputs grey	6	41	1000	0,5-6	10-12		PIT-6-3
	Push-in terminal block 6 4 outputs grey	6	41	1000	0,5-6	10-12		PIT-6-4
	Push-in terminal block 1,5 ground	1,5	17,5		0,14-1,5	8-10	Yellow-green	PIT-1,5-pe
	Push-in terminal block 1,5 3 outputs ground	1,5	17,5		0,14-1,5	8-10		PIT-1,5-3-pe
	Push-in terminal block 1,5 4 outputs ground	1,5	17,5		0,14-1,5	8-10		PIT-1,5-4-pe
	Push-in terminal block 2,5 ground	2,5	24		0,14-2,5	8-10		PIT-2,5-pe

Picture	Name	Conductor cross-section, mm²	Rated current, A	Rated voltage, V	Stranded conductor cross-section, mm²	Stripping length, mm	Color	Item code
	Push-in terminal block 2,5 3 outputs ground	2,5	24		0,14-2,5	8-10	Yellow-green	PIT-2,5-3-pe
	Push-in terminal block 2,5 4 outputs ground	2,5	24		0,14-2,5	8-10		PIT-2,5-4-pe
	Push-in terminal block double-level 2,5 ground	2,5	22		0,14-2,5	8-10		PIT-2,5-double-pe
	Push-in terminal block 4 ground	4	32		0,2-4	10-12		PIT-4-pe
	Push-in terminal block 4 3 outputs ground	4	32		0,2-4	10-12		PIT-4-3-pe
	Push-in terminal block 4 4 outputs ground	4	32		0,2-4	10-12		PIT-4-4-pe
	Push-in terminal block 6 ground	6	41		0,5-6	10-12		PIT-6-pe
	Push-in terminal block 6 3 outputs ground	6	41		0,5-6	10-12		PIT-6-3-pe
	Push-in terminal block 6 4 outputs ground	6	41		0,5-6	10-12		PIT-6-4-pe

Push-in terminal block item code	Color	End cover	Bridge 2-pin	Bridge 3-pin	Bridge 10-pin	Blank markers (500 pcs.) Side-mounted	Markers 1-50 (100 pcs.) Side-mounted	Blank markers (500 pcs.)	Markers 1-10 (100 pcs.)	Markers 1-50 (100 pcs.)	Markers 50-100 (100 pcs.)	Markers 100-150 (100 pcs.)	Markers 150-200 (100 pcs.)	Markers A-B-C-N-PE (100 pcs.)	Markers L1- L2-L3-N-PE (100 pcs.)
		Item code													
PIT-1,5	Grey	EP-PIT-1,5	–	–	–	–	–	zb-st-1.5-0	zb-st-1.5-1-10	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
PIT-1,5-3		EP-PIT-1,5-3													
PIT-1,5-4		EP-PIT-1,5-4													
PIT-2,5		EP-PIT-2,5	plc-per-st-2PIN-2.5	plc-per-st-3PIN-2.5	plc-per-st-10PIN-2.5	zb-st-2.5-nlpe-0	zb-st-2.5-nlpe-1-50	zb-st-2.5-0	zb-st-2.5-1-10	zb-st-2.5-1-10	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
PIT-2,5-3		EP-PIT-2,5-3													
PIT-2,5-4		EP-PIT-2,5-4													
PIT-2,5-double		EP-PIT-2,5-double													
PIT-4		EP-PIT-4	plc-per-st-2PIN-4	plc-per-st-3PIN-4	plc-per-st-10PIN-4	–	–	zb-st-4-0	zb-st-4-1-10	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
PIT-4-3		EP-PIT-4-3													
PIT-4-4		EP-PIT-4-4													
PIT-4-double		EP-PIT-4-double													
PIT-6		EP-PIT-6	plc-per-st-2PIN-6	–	–	–	–	zb-st-6-0	zb-st-6-1-10	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
PIT-6-3		EP-PIT-6-3													
PIT-6-4		EP-PIT-6-4													
PIT-1,5-pe	Yellow-green	EP-PIT-1,5	–	–	–	–	–	zb-st-1.5-0	zb-st-1.5-1-10	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
PIT-1,5-3-pe		EP-PIT-1,5-3													
PIT-1,5-4-pe		EP-PIT-1,5-4													
PIT-2,5-pe		EP-PIT-2,5	plc-per-st-2PIN-2.5	plc-per-st-3PIN-2.5	plc-per-st-10PIN-2.5	zb-st-2.5-nlpe-0	zb-st-2.5-nlpe-1-50	zb-st-2.5-0	zb-st-2.5-1-10	zb-st-2.5-1-10	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
PIT-2,5-3-pe		EP-PIT-2,5-3													
PIT-2,5-4-pe		EP-PIT-2,5-4													
PIT-2,5-double-pe		EP-PIT-2,5-double													
PIT-4-pe		EP-PIT-4	plc-per-st-2PIN-4	plc-per-st-3PIN-4	plc-per-st-10PIN-4	–	–	zb-st-4-0	zb-st-4-1-10	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
PIT-4-3-pe		EP-PIT-4-3													
PIT-4-4-pe		EP-PIT-4-4													
PIT-6-pe		EP-PIT-6	plc-per-st-2PIN-6	–	–	–	–	zb-st-1.5-0	zb-st-1.5-1-10	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
PIT-6-3-pe		EP-PIT-6-3													
PIT-6-4-pe		EP-PIT-6-4													

Mini terminals STB EKF

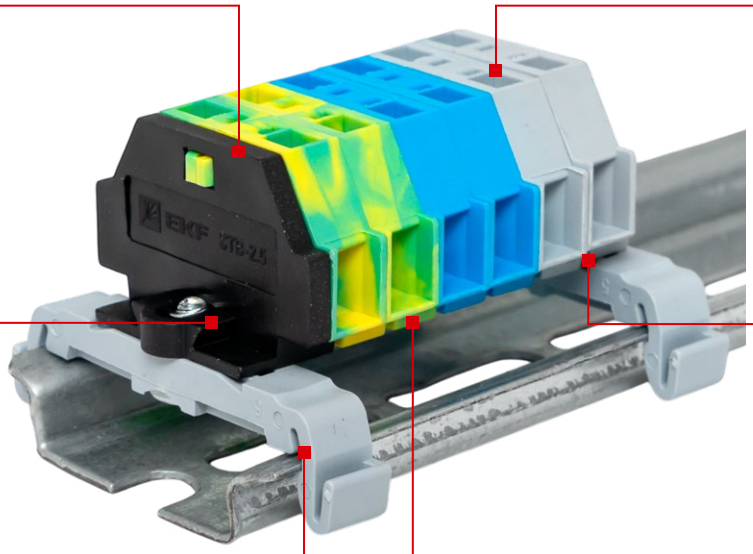
Mini terminals STB EKF are designed for connecting and branching phase, neutral and grounding wires of various cross-sections. With compact design, STB terminals can be used in limited space. To connect wires, push the spring in the terminal side with a screwdriver. Mini terminals are complemented with side covers and DIN-rail mounting clips.



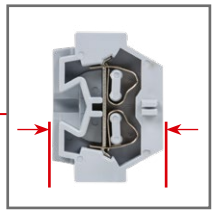
Flame-retardant polyamide housing does not dry out or crack

Tinned copper conductive plate

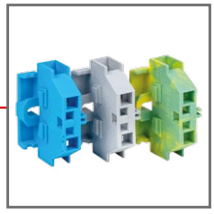
DIN rail installation mount



Spring-loaded contact for safe wire securing



Compact size



Interconnection options

APPLICATION

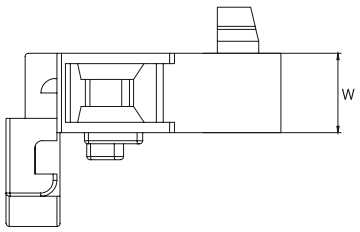
Terminals are widely used in industrial control systems, electrical distribution panels and process equipment.

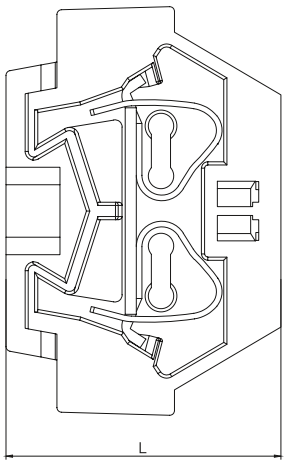
TECHNICAL DATA

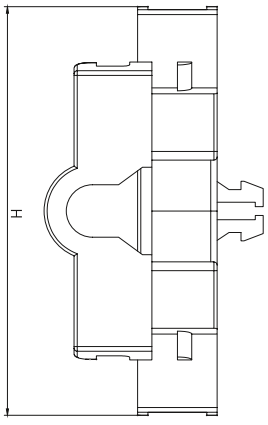
Parameters		Values							
Degree of protection, IEC 60529		IP20							
Housing material		Polyamide 6.6							
Contact part material		Tinned copper							
Mounting type		Mounting plate							
Connection type		Spring							
Operating temperature, °C		From -40 to +75							
Number of contact sockets per level		2							
Number of levels		1							
Current-temperature derating	Ambient temperature, °C	40	45	50	55	60	65	70	75
	Derating factor	1	0,92	0,86	0,8	0,73	0,65	0,56	0,45

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







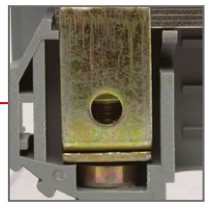
Picture	Name	Cross-section, mm²	Rated AC voltage, V	Rated current, A	Stripping length, mm	Color	Item code
	Mini terminal STB-1.5 18A (200 pcs.) EKF	0.1–1,5	400	18	8	Grey	stb-m-1.5-gray
	Mini terminal STB-2.5 24A (200 pcs.) EKF	0.1–2,5	500	24	8		stb-m-2.5-gray
	Mini terminal STB-4 32A (200 pcs.) EKF	0.1–4	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 clip for STB mini terminals (200 pcs.) EKF	Grey	1,5 2,5 4	mf-stb-m

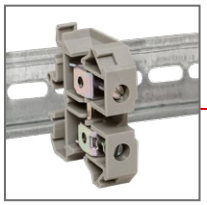
Terminal blocks JXB EKF

JXB is an affordable product line of screw terminal blocks. They can be mounted onto a TH or G-type DIN rails in distribution enclosures for easy and reliable connection of various wire cross-sections. The wire is clamped in the terminal block by a screw. Boasting streamlined design JXB screw terminal block offer excellent contact quality.

Central screw securely holds the ground terminal in contact with the DIN rail



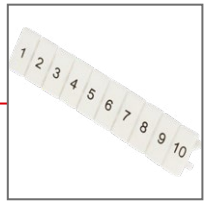
Galvanized steel conductive plate and clamping frame



Universal mounting on TH and G-type DIN rails

Screw bridges with high current-carrying capacity

Wide range of compatible wire cross-sections (1–95 mm²), colors and types



Universal markers compatible with all frame sizes

APPLICATION

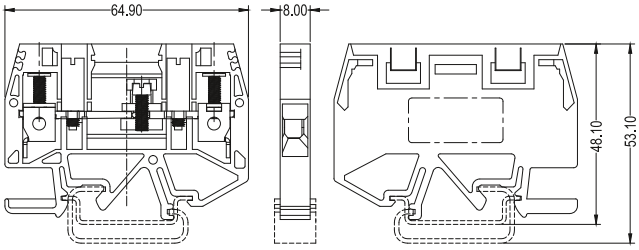
Terminal blocks are widely used in industrial control systems, electrical distribution panels and process equipment.

TECHNICAL DATA

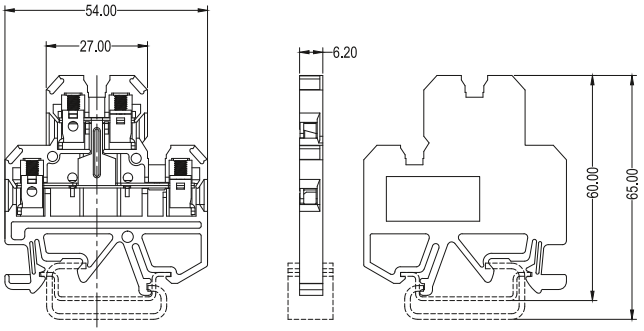
Parameters		Values							
Protection degree per IEC 60529		IP20							
Housing material		Polyamide 6.6							
Contact material		Anodized steel							
Mounting type		DIN rail, standard 35mm profile							
		DIN rail, G 32mm profile							
Connection		Screw							
Operating temperature, °C		From -40 to +80							
Number of contact sockets per level		2							
Current-temperature derating	Ambient temperature, °C	40	45	50	55	60	65	70	75
	Derating factor	1	0,92	0,86	0,8	0,73	0,65	0,56	0,45

Overall and installation dimensions (mm)

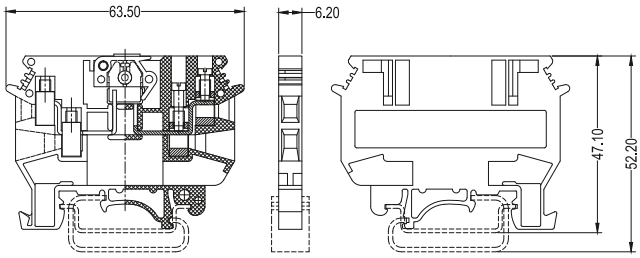
JXB-6S1/35

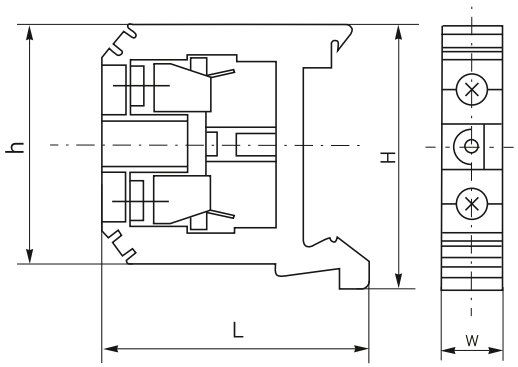


JXB-4/35, JXB-4/35L



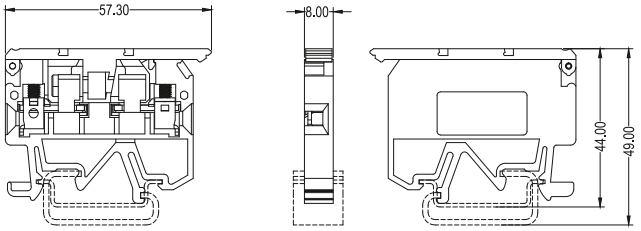
JXB-2-4/35K



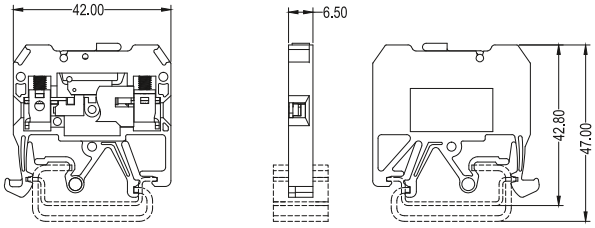


Name	Dimensions, mm			
	L	H	h	W
JXB-2,5/35	40,5	40,7	39	6,5
JXB-4/35	45	42	40	6,5
JXB-6/35	45	42	40	8
JXB-10/35	45	42	40	10
JXB-16/35	51,5	50	50	12
JXB-35/35	62	59	59	18
JXB-70/35	78	75	75	22
JXB-95/35	91	89	83,5	26
EK-JXB-2,5	39	57	39	6,2
EK-JXB-4	47	57	40,5	7
EK-JXB-6	47	58	40,5	8
EK-JXB-10	47	57	40,5	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

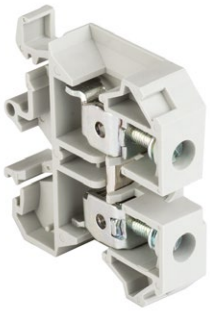


JXB-4/35K



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 voltage, V AC	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 voltage, V AC	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		25	1–2,5	10	0,4	Yellow			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	800	35	2–4	10	0,5		1	N/A	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-purpose 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.

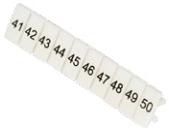
Picture	Name	Cross-section, mm²	Rated voltage, V AC	Rated current, A	Cross-section of stranded wire, mm²	Stripping length, mm	Tightening torque, N·m	Color	Number of levels	Item code
	Double terminal block JXB-4/35 grey EKF	4	500	32	0,2–4	10	0,5	Grey	2	plc-jxb-2-4/35gy
	Double terminal block JXB-4/35 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 2-pin	Bridge 3-pin	Bridge 10-pin
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 JXB terminal blocks blank (500 pcs.) EKF	dek-35-0
	Markers for JXB terminal blocks 1-10 (100 pcs.) EKF	dek-35-1-10
	Markers for JXB terminal blocks 1-50 (100 pcs.) EKF	dek-35-1-50
	Markers for JXB terminal blocks A-B-C-N-PE (100 pcs.) EKF	dek-35-A-PE
	Markers for JXB terminal blocks L1- L2-L3-N-PE (100 pcs.) EKF	dek-35-L-1-3

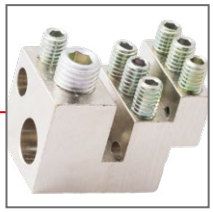
Picture	Name	Item code
	Marking holder for terminal block EKF	ahdw-2-38
	DIN rail clamp HDW-211 1 screw EKF	ahdw-211
	DIN rail clamp HDW-201 2 screws EKF	ahdw-201
	DIN rail plastic clamp EW 1 screw EKF	ahdw-ew
	DIN rail screw stopper EKF	eb-01

Power distribution blocks PDB EKF

Power distribution blocks PDB 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 unit



Tinned copper cover. Copper and aluminum wires supported

Transparent front cover 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, mm²	2,5–185

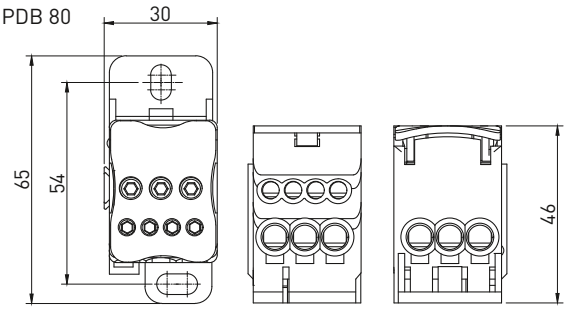
Screw size	Wire cross-section, mm²	Number of inputs	Tightening torque, N·m	Item code
M6	2,5–16	3	3,5	plc-kbr80
M5	2,5–6	4	1,2	
M10	10–35	1	8,5	plc-kbr125
M6	2,5–16	7	3,5	
M10	10–70	1	8,5	plc-kbr160
M6	2,5–16	7	3,5	
M16	35–120	1	19	plc-kbr250
M10	6–35	2	8,5	
M8	2,5–16	5	4,4	
M6	2,5–10	4	3,5	
M16	95–185	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

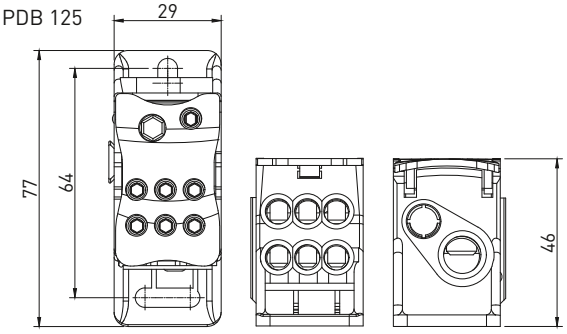
1. Install the block onto a DIN rail, or onto a mounting plate with two screws.
2. No cover opening is required for routine tightening of the cable securing bolts.

Overall and installation dimensions (mm)

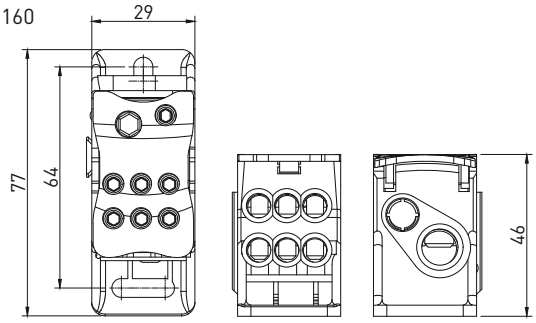
PDB 80



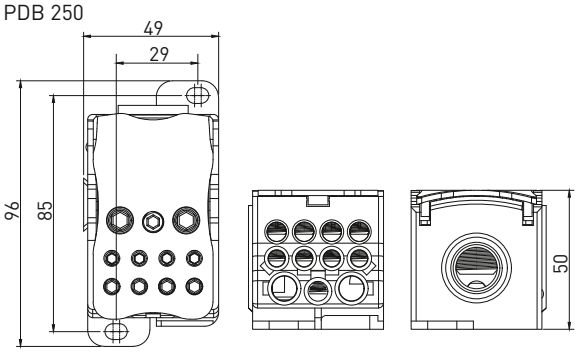
PDB 125



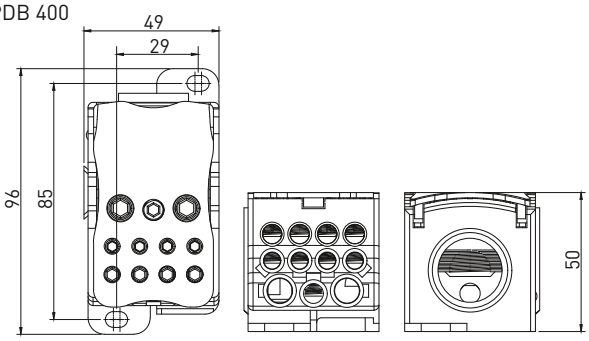
PDB 160



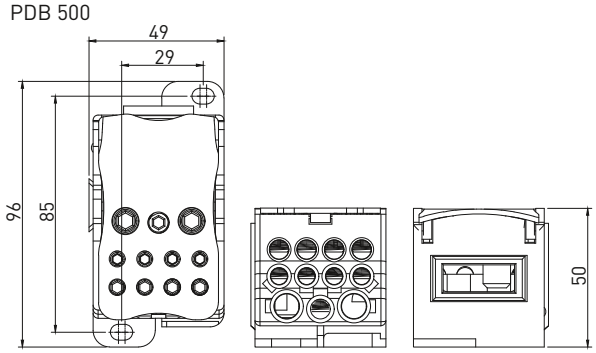
PDB 250



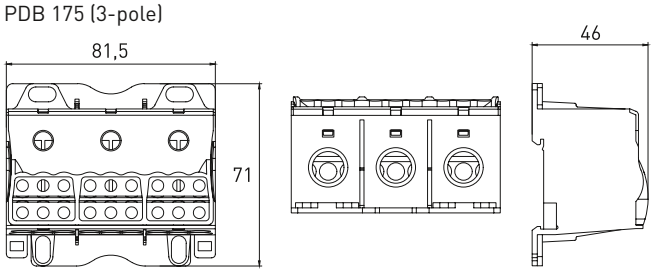
PDB 400



PDB 500



PDB 175 (3-pole)



Delivery scope

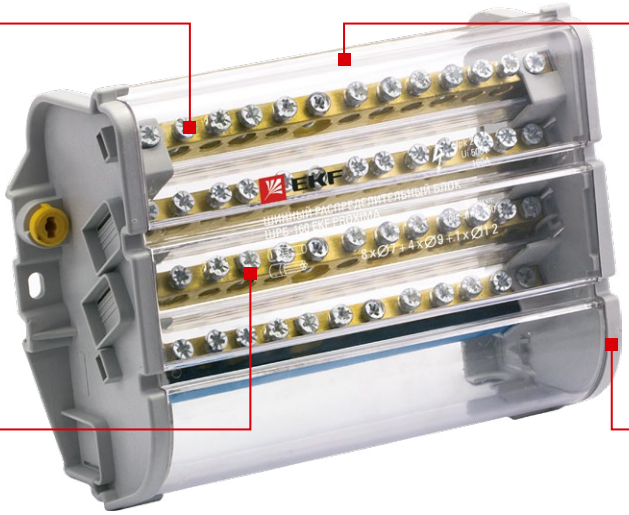
1. Power distribution block KBR.
2. Marking stickers.
3. Technical manual.

Picture	Name	Input contacts, mm²	Output contacts, mm²	Rated voltage, V	Rated current, A	Item code
	Power distribution block PDB DIN rail/mounting plate 80A EKF	1 × 16	2 × 16 4 × 6	690	80	plc-kbr80
	Power distribution block PDB DIN rail/mounting plate 125A EKF	1 × 35 1 × 16	6 × 16		125	plc-kbr125
	Power distribution block PDB DIN rail/mounting plate 160A EKF	1 × 70 1 × 16	6 × 16		160	plc-kbr160
	Power distribution block PDB DIN rail/mounting plate 250A EKF	1 × 120	5 × 16 2 × 35 4 × 10		250	plc-kbr250
	Power distribution block PDB DIN rail/mounting plate 400A EKF	1 × 185	5 × 16 2 × 35 4 × 10		400	plc-kbr400
	Power distribution block PDB 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 PDB 3-pole 175A EKF	3 × 70	18 × 16		175	kbr3-175

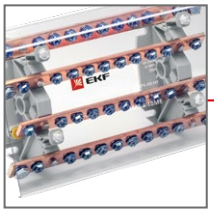
Multi-stage distribution blocks EKF

Multi-stage distribution blocks EKF are used as terminal blocks to arrange structured cable systems in distribution enclosures and 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.

