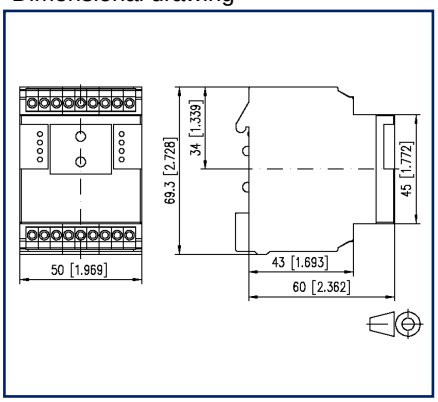
Data sheet
MR-SM4i Modbus RTU

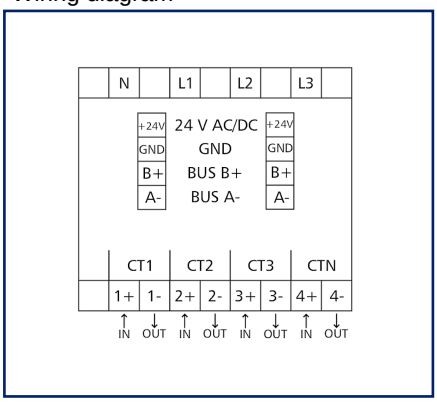
P/N 11084114
EAN 4251394695259
2026/08/24
Version: C

Illustrations

Dimensional drawing



Wiring diagram



See enlarged drawings at the end of document

Product specification

The MR-SM4i module is a Modbus RTU energy meter designed for use in building and industrial applications. Current, voltage, active power, reactive power, apparent power, and other relevant energy parameters can be measured for up to 3 phases plus neutral (L1, L2, L3, N) using current transformers with 1 A/5 A secondary current. The values can be retrieved via a Modbus master. The module address, baud rate, and parity are set via two rotary switches on the front side of the module or via software. Suitable for decentralized mounting on a TH35 mounting rail according to IEC 60715 in electrical distribution cabinets.

- Connection with screw type terminal blocks

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Technical Data

Meter characteristics	
Phase voltage (RMS)	L1-N, L2-N, L3-N
Peak voltage	L1-N, L2-N, L3-N
Line voltage (RMS)	L1-L2, L1-L3, L2-L3
Peak voltage across the outer conductor	L1-L2, L1-L3, L2-L3
Phase current (RMS)	L1, L2, L3
Neutral current (RMS) (measured)	yes
Power frequency	yes
Active power (W)	L1, L2, L3
Reactive power (VAR)	L1, L2, L3
Apparent power (VA)	L1, L2, L3
Power factor (Cos phi)	L1, L2, L3, total (L1+L2+L3)
Power factor Cos phi (min., max.)	L1, L2, L3
Crest factor	L1, L2, L3, total (L1+L2+L3)
Bidirectional energy (kWh) (positive/negative)	L1, L2, L3, total
Tan phi	L1, L2, L3, total
Distortion factor (THD)	L1, L2, L3, I1, I2, I3
Active power (min., max.)	L1, L2, L3, total
Internal temperature	yes
RS485 interface	
Protocol	Modbus RTU
Address range	00 - 99
Bus interface	RS485 two wire bus
Transmission parameters	
Transmission rate	min. 1200 Bit/s (Bd) max. 115200 Bit/s (Bd)
Transmission rate default setting	19200 Bit/s (Bd)
Parity	Odd Even (default setting) None
Stopbits	1
Topology	Bus / Route
Cabling	Equipotential bonding must be provided on site. The bus must be terminated on site with a 120-ohm resistor.

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Supply	
Operating voltage	24 V AC/DC +/- 10 %
Power consumption	
Power consumption AC (max.)	50 mA
Power consumption DC (max.)	30 mA
Duty cycle relative	100 %
Measurement inputs	
Current measurement (analog)	1+, 1-, 2+, 2-, 3+, 3-, 4+, 4- (converter with current output)
Secondary side of the converter	1 A/5 A, AC
Reference voltage In	5 A
Limit current Imax	6 A
Actual inrush current Ist	10 mA
Voltage measurement (analog)	L1, L2, L3 (direct measurement)
Voltage range (measurement inputs)	184 V - 265 V AC
Power frequency	50 ± 5 % Hz
Measurement accuracy	corresponds to Class B
Isolation coordination	
Surge category	III
Degree of contamination	2
Rated surge voltage	4 kV
Operating altitude	<= 2000 m above sea level
Type of insulation	reinforced insulation
Housing	
Dimensions	
Dimension (W x H x D)	50 mm x 69.3 mm x 60 mm
Dimension (W x H x D)	1.969 in. x 2.728 in. x 2.362 in.
Weight	100 g
Mounting style	Standard rail TH35
Mounting position	any
Apposition	The maximum quantity of Modbus modules connected side-by-side is limited to 15 or to a maximum power consumption of 2 Amps (AC or DC) per connection to the power supply. For any similar block of additional modules a separate connection to the power supply is necessary, without distance
Connection type	Screw type terminal blocks

