

CTBC17 series

AC/DC sensitive measuring current transformers





Measuring current transformer CTBC17

Device features

- Suitable for AC/DC sensitive residual current measurement according to IEC 62752 and IEC 60755
- Suitable for DC fault current monitoring to protect type A RCDs in conjunction with the listed evaluators
- Shield to prevent interferences caused by high load currents and external magnetic fields
- PCB mounting
- Connection cable for direct mounting available
- Can be used in applications according to
 - IEC 62020
 - IEC 62752
 - IEC 61851-1
 - IEC 62955
 - UL2231

Approvals



(conformity for cable variant only)



UL File E173157

Product description

The AC/DC sensitive measuring current transformers can be used in all earthed and unearthed DC, AC, and 3(N)AC systems. The measuring current transformers feature an integrated magnetic field shielding to prevent interferences from external magnetic fields.

Variants are available both for vertical PCB mounting and for cable connection. The RCMB104 and RDC104 evaluators are available for the PCB variant.

The cable variant is connected to the evaluators (e.g. CC612, CC613, ICC1324) via a six-wire cable.

Applications

- AC/DC sensitive residual current measurement in power supply systems up to a rated voltage of 600 V and a rated current of 80 A, where DC fault currents can occur due to the existing converters.

Ordering information

Version	Sensor	Art. No.
PCB mounting	CTBC17P-03	B98080070
Cable variant (length 325 mm)	CTBC17P-03-K0325	B98080071
PCB mounting	CTBC17P-04	B98080074

Connector length (mm)	Cable incl. clip enclosure	Art. No.
1470 ±30	CTBC17 cabel1470	B98080542
600 ±25	CTBC17 cabel600	B98080543
325 ±25	CTBC17 cabel325	B98080541
180 ±25	CTBC17 cabel180	B98080540

Accessories

Description	Recommended mounting screws
Mounting screws M3	2 x Würth-WüPlast 2,5 x 8 mm

Suitable evaluators

CTBC17P-03

Description	Cable	PCB	Type
Charge controller	■	–	CC612
	■	–	CC613
	■	–	ICC1324
Residual current monitoring modules	■ ¹⁾	■	RCMB104-1
	■ ¹⁾	■	RCMB104-2
	■ ¹⁾	■	RDC104-4

¹⁾ Molex adapter connector required by customer

CTBC17P-04

Description	Cable	PCB	Type
Residual current monitoring modules	■ ¹⁾	■	RCMB104-3S
	■ ¹⁾	■	RDC104-5S

¹⁾ Molex adapter connector required by customer


Technical data
Insulation coordination according to IEC 60664-1

Definitions	
CT cable feed-through opening on primary side	(IC1)
Measuring circuit; CT on secondary side	(IC2)
Connection cable measuring circuit	(IC3)
Operating altitude	
Basic insulation	≤ 4000 m AMSL
Double insulation	≤ 2000 m AMSL
Rated voltage	600 V
Overvoltage category	III
Rated impulse voltage	
IC1/IC2	8 kV
IC3	4 kV
Rated insulation voltage	
IC1/IC2	600 V
IC3	300 V
Pollution degree	2
Safe separation (double insulation) between	
IC1/IC2	OVC III/600 V
Insulation coordination according to IEC 62955	
IC1/IC2	8 mm/400 V

Measuring current transformer circuit

Diameter cable feed-through opening	17 mm
Rated load current	80 A
Rated primary residual current	1000 mA
Rated DC residual operating current $I_{\Delta dc}$ acc. to IEC 62955	6 mA
Rated continuous thermal current I_{cth}	80 A
Rated short-time thermal current I_{tth}	2400 A
Rated dynamic current I_{dyn}	6000 A

Environment

Operating temperature with cable	-30...+80 °C
Operating temperature sensor	-35...+85 °C
Temperature in the cable feed-through opening	max. 100 °C

Environment (UL applications)

Operating temperature with cable	-30...+75 °C
Operating temperature sensor	-35...+85 °C
Temperature in the cable feed-through opening	max. 100 °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)	3M12
Transport (IEC 60721-3-2)	2M4
Long-term storage (IEC 60721-3-1)	1M12

