

# LINETRAXX® RCMS460-D/-L – RCMS490-D/-L

Multi-channel AC, pulsed DC and AC/DC sensitive residual current monitors for earthed AC, DC and AC/DC systems (TN and TT systems)



# LINETRAXX®

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Multi-channel AC, pulsed DC and AC/DC sensitive residual current monitors for earthed AC, DC and AC/DC systems (TN and TT systems)



LINETRAXX® RCMS460-D und RCMS490-L

### Device features

- Optional AC, pulsed DC or AC/DC sensitive measurement by selecting the respective measuring current transformer for each channel
- True r.m.s. value measurement
- 12 measuring channels per device for residual current measurement or digital input
- Up to 90 RCMS... monitors, up to 1080 measuring channels in the system
- Fast parallel scanning for all channels
- Response ranges:  
10 mA...10 A (0...2000 Hz),  
6 mA...20 A (42...2000 Hz),  
100 mA...125 A (42...2000 Hz) RCMS...-D4
- Preset function
- Adjustable time delays
- The frequency response characteristics can be set for the protection of persons, fire and plant protection
- History memory with date and time stamp for 300 data records
- Data logger for 300 data records/channel
- Analysis of the harmonics, DC, THF
- Two alarm relays with one changeover contact each
- Device version RCMS490 with one alarm contact per channel
- N/O or N/C operation and fault memory selectable
- Connection external test/reset button
- Backlit graphical display (7-segment display) and alarm LEDs
- Data exchange via BMS bus
- Password protection for device setting
- Continuous CT connection monitoring
- RoHS compliant

### Approvals



### Product description RCMS460-D.../L... and RCMS490-D.../L...

The RCMS system consists of one or more RCMS460-D/-L or RCMS490-D/-L residual current monitors, which are able to detect and evaluate fault, residual and operating currents in earthed power supplies via the related measuring current transformers. The maximum voltage of the system to be monitored depends on the nominal insulation voltage of the measuring current transformer used in the case of busbar systems, resp. depend on the cables or conductors that are routed through.

Closed W...AB series measuring current transformers are required to measure AC/DC sensitive residual currents (according to IEC/TR 60755: Type B). Six W...AB series measuring current transformers require one AN420 or AN110 power supply unit. W (closed), WR (rectangular), WS (split-core) and WF... (flexible) series measuring current transformers are used for alternating and pulsating currents (according to IEC/TR 60755: Type A).

Any combination of the various measuring current transformer series can be connected to the monitor measuring channels. Each RCMS460-D/-L and RCMS490-D/-L has 12 measuring channels. Up to 90 residual current monitors can be connected via a BMS bus (RS-485 interface with BMS protocol), thereby up to 1080 measuring channels (sub-circuits) can be monitored.

If this product is to be used for personnel, fire or plant protection, the frequency response can be set accordingly. The measured currents can be analysed for harmonics.

### Typical applications

Measuring and evaluating residual, fault and rated currents of loads and installations in the frequency range of 0...2000 Hz (W...AB series measuring current transformers), 42...2000 Hz (W, WR, WS WF series measuring current transformers).

- Monitoring of currents regarded as fire hazards in flammable atmospheres
- EMC monitoring of TN-S systems for "stray currents" and additional N-PE connections.
- Monitoring of N conductors for overload caused by harmonics
- Monitoring of PE and equipotential bonding conductors to ensure they are free of current
- Residual current monitoring of stationary electrical equipment and systems to determine test intervals which meet practical requirements in compliance with the accident prevention regulations BGV A3 (Germany).
- Personnel and fire protection due to rapid disconnection
- Monitoring of digital inputs

### Function

The currents are detected and evaluated as true r.m.s. values in the frequency range of 0 (42)...2000 Hz. All channels are scanned simultaneously so that the maximum scanning time for all channels is 180 ms if 1x the response value is exceeded and 30 ms if 5x the response value is exceeded.

The current values of all channels are indicated on the LC display in bar graph format. If one of both values falls below or exceeds the set response value, the response delay  $t_{on}$  begins. Once the response delay has expired, the common alarm relays "K1/K2" switch and the alarm LEDs 1/2 light up.

Two response values/common alarm relays, which can be set separately, allow a distinction to be made between prewarning and alarm. The faulty channel(s) and the associated measured value are indicated on the LC display. If the current exceeds or falls below the release value (response value plus hysteresis), the delay on release  $t_{off}$  begins. Once the delay has expired, the common alarm relays return to their initial position.

If the fault memory is enabled, the common alarm relays remain in the alarm state until the reset button is pressed or a reset command is sent via the BMS bus. The device function can be tested using the test button. Parameters are assigned to the device via the LCD and the control buttons on the front of one of the connected RCMS...-D devices or via connected panels and protocol converters (e.g. COM460IP). The preset function allows the response values to be set for all channels considering the currently measured value for each channel.

### Digital input

Each individual channel can be used for one of the following monitoring functions: as digital input using a potential-free contact 1/0 or for current or residual current monitoring in combination with measuring current transformers.

### History memory in RCMS460-D, RCMS490-D

The device utilises a history memory for failsafe storing of up to 300 data records (date, time, channel, event code, measured value), so that all data about an outgoing circuit or an area can be traced back at any time (what happened when).

### Analysis of harmonics

The analysis of the harmonics of the measured currents can be selected via a menu item in RCMS460-D, RCMS490-D. There, the DC component, the THF and the current value of the harmonics (1...40 at 50/60 Hz, 1...5 at 400 Hz) is displayed numerically and graphically.

### Device variants

RCMS residual current monitoring systems differ in the type of residual current evaluator used. RCMS460... or RCMS490... are available as an option.

### RCMS460-D

Device version RCMS460-D utilises a backlit graphical display. This version is applied when detailed information about all devices in the switchboard cabinet, connected to the bus, are to be displayed locally. This device is capable of assigning parameters to all RCMS devices connected to the BMS bus and displaying all measurement details. Several RCMS-D devices can be used in one system.

### RCMS460-L

Device version RCMS460-L utilises a two-digit 7-segment display where the address of this device is displayed within the BMS bus. The alarm LEDs indicate in which measuring channel the response value has been exceeded. Parameter assignment can be carried out via an RCMS-D... or the protocol converter COM460IP.

