

User's Guide - EasyModular Multi-GEM

For the more information of EasyModular Multi-GEM, please refer full version manual (soft copy) that you can get via e-mail, homepage and internal SD memory card.

1. Introduction

EasyModular Multi-GEM is installed in electric distribution and local panels for supplying power to their production line. It measures the voltage and current, and calculates the power in real-time. You can monitor and manage the energy of equipment. It can help to operate efficiently and to reduce the energy consumption.

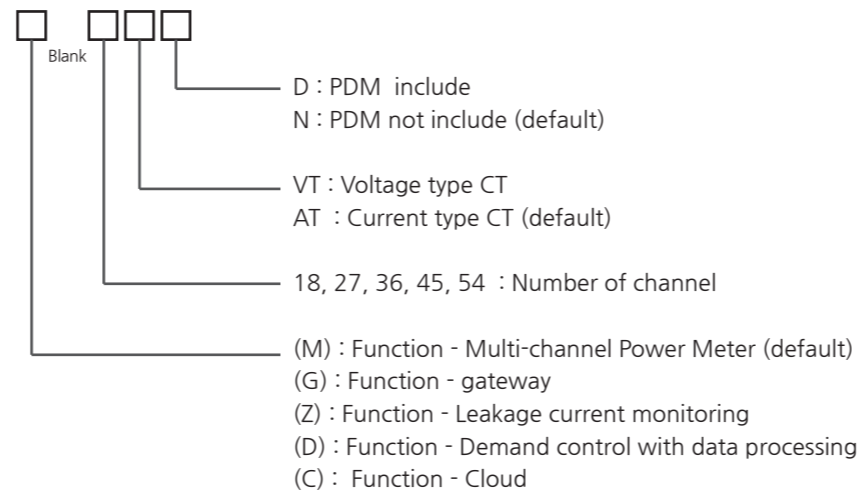
2. Characteristics

- Multi power meter(EasyModular Multi-GEM) is able to measure and monitor multi electric power loads.
- Max 54 single phase or 26ch 3P3W or 18ch 3P4W feeders power monitoring
- Measurement : V (L-N, L-L) , A, Hz, PF, Unbalance, Power(P,Q,S), Energy (P,Q,S).
- 1.0/0.5 Class accuracy for power measurement conformed by IEC62053-21/IEC62053-22.
- Flexible application for the single phase/ 3phase 4wire/ 3phase 3wire power line.
- Sag / Swell / Over Current / Temp. Alarm.
- Total Harmonics Distortion (THD)
- 1 analog input terminal for temperature measurement (NTC)
- Support RS232 / RS485 Serial (Modbus RTU) and Ethernet (Modbus TCP) Comm.

3. Specification

| Model | | EasyModular Multi-GEM (18/27/36/45/54) |
|-----------------------------------|---------------|--|
| Power system | | 1P2W, 3P3W(2CT), 3P4W |
| Power Input | | 100-240 V~, 50/60 Hz, 0.25-0.14 A, CAT II |
| Measuring Inputs Rating | Voltage | 50-690 V 3~ L-L, CAT III Max. 6000 A, 3~ |
| | Frequency | 50 /60 Hz |
| | CT type | 100 mA / 333mV |
| | Digital Input | 1point, AC 220 V external input power |
| | NCT | 25 °C, 10 kΩ, $\beta(25/85)=3970^{\circ}k$ |
| Output Contact | | 1-SPST, AC 250 V 5 A, DC 30 V 5 A |
| Communication | | RS485 RS232 Ethernet |
| Usage | | Indoor use |
| Altitude up to | | 2000 m |
| Operating Temperature | | -10 °C to 55 °C |
| Humidity | | maximum relative humidity 80 % R.H. for temperatures up to 31 °C decreasing linearly to 50 % R.H. relative humidity at 40 °C |
| Over voltage category | | II for AC Mains CAT III for Measurement Terminals |
| Pollution degree | | 2 |
| Short-term temporary overvoltage: | | 1440 V for AC Mains |
| Long-term temporary overvoltage: | | 490 V for AC mains |
| Storage Temp. | | -25 °C to 70 °C |
| Standards | | IEC 62053-21/22 |

