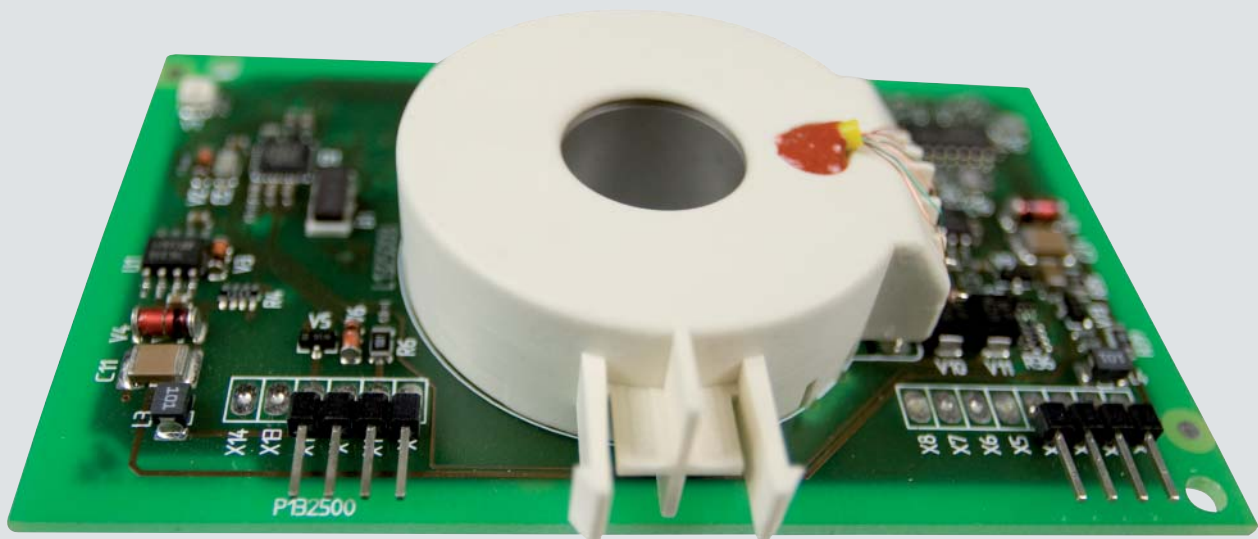


AC / DC sensitive Residual current monitoring module RCMB100





RCMB100

Device features

- AC / DC sensitive residual current monitoring module
- r.m.s. value measurement (AC+DC)
- Frequency range 0...500 Hz
- CT connection monitoring
- completely shielded residual current transformer
- mechanical locking on the baseplate
- RoHS-compliant

Product description

The AC / DC sensitive residual current monitoring module is suitable for fault current monitoring in transformerless photovoltaic inverters where direct and / 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 an internal measuring current transformer. The r.m.s. value is calculated by summing up the DC components included in the residual current and the AC components that are below the cut-off frequency. A signal in proportion to the residual current is available at the module output (X1). In addition, values outside the measuring range are signalled by a switching output (X12).

The control input (X10) will also be queried. Depending on the HIGH / LOW sequence, a reset of the RCMB100 will be activated with / without subsequent calibration.

Ordering information

Type	Measuring range	Frequency range	Art. No.
RCMB100	0...100 mA	0...500 Hz	B 9404 2097

Technical data
Voltage supply

$U_S + (X11)$	12 V (± 1 V)
$U_S - (X2)$	-12 V (± 1 V)

Alternative:

$U_S + (X11)$	15 V (± 1 V)
$U_S - (X2)$	-15 V (± 1 V)
Power consumption	≤ 1 W

Measuring circuit

Operating characteristic acc. to IEC 60755	Type B
Frequency range	0...500 Hz
Measuring range	0...100 mA
Resolution	< 2 mA
Ripple max.	< 15 mV (effective)
Max. nominal current	50 A / 45...65 Hz

Inputs

Control input X10:	
High level	4.5...5.5 V
Low level	0...0.5 V

Outputs

Output voltage range	DC 0.15 V...4.85 V
Sensitivity analogue output	1 V/20 mA
Tolerance at 3...10 mA	0...-20% / ± 1 mA
Tolerance at 10...100 mA	0...-20%
Tolerance at 0.15 V	+50 mV / - 0 mV
Tolerance at 4.85 V	-150 mV / + 50 mV
Output resistance at the measurement output X1	1 k Ω (short-circuit proof)
Switching behaviour switching output X12 (Open Collector)	
Low:	values within the permissible measuring range
High:	values outside the permissible measuring range
Max. switching voltage X12	+ 24 V
Max. switching current X12	DC 10 mA

Test winding

Output voltage at X1 with a test current of 22.4 mA	1.12...1.4 V
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Specified time