### RCMS490-D/RCMS490-L

The function of the device versions RCMS490-D/RCMS490-L corresponds to the function described above. In addition, a galvanically isolated alarm contact (N/O contact) is provided, for example, to trigger a circuit breaker in this sub-circuit when a response value has been exceeded or the value has fallen below the set response value.

### RCMS...-D4/RCMS...-L4

The function of device version RCMS...-D4/RCMS...-L4 corresponds to the function described before. The functions of measuring channels k9...k12 vary from those described before. They are exclusively designed for current measurements with Type A measuring current transformers (measuring range 100 mA...125 A). For that reason, the measuring channels k9...k12 cannot be used in combination with W...AB series measuring current transformers or as digital inputs.

### Standards

The LINETRAXX® RCMS460/490 series complies with the requirements of the device standards: DIN EN 62020 (VDE 0663) and IEC 62020.

### Overview of device types

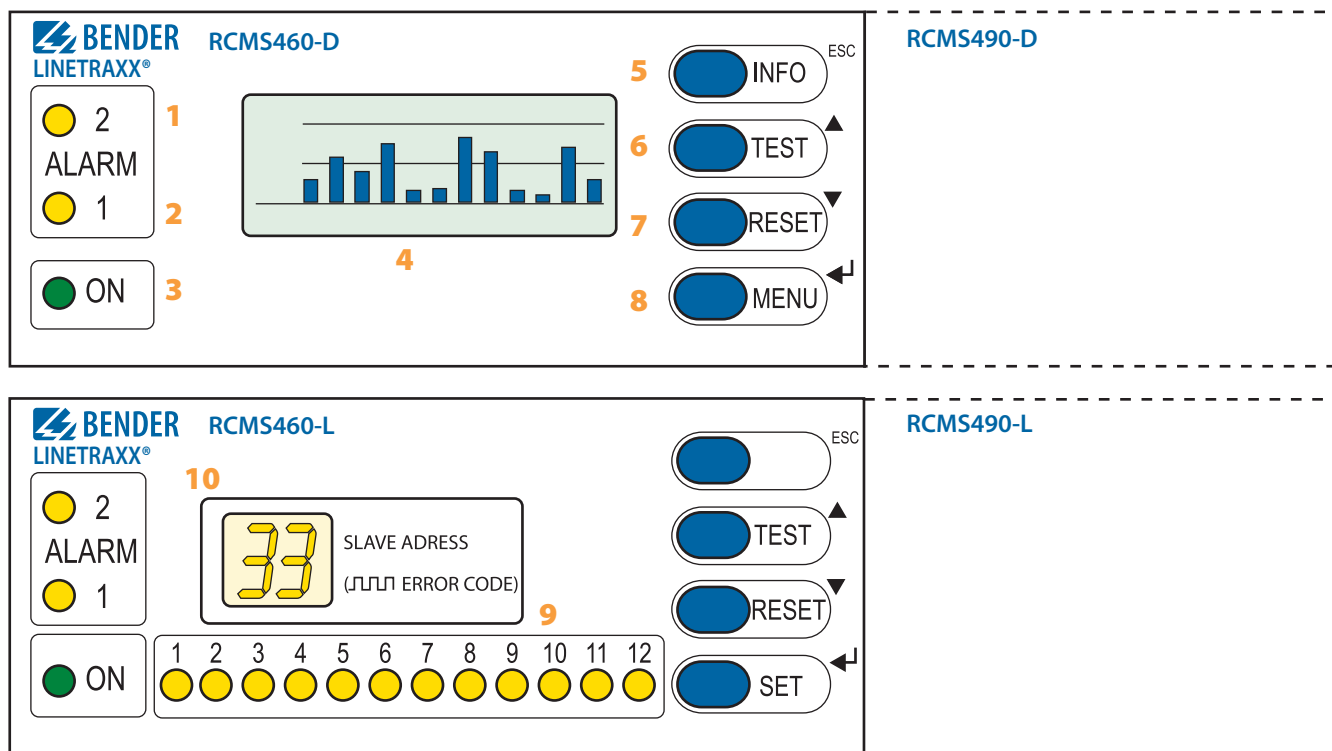
Distinctive device features		RCMS460-D...	RCMS460-L	RCMS490-D...	RCMS490-L...	
Measuring circuit	Parameter setting function	■	–	■	–	
	Master/Slave	■	■	■	■	
	Address range	1...90	1...90	1...90	1...90	
	Measuring channels per device	12	12	12	12	
	W... , WR... , WS... , W...AB, W...F series measuring current transformers	■	■	■	■	
	CT monitoring	■	■	■	■	
	Rated residual operating current $I_{\Delta n2}$ (Alarm)	AC/DC sensitive 0...2000 Hz (Type B)	10 mA...10 A	10 mA...10 A	10 mA...10 A	10 mA...10 A
		pulsed DC sensitive 42...2000 Hz (Type A)	6 mA...20 A	6 mA...20 A	6 mA...20 A	6 mA...20 A
		pulsed DC sensitive 42...2000 Hz (Type A) for the channels 9...12 (RCMS4x0-D4/-L4)	100 mA...125 A	100 mA...125 A	100 mA...125 A	100 mA...125 A
	Rated residual operating current $I_{\Delta n1}$ (prewarning)	10...100 %, min. 5 mA	10...100 %, min. 5 mA	10...100 %, min. 5 mA	10...100 %, min. 5 mA	
Function selectable per channel off, <, >, I/O	■	■	■	■		
Cut-off frequency adjustable for personnel, plant and fire protection	■	*	■	*		
Preset function for $I_{\Delta n2}$ and I/O	■	■	■	■		
Hysteresis	2...40 %	2...40 %	2...40 %	2...40 %		
Factor for additional CT	■	■	■	■		
Switching elements	Common alarm relay for all channels	2 x 1 changeover contact	2 x 1 changeover contact	2 x 1 changeover contact	2 x 1 changeover contact	
	Alarm relay per channel	–	–	12 x 1 N/O contact	12 x 1 N/O contact	
Time response	Start-up delay 0...99 s	■	■	■	■	
	Response delay $t_v$ , adjustable 0...999 s	■	■	■	■	
	Operating time at	$I_{\Delta n} = 1 \times I_{\Delta n2} \leq 180 \text{ ms}$	■	■	■	■
$I_{\Delta n} = 5 \times I_{\Delta n2} \leq 30 \text{ ms}$		■	■	■	■	
Displays, memory	Analysis of the harmonics ( $I_h$ , DC, THF)	■	*	■	*	
	History memory 300 data records	■	–	■	–	
	Data logger for 300 data records/ channel	■	–	■	–	
	Internal clock	■	–	■	–	
	Password	■	–	■	–	
	Language English, German, French, Swedish	■	–	■	–	
	Backlit graphics LC display	■	–	■	–	
7-segment display and LED line	–	■	–	■		

