INTELLIGENT POWER DISTRIBUTION UNIT (iPDU)

Installation & Operation Manual

75/100/150/225 kVA
20/05/2013 Ver. 6.0
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<td>66</td>
</tr>
<tr>
<td>10.</td>
<td>About</td>
<td>68</td>
</tr>
</tbody>
</table>
1. Safety Instructions
This manual contains important instructions that must be followed during operation and maintenance of the equipment.

⚠️ WARNING: Opening enclosures expose hazardous voltage. Always refer service to qualified personnel only.

⚠️ WARNING: As standards, specifications, and designs are subject to change, please ask for confirmation of the information given in this publication.

⚠️ WARNING: To reduce the risk of fire or electric shock, install in a controlled indoor environment free of conductive contaminants. This equipment is intended only for installations in a RESTRICTED ACCESS LOCATION.

⚠️ WARNING: HIGH LEAKAGE CURRENT. Earth connection is important before connecting supply.

Product Safety

- Hardwiring of iPDU should be performed by Qualified Service Personnel only.

- A protection circuit breaker must be installed upstream and be easily accessible.
2. Site Conditions

Ensure the iPDU is installed in a controlled environment as specified below.

- Install the iPDU indoors only.
- Install the iPDU away from direct sunlight and away from objects which give off excessive heat.
- Allow 0.6 meters side (either left or right) clearance for input cable termination for all models.
- For iPDU models, allow minimum 0.6 meters front & rear clearance for routine maintenance.
- For iPDU-TX (with build in Transformer) model, allow 1 meter front & rear clearance for routine maintenance.
- If rear clearance is not permitted, please allow minimum 0.6 meters side (either left or right) clearance for routine maintenance for all models.
3. Important Installation Instructions

3.1 Install the iPDU in a vertical upright position.
3.2 Ensure floor structure is able to withstand iPDU weight.

3.3 Leveling Jacks
   Use the leveling jacks on the iPDU to prevent the iPDU from tilting when placed on an elevated platform.
   Once the iPDU is in its final position, the leveling jacks on all four corners should be lowered to keep the iPDU securely in place.

3.4 Cable Landing
   The iPDU can be mounted on a raised or solid floor. Conduit landings are provided for bottom cable entry.

3.5 Power Supply
   Ensure the power supply is in accordance with the table below.

Voltage/Current/Cable Size recommendation table

<table>
<thead>
<tr>
<th>Power (kVA)</th>
<th>Input Voltage (V)</th>
<th>Input Current (A)</th>
<th>AVG (mm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>75</td>
<td>480 / 400 / 380 / 208</td>
<td>92 / 110 / 116 / 213</td>
<td>22 / 30 / 30 / 100</td>
</tr>
<tr>
<td>100</td>
<td>480 / 400 / 380 / 208</td>
<td>123 / 147 / 155 / 283</td>
<td>38 / 60 / 60 / 150</td>
</tr>
<tr>
<td>150</td>
<td>480 / 400 / 380 / 208</td>
<td>184 / 221 / 232 / 425</td>
<td>80 / 100 / 100 / 250</td>
</tr>
<tr>
<td>225</td>
<td>480 / 400 / 380 / 208</td>
<td>276 / 331 / 348 / 638</td>
<td>125 / 200 / 200 / (150x2)</td>
</tr>
</tbody>
</table>
4. System Overview
The intelligent Power Distribution Unit (iPDU) serves as a power distribution centre suitable with all types of non-linear loads. The system is equip with colour LCD touch screen display and can measure up to 168 distributed MCBs in the distribution panelboards.