PCB mounting (CTBC17P-03, CTBC17P-04)

Fastening	solderable fixing pins
Pin length from top edge of PCB	3.9 ± 0.3 mm
Connection windings	solderable contact pins
Pin length from top edge of PCB	min. 3 mm
Enclosure retaining pin pull-out forces	50N/PIN
Soldering profile	260 °C for 10 s
Recommended PCB thickness	1.6...2.4 mm

Connection

Tightening torque mounting screw	0.5 Nm
Drilling diameter	3 mm
Connection cable with plug connector	6 poles
Cable length	see ordering information

Suitable PCB connector

Molex Micro Fit 3.0 Header	Art No. 43045-0607
Connection cable	UL Style 2464
External diameter of the cable (Da)	typ. 5.4 mm

Bending radius of the connection cable

Once	8 x Da
Several times	15 x Da

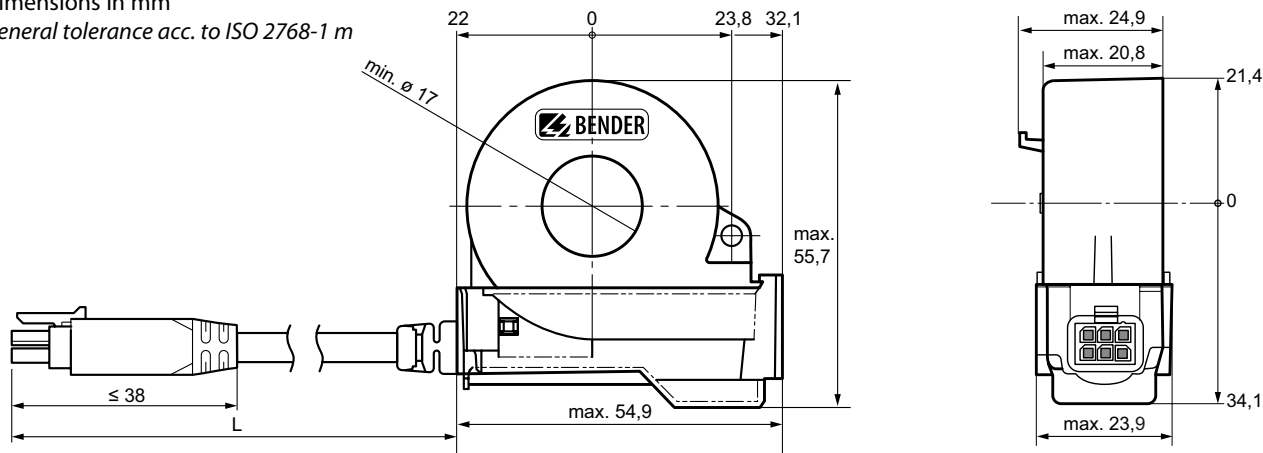
Other

Degree of protection (DIN EN 60529)	IP40
Degree of protection, connection (DIN EN 60529)	IP30
Fastening cable connection variant	cable ties
Enclosure sensor	black
Flammability class according to	UL94V-0
Weight	
CTBC17 cable1470	< 75 g
CTBC17 cable600	< 40 g
CTBC17 cable325	< 30 g
CTBC17 cable180	< 25 g
CTBC17P-03	< 40 g
CTBC17P-03-K0325	< 70 g
CTBC17P-04	< 40 g

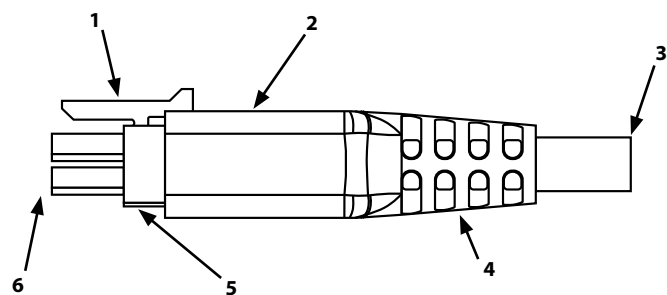
Dimension diagram – Cable variant

Dimensions in mm

General tolerance acc. to ISO 2768-1 m



Connection cable plug



No	Description
1	Latch mechanism
2	Plug enclosure overmoulded
3	Cable
4	Kink protection/strain relief
5	Plug enclosure
6	Contact area