\* only in conjunction with RCMS4xx-D, MK2430 or COM460IP

The following table gives an overview of the measuring functions per channel:

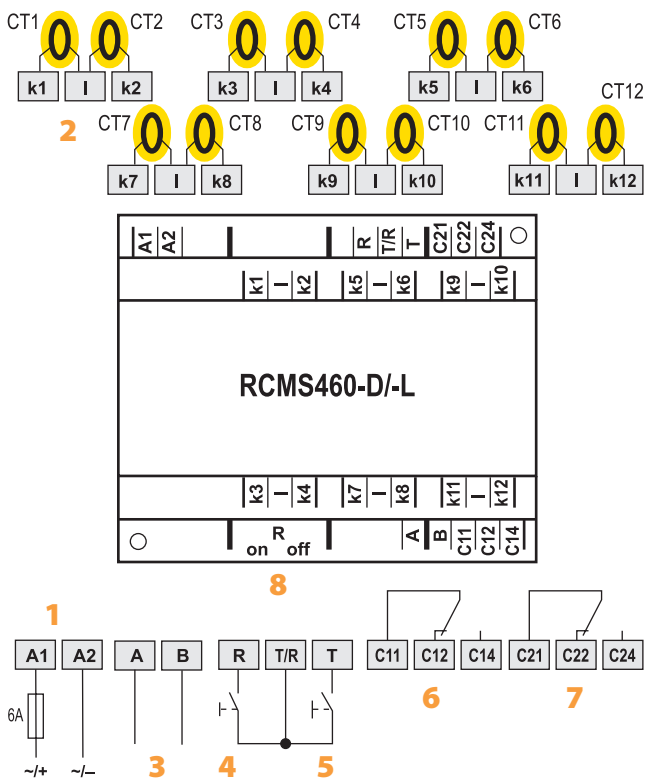
Overview of measuring functions				
Type	RCMS460-D/-L, RCMS490-D/-L		RCMS460-D4/-L4, RCMS490-D4/-L4	
Measuring functions, selectable	Channel 1...12		Channel 1...8	Channel 9...12
$I/I_{\Delta n}$ 6 mA...20 A (42...2000 Hz)	</>/OFF		</>/OFF	--
$I/I_{\Delta n}$ 100 mA...125 A (42...2000 Hz)	--		--	</>/OFF
$I/I_{\Delta n}$ 10 mA...10 A (0...2000 Hz)	</>/OFF		</>/OFF	--
I/O	I/O/OFF		I/O/OFF	--

### Operating and display elements RCMS460-D.../L ... and RCMS490-D.../L...



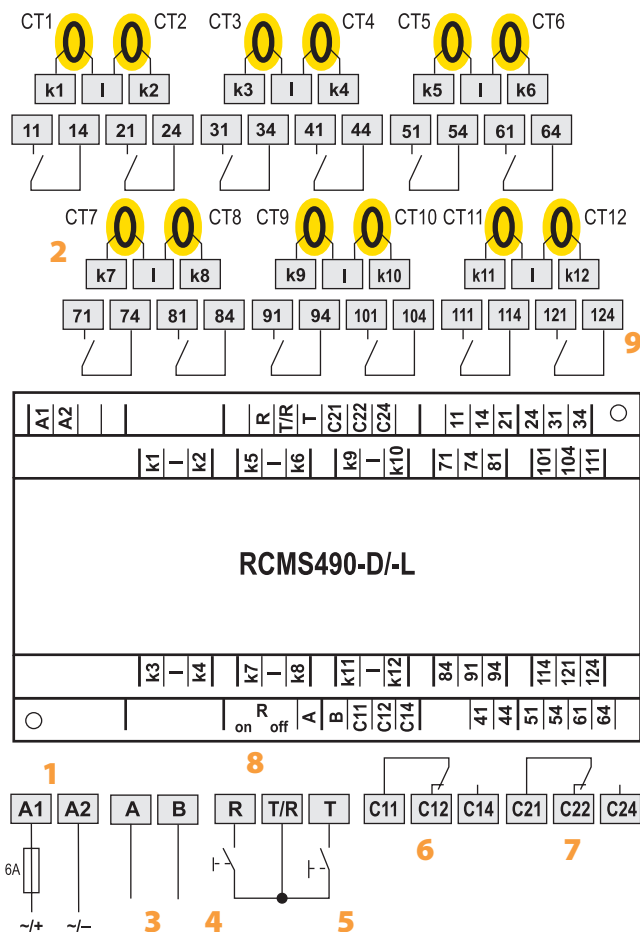
- 1 - LED ALARM "2" lights up when the measured value falls below or exceeds the response value in a measuring channel or an error is indicated by the digital input.
- 2 - LED "ALARM 1" lights up if the measured value exceeds or falls below the "Prewarning" response value in a channel or in the event of device error.
- 3 - Power On LED "ON" lights up when the device is switched on or flashes until the device is ready for operation during switching on.
- 4 - Illuminated graphic LCD
- 5 - "INFO" button: to query standard information (does not apply to RCMS4...-L)  
ESC button: to exit the menu function without changing parameters
- 6 - Test button "TEST": to call up the self test  
Arrow up button: Parameter changes, scroll
- 7 - Reset button "RESET": to delete alarm and fault messages  
Arrow down button: Parameter changes, scroll
- 8 - "MENU" button: RCMS460-D/490-D: to toggle between the standard display, menu and alarm display  
"SET" button: RCMS460-L/490-L: to set the BMS address  
Enter button: to confirm parameter changes
- 9 - Alarm LEDs "1...12" light up when a fault has been detected in the relevant measuring channel or flash if there is a fault with the measuring current transformer
- 10 - Digital display for device address and error codes.