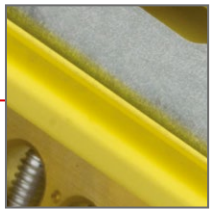
Full range of rated currents from 160 to 400 A. Galvanized steel screws included in the kit



Transparent cover 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

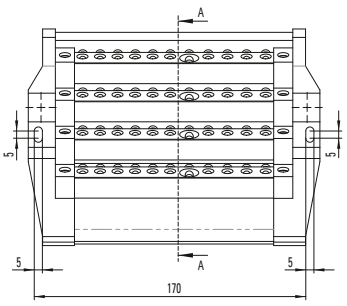
- Electrical distribution panels, motor control centers, switchgears
- Industrial machinery, and various types of electrical equipment.

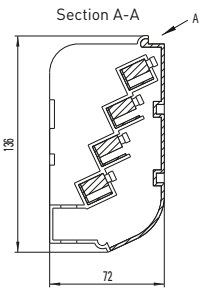
TECHNICAL DATA

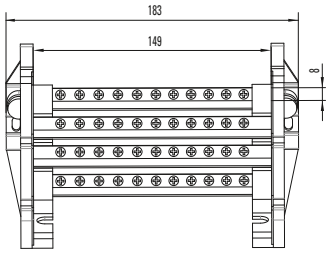
Parameters	Values			
	plc-shrb-160	plc shrb-200	plc shrb-250	plc shrb-400
Rated voltage, V	400			
Rated insulation voltage, V	500			
Rated peak withstand current Ipk, kA	20			
Rated current, A	160	200	250	400
Number of poles	4			
Screw terminals (number x diameter of screws)	8 × Ø7 + 4 × Ø9 + 1 × Ø12	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 steel			

Overall and installation dimensions (mm)

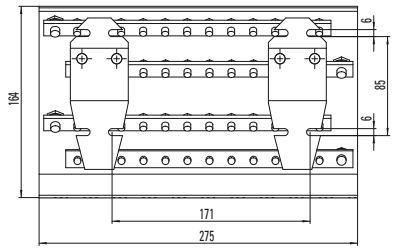
Distribution block 160

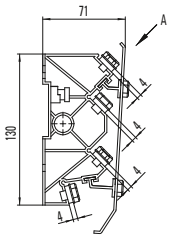


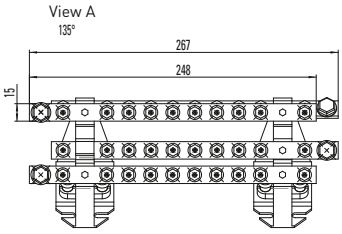




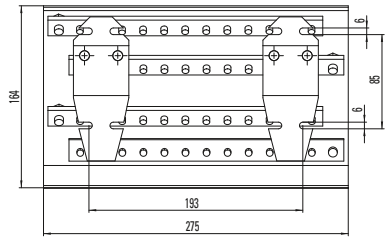
Distribution block 200

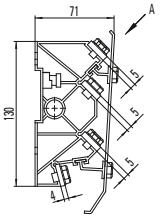


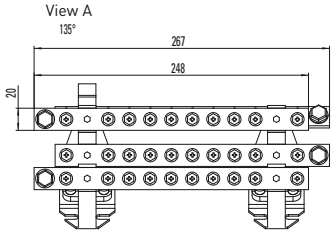




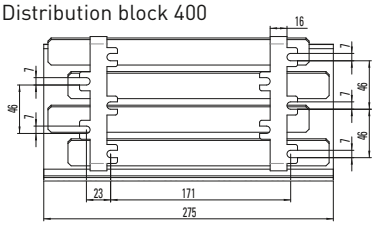
Distribution block 250

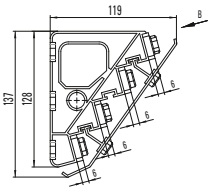


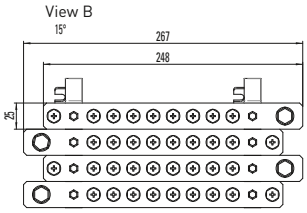




Distribution block 400

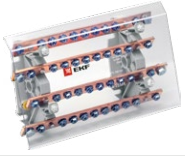






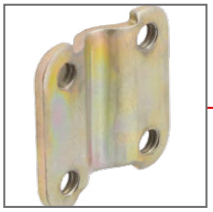
Delivery scope

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.

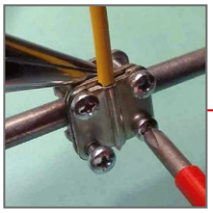
Picture	Name	Number of poles	Number of screws connected per busbar (diameter)	Rated current, A	Item code
	Multi-stage distribution block 160 EKF	4	8 × Ø7 + 4 × Ø9 + 1 × Ø12	160	plc-shrb-160
	Multi-stage distribution block 200 EKF		1 × M8 + 10 × M6	200	plc-shrb-200
	Multi-stage distribution block 250 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 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, with no need to cut the wires.

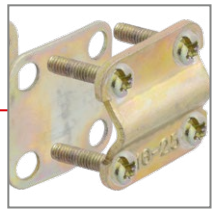


Anodized steel contact part



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.

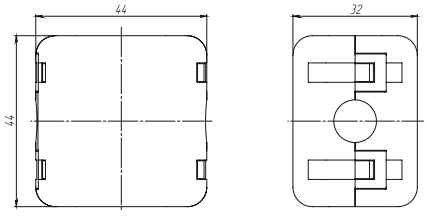
TECHNICAL DATA

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

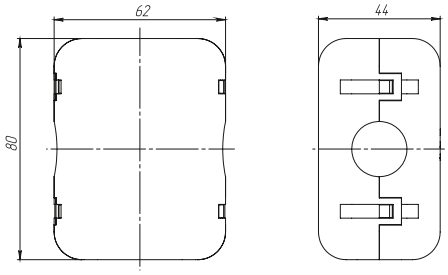
* Provided the housing cover is latched.

Overall and installation dimensions (mm)

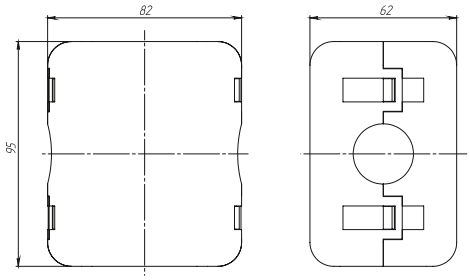
y731m, y733m, y734m, y739m



y859m



y870m, y871m, y872m

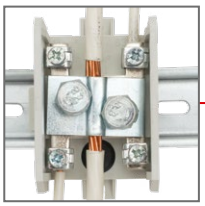


Name	Main conductor cross-section, mm²	Branch conductor cross-section, mm²	Item code
Branching clamp U731M StreamLine	4–10	1,5–10	y731m*
Branching clamp U733M StreamLine	16–35	1,5–10	y733m*
Branching clamp U734M StreamLine	16–35	16–25	y734m*
Branching clamp U739M StreamLine	4–10	1,5–2,5	y739m*
Branching 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.

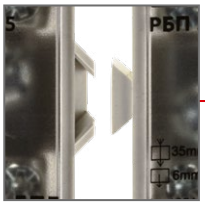
Branch terminal blocks RBP EKF

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 voltages up to 660 V, with no need to cut the main conductor. Up to four branches can be connected.



Panel and DIN rail mounting options

Electrolytic tin plated brass base. Copper and aluminum wires supported



Gangable housing

Flame retardant polycarbonate

APPLICATION

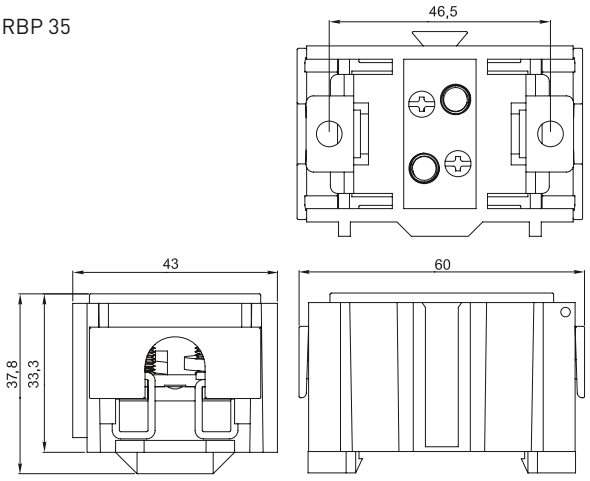
- Street lighting
- Residential electrical distribution
- Industrial power distribution networks.

TECHNICAL DATA

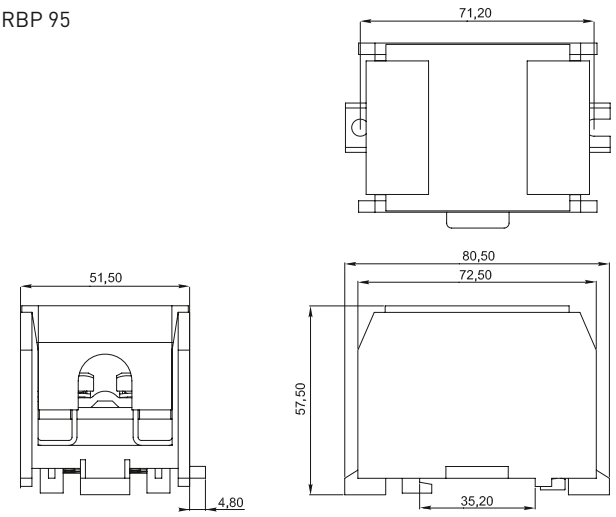
Parameters	Values	
	RBP-35-50	RBP-95-100
Rated voltage, V	660	
Rated frequency, Hz	50 / 60	
Tightening torque, N·m	2,0 (M5 screw), 2,5 (M6 screw)	2,5 (M7 screw), 3,5 (M8 screw)
Operating temperature, °C	-40...+70	
Degree of protection: IEC 60529	IP20	
Breakdown voltage, V	8	
Insulation resistance, MOhm	> 1000 at 1000 V DC	
Relative humidity, %	5–95	

Overall and installation dimensions (mm)

RBP 35



RBP 95



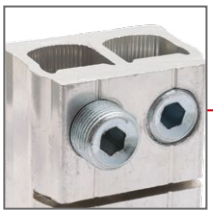
Name	Rated current of main/branch conductor, A	Main conductor cross-section, mm²	Branch conductor cross-section, mm²	Item code
Branch terminal block RBP 35 125/50A EKF	125/50	4–35	1,5–6	RBP-35-50
Branch terminal block RBP 95 232/100A EKF	232/100	16–95	6–16	RBP-95-100

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 clip. To connect a wire to the terminal, loosen the hexagonal screw, insert the conductor into the hole and tighten the screw.

Knurled inner surface prevents wires from pulling out

All critical info is specified in the product sticker



Tinned aluminum power part is compatible both with aluminum and copper wires

Secure conductor connection with steel screw

35 mm DIN rail or panel mounting options

Central slot to adjust the conductor in the terminal and monitor for proper depth of insertion

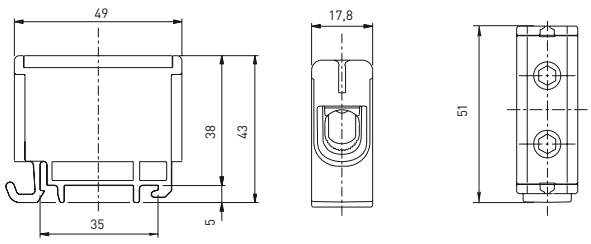
APPLICATION

Terminals are widely used in industrial control systems, electrical distribution panels and process equipment.

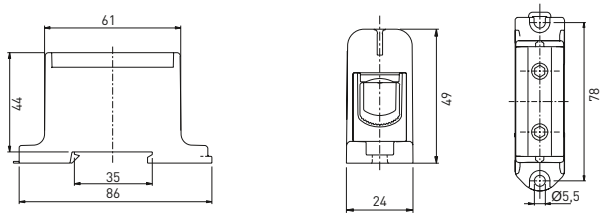
TECHNICAL DATA

Overall and installation dimensions (mm)

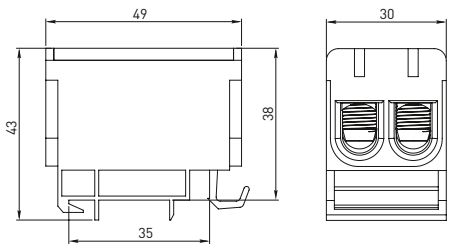
One-pole 2,5-50 terminal



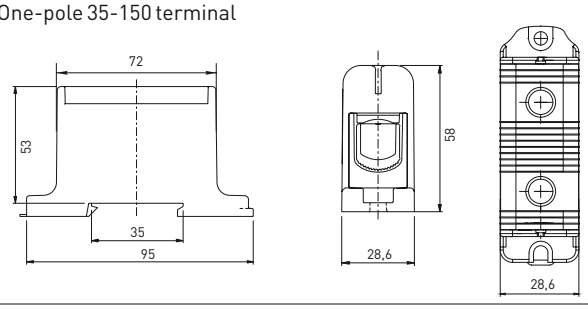
One-pole 16-95 terminal



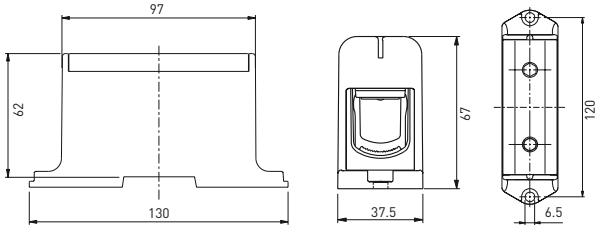
Two-pole 2,5-50 terminal



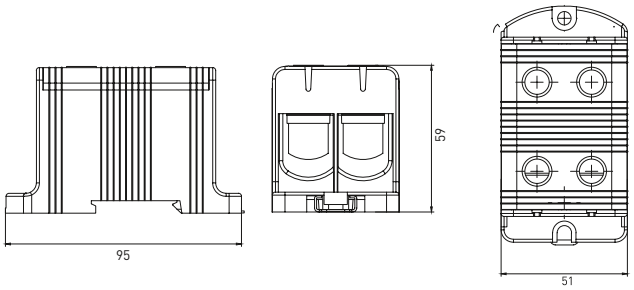
One-pole 35-150 terminal



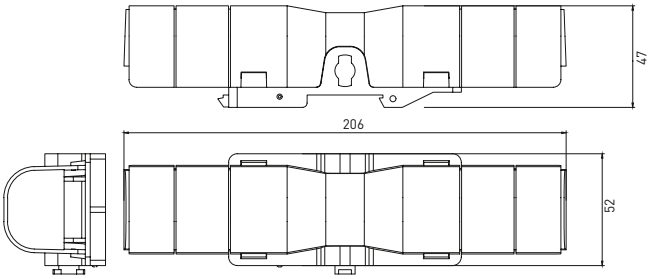
One-pole 35-240 terminal



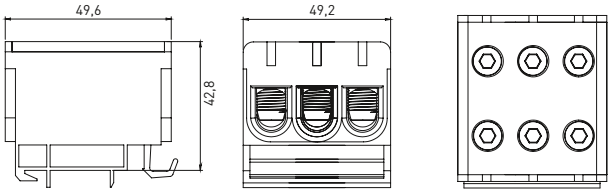
Two-pole 35-150 terminal



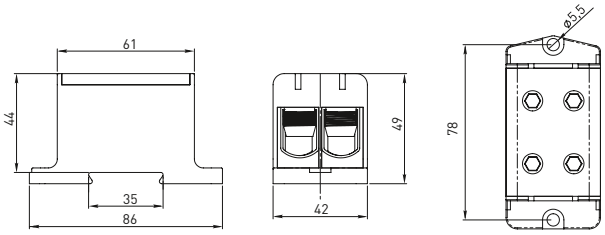
One-pole 10-120 terminal



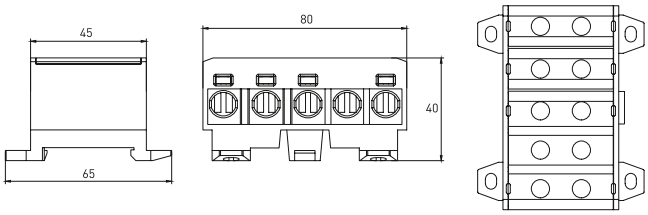
Three-pole 2,5-50 terminal



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	–	–	–

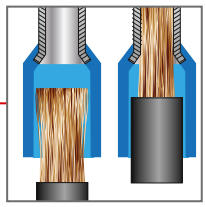
Picture	Name	Parameters				Item code
		Wire cross-section, mm²	Operating voltage at 50/60Hz, V	Rated operating current, A	Protection degree	
One-pole terminals						
	KSV 2,5-50 EKF	Cu: 2,5–50 Al: 6–50	800	Cu: 160 Al: 145	IP20	plc-kvs-16-50-y-green plc-kvs-16-50-gray plc-kvs-16-50-blue

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 Al: 220	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 Al: 290		plc-kvs-35-150-y-green plc-kvs-35-150-gray plc-kvs-35-150-blue
	KSV 35-240 EKF	35–240		Cu: 425 Al: 380		plc-kvs-35-240-y-green plc-kvs-35-240-gray plc-kvs-35-240-blue
	KSVb 10-120 EKF	10–120	690	250	IP10	kvs-b-120
Two-pole terminals						
	KSV 2,5-50 EKF	Cu: 2,5–50 Al: 6–50	800	Cu: 160 Al: 145	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 Al: 220		plc-kvs2-16-95-grey plc-kvs2-16-95-y-green plc-kvs2-16-95-lue
	KSV 35-150 EKF	35–150		Cu: 320 Al: 290		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 Al: 145	IP20	plc-kvs3-16-50-grey
	KSV 2,5-35 (3P+N+PE) EKF	2,5–35		Cu: 135 Al: 120		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 design facilitates stranded condutor insertion and prevents fraying of individual strands

DIN-compliant colors. Insulation material: flame-retardant polypropylene

Socket-shaped insulating cuff for easy termination of stranded copper wires

APPLICATION

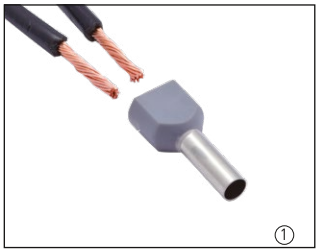
- Control panels & electrical enclosures
- Industrial machinery & equipment
- Power distribution & building wiring

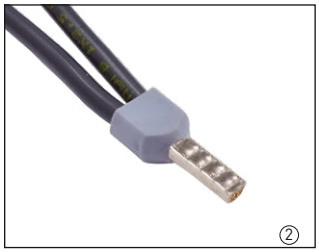
TECHNICAL DATA

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. Stripped part of the stranded wire crimped with the ferrule produces a single solid piece, while the insulating cuff protects the conductor insulation.



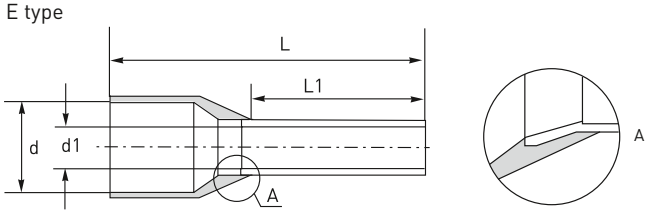


If required, shorten the crimped ferrule to fit into the electrical equipment terminal.
With the polyamide insulating cuff, cord end terminals can be used with an extended temperature range.

* For TE cord end terminals designed for simultaneous crimping of two conductors, depending on the product size.

Overall and installation dimensions

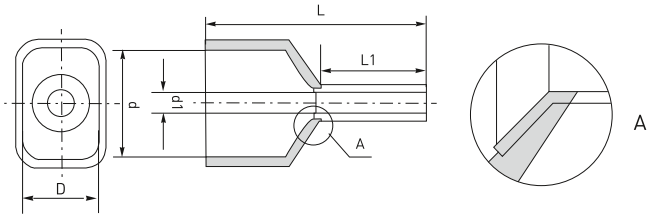
E type



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	Light 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	

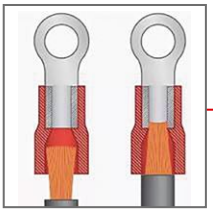
Insulated ring & fork terminals EKF

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 semi-permanent connections to electrical equipment. Fork terminals are best suited for connections that might require multiple reconnection cycles, as their shape means that the retaining screw can be simply loosened a bit, instead of being completely removed in order to connect/dicsonnect the terminal.

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

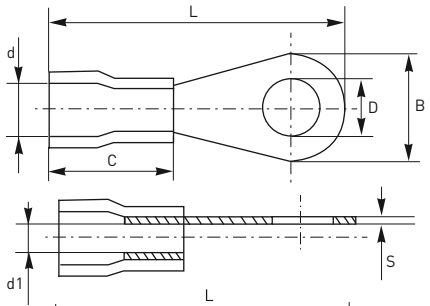
TECHNICAL DATA

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*

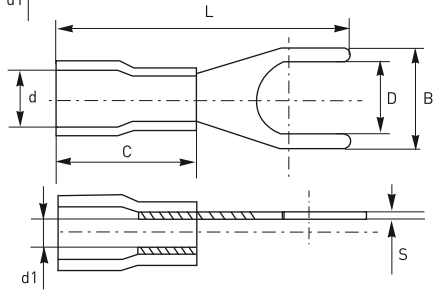
*depending on ferrule size

Overall and installation dimensions

RV



SV



Installation and operation

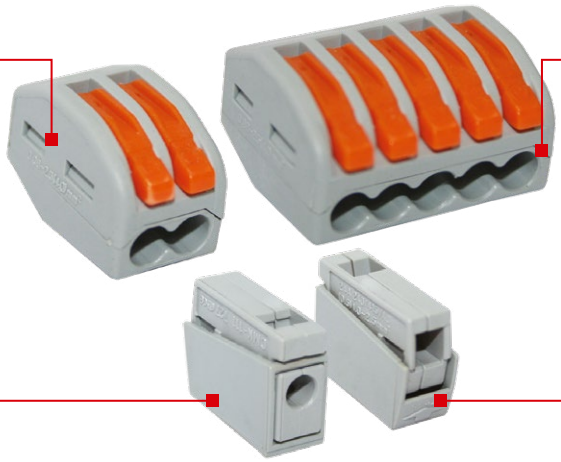
1. Strip required length of wire insulation. Do not damage wire strands. Stripping length depends on cord end terminal crimping length. Twist strands slightly to shape the wire for easier insertion into the cord end terminal.
2. Select cord end terminal size to match wire cross-section.
3. Select contact 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

SMK terminals are designed for temporary and semi-permanent connection and branching of solid and stranded copper (SMK 222) and aluminium (SMK 224) wires in 50/60 Hz AC circuits up to 415 V.

Contact part made of medical-grade stainless steel spring with copper plates



Secure and easy splicing. SMK 224 supports both copper & aluminium wires

Flame retardant plastic housing

Voltage test window

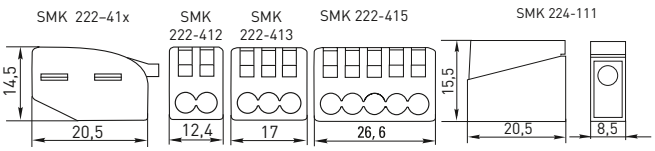
APPLICATION

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 (mm)



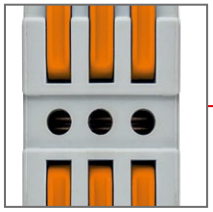
Installation and operation

- 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 depth.
- Pull the lever down. The contact part will compress the wire, securely holding the wire in place.

Picture	Name	Number of conductors	Conductors	Item code
	Quick spring terminal SMK 222-412 with levers 2-conductor 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 levers 3-conductor EKF	3		plc-smk-413
	Quick spring terminal SMK 222-415 with levers 5-conductor EKF	5		plc-smk-415
	Quick spring terminal SMK 224-111 inline 1-conductor EKF	2	Copper and aluminium wires: round openings for solid wires 1,0–2,5 mm² and square openings for solid and stranded wires 0,5–2,5 mm²	plc-smk-111

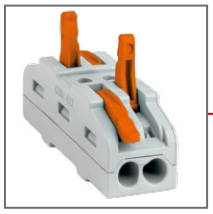
Quick spring terminals SMK 222 inline reusable EKF

Inline quick-spring terminals SMK 222 are designed for temporary and semi-permanent connection of solid and stranded copper wires in 50/60 Hz AC circuits up to 400 V.

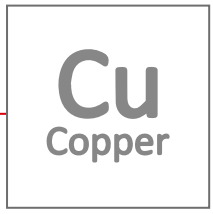


Voltage test window

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

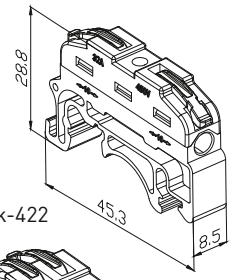
Parameters	Values
Maximum current, A	32
Rated voltage, V	240
Cross-sections of solid / stranded wires, mm²	0,08–2,5 / 0,08–4,0
Housing material	Self-extinguishing polyamide
Contact part	Copper

Installation and operation

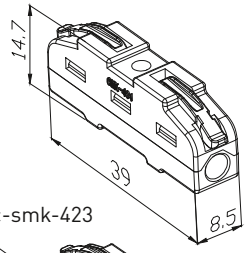
• Strip wire insulation. With a recess on the back, you can easily measure the required size.
• Push up the terminal lever. Insert the wire up to max depth.
• Pull the lever down. The contact part will compress the wire, securely holding the wire in place.

