



# SEM1340

## Single phase Multi-function energy meter



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# Contents

|                                              |    |
|----------------------------------------------|----|
| BENEFITS AND MAIN FEATURES .....             | 1  |
| 1. METER SPECIFICATION .....                 | 2  |
| 2. INSTALLATION .....                        | 4  |
| 3. DIMENSIONS .....                          | 4  |
| 4. LED INDICATORS .....                      | 5  |
| 3. MAIN FUNCTION .....                       | 5  |
| 5.1 MEASURING FUNCTION .....                 | 5  |
| 5.2 ELECTRICITY PARAMETERS MEASUREMENT ..... | 6  |
| 5.3 WiFi COMMUNICATION .....                 | 6  |
| 5.4 RS485 COMMUNICATION .....                | 8  |
| 5.5 PULSE OUTPUT FUNCTION .....              | 8  |
| 6. WIRING DIAGRAMS .....                     | 9  |
| 7. REGISTER MAP .....                        | 10 |
| 7.1 INSTANTANEOUS VALUES .....               | 10 |
| 7.2 TOTAL ENERGY ACCUMULATOR .....           | 10 |
| 7.3 PRODUCTION DATA AND IDENTIFICATION ..... | 10 |
| 8. FAULT TREATMENT .....                     | 12 |
| 9. TECHNICAL SUPPORT .....                   | 12 |

# SEM1340

## Single phase 1 modular energy meter With WiFi module, RS485 interface 330mV CT ac input

- The product has passed CE certification
- Accuracy class B according to EN50470-3  
Accuracy class 1 according to IEC62053-21
- Bi-directional energy metering, with a width of 1 module (18mm)
- Wide-range power supply (120-275)V
- Voltage, current, active power, reactive power, power factor, frequency, import, export and total active energy, import & export reactive energy all can be read via interface
- The total energy can be set to 5 different working modes according to the usage place of the electricity meter
- RS485 communication with Modbus protocol
- Wireless WiFi communication, which supports 802.11b/g/n with a frequency range of 2.412GHz-2.484GHz
- Supports TCP Server, TCP Client, and UDP.  
In Server mode, it supports up to 8 simultaneous TCP communications; in Client mode, it can connect to 3 destination IPs
- WiFi supports mDNS protocol, enabling automatic discovery and resolution of on-site LAN devices through LAN multicast



18mm



WiFi Communication

Import/Export  
Energy Measuring

Multi-Measurements

## » 1. Meter specification

|                              |                                                         |
|------------------------------|---------------------------------------------------------|
| Voltage/current inputs       |                                                         |
| Nominal voltage(V)           | 230V AC                                                 |
| Voltage range                | (120-275)V                                              |
| Power consumption            | 0.5W 2VA                                                |
| Primary Current(A)           | 100A                                                    |
| Second input(mV)             | 330mV ( Primary current=100A)                           |
| <b>Modbus Communications</b> |                                                         |
| Protocol                     | MODBUS RTU                                              |
| Communication Address        | 1~255                                                   |
| Baud Rate                    | 1200bps-19200bps, 9600(default)                         |
| Parity                       | None, Even                                              |
| Stop Bits                    | 1                                                       |
| <b>Wifi comms</b>            |                                                         |
| Wifi standard                | 802.11 b/g                                              |
| Frequency Ranger             | 2.412GHz~2.484GHz                                       |
| Power consumption            | 802.11 b :+20db ; 802.11 g:+18db                        |
| <b>General</b>               |                                                         |
| Frequency (Hz)               | 50 or 60Hz                                              |
| Accuracy                     | B                                                       |
| <b>Mechanical</b>            |                                                         |
| Material                     | ABS+PC                                                  |
| Weight                       | 100g                                                    |
| <b>Environment</b>           |                                                         |
| Operating temperature        | -25°C ~ +55°C                                           |
| Storage temperature          | -40°C ~ +70°C                                           |
| Humidity                     | 75% yearly average, 95% on 30 days/year, non-condensing |
| Altitude                     | Up to 2000m                                             |

| Dimension   |      |
|-------------|------|
| Width (mm)  | 18   |
| Height (mm) | 99.5 |
| Depth (mm)  | 65   |

