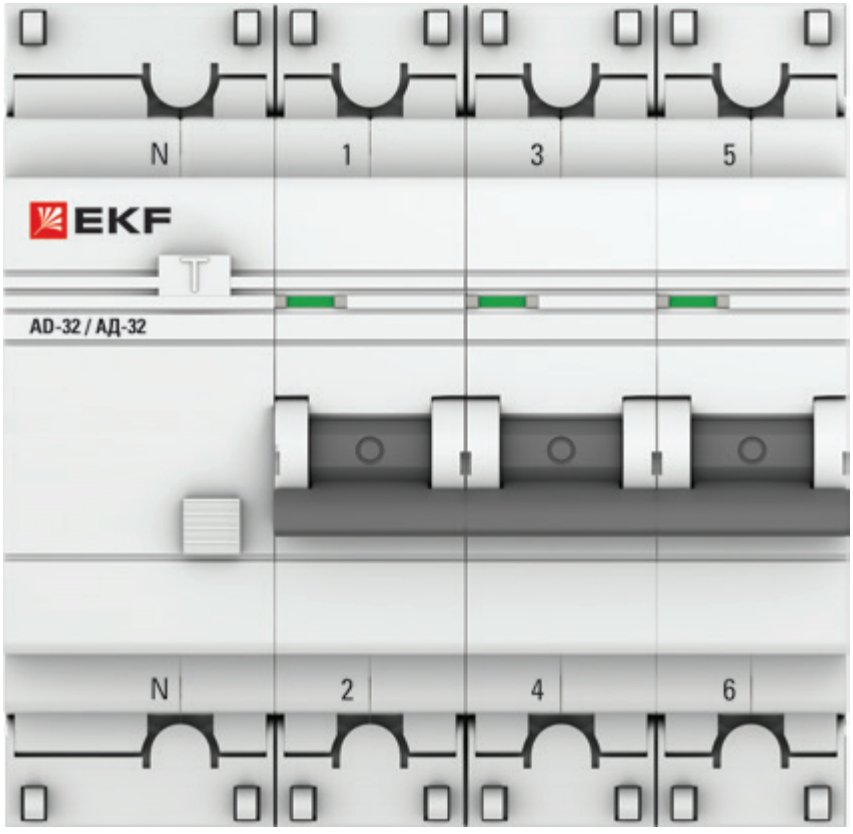


TECHNICAL MANUAL

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

1 DESCRIPTION

The residual current circuit breakers with overcurrent protection AD-32 EKF PROXIMA are used in 50Hz 230 V/400 V AC circuits of residential and commercial buildings. The residual current circuit breakers with overcurrent protection (RCBO) are designed to:

- Protect persons against electric shock by accidental indirect contact with exposed conductive parts of electrical installation.
- Protect electrical installations in case of damaged insulation and faults.
- Protect equipment against fires and inflammations set by leakage currents and subsequent short circuits, housing or ground faults.
- Auto disconnect circuit sections in case of overload or short-circuit currents.

RCBO AD-32S selective type AC trips with a pre-set time delay on residual current flowing.

