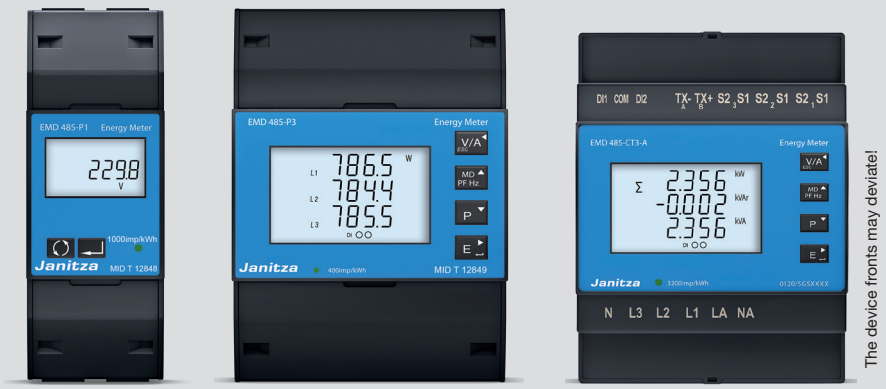


The device fronts may deviate!

Dok.-Nr. 2.100.146.1.c 03/2025

MID Energy Meter

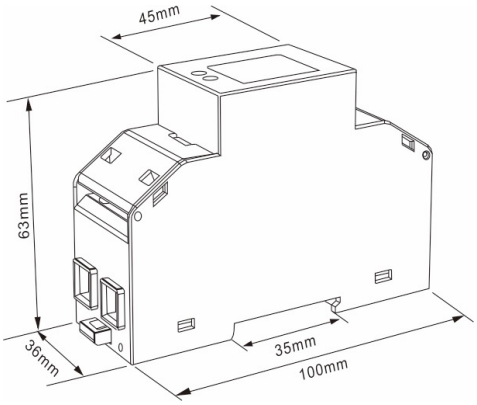
EMD 485 Series

Data Sheet

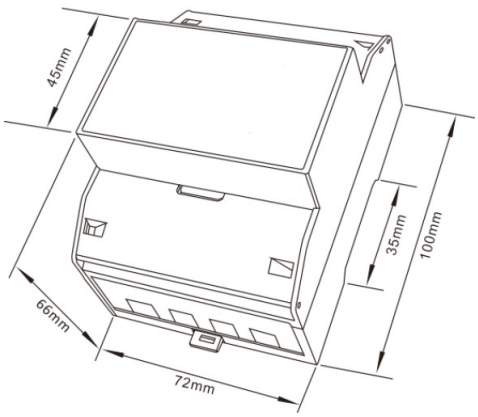
Janitza®

DEVICE VIEWS

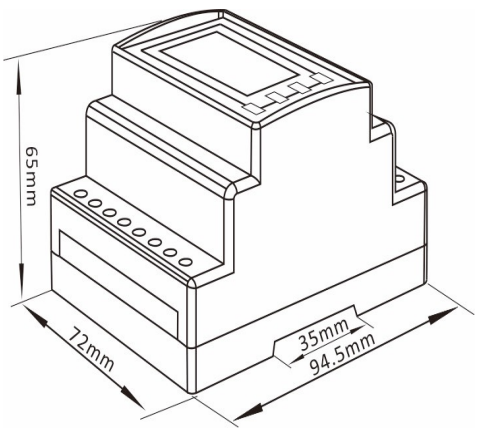
EMD 485-P1 **Direct measurement up to 100 A AC, single-phase**



EMD 485-P3 **Direct measurement up to 100 A AC, three-phase**



EMD 485-CT3-A **Flexibility with ../1A or ../5A current transformers, three-phase**



The figures serve as illustrations and are not true to scale. The terminal covers are not shown in the illustrations on the left.

