

AV AVERES



TECHNICAL MANUAL

Residual current
circuit breakers
DV EKF AVERES

1 DESCRIPTION

Residual current circuit breakers DV EKF AVERES are used in 50/60Hz 230V/400V AC electrical circuits.

Residual current circuit breakers (RCCB) are designed to:

- protect persons against electric shock by accidental indirect contact with exposed conductive parts of electrical installation.
- protect equipment against fires and inflammations set by leakage currents in case of damaged insulation and faults.

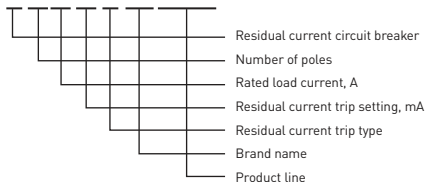
Screw shields lock the space behind screw terminals, preventing incorrect conductor connections.

The RCCB front panel features an indicator of contact physical position and a circuit marking plate. A two-position clamp ensures easy DIN rail mounting of the circuit breaker.

Residual current circuit breakers DV EKF AVERES comply with IEC 61008-1.

TYPE CODE

DV XX XX/XX (X) EKF AVERES



2 TECHNICAL DATA

Table 1

Characteristics	Values
Number of poles	2, 4
Rated operating voltage U_e , V	230 / 400
Circuit type	AC
Rated frequency, Hz	50 / 60
Rated current I_n , A	25, 40, 63, 80, 100
Residual current protection type	Electromagnetic (voltage independent)
Residual current trip type	A, AC, S
Rated residual current $I_{\Delta n}$, mA	10, 30, 100, 300
Rated conventional short-circuit current I_{nc} , kA	10
Mechanical endurance, O-C cycles	20 000
Electrical endurance, O-C cycles	10 000
Minimum cross-section of connected wires, mm ²	1
Maximum cross-section of connected wires, mm ²	25 for 25-63 A 35 for 80, 100 A
Tightening torque, N·m	3

RCCB can be connected with PIN- and FORK-type connecting bars.

3 TRIPPING CHARACTERISTICS

Table 2

Type	Trip current I_{Δ}/A		
AC	$0,5 I_{\Delta n} < I_{\Delta} < I_{\Delta n}$		
A	Lag angle	$I_{\Delta n} > 0,01A$	$I_{\Delta n} \leq 0,01A$
	0°	$0,35 I_{\Delta n} \leq I_{\Delta} \leq 1,4 I_{\Delta n}$	$0,35 I_{\Delta n} \leq I_{\Delta} \leq 2 I_{\Delta n}$
	90°	$0,25 I_{\Delta n} \leq I_{\Delta} \leq 1,4 I_{\Delta n}$	$0,25 I_{\Delta n} \leq I_{\Delta} \leq 2 I_{\Delta n}$
	135°	$0,11 I_{\Delta n} \leq I_{\Delta} \leq 1,4 I_{\Delta n}$	$0,11 I_{\Delta n} \leq I_{\Delta} \leq 2 I_{\Delta n}$

Table 3 - Standard trip /non-trip time limits

Type	I_n/A	$I\Delta n/A$	Standard trip /non-trip time limits for residual current ($I\Delta$), sec.					
			$I\Delta n$	$2I\Delta n$	$5I\Delta n$	5, 10, 20, 50, 100, 200, 500 (A)	$I\Delta n$	
Non-selective	Any value	Any value	0,3	0,15	0,04	0,04	0,04	Max. trip time
Selective	> 25	> 0,030	0,5	0,2	0,15	0,15	0,15	
			0,13	0,06	0,05	–	0,04	Min. non-trip time

4 OVERALL DIMENSIONS

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

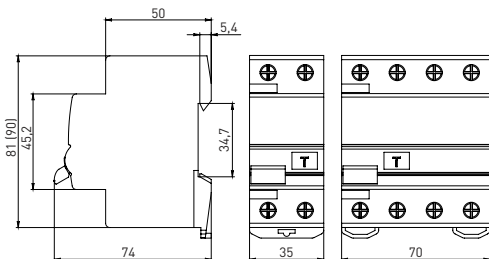


Figure 1. Overall dimensions

5 INSTALLATION AND CONNECTION

RCCB shall be installed and connected by qualified electrical personnel.

If vertically installed, the upper position of the operating handle shall correspond to the RCCB ON status, while the handle lower position shall correspond to the RCCB OFF status in compliance with IEC 60447. If horizontally installed, the handle right position shall correspond to the RCCB ON status, while the handle left position shall correspond to the RCCB OFF status.

Before installation, make sure that:

- The device characteristics (RCCB marking) meet the required values.
- The device has no visible damage.
- The mechanism properly operates by turning the handle a few times.

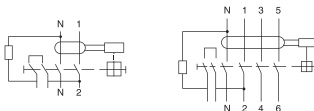


Figure 2. Wiring diagrams

RCCB power supply shall be connected on the top from terminals 1, 3, 5, N. Connection options with copper and aluminum wires are supported. Do not connect copper and aluminum wires concurrently to the same terminal. Tightening torque: max. 3 N·m for copper wires; max. 2,2 N·m for aluminum-alloy wires, series 8000.

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 RCCB, when installing the device.

RCCB DV EKF AVERES can be complemented with the following accessories: shunt release AV-SNT2, alarm contact AV-SD, auxiliary contact AV-OF, auto reclosers M1, M6S and M6, and undervoltage release AV-MIN. Accessories shall be ordered separately and installed on the RCCB left side in the following sequence: OF-SD-SNT2-DV.

If the RCCB trips (the handle moves to the OFF position), troubleshoot the causes and then switch on the RCCB.

6 OPERATION CONDITIONS

Operating temperature: from -25°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

Residual current circuit breakers DV EKF AVERES are supplied in an individual package. RCCB 80A and 100A versions are supplied with phase barriers.

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

8 SAFETY REQUIREMENTS

Do not operate RCCB with visual mechanical damage. RCCBs conform to IEC 61140 Class 0 for protection against electrical shock and shall be installed in distribution enclosures with Class 1 protection or higher.

9 MAINTENANCE

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

Under normal operating conditions: test RCCB operation with the Test button every month; visually inspect the device and tighten screw terminals every 6 months. Discontinue operating the RCCB, if visual damage to RCCB housing is found.

10 TRANSPORTATION AND STORAGE

RCCBs can be transported by any means of enclosed transport that ensures protection of packaged products from mechanical impacts and weather exposure.

The residual current circuit breakers shall be stored indoors in the original package at the ambient temperature from -40°C to $+50^{\circ}\text{C}$ and relative humidity of max. 80% at $+25^{\circ}\text{C}$.

11 DISPOSAL

Life-expired and failed RCCBs 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 effective national and local laws and regulations.

12 MANUFACTURER'S WARRANTY

The manufacturer guarantees residual current circuit breakers DV comply with the declared characteristics, provided that consumers follow the operation, transportation and storage conditions.

Warranty period: 10 years from the date of sale specified in the sales receipt.

Shelf life: 10 years from the date of manufacture specified on the product package or housing.

Service life: 25 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: OOO «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 of the Republic of Kazakhstan: TOO «Energoresheniya Kazakhstan», Kazakhstan, Almaty, Bostandyk district, Turgut Ozal st., 247, apt 4.

13 CERTIFICATE OF ACCEPTANCE

The residual current circuit breaker DV EKF AVERES has been approved for operation.

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

Quality control stamp



EKF

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EKF

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