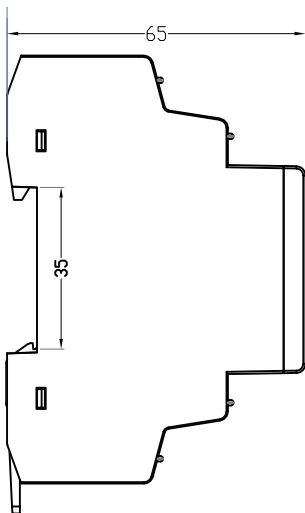
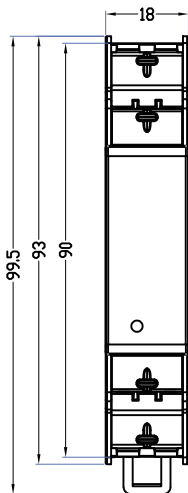
## » 2. Installation

 The voltage connected to the SEM1340 meter is dangerous and potentially fatal. Therefore, all power sources MUST be disconnected during installation!

To comply with protection requirements, the meter must be installed in a meter box meeting at least the IP51 protection rating standard (IEC62059). The meter box must include a DIN rail compliant with the DIN 50022 standard. In this case, no additional accessories are required; the meter is secured by snapping its rear plastic snap-fit mechanism onto the rail.

The meter features wireless communication functionality and should not be installed within 20 cm of the human body. The WiFi antenna must be placed outside the meter box.

## » 3.Dimensions



## » 4.LED Indicators

The SEM1340 features 3 LED indicators on its front panel to show the instrument's working status, along with 1 reset button. Pressing and holding the reset button for approximately 1 second will reset the internal WiFi communication unit of the instrument, and the communication unit will reconnect to the router using the previously obtained account and password.

| LED Color | Status                                                                                      | Indication Meaning                    |
|-----------|---------------------------------------------------------------------------------------------|---------------------------------------|
| Red       |  Always on | The power supply is working normally  |
| Blue      |  Blinking  | The WiFi unit is functioning normally |
| Green     |  Always on | The WiFi connection is successful     |

## » 5.Main function

### • 5.1 Measuring Function

Meter can measure import active energy, export active energy, total active energy. Import reactive and export reactive energy available through interface.

The total energy metering mode can be set to the following five modes according to different installation locations:

| Code         | Active Energy Metering Mode                    |
|--------------|------------------------------------------------|
| 01           | Total energy = Forward active energy           |
| 02           | Total energy = Reverse active energy           |
| 05 (default) | Total energy = Forward energy + Reverse energy |
| 06           | Total energy = Reverse energy - Forward energy |
| 09           | Total energy = Forward energy - Reverse energy |

## • 5.2 Electricity parameters measurement

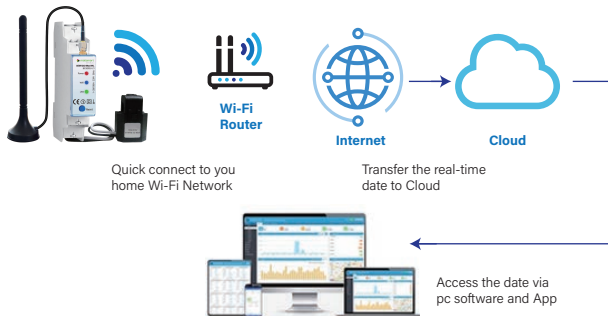
Measured parameters from mains:

|                         |                                     |
|-------------------------|-------------------------------------|
| Voltage                 | 0.5% of range maximum               |
| Current                 | 0.5% of range maximum               |
| Current                 | 1.0% of nominal FS open-core sensor |
| Frequency               | 0.2% of MID-frequency               |
| Power factor            | 1.0% of unity (0.01)                |
| Active power(W)         | ± 1.0% of range maximum             |
| Reactive power(VAr)     | ± 2.0% of range maximum             |
| Apparent power(VA)      | ± 1.0% of range maximum             |
| Active energy(kWh)      | Class B EN50470-3                   |
| Reactive energy (kvarh) | ± 2.0% of range maximum             |

## • 5.3 WiFi communication

The SEM1340 integrates a powerful WiFi communication unit, which supports 802.11 b/g/n with a frequency range of 2.412GHz~2.484GHz. The meter can work in three modes: AP, STA, or AP +STA, and supports the mDNS protocol (Multicast DNS protocol). Through LAN multicast, it enables zero-configuration automatic discovery and resolution of devices. Via the mDNS protocol, on-site LAN devices can obtain information such as the ID, MAC, IP, and port of the meter's WiFi communication unit, making connection extremely convenient.

