LINETRAXX® RCMB330

AC/DC sensitive residual current monitoring module
with integrated divisible measuring current transformer



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Mit Sicherheit Spannung

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Device features

- Continuous residual current monitoring in compliance with DGUV Vorschrift 3 (German Accident Prevention Regulation 3)
- Easy DIN rail or screw mounting
- RS-485 interface with Modbus RTU (reading out measured values/setting parameters)
- Frequency range DC…100 kHz
- Multicolour LED for operation and status messages
- Digitally adjustable filters for AC/DC sensitive measured value acquisition (lowpass filters, type B acc. to IEC 60755, type B+ acc. to VDE 0664-400)
- Separate evaluation of the AC and DC components as well as the RMS value of the residual current possible
- Installation without mechanical separation of the primary conductors
- Extension or modification of functionalities through software updates via Modbus
- Insensitive to load currents due to magnetic screen
- Supply voltage DC 24 V

Certifications

CE UKCA

Product description

The RCMB330 residual current monitoring modules are intended for measuring AC and DC fault currents in earthed systems (TN and TT systems). The modules are able to measure residual currents I_{Δ} = 10…500 mA in a frequency range of DC…100 kHz.

Two separately adjustable response values allow a distinction to be made between pre-warning and main alarm.

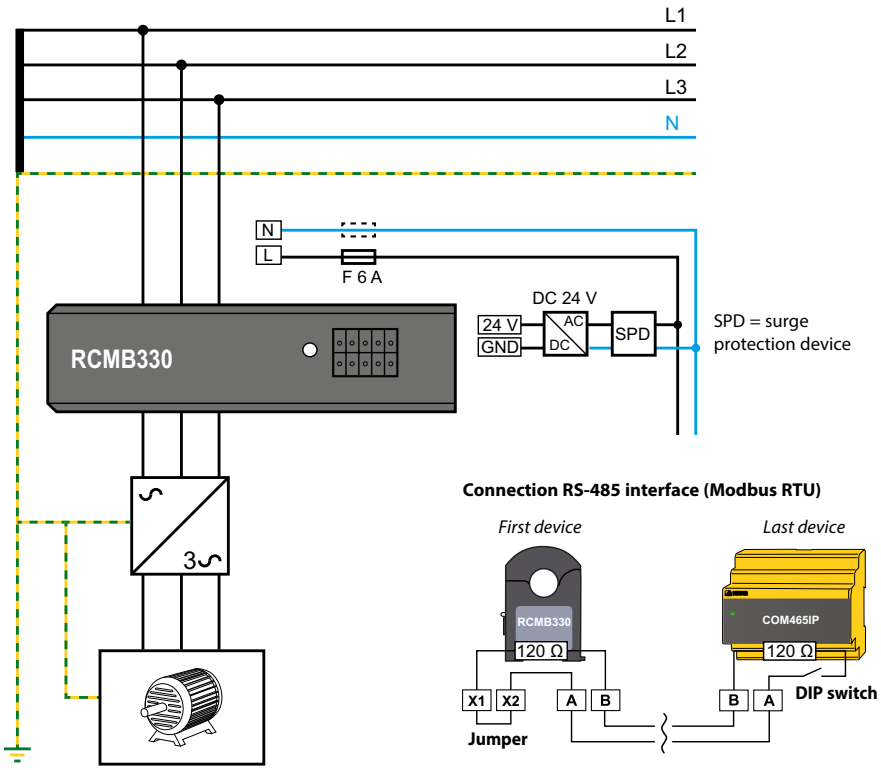
The modules feature an RS-485 interface with Modbus RTU which can be used to transfer measured values and alarm values. Setting parameters is also possible via this interface.

Standards

The RCMB330 residual current monitoring modules comply with the device standard:

- IEC 62020-1:2020

Wiring diagram

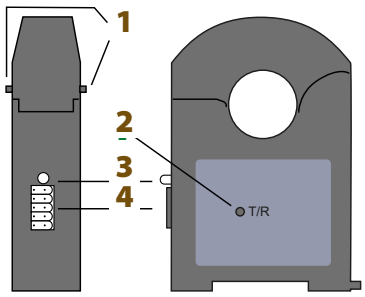


RCMB330
By using the jumper, the internal 120 Ω terminating resistor can be connected.

COM465IP
By means of the **DIP switch**, the internal 120 Ω terminating resistor can be connected.

*The **connections** for the power supply (X1, X2) and the RS-485 interface (A, B) are **doubled**, so that the wiring can be carried out directly on the device according to the **daisy-chain** principle required for **Modbus**.*

Device view RCMB330



No.	Element	Description
1	Unlock current transformer core	Press both elements together simultaneously and flip the RCMB330 open
2	"T/R" button	For manual test, manual reset, degaussing, offset calibration (use pointed object to press)
3	LED	Combined LED
4	**Terminal block**	

Terminal	Pin no.		Terminal	Description
X1	5	6	X2	Terminals for jumper to connect the integrated terminating resistor (120 Ω) of the RS-485 interface
B	4	7	B	RS-485 interface
A	3	8	A	
GND	2	9	GND	Supply voltage U_s
+24 V	1	10	+24 V	

Installation instructions

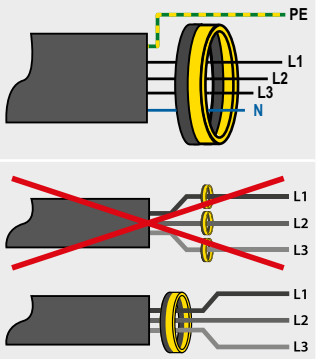
- Do not route any shielded cables through the measuring current transformer!
- **Device damage due to interference pulses!**
  The connecting cable (supply, analogue interface…) must **not** be routed directly past the current transformer core/primary conductor.