Wiring diagram RCMS460-D.../-L...



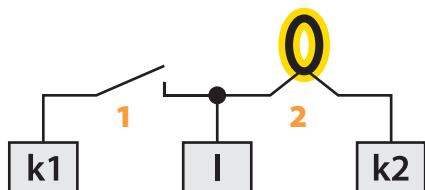
- 1 - Connection of supply voltage  $U_S$  (see ordering information), 6 A fuse recommended.
- 2 - Connection of measuring current transformers CT1...CT12. Either Type A or Type B measuring current transformers can be selected for each measuring channel. Six W...AB series measuring current transformers require one AN420 or AN110 power supply unit. The channels k9...k12 of the device versions RCMS460-D4/-L4 require the connection of Type A measuring current transformers.
- 3 - RS-485 interface with BMS protocol

Wiring diagram RCMS490-D.../-L...

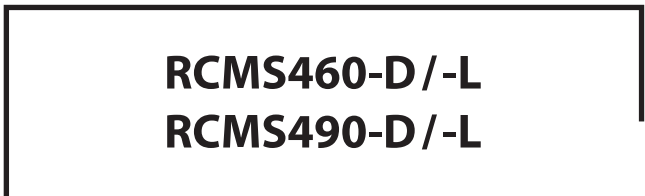


- 4 - External reset button "R" (N/O contact)\*
- 5 - External test button "T" (N/O contact) The external "T/R" buttons of several devices must not be connected to one another.
- 6 - Alarm relay "K1": Alarm 1, common alarm for alarm, prewarning, device error, ext. alarm (adjustable)
- 7 - Alarm relay "K2": Alarm 2, common alarm for alarm, prewarning, device error, ext. alarm (adjustable)
- 8 -  $R_{on/off}$ : Activate or deactivate the BMS bus terminating resistor (120)
- 9 - Alarm relay: N/O contact per channel

Wiring diagram- Digital input

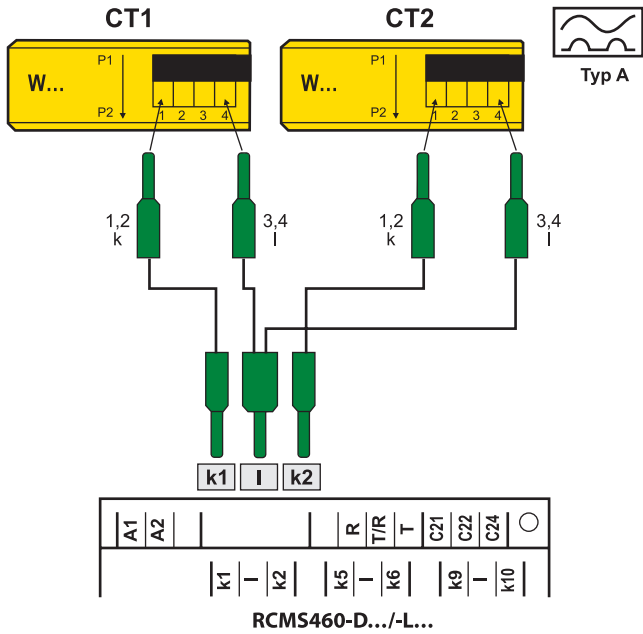


- 1 - Potential-free contact  
 $0 \cong$  Resistance between k and I > 250  $\Omega$   
 $I \cong$  Resistance between k and I < 100  $\Omega$
- 2 - Measuring current transformers

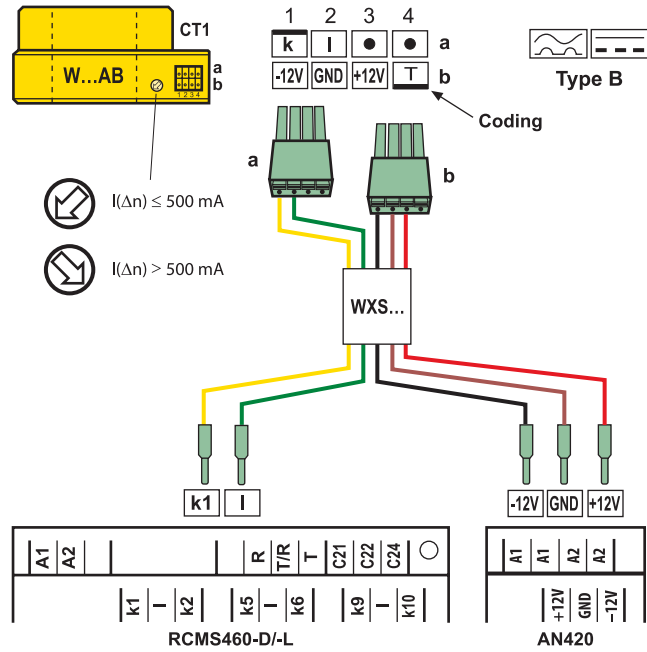


**Connection W..., WR..., WS... series measuring current transformers (pulsed current sensitive)**

Example: W...

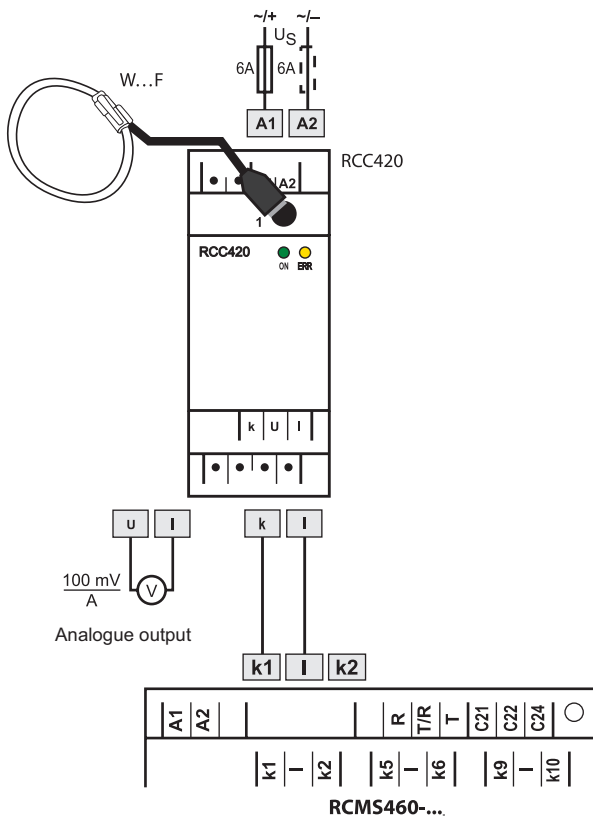


**Connection W...AB series measuring current transformer (AC/DC current sensitive)**



The connections k and I at the residual current monitor must not be interchanged.

