EasyModular Multi-GEM User's guide

J&D SMART SENSING

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.

The device complies with part 15 of the FCC Rules. Operation in subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Product

1. Introduction

EasyModular Multi-GEM is installed in electric distribution and local panels for supplying power to their production line. It measure the voltage and current, and calculate 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.

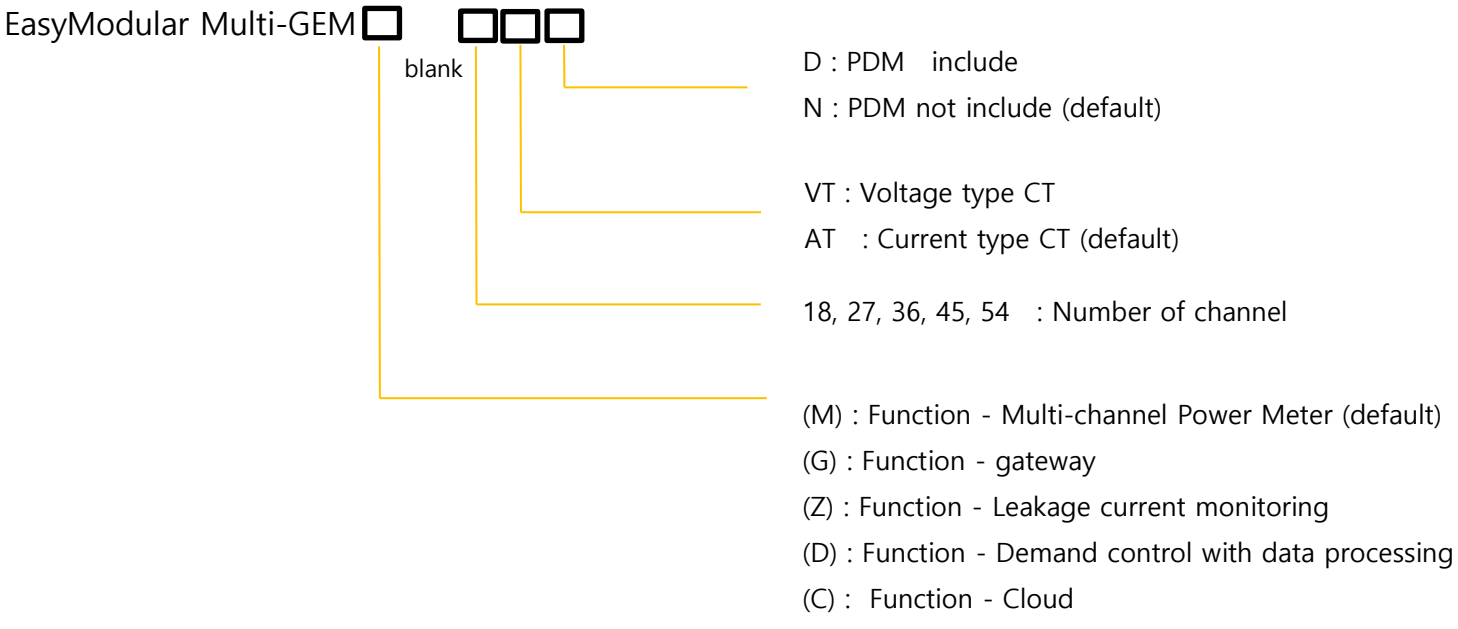
2. Characteristics

- 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
	Digital Input	1point, AC 220 V external input power
	NTC	25 °C, 10 kΩ,(β(25/85)=3970°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

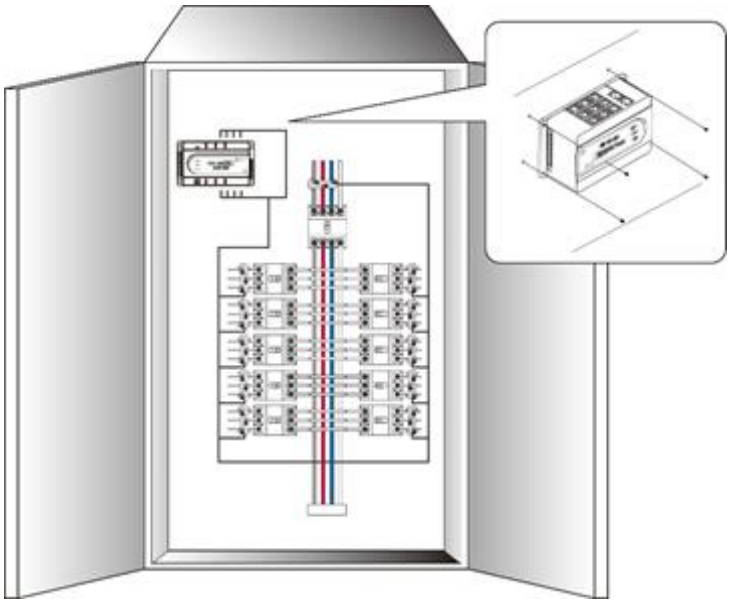
Ordering Information.