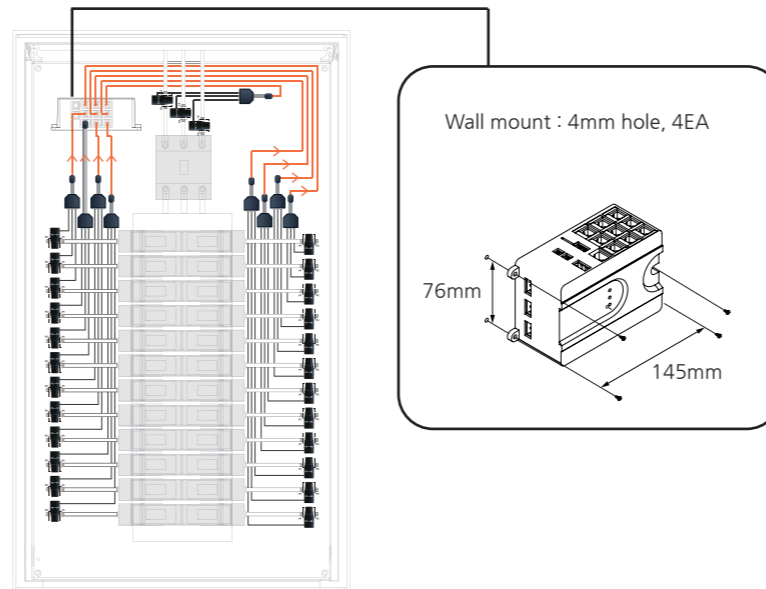
EasyModular Multi-GEM



4. Installation

It needs to avoid a place where direct interference exists like as high temperature and electromagnetic field for the installation. Please check the environment condition around EasyModular Multi-GEM below for a correct operation.

| Item | Condition |
|--------------------|---|
| Location | Indoor |
| Operation temp, | -10 °C to 55 °C [14 °F to 122 °F] |
| Storage temp, | -25 °C to 70 °C [-13 °F to 158 °F] |
| Operation humidity | Non condensation, 5 % R.H. to 95 % R.H. |



! WARNING

EasyModular Multi-GEM should be installed inside of an electric Cabinet or Panel to prevent access to the terminals of EasyModular Multi-GEM by person after it is installed. EasyModular Multi-GEM is an indoor product, therefore it needs to take care not to be exposed external environment directly.

! WARNING

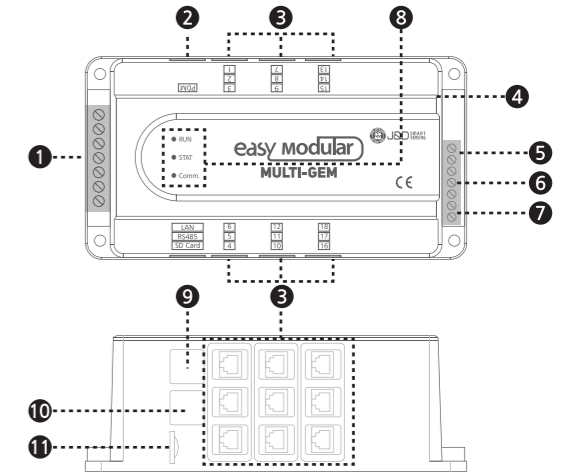
To avoid the risk of electric shock, this equipment must only be connected to a supply mains with protective earth

5. Name of parts

| CT Pin No. | Description |
|----------------|--------------|
| 1,3,5(K cable) | K side of CT |
| 2,4,6(L cable) | L side of CT |

| PDM Pin No. | Description |
|-------------|-------------|
| 6 | Ground |
| 4 | Transmit |
| 5 | Receive |

