

EM115-Mod-WL

Single phase Multi-function energy meter



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EM115-Mod-WL

Single phase 1 modular energy meter With LoRa, Blue tooth module, RS485 interface 330mV CT ac input

- Bidirectional energy metering 1 DIN modules, 230V AC 50Hz/120V AC 60Hz.
- Accuracy class B according to EN50470-3
Accuracy class 1 according to IEC62053-21
- Solid-core sensor & open-core sensor, 330mV ac input 100A
- Total energy usage can be calculated via 5 different modes
- Reactive power and reactive energy available through interface
- Built-in RS485 communication port, modbus protocol
- Support LoRa radio LoRaPMAC protocol which requires no gateway and has low costs
- Bluetooth configuration LoRa communication parameters



Multi-Measurements



18mm

Import/Export
Energy MeasuringSupport LoRa radio
LoRaPMAC protocolBluetooth configuration
LoRa communication
parameters

» 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)

Modbus Communications

Protocol	MODBUS RTU
Communication Address	1~255
Baud Rate	1200bps-19200bps, 9600(default)
Parity	None, Even
Stop Bits	1

LoRa Wireless Parameters

» Name	» Description	» Min.	» Type	» Max.
Frequency band	433	428MHz	---	438MHz
	470	470MHz	---	510MHz
	868	863MHz	---	870MHz
	915	902MHz	---	928MHz
Receiver Sensitivity	---	---	+17dBm	+19dBm
Transmitting Power	SF10@BW125KHz	---	-132dBm	---

» General data

Frequency (Hz)	50 or 60Hz
Accuracy	B

» Mechanical

Material	ABS+PC
Weight	100g

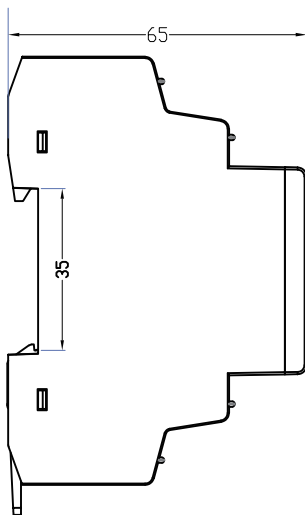
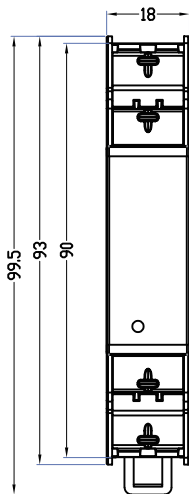
» Environmental

Operating temperature	-25°C ~ +55°C
Storage temperature	-40°C ~ +70°C
Humidity	75% yearly average, 95% on 30 days/year, non-condensing

» Dimension

Width (mm)	18
Height (mm)	104.5
Depth (mm)	88

» 2.Dimensions



» 3.Main function

• 3.1 Measuring Function

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

• 3.2 Electricity parameters measurement

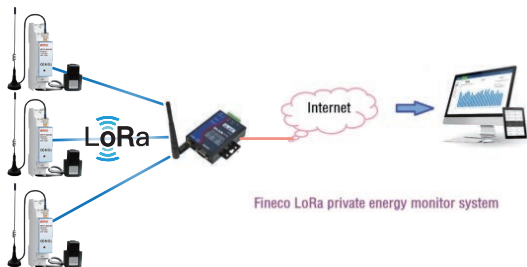
Measured parameters from mains:

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)	$\pm 1.0\%$ of range maximum
Reactive power(VAr)	$\pm 2.0\%$ of range maximum
Apparent power(VA)	$\pm 1.0\%$ of range maximum
Active energy(kWh)	Class B EN50470-3
Reactive energy (kvarh)	$\pm 2.0\%$ of range maximum

• 3.3 LoRa communication

EM115-Mod-WL is a smart energy meter with LoRa module which has the characteristics of high efficiency cyclic interleaving error correction coding technology, strong anti-jamming ability and high sensitivity. It is compliant with smart meter reading system requirements for long distance transmission of small data supporting the LoRa communication technology.

The smart meter data communication process can be adjusted to adapt to different distances and rates. Communication distance is 2.5-4km(Non-obstruction). data transmission 121mA@22db, receiving data 10mA



• 3.4 Bluetooth communication

The EM115-Mod-WL is equipped with a Bluetooth communication interface, which can be used to configure LoRa communication parameters, such as LoRa working mode, communication frequency, spread factor and bandwidth.

• 3.5 RS485 Communication

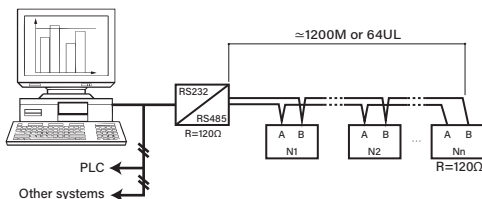
The meter provide RS485 port for remote communication. Communication parameters can be selected from the set mode.

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.

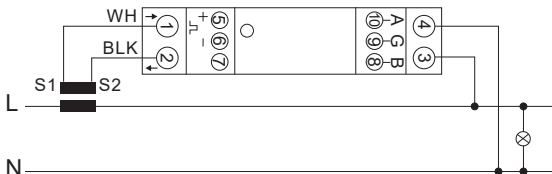


• 3.6 Pulse output function

The meter has pulse output.

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

» 4.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

» 5.Register map

• 5.1 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

• 5.2 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

• 5.3 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
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 01: Total=Import 04: Total=Export 05: Total=Import+Export 06: Total=Export-Import 09: Total=Import-Export
23	Modbus id	Y	Y	2	0524
24	Baud rate Hex(04B0) 1200bps Hex(0960) 2400bps Hex(12C0) 4800bps Hex(2580) 9600bps Hex(4B00) 19.2kbps	Y	Y	2	0525
25	Network Parity Stop 0000 None parity 0001 Even parity	Y	Y	2	0526
26	Clear energy	N	Y	2	0565

» 6. Technical support

Any questions, please contact:

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