Overall and installation dimensions (mm)

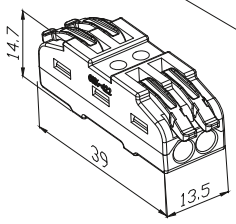
plc-smk-421-din



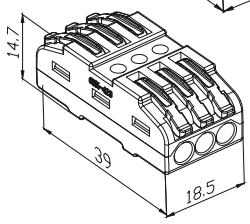
plc-smk-421



plc-smk-422



plc-smk-423

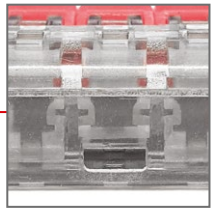


Picture	Name	Number of connected wires (holes)	Max. current, A	Conductors	Item code
	Quick spring terminal SMK 222-421 DIN rail inline 1 pole 0,08-4mm² (25 pcs.) EKF	2	32	Copper wires: solid - 0,08-2,5 mm², stranded - 0,08–4,0 mm²	plc-smk-421-din
	Quick spring terminal SMK 222-421 inline 1 pole 0,08-4mm² (25 pcs.) EKF	2			plc-smk-421
	Quick spring terminal SMK 222-422 inline 2 poles 0,08-4mm² (25 pcs.) EKF	4			plc-smk-422
	Quick spring terminal SMK 222-423 inline 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

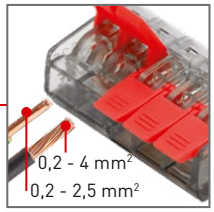
Quick spring terminals 221 reusable compact EKF

Compact reusable quick-spring 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 reused 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



Compatible with 0,2-4mm² wires

APPLICATION

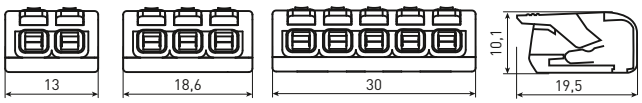
Quick-spring terminals are utilized in a diverse range of electrical and electronic applications where rapid and simple wire connections are required.

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 (mm)

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 depth.
- Pull the lever down. The contact part will compress the wire, securely holding the wire in place.

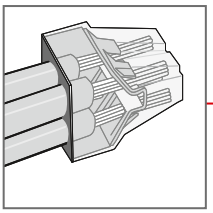
Picture	Name	Number of openings (conductors)	Conductors	Item code
	Quick spring terminal SMK 221-412 2-conductor 0,2-4,0mm² (100 pcs.) EKF	2	Stranded wires - 0,2-4 mm², solid wires - 0,2-2,5 mm²	plc-smk-221-412
	Quick spring terminal SMK 221-413 3-conductor 0,2-4,0mm² (100 pcs.) EKF	3		plc-smk-221-413
	Quick spring terminal SMK 221-415 5-conductor 0,2-4,0mm² (50 pcs.) EKF	5		plc-smk-221-415

Quick spring terminals SMK 773 with contact paste EKF

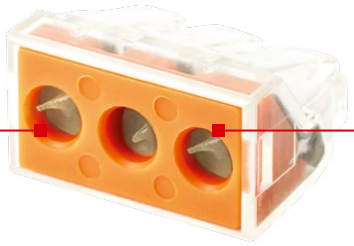
Non-reusable quick-spring terminals SMK 773 with contact paste are designed for connection and branching of solid copper and aluminium wires and stranded copper wires in 50/60 Hz AC circuits up to 415 V. Terminals are used in junction boxes. These user-friendly terminals with spring-loaded steel plates and individual port for each conductor enable screwless connection. Contact paste removes oxide film from aluminum wires and protects them from re-oxidation.

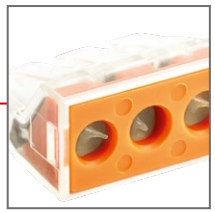
Contact paste minimizes electrical power loss and protects conductors from oxidation

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

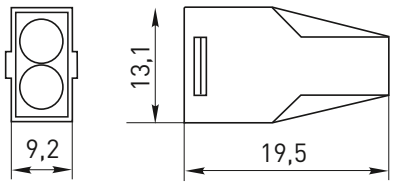
Quick-spring terminals are utilized in a diverse range of electrical and electronic applications where rapid and simple wire connections are required.

TECHNICAL DATA

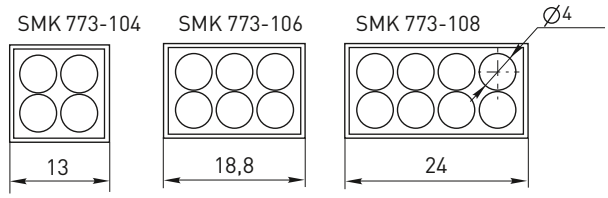
Parameters	Values
Maximum current, A	24 / 42
Cross-section, mm²	1,0–2,5 / 2,5–6,0
Housing material	Flame-retardant plastic
Contact part	Corrosion resistant steel
Contact paste	Yes
Color	Transparent with black/orange insert

Overall and installation dimensions (mm)

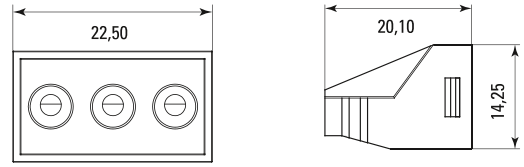
SMK 773-102



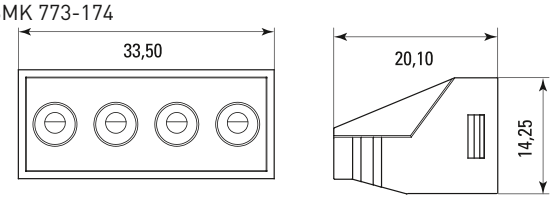
SMK 773-104 SMK 773-106 SMK 773-108



SMK 773-173



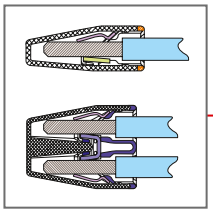
SMK 773-174



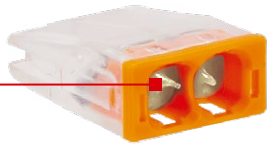
Picture	Name	Number of openings (conductors)	Item code
	Quick spring terminal SMK 773-102 2-conductor 1,0-2,5mm² (100 pcs.) EKF	2	plc-smk-102
	Quick spring terminal SMK 773-104 4-conductor 1,0-2,5mm² (100 pcs.) EKF	4	plc-smk-104
	Quick spring terminal SMK 773-106 6-conductor 1,0-2,5mm² (50 pcs.) EKF	6	plc-smk-106
	Quick spring terminal SMK 773-108 8-conductor 1,0-2,5mm² (50 pcs.) EKF	8	plc-smk-108
	Quick spring terminal SMK 773-173 (with paste) 3-conductor 2,5-6,0mm² (50 pcs.) EKF	3	plc-smk-773-173
	Quick spring terminal SMK 773-174 (with paste) 4-conductor 2,5-6,0mm² (50 pcs.) EKF	4	plc-smk-773-174

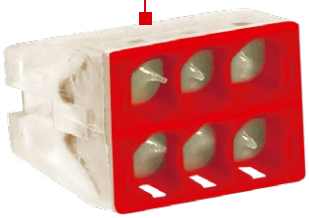
Quick spring terminals 2273 compact with contact paste EKF

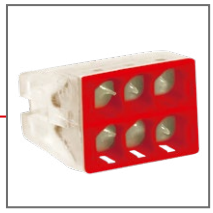
Non-reusable quick-spring terminals SMK 773 with contact paste are designed for connection and branching of solid copper and aluminium wires and terminated stranded copper wires in 50/60 Hz AC circuits up to 400 V and are used in junction boxes. Contact paste removes oxide film from aluminum wires and protects them from re-oxidation.



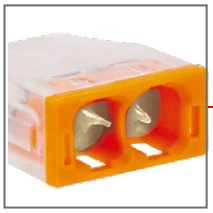
Easy and quick installation without screws. Copper and aluminum wires supported



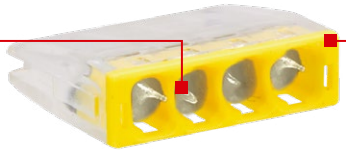


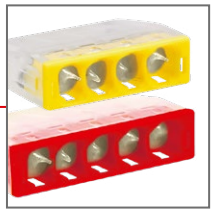


Smaller size compared to other SMK terminals. Flame retardant plastic housing



Contact paste minimizes electrical power loss and protects conductors from oxidation





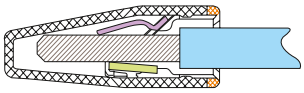
Terminals are color-coded to indicate their capacity

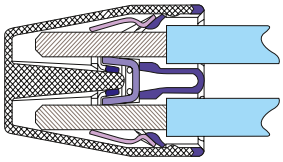
APPLICATION

Quick-spring terminals are utilized in a diverse range of electrical and electronic applications where rapid and simple wire connections are required.

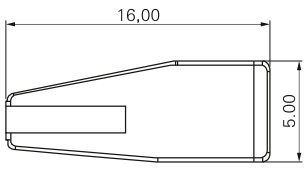
TECHNICAL DATA

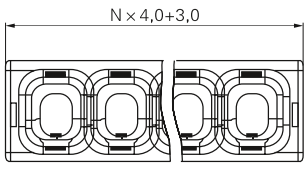
Parameters	Values
Maximum current, A	24
Cross-section, mm²	0,75–2,5
Housing material	Flame-retardant plastic
Contact part	Tinned copper

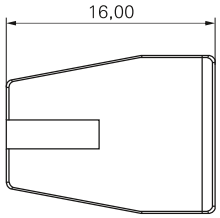


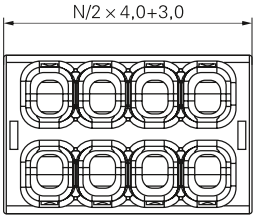


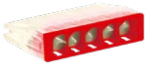
Overall and installation dimensions (mm)









Picture	Name	Number of openings (conductors)	Color	Item code
	Quick spring terminal SMK 2273-242 (with paste) 2-conductor 0,5-2,5mm² (100 pcs.) EKF	2	Orange	plc-smk-2273-242
	Quick spring terminal SMK 2273-243 (with paste) 3-conductor 0,5-2,5mm² (100 pcs.) EKF	3	Grey	plc-smk-2273-243
	Quick spring terminal SMK 2273-244 (with paste) 4-conductor 0,5-2,5mm² (100 pcs.) EKF	4	Yellow	plc-smk-2273-244
	Quick spring terminal SMK 2273-245 (with paste) 5-conductor 0,5-2,5mm² (100 pcs.) EKF	5	Red	plc-smk-2273-245
	Quick spring terminal SMK 2273-246 (with paste) 6-conductor 0,5-2,5mm² (50 pcs.) EKF	6	Red	plc-smk-2273-246
	Quick spring terminal SMK 2273-248 (with paste) 8-conductor 0,5-2,5mm² (50 pcs.) EKF	8	Grey	plc-smk-2273-248

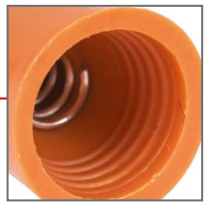
Twist-on connectors SIZ EKF

Twist-on connectors SIZ EKF are designed for bonding wires and cables into a single bundle, and insulating copper and aluminum wire ends. 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.

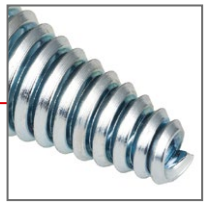
Twisting bit in the kit

SIZ-L winged design ensures better grip, leverage and torque while twisting wires in the connectors

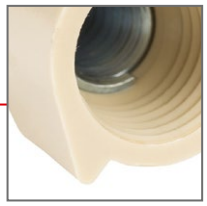
Twisted wires fully insulated



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

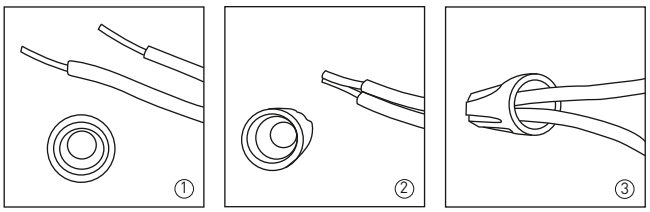
TECHNICAL DATA

Parameters	Values
Material	Flame retardant molded PVC
Operating temperature, °C	-25 to +105

Installation and operation

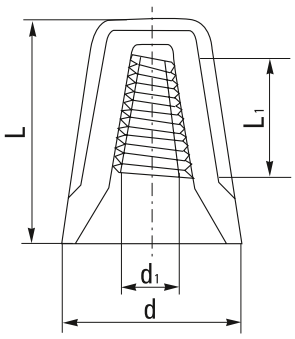
Easy installation

- No special tools required.
- Strip and twist wire ends.
- Twist wires together and onto the connector clockwise.

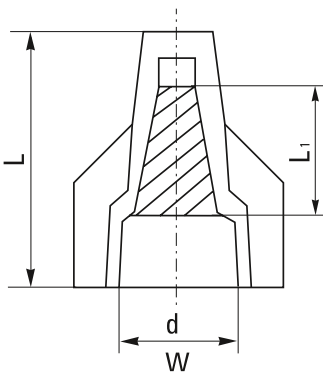


Overall and installation dimensions (mm)

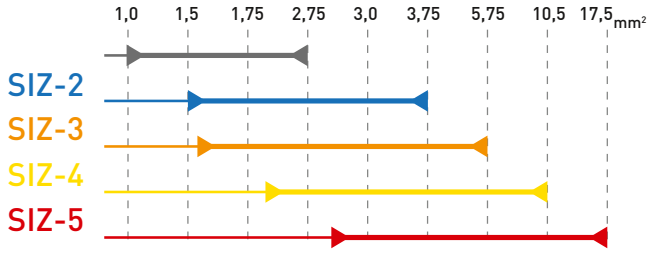
SIZ



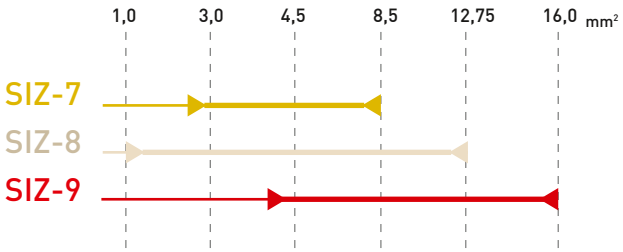
SIZ-L



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	

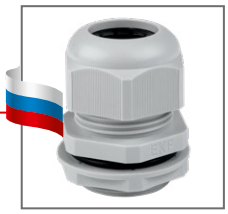
Waterproof cable glands PG EKF

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 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

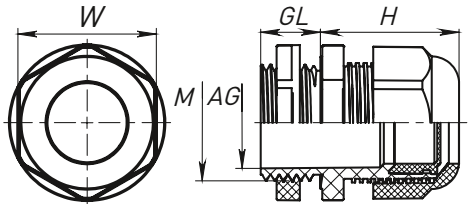
Waterproof cable glands are used to securely attach and seal cables to electrical equipment or enclosures, while providing protection against moisture, dust, and other environmental elements:

- 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

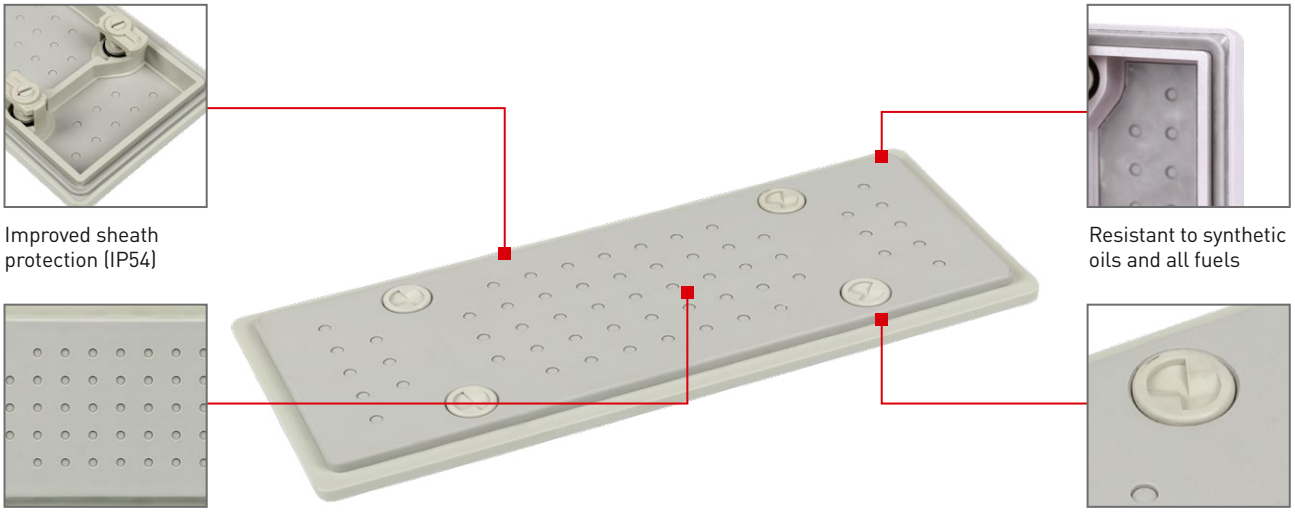
Overall and installation dimensions



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

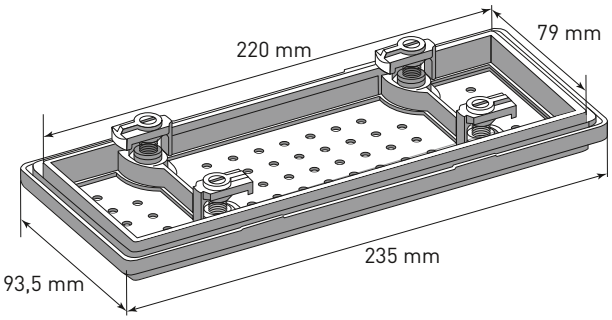
By providing a secure, sealed entry point for cables while maintaining environmental protection, membrane gland plates are essential components in various applications:

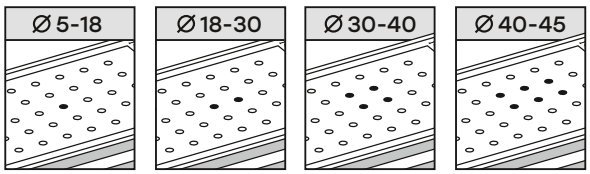
- Industrial control panels and automation equipment.
- Outdoor electrical enclosures: telecommunications, security systems, traffic control equipment.
- HVAC and building automation systems.

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



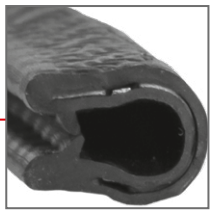


Name	Overall dimensions, mm	Dimensions of mounting window, mm	Membrane holes diameter, mm	Item code
Membrane gland plate IP54 EKF	235 × 93.5	220 × 79 (±1)	4	plc-df-w

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

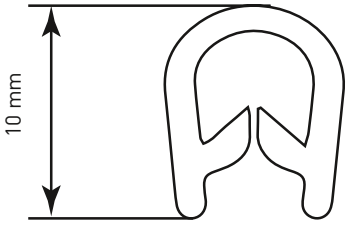
APPLICATION

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

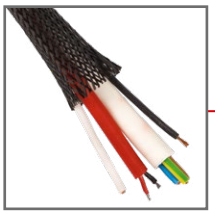
Overall and installation dimensions (mm)



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 neat and tidy.



Safe and organized 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

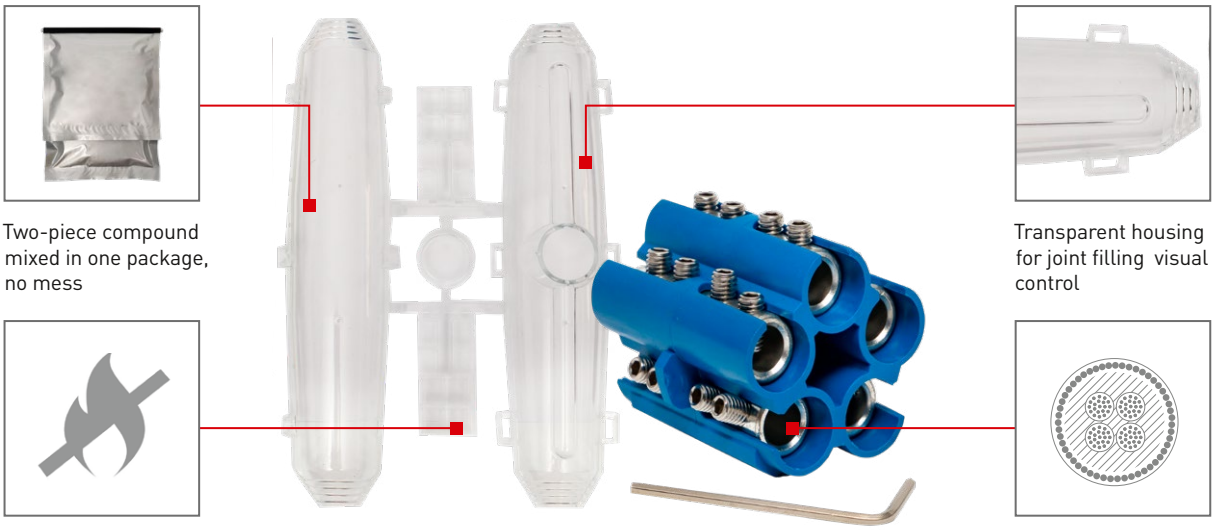
Delivery scope

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

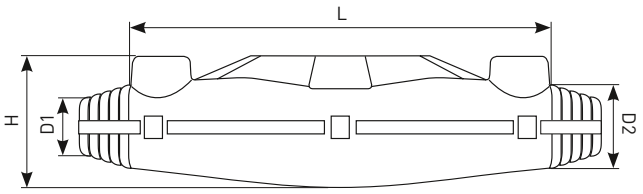
APPLICATION

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

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.

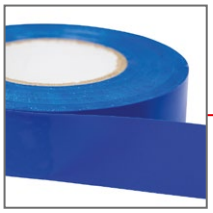
APPLICATION

- 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	Tensile strength, MPa	Color	Item code
	PVC insulation tape SafeFlex Auto	0,15	Min. 200	1	15	5	6000	–50 to +80	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	250	1,5				-18 to +105		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, grey, 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

Eight colors

APPLICATION

- Electrical insulation of conductors and cables
- Splicing and bundling
- Protection against mechanical damage

TECHNICAL DATA

Parameters	Values
Tape width, mm	15
Base thickness, mm	0,13
Tape length per roll, yd	10
Adhesive layer thickness, mm	0,015
Breakdown voltage, V	5000
Moisture resistance	PV-0
Flame Retardance, °C	850
Adhesion (stickiness), sec.	45
Tensile strength, MPa	15
Elongation at break, %	190
Operating temperature, °C	from 0 to +80

Name	Item code
White	it-13-18-10y-w
Yellow	it-13-18-10y-y
Yellow-green	it-13-18-10y-yg
Green	it-13-18-10y-gr
Red	it-13-18-10y-r
Blue	it-13-18-10y-b
Black	it-13-18-10y-d
Grey	it-13-18-10y-g

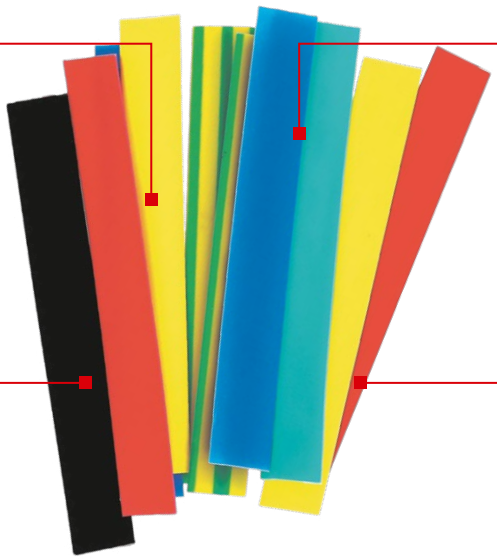
Heat-shrink tubes EKF

Polyolefin 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 84 to 120 °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, flame retardant

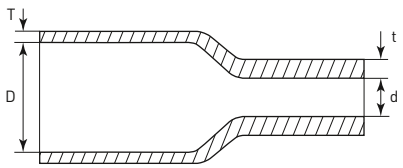
APPLICATION

- Insulation and corrosion protection of electrical conductors and contact connections
- Binding of cables and wires

TECHNICAL DATA

Parameters		Values
Operating voltage, kV		Max. 0,6
Tensile strength, MPa	Recovered	Over 7,3
	Expanded	10,4
Resistivitym Ohm*cm		10^{14}
Dielectric strength, kV/mm		Min. 15
Flammability		Non-flammable VW-1
Strain at break, %	Recovered	Min. 200
	Expanded	Min. 100
Shrinkage temperature, °C		from +84 to 120
Operation ambient temperature, °C		from -55 to 125

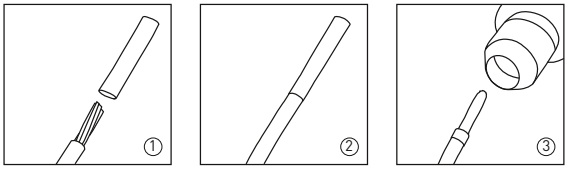
Overall and installation dimensions



Name	Conductor outer diameter, mm	Name	Conductor outer diameter, mm
Heat-shrink tube NF 1/0,5	0,72-0,81	Heat-shrink tube NF 16/8	8,89-10,00
Heat-shrink tube NF 1,5/0,75	0,94-1,06	Heat-shrink tube NF 18/9	10,00-11,25
Heat-shrink tube NF 2/1	1,11-1,25	Heat-shrink tube NF 20/10	11,11-12,50
Heat-shrink tube NF 2,5/1,25	1,44-1,63	Heat-shrink tube NF 25/12,5	13,89-15,63
Heat-shrink tube NF 3/1,5	1,67-1,88	Heat-shrink tube NF 30/15	16,67-18,75
Heat-shrink tube NF 4/2	2,22-2,50	Heat-shrink tube NF 35/17,5	19,44-21,88
Heat-shrink tube NF 5/2,5	2,78-3,13	Heat-shrink tube NF 40/20	22,22-25,00
Heat-shrink tube NF 6/3	3,33-3,75	Heat-shrink tube NF 50/25	27,78-31,25
Heat-shrink tube NF 8/4	4,44-5,00	Heat-shrink tube NF 60/30	33,33-37,50
Heat-shrink tube NF 10/5	5,56-6,25	Heat-shrink tube NF 80/40	44,44-50,00
Heat-shrink tube NF 12/6	6,67-7,50	Heat-shrink tube NF 100/50	55,56-62,50
Heat-shrink tube NF 14/7	7,78-8,75	Heat-shrink tube NF 120/60	66,67-75,00

Installation and operation

1. Select the appropriate tubing size. Outer diameter of the joint should be smaller than the expanded heat shrink tubing's inner diameter. Recovered heat shrink tubing diameter should be 10–20% smaller than the joint for a secure fit.
2. Clean and degrease the joint area thoroughly, removing any sharp edges to prevent damage to the tubing.
3. Use a heat gun or a gas torch with a low-temperature yellow flame for heating. Do not use high temperature blue cutting flame to shrink the tubing.
4. To achieve a uniform shrink and prevent overheating, apply heat evenly, keeping the heat source in constant motion. Recommended shrink temperature range: +84 °C to +120 °C.
5. Do not use heat shrink tubing that has been kinked, damaged or has frayed or scratched surface or edges.
6. To achieve a uniform shrink without kinks or air bubbles, apply heat evenly, starting from one end to the other or from the center of the joint outward. Ensure a proper radial shrink before moving along to the next section.
7. After shrinking, inspect the tubing to ensure a smooth, even surface without wrinkles or air bubbles for optimal insulation and protection.