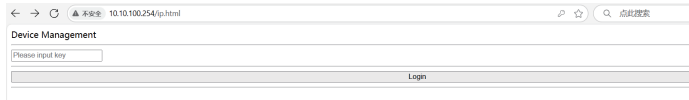


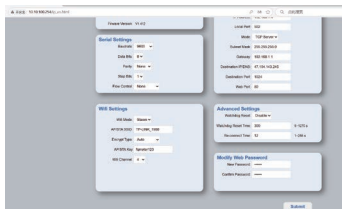


After the SEM1340 is powered on, the red POWER indicator light turns on, and the blue WiFi indicator light blinks for 1 second and then turns off for 1 second, which indicates that the WiFi chip is working normally.

The computer searches for the WiFi signal named "WifiTo485XXXX" WiFi meters with different serial numbers will display different names, where "XXXX" represents the last 4 digits of the MAC address of the meter's WiFi communication unit.

After the computer successfully connects to the WiFi, the green LAN indicator light turns on. Open the browser, enter the IP address "192.168.70.1" in the window, and log in with the default password "123456"





In the WiFi settings window, enter the local router name and password in the "AP/STA SSID" and "AP/STA Password" boxes respectively, and submit to successfully connect to the local area network.

#### • 5.4 RS485 Communication

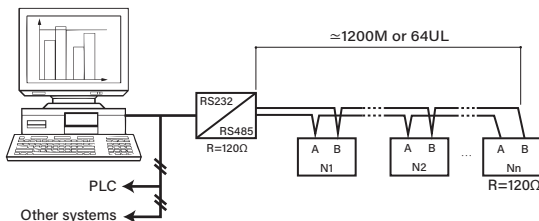
The meter provides RS485 port for remote communication. Communication parameters can be selected from the set mode.

RS485 communications transfer rates allow selected at 1200bps, 2400bps, 4800 bps, 9600bps, 19200bps, default is 9600bps.

Parity: None/Even, default is None.

Modbus address: 001—255, default is 001.

The max quantity of meters on one RS485 main bus is 64 Units, the longest communication distance is 1.2km.

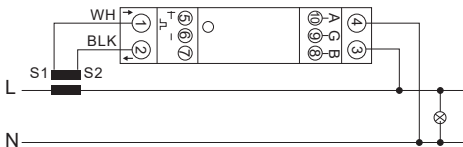


#### • 5.5 Pulse output function

The meter has pulse output.

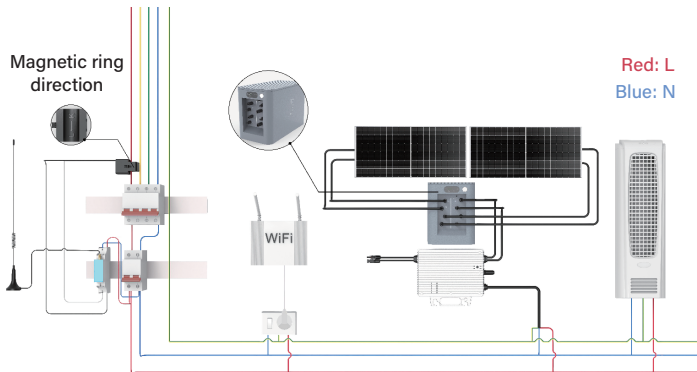
Pulse width: 60/100/200ms, Pulse output1 is fixed up with total kWh. Constant is 1000imp/kWh.

## » 6.Wiring diagram



|        |                                                 |
|--------|-------------------------------------------------|
| 1/2    | CT in &Out                                      |
| 3/4    | Phase/Neutral                                   |
| 5/6    | S0 1000imp/kWh                                  |
| 8/9/10 | RS485 communication contact RS485B, GND, RS485A |

### Schematic Diagram of SEM1340 in Solar Inverter System



## » 7. Register map

### • 7.1 Instantaneous values

| » No | » Comments     | » Read | » Write | » Bytes | » Starting address |
|------|----------------|--------|---------|---------|--------------------|
| 1    | Voltage        | Y      | N       | 4       | 0002/0010          |
| 2    | Frequency      | Y      | N       | 4       | 0004/004E          |
| 3    | Current        | Y      | N       | 4       | 0006/0052          |
| 4    | Active power   | Y      | N       | 4       | 0008/0092          |
| 5    | Apparent power | Y      | N       | 4       | 000A/00D2          |
| 6    | Reactive power | Y      | N       | 4       | 000C/ 0112         |
| 7    | Power factor   | Y      | N       | 4       | 000E/0152          |