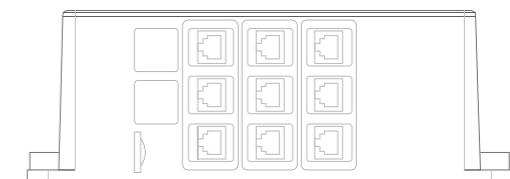
| RS-485 Pin No. | Description |
|----------------|-------------|
| 1 | Transmit + |
| 2 | Transmit - |
| 7,8 | Ground |



| No. | Name | Description | | | | | | | | |
|------------|-------------------------------|--|------------|-------------|---|----------------------------|---|-------------------------------|----|--------|
| 1 | Voltage Input | Voltage input terminal for measurement | | | | | | | | |
| 2 | Ethernet Port | Communication with Master (Modbus Slave) Protocol : Modbus TCP Speed : 10/100 Mbps Automatic selection | | | | | | | | |
| 3 | 1~54 CT Port | CT input terminal (pin# 1,3,5 - K side of CT, pin# 2,4,6 - L side of CT) 6 pin connector (RJ12) is used. | | | | | | | | |
| 4 | Temp. sensor | NTC temperature sensor It measures the present temperature by NTC at this port. | | | | | | | | |
| 5 | DO Terminal | Digital Output Terminal, Rating is 250 VAC/5 A, 30 VDC/5 A resistive DO terminal is used like as below. 1) Temperature Alarm It operates when the temperature keeps the higher value than the setting for 5 sec. 2) Event Alarm It operates by Sag, Swell, OC events as well | | | | | | | | |
| 6 | DI Terminal | Digital Input Terminal Rating : AC220 V latch voltage input is needed | | | | | | | | |
| 7 | Control Power | Supply the control power to the EasyModular Multi-GEM (AC/DC 100~240V) | | | | | | | | |
| | | <table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>L</td> <td>Line(AC), +(DC) connection</td> </tr> <tr> <td>N</td> <td>Neutral(AC), -(DC) connection</td> </tr> <tr> <td>FG</td> <td>Ground</td> </tr> </tbody> </table> | Pin Number | Description | L | Line(AC), +(DC) connection | N | Neutral(AC), -(DC) connection | FG | Ground |
| Pin Number | Description | | | | | | | | | |
| L | Line(AC), +(DC) connection | | | | | | | | | |
| N | Neutral(AC), -(DC) connection | | | | | | | | | |
| FG | Ground | | | | | | | | | |
| 8 | LED Status | RUN : blinking at normal operation STAT : fast blinking at normal metering Comm : blinking at normal communication | | | | | | | | |
| 9 | PDM Port | RS232 Port to connect the PC or PDM | | | | | | | | |
| 10 | RS485 Port | RS485 Port to connect the PC, external IO or SCADA system. | | | | | | | | |
| 11 | SD Card Slot | Micro SD Card Slot | | | | | | | | |

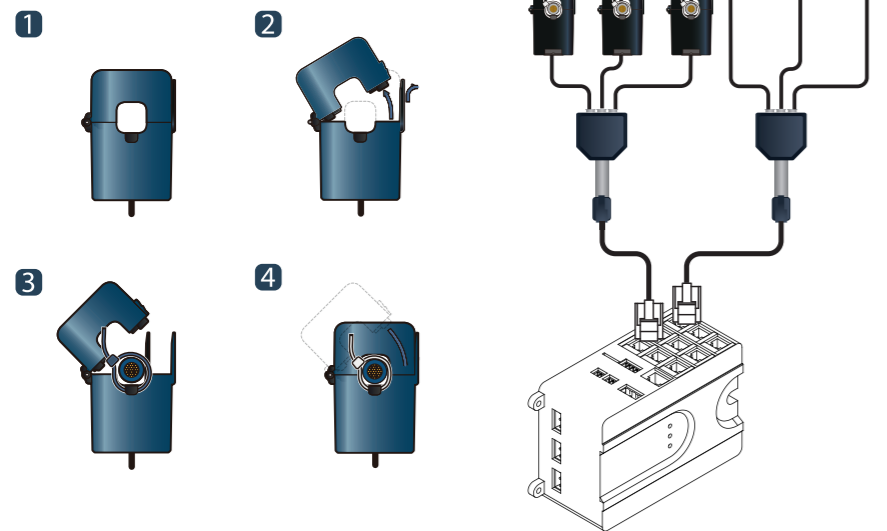
6. CT Input Terminal

CTs are connected to this terminal. The terminal must meet the correct side of CT to measure power correctly.