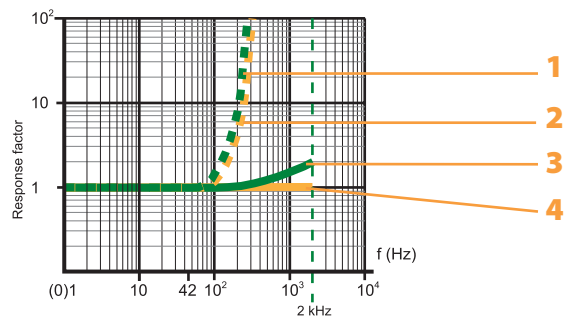
**Connection WF... series measuring current transformers**



**Frequency settings**

The frequency response of the equipment can be set to a linear frequency response (up to the maximum frequency of Hz) if used for fire protection or to a frequency response in accordance with IEC 60990 for personnel protection. For plant protection, the residual current is measured up to the rated system frequency. The figure below shows the corresponding frequency response.

**Frequency curves**



Response factor =  $I_{\Delta} / I_{\Delta n}$

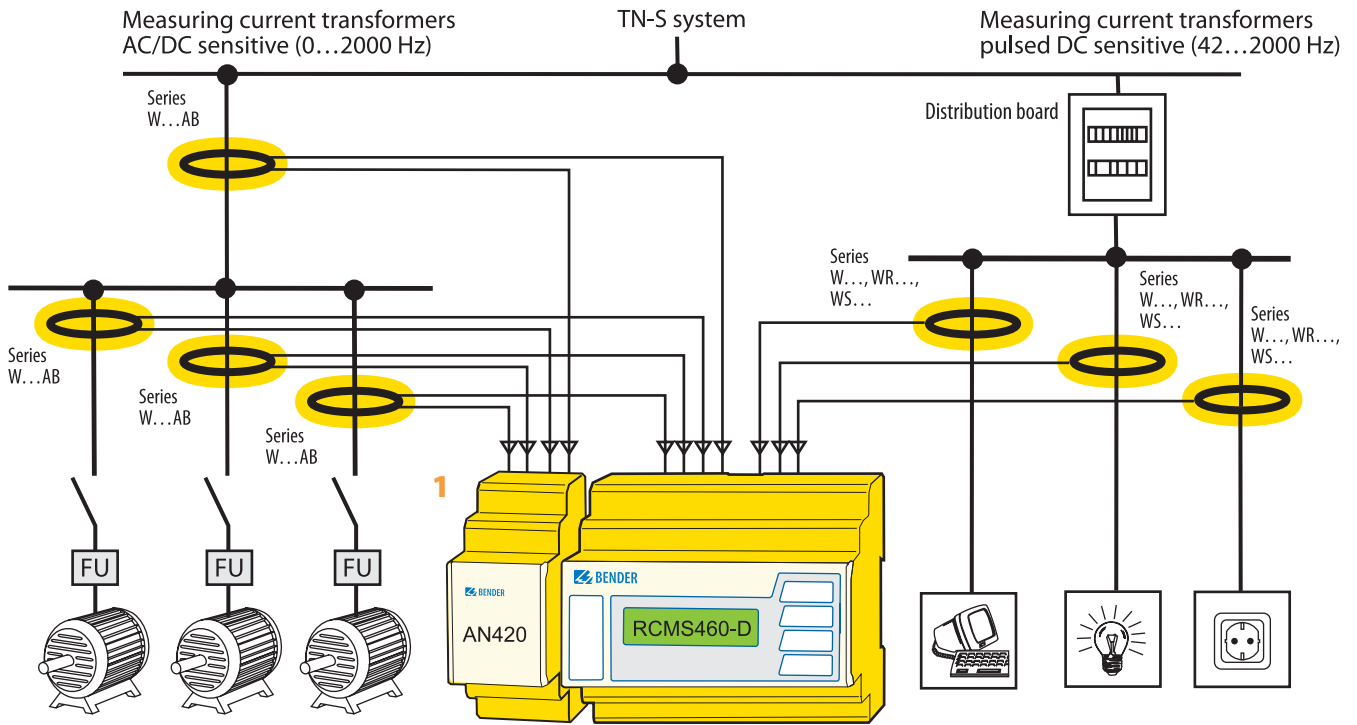
( $I_{\Delta}$ ) Residual operating current: Measured value at which the RCMS responds.

