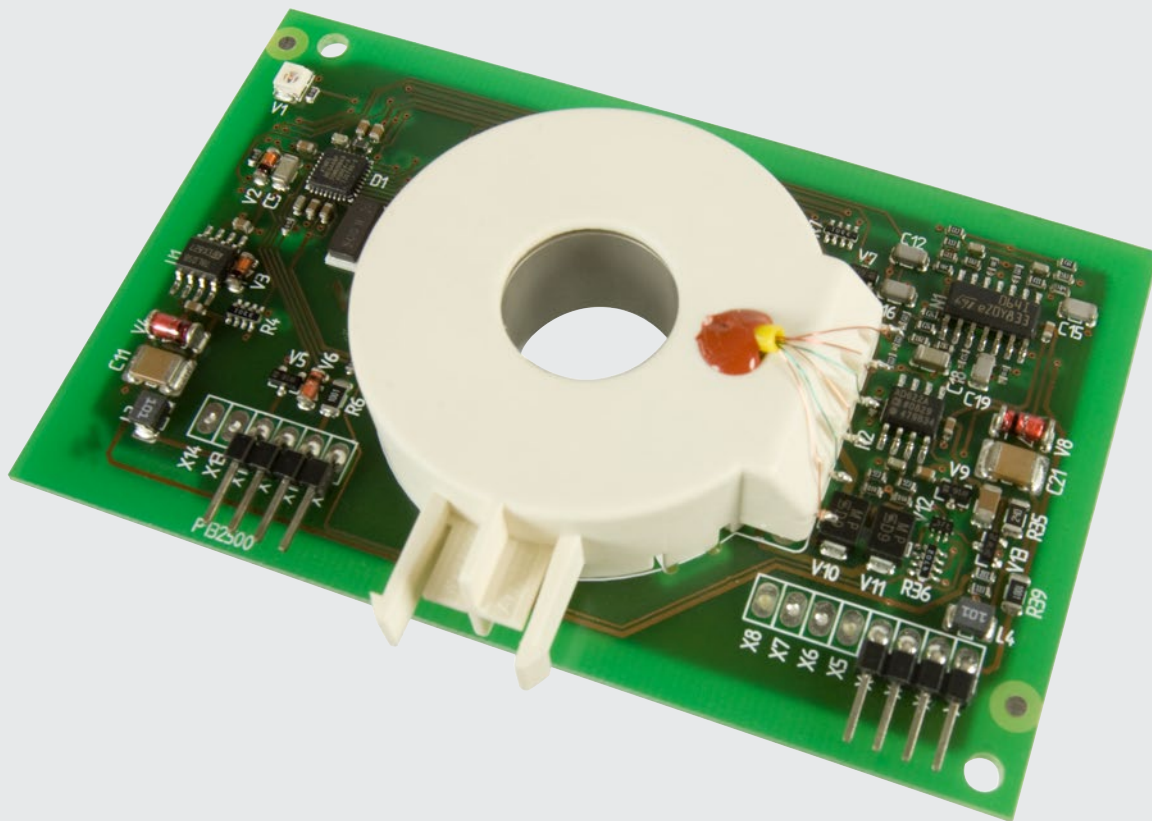


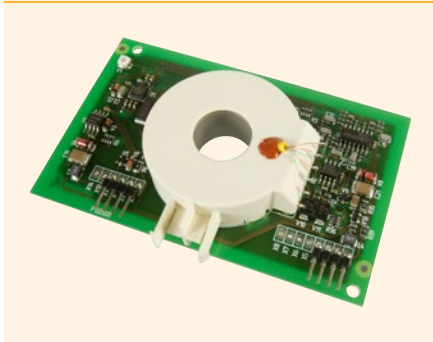
AC/DC sensitive Residual current monitoring module RCMA278P-S

for installation into photovoltaic converters



RCMA278P-S

AC/DC sensitive residual current monitoring module



RCMA278P-S

Device features

- AC/DC sensitive residual current monitoring module Type B
- r.m.s. value measurement (AC+DC)
- Frequency range 0...500 Hz
- CT connection monitoring

Approvals and certifications



Product description

The AC/DC sensitive residual current monitoring module RCMA278P-S 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 RCMA278P-S will be activated with/without subsequent calibration.