Pin assignment plug application side

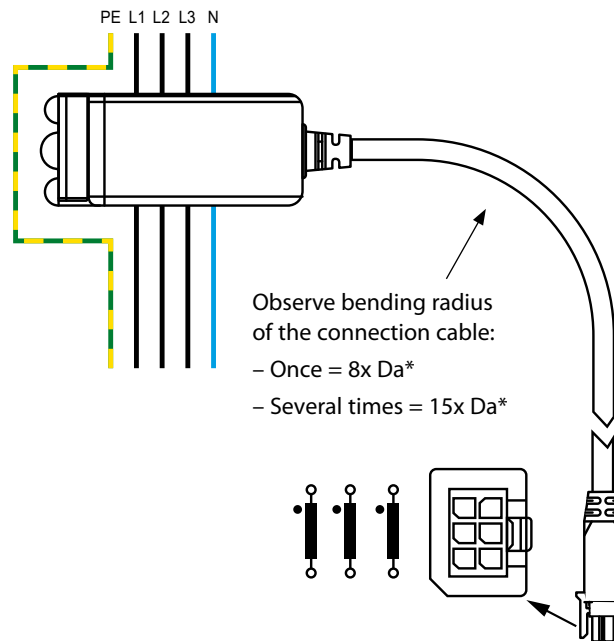
CTBC17P-03

	Pin no	Pin name	Description
	1, 6	1S1, 1S2	Measurement winding
	3, 4	2S1, 2S2	Measurement winding
	5, 5	3S1, 3S2	Test winding

CTBC17P-04

	Pin no	Pin name	Description
	2, 5	–	n. c.
	3, 1	1S1, 1S2	Measurement winding
	4, 6	2S1, 2S2	Test winding

Wiring diagram

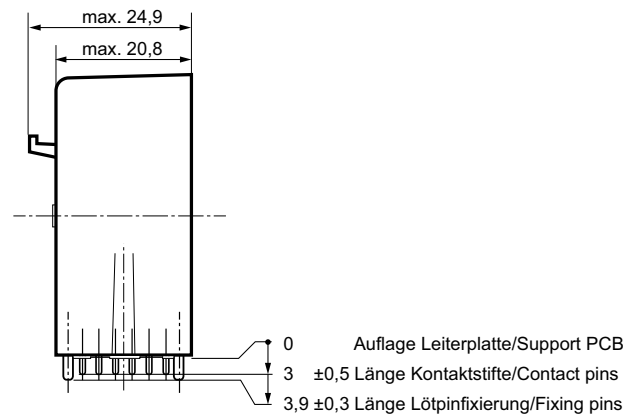
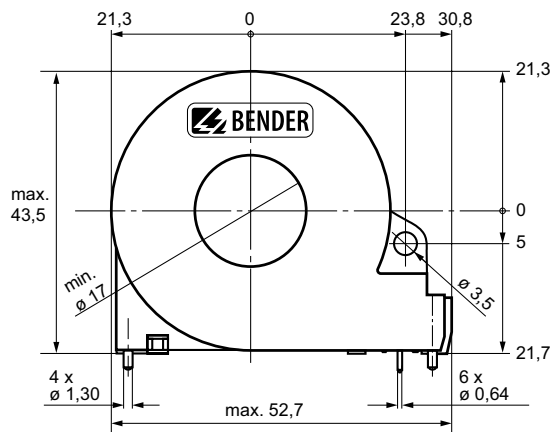