### • 7.2 Total energy accumulator

| » No | » Comments             | » Read | » Write | » Bytes | » Starting address |
|------|------------------------|--------|---------|---------|--------------------|
| 8    | Import active energy   | Y      | N       | 4       | 0160/0800          |
| 9    | Import reactive energy | Y      | N       | 4       | 0162/0A00          |
| 10   | Reserve (default 0)    | Y      | N       | 4       | 0164               |
| 11   | Export active energy   | Y      | N       | 4       | 0166/0900          |
| 12   | Export reactive energy | Y      | N       | 4       | 0168/0B00          |
| 13   | Total active energy    | Y      | N       | 4       | 016A/0700/0618     |

### • 7.3 Production data and identification

| » No | » Comments       | » Read | » Write | » Bytes | » Starting address |
|------|------------------|--------|---------|---------|--------------------|
| 14   | Serial number    | Y      | Y       | 4       | FF00               |
| 15   | Manufacture code | Y      | Y       | 4       | FF02 (SHFQ ASCII)  |
| 16   | Type code        | Y      | Y       | 2       | FF04               |
| 17   | Hardware version | Y      | Y       | 2       | FF05               |

| » No | » Comments                                                                                                          | » Read | » Write | » Bytes | » Starting address                                                                                                            |
|------|---------------------------------------------------------------------------------------------------------------------|--------|---------|---------|-------------------------------------------------------------------------------------------------------------------------------|
| 18   | Software version                                                                                                    | Y      | Y       | 2       | FF06                                                                                                                          |
| 19   | Reference voltage                                                                                                   | Y      | N       | 2       | FF07                                                                                                                          |
| 20   | Reference current                                                                                                   | Y      | N       | 2       | FF08                                                                                                                          |
| 21   | S0 constant                                                                                                         | Y      | N       | 2       | FF09                                                                                                                          |
| 22   | Active energy measurement type                                                                                      | Y      | Y       | 2       | FF19<br>01: Total=Import<br>04: Total=Export<br>05: Total=Import+Export<br>06: Total=Export-Import<br>09: Total=Import-Export |
| 23   | Modbus id                                                                                                           | Y      | Y       | 2       | 0524                                                                                                                          |
| 24   | Baud rate<br>Hex(04B0) 1200bps<br>Hex(0960) 2400bps<br>Hex(12C0) 4800bps<br>Hex(2580) 9600bps<br>Hex(4B00) 19.2kbps | Y      | Y       | 2       | 0525                                                                                                                          |
| 25   | Network Parity Stop<br>0000 None parity<br>0001 Even parity                                                         | Y      | Y       | 2       | 0526                                                                                                                          |
| 26   | Clear energy                                                                                                        | N      | Y       | 2       | 0565                                                                                                                          |

## » 8. Fault treatment

| » Malfunction symptom                         | » Probable cause                                                                                                                                                                                                                    | » Check/Handle                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The red power indicator light is not on       | <p>1.The voltage is not within the operating range of 85~275V.</p> <p>2.The screws of terminals #3 and #4 are loose.</p> <p>3.There may be an internal fault.</p>                                                                   | <p>1.Use a multimeter to check whether the voltage at terminals #3 and #4 is within the range of 85~275V. The normal rated voltage is 220/230V.</p> <p>2.Tighten the screws of terminals #3 and #4.</p> <p>3.Contact after-sales service for replacement.</p>                                                                                                                                                  |
| The blue WiFi indicator light is not blinking | There may be an internal fault.                                                                                                                                                                                                     | Contact after-sales service for replacement.                                                                                                                                                                                                                                                                                                                                                                   |
| The green Link indicator light is not on.     | <p>1.When the WiFi is in AP mode, no WiFi device is connected to the electricity meter.</p> <p>2. In STA mode, it fails to connect to the router successfully to obtain an IP address.</p> <p>3.There may be an internal fault.</p> | <p>1.Successfully connect a mobile phone or computer to the electricity meter's WiFi.</p> <p>2.1 Check whether the router's account and password match those saved in the module; if they do not match, modify the parameters to ensure consistency.</p> <p>2.2 Press the Reset button on the nameplate for 1 second, and the module will reconnect.</p> <p>3.Contact after-sales service for replacement.</p> |