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	2,5±0,2	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	3,5±0,2	0,25±0,05	1,5	0,45±0,1		200	–	tut-3-yg	–	–	–	tut-3-b	–	–
Heat-shrink tube NF 4/2	4,5±0,2	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	5,5±0,2	0,35±0,05	≤2,5	0,56±0,1		100	–	tut-5-yg	–	–	–	tut-5-b	–	–
Heat-shrink tube NF 6/3	6,5±0,2	0,35±0,05	≤3	0,56±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	8,5±0,3	0,35±0,05	≤4	0,56±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	10,5±0,3	0,35±0,05	≤5	0,56±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	12,5±0,3	0,35±0,1	≤6	0,56±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	16,5±0,4	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	19±0,5	0,4±0,1	≤9	0,7±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	22±0,5	0,5±0,1	≤10	0,83±0,15		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	26±0,5	0,5±0,1	≤12,5	0,9±0,15		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	31,5±1	0,5±0,1	≤15	1±0,15		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	36,5±1	0,5±0,1	≤17,5	1±0,15		50	–	–	–	–	–	tut-35-b	–	–
Heat-shrink tube NF 40/20	41,5±1	0,5±0,1	≤20	1±0,15		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±0,15		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	1,1±0,15		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±0,15		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	1,3±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	1,3±0,2		25	tut-120-y	–	tut-120-j	tut-120-r	tut-120-g	tut-120-b	tut-120-w	–

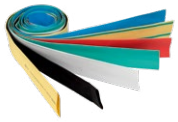
1 meter pre-cut

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	1,5±0,2	0,2±0,05	≤0,65	0,36±0,1	5	200	–	–	–	–	–	tut-1-b-1m	–
Heat-shrink tube NF 1,5/0,75	2,0±0,2	0,2±0,05	≤0,85	0,36±0,1		200	–	–	–	–	–	tut-1.5-b-1m	–
Heat-shrink tube NF 2/1	2,5±0,2	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	3±0,2	0,25±0,05	≤1,3	0,45±0,1		200	–	–	–	–	–	tut-2.5-b-1m	–
Heat-shrink tube NF 3/1,5	3,5±0,2	0,25±0,05	≤1,5	0,45±0,1		200	–	–	–	–	–	tut-3-b-1m	–
Heat-shrink tube NF 4/2	4,5±0,2	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	5,5±0,2	0,35±0,05	≤2,5	0,56±0,1		100	–	–	–	–	–	tut-5-b-1m	–
Heat-shrink tube NF 6/3	6,5±0,2	0,35±0,05	≤3	0,56±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	8,5±0,3	0,35±0,05	≤4	0,56±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	10,5±0,3	0,35±0,05	≤5	0,56±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	12,5±0,3	0,35±0,1	≤6	0,56±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	14,5±0,3	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	16,5±0,4	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	19±0,5	0,4±0,1	≤9	0,7±0,1		25	–	–	–	–	–	tut-18-b-1m	–
Heat-shrink tube NF 20/10	22±0,5	0,5±0,1	≤10	0,83±0,15		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	26±0,5	0,5±0,1	≤12,5	0,9±0,15		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	31,5±1	0,5±0,1	≤15	1±0,15		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	36,5±1	0,5±0,1	≤17,5	1±0,15		50	–	–	–	–	–	tut-35-b-1m	–
Heat-shrink tube NF 40/20	41,5±1	0,5±0,1	≤20	1±0,15		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±0,15		25	–	–	–	–	–	tut-50-b-1m	–
Heat-shrink tube NF 60/30	>60	0,6±0,1	≤30	1,1±0,15		25	–	–	–	–	–	tut-60-b-1m	–
Heat-shrink tube NF 80/40	>80	0,6±0,1	≤40	1,2±0,15		25	–	–	–	–	–	tut-80-b-1m	–
Heat-shrink tube NF 100/50	>100	0,6±0,1	≤50	1,3±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	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	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	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	Black, Blue, Green, White, Red, Yellow	6	30	tut-n-3-r
	4	2					
	5	2,5					
	6	3					
	8	4					
	4	2	100	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	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		

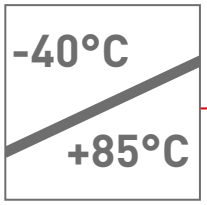
Adhesive-lined heat-shrink tubes EKF

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

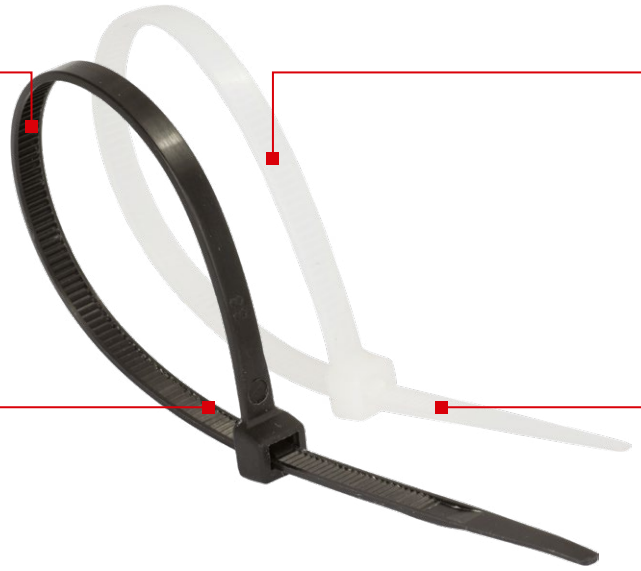
Cable ties FlexLock EKF

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: up to 8,8 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.

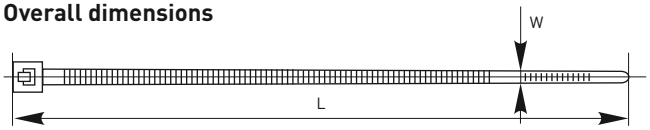
TECHNICAL DATA

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

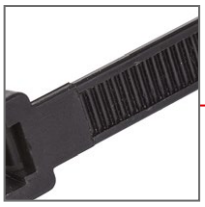


Name	Dimensions, mm				Weight, g ±10%	Tensile strength, N	Item code			
	Width, W	Length, L	Min. Bundle Ø	Max. Bundle Ø			Packaging (100 pcs.)		Packaging (50 pcs.)	
							White	Black	White	Black
Cable tie 2,5x100	2,5±0,2	100±3	3,00	20,50	0,23	80	plc-fl-ctsw-2.5x100	plc-fl-ctsb-2.5x100	plc-fl-ctsw-2.5x100-r	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-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	–	–	–
Cable tie 7,6x200		200±5		50,90	2,44		–	plc-fl-ctsb-7.6x200	–	–
Cable tie 7,6x250		250±5		66,80	3,00		–	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 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).

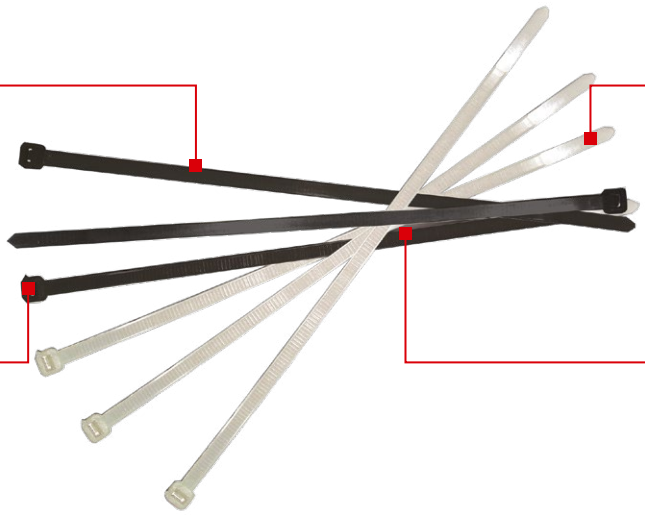


Increased teeth width

Durable and reliable

Reliable self-locking mechanism

Material: Halogen-free self-extinguishing Nylon 6.6



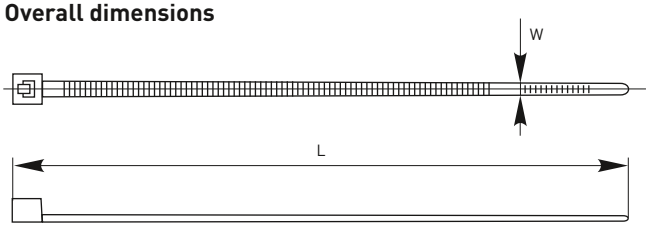
APPLICATION

Designed for binding and bundling wires and cables indoors and outdoors.

TECHNICAL DATA

Parameters	Values
Density g/cm^3	1,5
Insulating capability, mm^2	> 300
Tensile strength,%	20–50
Flexural strength, kg/cm^3	800
Minimal size, mm	2,5 × 60
Insulating capability, mm^2	35
Operating temperature, °C	from-40 to +80

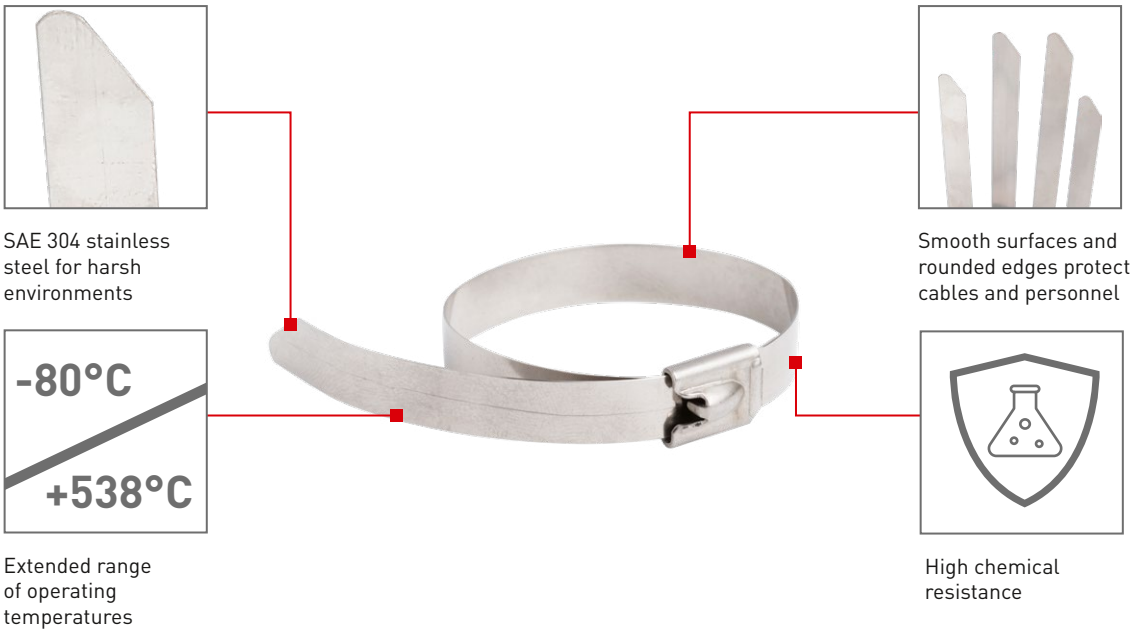
Overall dimensions



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 4,8x400 EKF		400		plc-c-4.8x400	plc-cb-4.8x400
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-8.2x450
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.

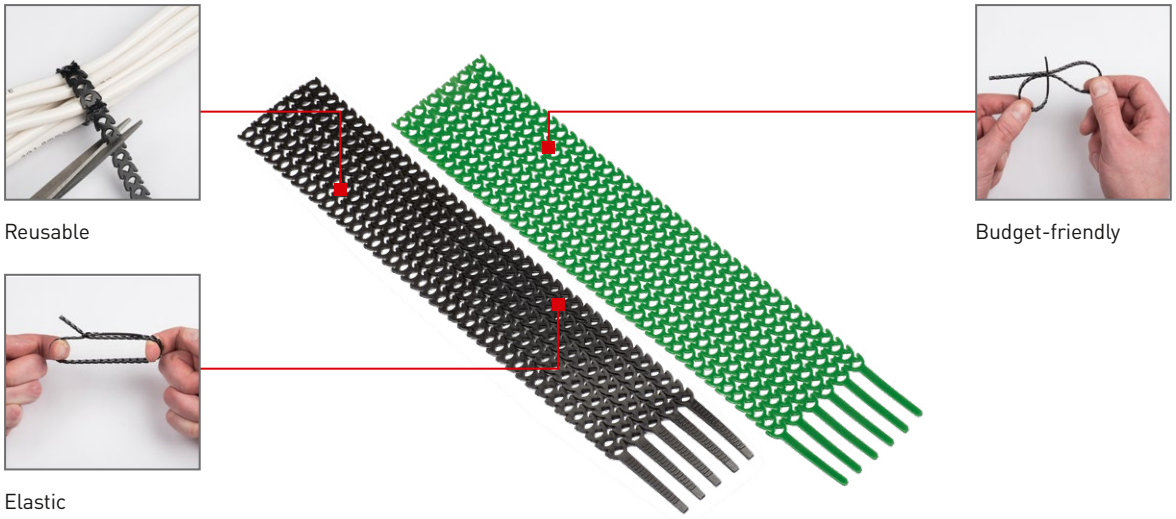
APPLICATION

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

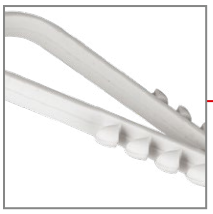
1. Cable ties should be used at temperature from -20 to +50 °C.
2. If installing in low temperature conditions, first keep the package with cable ties at room temperature for two hours.

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

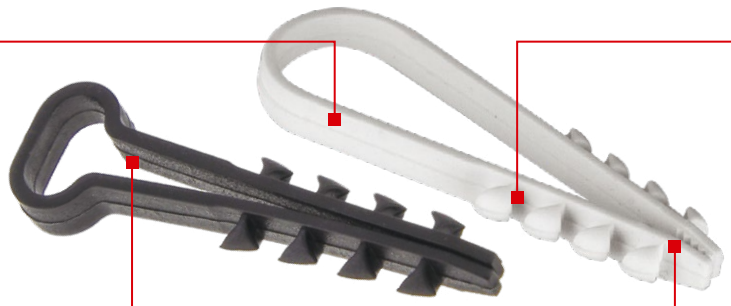
Dowel cable ties EKF

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.

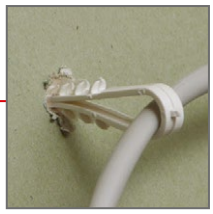
Airtight packaging for extended shelf life



Material: Halogen-free self-extinguishing Nylon 6.6



Easy installation



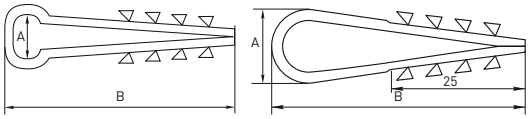
Larger teeth for secure fastening

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

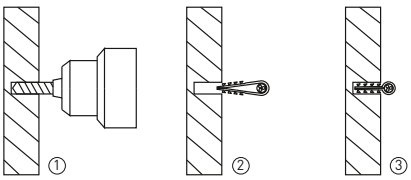
Overall dimensions



Delivery scope

Dowel tie – 50/100 pcs., depending on the type of product.

Mounting procedure



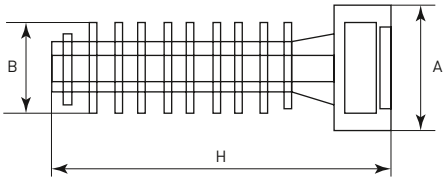
1. Drill a hole in the wall.
2. Insert the wire/cable into the tie loop.
3. Insert the cable tie into the hole until it stops.

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



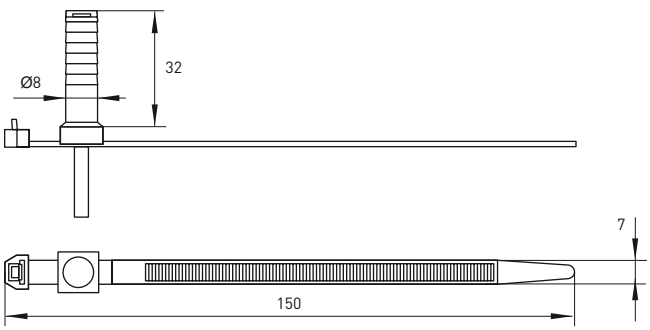
Delivery scope

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)

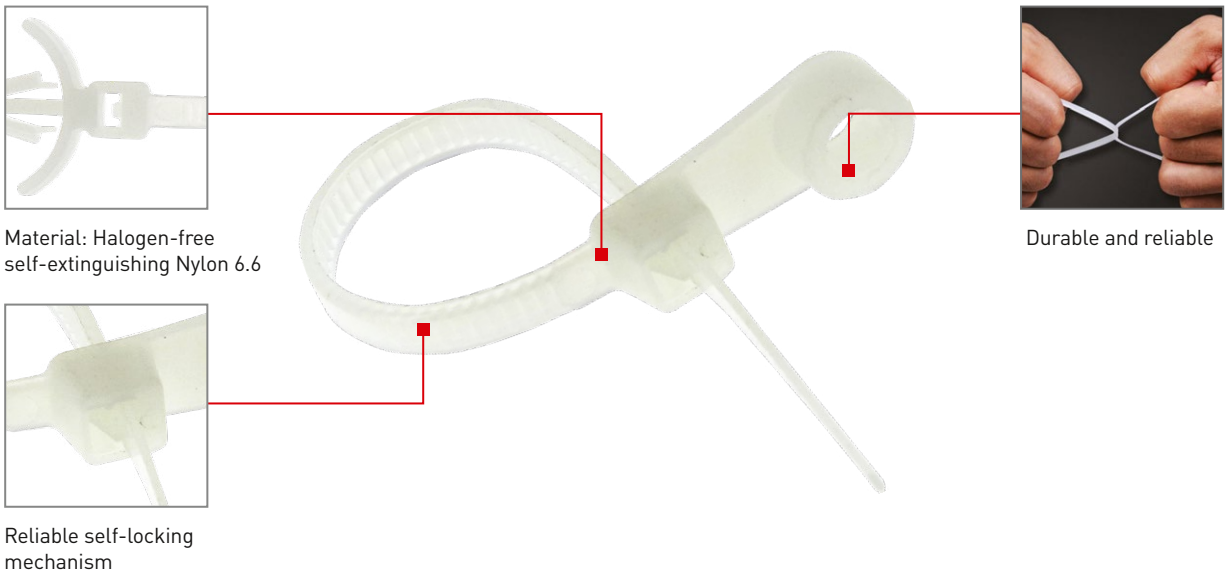


Delivery scope

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	

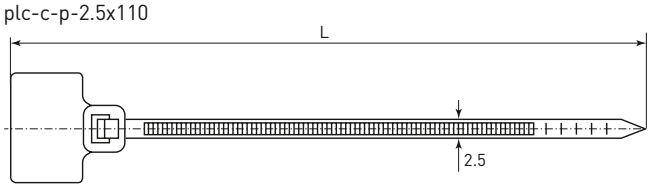
Cable tie with marking plate

Parameters	Values
Plate dimensions, mm	13 × 20
Wire bundle diameter, mm	4–25

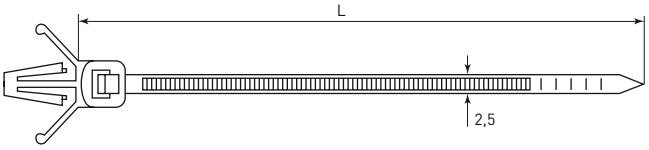
Anchor cable tie

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

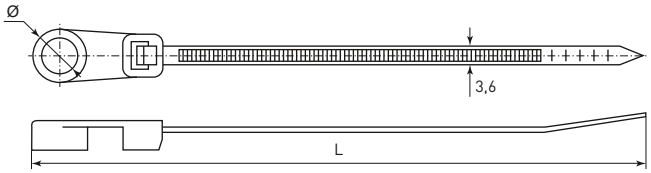


plc-c-a-2.5x100



Overall dimensions (mm)

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.

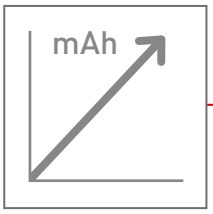
Name	Size, mm		Item code
	Width	Length	
Nylon cable tie with fixing hole 3,6x100 EKF	3,6	100	plc-c-o-3.6x100
Nylon cable tie with fixing hole 3,6x200 EKF	3,6	200	plc-c-o-3.6x200
Nylon cable tie with marking plate 2,5x110 EKF	2,5	110	plc-c-p-2.5x110
Nylon anchor cable tie 2,5x100 EKF	2,5	100	plc-c-a-2.5x100

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.

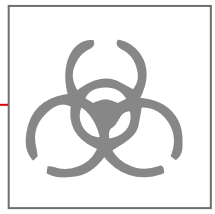
All EKF batteries are alkaline. They last longer, have a higher capacity and are perfect for heavy-duty applications. Excellent solution for children's toys, measuring devices, wall clocks and other devices.

Always in stock



Higher capacity and higher discharge current, compared to competition. High energy density

Bright retail packaging



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.

