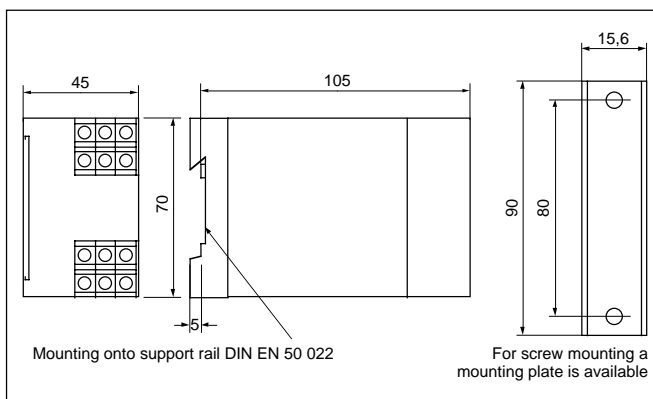


- ⇒ residual current relay
- ⇒ impulse voltage and electrical disturbance proof according to VDE and IEC
- ⇒ output relay with two change-over contacts
- ⇒ built-in operation LED
- ⇒ builtin alarm LED
- ⇒ built-in test/reset button
- ⇒ CT connection monitoring
- ⇒ compact 45 mm casing

Standards

The residual current relays RCD140 and RCD140Y correspond to VDE specification VDE0110, contamination level 3, DIN 57 435/ VDE 0435, part 303 and DIN 57 660/VDE 0660, part 1 and UL 1053.

Dimension diagram



Product description

The RCD140 and RCD140Y are sensitive earth fault relays which monitor earth leakage current in earthed and high-resistance earthed networks.

The RCD140 has a single preset response value: 10 mA, 100 mA, 1 A or 10 A. The RCD140Y has a large working range of adjustable response values between 10 mA ... 100 mA, 0.1 A ... 1 A or 1 A ... 10 A.

The RCD140Y has an adjustable time delay from 0 to 10 seconds and can operate on 110 V or 230 V, 50 ... 60 Hz power supply. The short inherent response time of 10 ... 20 ms allows for quick response.

Mode of operation

The residual current relays RCD140 and RCD140Y work in combination with differing diameter current transformers W1-W5. These current transformers are described in data sheet 1.11/ 1.1E. The RCD has sophisticated electronic circuitry that measures the differential current signal from the current transformer.

When the selected response value is reached, the built-in red alarm LED will illuminate and the output relay K1 will deenergize (NC operation) or energize (N/O operation) depending on the setting of the relay operation mode.

The output relay works with or without storage action.

The device can be reset by pushing the test/reset button if the differential current is below 15 ... 25% of the adjusted response value.

When pushing the unit test/reset button, the correct function of both the unit and its corresponding loop to the current transformer are checked.

RCD140Y works with an adjustable response delay of 0 to 10 seconds. RCD140 works without response delay.

The connection of the current transformer is continuously monitored by the electronic system for connection failure. The red alarm LED will flash to indicated an open circuit and the output relay will operate.

Current transformers W1-W5 are protected from open circuit overvoltage by a special internal burden resistor.

Please note

A function test is recommended before system start up to ensure proper connection and operation of the unit.

Please observe correct nominal supply voltage!

Each unit is supplied with terminal covers for protection against shock hazard. If these terminal covers are not used, other suitable protection measures must be taken in accordance with accident prevention regulations.

The current transformer should not be installed near strange magnetic fields, thereby the response values can be influenced.

Technical data RCD140/140Y

Insulation	
Insulating coordination acc. to DIN VDE 0110 T.1:	
Rated insulation voltage	AC 250 V
Rated impulse withstand voltage/contamination level	4 kV/3
Operation class	permanent operation

Network being monitored	
Rated mains voltage U_N	
Operating range	

Supply voltage	
Supply voltage U_S	AC 50 ... 60 Hz 110 or 230 V
Operating range (110 V)	0.8 ... 1.2 x U_S
Operating range (230 V)	0.75 ... 1.2 U_S
Self-consumption max.	2.5 VA

Response values	
Response value R_{AN}	
RCD140	fixed: 10 mA, 100 mA, 1 A, 10 A
RCD140Y	adjustable: 10 mA ... 100 mA, 100 mA ... 1 A, 1 A ... 10 A
Accuracy (30 Hz ≤ f_n ≤ 100 Hz)	+0% ... -10%
Hysteresis	15 ... 25% of the rated value
Minimum response delay	10 ... 20 msec
Response delay, adjustable	0 ... 10 sec
Tolerance	± 50 msec