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

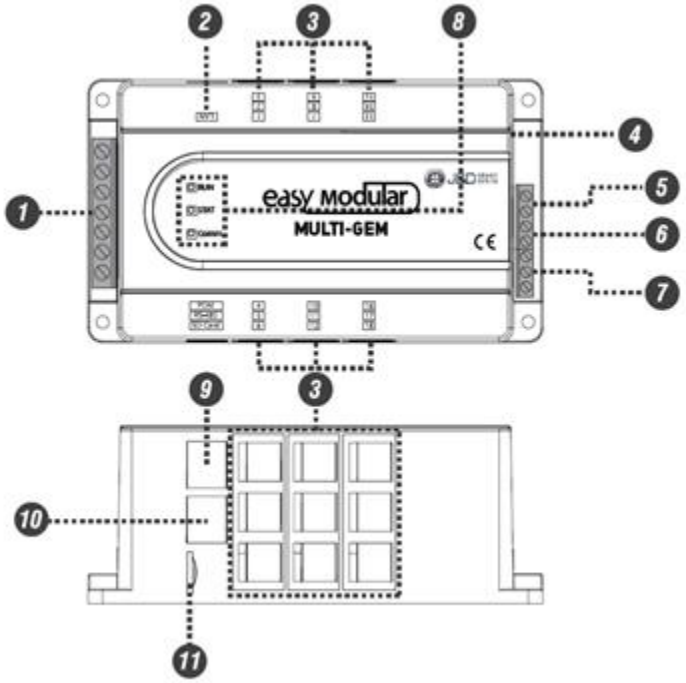
To avoid the risk of electric shock, this equipment must only be connected to a supply mains with protective earth.

5. Terminals

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

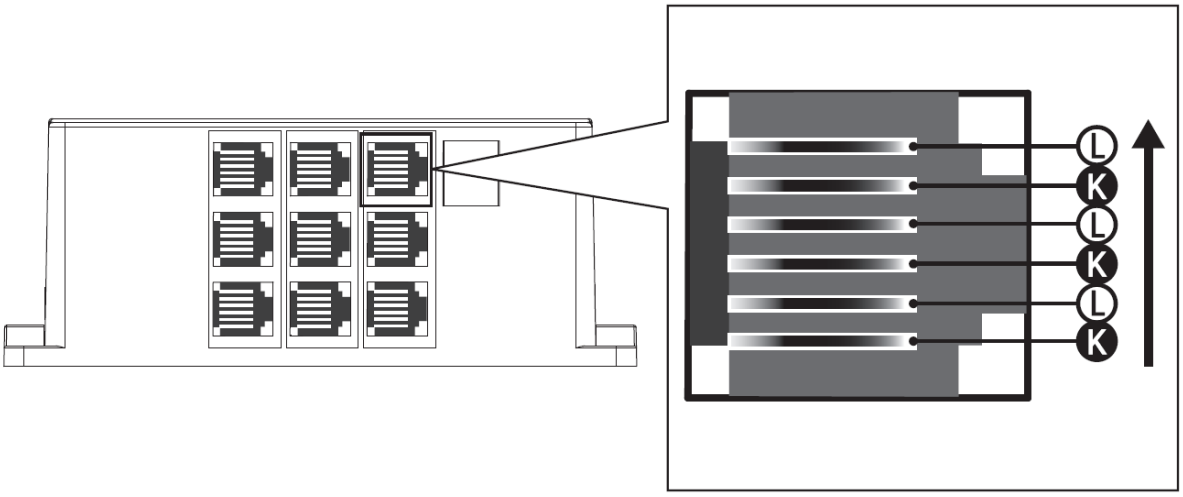


No.	Name	Description
1	Voltage Input	Voltage input terminal for measurement
2	Ethernet Port	Communication with Master (Modbus Slave) Protocol : Modbus TCP Speed : 10/100 Mbps Automatic selection
3	1~54 CT Port	CT input terminal (pin# 1,3,5 – K side of CT, pin# 2,4,6 – L side of CT) 6 pin connector (RJ12) 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