Changes in residual current $I_{\Delta} \geq 30$ mA (output X1)	< 150 ms
Changes in residual current $I_{\Delta} \geq 60$ mA (output X1)	< 100 ms
Residual current $I_{\Delta} \geq 100$ mA (output X12)	< 130 ms
Residual current $I_{\Delta} \geq 150$ mA (output X12)	< 25 ms

Environmental conditions

Without solar radiation, precipitation, water, icing. Condensation possible temporarily:

Classification of climatic conditions acc. to IEC 60721:

Stationary use (IEC 60721-3-3)	3K5
Transport (IEC 60721-3-2)	2K3
Long-time storage (IEC 60721-3-1)	1K4

Classification of mechanical conditions acc. to IEC 60721:

Stationary use (IEC 60721-3-3)	3M6
Transport (IEC 60721-3-2)	2M2
Long-time storage (IEC 60721-3-1)	1M3

Deviation from the classification of climatic conditions:

Ambient temperature, during operation	-25 °C...+ 80 °C
Ambient temperature, during transport	-40 °C...+ 80 °C
Ambient temperature, during long-time storage	-25 °C...+ 80 °C
Relative humidity	10...100 %
Air pressure	70...106 kPa

Connection

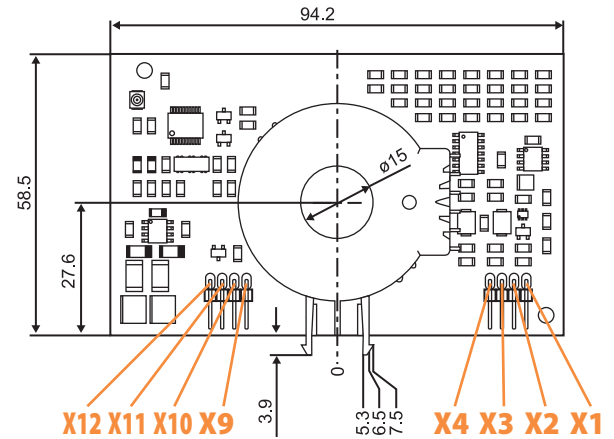
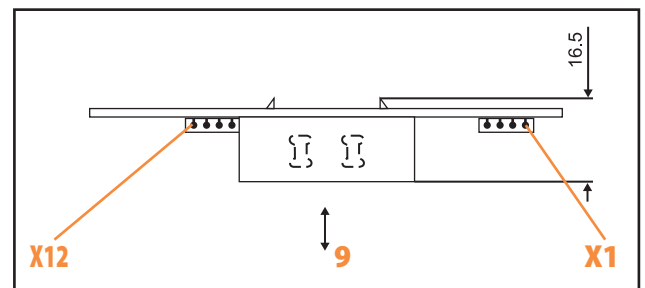
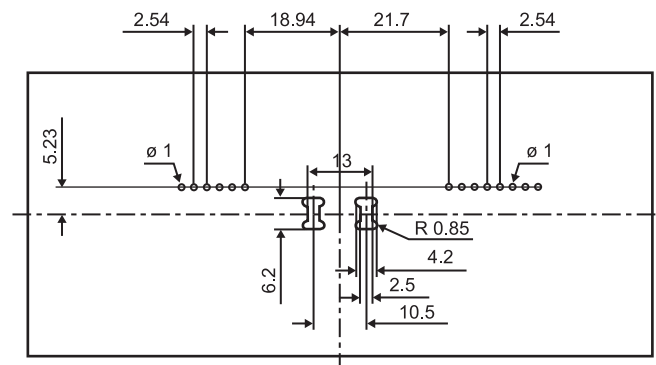
Plug-in connectors for PCBs, single-row	0.65 mm x 0.65 mm
Modular dimensions	2.54 mm

Other

Operating mode	continuous operation
Position of normal use	any
Software version	D356 V1
Operating manual	TGH1456
Weight	≤ 65 g

Dimension diagram

Dimensions in mm

Bender p.c.b. RCMB100 of 1.5 mm thickness

Bender p.c.b. on a base plate

Base plate of 1.7 mm thickness, tolerance: + 0.1 mm / - 0 mm


- X1 - M Analogue voltage output
- X2 - U2 - U_S Voltage supply - 12 V / - 15 V via fuse 100 mA (recommended)
- X3 - GND Ground
- X4 - not connected
- X9 - GND Ground
- X10 - Control input 0...5 V
- X11 - U1 + U_S voltage supply + 12 V / + 15 V via fuse 100 mA (recommended)
- X12 - Switching output / alarm output (transistor, open collector)
- 9 - Working space to unlatch the p.c.b.



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