( $I_{\Delta n}$ ) Rated residual operating current: Set response value

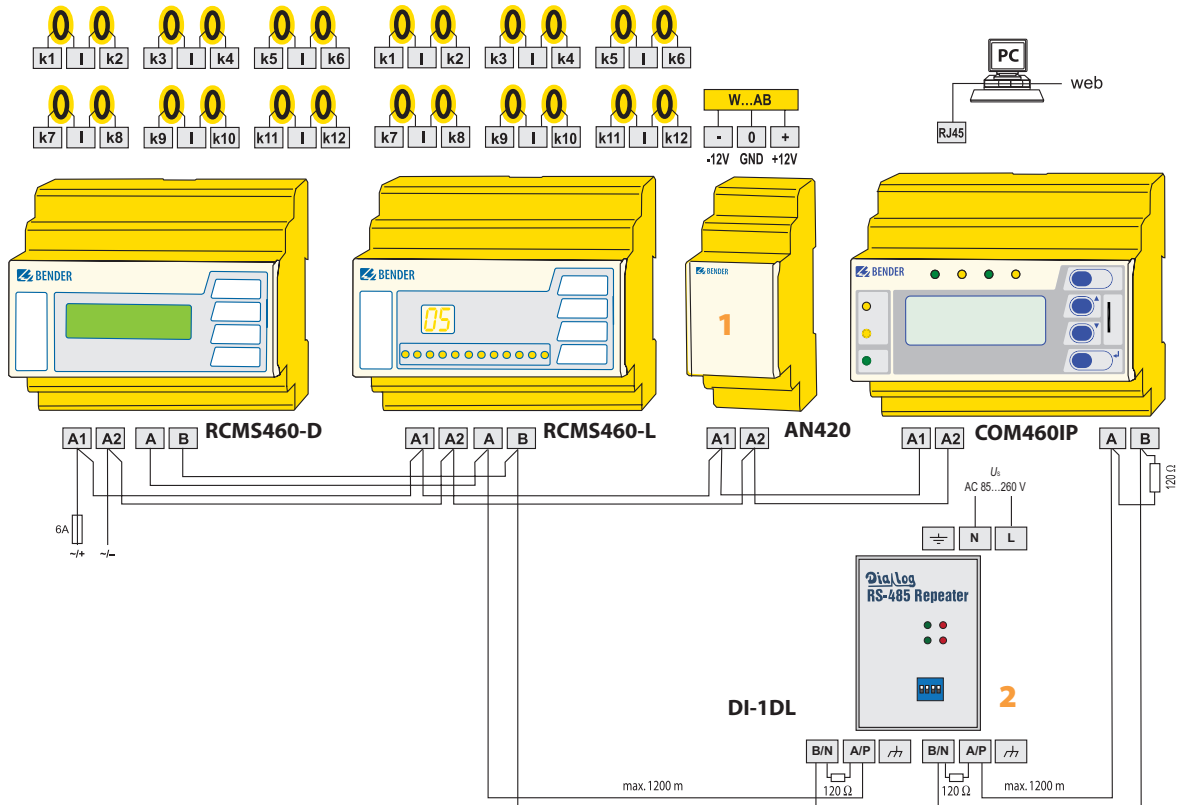
- 1 - Menu option "50 Hz" – plant protection: Only evaluates the fundamental component of the residual current.
- 2 - Menu selection "60 Hz" – Plant protection: Only evaluates the fundamental component of the residual current.
- 3 - Menu selection "IEC" – Touch current for let go (protection of persons) in accordance with IEC 60990
- 4 - Menu selection "None" – Fire protection: Response factor remains the same over the entire frequency range.



**Example for a design of a – minimum system consisting of an RCMS460-D and 12 measuring points**



**Example for a system design of – standard system consisting of an RCMS460-D and RCMS460-L and a protocol converter COM460IP**



**Note:**

- 1 - When AC/DC sensitive measuring current transformers of the W...AB series are used, an AN420 or AN110\* is required that supplies up to six measuring current transformers of this type.
- 2 - The DI-1DL repeater only is required when the length of the cable exceeds 1200 m or when more than 32 devices are connected to the bus.

\* When the supply voltage of AN110-1 is < 30 V, the output power decreases, so that only 5 measuring current transformers can be connected.

## Technical data

### Insulation coordination acc. to IEC 60664-1/IEC 60664-3 for the versions:

#### a) RCMS4x0-D1

Supply voltage $U_S$	AC 24...60 V/DC 24...75 V (AC/DC $\pm 20\%$ )
Supply voltage frequency	DC, 50/60 Hz
Rated insulation voltage	100 V
Rated impulse voltage/pollution degree	2.5 kV/3
Overvoltage category	III
Protective separation (reinforced insulation) between	(A1, A2) - (k1, I...k12, R, T/R, T, A, B)
Voltage test acc. to IEC 61010-1	1.344 kV

Rated insulation voltage	250 V
Rated impulse voltage/pollution degree	4 kV/3
Overvoltage category	III
Basic insulation between	(A1, A2), (k1, I...k12, R, T/R, T, A, B) - (C11, C12, C14), (C21, C22, C24), (11,14), (21,24), (31,34), (41,44), (51,54), (61,64), (71,74), (81,84), (91,94), (101,104), (111,114), (121,124)
Basic insulation between:	(11, 14) - (21, 24) - (31, 34) - (41, 44) - (51, 54) - (61, 64)
Voltage test acc. to IEC 61010-1	2.21 kV

Rated insulation voltage	250 V
Rated impulse voltage/pollution degree	6 kV/3
Overvoltage category	III
Protective separation (reinforced insulation) between	(C11, C12, C14) - (C21, C22, C24) - (11, 14, 21, 24, 31, 34) - (41, 44, 51, 54, 61, 64) - (71,74) - (81,84) - (91,94) - (101,104) - (111,114) - (121,124)
Voltage test acc. to IEC 61010-1	3.536 kV

#### b) RCMS4x0-D2

Supply voltage $U_S$	AC/DC 100...240 V (-20...+15 %)
Supply voltage frequency	DC, 50/60 Hz
Rated insulation voltage	250 V
Rated impulse voltage/pollution degree	6 kV/3
Overvoltage category	III
Protective separation (reinforced insulation) between	(A1, A2) - (k1, I...k12, R, T/R, T, A, B), (C11, C12, C14), (C21, C22, C24), (11,14), (21,24), (31,34), (41,44), (51,54), (61,64), (71,74), (81,84), (91,94), (101,104), (111,114), (121,124)
Protective separation (reinforced insulation) between	(C11, C12, C14) - (C21, C22, C24) - (11, 14, 21, 24, 31, 34) - (41, 44, 51, 54, 61, 64) - (71,74) - (81,84) - (91,94) - (101,104) - (111,114) - (121,124)
Voltage test acc. to IEC 61010-1	3.536 kV

Rated insulation voltage	250 V
Rated impulse voltage/pollution degree	4 kV/3
Overvoltage category	III
Basic insulation between:	k1, I...k12, R, T/R, T, A, B) - (C11, C12, C14), (C21, C22, C24)
Basic insulation between:	(11, 14) - (21, 24) - (31, 34) - (41, 44) - (51, 54) - (61, 64)
Voltage test acc. to IEC 61010-1	2.21 kV