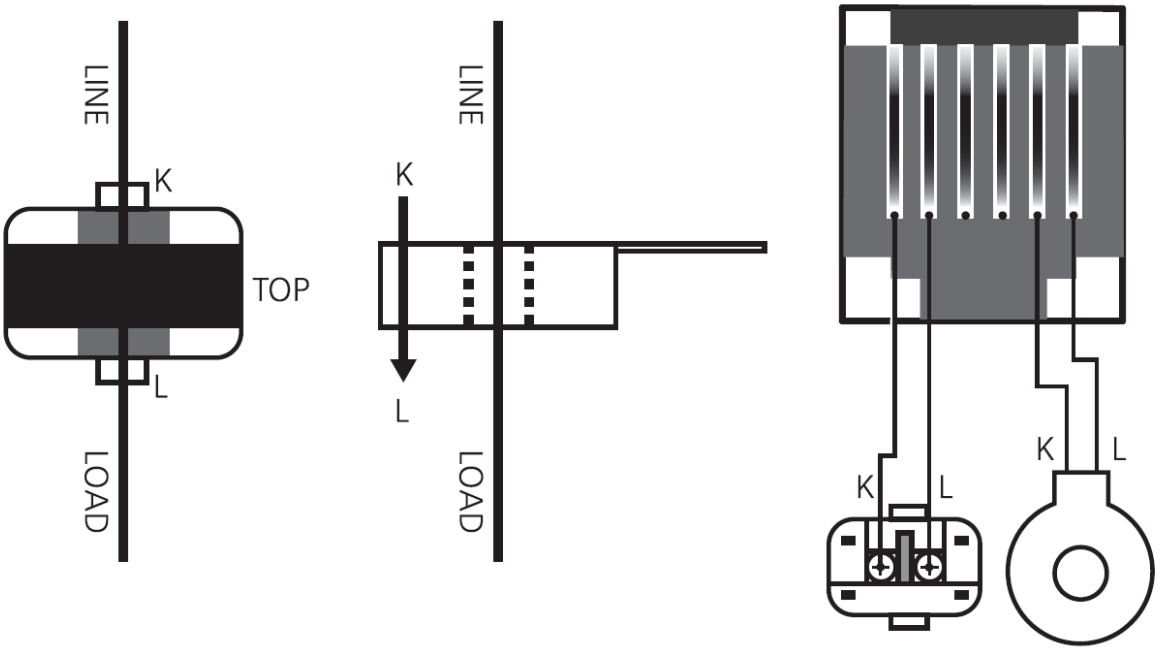
<table>
<tr><td>6</td><td>DI Terminal</td><td>Digital Input Terminal
Rating : AC220 V latch voltage input is needed</td></tr>
<tr><td>7</td><td>Control Power</td><td>Supply the control power to the EasyModular Multi-GEM (AC/DC 100~240V)
<table><tr><th>Pin Number</th><th>Description</th></tr><tr><td>L</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></table></td></tr>
<tr><td>8</td><td>LED Status</td><td>RUN : blinking at normal operation
STAT : fast blinking at normal metering
Comm : blinking at normal communication</td></tr>
<tr><td>9</td><td>PDM Port</td><td>RS232 Port to connect the PC or PDM</td></tr>
<tr><td>10</td><td>RS485 Port</td><td>RS485 Port to connect the PC, external IO or SCADA system.</td></tr>
<tr><td>11</td><td>SD Card Slot</td><td>Micro SD Card Slot</td></tr>
</table>