TECHNICAL DATA

	EMD 485-P1	EMD 485-P3	EMD 485-CT3-A
General			
Certificates	Calibrated according to Measuring Instruments Directive (MID). Approved according to IEC, UL*, FCC, ANSI C12.20 Class 0.2.		
Measures and displays	• Voltages and THD%** of all phases, grid frequency • Current, current demand**, and current THD%** of all phases • Active, reactive, and apparent power • Maximum power demand and power factor • Bidirectional measurement of imported and exported active/reactive energy • Total active and reactive energy		
Net weight, approx.	182 g (0.40 lbs)	325 g (0.71 lbs)	246 g (0.54 lbs)
Total weight (incl. packaging), approx.	213 g (0.47 lbs)	395 g (0.87 lbs)	315 g (0.69 lbs)
Width of the device in horizontal pitches (1 HP = 18 mm)	2 HP	4 HP	4 HP
Power consumption, approx.	1 W	1 W	1 W
Fuse, external	100 A recommended	100 A recommended	1 A / 300 V AC fast
Warm-up time	5 s	5 s	1 min
Backlight service life	10 years (50% of the start brightness)		
Inputs/Outputs	2 digital inputs (counters), 1 optical pulse output LED for total kWh		
Material	self-extinguishing UI94 V-0		

* Only the UL models are UL-certified.
** Not available on EMD 485-P1.

Transportation and storage The following specifications apply for devices transported and stored in the original packaging.	
Free fall	1 m (39.37 in)
Shock	up to 30 kg of shock to the front, back and sides
Temperature	-40 °C (-40 °F) .. +70 °C (158 °F)
Relative air humidity	0 .. 90%, no condensation

Environmental conditions during operation			
Use	For weather-protected and stationary use. Protection class II according to IEC 60536 (VDE 0106, Part 1).		
Rated temperature range	-40 °C (-40 °F) .. +70 °C (158 °F)		
Relative air humidity	0 .. 90%, no condensation		
Operating elevation	0 .. 2000 m (6562 ft) above sea level		
Pollution degree	2	2	2
Mounting orientation	DIN rail 35 mm (DIN EN 60715), upright		
Ventilation	No forced ventilation required.		
Protection rating (EN 60529): Front panel / other areas	IP51 / IP20	IP51 / IP20	IP51 / IP20
Vibration	10 .. 50 Hz, IEC 60068-2-6, 2g		

Auxiliary supply			
Nominal range	No auxiliary supply required		AC 100 V .. 277 V (50/60 Hz) or DC 120 V .. 424 V
Terminal connection capacity	–	–	0.5 .. 2.5 mm² (AWG14)

Communication – RS485 port for Modbus RTU	
The following RS485 communication parameters can be configured from the setup menu:	
Baud rate	2400, 4800, 9600, 19200, 38400, 115200 bps
Parity	none (default)/odd/even
Stop bits	1 (default) or 2
RS485 network address	3-digit number, 001 .. 247
Modbus word order	The byte order is high byte/low byte (“big-endian”, not configurable).

TECHNICAL DATA

	EMD 485-P1	EMD 485-P3	EMD 485-CT3-A
Voltage measurement			
Nominal voltage	230 V AC	230 / 400 V AC	230 / 400 V AC
Measuring range L-N	100 .. 277 V AC	100 .. 277 V AC	100 .. 277 V AC
Measuring range L-L (3p3w)	–	172 .. 480 V AC	172 .. 480 V AC
Supported grid systems	1p2w	3p3w, 3p4w 1p2w, 1p3w	3p3w, 3p4w 1p2w, 1p3w
Measurement category (IEC 61010-1)	300 V CAT III	300 V CAT III	300 V CAT III
Settable voltage transformer ratio (prim./sec.)	–	–	1 .. 9999 / 100 .. 500
AC withstand voltage; Pulse withstand voltage	4 kV for 1 minute; 6 kV-1.2 uS waveform	4 kV for 1 minute; 6 kV-1.2 uS waveform	4 kV for 1 minute; 6 kV-1.2 uS waveform
Harmonics	–	1. .. 31.	1. .. 31.