* Da = external diameter

Dimension diagram – PCB variant

Dimensions in mm

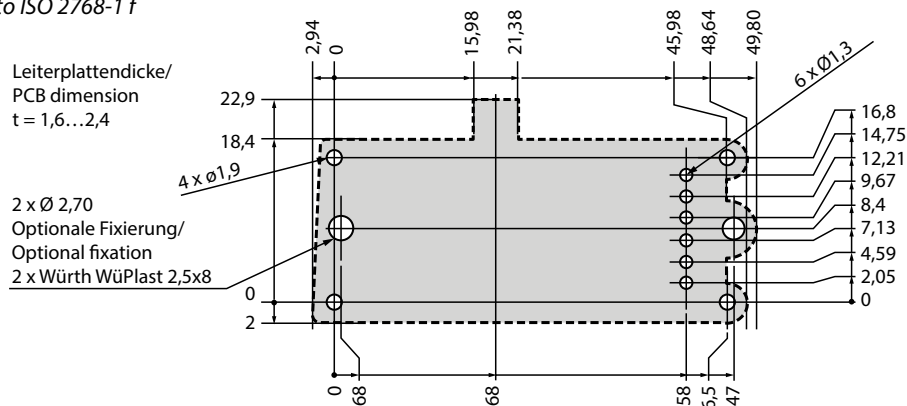
General tolerance acc. to ISO 2768-1 m



Drilling diagram PCB mounting

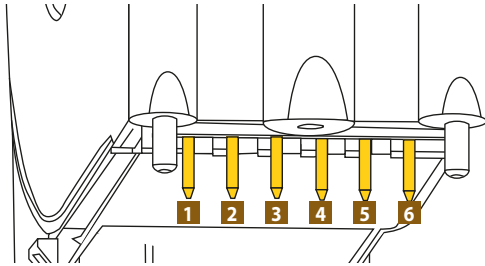
Dimensions in mm

General tolerance acc. to ISO 2768-1 f



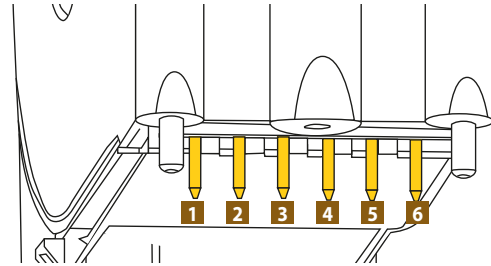
Pin assignment sensor pin side

CTBC17P-03



Pin no	Pin name	Description
4, 6	1S1, 1S2	Measurement winding
3, 5	2S1, 2S2	Measurement winding
1, 2	3S1, 3S2	Test winding