Standards: IEC 60309-1, IEC 60309-2

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 (mm)

Wander plugs

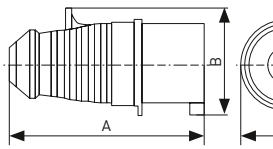


Figure 1

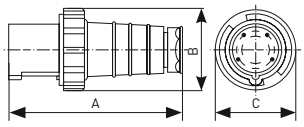
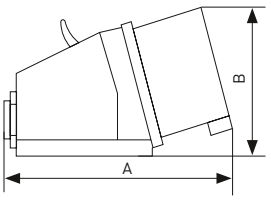


Figure 2

Model	Figure no.	Dimensions, mm		
		A	B	C
013	1	122	55	51
023		135	71	64
014		122	61	54
024		134	71	64
015		125	69	64
025		145	78	70
033		231,5	110	110
034		231,5	110	110
035	2	231,5	110	110
045		295	123	123

Wall-mounted plugs



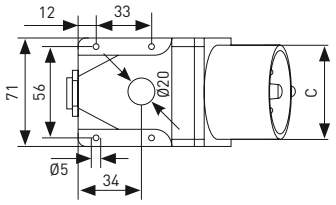


Figure 3

Model	Figure no.	Dimensions, mm		
		A	B	C
513	3, 4	125	71	43
523		139	81	58
514		130	72	49,5
524		139	81	58
515		130	77	55,5
525		143	83	63

Wander sockets

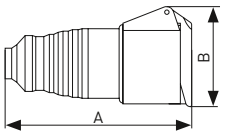


Figure 4

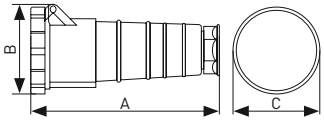


Figure 5

Model	Figure no.	Dimensions, mm		
		A	B	C
213	4	130	71	51
223		145	92	64
214		131	77	55
224		144	92	64
215		135	90	63
233	5	240	115	108
234		240	115	108
235		240	115	108

Wall-mounted sockets

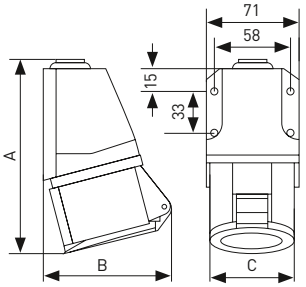


Figure 6

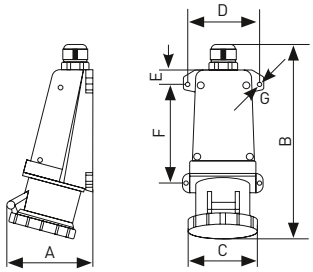


Figure 7

Model	Figure no.	Dimensions, mm						
		A	B	C	D	E	F	G
113	6	135	88	51	–	–	–	–
123		151	98	64	–	–	–	–
114		139	92	55	–	–	–	–
124		151	99	64	–	–	–	–
115		139	96	63	–	–	–	–
125		152	104	70	–	–	–	–
133	7	134	311	108	111	20	161	6
134		134	311	108	111	20	161	6
135		134	311	108	111	20	161	6
145		154	338	122	130	20	193,2	6,2

Panel-mounted sockets

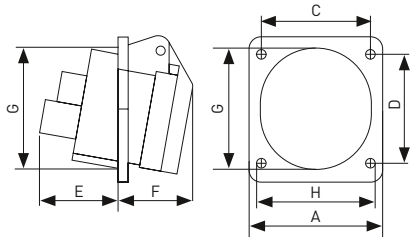


Figure 8

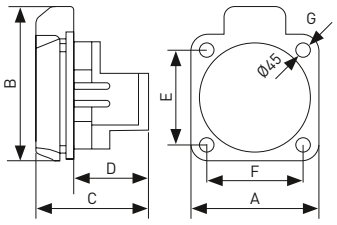


Figure 9

Model	Figure no.	Dimensions, mm							
		A	B	C	D	E	F	G	H
413	8	62	70	48	49	34	38	55	49
423		82	100	61	72	44	43	74	65
414		77	88	62	63	40	36	63	56
424		81	100	61	72	44	43	74	64
415		75	86	60	62	39	35	70	61
425		82	100	62	73	45	45	81	71
112	9	50,6	65	41	26	38,5	38,5	5	–

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.

Standards: IEC 60309-1, IEC 60309-2

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

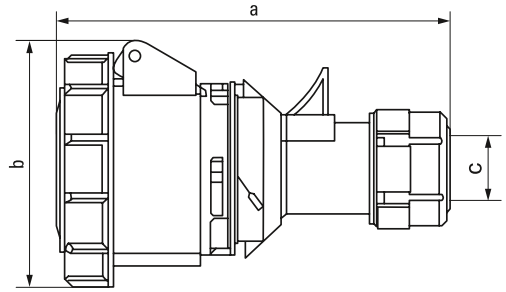


Figure 1

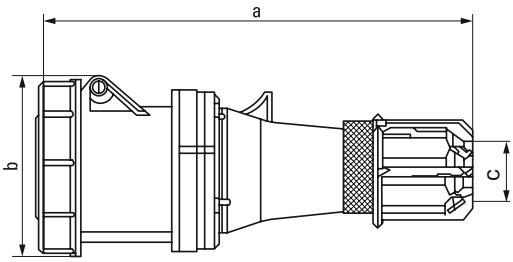


Figure 2

Model	Figure no.	Dimensions, mm		
		a	b	c
2142	1	146	85	6–15
2152		155	93	6-15
2242		172	97	10–20
2252		181	104	10-20
2342	2	275	114	23
2352				
2442		290	128	31
2452				

Power wall-mounted sockets

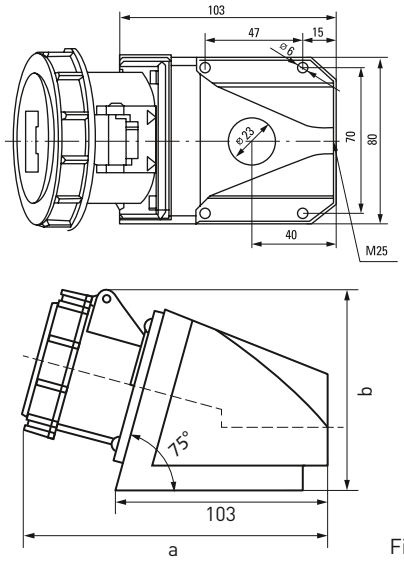
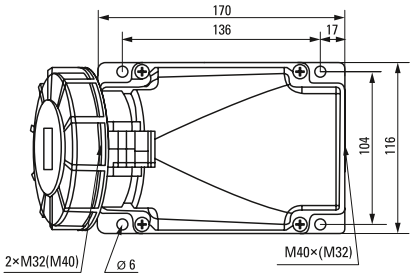


Figure 3



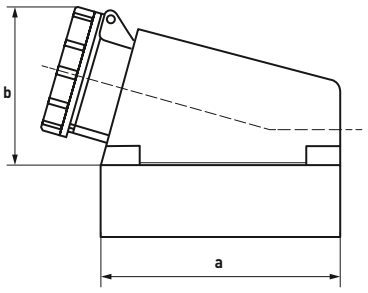
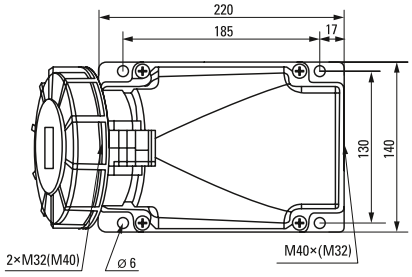


Figure 4



Model	Figure no.	Dimensions, mm	
		a	b
1142	3	150	101
1152		150	108
1242		160	108
1252		161	111
1342	4	176	260
1352			
1442		180	260
1452			

Panel-mounted sockets

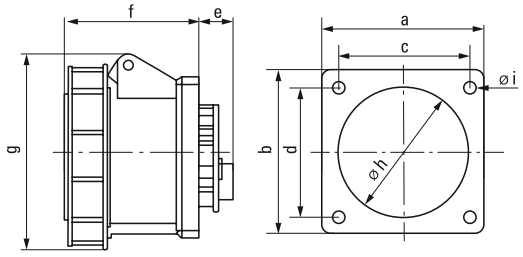


Figure 5

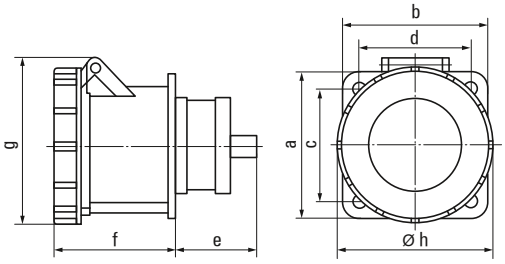


Figure 6

Model	Figure no.	Dimensions, mm								
		a	b	c	d	e	f	g	h	i
3142	5	76	76	60	60	17	56	89	53	5
3152								92	60	
3242							60	97		
3252							65	105		
3342	6	100	100	80	80	48	83	116	80	–
3352										
3442		120	120	100	100	45	104	127	90	
3452										

Panel-mounted angled sockets

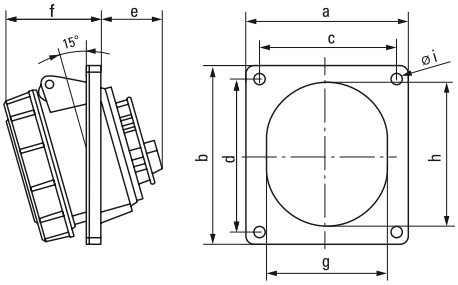


Figure 7

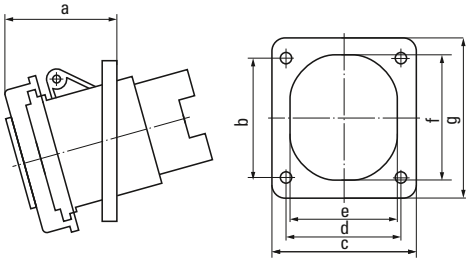


Figure 8

Model	Figure no.	Dimensions, mm								
		a	b	c	d	e	f	g	h	i
4142	7	80	98	60	73	33	52	57	65	5,5
4152						36			73	
4242						40	63	65	80	
4252						41		65	88	
4342	8	65	89	101	80	80	92	113	–	–
4352						79	95			
4442		85	108	120	100	95	112	130		
4452										

Power wander plugs

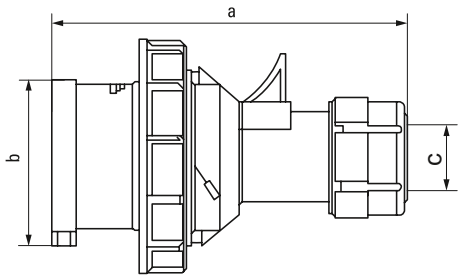


Figure 9

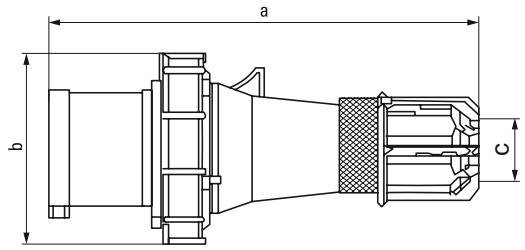


Figure 10

Model	Figure no.	Dimensions, mm		
		a	b	c
0142	9	133	53	6-15
0152		140	61	6-15
0242		158	63	10-20
0252		165	69	
0342	10	250	115	23
0352				
0442		275	128	31
0452				

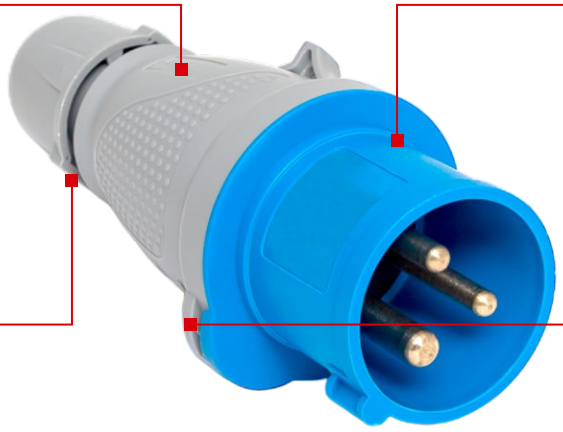
Picture	Rated current, A	Voltage, V	Poles	Picture	Degree of protection	Item code
Power wander sockets						
	16	400/415	3P+PE		IP67	ps-2142-16-380
			3P+PE+N			ps-2152-16-380
	32		3P+PE			ps-2242-32-380
			3P+PE+N			ps-2252-32-380
	63		3P+PE			ps-2342-63-380
			3P+PE+N			ps-2352-63-380
	125		3P+PE			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 PRO 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 60309-1, IEC 60309-2

Textured surface and less slippery plastic of the connector housing for a more secure grip



Larger thumb pad on the socket cover to facilitate one-handed alignment and connection

Gland nut with a rubber inner gasket for a safe and secure cable grip, as well as ingress protection. Inner grooves prevent the gland nut from falling off the plug when the thread is fully disengaged

Easy assembly and disassembly with a simple and reliable screwless twist-lock requiring only a flathead screwdriver or similar to unlock

APPLICATION

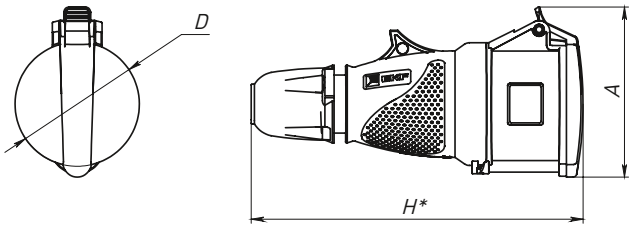
- Power supply for industrial and construction equipment.
- Connecting mobile shops, fast food outlets, mobile infrastructure facilities, etc. to the electrical networks.

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

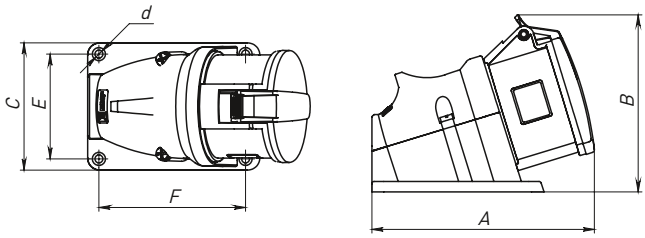
Overall and installation dimensions

Wander sockets



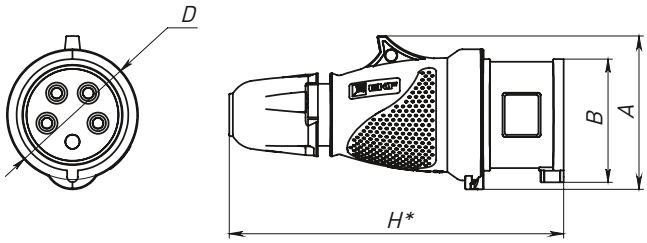
Item code	Dimensions, mm		
	A	D	H*
ps-213-16-220-PRO	78,5	55	159
ps-214-16-380-PRO	85	62	164
ps-215-16-380-PRO	91	67	169
ps-223-32-220-PRO	96	69	197
ps-224-32-380-PRO	69	69	197
ps-225-32-380-PRO	102,5	75	200

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 220-240 V AC 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, IEC 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

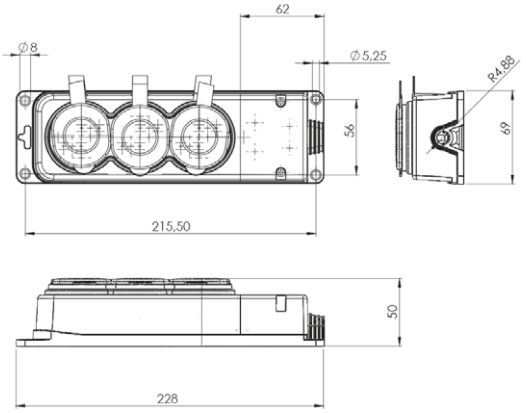
APPLICATION

- 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.

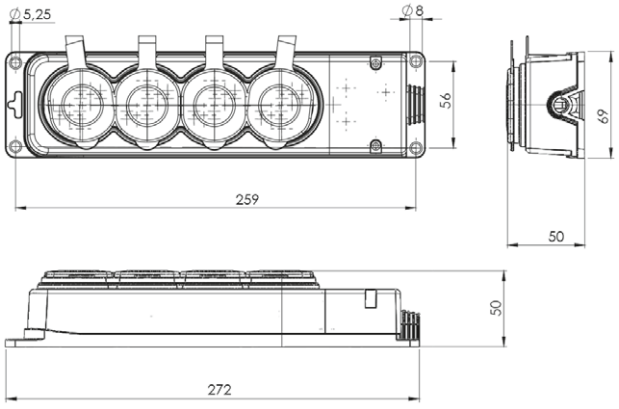
TECHNICAL DATA

Overall and installation dimensions (mm)

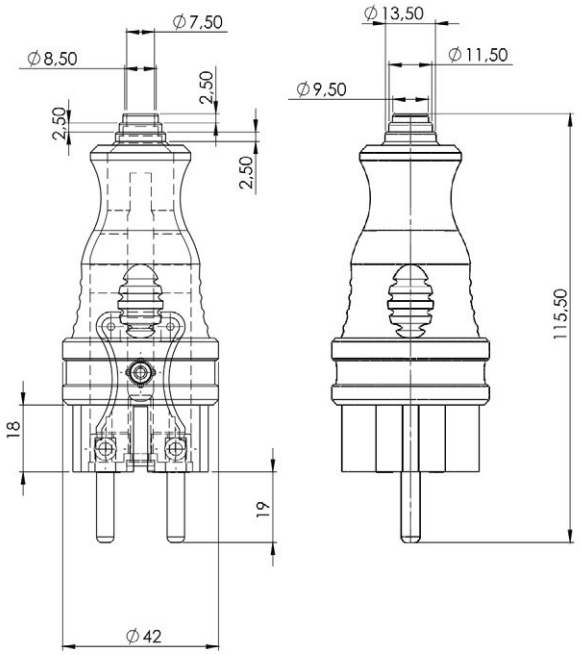
Rubber Schuko strip 3 sockets with safety covers

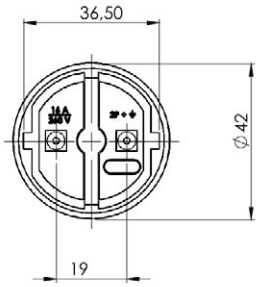


Rubber Schuko strip 4 sockets with safety covers

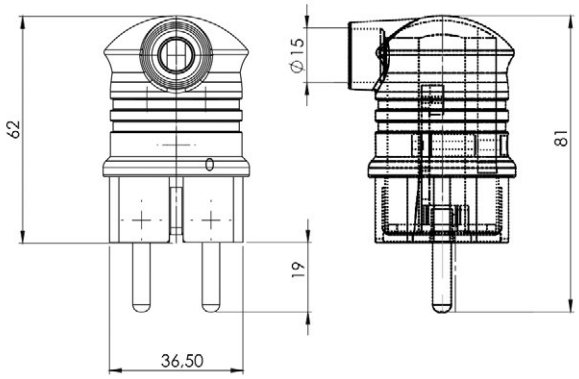


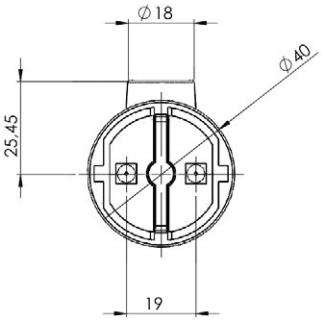
Rubber Schuko straight plug



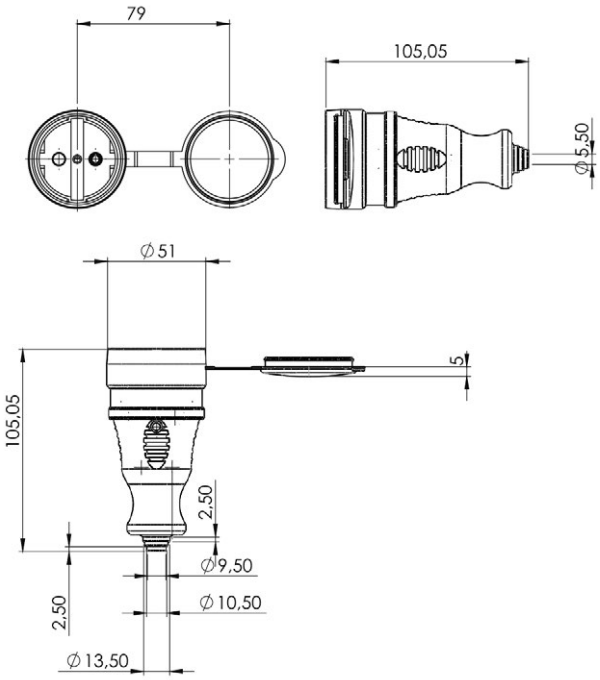


Rubber Schuko straight plug

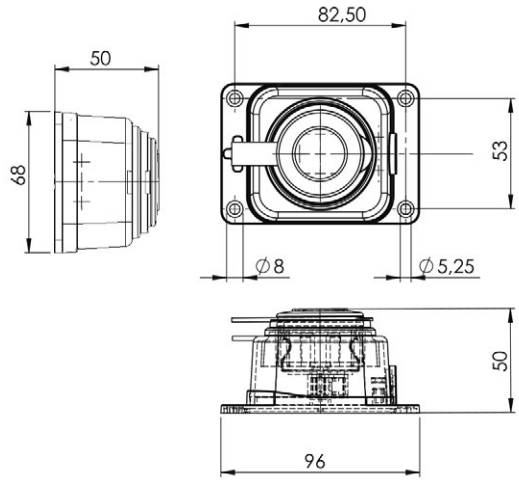




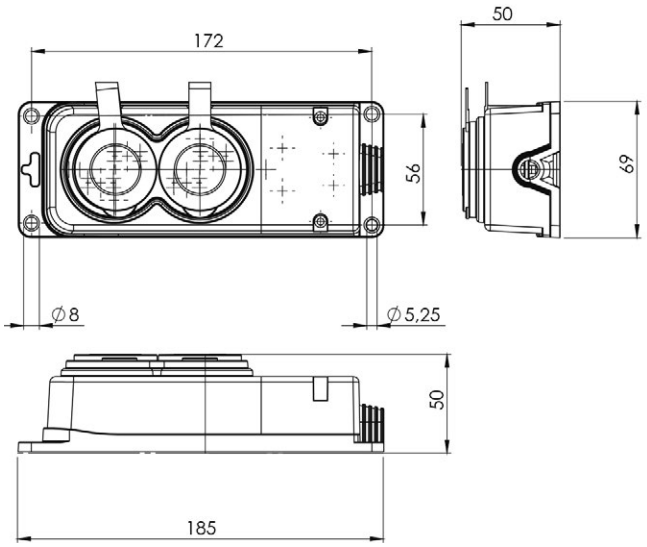
Wander rubber Schuko socket with safety cover



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 Mars

EKF Mars rubber power connectors offer superior electrical insulation, exceptional durability, high impact resistance, and excellent thermal stability. The connector housings are constructed from advanced thermoplastic elastomer, enhancing their operational characteristics, durability, and chemical resistance. These versatile connectors are optimized for a wide range of applications, including construction equipment, power tools, automotive maintenance facilities, and industrial machinery.

Standards: IEC 60884-1, IEC 60884-2-2

Impact and weather-resistant housing that does not crack or break

Solid brass plug pins

IP44 molded housing

Textured surface for a more secure, comfortable grip

Detachable terminal assembly to facilitate easier initial and repeat wiring

Socket cover and cable entry design ensure IP44 compliance

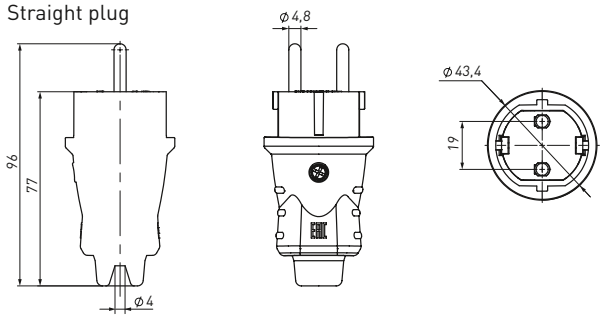
APPLICATION

- Construction and manufacturing sites.
- Machine assembly facilities.
- Temporary power distribution for mobile units.
- Residential power systems in villas and country homes.

