

LINETRAXX® RCMB35-30-...

AC/DC sensitive residual current monitoring module
for residual current monitoring in earthed systems
(TN and TT systems)



LINETRAXX® RCMB35-30-01

Device features

- Realisation of a protective device in accordance with DIN EN 60947-2 Annex M in combination with circuit-breakers providing isolating properties
- Integral switching output with two changeover contacts
- Combined test and reset button
- Monitoring of the connection to the measuring current transformer with cyclical test current
- Insensitive to load currents due to magnetic screen
- Multicolour LED indicating operation, response value exceeded and fault detected
- AC/DC sensitive measured value acquisition
- Response value $I_{\Delta n} \leq 30 \text{ mA}$
- Rated frequency range
RCMB35-30-01: 0...1 kHz
RCMB35-30-02: 0...10 kHz
- Supply voltage DC 24 V
- Measuring current transformer, inside diameter 35 mm

Approvals



Product description

The AC/DC sensitive residual current monitoring module RCMB35-30-... is used for residual current monitoring in earthed systems (TN and TT systems).

It detects direct and/or alternating fault currents. The output relays switch as soon as a response value of 30 mA is reached.

By the application of an RCMB35-30-... and a switching component with isolating properties this device combination fulfils the requirements of DIN EN 60947-2 Annex M for an MRCD protective device. The switching component must not exceed a disconnection time of 20 ms.

Function

After switching the supply voltage on, the multicolour LED shows a green light and the residual current monitoring module carries out a self test. Every two seconds, the residual current monitoring module cyclically tests the connection to the measuring current transformer and the correct functioning of the AC and DC measurement. The supply voltage is continuously monitored.

If a fault occurs, the multi-colour LED flashes red (slowly). The residual current monitoring module measures both AC and DC currents. The r.m.s. value is calculated by summing up the DC components included in the residual current and the AC components that are below the rated frequency.

When a response value of 30 mA is exceeded, the changeover contacts of relay K1 and the internal electronic switch K2 will switch without response delay. The multicolour LED lights constantly red.

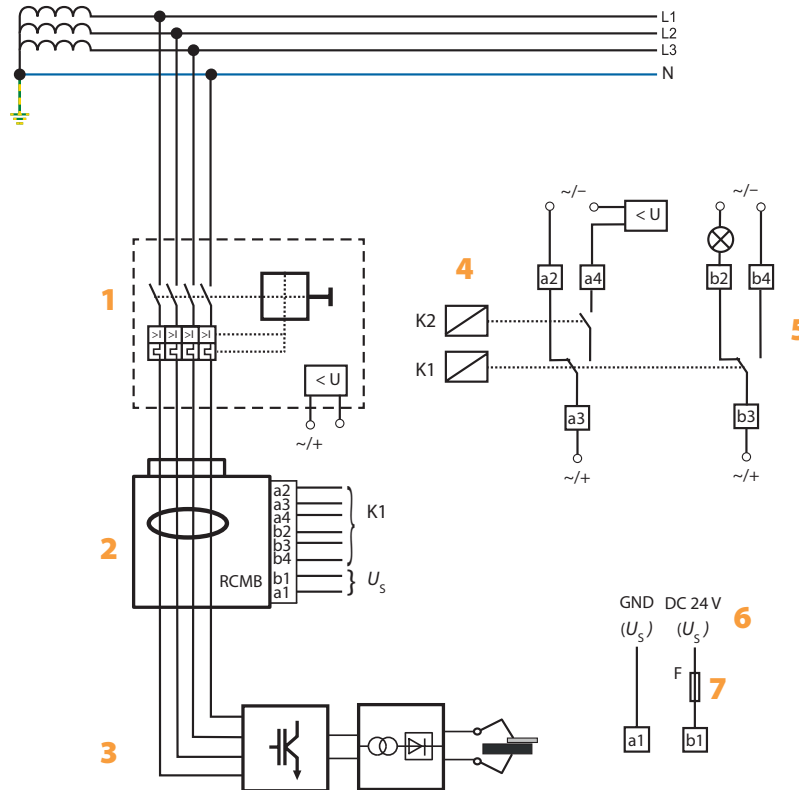
Ordering information

Supply voltage ¹⁾ U_S	Inside diameter	Type	Art. No.
DC	ø 35 mm	RCMB35-30-01	B 9404 2100
20.4...28.8		RCMB35-30-02	B 9404 2106

