LINETRAXX® CTBC-Serie

AC/DC sensitive measuring current transformer cores

Intended use

The AC/DC sensitive measuring current transformer cores of the CTBC series can **only** be used **in combination** with one of the follwing devices:

- MRCDB300 series (see manual D00343)
- CTUB100 series (see manual D00362)
- RCMB300 series (see manual D00372)

The measuring current transformer cores convert system leakage and fault currents into a signal to be processed by the devices mentioned above. The measuring current transformers can be used in DC, AC, and 3(N)AC systems. The devices are suitable for detecting fault currents with smooth DC components. CTBC…P are insensitive to load currents due to full magnetic shield, can be used for high short-term system-related load currents.

General safety instructions

Part of the device documentation in addition to this manual is the enclosed "Important safety instructions for Bender products".

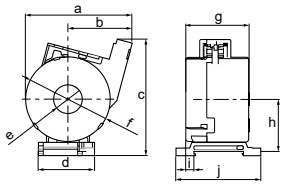
Installation, connection and commissioning are to be carried out by electrically skilled persons only! It is essential to follow the existing safety instructions.

This symbol indicates a high risk of danger that will result in death or serious injury if not avoided.

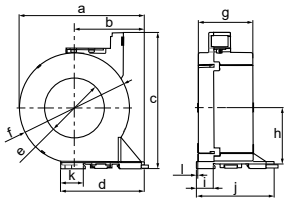
This symbol indicates a low-level risk that can result in minor or moderate injury or damage to property if not avoided.

This symbol refers to information that is designed to help you make the best use of the product.

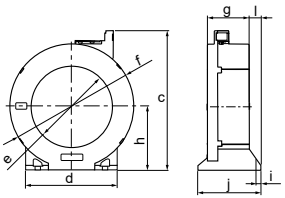
Dimension diagrams



CTBC20(P)/CTBC35(P)



CTBC60(P)

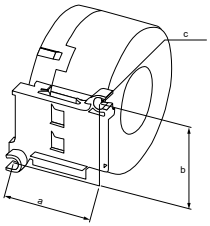


CTBC120/210(P)

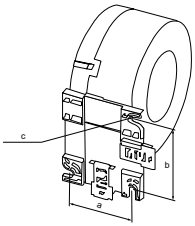
Dimensions (mm), tolerance: ±0.5 mm

CTBC	a	b	c	d	e	f	g	h	i	j	k	l
20(P)	75	45	83	40	ø 20	ø 60	46	37	6	60.5	–	–
35(P)	94	54	100	58.4	ø 35	ø 79.5	45	46	5	60.5	–	–
60(P)	126	70	137	84.5	ø 60	ø 111	55	57	16	78.5	23	1.5
120(P)	–	–	211	139	ø 120	ø 188	66	96	7.5	96	–	17
210(P)	–	–	324	277	ø 201	ø 302	68	153	7.5	113	–	26

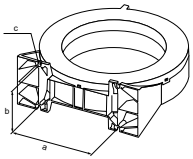
Mountings



CTBC20(P), CTBC35(P)



CTBC60(P)

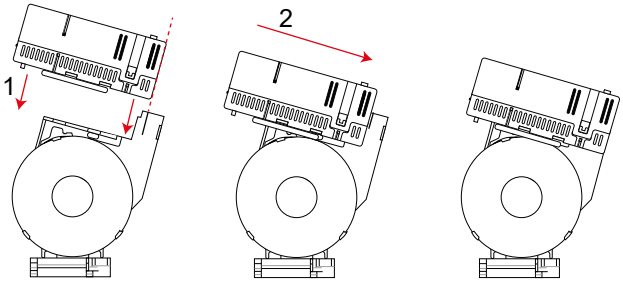


CTBC120(P) … CTBC210(P)

Type	a	b	c
CTBC20(P)	31.4	49	2 x ø 5.5
CTBC35(P)	49.8	49	2 x ø 5.5
CTBC60(P)	56	66	3 x ø 6.5
CTBC120(P)	103	81	4 x ø 6.5
CTBC210(P)	180	98	4 x ø 6.5

Assembly

Slide the electronic module onto the plug contacts of the measuring current transformer.



In combination with devices of the MRCDB300 series, an offset calibration is mandatory at the final installation site before the initial commissioning.
For measuring current transformer cores with an internal diameter ≥ 120 mm, an offset calibration should always be carried out before the first commissioning. Note that during the offset calibration the system is switched off and no current flows through the measuring current transformer.

	Action	LED
1	Install the measuring current transformer in the system	off
2	Assemble the electronic module and the measuring current transformer core	lights green (CTUB10x, RCMB300 series) lights red (MRCDB300 seires)
3	Disconnect the electronic module from the supply voltage	off
4a	Press and hold the "T" button	off
4b	Press and hold "T", supply the electronic module with supply voltage U_S	lights red permanently (not ready for operation)

	Action	LED
4c	Press and hold "T", supply the electronic module with supply voltage U_S	flashes red **slowly** (ready for calibration)
4d		flashes red **quickly** (calibration mode)
5	Start calibration: release "T"	
6	Calibration in progress	flashes red quickly
7	Calibration successful, values are accepted	lights green permanently
8	Calibration finished, normal operating status	

Installation instructions of measuring CT

Caution! Device damage due to high induction currents! *High currents can be induced into the conductor loop due to the AC/DC sensitive measuring technology used. Do not route protective conductors and low-resistance conductor loops through the measuring current transformer!*

