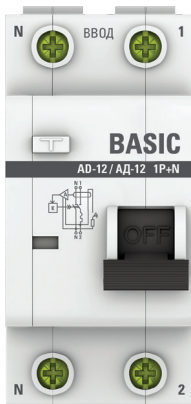


# BASIC



## TECHNICAL MANUAL

Residual current circuit breakers  
with overcurrent protection AD-12 BASIC

## 1 DESCRIPTION

Residual current circuit breakers with overcurrent protection AD-12 BASIC are used in 50Hz 230V/400V AC circuits of residential and commercial buildings.

The residual current circuit breakers (RCBO) are designed to:

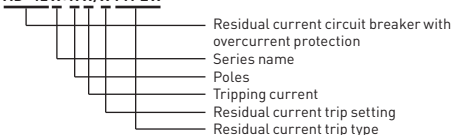
- Protect persons against electric shock by accidental contact with exposed conductive parts of electrical installation.
- Protect electrical installations in case of damaged insulation and faults.
- Protect equipment against fires and inflammations set by leakage currents and subsequent short circuits,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

RCBO AD-12 type AC trips on alternating sinusoidal residual current, suddenly applied or smoothly increasing.

The residual current circuit breakers with overcurrent protection AD-12 BASIC comply with IEC 61009-1.

TYPE CODE

**AD-12 X+N X/X TYPE X**



## 2 TECHNICAL DATA

Table 1 - Main characteristics

Characteristics	Value
Poles	1P+N
Rated operating voltage $U_e$ , V	230
Rated current $I_n$ , A	10, 16, 20, 25, 32,40,50,63
Rated operating residual current $I_{\Delta n}$ , mA	30
Frequency, Hz	50
Rated breaking capacity $I_{cn}$ , A	4500
Tripping curve	C (Figure 1)
Residual current trip type	AC
Type by time delay	no time delay
Rated residual non-operating current $I_{\Delta no}$ , mA	$0,5I_{\Delta n}$
Residual current protection type	Electronic (voltage dependent)
Mechanical endurance, O-C cycles	8000
Electrical endurance, O-C cycles	4000
Cross-section of connected wires, mm <sup>2</sup>	from 1 to 25
Degree of protection	IP20
Operating temperature, °C	from -25 to 50
Max. tightening torque, N•m	2,5
Max. weight, kg	0,16

### 3 TRIPPING CHARACTERISTICS

At the ambient temperature of +30°C

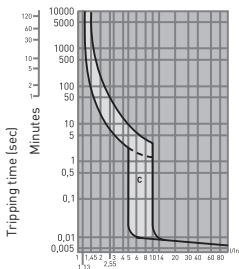


Figure 1. Electromagnetic protection tripping curves

At the ambient temperature of +30°C

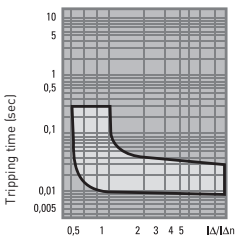


Figure 2. Residual current protection tripping curves

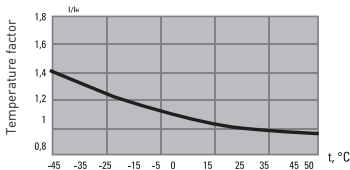


Figure 3. Derating factor depending on ambient temperature

#### 4 OVERALL DIMENSIONS

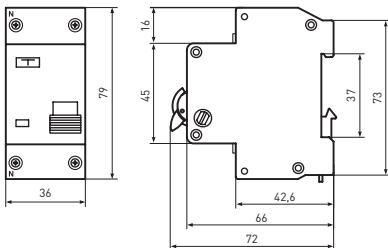


Figure 4. Overall dimensions

#### 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. 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.

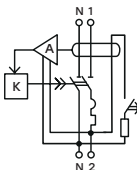


Figure 5. Wiring diagram

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 properly, if it trips instantly.

After the RCBO trips by residual current (the operating handle switches 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.

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.

## **6 OPERATION CONDITIONS**

Operating temperature: from  $-25^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ .

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.

## **7 DELIVERY SCOPE**

The RCBO are supplied in the 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 the RCBO with visual mechanical damage.

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

## **9 MAINTENANCE**

For 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 STORAGE AND TRANSPORTATION**

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  $-40^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$  and relative humidity of max. 80 % at  $25^{\circ}\text{C}$ .

## **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:** 3 years from the date of sale specified in the sales receipt.

**Shelf life:** 3 years from the date of manufacture specified on the product package or housing.

**Service life:** 15 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. 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-12 BASIC has been approved for operation.

**Date of manufacture:**

For information, refer to the product package.

Quality control stamp



[ekfgroup.com](http://ekfgroup.com)