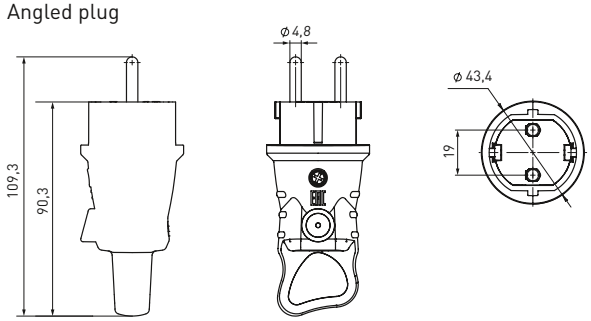
TECHNICAL DATA

Overall and installation dimensions (mm)

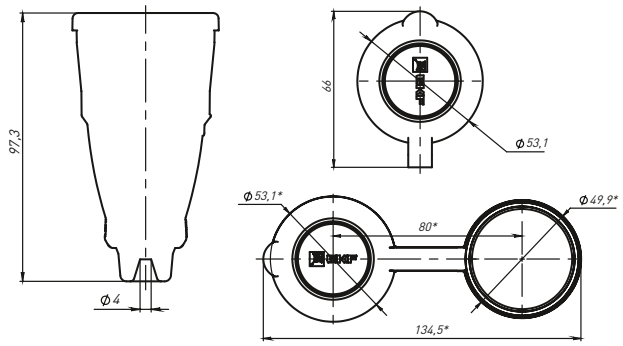
Straight plug



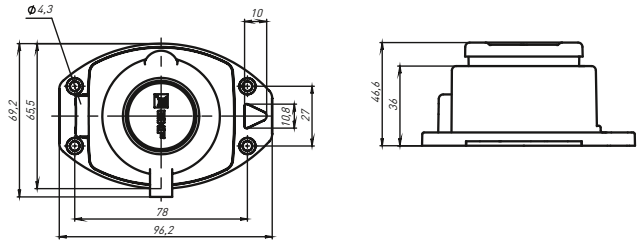
Angled plug



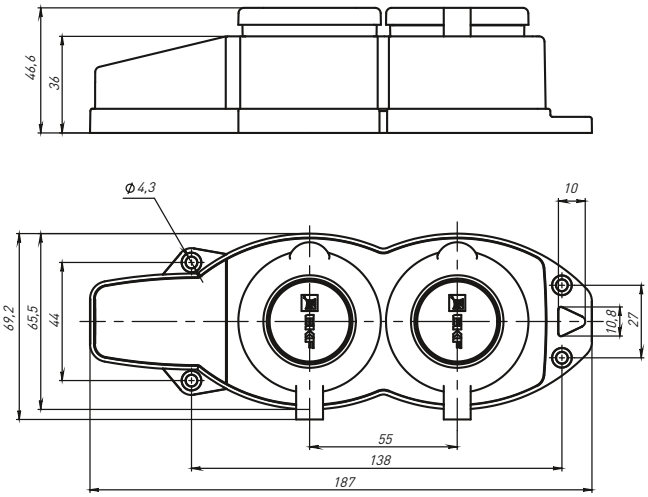
Wander socket



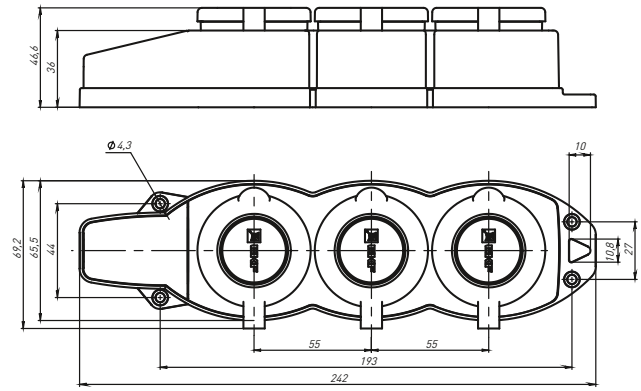
Wall-mounted socket



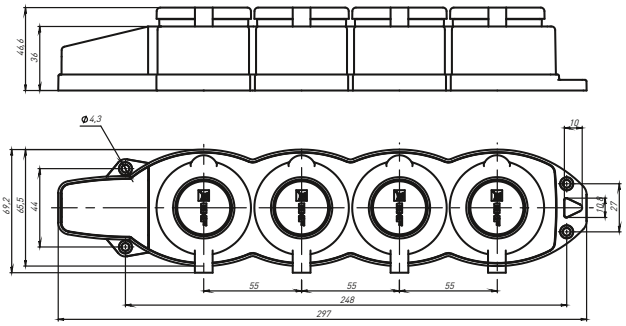
2 gang socket strip



3 gang socket strip



4 gang socket strip

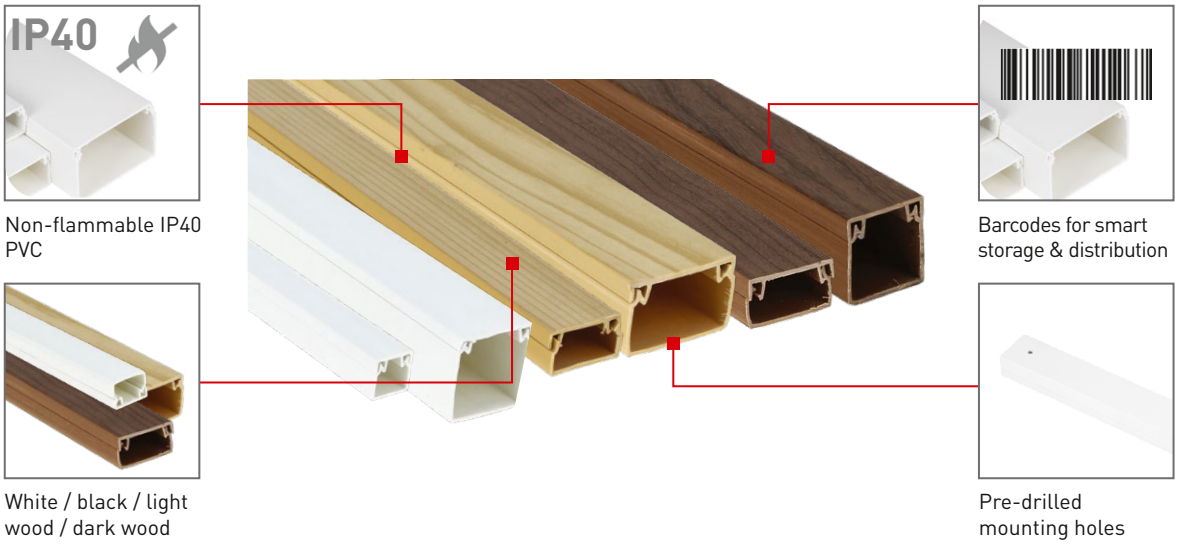


Picture	Name	Poles	Rated current, A	Rated voltage, V	Ambient temperature range, °C	Item code
	Rubber schuko plug straight EKF Mars	2P+PE	16	230	from -40 to 40	RPS-011-16-230-44
	Rubber schuko plug angled with pull ring EKF Mars					RPS-017-16-230-44
	Wander rubber schuko socket with safety cover EKF Mars					RPS-012-16-230-44
	Rubber schuko socket with safety cover wall mounted EKF Mars					RPS-014-16-230-44
	Rubber schuko strip 2 gang with safety covers EKF Mars					RPS-018-16-230-44
	Rubber schuko strip 3 gang with safety covers EKF Mars					RPS-015-16-230-44
	Rubber schuko strip 4 gang with safety covers EKF Mars					RPS-020-16-230-44

Cable Support Systems

Cable ducts EKF-Plast

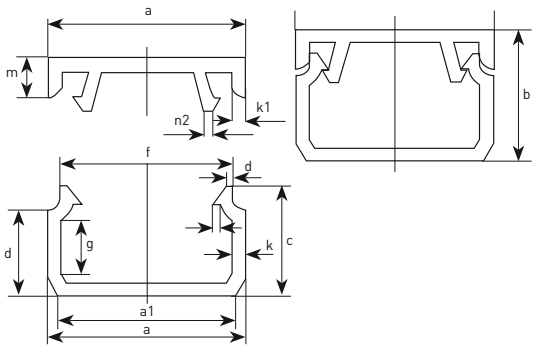
Cable ducts are mechanical supports designed to bundle, contain, and route cables in any type of buildings and facilities. The EKF cable duct systems consist of ducts and accessories for connecting, branching and bending cable routes. The EKF cable ducts are made of high-quality self-extinguishing PVC compound.



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

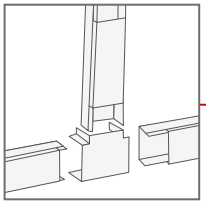


Name	Dimensions, mm												
	a	a1	b	c	d	f	g	k	k1	m	n	n1	n2
Cable duct 12 x 12	12	–	12	10,3	8,5	10	6,8	1	1	3	0,5	0,5	0,7
Cable duct 15 x 10	15	13,6	10	8,3	6,5	13	4						
Cable duct 16 x 16	16	–	16	14,3	12,5	14	10,8						
Cable duct 20 x 10	20	18,6	10	8,3	6,5	18	4						
Cable duct 25 x 16	25	–	16	14,5	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

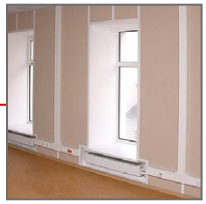
Name	Meters per package	Effective cross-section, mm²	Maximum cable duct capacity (according to IET On-Site Guide BS 7671:2018, Appendix E), mm	Item code			
				White	Light wood	Dark wood	Black
Cable duct (12 x 12) (120 m) EKF-Plast	120	130	7	kk-12-12	kk-12-12w	kk-12-12d	kk-12-12b
Cable duct (15 x 10) (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 cable ducts EKF-Plast

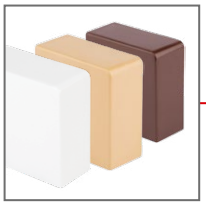
A wide range of accessories for building, connecting, and installing cable ducts enables the implementation of a clean, comprehensive and professional-looking solution for concealed cable routing. EKF-plast range of cable duct accessories offers versatile solutions for efficiently managing cable installations. 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.



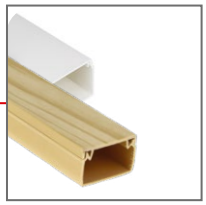
A wide range of accessories for cable routing of any complexity



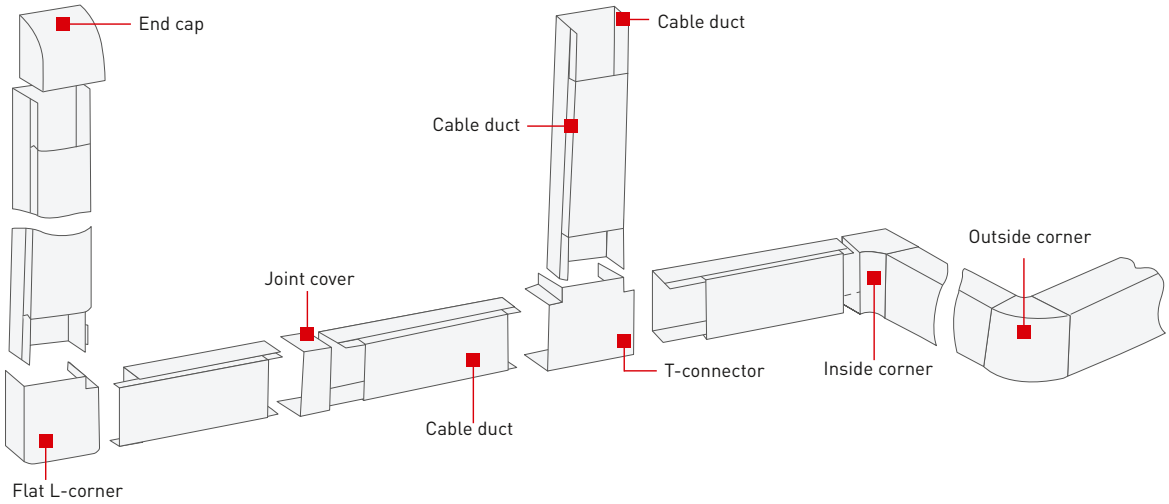
All accessories are easily snap into place and do not require tools or retainers



White / black / light wood / dark wood



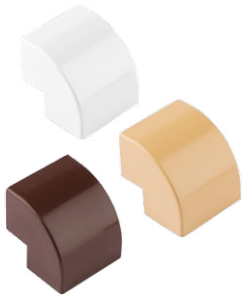
Made of self-extinguishing PVC



APPLICATION

The accessories EKF-Plast are ideal for various applications, where cable organization and protection are crucial for maintaining efficient and safe operations:

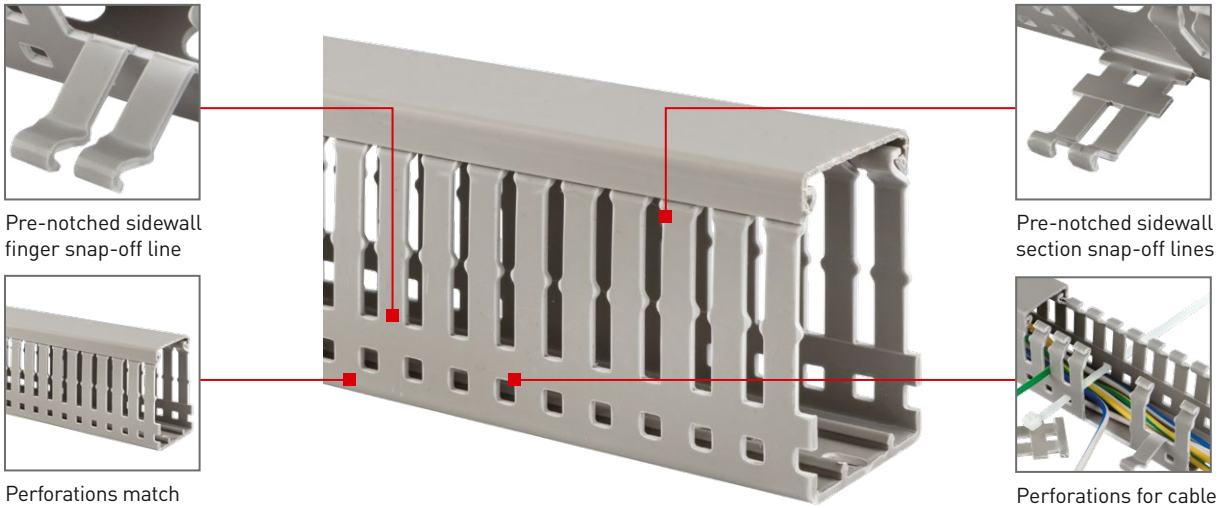
- Offices
- Industrial settings
- Home installations

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. The slots allow for easy insertion and removal of wires, enabling quick and convenient cable routing. The perforations also assist in enhancing airflow and heat dissipation, making it suitable for installations that require proper ventilation. 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

Pre-notched sidewall section snap-off lines

Perforations match with distances between terminals of modular devices

Perforations for cable ties. Different diameter preforations in the base for flexible no-drill mounting options

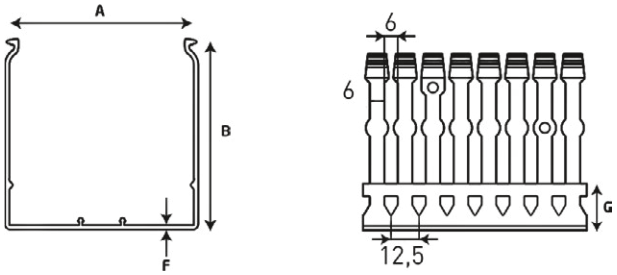
APPLICATION

Perforated (slotted) plastic cable ducts are designed to efficiently organize and manage cables in various applications, where effective cable management is essential and commonly used in:

- Electrical panels;
- Control cabinets;
- Server rooms.

TECHNICAL DATA

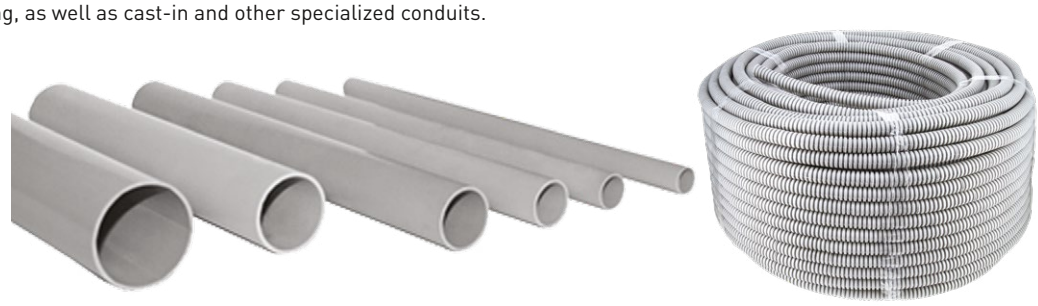
Overall and installation dimensions



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.



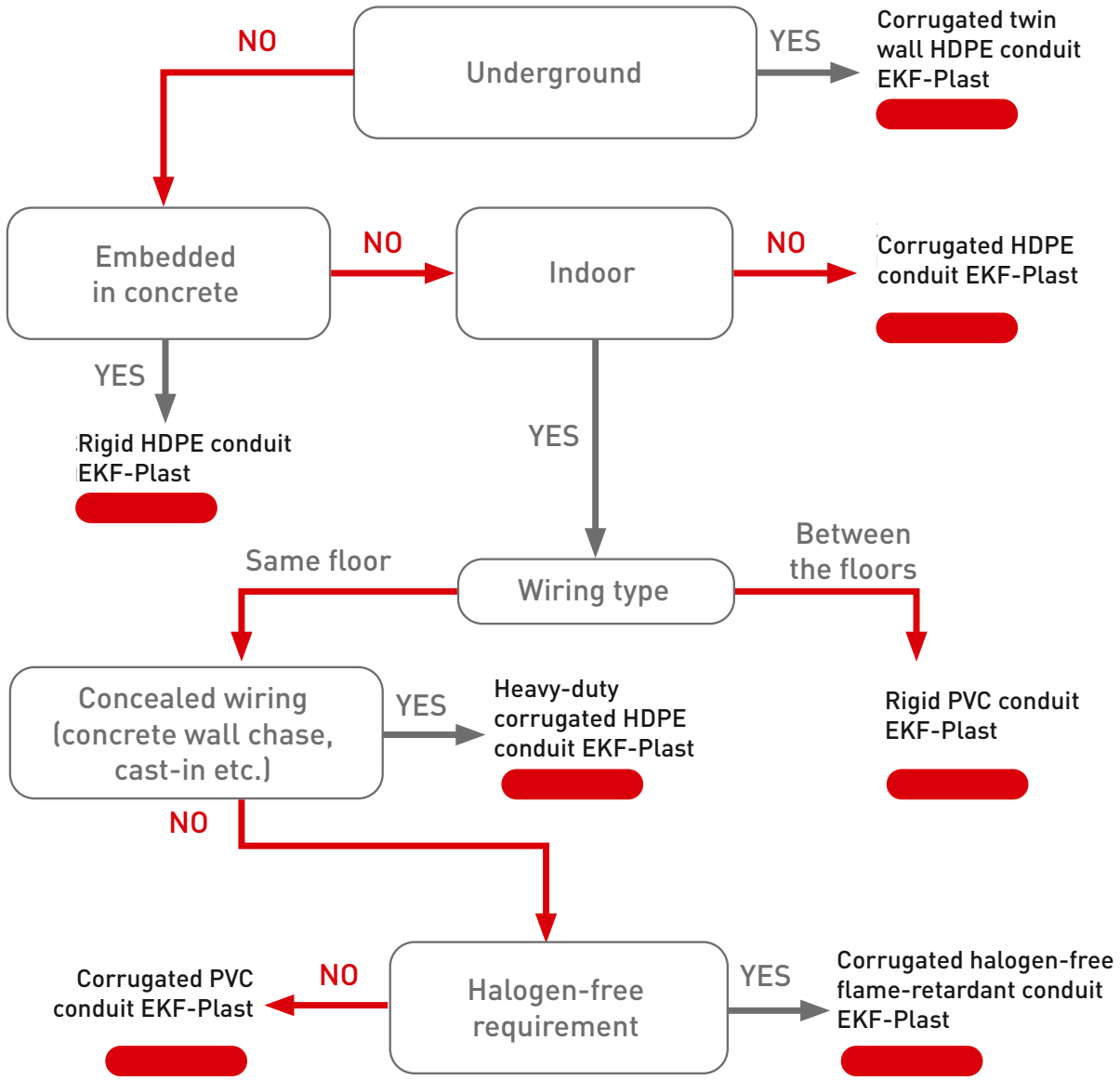
Installation tips

- 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

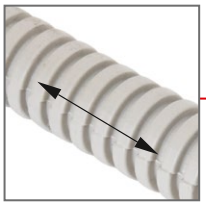
- For low-current and telecom lines, use 16 mm conduits.
- For luminaires, use 16 mm conuduits.
- For wiring accessories (sockets, switches), use 20 mm or larger conduits.
- For connecting junction boxes within the same floor use 2 mm or larger conduits.
- For connecting electrical panels within the same floor use 50 mm or larger conduits.
- For interfloor connections, use 40 mm, 50 mm or 63 mm conduits.

Conduit selection flowchart

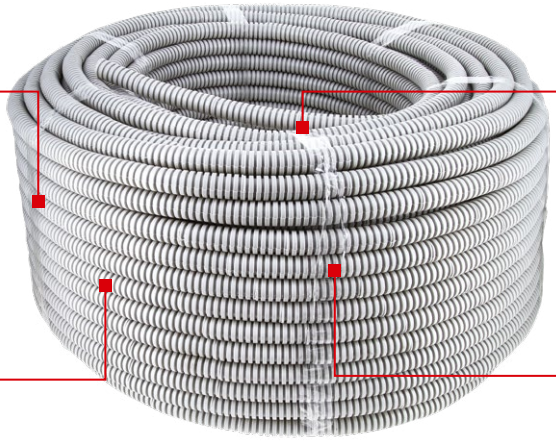


Corrugated PVC conduits EKF-Plast

Corrugated PVC conduits are a professional cable routing systems 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.

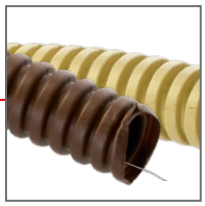


Broad selection of coil lengths



Complete range of accessories

Degree of protection: IP55



Color: white, grey, light wood, dark wood, black

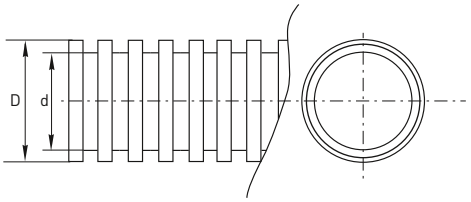
APPLICATION

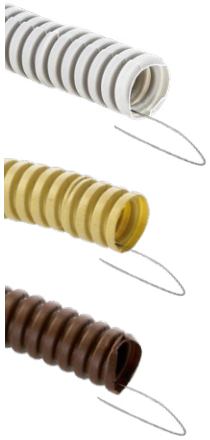
Open and concealed wiring systems in applications where a more flexible cable routing solution is required.

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

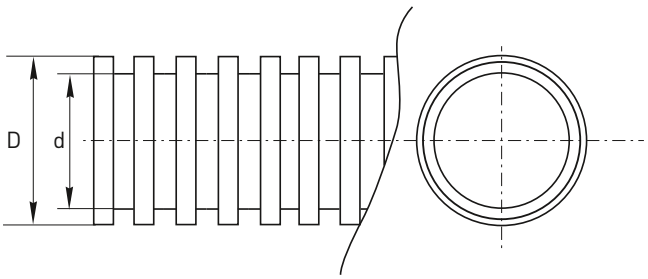
APPLICATION

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

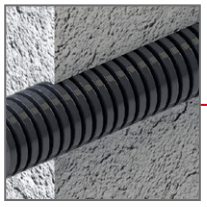


Picture	Name	Outer diameter D, mm	Inner diameter d, mm	Coil length, m	Draw cord	Item code
	Corrugated halogen-free flame-retardant conduit with draw cord d=16mm (100m) black EKF-Plast	16±0,4	10,7±0,3	100	Yes	FRHF-16
	Corrugated halogen-free flame-retardant conduit with draw cord d=20mm (100m) black EKF-Plast	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

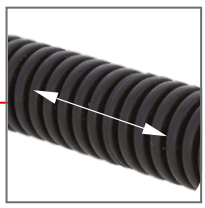
Corrugated high-density polyethylene conduits EKF-Plast

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 place



Variety of coil length options

Complete range of accessories

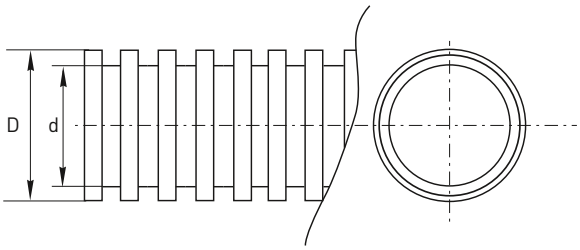
APPLICATION

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 350 N/5 cm - regular Over 750 N/5 cm - heavy-duty

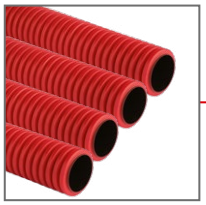
Overall and installation dimensions



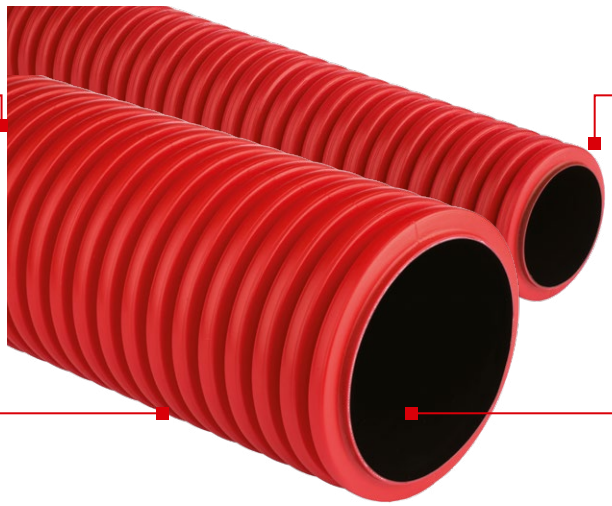
Name	Outer diameter D, mm	Inner diameter d, mm	Coil length, m	Draw cord	Cast-in applications	Item code	
						black	orange
Corrugated HDPE conduit with draw cord d=16mm (25m) EKF-Plast	16±0,4	10,7±0,3	25	Yes	N/A	tpnd-16-25m	–
Corrugated HDPE conduit with draw cord d=16mm (100m) EKF-Plast	16±0,4	10,7±0,3	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

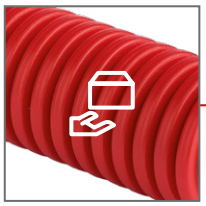
Twin wall conduits are designed to protect power and signal cables, communication lines and low-voltage systems (CCTV, ACS, emergency lighting, etc.) from external mechanical damage and corrosive environment exposure. EKF twin wall conduits are the perfect solution for efficient cable routing arrangement. The conduits, including the inner wall, are made only from top-quality HDPE, ensuring a perfectly smooth surface and reducing the cabling time significantly.



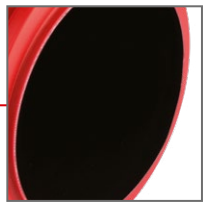
Container shipping option (5,7m in length)



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.