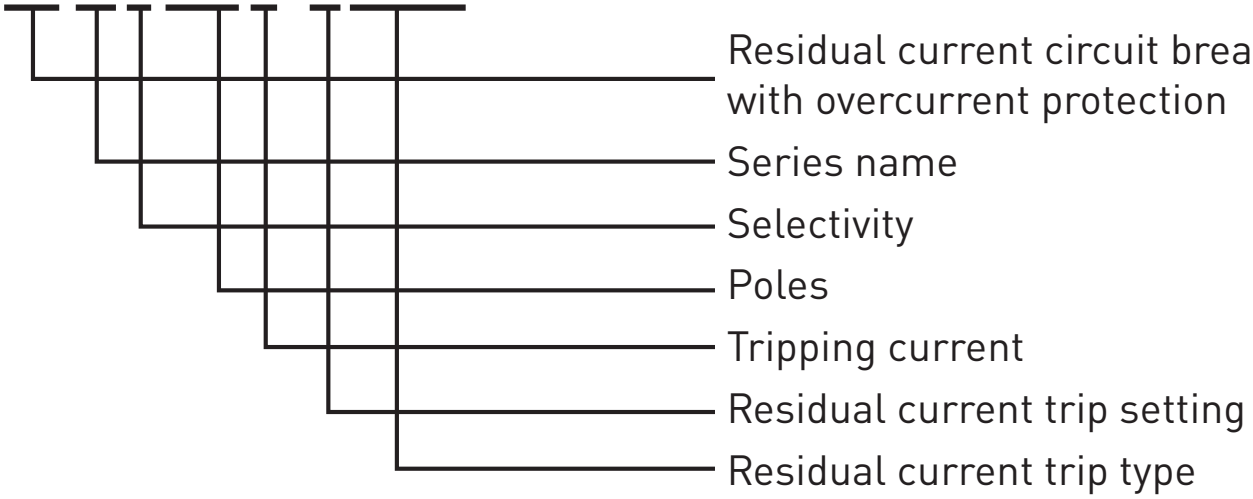
RCBO AD-32 type AC trips on alternating sinusoidal residual current, suddenly applied or smoothly increasing.

RCBO AD-32 type A trips on alternating sinusoidal residual current and on residual pulsating direct current, suddenly applied or smoothly increasing.

Residual current circuit breakers with overcurrent protection AD-32 EKF PROXIMA comply with IEC 61009-1.

TYPE CODE

AD-32 S X+N X / X type X



2 TECHNICAL DATA

Table 1

Characteristics	Value	
	AD-32 1P+N	**AD-32 3P+N**
Poles	1P+N	3P+N
Rated operating voltage Ue, V	230	400
Rated current In, A	6, 10, 16, 20, 25, 32, 40, 50, 63	
Rated residual operating current IΔn, mA	10, 30, 100, 300	
Frequency fn, Hz	50	
Rated breaking capacity Icn, A	4 500, 6 000	
Tripping curve	B, C (figure 1)	
Residual current trip type	A, AC	
Type by time delay	S (type AC)	
Rated residual non-operating current IΔno, mA	0,5IΔn	
Overvoltage protection (only for AC type), V	270 ± 5%	
Residual current protection type	Electronic (voltage dependent)	
Mechanical endurance, O-C cycles	10 000	
Electrical endurance, O-C cycles	4 000	
Cross-section of connected wires, mm^2	from 1 to 25	
Degree of protection	IP20	
Operating temperature, °C	from – 25 to + 55	
Max. tightening torque, N•m	2,5	
Max weight, kg (depending on number of poles)	0,2	0,4

3 TRIPPING CHARACTERISTICS

Table 2 – Tripping characteristics of AD-32 EKF PROXIMA

Tripping curve	Release	Trip/non-trip time
B,C	Thermal	1,13 In: t ⩾ 1 hour – no trip 1,45 In: t < 1 hour – trip 2,55 In: 1 sec < t < 60 sec (at In ⩽ 32A) – trip 1 sec < t < 120 sec (at In > 32A) – trip
B	Electro-magnetic	3 In: t ⩽ 0,1 sec – no trip 5 In: t < 0,1 sec – trip
C		5 In: t ⩽ 0,1 sec – no trip 10 In: t < 0,1 sec – trip

Table 3 – Trip /non-trip time limits for alternating residual current for AD-32 EKF PROXIMA, types AC and A.

Type	In,A	IΔn, mA	Trip /non-trip time limits for alternating residual current for AD-32 EKF PROXIMA, types AC and A, sec.					
			IΔn	2IΔn	5IΔn	500A	IΔt*	Notes
Non-selective	Any value	max. 30	0,3	0,15	0,04	0,04	0,04	Max. trip time
		30						
		> 30						
Selective	⩾ 25	> 30	0,5	0,20	0,15	0,15	0,15	
		> 30	0,13	0,06	0,05	0,04	0,4	Min. non-trip time

* The devices shall be tested with current IΔt, equal to the minimum threshold of the instantaneous tripping current, by types B and C, as applicable, specified in Table 2.