¹⁾ Absolute values

Wiring diagram

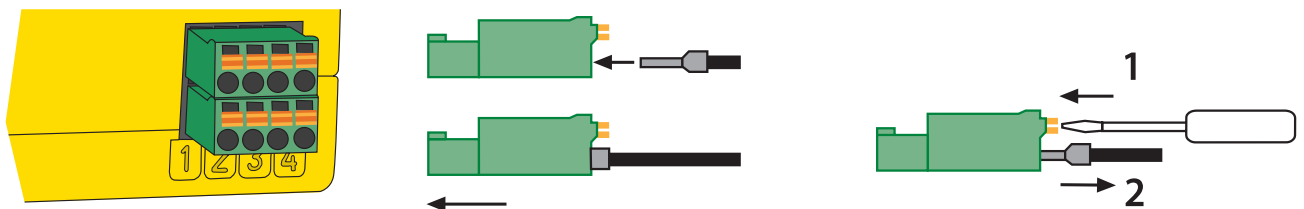
Connect the residual current monitoring module according to the wiring diagram. The output current in proportion to the residual current I_A must be made available to the frequency converter.



- 1 - Circuit-breaker with undervoltage release in accordance with DIN EN 60947-2; $t_{ab} \leq 20$ ms
- 2 - RCMB35-30-...
- 3 - Loads, e.g. welding inverter
- 4 - K2: internal electronic switch (redundancy)
- 5 - K1: changeover contact in N/C operation for controlling the undervoltage release and an alarm LED
- 6 - Supply voltage for RCMB35-30-...
- 7 - Fuse F: 100 mA, time-lag

Connections

Position of the terminals, connecting of the conductors, disconnecting of the conductors



Wiring of the plug-in terminal XK1

Coding socket	Pluggable push-wire terminal	Terminal	RCMB35-30-...
		a1	GND (U_s)
		a2	K1, Kontakt/contact 12
		a3	K1, Kontakt/contact 11
		a4	K1, Kontakt/contact 14
		b1	+24V (U_s)
		b2	K1, Kontakt/contact 22
		b3	K1, Kontakt/contact 21
		b4	K1, Kontakt/contact 24

Technical data

Insulation coordination acc. to IEC 60664-1/IEC 60664-3

Rated insulation voltage	AC 800 V
Rated impulse withstand voltage/pollution degree	12 kV/2
Overvoltage category	III
Protective separation (reinforced insulation) between primary conductor and the measurement electronics	
Voltage tests according to IEC 61010-1	6.88 kV

Supply voltage

Supply voltage U_S	DC 24 V
Operating range of U_S	DC 20.4...28.8 V
Ripple U_S	$\leq 1\%$
Power consumption	≤ 2.5 VA
Making current	5 A, 1 ms

Measuring circuit

Measuring current transformer, inside diameter	35 mm
Rated insulation voltage (measuring current transformer)	800 V
Characteristics according to IEC 62020 and IEC/TR 60755	AC/DC sensitive, Type B
Rated frequency	RCMB35-30-01: 0...1 kHz RCMB35-30-02: 0...10 kHz
Response value $I_{\Delta n}$	30 mA
Nominal current	160 A
Relative uncertainty of the response value	0...-35 %
Test winding	yes