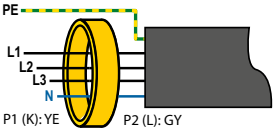
Caution! Device damage due to interference pulses! *The connecting cable (supply, analogue interface, …) must not be routed directly past the current transformer core.*

Caution! Risk of injury due to accessible live conductors! *The measuring current transformer must be connected to the corresponding evaluator before the first use and before commissioning of the monitored system.*

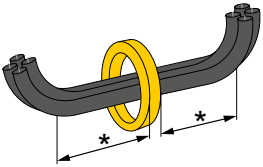
Application in railway vehicles / DIN EN 45545-2:2016: *If the horizontal or vertical distance to adjacent components which do not meet the requirements in table 2 of DIN EN 45545-2 is less than 20 mm or less than 200 mm respectively, they are to be regarded as grouped. Refer to DIN EN 45545-2 chapter 4.3 Grouping rules.*

Do not route any shielded cables through the measuring current transformer.

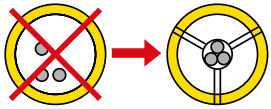
The measuring current transformer must be connected to the corresponding evaluator before the first use and before commissioning of the monitored system.



All current-carrying cables must be routed through the measuring current transformer. Never route an existing protective conductor through the measuring curre nt transformer.



The primary conductors may only be bent from the specified minimum distance. The minimum bending radius specified by the manufacturers for the conductors used must be observed.
Distance to 90° angle = 2 x outside diameter



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

Technical data

Measuring circuit

Internal diameter measuring CTs ..... see dimension diagrams
Rated current I .....
- CTBC20 when $I_{\Delta n}$ = 30 mA ..... 40 A
- CTBC20 when $I_{\Delta n}$ = 300 mA ..... 63 A
- CTBC20P ..... 80 A
- CTBC35 when $I_{\Delta n}$ = 30 mA ..... 80 A
- CTBC35 when $I_{\Delta n}$ = 300 mA ..... 125 A
- CTBC35P ..... 160 A
- CTBC60 when $I_{\Delta n}$ = 30 mA ..... 160 A
- CTBC60 when $I_{\Delta n}$ = 300 mA ..... 250 A
- CTBC60P ..... 320 A
- CTBC120 when $I_{\Delta n}$ = 100 mA ..... 330 A
- CTBC120P when $I_{\Delta n}$ = 100 mA ..... 630 A
- CTBC210 when $I_{\Delta n}$ = 300 mA ..... 630 A
- CTBC210P when $I_{\Delta n}$ = 100 mA ..... 630 A
- CTBC210P when $I_{\Delta n}$ = 300 mA ..... 1000 A

Measurement accuracy ..... ±1 %
Test winding ..... yes
Rated continuous thermal current [1] I_{cth} ..... 30 A
Rated short-time thermal current [1] I_{th} ..... 2.4 kA / 1 s
Rated dynamic current [1] I_{dyn} ..... 6 kA / 40 ms
..... 50 kA / 50 ms

[1] refers to the residual current

Environment/EMC

EMC ..... IEC 62020: 2005-11
Operating temperature ..... -25…70 °C

Classification of climatic conditions acc. to IEC 60721

Stationary use (IEC 60721-3-3) 3K22
Transport (IEC 60721-3-2) 2K11
Long-term storage (IEC 60721-3-1) 1K22

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

The device may only be connected directly to electronic modules of the CTUB100, RCMB300 and MRCDB300 series.

Mounting CTBC…

Screw type
CTBC20…60(P) ..... DIN EN ISO 7045 - M5x
CTCB120…210(P) ..... DIN EN ISO 7045 - M6
Washer type
CTBC20…60(P) ..... DIN EN ISO 7089/7090 - 5
CTCB120…210(P) ..... DIN EN ISO 7089/7090 - 6
Tightening torque
CTBC20…35 (P) ..... 0.6 Nm
CTCB60…210(P) ..... 1 Nm

Other

Operating mode ..... continuous operation
Mounting ..... any position
Degree of protection, built-in components (DIN EN 60529) IP40
Degree of protection, terminals (DIN EN 60529) IP20
Flammability class UL94 V-0
Software D591

Weight

CTBC20 ..... ≤ 160 g
CTBC20P ..... ≤ 220 g
CTBC35 ..... ≤ 240 g
CTBC35P ..... ≤ 320 g
CTBC60 ..... ≤ 460 g
CTBC60P ..... ≤ 620 g
CTBC120 ..... ≤ 1390 g
CTBC120P ..... ≤ 1750 g
CTBC210 ..... ≤ 4220 g
CTBC210P ..... ≤ 4870 g

Spare parts

Measuring current transformer cores

ø CT´s	Type	Art. No.	Manual No.
20 mm	CTBC20	B98120001	D00336
	CTBC20P	B98120002	
35 mm	CTBC35	B98120003	
	CTBC35P	B98120004	
60 mm	CTBC60	B98120005	
	CTBC60P	B98120006	
120 mm	CTBC120	B98120007	
	CTBC120P	B98120020	
210 mm	CTBC210	B98120008	
	CTBC210P	B98120021	

Standards

The variants B98120001, B98120002, B98120003, B98120004, B98120005 and B98120006 of the CTBC series comply with the requirements of the standard DIN EN 45545-2.

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