Table 4 – Maximum trip time for half-wave pulse residual current for AD-32 EKF PROXIMA, type A.

Type	In, A	IΔn, mA	Maximum trip time for AD-32 type A in case of half-wave pulse residual current, sec							
			1,4IΔn	2IΔn	2,8IΔn	4IΔn	7IΔn	0,35A	0,5A	350A
Non-selective	Any value	max. 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

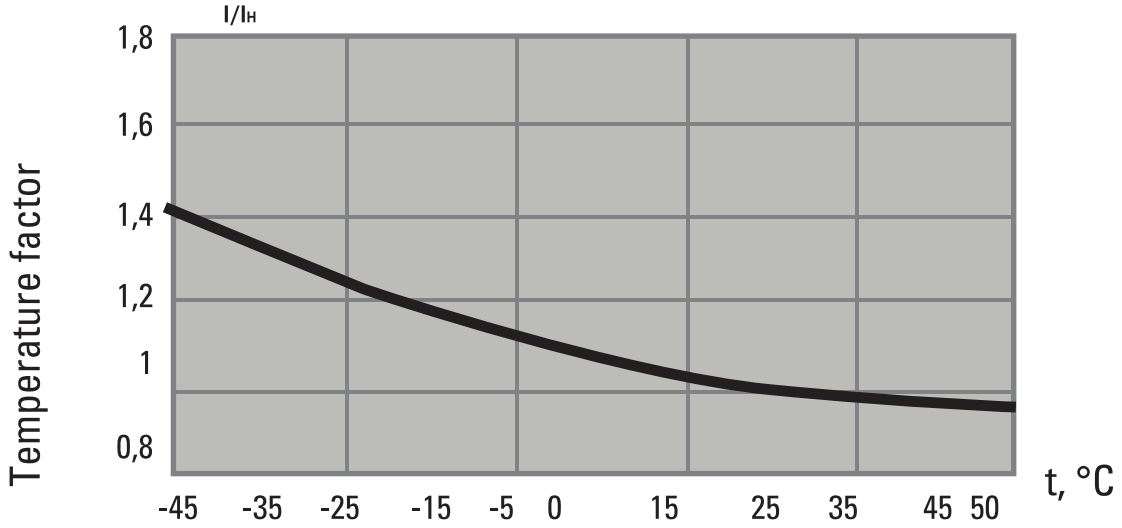


Figure 1 – Derating factor depending on ambient temperature

4 OVERALL DIMENSIONS

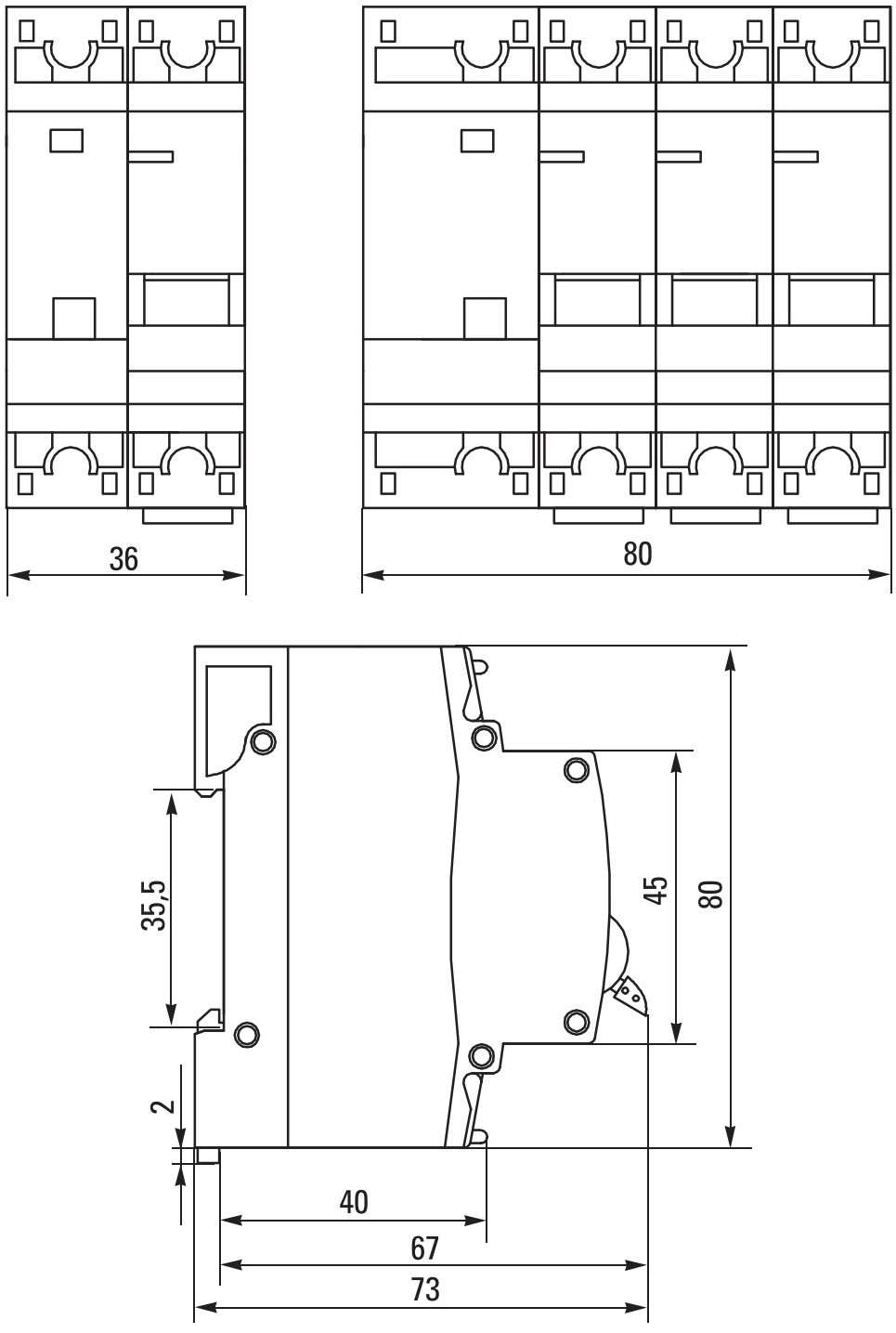


Figure 2 – Overall dimensions

5 INSTALLATION AND CONNECTION

The RCBO shall be installed and connected by qualified electrical personnel.

Before installation, make sure that:

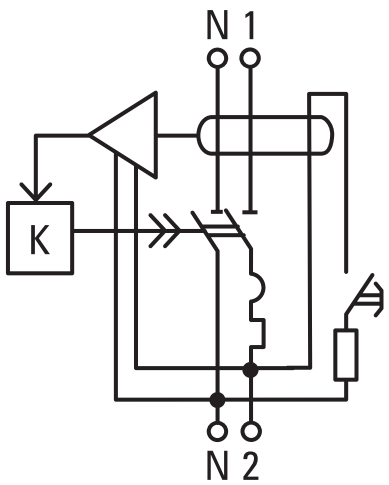
- The device characteristics (RCBO marking) meet the required values.
- The device has no visible damage.
- The mechanism properly operates (by turning the handle a few times and pressing the «T» button when the input terminals are powered).

Copper and aluminum wire connections are supported. Do not connect copper and aluminum wires to one terminal concurrently.

RCBO power supply shall be connected on the top from terminals 1, N and 1, 3, 5, N. The RCBO shall be mounted onto 35mm DIN rail.

Tightening torque: max. 2,5 N•m for copper wires; max. 2,2 N•m for aluminum-alloy wires, series 8000.