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Housing	
Indicator	green and red LED
Terminal blocks	
Supply and bus	
Terminal block	4-pole
Solid wire (AWG)	max. 1.5 mm² / max. 16 AWG
Stranded wire (AWG)	max. 1 mm² / max. 18 AWG
Wire diameter	min. 0.3 mm max. 1.4 mm
Housing connection	
Wire cross section solid	0.34 mm² - 2.5 mm² / AWG 22-12
Wire cross section multi	0.25 mm² - 2.5 mm² / AWG 22-12
Wire cross section with wire ferrule	0.25 mm² - 2.5 mm² / AWG 22-12
Screw torque (max.)	0.5 Nm
Stripping length (min.)	8 mm
Protection circuit	Polarity reversal protection for DC operating voltage Protection against interchanging power supply and bus
Material	
Material - Housing	Polyamid 6.6 V0
Color	gray
Material - Terminal block	Polyamid 6.6 V0
Material - Covers	Polycarbonat
Protection category according to IEC 60529	
Protection category - housing (acc. to IEC 60529)	IP40
Protection category - terminal blocks (acc. to IEC 60529)	IP20
Protection category - device (acc. to IEC 60529)	IP20

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Climatic Data	
Operating	
Temperature - Operating °C	-5 °C - 55 °C
Temperature - Operating °F	23 °F - 131 °F
Relative humidity	max. 85 % non-condensing
Storage	
Temperature - Storage °C	-20 °C - 70 °C
Temperature - Storage °F	-4 °F - 158 °F
Classifications	
ETIM 9.0	EC000794
ETIM 10.0	EC000794
Standards	
Device safety	EN 61010-1, EN 61010-1:2010, EN 61010-1:2010/A1:2019/AC:2019-04, EN 61010-1:2010/A1:2019
Related harmonized standards	EN IEC 61010-2-030:2021, EN IEC 61010-2-030:2021/A11:202
EMC	EN 61326-1:2021
Harmonized standards	EN 61326-1:2013
Immunity to interference	Device for industrial environments
Cable length to the converter input	max. 30 m
Interference	Class B, Group 1
Environment	
RoHS	2011/65/EU
REACH	1907/2006
Software and additional documents	
Software and documentation	Further documentation is available for free download at www.metz-connect.com

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Application note

This product is a standard product of METZ CONNECT. METZ CONNECT is not aware of the specific intended use of the goods by the Customer or any customers of the Customer. The Customer guarantees that it has fully and sufficiently tested the use of the goods and any product modifications, product changes or product enhancements with regard to the specific intended use in accordance with the state of the art or in any other way.

Accessories

P/N	Designation
1101810509	Current transformer 100/1 A
1101810510	Current transformer 100/5 A

Accessories from

P/N	Designation
110561	Power supply NG4 24 V DC
11056170	Power supply NG4-F 24 V DC
11083001	MR-GW Modbus RTU / Modbus TCP Gateway
1108300170	MR-F-GW Modbus RTU / Modbus TCP Gateway
110930	$EWIO_2$-M M-Bus
110935	$EWIO_2$-M-BM M-Bus / BACnet / Modbus

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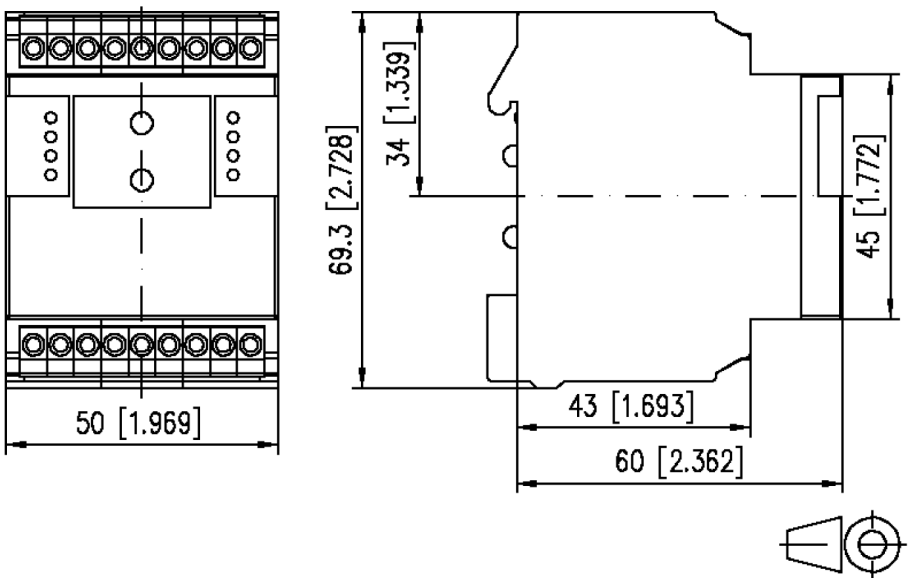
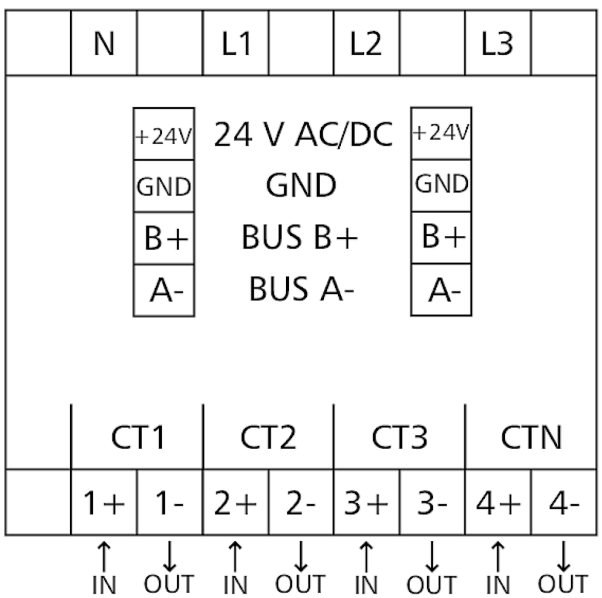


Wiring diagram



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Principle diagram