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

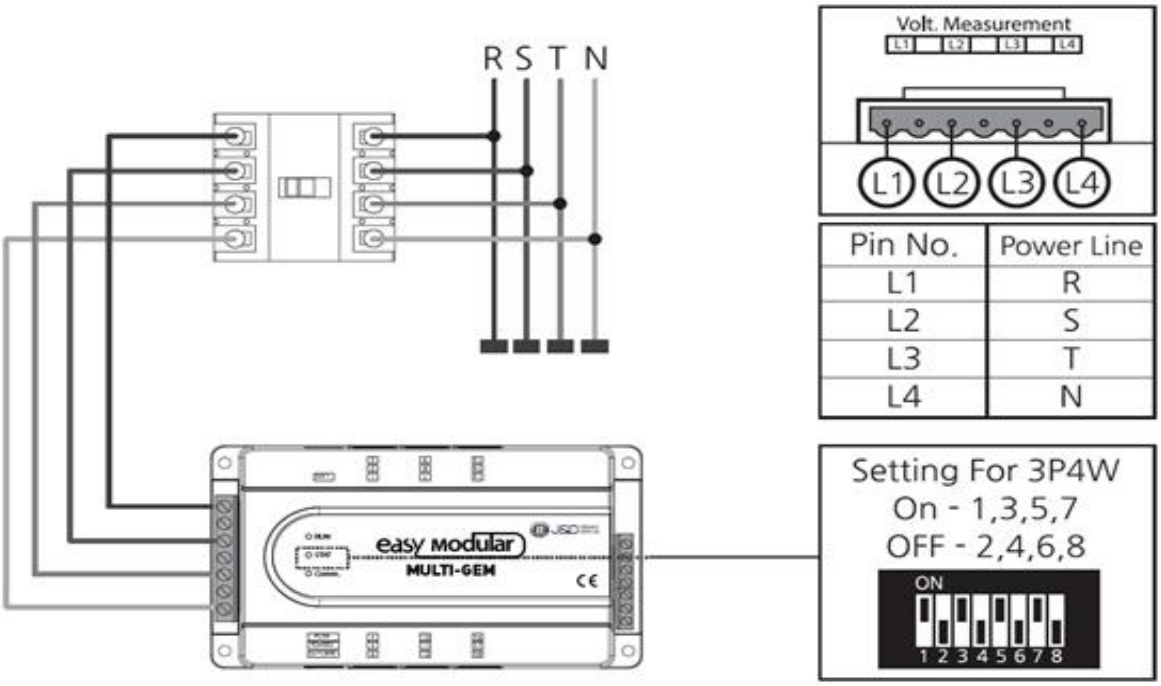


✓ Wiring with a CT should follow the direction of CT that power line side is at K of CT and Load side is at L of CT

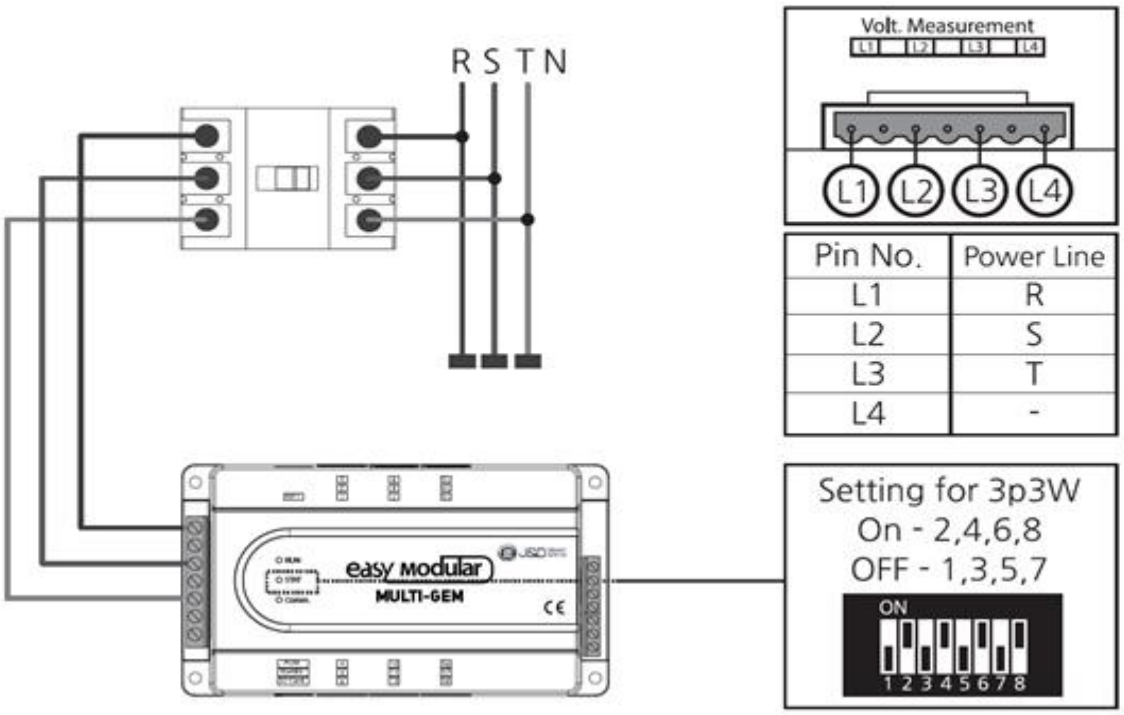
7. Voltage Input Terminal

You can select the 3P4W or 3P3W by setting the DIW switch at the back side.