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 Hz...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...4.85 V
Sensitivity analogue output	1 V/20 mA
Tolerance 3...10 mA	0...-20% ± 1 mA
Tolerance 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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Time response

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

Environment

Environmental conditions

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

Classification of mechanical conditions 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 IEC 60721	
Stationary use (IEC 60721-3-3)	3M6
Transport (IEC 60721-3-2)	2M2
Long-time storage (IEC 60721-3-1)	1M3
Ambient temperature, during operation/Transport	-25...+80 °C/-40...+80 °C
Rel. humidity	10...100 %
Ambient temperature, during long-time storage	25...+80 °C
Air pressure	70...106 kPa

Connection

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

Other

Operating mode	continuous operation
Position of normal use	any
Operating manual	TGH1449
Weight	≤ 65 g

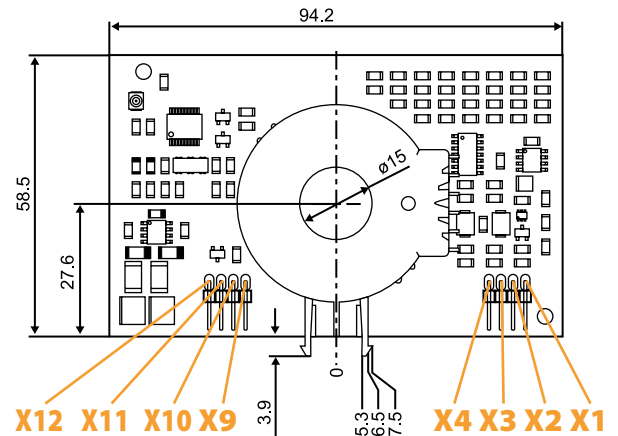
Ordering information

Measuring range	Frequency range	Type	Art. No.
0...100 mA	0...500 Hz	RCMA278P-S	B 9404 2095

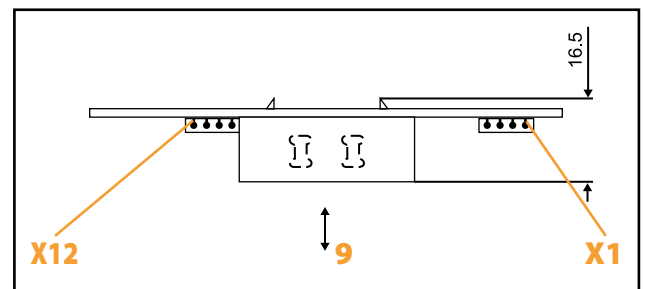
Dimension diagram

Dimensions in mm

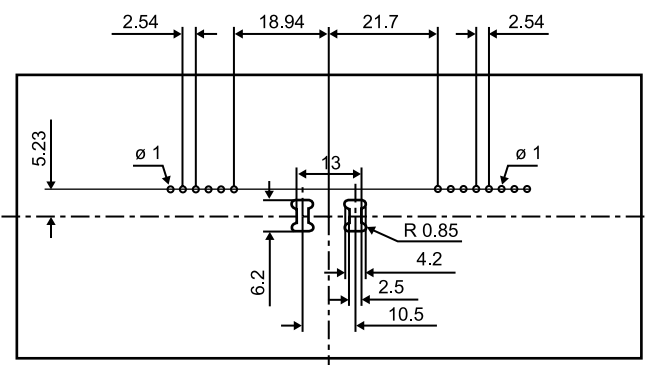
Bender p.c.b. RCMA278P-S of 1.5 mm thickness



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
- 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
- X12 - Switching output/alarm output (transistor, open collector)
- 9 - Working space to unlatch the p.c.b.



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