LINETRAXX® RCMB42...EC

AC/DC sensitive residual current monitor

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LINETRAXX® RCMB420EC

LINETRAXX® RCMB422EC

Device features

- AC/DC sensitive residual current monitoring module Type B in accordance with IEC 60364-7-722 (VDE 0100-722)
- Response value 2 – AC/DC 30 mA: r.m.s. measurement
- Response value 1: DC 6 mA
- Frequency range, residual current 0…2000 Hz
- Frequency range, load current 45…65 Hz
- Monitoring of the connection to the measuring current transformer
- Shielded residual current transformer to prevent the effects of external disturbances
- Connection by means of push-wire terminals
- Variants: Single and two-channel residual current measurement

Product description

The AC/DC sensitive residual current monitoring module RCMB42…EC is used for residual current monitoring of AC charging stations for electric vehicles where direct or alternating fault currents are likely to occur, the value of which is constantly greater than zero.

Function

Residual current monitoring is carried out using externally connected measuring current transformers. The r.m.s. value is calculated by summing the DC components included in the residual current and AC components that are below the cut-off frequency.

When the limit values of $I_{\Delta n}$ = DC ≥ 6 mA and/or $I_{\Delta n}$ = AC/DC ≥ 30 mA are exceeded, it will be indicated by alarm relays. Both indications are signalled via the same relay.

A test signal is generated by the microcontroller by pressing the test button "Test" on the front panel. This signal consists of an AC signal superimposed on a DC component. The value of the test current is designed in such a way as to exceed the response value so that both alarm relays are triggered. This indicates that both relays are functioning correctly.

Before charging, the monitoring device must perform a self test and offset measurement to prevent long-term drifts during residual current measurement. During this process safety relevant residual current monitoring is checked. The charging process has to be deactivated before starting this test.

Ordering information

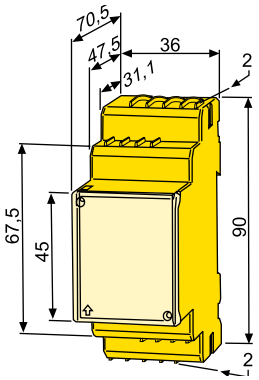
Measuring range		Frequency range	Number of measuring current transformers (Ø 15 mm, 1,5 m Cable)	Channels	Type	Art. No.
DC	AC/DC					
0…6 mA	0…30 mA (rms)	0…2000 Hz	2	2 x residual current	RCMB420EC-2	B 7404 2500
			1	1 x residual current	RCMB422EC-2	B 7404 2502

Delivery incl. measuring current transformers.

Measuring current transformer available with shorter cable on request (minimum order quantity 250 pcs).