Two types of systems available with various rating from 75kVA to 600kVA –
   a) iPDU
   b) IPDU-TX (with built-in isolation transformer)

The system dimensions for iPDU and iPDU-TX are shown on the next pages.
### 4.1 iPDU Front View

#### Diagram:

![iPDU Front View Diagram]

---

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>7&quot; Colour LCD Touch Screen Display</td>
</tr>
<tr>
<td>B</td>
<td>Emergency Power Off (EPO)</td>
</tr>
</tbody>
</table>

**Note:**

a) The actual layout and dimension are subject to change, depending on customer requirements and iPDU ratings.

b) Please refer to as-built drawings for actual layout and dimension.
4.2 iPDU-TX Front View

A  Power Monitoring and Control Touch Screen Display
B  Emergency Power Off (EPO)

Note:

a) The actual layout and dimension are subject to change, depending on customer requirements and iPDU ratings.

b) Please refer to as-built drawings for actual layout and dimension.
4.3 iPDU Bottom View

4-Φ14 Fixed hole

Openings stamped plate
4.4 iPDU-TX Bottom View

Note:

a) The actual layout and dimension are subject to change, depending on customer requirements and iPDU ratings.

b) Please refer to as-built drawings for actual layout and dimension.
4.5 Location of major components for iPDU

<table>
<thead>
<tr>
<th>①</th>
<th>Sub-Main Circuit Breaker</th>
<th>⑥</th>
<th>Control PCBs - Main Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>②</td>
<td>BCTB, Branch Current Monitor CTs strip</td>
<td>⑦</td>
<td>Measurement Board (MPMB) &amp; Branch Current Measurement Board (BCMB)</td>
</tr>
<tr>
<td>③</td>
<td>42-Pole Distribution Panelboard</td>
<td></td>
<td></td>
</tr>
<tr>
<td>④</td>
<td>Neutral Bus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>⑤</td>
<td>Ground Bus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>⑥</td>
<td>Customer Input Terminal Block Connections</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note:

a) The actual layout and dimension are subject to change, depending on customer requirements and iPDU ratings.

b) Please refer to as-built drawings for actual layout and dimension.
4.6 Location of major components for iPDU-TX

- **Control PCBs** - Main Parameter Measurement Board (MPMB) & Branch Current Measurement Board (BCMB)
- **Shunt Capacitor Trip Device (option)**
- **INPUT Main Circuit Breaker & Sub Main Circuit Breakers**
- **BCTB, Branch Current Monitor CTs strip**
- **42-Pole Distribution Panelboard**

Note:

a) The actual layout and dimension are subject to change, depending on customer requirements and iPDU ratings.

b) Please refer to as-built drawings for actual layout and dimension.
4.7 Location of Access Panel on left side of iPDU-TX

Note:

a) The actual layout and dimension are subject to change, depending on customer requirements and iPDU ratings.

b) Please refer to as-built drawings for actual layout and dimension.
5. Installation Procedures
Please follow the steps below for correct installation, and the sequence to be followed any time when the system is restarted or shut down completely with no power applied to the system.

a) Ensure all input protection switches/breakers and branch breakers set to “OFF” position.
b) Ensure all the fuses are in the fuse blocks and working normally.
c) Remove the top two screws of the Access panel on the right side (Note: other designs is on the left) of the iPDU. Remove the Access panel.
d) Remove the “openings stamped plate” located at the bottom of the iPDU.
e) Connect input power cables to the Mains Power (mains) marked R, S, T (or R, S, T, N) and ensure phase sequence is correct.
f) Ensure the input ground wire is securely connected to the receptacle marked GND.
g) Connect the output power cables to the corresponding branch circuit breakers (note: the power cord – “L” (Live) must go through the corresponding CT, the N (Neutral) cord connects to the “N” terminal block.
h) Ensure the output ground cable is securely connected to the terminal marked GND.
i) Upon completed termination, ensure the openings stamped plate are cut to appropriate sizes to allow cables to route through and to cover the iPDU base. Trim the edges of the plate to prevent the sharp edges chafing the cables insulation.
j) Ensure the right or left panels of the iPDU are covered and secured.
k) Ensure the “openings stamped plate” is covered and secured.