Wiring of 3Phase 4Wire system

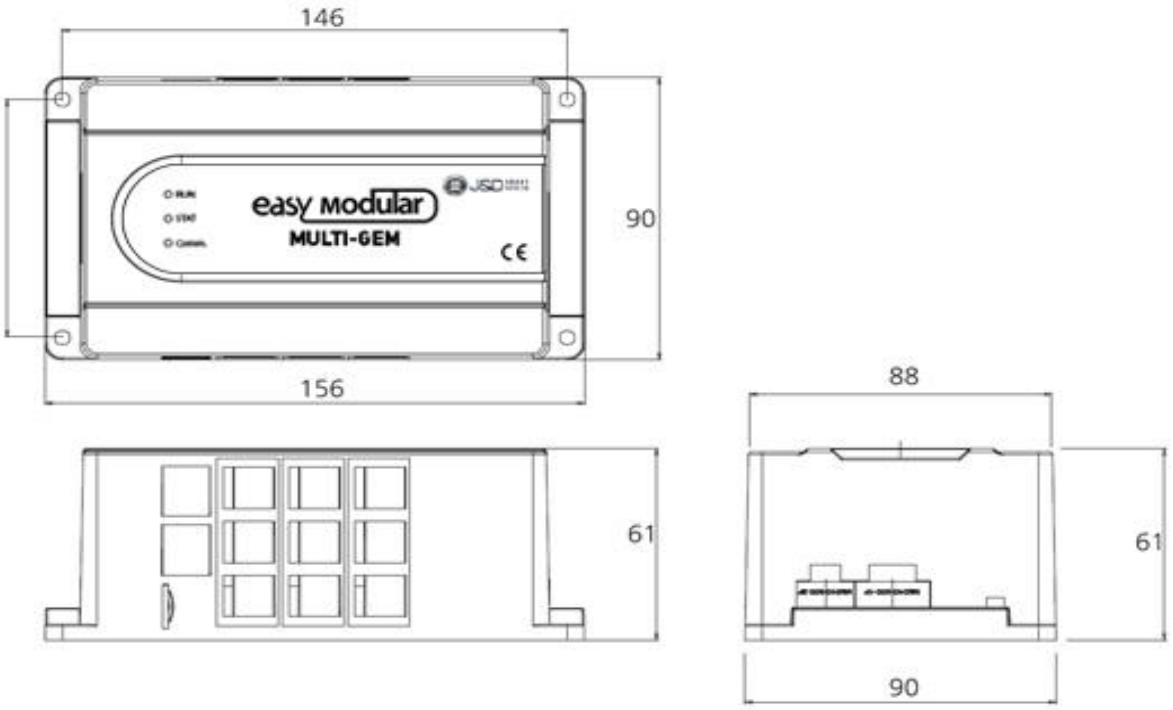


Wiring of 3Phase 3Wire system

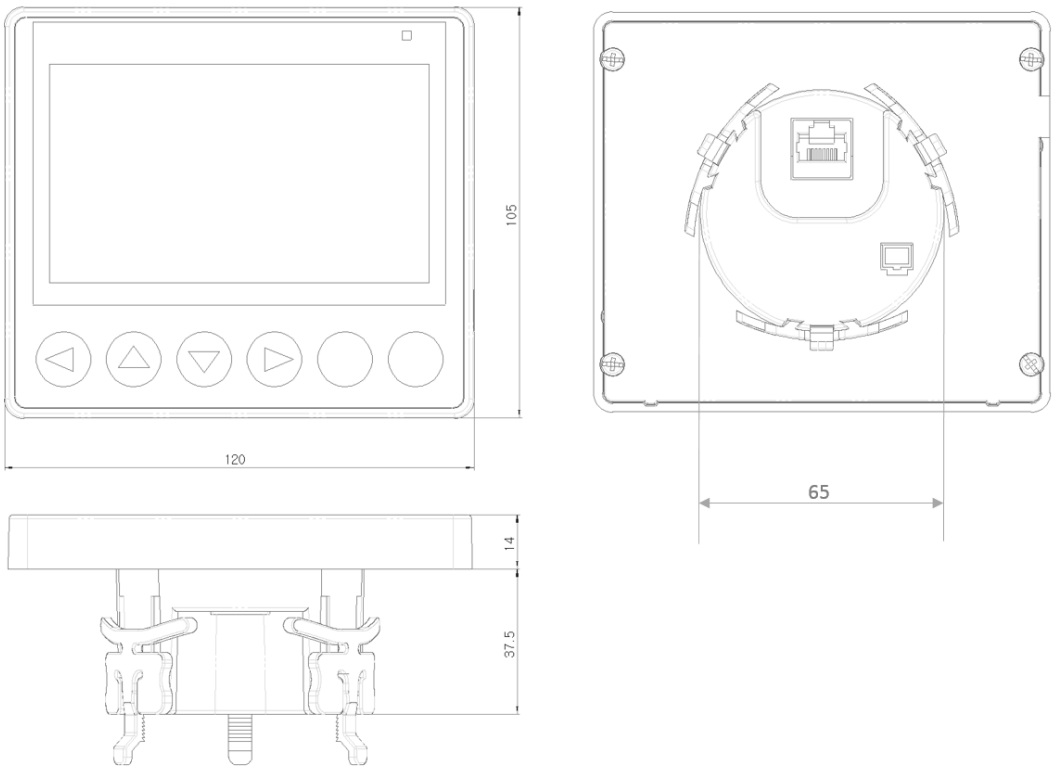


8. Dimension

EasyModular Multi-GEM



PDM 430 (Panel Display Monitor)



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. Connection with Panel Display Monitor (PDM 430)