◆ Example of CT wiring

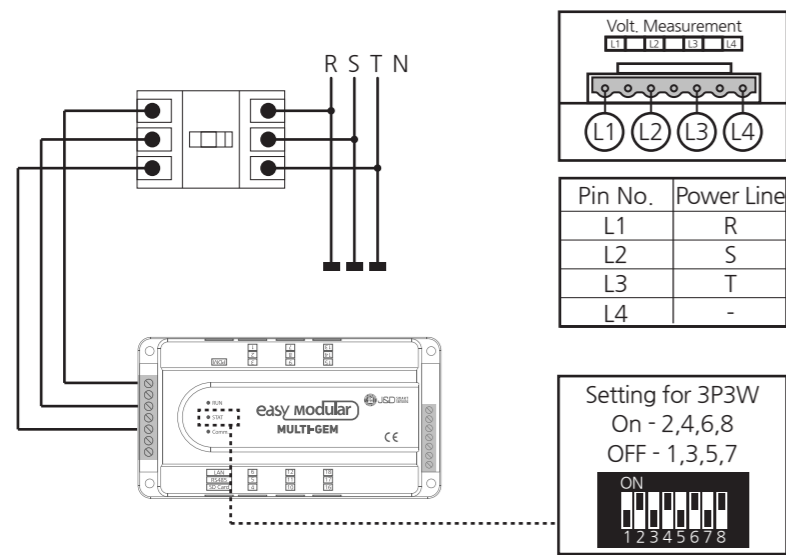
How to use >>>



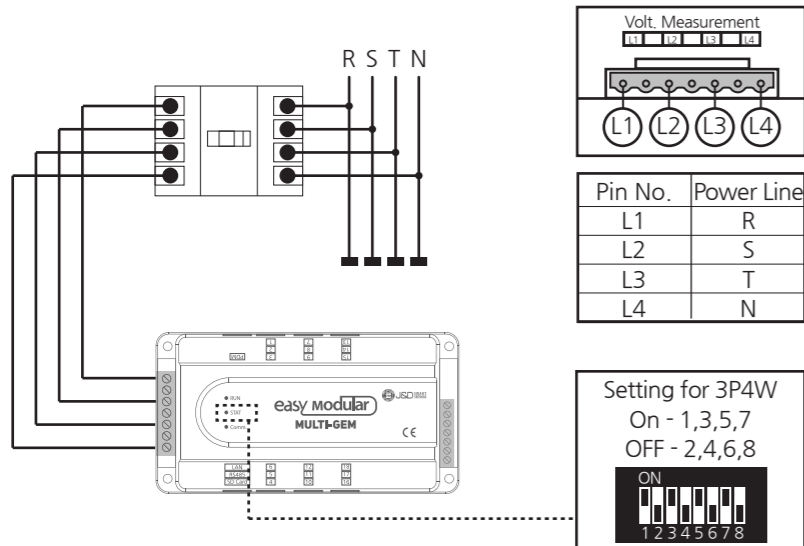
7. Voltage Input Terminal

You can select the 1P3W, 3P4W or 3P3W by setting menu.