Initial Startup
After completing the above “Check Before Startup”, proceed as follows:

a) Close the upstream circuit breaker.
b) Close the main circuit breaker.
c) Close the sub-main circuit breakers to the panelboard (for iPDU-TX model)
d) Close individual output circuit breakers as required.

Checks After Startup
Normal operation of the iPDU should be verified immediately after the initial startup has been performed.
## 5.1 Capacity

<table>
<thead>
<tr>
<th>Ratings (kVA)</th>
<th>Voltage (V)</th>
<th>Input Breaker (A)</th>
<th>Sub-Main Breaker (A)</th>
<th>No. of Poles</th>
<th>Dimension - W x D x H (mm)</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Standard</td>
<td>Optional</td>
</tr>
<tr>
<td>75</td>
<td>480</td>
<td>125</td>
<td>60</td>
<td>Up to 84P</td>
<td>1000 x 900 (1200)* x 2000</td>
<td>~620</td>
</tr>
<tr>
<td></td>
<td>400</td>
<td>150</td>
<td>80</td>
<td>Up to 168P</td>
<td>600 x 900 (1000)* x 2000</td>
<td>~750</td>
</tr>
<tr>
<td></td>
<td>380</td>
<td>150</td>
<td>80</td>
<td>Up to 84P</td>
<td>1000 x 900 (1200)* x 2000</td>
<td>~750</td>
</tr>
<tr>
<td></td>
<td>208</td>
<td>250</td>
<td>125</td>
<td>Up to 168P</td>
<td>600 x 900 (1000)* x 2000</td>
<td>~750</td>
</tr>
<tr>
<td>100</td>
<td>480</td>
<td>150</td>
<td>80</td>
<td>Up to 84P</td>
<td>1000 x 900 (1200)* x 2000</td>
<td>~750</td>
</tr>
<tr>
<td></td>
<td>400</td>
<td>200</td>
<td>100</td>
<td>Up to 168P</td>
<td>600 x 900 (1000)* x 2000</td>
<td>~750</td>
</tr>
<tr>
<td></td>
<td>380</td>
<td>200</td>
<td>100</td>
<td>Up to 84P</td>
<td>1000 x 900 (1200)* x 2000</td>
<td>~750</td>
</tr>
<tr>
<td></td>
<td>208</td>
<td>350</td>
<td>200</td>
<td>Up to 168P</td>
<td>600 x 900 (1000)* x 2000</td>
<td>~750</td>
</tr>
<tr>
<td>150</td>
<td>480</td>
<td>225</td>
<td>125</td>
<td>Up to 168P</td>
<td>1200 x 1200 x 2000</td>
<td>~930</td>
</tr>
<tr>
<td></td>
<td>400</td>
<td>300</td>
<td>150</td>
<td>Refer to Note 1</td>
<td>1200 x 1000 x 2000</td>
<td>~930</td>
</tr>
<tr>
<td></td>
<td>380</td>
<td>300</td>
<td>150</td>
<td>Refer to Note 1</td>
<td>1200 x 1000 x 2000</td>
<td>~930</td>
</tr>
<tr>
<td></td>
<td>208</td>
<td>500</td>
<td>250</td>
<td>Refer to Note 1</td>
<td>1200 x 1000 x 2000</td>
<td>~930</td>
</tr>
<tr>
<td>225</td>
<td>480</td>
<td>225</td>
<td>125</td>
<td>Up to 168P</td>
<td>1200 x 1200 x 2000</td>
<td>~1050</td>
</tr>
<tr>
<td></td>
<td>400</td>
<td>300</td>
<td>150</td>
<td>Refer to Note 1</td>
<td>1200 x 1000 x 2000</td>
<td>~1050</td>
</tr>
<tr>
<td></td>
<td>380</td>
<td>300</td>
<td>150</td>
<td>Refer to Note 1</td>
<td>1200 x 1000 x 2000</td>
<td>~1050</td>
</tr>
<tr>
<td></td>
<td>208</td>
<td>500</td>
<td>250</td>
<td>Refer to Note 1</td>
<td>1200 x 1000 x 2000</td>
<td>~1050</td>
</tr>
</tbody>
</table>

Note 1: Additional poles available upon request, up to 336 poles max.