Protective conductors and live conductors

Make sure that all current-carrying cables are routed through the measuring current transformer.

Never route an existing protective conductor through the measuring current transformer.

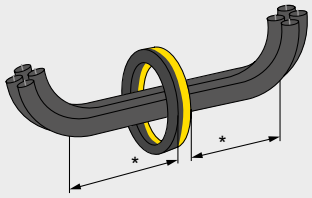
The cable diameter may not exceed half the current transformer diameter.



Bending cables

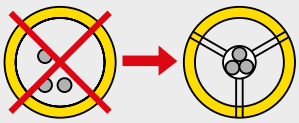
The cables may only be bent at a certain distance from the measuring current transformer.

* Distance to 90° angle:
2 x external diameter of the current transformer



Routing cables centrally

The cables must be aligned with the centre of the measuring current transformer.



Technical data

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

Definitions	
Measuring circuit (IC1)	Primary conductors routed through the current transformer
Secondary (IC2)	terminal block (24 V, GND, A, B, X1, X2)
Rated voltage	300 V
Overvoltage category	III
Operating altitude	≤ 2000 m AMSL
Rated impulse voltage	
IC1/IC2	4 kV
Rated insulation voltage	
IC1/IC2	300 V
Pollution degree	2
Basic insulation between	
IC1/IC2	300 V

Supply voltage

Supply voltage U_s	DC 24 V
Operating range of U_s	±5 %
Ripple U_s	≤ 2 %
Power consumption	≤ 0.5 W typ. (2.5 W max.)
Inrush current	10 A for 25 µs

Measuring circuit

Measuring current transformer, internal diameter	25 mm
Characteristics according to IEC 62020-1	AC/DC sensitive, type B
Measuring range	10…500 mA
Residual operating current $I_{\Delta n}$	30…500 mA (freely configurable), (30 mA)*
Prewarning	50…100 % $I_{\Delta n}$ (freely configurable), (60 %)*
Rated current I_n	100 A
Operating uncertainty	
DC…50 kHz	±17.5 %
50…100 kHz	0…+55 %
Relative uncertainty	
DC…50 kHz	0…−35 %
50…100 kHz	−15…+35 %

Time response

Response delay t_{on} (prewarning)	50 ms…60 min (1 s)*
Response delay t_{on} (main alarm)	50 ms…60 min (50 ms)*
Start-up delay t_{an}	0 s…60 min (freely configurable), (0 s)*
Delay on release t_{off}	0 s…60 min (freely configurable), (1 s)*
Operating time t_{ae}	
at 1 x $I_{\Delta n}$	≤ 500 ms
at 2 x $I_{\Delta n}$	≤ 230 ms
at 5 x $I_{\Delta n}$	≤ 100 ms
Response time	$t_{an} = t_{ae} + t_{on}$
Recovery time t_b	≤ 1 s

Technical data (continued)

Displays

Multicolour LED	Refer to chapter “LED” in the manual.

Interface

Interface/protocol	RS-485/Modbus RTU
Baud rate	1.2…57.6 kbit/s
Cable length	0…1200 m

Environment/EMC

EMC	IEC 62020-1
Operating temperature	-25…70 °C

Classification of climatic conditions acc. to IEC 60721

Stationary use (IEC 60721-3-3)	3K23 (except condensation and formation of ice)
Transport (IEC 60721-3-2)	2K11 (except condensation and formation of ice)
Long-term storage (IEC 60721-3-1)	1K22 (except condensation and formation of ice)

Classification of mechanical conditions acc. to IEC 60721

Stationary use (IEC 60721-3-3)	3M11
Transport (IEC 60721-3-2)	2M4
Long-term storage (IEC 60721-3-1)	1M12

Connection

Required terminals are included in the scope of delivery

Terminal block

Manufacturer	Phoenix Contact
Type	PCB plug-in connector - DFMC 0.5/ 8-ST-2.54
The connection conditions of the manufacturer apply.	
Connection properties	
rigid	0.14…0.5 mm² (AWG 26…20)
flexible	0.14…0.5 mm² (AWG 26…20)
with ferrules	0.25…0.34 mm² (AWG 24…22)

Other

Operating mode	continuous operation
Mounting	any position
Degree of protection, internal components (DIN EN 60529)	IP40
Degree of protection, terminals (DIN EN 60529)	IP20
Flammability class	UL94 V-0
Software	D0609
Documentation number	D00389
Weight	≤ 170 g

( )* factory setting

Ordering information

Supply voltage U_S	Variant	Type	Art. No.
DC 24 V (19,2…28,8 V)	Modbus RTU	RCMB330	B74043160

Accessories

Description	Art. No.
RS-485/USB interface converter	B95012045

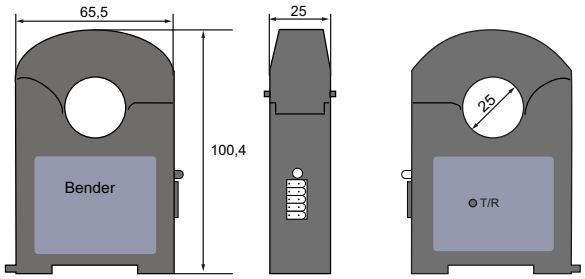
Suitable system components

The use of the listed power supply units is recommended.
The use of a surge protection device is mandatory for these power supply units.

Description	Max. connected current transformers	Type	Art. No.
Voltage supply	4	STEP-PS/1 AC/24 DC/0.5	B94053110
	14	STEP-PS/1 AC/24 DC/1.75	B94053111
	34	STEP-PS/1 AC/24 DC/4.2	B94053112

Dimension diagram

Dimensions in mm, tolerance ±0.5 mm



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