AD-32 1P+N



AD-32 3P+N

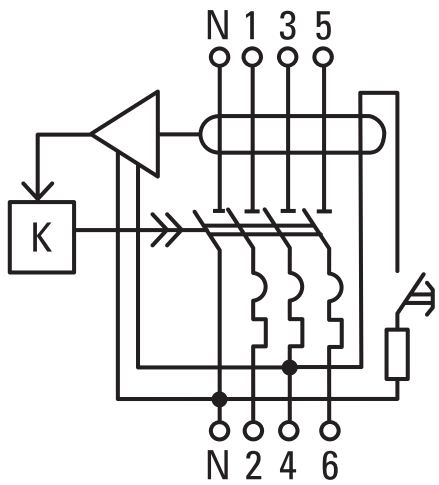


Figure 3 – Wiring diagram

Make sure that the neutral operating conductor N is connected neither to earthed elements nor to the protective earthing conductor PE in the protection area of the RCBO, when installing the device. Test the device operation with the Test (T) button monthly – the device operates correctly, if it trips instantly.

After the RCBO trips by residual current (the operating handle turns to the OFF position and the button next to the handle is released), carefully inspect the insulation of wires and devices in the protected circuit and troubleshoot the causes of current leakage. Press the button indicating the device trip and turn the operating handle to the ON position to reclose the device.

6 OPERATION CONDITIONS

Operating temperature: -25°C to +55°C. Relative humidity: max. 98 % at +25°C.

Attitude above sea level: max. 2000 m. The device shall be operated in non-explosive environment free of gases, liquids, or dust, impairing the device operation.

Position in space is vertical or horizontal on a vertical plane. If vertically installed, the upper position of the operating handle shall refer to the RCBO ON status, while the handle lower position shall refer to the RCBO OFF status in compliance with IEC 60447. If horizontally installed, the handle right position shall correspond to the RCBO ON status, while the handle left position shall correspond to the RCBO OFF status.

7 DELIVERY SCOPE

The RCBO are supplied in an individual package. For all available documentation, scan the QR-code on the insert or on the inside of the package.

8 SAFETY REQUIREMENTS

Do not operate RCBO with visual mechanical damage.

By protection method against electric shock, RCBO belong to protection class «0» according to IEC 61140 and shall be installed in distribution enclosures with protection class «1» and higher.

9 MAINTENANCE

For RCBO maintenance, follow national safety rules for operation of electrical Installations.

Under normal operating conditions: test the RCBO operation with the Test button every month; visually inspect the device and tighten screw terminals every 6 months.

Do not operate the RCBO, if visual damage to the RCBO housing is found.

10 TRANSPORTATION AND STORAGE

The RCBO can be transported by any means of enclosed transport that ensures protection of packed products from mechanical and atmospheric impacts.

The RCBO shall be stored in the original package indoors at the ambient temperature from -40°C to +55°C and relative humidity of max. 80 % at 25°C

11 DISPOSAL

Life-expired and failed products shall be disposed of in compliance with the national and local laws and regulations in force.

To dispose of the product, send it to an authorized company for recycling in compliance with the national and local laws and regulations in force.

12 MANUFACTURER'S WARRANTY

The manufacturer guarantees residual current circuit breakers with overcurrent protection (RCBO) comply with the declared characteristics, provided that the consumer follows the operation, transportation and storage conditions.

Warranty period: 7 years from the date of sale specified in the sales receipt.

Shelf life: 7 years from the date of manufacture specified on the product package or housing.

Service life: 20 years.

Manufacturer: for information, refer to the product package.

Importer and EKF trademark service representative:
EKF ELECTRICAL SOLUTION – FZCO, Dubai Silicon Oasis, DDP, Building A2, Dubai, United Arab Emirates.

Importer and EKF trademark service representative on the territory of the Russian Federation: ООО «Electroresheniya», Otradnaya st., 2b bld. 9, 5th floor, 127273, Moscow, Russia. Tel.: +7 (495) 788-88-15.

Importer and EKF trademark service representative on the territory the Republic of Kazakhstan: ТОО «Energoresheniya Kazakhstan», Kazakhstan, Almaty, Bostandyk district, street Turgut Ozal, 247, apt 4.

13 CERTIFICATE OF ACCEPTANCE

The residual current circuit breaker with overcurrent protection AD-32 EKF PROXIMA has been approved for operation.

Date of manufacture: for information, refer to the product package.

Quality control stamp 

ekfgroup.com

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