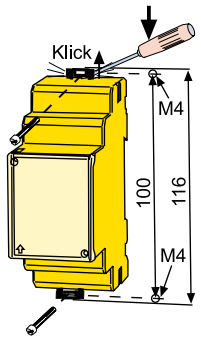
Dimension diagram XM420

Dimensions in mm

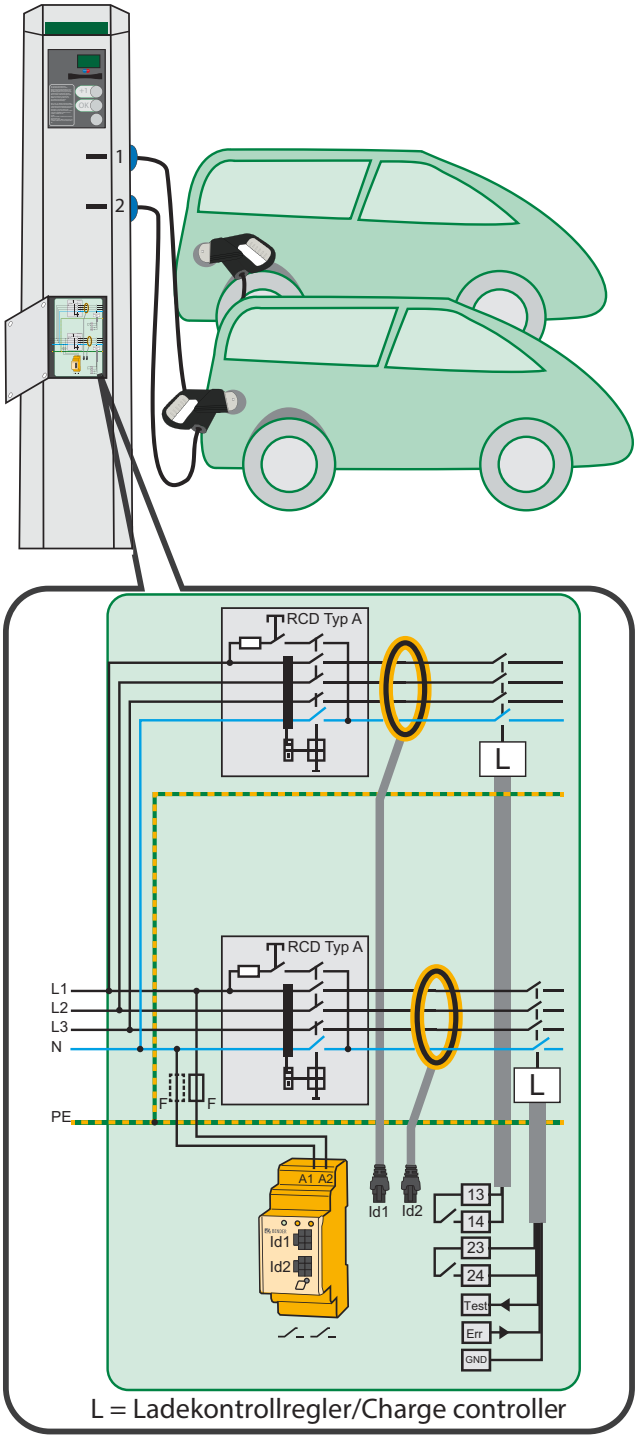


Screw mounting

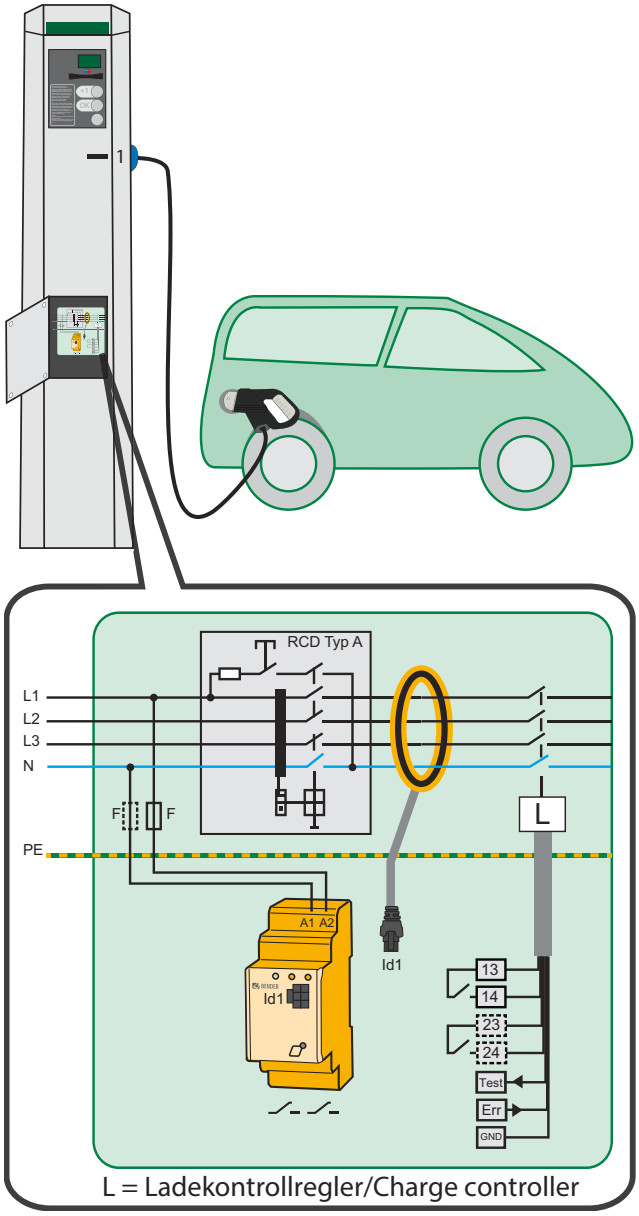
Note: The upper mounting clip must be ordered separately (see ordering information).