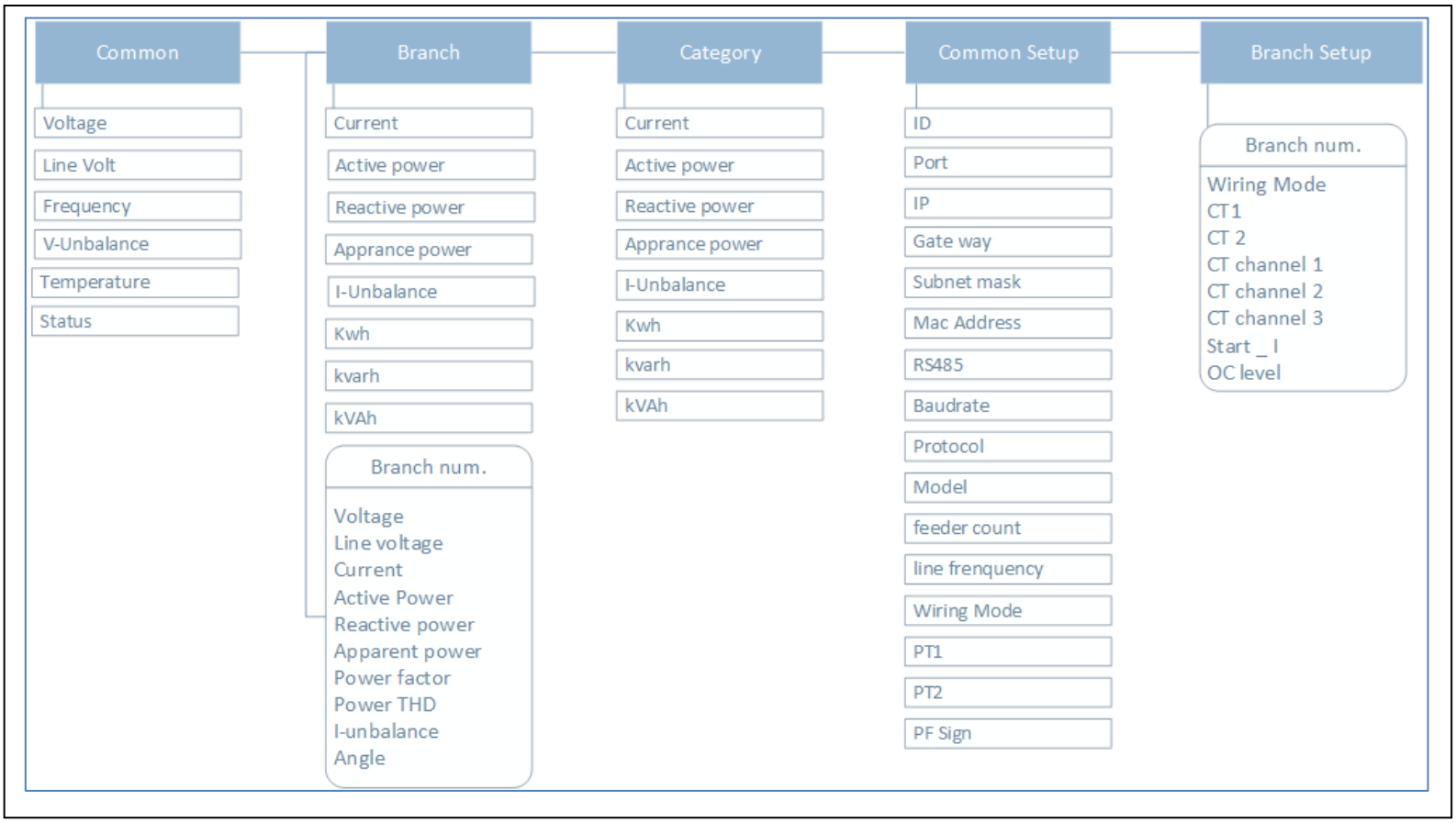
PDM 430 connects with EasyModular Multi-GEM by one of the RJ-45 cable without external power supply. This equipment can be set all the parameters of EasyModular Multi-GEM in the field, in addition, you can monitor the information using clean 4.3" TFT LCD.