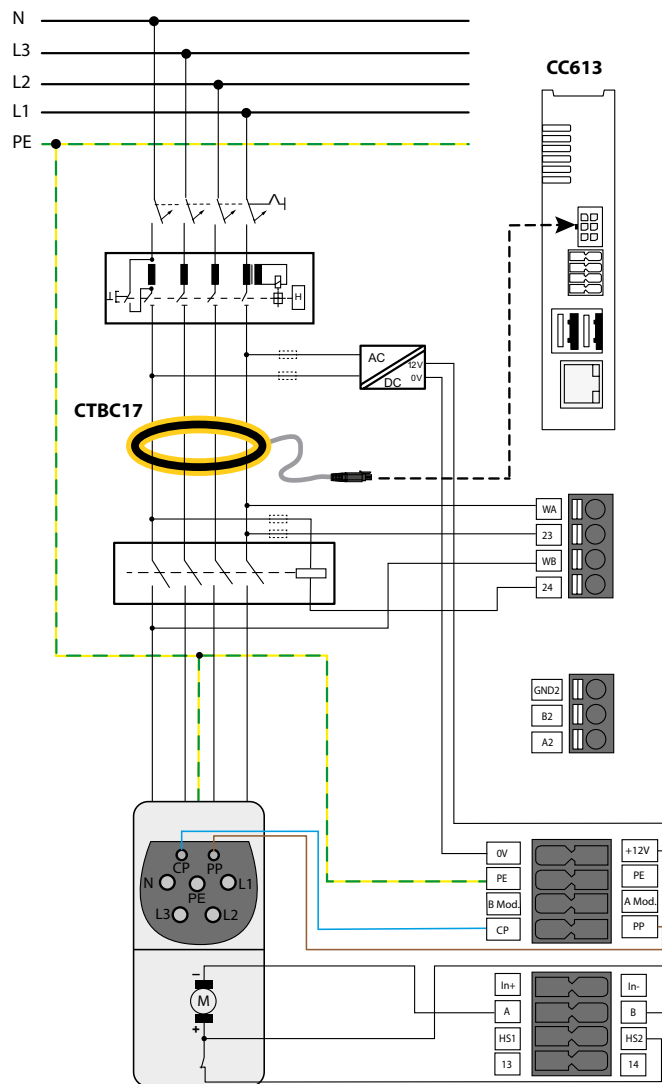
CTBC17P-04



Pin no	Pin name	Description
2, 5	–	n. c.
3, 1	1S1, 1S2	Measurement winding
4, 6	2S1, 2S2	Test winding

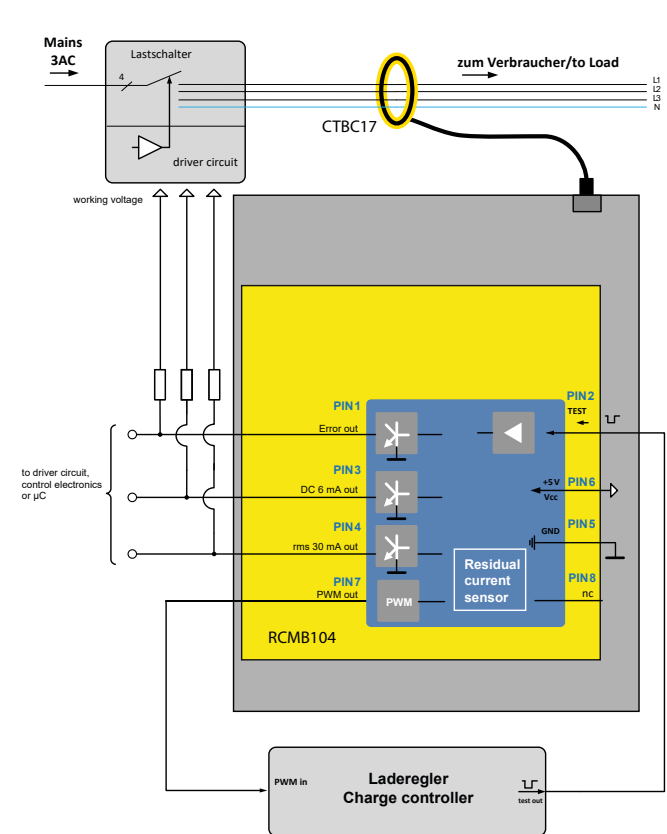
Connection example

Cable variant – CTBC17 with CC613 charge controller



Connection example

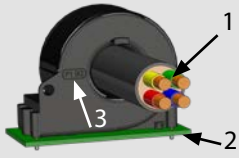
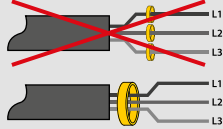
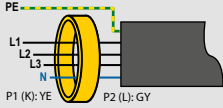
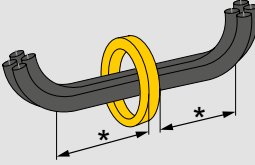
PCB variant – CTBC17 with RCMB104 evaluator



Installation instructions measuring CTs

The measuring current transformer must be connected to the evaluator before commissioning the system.

Output connections shall be powered by Class 2 or Limited Voltage / Limited Current circuits.!

1	Primary conductor	
2	PCB application	
3	Feed-through direction (any)	
<p>All current-carrying cables must be routed through the measuring current transformer. Do not route any shielded cables through the measuring current transformer!</p>		
<p>Never route an existing protective conductor through the measuring current transformer.</p>		
<p>The primary conductors may only be bent from the specified minimum distance. The minimum bending radius specified by the manufacturers for the cables used must be observed. * Distance to 90° angle = 2 x external diameter of the measuring CT</p>		



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