

AV AVERES



TECHNICAL MANUAL
Residual current
circuit breakers with
overcurrent protection
DVA-6 & DVA-10 EKF AVERES

1 DESCRIPTION

Residual current circuit breakers with overcurrent protection DVA-6 and DVA-10 EKF AVERES are used in 50 / 60 Hz and 230 / 400 V AC electrical circuits.

Residual current circuit breakers with overcurrent protection (RCBO) are designed to:

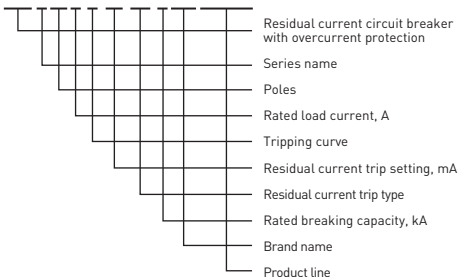
- protect persons against electric shock by accidental contact with live parts;
- protect electrical equipment in case of damaged insulation and faults;
- protect equipment against fires and inflammations set by leakage currents and subsequent short circuits, housing or ground faults.
- auto disconnect circuit sections in case of overload or short-circuit currents.

Terminal covers lock the space behind screw terminals, preventing incorrect conductor connections.

The molded front panel features an indicator of contact physical position and a circuit marking plate. Residual current circuit breakers with overcurrent protection DVA-6 and DVA-10 EKF AVERES comply with IEC 61009-1.

TYPE CODE

DVA-X XX X (X) XX (XX) X EKF AVERES



2 TECHNICAL DATA

Table 1

Characteristics	Values	
	DVA-6	DVA-10
Poles	1P+N	
Rated voltage U_e , V	230 / 400	
Rated frequency, Hz	50 / 60	
Rated current I_n , A	6, 10, 13, 16, 20, 25, 32, 40	
Residual current protection type	Electromagnetic (voltage independent)	
Tripping curve	B, C, D (Fig. 1)	
Rated breaking capacity I_{cn} , A	6000	10 000
Residual current trip type	A, AC	
Rated breaking residual current, mA	10, 30, 100, 300	
Mechanical endurance, O-C cycles	20 000	
Electrical endurance, O-C cycles	10 000	
Cross-section of connected wires, mm ²	from 1 to 25	
Tightening torque, N•m	3	
Operating temperature, °C	from -40 to +50	
Energy limiting class	3	
Max. weight, kg	0,25	

3 TRIPPING CHARACTERISTICS

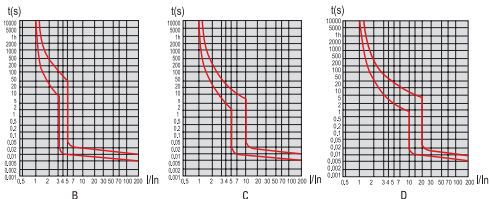


Fig. 1 - Tripping characteristics

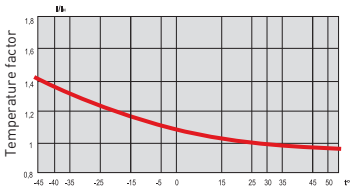


Fig. 2 - RCBO temperature derating chart

Table 2 - Residual alternating current trip /non-trip time limits for DVA-6 & DVA-10, types A & AC

Type	In, A	IΔn, mA	Trip /non-trip time limits for DVA-6 & DVA-10, types A & AC in case of residual alternating current, sec.					
			IΔn	2IΔn	5IΔn	5-200, 500A	IΔt*	Notes
Non-selective	Any value	< 30	0,3	0,15	0,04	0,04	0,04	Max. trip time
		30						
		> 30						

Table 3 - Maximum trip time for half-wave pulse residual current for DVA-6 & DVA-10, types A & AC

Type	In, A	IΔn, mA	Maximum trip time for DVA-6 & DVA-10, types A & AC in case of half-wave pulse residual current, sec							
			1,4 IΔn	2 IΔn	2,8 IΔn	4 IΔn	7 IΔn	0,35 A	0,5 A	350 A
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

4 OVERALL DIMENSIONS

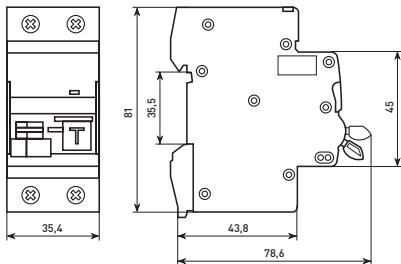


Fig. 3 - Overall dimensions

5 INSTALLATION AND CONNECTION

RCBO can be connected with pin- and fork-type busbars.

RCBOs DVA-6 and DVA-10 EKF AVERES shall be installed and connected only by qualified electrical personnel.

The RCBO operating position is vertical (with the operating handle "OFF" downwards), with max. tolerance of 90° to either side of the specified plane.

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.

RCBO power supply shall be connected on the top from terminals 1, N. Max. tightening torque: 3 N•m.

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

Make sure that the neutral operating conductor N is connected neither to earthed elements nor to the protective earthing conductor PE in the

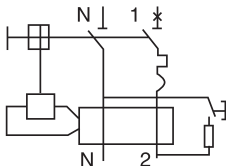


Fig. 4 - Wiring diagram

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.

The RCBO operating handle consists of two parts. When RCBO trips by short circuit or overload, the right side of the handle moves to the intermediate position, so the handle cannot be turned to the ON position until it is moved to the lower OFF position. When RCBO trips by current leakage, both parts move to the intermediate position, so the RCBO cannot be turned ON. Carefully inspect the insulation of wires and devices in the protected circuit and troubleshoot the the RCBO trip causes. Turn the handle down and then turn it up to reclose the RCBO.

6 OPERATION CONDITIONS

Operating temperature: from -25 to +50°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 with overcurrent protection are supplied in a group 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. RCBOs 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 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.

Discontinue operating the RCBO, if visual damage to the RCBO housing is found.

10 TRANSPORTATION AND STORAGE

The RCBOs 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 with overcurrent protection 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 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 the products 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 packaging 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

Residual current circuit breakers with overcurrent protection DVA-6 and DVA-10 EKF AVERES have been approved for operation.

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

Quality control stamp



EAC



v3

ekfgroup.com