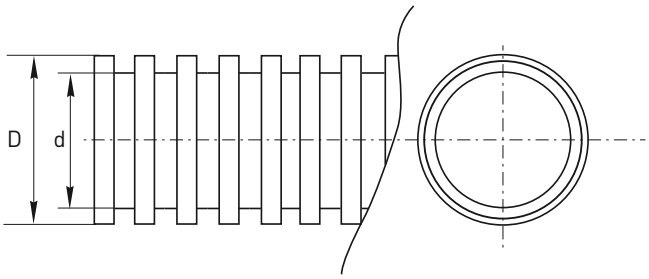
TECHNICAL DATA

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

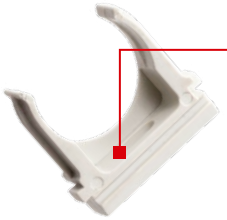


Name	Outer diameter D, mm	Inner diameter d, mm	Length, m	Draw cord	Item code
Corrugated twin wall HDPE conduit with draw cord d=40mm (50m) red EKF-Plast	40	32,0	50	Yes	tg2st-40-50m
Corrugated twin wall HDPE conduit with draw cord d=50mm (50m) red EKF-Plast	50	41,5	50		tg2st-50-50m
Corrugated twin wall 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

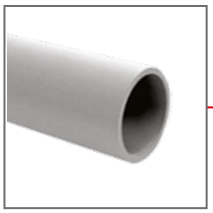
Accessories for cable conduits EKF-Plast

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	Name	Diameter, mm	Quantity per package, pcs	Item code	Quantity per package, pcs.	Item code	
				Grey		Grey	White
	Conduit coupling 16mm EKF-Plast	16	100	ms-t-16	10	ms-t-16-r	ms-t-16-w-r
	Conduit coupling 20mm EKF-Plast	20	50	ms-t-20	10	ms-t-20-r	–
					5	–	ms-t-20-w-r
	Conduit coupling 25mm EKF-Plast	25	50	ms-t-25	10	ms-t-25-r	–
					5	–	ms-t-25-w-r
	Conduit coupling 32mm EKF-Plast	32	25	ms-t-32	5	ms-t-32-r	–
	Conduit coupling 40mm EKF-Plast	40	20	ms-t-40	5	ms-t-40-r	–
	Conduit coupling 50mm EKF-Plast	50	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	Name	Diameter	Quantity per package, pcs.	Item code Grey	Quantity per package, pcs	Item code White
	Conduit tee 16mm EKF-Plast	16	10	tr-t-16	5	tr-t-16w-r
	Conduit tee 20mm EKF-Plast	20	10	tr-t-20	5	tr-t-20w-r
	Conduit tee 25mm EKF-Plast	25	10	tr-t-25	5	tr-t-25w-r
	Conduit tee 32mm EKF-Plast	32	10	tr-t-32	–	–
	Conduit elbow 90 deg. 16mm EKF-Plast	16	10	ug-t-16	5	ug-t-16w-r
	Conduit elbow 90 deg. 20mm EKF-Plast	20	10	ug-t-20	5	ug-t-20w-r
	Conduit elbow 90 deg. 25mm EKF-Plast	25	10	ug-t-25	5	ug-t-25w-r
	Conduit elbow 90 deg. 32mm EKF-Plast	32	10	ug-t-32	–	–

Twin Wall Conduit Accessories

Picture	Name	Conduit 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 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

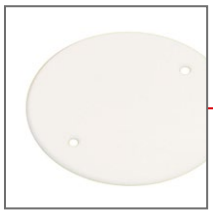
An electrical box, also known as a junction box or outlet box, is a protective enclosure used in electrical systems to house and protect wire connections, switches, receptacles (outlets), or other electrical devices. It provides a safe and accessible place for electrical connections to be made while 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

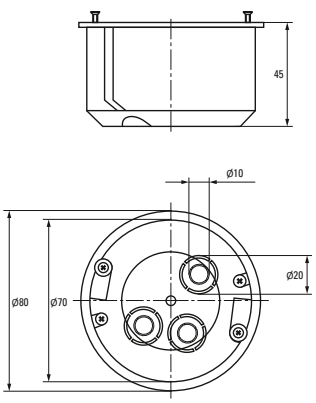
APPLICATION

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.

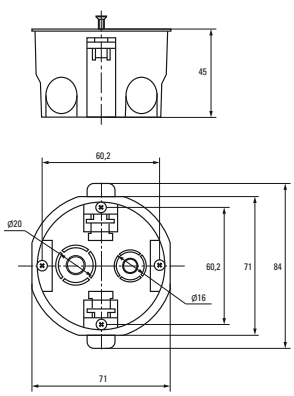
TECHNICAL DATA

Overall and installation dimensions (mm)

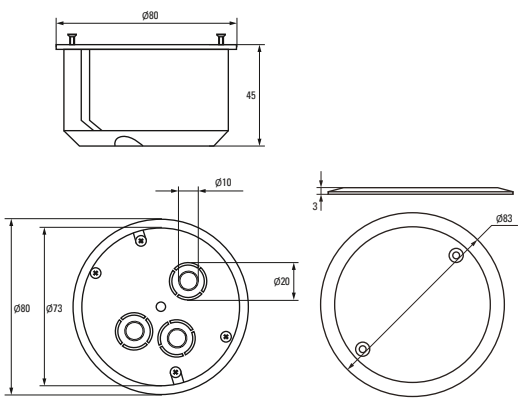
KMP-020-009



KMP-020-011



KMP-020-026



Picture	Name	Delivery scope		External size, mm	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	IP30	plc-kmp-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-kmp-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-kmp-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

Optional cover to convert mounting boxes to junction boxes

Gangable models available

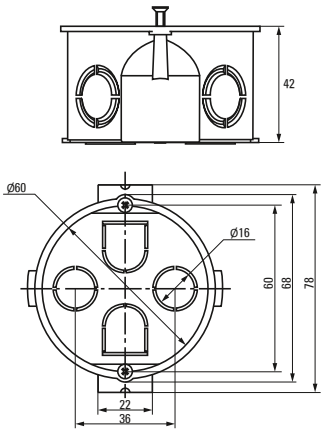
Gangable, self-tapping screws, terminal block and box cover models available

APPLICATION Masonry electrical boxes are an essential component of concealed wiring systems.

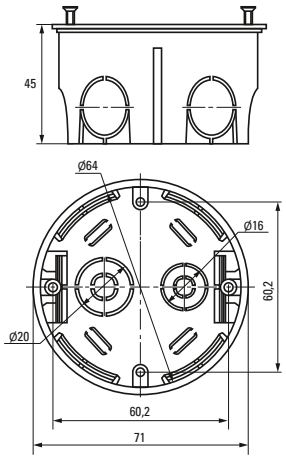
TECHNICAL DATA

Overall and installation dimensions (mm)

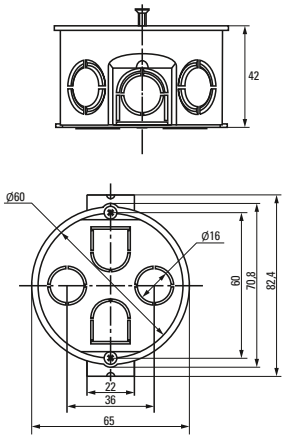
KMT-010-002



KMT-010-033



KMT-010-044



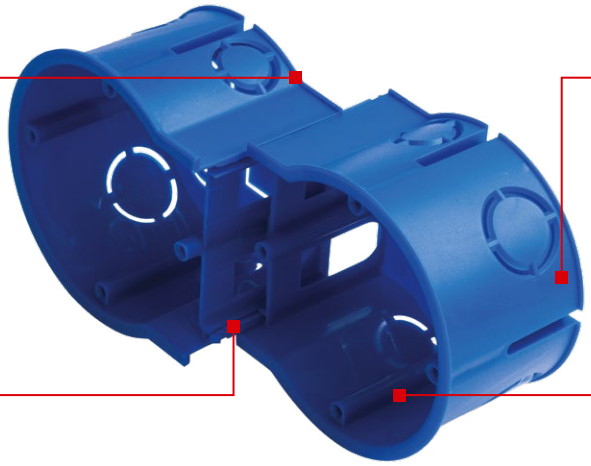
Picture	Name	Delivery scope		Size, mm	Materials	Color	Degree of protection	Item code
	Masonry mounting box with self-tapping screws (68x42) IP20 EKF		Self-tapping screws included, gangable Universal cover* Item code: plc-kmt-100-015	Ø 68 × 42	polystyrene	Blue	IP20	plc-kmt-010-002
	Masonry mounting box 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

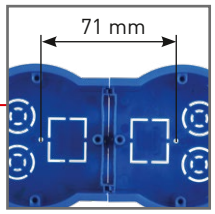
The novel design concept behind the new line of EKF modular gangable mounting boxes sets a new standard for the category. There can never be enough outlets in a modern world with rechargable mobile devices, and our modular solution helps in building safe, convenient and easy to configure multi-gang designs. 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)

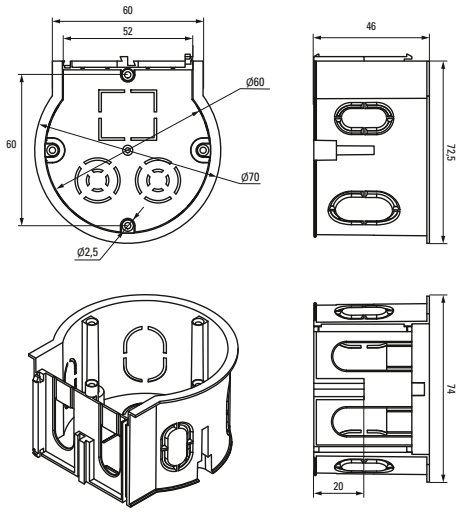
APPLICATION

Modular gangable masonry mounting boxes are the perfect solution for providing flexible multi-gang configurations for solid masonry wall applications as per user requirements

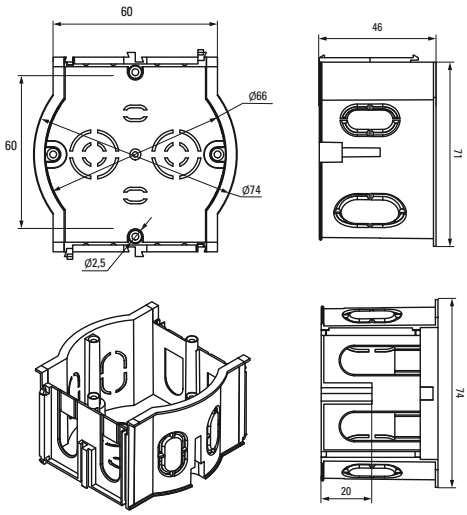
TECHNICAL DATA

Overall and installation dimensions (mm)

KMT-010-4005



KMT-010-4007



Picture	Name	Delivery scope	Size, mm	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.

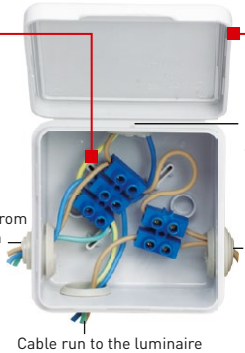
Surface-mounted junction boxes

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. 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

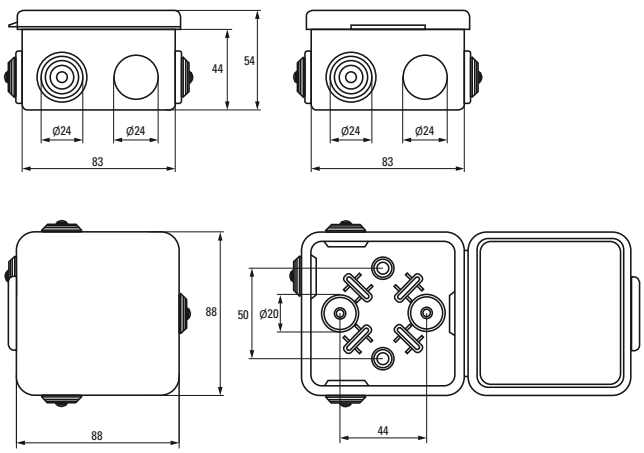
APPLICATION

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.

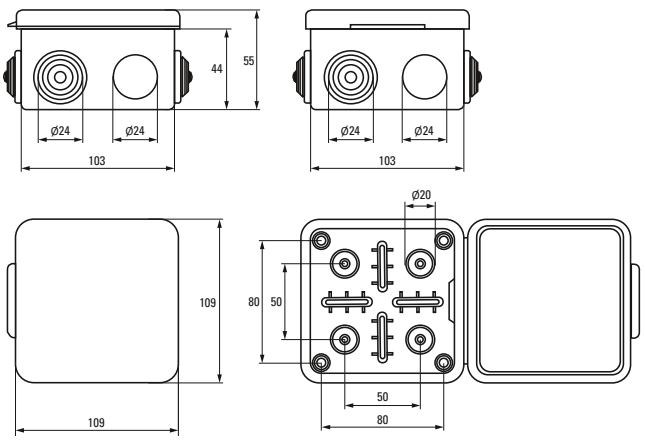
TECHNICAL DATA

Overall and installation dimensions (mm)

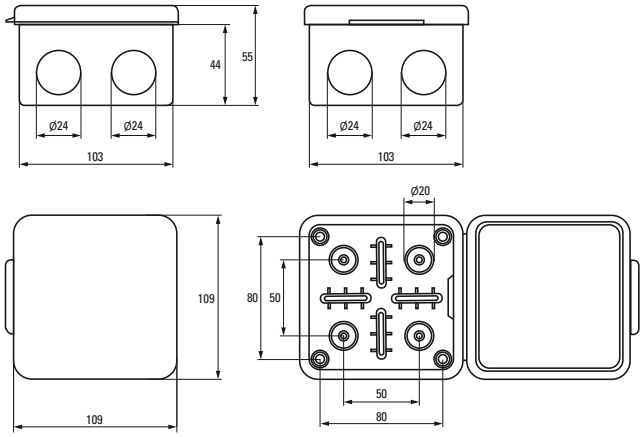
KMP-030-031



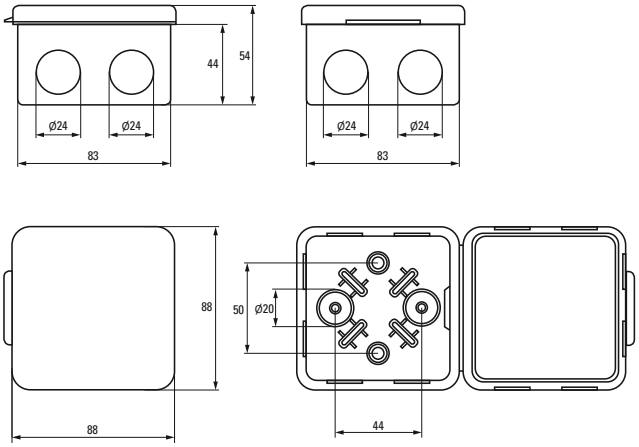
KMP-030-014



KMP-030-034



KMP-030-035



Picture	Name	Delivery scope	Size, mm	Materials	Color	Degree of protection	Item code
	Junction box KMP-030-031 surface-mounted with cover, 8 membrane entries IP54 EKF	Cover. 8 membrane entries	83 × 83 × 54	Polypropylene, PVC	Grey	IP54	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 with cover, for direct mounting, cutout cable entries IP54 EKF	Snap-on cover	109 × 109 × 55				plc-kmr-030-034
	Junction box KMP-030-035 with cover, for direct mounting, cutout cable entries IP54 EKF	Snap-on cover	88 × 88 × 54				plc-kmr-030-035

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:

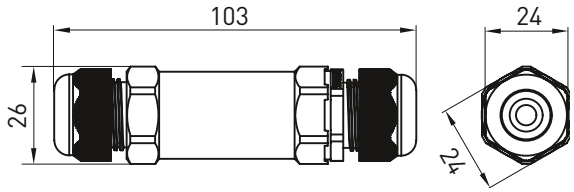
- Outdoor lighting;
- Marine applications;
- Industrial equipment.

TECHNICAL DATA

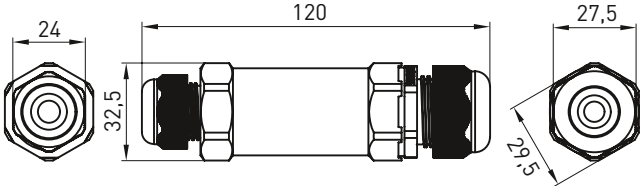
Parameters	Values
Degree of protection	IP68
Operating temperature, °C	from –40 to +85
Housing material	Polyamide 6.6
Seal material	Rubber
Contact part material	Nickel-plated brass (Cu = 52,8%, Zn = 30%, Ni = 15,1%)
Cable diameter with two rubber seals, mm	4–7
Cable diameter with one rubber seal, mm	7–12
Terminal housing material	Nylon
Max. tightening torque	1 N·m
UV resistance	Available

Overall and installation dimensions (mm)

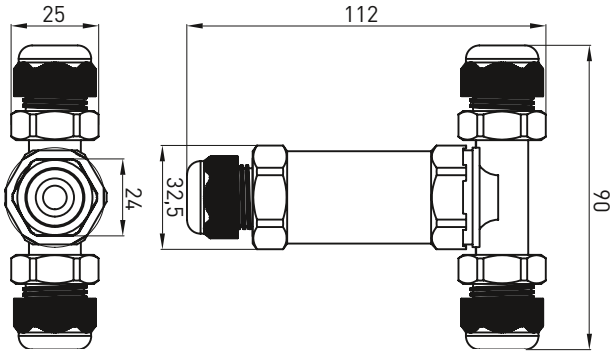
plc-uac-cb3



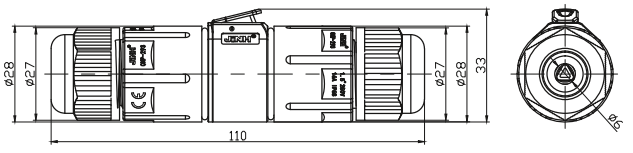
plc-uac-cb5



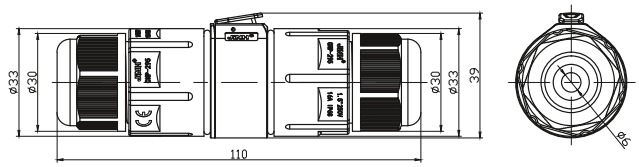
plc-uac-cb3t, plc-uac-cb5t



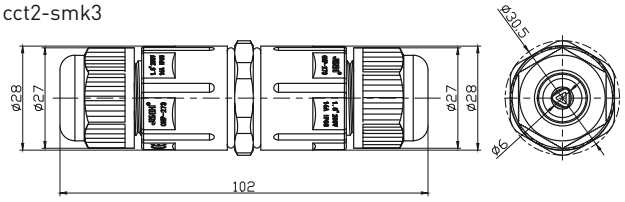
cct-smk3



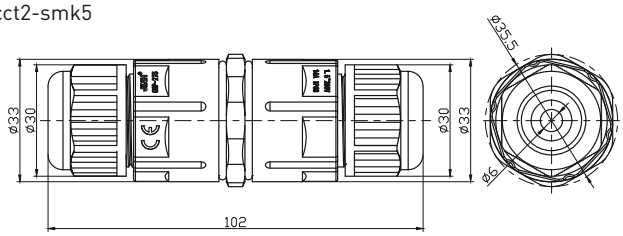
cct-smk5



cct2-smk3



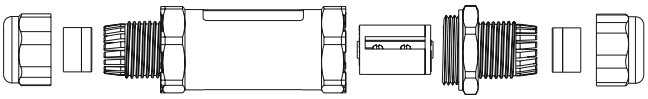
cct2-smk5



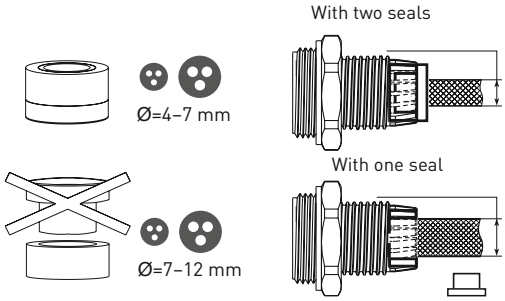
Installation and operation

WARNING! Turn off power before connecting or disconnecting any cables. Do not operate connectors with visible mechanical damage.

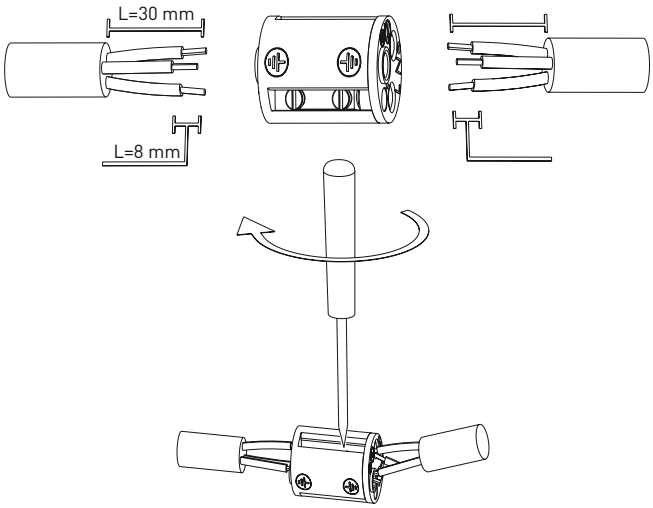
1. Open the connector, remove seal covers.



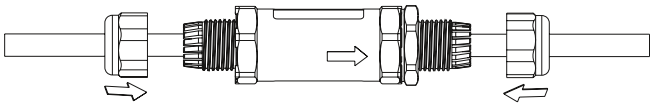
2. Place cables into the connector. For 4-7 mm cables, use two rubber seals. For 7–12 mm cables, use a single rubber seal.



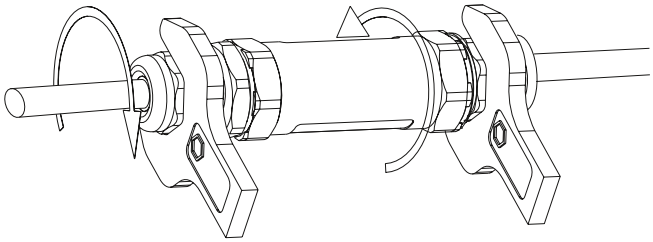
3. Prepare and connect cables with a terminal block.



4. Place the connected cables in the connector and close the cover tightly.



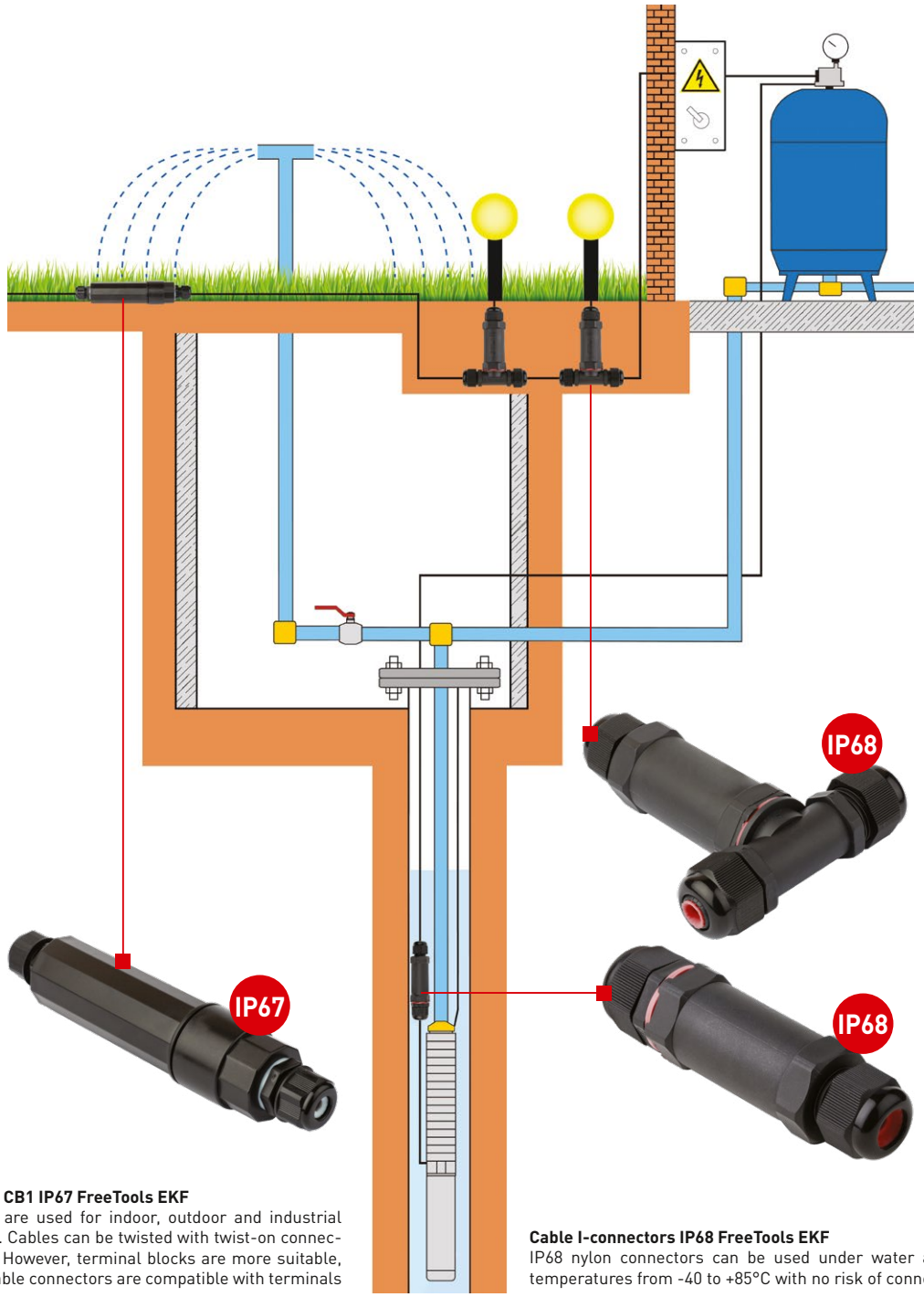
5. Torque the seal covers tight.