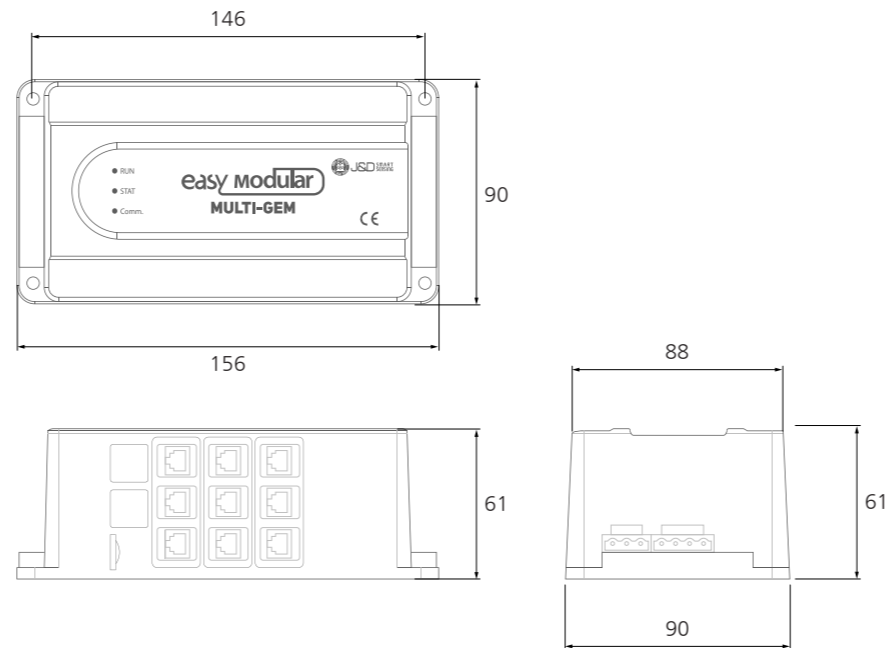
◆ Wiring of 3Phase 3Wire system



◆ Wiring of 3Phase 4Wire system



8. Dimension



9. Configuration software

The configuration software is made for a user to put the settings and check the each data of the load simply. Current version supports Windows 7 (32/64 bit) and Windows 8 (32/64 bit).

For the communication between the Simulator and EasyModular Multi-GEM, you can select a port; Serial or LAN.

- 1) Serial Port (PDM port or RS485 port)
Default : 115,200bps, None Parity, 8Bit, 1 Stop
- 2) LAN Port
Default IP : 192.168.7.74, Port no. 502

To use LAN, you should set the PC IP band as same as Multi-CPM.
At the PC's network setting, please set IP address.
Set : 192. 168. 7. nnn (nnn is available 1~255, except only 74)

For the more information of configuration software, please refer soft copy manual that you can get via e-mail, homepage and internal SD memory card.

10. Appendix

1. Accessory
Must use authorized CTs that used with EasyModular Multi-GEM.
Must use CTs certified by IEC/UL standards.
2. Meter Calibration
Calibration of EasyModular Multi-GEM
A significant drift in calibration is unlikely. Therefore, no required the annual re-calibration which is performed generally.
Current channel and voltage channel can be calibrated by qualified site technicians, if a stable calibration source can be applied.
Calibration on EasyModular Multi-GEM requires precise input of 220 Volts, 5 Amps or 20 Amps.
If the device has a problem, please contact agency for assistance.
3. Explanation of Symbols

WARNING
This notice used to identify conditions under which improper use of the product may cause death or serious personal injury

| | |
|--|--|
| | CAUTION This notice used to identify conditions under which improper use of the product may cause minor personal injury. |
| | PROTECTIVE CONDUCTOR TERMINAL. IEC 60417-5019 (2006-08) |
| | ALTERNATING CURRENT IEC 60417-5032 (2002-10) |
| | Operating Instructions ISO 7000-1641 |

4. Safety instructions

Warning

It can cause serious injury or death to persons if careless handling with the low and high voltage electricity during installation and operation of the product.

- Hazardous voltage always exists on the connecting terminal of PT/CT, Digital Input/Output, Control power always when it is on the power line
- Be sure to follow the safety instruction in this manual during installation and maintenance of the product. Keep the specified specifications and electric regulations.
- Take care that do not touch the terminals and wire sheath after the wiring is finished.

Caution

For protection against electrical shock, all accessories, such as Personal computer and etc, must be certified by IEC standard.

Definition of measurement category

- 1) Measurement category IV is for measurements performed at the source of the low-voltage installation.
- 2) Measurement category III is for measurements performed in the building installation.
- 3) Measurement category II is for measurements performed on circuits directly connected to the low voltage installation.
- 4) Measurement category I is for measurements performed on circuits not directly connected to MAINS.

Caution

The following part is considered the equipment disconnecting device.
A switch or circuit-breaker shall be included in the building installation. The switch shall be in close proximity to the equipment and with in easy reach of the operator.
The switch shall be marked as the disconnecting device for the equipment

Manufacture Information

J&D Electronics.co., Ltd.
Head office & USA Sales
4801 Wilshire Blvd., Suite 218, Los Angeles, CA 90010, USA
Head office2 & Factory1
#B-401, Dosim Knowledge Industry Center, 234 Deokso-ro, Wabu-eup, Namyangju-si, Gyeonggi-do, 12275 South Korea
Tel : +82-31-577-2280 Fax : +82-31-601-8098
E-mail: support@hqsensing.com Web: www.hqsensing.com
R&D Center & Factory2
#207/208, Suntec City II, 52 Sagimakgol-ro, Jungwon-gu, Seongnam-si, Gyeonggi-do, 13210 South Korea