Time response

Response delay t_{on}	0 s
Delay on release t_{off}	2 s after reset
Operating time t_{ae} at 1 x $I_{\Delta n}$	≤ 180 ms
Operating time t_{ae} at 2 x $I_{\Delta n}$	≤ 130 ms
Operating time t_{ae} at 5 x $I_{\Delta n}$	≤ 20 ms
Response time t_{an}	$= t_{ae} + t_{on}$
Recovery time t_b	≤ 1 s

Displays

Multicolour LED

lights constantly green	operation indicator
Flashes green (quickly)	self test
lights constantly red	response value exceeded/self test: no faults detected
flashes red (quickly)	Reset
flashes red (slowly)	fault/during a self test: fault occurred

Outputs

Number	2 change-over contacts
Operating principle	N/C operation
Switching outputs a2/a3, a3/a4, b2/b3, b3/b4	AC 24 V/DC 48 V; 200 mA
Electrical service life, number of cycles	100.000

Environment/EMC

EMC	IEC 60947-2 Annex M
Operating temperature	-25...70 °C

For UL application:

Max. surrounding air temperature	70 °C
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Climatic class acc. to IEC 60721	
Stationary use (IEC 60721-3-3)	3K5 (except condensation and formation of ice)
Transport (IEC 60721-3-2)	2K3 (except condensation and formation of ice)
Long-term storage (IEC 60721-3-1)	1K4 (except condensation and formation of ice)
Classification of mechanical conditions acc. to IEC 60721	
Stationary use (IEC 60721-3-3)	3M4
Transport (IEC 60721-3-2)	2M3
Storage (IEC 60721-3-1)	1M3
Chemical stresses acc. to IEC 60721	
Stationary use (IEC 60721-3-3)	3C4

Connection

Primary conductor	$\leq 4 \times 35$ mm ² or 3×50 mm ²
Connector XK1:	
Connection type	pluggable push-wire terminals, 2 x four-pole

For UL application:

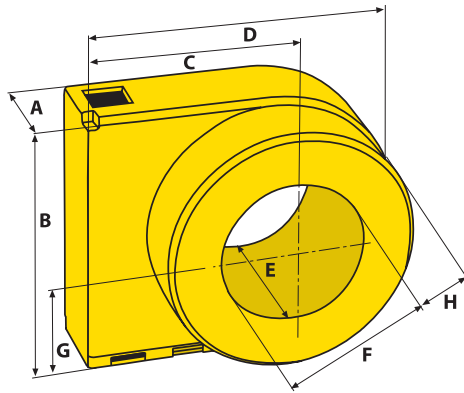
Use min. 60 °C/75 °C copper conductors only!

Connection properties:	
Rigid	0.2...2.5 mm ² (AWG 24...14)
Flexible without ferrules	0.2...2.5 mm ² (AWG 24...14)
Flexible with ferrules	0.2...1.5 mm ² (AWG 24...16)
Stripping length	10 mm
Opening force	50 N

Other

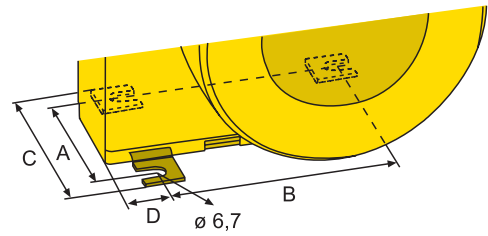
Operating mode	continuous operation
Position	any position
Degree of protection, internal components (DIN EN 60529)	IP40
Degree of protection, terminals (DIN EN 60529)	IP20
Enclosure material	polycarbonate
Flammability class	UL94 V-0
Screw mounting	M5 with mounting brackets
DIN rail mounting acc. to	IEC 60715
Documentation number	D00079
Weight	≤ 250 g

Dimension diagram



Dimensions (mm)								
Type	A	B	C	D	E	F	G	H
RCMB35-30-...	30	79.2	62	99.5	55	∅35	41.7	20

Screw mounting



Dimensions (mm)				
Type	A	B	C	D
RCMB35-30-... (mounting with 2 angles diagonal)	47	48.5	63	12.85



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