Vantor VM-R20M

Single Phase DIN Rail Energy Meter, 80A Direct, Relay, RS485

Vantor VM-M single-phase DIN rail energy meter with a built-in load relay, 80A direct connection and RS485 Modbus RTU. The relay can be opened and closed remotely over RS485 or from the front panel, and can trip automatically on programmable alarm limits, which makes it suited to tenant disconnect and load control on sub-metered sites.



Key specifications

- Built-in load relay: remote connect/disconnect over RS485, manual control from the front panel
- Alarm-triggered disconnect on voltage, current, active/reactive/apparent power or frequency, with programmable automatic reconnect time (0 = manual reconnect only)
- Class 1 / Class 0.5S active energy, Class 2 reactive (IEC 62053-21/22/23)
- 1P2W, 230V AC (85–276V), 45–65Hz
- 0.15–80A direct input, rated 5A, 30× overload for 0.01s
- Bi-directional: import/export active and reactive energy, four-quadrant
- Multifunction: V, A, W, var, VA, kWh, kvarh, PF, frequency
- Monthly and daily energy consumption statistics
- RS485 Modbus RTU / DL/T645-2007, 1200–38400bps, up to 64 meters per bus
- 1 configurable pulse output (open collector), pulse LED 1000 imp/kWh
- Backlit LCD with touch buttons, password protection
- 2 modules (36mm) TH35-7.5 DIN rail, IP51 display / IP30 body
- –25°C to +55°C operating, 4kV AC insulation, CAT III

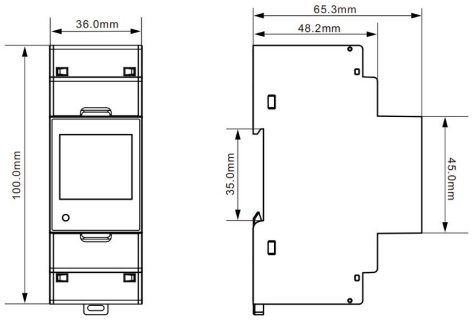
Ordering information

Order code	Description
VM-R20M	Single Phase DIN Rail Energy Meter, 80A Direct, Relay, RS485

Technical data

Accuracy	Voltage / current	Class 0.5 (IEC 61557-12)
	Active power	Class 1 / Class 0.5 (IEC 61557-12)
	Reactive power	Class 2 (IEC 61557-12)
	Apparent power	Class 1 (IEC 61557-12)
	Active energy	Class 1 / Class 0.5 S (IEC 62053-21/22, IEC 61557-12)
	Reactive energy	Class 2 (IEC 62053-23)
	Power factor	Class 1 (IEC 61557-12)
	Frequency	Class 0.2 (IEC 61557-12)
	Data update rate	1 s (100 ms optional)
Voltage input	Rated voltage	230 V AC, 1P2W
	Measuring range	85 - 276 V AC
	Frequency	45 - 65 Hz
	Overload	2 × rated voltage for 1 s
	Self-consumption	Voltage circuit < 2 W / 10 VA; current circuit < 1 VA
Current input	Connection	Direct, 80 A maximum
	Measuring range	0.15 - 80 A, rated 5 A
	Overload	30 × maximum current for 0.01 s
Load relay	Control	Remote connect / disconnect over RS485; manual control from the front panel
	Alarm objects	Voltage, current, active, reactive and apparent power, frequency (2 channels)
	Reconnect	Programmable automatic reconnect time; 0 = manual reconnect only
Pulse output	Type	Open-collector optocoupler, Class A (IEC 62053-31)
	Pulse constant	1000 (default), 100, 10 or 1 imp/kWh (kvarh)
	Pulse width	60, 100 (default) or 200 ms
	Assignable to	Import, export or total active energy; total reactive energy
	External supply	5 - 27 V DC
	Pulse LED	1000 imp/kWh
Communication	Interface	2-wire RS485, half duplex
	Protocol	Modbus RTU (default); DL/T645-2007 (optional)
	Baud rate	1200 - 38400 bps (9600 default)
	Parity / stop bits	None (default), even, odd / 1 (default) or 2
	Response time	< 100 ms
	Bus length / load	Max. 1000 m / max. 64 devices per bus
Mechanical	Mounting	TH35-7.5 DIN rail, 2 modules
	Dimensions (W × H × D)	36.0 × 100.0 × 65.3 mm
	Protection	LCD front IP51 (indoor); meter body IP30
	Housing	Flammability UL 94 V-0; utilisation category UC2
	Display	Backlit LCD with touch buttons, 1 s refresh, password protected
Environment	Operating temperature	-25 to +55 °C
	Storage temperature	-40 to +80 °C
	Relative humidity	< 90 %, non-condensing
	Pollution degree	2
	Altitude	< 2000 m
	Vibration	10 - 150 Hz (IEC 60068-2-6)
EMC	Immunity - ESD / radiated field	IEC 61000-4-2, Level 4 / IEC 61000-4-3, Level 3
	Immunity - fast transients / surge	IEC 61000-4-4, Level 4 / IEC 61000-4-5, Level 4
	Immunity - conducted / magnetic field	IEC 61000-4-6, Level 3 / IEC 61000-4-8
	Immunity - voltage dips	IEC 61000-4-11
	Emissions	EN 55011 Class B (radiated and conducted); IEC 61000-3-2 (harmonics)
Safety	Installation category	CAT III (IEC 61010-1)
	Over-voltage category	CAT III (IEC 61010-1)
	AC withstand voltage	4 kV AC for 1 minute
	Impulse withstand voltage	6 kV, 1.2/50 µs waveform
	Insulation	Double insulation (IEC 61010-1)

Dimensions



Dimensions in mm

Terminals and cabling

Terminal	Function
1 / 2	Neutral in / neutral out
3 / 4	Line in / line out (switched by the internal relay)
A, B, GND	RS485 Modbus RTU
+ / -	Pulse output
Cabling	Mains terminals 14 - 4 AWG, 4 N·m max.; communication and pulse 26 - 14 AWG, 0.4 N·m max.

Standards and compliance

Standard	Scope
IEC 62053-21 / -22	Static meters for active energy - accuracy classes 1 and 0.5 S
IEC 62053-23	Static meters for reactive energy - accuracy class 2
IEC 62053-31	Pulse output devices - Class A
IEC 61557-12	Performance measuring and monitoring devices (PMD) - measurement accuracy
IEC 61010-1	Safety requirements - CAT III, double insulation
IEC 61326-1	EMC requirements, industrial environment (IEC 61000-4-2/-3/-4/-5/-6/-8/-11)
EN 55011 / IEC 61000-3-2	Radiated and conducted emissions Class B; harmonic emissions
IEC 60068-2-6	Vibration, 10 - 150 Hz
UL 94	Housing flammability rating V-0

EMC tests are carried out to the industrial-product requirements of IEC 61326-1.
Installation must be carried out by a qualified electrician in line with SANS 10142-1. Isolate the supply before working on the meter, fit the protection shown, and never open-circuit the secondary of a live current transformer.