Since there is no separate power required, you can use it as a portable setting device.

1) Specification

Item	Contents
Operating Power	DC 5 V (EasyModular Multi-GEM supply)
Power Consumption	1 W
Size	128(W)×76(H)×19(D)
Weight	120 g
How to install	Panel-mounted / portable
Environment	indoor use -10 ℃ to 55 ℃
Display	4.3 inch (480(W)×272(H)) TFT LCD
KEY	6 Key, touch type MENU / ESC UP DOWN LEFT RIGHT OK

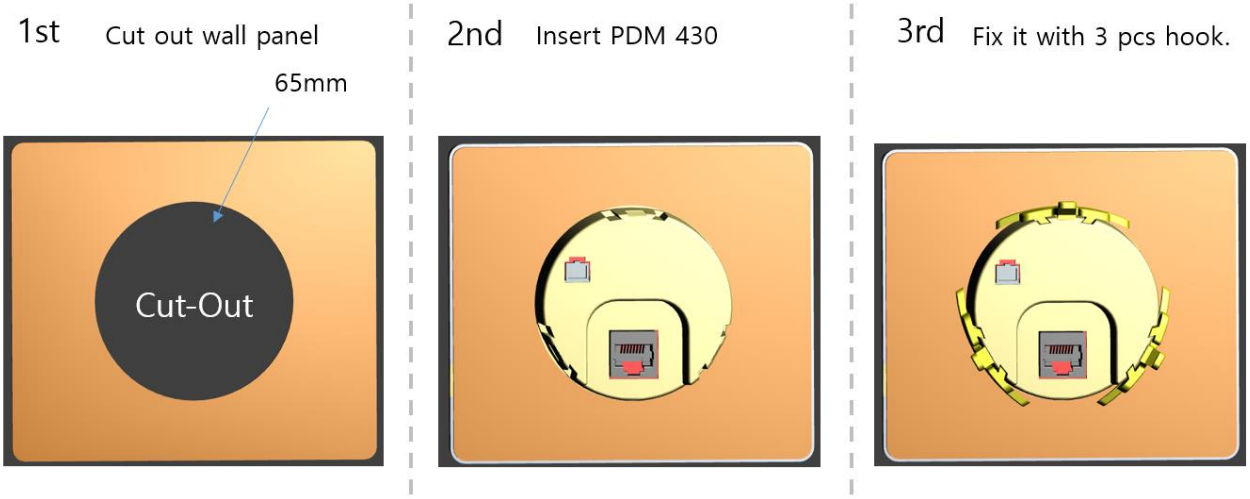
2) **Menu Tree**



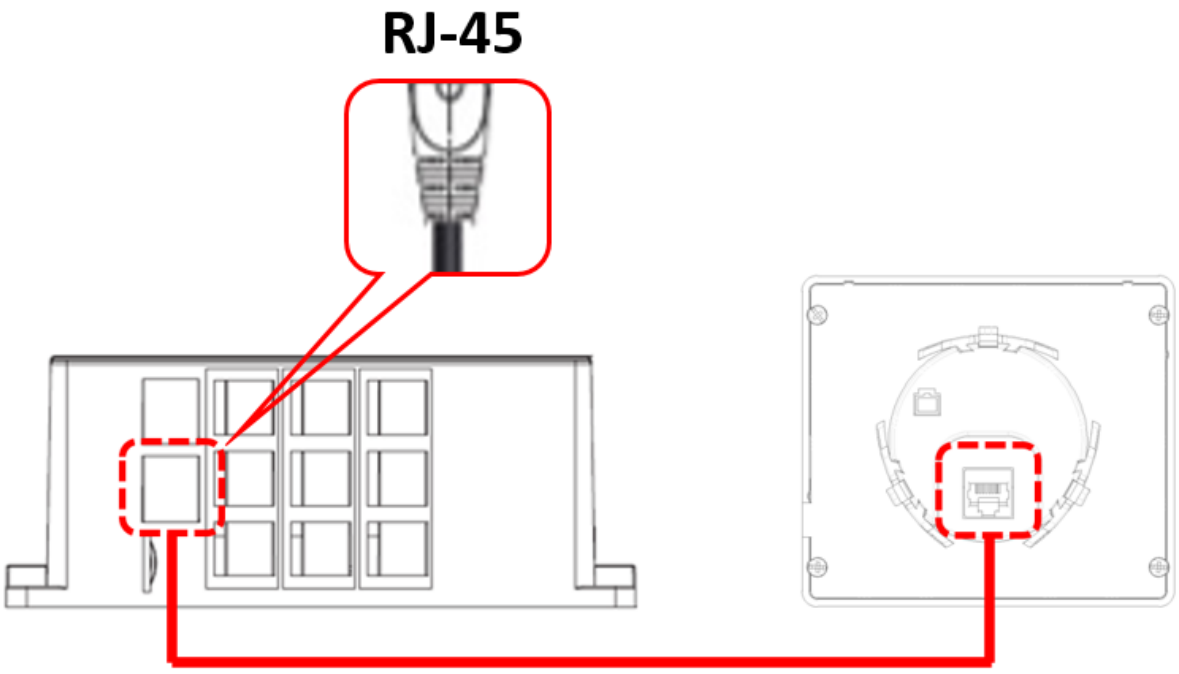
For the more information of how to use PDM 430, please refer soft copy manual that you can get via e-mail, homepage and internal SD memory card.

How to Install PDM430

1) Installation on the panel



2) Connect PDM port of easyModular Multi-GEM and PDM 430 using RJ-45 cable.



11. 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

3. 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

A fused branch circuit protection, rated at 250 V/20 A maximum, with isolator must be installed on the main incoming power supply, external to the unit. The branch circuit fused isolator must be fitted with two UL listed 250 Vac/2.0 A rated fuses, one on the live and one on the neutral supply circuits. The fuses must comply with UL 248-4, Class CC, Guide JDDZ and be contained by Class CC fuse holders.

A suitable switch or circuit-break, meeting IEC60947-1 and IEC 60947-3, shall be used as a means of disconnection.

Use at least AWG 18(maximum AWG 14) wires for the incoming supply.

For field wiring terminals use copper conductors rated 75 °C only, Field wiring tightening torque 1.2 Nm

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

Caution

To clean the meter, wipe it with a clean, dry cloth.

Caution

Installation of the meter must be performed only by qualified personnel who follow standard safety precautions during all procedures. Those personnel should have appropriate training and experience with high voltage devices. Appropriate safety gloves, safety glasses and protective clothing are recommended.

- If THE EQUIPMENT IS USED IN A MANNER NOT SPECIFIED BY THE MANUFACTURER, THE PROTECTION PROVIDED BY THE EQUIPMENT MAY BE IMPAIRED.
- THERE IS NO REQUIRED PREVENTE MAINTENANCE OR INSPECTION NECESSARY FOR SAFETY. HOWEVER, ANY REPAIR OR MAINTENANCE SHOULD BE PERFORMED BY THE FACTORY.

- First of all, be sure to read this manual for correct use of the product.
- If you find any missing contents or error, please inform us.
- NTEK system assumes no responsibility for any direct or indirect loss or damage which may occur through use of this product, regardless of any failure to perform on the part of this product.

Standard

CE

Manufacture Information

J&D Electronics Co., Ltd.

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