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~
OFF
0 - ВЫКЛ
N
2

BASIC

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 60898-1

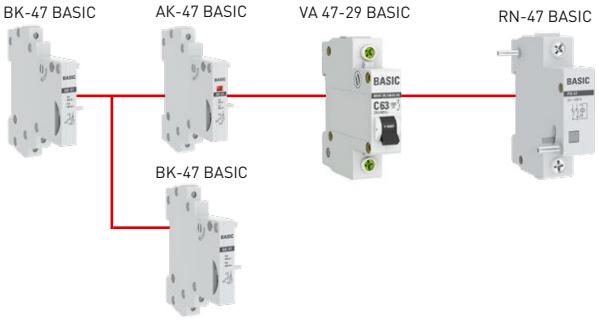
APPLICATION

Miniature circuit breakers VA 47-29 4,5kA up to 63A BASIC are used in public, commercial, industrial and residential buildings:

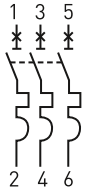
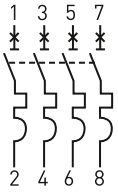
- carrying current under normal conditions;
- infrequent manual switching of individual circuit branches;
- protection against overload and short-circuit currents;
- final component of terminal power distribution system.

TECHNICAL DATA

Connection of accessories



Wiring diagrams

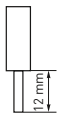
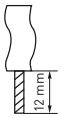
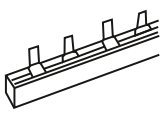
Number of poles			
1P	2P	3P	4P
			

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, 10, 16, 20, 25, 32, 40, 50, 63
Rated impulse withstand voltage Uimp, kV	4
Tripping curve types	B, C
Degree of protection	IP20
Rated breaking capacity Icn, kA	4,5
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

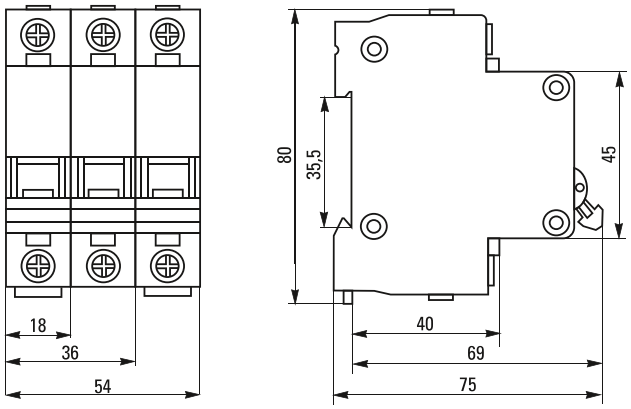
1. Connection

Conductor			Comb busbar
solid	stranded	ferrule	PIN
			

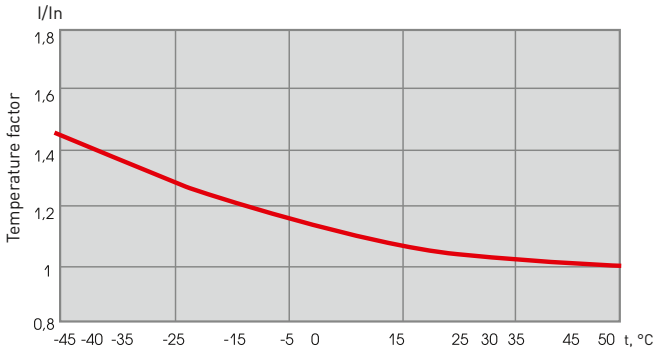
2. Accessories:

- 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).

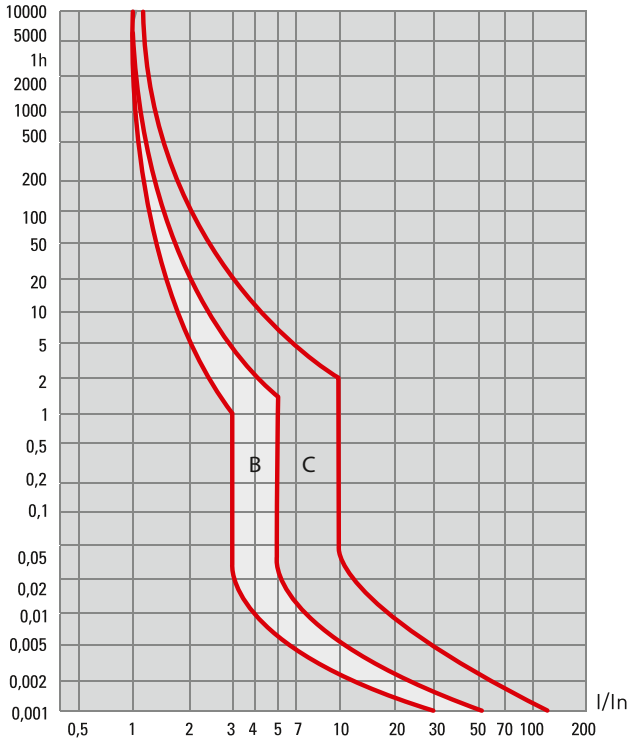
Overall and installation dimensions (mm)



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.

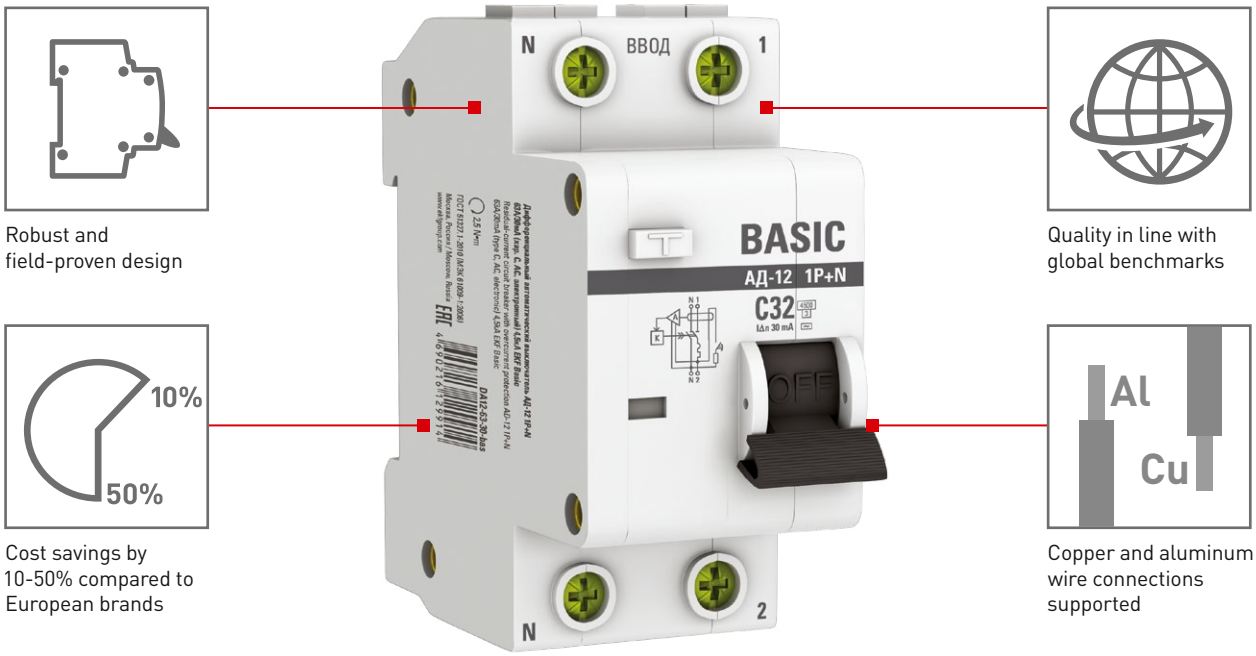
Rated current, A	1P		2P		3P	
	B	C	B	C	B	C
6	mcb4729-1-06-B	mcb4729-1-06C	mcb4729-2-06-B	mcb4729-2-06C	mcb4729-3-06-B	mcb4729-3-06C
10	mcb4729-1-10-B	mcb4729-1-10C	mcb4729-2-10-B	mcb4729-2-10C	mcb4729-3-10-B	mcb4729-3-10C
16	mcb4729-1-16-B	mcb4729-1-16C	mcb4729-2-16-B	mcb4729-2-16C	mcb4729-3-16-B	mcb4729-3-16C
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

BASIC

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 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

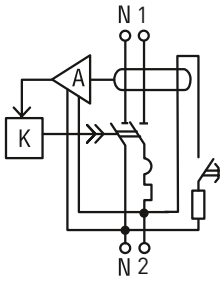
Connection of accessories

AD-12 BASIC

RN-47 BASIC

Wiring diagram

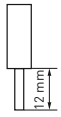
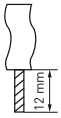
AD-12



Parameters	Values
Rated operating voltage Ue, V	230
Frequency, Hz	50 / 60
Number of poles	1P+N
Rated current In, A	10, 16, 20, 25, 32, 40, 50, 63
Neutral pole position	Left
Tripping curve	C
Degree of protection	IP20
Rated breaking capacity Icn, kA	4,5
Residual current protection type	Electronic
Type of waveform detected	AC
Sensitivity IΔn, mA	30
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

Installation and operation

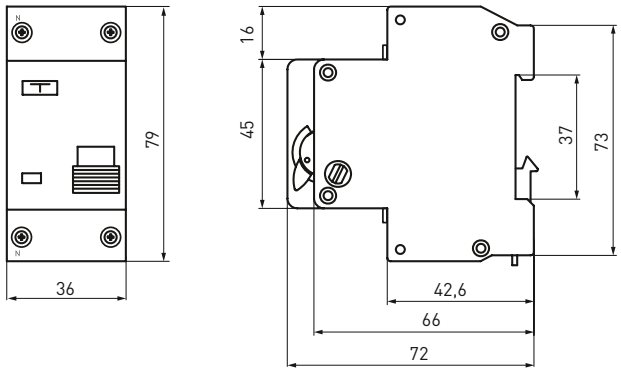
1. Connection

Conductor		
solid	stranded	ferrule
		

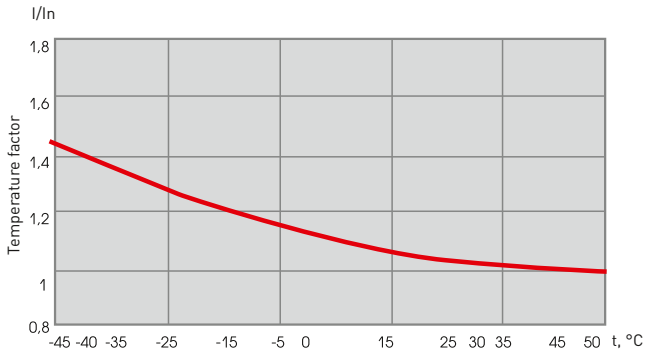
2. Accessories:

- Copper and aluminum wire connections are supported.
- Shunt release RN-47 EKF BASIC (installed on the right)

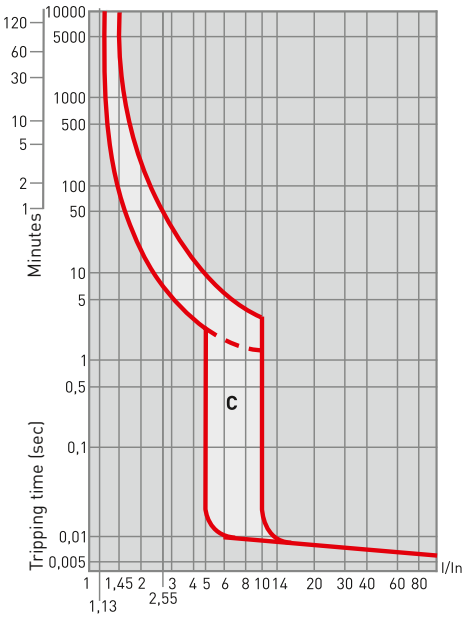
Overall and installation dimensions (mm)



Temperature derating

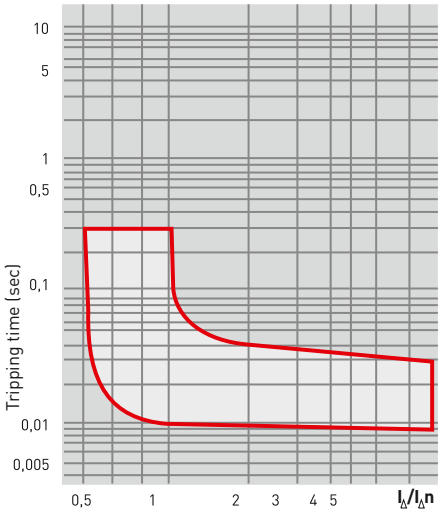


Tripping curve



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.

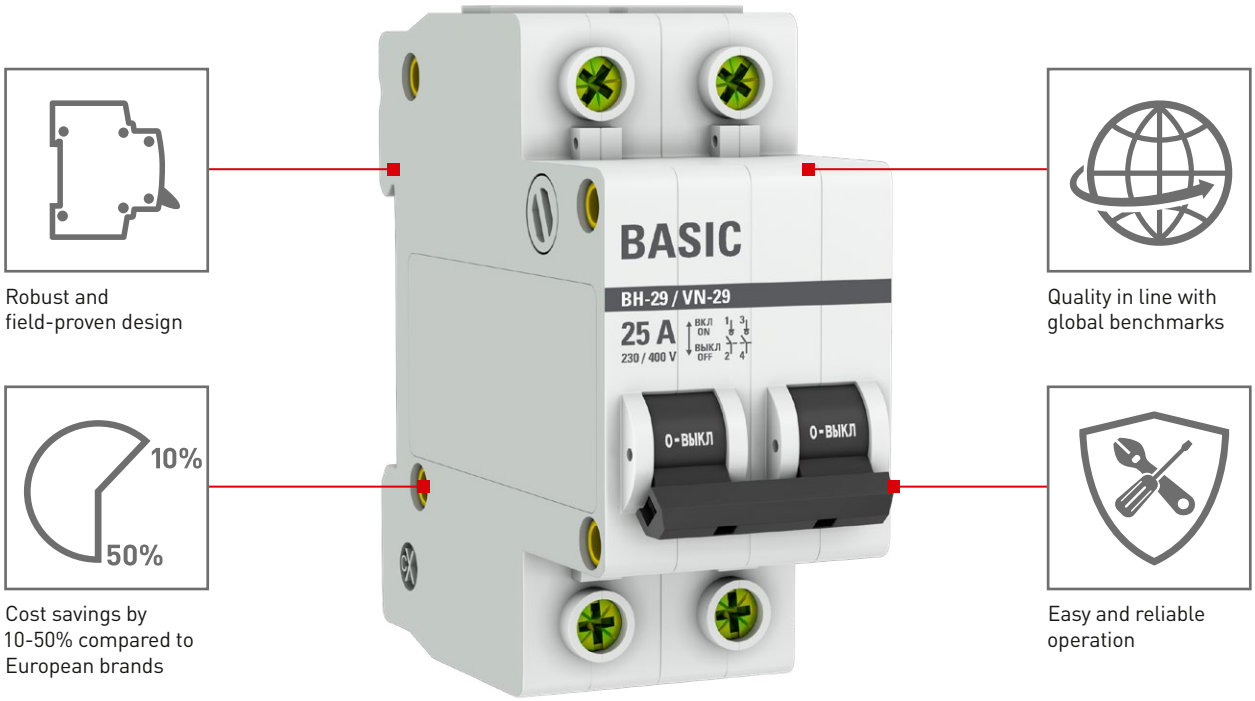
Name	Rated current, A	Item code
AD-12 1P+N 10A 30mA type AC curve C electronic 4,5kA BASIC	10	DA12-10-30-bas
AD-12 1P+N 16A 30mA type AC curve C electronic 4,5kA BASIC	16	DA12-16-30-bas
AD-12 1P+N 20A 30mA type AC curve C electronic 4,5kA BASIC	20	DA12-20-30-bas
AD-12 1P+N 25A 30mA type AC curve C electronic 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 60947-3



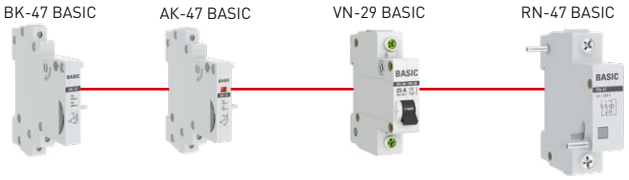
APPLICATION

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.

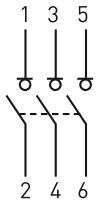
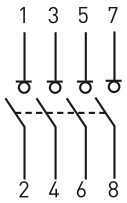
TECHNICAL DATA

Connection of accessories



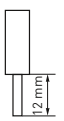
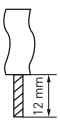
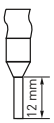
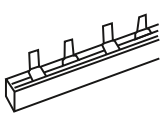
Parameters	Values
Rated operating voltage Ue, V	230 / 400
Frequency, Hz	50 / 60
Poles	1; 2; 3; 4
Rated current In, A	16, 20, 25, 32, 40, 63
Degree of protection	IP20
Rated short-time withstand current Icw, kA	1
Mechanical endurance, O-C cycles	20 000
Electrical endurance, O-C cycles	10 000
Operating temperature, °C	- 25 to + 50
Cross-section of connected wires, mm²	1-25
Max. tightening torque, N·m	2,5

Wiring diagrams

Number of poles			
1P	2P	3P	4P
			

Installation and operation

1. Connection

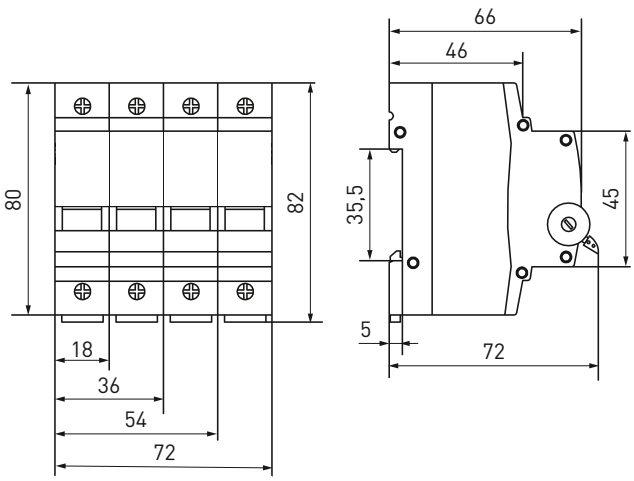
Conductor			Comb busbar
solid	stranded	ferrule	PIN
			

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).

BASIC

Overall and installation dimensions (mm)



Delivery scope

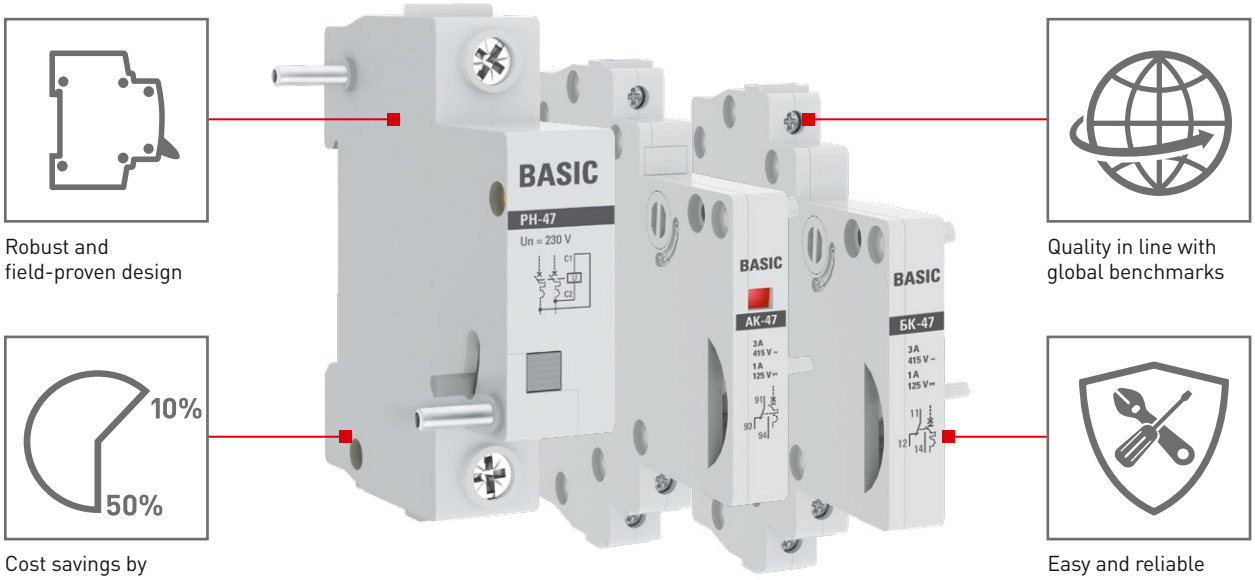
Modular switch disconnectors VN-29 BASIC are supplied in a group package.
For all available documentation, scan the QR-code on the insert or on the inside of the package.

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 60947-1



Robust and field-proven design

Quality in line with global benchmarks

Cost savings by 10-50% compared to European brands

Easy and reliable operation

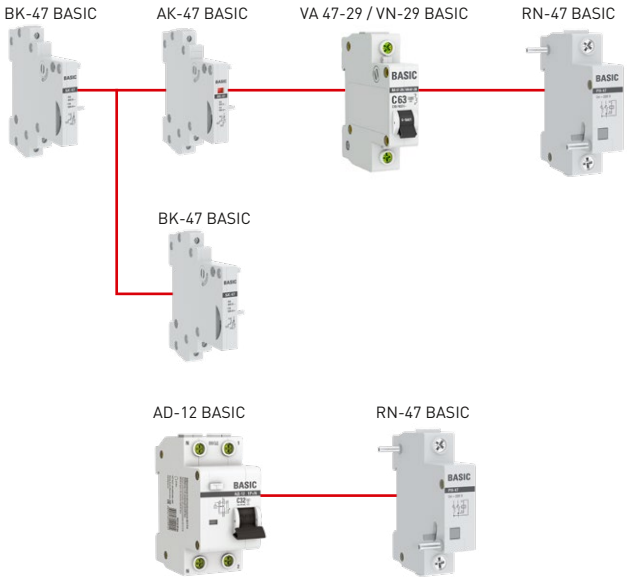
APPLICATION Improving maintenance, monitoring and control capabilities of distribution panels.

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

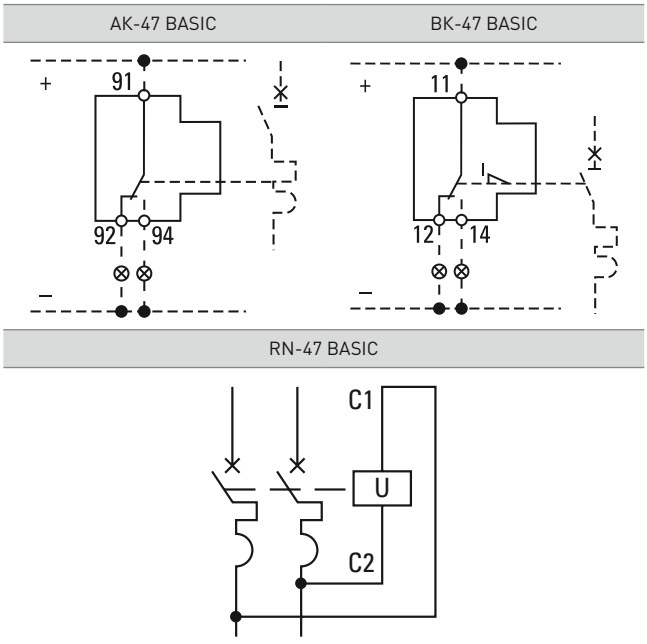
BASIC

TECHNICAL DATA

Connection of accessories

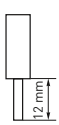
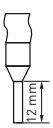
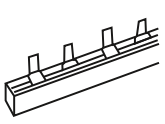


Wiring diagrams



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.

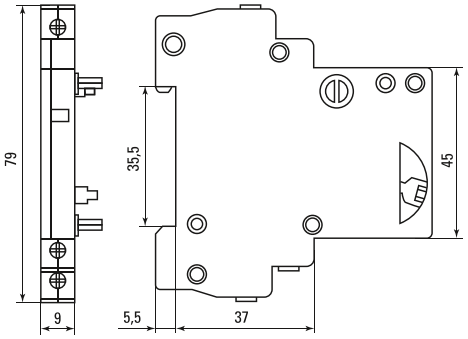
2. Shunt release operation

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.

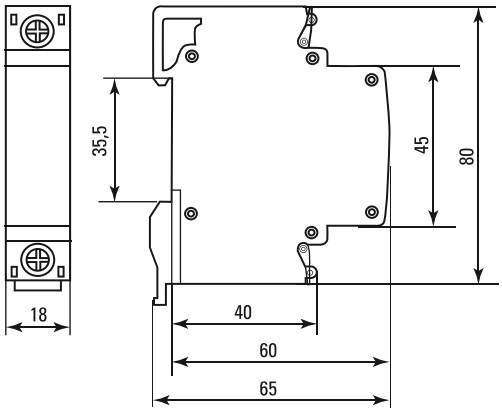
Parameters	AK-47	BK-47	RN-47
Rated current, A	1,3	1,3	1,3
Rated voltage, V	3/415 AC 1/125 DC	3/415 AC 1/125 DC	180–260
Size compared to 1 module (18mm)	0,5	0,5	1
Cross-section of connected wires, mm²	2,5	2,5	25

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

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