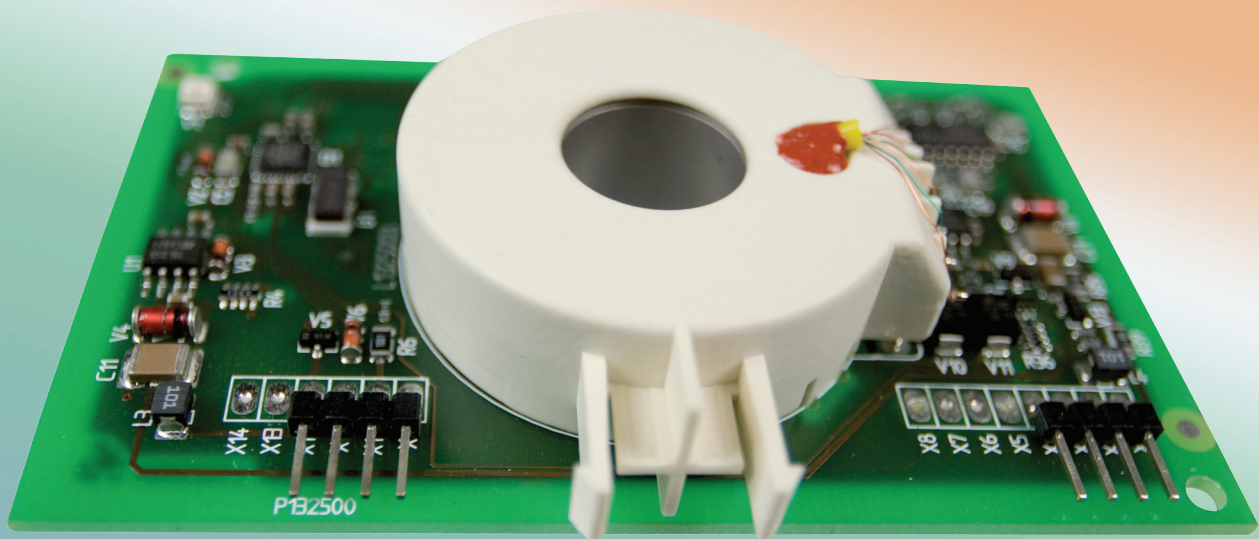


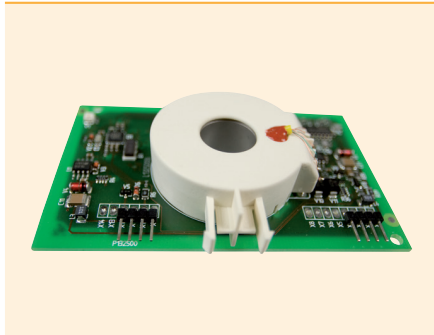
RCMA278P-S

AC/DC Ground Fault Monitoring Module
For Integration Into PV Inverters < 10 kW



RCMA278P-S

**AC/DC Ground Fault Monitoring Module
For Integration Into PV Inverters < 10 kW**



RCMA278P-S

Description

The RCMA278P-S AC/DC ground fault module is designed for monitoring ground faults while integrated into transformerless inverters.

Function

Ground fault monitoring is carried out via the built-in current transformer. The RMS value is calculated by summing the DC components included in the leakage current, as well as the AC components that are below the cut-off frequency. A signal in proportion to the measured fault current is available at the module output X1. In addition, values outside the measuring range are signaled by a switching output X12.

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

Features

- Detects both AC and DC ground fault current
- Designed for integration into solar inverters
- RMS measurement (AC + DC)
- Measurement range 0 - 100 mA
- Frequency range 0 - 500 Hz
- Small, PCB-style form factor
- Analog voltage output
- CT connection monitoring
- Built-in current transformer with test winding and screening for electrical interference reduction
- RoHS-compliant

Ordering information

Type	Measuring Range	Frequency Range	Ordering No.
RCMA278P-S	0 - 100 mA	0 - 500 Hz	B 9404 2121

Approvals



Technical data

Voltage supply

US + (X11)	12 V (± 1 V)
Us - (X2)	-12 V (± 1 V)

Alternative:

Us + (X11)	15 V (± 1 V)
Us - (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 analog 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 kΩ (short-circuit proof)
Switching behavior 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 ground fault current $I_{\Delta} \geq 30$ mA (output X1)	< 150 ms
Changes in ground fault current $I_{\Delta} \geq 60$ mA (output X1)	< 100 ms
Ground fault current $I_{\Delta} \geq 100$ mA (output X12)	< 130 ms
Ground fault 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

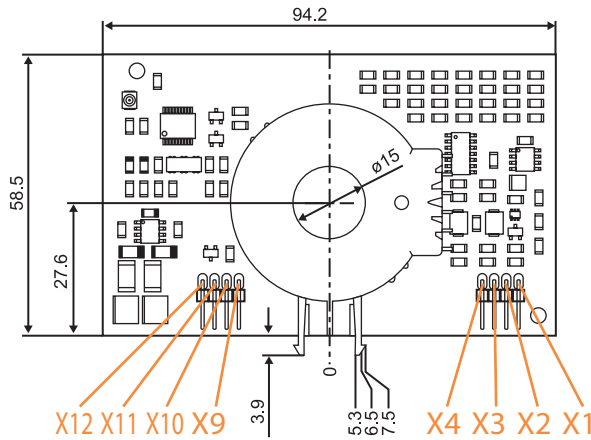
Other

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

Dimensions

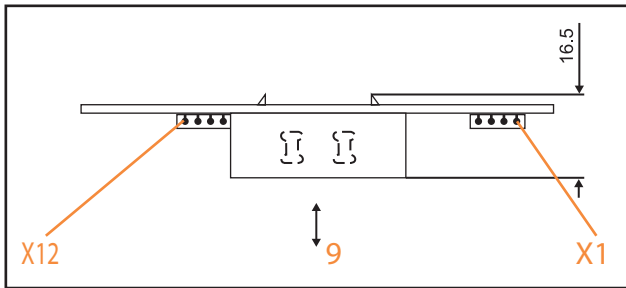
Dimensions in mm

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

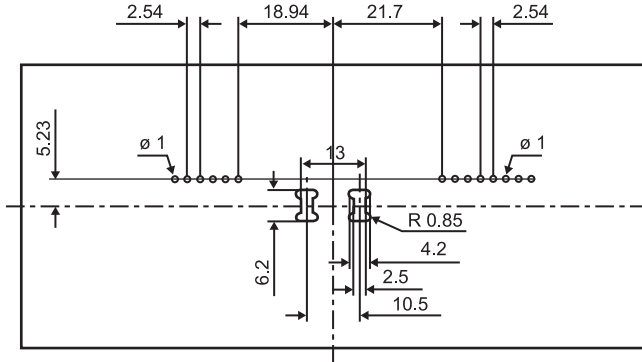


- X1 - M Analog voltage output
- X2 - U2 - U_S Voltage supply - 12 V / - 15 V via fuse 100 mA (recommended)
- X3 - GND Ground
- X4 - not connected
- X9 - GND Ground
- X10 - Control input 0...5 V
- X11 - U1 + U_S voltage supply + 12 V / + 15 V via fuse 100 mA (recommended)
- X12 - Switching output / alarm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

Bender p.c.b. on a base plate



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



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