APsystems



SEM1-WL-2

Multi-function single phase meter

- Multi-parameter measurements
- Accuracy Class 1 active energy
- Support Wi-Fi/Bluetooth dual-mode communication
- RS485 Modbus RTU
- Bi-directional measurement
- Easy connection solution
- Compact design

Introduction

SEM1 is a new generation din rail mounted energy meter, equipped with Wi-Fi and RS485 connectivity. With multi parameters measurement, SEM1 can be used for energy monitoring of various applications, such as solar PV system, smart building, industrial equipment, etc.

SEM1 measures characteristics of 1P2W network, including voltage, frequency, current, power and active and reactive energy, imported or exported, power factor etc. Energy is measured in terms of kWh and kVArh.

SEM1 is designed in compact size. To save installation and maintenance cost, all terminals of SEM1 adopt spring terminals or RJ terminals for easy connection.

The measurement mode of SEM1 is total mode. In total mode, import and export energy will be measured separately. Total energy equals to import energy plus export energy.

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Datasheet | SEM1 smart energy meter

Electrical Characteristics

Type of Measurement		RMS Including Harmonics
Measurement Accuracy	Power	± 1%
	Active Energy	± 1% IEC 62053-21 Class 1
	Reactive Energy	± 2%
	Frequency	± 0.2%
	Current	± 0.5% (4A to 120A) ± 1% (1A to 4A) ± 3% (0.06A to 1A)
	Voltage	± 0.5%
	Power Factor	± 0.1
Data Update Rate		Active Power:50mS(RS485), 500mS(Wi-Fi)
Input-Voltage	Un	230V
	Working Voltage Range	100 to 277 V ac L-N
	Frequency Range	50/60Hz

Mechanical Characteristics

Net Weight	≈68g (SEM1)
IP Degree of Protection (IEC 60529)	IP51 Front Display IP20 Whole Meter
Dimensions (DxHxW)	68.5*94.5*19mm
Mounting	DIN Rail 35mm
Material of Meter Case	Self-extinguishing UL 94 V-0
Mechanical Environment	M1

Environmental Characteristics

Operating Temperature	-40 °C to +70°C
Storage Temperature	-40 °C to +85°C
Humidity Rating	≤95% RH , non-condensing
Pollution Degree	2
Altitude	Up to 2000m
Vibration	10Hz to 50Hz, IEC 60068-2-6

Electromagnetic Compatibility

Electrostatic Discharge	IEC 61000-4-2
Immunity to Radiated Fields	IEC 61000-4-3
Immunity to Fast Transients	IEC 61000-4-4
Immunity to Impulse Waves	IEC 61000-4-5
Conducted Immunity	IEC 61000-4-6
Immunity to Magnetic Fields	IEC 61000-4-8
Immunity to Voltage Dips	IEC 61000-4-11
Radiated Emissions	EN55032 Class B
Conducted Emissions	EN55032 Class B

Safety

Measurement Category	Per IEC61010-1 CAT III
Current Inputs	Require External Current Transformer for Insulation
Over-voltage Category	CAT III
Protective Class	II

Communications

Interface 1	RS485 Port
Interface 1 Protocol	MODBUS RTU
Communication Address	1 to 247
Transmission Mode	Half Duplex
Data Type	Floating Point
Transmission Distance	1000m Maximum
Transmission Speed	2400/4800/9600(Default)/19200/38400/115200bps
Parity	NONE(Default)/ ODD / EVEN
Stop Bits	1 or 2
Response Time	<50 ms
Interface 2	Wi-Fi
RF Band	2.4 GHz to 2.5 GHz
Max. RF Power	<20 dBm
Wi-Fi Protocol	802.11 b/g/n
Wi-Fi Range	Up to 30m / 100ft indoors and 50m / 160ft outdoors (Depends on local conditions)
Interface 3	Bluetooth
Bluetooth Protocol	Bluetooth 4.2
Bluetooth Range	Up to 10m / 33ft indoors and 50m / 160ft outdoors (Depends on local conditions)

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