Internal resistance CT input	180 Ω
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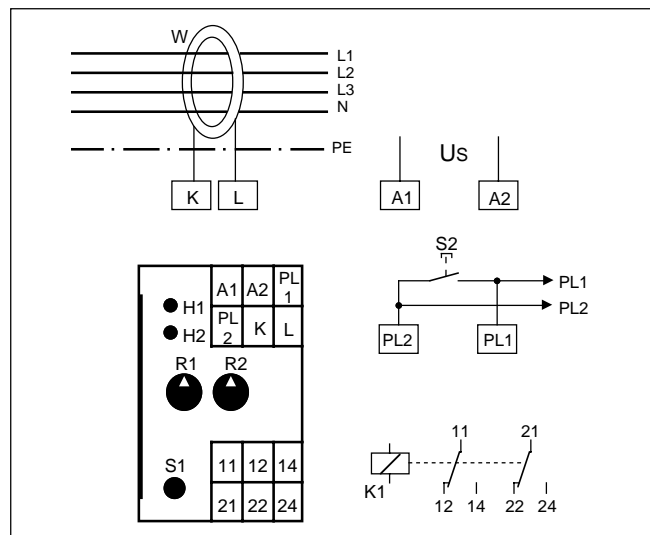
Contact circuit	
Switching components	two change-over contacts
Switching capacity max.	1250 V
Rated contact voltage	250 V
Permanent current	5 A
Break capacity	
AC 230 V and cos phi = 0.4	3 A
DC 110 V and L/R = 0	0.3 A
Operating principle	N/O or N/C operation
Adjustment by factory	N/O operation
Alarm LED	with or without storage action
Adjustment by factory	without storage action
Output relay	with or without storage action
Adjustment by factory	without storage action
other factory adjustments on request	

Tests acc. to DIN VDE 0435, T. 303/IEC 255	
Dielectric test:	
Test voltage	2 kV
Current transformer rated insulation voltage	3 kV
Impulse voltage test	class III
Electrical disturbance test	
at response value ≥ 30 mA	class III
at response value ≤ 30 mA	class II
Mechanical vibration test	1/32", 55 Hz

Environmental conditions	
Ambient temperature, during operation	-5°C ... +60°C/268 K ... 333 K
Storage temperature range	-40°C ... +70°C/233 K ... 343 K
Climatic class acc. to DIN 40040	

General data	
Type of connection	terminal screws M 3.5 with self-lifting clamp-washers
Wire cross section	
single wire	2x(1 ... 1.5 mm ²)
fine braid	2x(0.75 ... 1.5 mm ²)
Casing material	RABS 9000
Length of connection cable to current transformer*	
single wire 0.75 mm ²	up to 1 m
single wire drilled 0.75 mm ²	up to 10 m
covered lead 0.75 mm ² , cover on L	up to 25 m
Protection class acc. to DIN 40050	
Internal components	IP 50
Terminals/with terminal covers	IP 10/IP 20
Type of casing	X 140
Weight approx.	250 g
Wiring diagram	Z 120 445 and Z 120 448

Wiring diagram



Legend to wiring diagram

H1	operation LED
H2	red fault indication LED. Will flash if connection to W is interrupted.
R1	adjustment for RCD140Y only. Built in potentiometer for response value adjustment.
R2	built potentiometer for time delay adjustment 0...10 seconds. Only for RCD140Y (0 = inherent time = 10...20 ms)
S1	integrated combined test and reset button includes test function for the CT connection.
S2	external test/reset button. Can also be used for system reset
K1	output relay with 2 change-over contacts for response >I and CT interruption.
A1, A2	supply voltage AC 230 V or 110 V (see type label)
K, L	CT input

Ordering details

Type	Supply voltage U_S	Response value	Art. No.
RCD140	110 V	10 mA 100 mA 1 A 10 A	915 213 915 214 915 215 915 216
	230 V	10 mA 100 mA 1 A 10 A	915 159 915 160 915 161 915 162
RCD140Y	110 V	10 ... 100 mA 0.1 ... 1 A 1 ... 10 A	915 217 915 218 915 219
	230 V	10 ... 100 mA 0.1 ... 1 A 1 ... 10 A	915 163 915 164 915 165

*These specifications are based on normal operating conditions. Other methods should be used for network equipment with high interference.

Should the response value 10 ... 100 mA be selected, we recommend using a covered lead at least 1 m long to the current transformer.

Right to modifications reserved