### Measuring circuit

External measuring current transformers	W..., WR..., WS..., WF... series (Type A), W...AB series (Type B)
CT monitoring	on/off (on)*
Rated burden RCMS...-D/-L	68 $\Omega$
Rated burden RCMS...-D4/-L4 (channels 9...12 only)	1 $\Omega$
Rated insulation voltage (measuring current transformer)	800 V
Operating characteristics acc. to IEC/TR 60755	type A and type B depending on measuring current transformer series (type A)*
Rated frequency	0...2000 Hz (Type B) / 42...2000 Hz (type A)
Cut-off frequency	none, IEC, 50 Hz, 60 Hz (none)*
Measuring range RCMS...-D/-L	0...30 A (measuring current transformer type A) 0...20 A (measuring current transformer type B) Crest factor up to 10 A = 4, up to 20 A = 2
Measuring range RCMS...-D4/-L4 (channels 9...12 only)	100 mA...125 A
Rated residual operating current $I_{\Delta n2}$ (alarm)	10 mA...10 A (type B) 6 mA...20 A (type A) (100 mA overcurrent)*
Rated residual operating current $I_{\Delta n2}$ (alarm) for RCMS...-D4/-L4 (channels 9...12 only)	100 mA...125 A (16 A overcurrent)*
Rated residual operating current $I_{\Delta n1}$ (prewarning)	10...100 % $\times I_{\Delta n2}$ min. 5 mA (50 %)*
Digital input	1: < 100 $\Omega$ 0: > 250 $\Omega$
Preset for alarm	$I_{\Delta}$ x factor 1...99 (3)* Offset 0...20 A (30 mA)*
Preset for digital input	0/1 (1)*
Relative uncertainty RCMS...-D/-L	0...-20 %**
Relative uncertainty RCMS...-D4/-L4 (channels 9...12 only)	+10...-20 %**
Hysteresis	2...40% (20 %)*
Factor for additional CT	/1...10; x 1...250 (x 1)*
Number of measuring channels (per device/system)	12/1080

### Time response

Start-up delay $t$ (start-up) per device	0...99 s (0 ms)*
Response delay $t_{on}$ per channel	0...999 s (200 ms)*
Delay on release $t_{off}$ per channel	0...999 s (200 ms)*
Operating time $t_{ae}$ at $I_{\Delta n} = 1 \times I_{\Delta n1/2}$	$\leq 180$ ms
Operating time $t_{ae}$ at $I_{\Delta n} = 5 \times I_{\Delta n1/2}$	$\leq 30$ ms
Response time $t_{an}$ for residual current measurement	$t_{an} = t_{ae} + t_{on1/2}$
Operating time $t_{ae}$ digital inputs	$\leq 3.5$ s
Scanning time for all measuring channels (residual current measurement)	$\leq 180$ ms
Recovery time $t_b$	500...600 ms

### Displays, memory

Measured value display range RCMS...-D / -L	0...30 A (CT Type A) 0...20 A (CT type B)
Display range, measured value RCMS...-D4/-L4 (channels 9...12)	0...125 A (CT type A)
Error of indication	$\pm 10$ %
LEDs	ON/ALARM (RCMS...-D...) ON/ALARM / measuring channel 1...12 (RCMS...-L...)
LC display	backlit graphical display (RCMS...-D...)
7-segment display	2 x 7.62 mm (RCMS4...-L)
History memory	300 data records (RCMS...-D...)
Data logger	300 data records per measuring channel (RCMS...-D...)
Password	off / 0...999 (off)*
Language	D, GB, F (GB)*
Fault memory alarm relay	on/off (off)*



**Inputs/outputs**

Test/reset button	internal/external
Cable length for external test/reset button	0...10 m

**Interface**

Interface/protocol	RS-485/BMS
Baud rate	9.6 kbit/s
Cable length	0...1200 m
Cable (shielded, shield connected to PE on one side)	recommended: min. J-Y(St)Y min. 2x0.8
For UL application: : Copper lines	at least 60/70 °C
Terminating resistor	120 Ω (0.25 W) connectable via DIP switch
Device address, BMS bus	1...90 (2)*

**Cable lengths for W..., WR..., WS..., WF... series measuring current transformers**

Single wire ≥ 0.75 mm <sup>2</sup>	0...1 m
Single wire, twisted ≥ 0.75 mm <sup>2</sup>	0...10 m
Shielded cable ≥ 0.5 mm <sup>2</sup>	0...40 m
Cable (shielded, shield connected to terminal I at one end, must not be earthed)	recommended: J-Y(St)Y min. 2 x 0.8

**Cable lengths for W...AB series measuring current transformers**

Single wire ≥ 0.75 mm <sup>2</sup>	0...10 m
Connection	plug-in connector, recommended WXS...

**Switching elements**

Number	2 x 1 changeover contact (RCMS460)				
	2 x 1 changeover contact, 12 x 1 N/O contact (RCMS490)				
Operating principle	NC or N/O operation (N/O operation)*				
Electrical endurance under rated operating conditions, number of cycles	10.000				
Contact data acc. to IEC 60947-5-1					
Utilisation category	AC-13	AC-14	DC-1	DC-12	DC-12
Rated operational voltage	230 V	230 V	24 V	110 V	220 V
Rated operational current (common alarm relay)	5 A	3 A	1 A	0.2 A	0.1 A
Rated operational current (alarm relay)	2 A 0.5 A 5 A 0.2 A 0.1 A				
Minimum contact rating	1 mA at AC/DC ≥ 10 V				

**Environment/EMC**

EMC	IEC 62020
Operating temperature	-25...+ 55 °C
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)	2M2
Long-term storage (IEC 60721-3-1)	1M3

**Connection**

Connection	screw terminals
Connection properties:	
Rigid/flexible/conductor sizes	0.2...4/0.2...2.5 mm <sup>2</sup> /AWG 24...12
Multi-conductor connection (2 conductors with the same cross section):	
Rigid/flexible	0.2...1.5/0.2...1.5 mm <sup>2</sup>
Stripping length	8...9 mm
Tightening torque	0.5...0.6 Nm

**Other**

Operating mode	continuous operation
Mounting	display-oriented
Degree of protection, internal components (IEC 60529)	IP30
Degree of protection, terminals (IEC 60529)	IP20
Enclosure material	polycarbonate
Flammability class	UL94V-0
Screw mounting	2 x M4
DIN rail mounting acc. to	IEC 60715
Software version measurement technique	D233 V2.42
Software version display	D256 V2.29
Power consumption	≤10 VA (RCMS460) ≤12 VA (RCMS490)
Documentation number	D00067
Weight	≤ 360 g (RCMS460), ≤ 510 g (RCMS490)

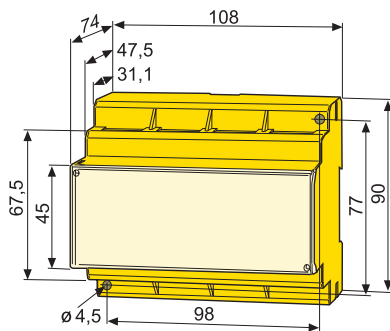
( )\* factory setting

\*\* In the frequency range of < 15 Hz, the relative uncertainty is between -35 % and 100 %.

