WI-GEM

CERTIFICATION RELATED

This product has been designed to comply with the following standards and directives :

- IEC 61010_1 : 2001 (Safety Specification)
- FCC Part 15, Class B
- FCC Part 15, Class C

For more details, see this manual.

c UL us LISTED

Measuring Equipment
E344623
4YP9
CAT III

LABELING

The label including the model name, identification number and etc. is placed on the back cover.

The identification number of each device is placed on the bottom center of the back cover.

GLOSSARY

- Wi-GEM(Wireless Green Energy Meter) : Product name that consists of EMU, EMC, and EMR.
- EMU(Energy Meter Unit) : Energy meter that collects the required electrical parameters.
- EMC(Energy Meter Coordinator) : The network gateway.
- EMR(Energy Meter Router) : Router between EMU and EMC.
- RTC(Real Time Clock)
- Modbus : Communication protocol.
- L1/L2/L3/N : In case of 3phase 4wires, L1/L2/L3/N indicates the phase of power source.
  In case of 3phase 3wires, only L1/L2/L3 exist. In this manual, we use L1, L2, L3, and N.

Energy Meter Unit

Electric power energy meter(EMU) performs variable electric measurements with pre-wired split core current transformers(CTs) and the voltage input and send the data to EMR or EMC automatically. EMU is applied to both single or three phase line with a wireless(radio) communication.

Energy Meter Router

Router(Repeater), EMR extends the transmission distance between the Meter(EMU) and the Coordinator(EMC) to get a smooth transmission.

Energy Meter Coordinator

Stand alone gateway, EMC manages the wireless network and collect the data periodically sent by the Wireless EMU or EMR. The Meter Coordinator(EMC) can be accessed by the data logging system for metering and the other analysis use.

WIRELESS GREEN ENERGY METER

EMU (ENERGY METER UNIT) GENERAL FEATURES

EMU is the energy meter that collects the required electrical parameters at the specific interval after its sensors are fixed on the power cable. A single EMU can also be connected to a computer for analysis. An EMU can have 2 sensors that measure the electrical parameters for 3phase 3wires(L1/L2/L3). An EMU can have 3 sensors that measure the electrical parameters for 3phase 4wires(L1/L2/L3/N).
It can support wirings for single phase, 3phase 3wires, and 3phase 4wires. Communication is possible by a single EMU or multiple EMUs.

- Measurement : Voltage, Current, Frequency, Power Factor, Active/Reactive/Apparent Power, Active/ Reactive/Apparent Energy of each phase and total, THD(V(I)), 2nd~63rd Individual Harmonics(50Hz).
- Frequency : 45~65Hz
- Voltage : 100~250VAC(± 10%)/phase to neutral.
- Current : 5~2,400A using the split core CT.
  250~5,000A using the Rogowski coil CT.
- Control voltage : 100~250V AC(± 10%)/ L1-N
- Power consumption : 10VA
- Measurement category : CAT III 600V AC
- Ambient operating temperature : -10˚C ~ +55˚C
- Max altitude : 2,000m
- 2.4GHz wireless via ZigBee, max 200 node installation, IEEE 802.15. 4 compliant radio, RF Data rate : 250 kbps
- Time stamps for transmission data, Logging interval : 1~60 min.
- Accuracy : IEC62053-21 Class 1.0, IEC62053-22 Class 0.5
- Support DIN rail mounting.
- Modbus protocol(Coordinator)

EMR (ENERGY METER ROUTER)

EMR is the router that relays the data between EMU and EMC. It is automatically detected by an EMC. An EMC can connect EMRs up to 255 logically.

EMR has the same shape as EMC except for RS232 to USB connection port to a PC.
EMR has no connection port. The adapter that is used to supply power must have been evaluated by UL.
The DC power to EMR can use the DC adapter for 5 to 9 V.

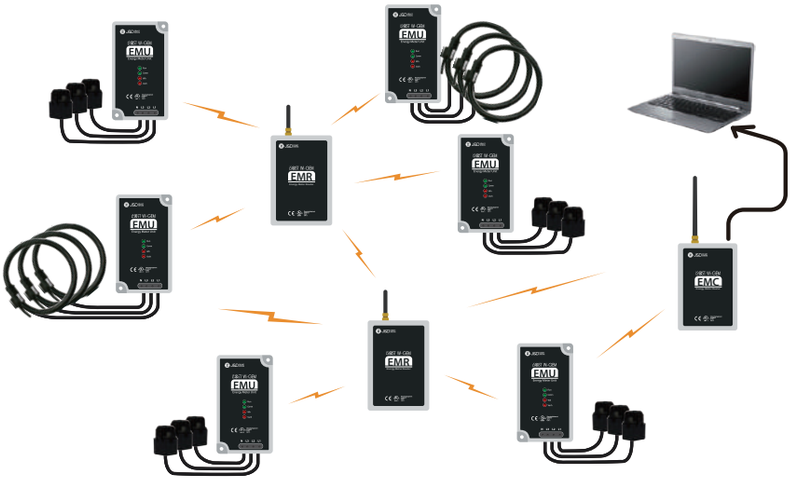
EMC (ENERGY METER COORDINATOR)

EMC is the gateway that controls the wireless network and periodically gathers the collected data from EMUs. It can be accessed by an application program for data analysis. The program shows the power-related values such as voltage, current, frequency, etc. It is connected with PC via the USB cable.

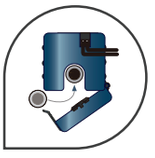
EMC has the following parts :

NAME	FUNCTION
Fixing Screw Hole 1&2	To fix EMC on a wall, insert screws in these holes and fasten them.
Antenna	Used for wireless communication.
DC Jack	5V DC
RJ45 Connector	Used to connect EMC with a RS232 to PC.
Product Label	The product label is placed.

WIRELESS GREEN ENERGY METER

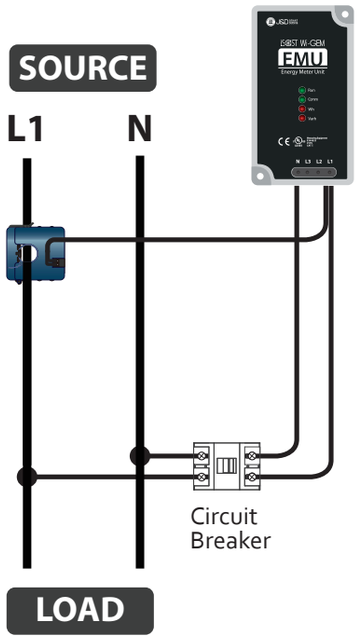


Wi-GEM Network Topology

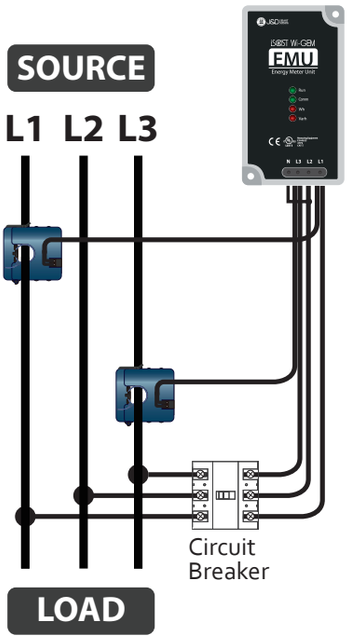


PHASE CONNECTION

Wiring for Single phase 2wires



Wiring for 3phase 3wires(2CT)



Wiring for 3phase 4wires