RCMB420EC with 2 channels with I_Δ = DC ≥ 6 mA and I_Δ = AC/DC ≥ 30 mA (rms)



RCMB422EC with 1 channel with I_Δ = DC ≥ 6 mA and I_Δ = AC/DC ≥ 30 mA (rms)



Technical data

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

Rated insulation voltage	AC 250 V
Overvoltage category/pollution degree	III/3
Rated impulse voltage	4 kV

Degree of Contamination

Protective separation	between (A1, A2) - (Id1, Id2, Err, Test, GND) - (13, 14, 23, 24)
Basic insulation	beetween (13, 14) - (23, 24)
Range of use	≤ 2000 m above NN

Power supply

Nominal supply voltage U_S	AC 110…240 V, 50/60 Hz DC 150…220 V
Operating range of the supply voltage	AC 0.85…1.1 x U_S DC 0.8…1.2 x U_S
Power consumption	< 5 VA

Measuring range residual current

Rated frequency	0…2000 Hz
Measuring range	± 300 mA

Response values

Residual current $I_{\Delta n2}$	6 mA
Response tolerance $I_{\Delta n2}$	0…-50 %
Residual current $I_{\Delta n1}$	30 mA
Response tolerance $I_{\Delta n2}$	
for $f \leq$ 1kHz	0…-20 %
for $f >$ 1kHz	-20…+100 %
Restart sequence value	
DC 6 mA	< 3 mA
AC/DC 30 mA (rms) for $f \leq$ 1 kHz	< 12 mA
AC/DC 30 mA (rms) for $f >$ 1 kHz	< 22 mA
Operating time t_{ae} for	
1 x $I_{\Delta n}$	< 180 ms
2 x $I_{\Delta n}$	< 70 ms
5 x $I_{\Delta n}$	< 20 ms

Inputs and operation

Test button	on front side
Test	internal/external
Cable lenght Test/Err, GND	0…10 m
Transformer connection	external
LED device function	green
LED alarm channel 1	yellow
LED alarm channel 2	yellow

Switching elements

Alarm relay K1, K2	$I_{\Delta n}$ DC > 6 mA; $I_{\Delta n}$ AC/DC ≥ 30 mA (rms)
Contact elements	2 x 1 N/O contacts
Operating principle	N/C operation
Electrical service life	10,000 switching cycles
Contact data to IEC 60947-5-1	
Utilisation category	AC-14/DC-13
Rated operational voltage	250 V
Rated operational current	5 A
Minimum contact rating	1 mA at AC/DC ≥ 10 V

Environment/EMC

EMC	IEC 61543
Operating temperature	-25…+75 °C
Climatic class acc. to IEC 60721	
Stationary use (IEC 60271-3-3)	3K5
Transport (IEC 60721-3-2)	2K5
Long-time storage (IEC 60721-3-1)	1K4
Classification of mechanical conditions IEC 60271	
Stationary use (IEC 60721-3-3)	3M4 (except condensation and formation of ice)
Transport (IEC 60721-3-2)	2M3
Long-time storage (IEC 60271-3-1)	1M3

Connection

Connection type	push-wire terminal
Connection properties	
rigid	0.2…2.5 mm² (AWG 24…14)
flexible without ferrule	0.75…2.5 mm² (AWG 19…14)
flexible with ferrule	0.2…1.5 mm² (AWG 24…16)
Stripping length	10 mm
Opening force	50 N
Test opening, diameter	2.1 mm

Other

Operating mode	continuous operation
Degree of protection	IP 30
Degree of protection terminals	IP 20
DIN rail mounting	IEC 60715
Screw mounting	2 x M4 with mounting clip

Measuring current transformers

Diameter cable gland residual current transformer	15 mm
Cable length	1.5 m
Mounting	with cable ties
Connection type	connector
Connection to the main device	connector with 6 poles
Max. load current	3 x 32 A (4 x 6 mm²)

BENDER
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