Current measurement			
Current THD% for each phase	–	Yes	
Measuring range	0.15 .. 10 (100) A_{eff}	0.3 .. 10 (100) A_{eff}	0.05 .. 5 (6) A_{eff}
Maximum current	100 A	100 A	6 A
Nominal current	10 A	10 A	5 A
Minimum current	0.15 A	0.3 A	0.05 A
Starting current	0.04 A	0.04 A	–
Settable current transformer ratio (prim./sec.)	–	–	1 .. 9999 / 5 or 1
Nominal current of current transformer	–	–	5 A or 1 A
Crest factor (relative to maximum current)	10	10	1.2
Overload for 0.01 s	3000 A	3000 A	20 times the maximum current
Resolution	1 mA	1 mA	0.1 mA
Overvoltage category	III		
Rated surge voltage	4 kV		
Harmonics	–	1. .. 31.	1. .. 31.

Power factor, frequency, and maximum demand			
Frequency of fundamental oscillation	50 / 60 Hz (±10 %)		
Grid frequency measured from	L1	L1 or L3	L1 or L3
Instantaneous power: - Power - Reactive power - Apparent power	 0 .. 999999 W 0 .. 999999 VAr 0 .. 999999 VA	 0 .. 99999 W 0 .. 99999 VAr 0 .. 99999 VA	 0 .. 3600 MW 0 .. 3600 MVAr 0 .. 3600 MVA
Maximum demanded power since the last demand reset	Yes	Yes	Yes
Maximum neutral demand current since the last demand reset	–	Yes (3p4w only)	
Power factor range	-1.0 .. 1.0	-1.0 .. 1.0	
Maximum demand range	Same as power range	Same as power/current range	

TECHNICAL DATA

	EMD 485-P1	EMD 485-P3	EMD 485-CT3-A
Energy Measurements			
Imported/exported active energy	0 .. 9 999 999.9 kWh		
Imported/exported reactive energy	0 .. 9 999 999.9 kVArh		
Total active energy	0 .. 9 999 999.9 kWh		
Total reactive energy	0 .. 9 999 999.9 kVArh		

Accuracy			
Accuracy class	MID Class C	MID Class C	MID Class C
Voltage	0.5 % of the maximum range		
Current	0.5 % of the nominal current		
Frequency	0.2 % of the mid frequency		
Power factor	1 % of the unit (0.01)		
Active power (W)	±1 % of the maximum range		
Reactive power (VAr)	±1 % of the maximum range		
Apparent power (VA)	±1 % of the maximum range		
Active energy (Wh)	Class 0.5 - IEC 62053-21 Class C - EN 50470-3	Class 0.5 - IEC 62053-21 Class C - EN 50470-3	Class 0.5 - IEC 62053-21 Class C - EN 50470-3 Class 0.5S - IEC 62053-22
Reactive energy (VARh)	Class 2 IEC 62053-23		
Total harmonic distortion up to 31st harmonic	–	1 %	1 %
Response time to digital input (typical, to > 99 % of final reading, at 50 Hz)	100 ms	100 ms	1 s

Connecting capacity of the terminals Only connect one conductor per terminal point!		
Connectible conductors	Single core, multi-core, fine-stranded, wire ferrules	
Voltage/current measurement	4 .. 25 mm² (AWG4)	0.5 .. 2.5 mm² (AWG14)
Other terminals	0.5 .. 2.5 mm² (AWG14)	0.5 .. 2.5 mm² (AWG14)

Reference conditions of influencing quantities			
Influencing quantities are variables that affect measurement errors to a minor degree. Accuracy is verified under nominal value (within the specified tolerance) of these conditions.			
Ambient temperature	23 °C ±2 °C	23 °C ±1 °C	23 °C ±1 °C
Input frequency	50 or 60 Hz ±2 %	50 Hz (MID) 45 .. 65 Hz (non-MID)	50 or 60 Hz ±2 %
Input waveform	Sinusoidal (distortion factor < 0.005)		
Auxiliary supply voltage	–	–	Nominal ±1 %
Auxiliary supply frequency	–	–	Nominal ±1 %
Auxiliary supply waveform (if AC)	–	–	Sinusoidal (distortion factor < 0.05)
Magnetic field of external origin	Terrestrial flux		

Janitza electronics GmbH
Vor dem Polstück 6 | 35633 Lahnau
Germany

Tel. +49 6441 9642-0
info@janitza.com | www.janitza.com

Janitza®