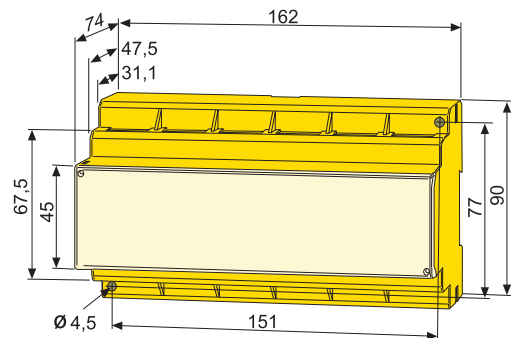
**Dimension diagrams**

Dimensions in mm

**RCMS460-D/-L**



**RCMS490-D/-L**



### Ordering information RCMS460/490-D

Differential measurement method		Common alarm relay	Alarm relay per channel	4 channels for load current measurement	Supply voltage <sup>1)</sup> U <sub>S</sub>		Type	Art. No.	
pulsed DC sensitive	AC/DC sensitive				AC	DC			
6 mA...20 A	10 mA...10 A	2 x 1 changeover contact	–	–	16...72 V, 42...460 Hz	16...94 V	RCMS460-D-1	B 9405 3001	
					70...276 V, 42...460 Hz	70...276 V	RCMS460-D-2	B 9405 3002	
					100 mA...125 A	16...72 V, 42...460 Hz	16...94 V	RCMS460-D4-1	B 9405 3009
					70...276 V, 42...460 Hz	70...276 V	RCMS460-D4-2	B 9405 3010	
			12 x 1 N/O contact	–	16...72 V, 42...460 Hz	16...94 V	RCMS490-D-1	B 9405 3005	
					70...276 V, 42...460 Hz	70...276 V	RCMS490-D-2	B 9405 3006	
					100 mA...125 A	16...72 V, 42...460 Hz	16...94 V	RCMS490-D4-1	B 9405 3011
					70...276 V, 42...460 Hz	70...276 V	RCMS490-D4-2	B 9405 3012	

<sup>1)</sup> Absolute values

### Ordering information RCMS460/490-L

Current measurement		Common alarm relay for all channels	Alarm relay per channel	Supply voltage <sup>1)</sup> U <sub>S</sub>		Type	Art. No.
pulsed DC sensitive	AC/DC sensitive			AC	DC		
6 mA...20 A	10 mA...10 A	2 x 1 changeover contact	–	16...72 V, 42...460 Hz	16...94 V	RCMS460-L-1	B 9405 3003
				70...276 V, 42...460 Hz	70...276 V	RCMS460-L-2	B 9405 3004
		2 x 1 changeover contact	12 x 1 N/O contact	16...72 V, 42...460 Hz	16...94 V	RCMS490-L-1	B 9405 3007
				70...276 V, 42...460 Hz	70...276 V	RCMS490-L-2	B 9405 3008

<sup>1)</sup> Absolute values

RCMS460-L4 and RCMS490-L4 on request

### Accessories

Type designation	Art. No.
XM460 mounting frame, 144 x 82 mm	B 990 995

**Suitable system components**

Type designation	Version	Type	Art. No.
RS-485 repeater	Busverstärker	DI-1DL	B 9501 2047
Power supply unit	for supplying up to six W...AB series measuring current transformers	AN420-2	B94053100 B74053100
		AN110-1	B94053101
		AN110-2	B94053102
		AN471	B 924 189
Protocol converters	for DI-1	COM460IP	B 9506 1010
	BMS-Ethernet-Gateway	FTC470XMB	B 9506 1002
	BMS bus – PROFIBUS DP	FTC470XDP	B 9506 1000

**Messstromwandler**
**Pulsating current sensitive measuring current transformers for RCMS460/490**

Type of construction	Internal diameter/mm	Type	Art. No.
circular	20	W20	B 9808 0003
	35	W35	B 9808 0010
	60	W60	B 9808 0018
	120	W120	B 9808 0028
	210	W210	B 9808 0034
rectangular	70 x 175	WR70x175	B 9808 0609
	115 x 305	WR115x305	B 9808 0610
split-core	20 x 30	WS20x30	B 9808 0601
	50 x 80	WS50x80	B 9808 0603
	80 x 120	WS80x120	B 9808 0606

**AC/DC sensitive measuring current transformers for RCMS460/490**

Type of construction	Internal diameter/mm	Type	Art. No.
circular	20	W20AB	B 9808 0008
	35	W35AB	B 9808 0016
	60	W60AB	B 9808 0026
	120	W120AB	B 9808 0041
	210	W210AB	B 9808 0040

**Connection cable for W...AB series measuring current transformers – RCMS and AN420 resp. AN110**

Length/m	Type	Art. No.
1	WXS-100	B 9808 0506
2,5	WXS-250	B 9808 0507
5	WXS-500	B 9808 0508
10	WXS-1000	B 9808 0509

**Flexible measuring current transformers (pulsed DC sensitive) for RCMS460/490**

Internal diameter/mm	Type	Art. No.
170	WF170-1	B 7808 0201
	WF170-2	B 7808 0202
250	WF250-1	B 7808 0203
	WF250-2	B 7808 0204
500	WF500-1	B 7808 0205
	WF500-2	B 7808 0206
800	WF800-1	B 7808 0207
	WF800-2	B 7808 0208
1200	WF1200-1	B 7808 0209
	WF1200-2	B 7808 0210

WF... series measuring current transformers consist of one flexible W...F series measuring current transformer and one RCC420 signal converter.



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