Note 2 ( )*: Depth for iPDU models with optional higher no. of poles.

Note 3 ( )***: Weight for iPDU with optional higher no. of poles. All weight indicated are without built-in Isolation Transformer.
### 5.2 Specifications:

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input Voltage:</strong></td>
<td>3Phase + G 208VAC, 380VAC, 400VAC, 480VAC, 580/60HZ</td>
</tr>
<tr>
<td></td>
<td>(Rack mount: 3Phase+N 208/120VAC 380/220VAC 400/230VAC 480/277VAC)</td>
</tr>
<tr>
<td><strong>Output Voltage:</strong></td>
<td>3Phase + N 208/120VAC 380/220VAC 400/230VAC 480/277VAC, 60/50HZ</td>
</tr>
<tr>
<td><strong>Transformer:</strong></td>
<td>K Factor ISOLATION H Class Transformer (without rack)</td>
</tr>
<tr>
<td><strong>Noise Attenuation:</strong></td>
<td>50 decibels</td>
</tr>
<tr>
<td><strong>Operating Temperature:</strong></td>
<td>0˚C ~ 40˚C</td>
</tr>
<tr>
<td><strong>Relative Humidity:</strong></td>
<td>0% ~ 95%</td>
</tr>
<tr>
<td><strong>Efficiency:</strong></td>
<td>iPDU &gt; 99.5%</td>
</tr>
<tr>
<td></td>
<td>iPDU-TX &gt; 98%</td>
</tr>
<tr>
<td><strong>Grounding System:</strong></td>
<td>Equipment grounding, system grounding (with PC-class grounding and anti-static protection)</td>
</tr>
<tr>
<td><strong>Communication Port:</strong></td>
<td>RS-422、 RS-485、TCP/IP</td>
</tr>
<tr>
<td><strong>Cooling System:</strong></td>
<td>Force air cooling</td>
</tr>
</tbody>
</table>
6. Operating Procedures

6.1 Touch Screen Display

The main menu is a 7” touch screen display equipped with control panel and monitoring functions.
6.2 Data Measurement

The iPDU provides multiple data measurement parameters and statistical data for user analysis. Other features include “Setting” function (see 8. Setting Procedure) which allows user to configure the iPDU, communications function (see 8.3 Communication Interface) and “Reset” function (see 8.9 Reset Counter) which enables statistical data reset, re-computing and remote monitoring.

I) Input Power Display
- Input Voltage & Current
- Maximum & Average Input Voltage & Current
- R-phase input current harmonic distortion
- S-phase input current harmonic distortion
- T-phase input current harmonic distortion
- Input Frequency
- R-S phase input voltage harmonic distortion
- S-T phase input voltage harmonic distortion
- R-T phase input voltage harmonic distortion
- kW, kvar, kVA, kWh, KvarH, Cosϕ
- Max. kW, kVA, kvar
- Input power factor
- Voltage / Current Waveform
- Voltage / Current Spectrum
- Demand & Max. Demand current, kW, kVA
- Transformer Temperature

II) Output Power Supply Monitoring
- Output line voltage
- Output phase voltage
- Output current harmonic distortion
- Output voltage harmonic distortion
- Output neutral line current
- Output phase current
- Output ground current
- KVA rating
- Output frequency
- Output power factor
- kW rating
- Max. output phase current rating
- kWH
- Max. kVA output rating
- Voltage / Current Waveform
- Voltage / Current Spectrum
- Maximum & Average Input Voltage & Current
- Demand & Max. Demand current, kW, kVA
- Isolation transformer temperature (iPDU-TX model only)
- Cabinet internal temperature

III) Branch circuit current monitoring (Panelboard 1 & 2)
- Current
- Average current display
- Maximum current display
- Current demand display
- Maximum current demand display
- kW
- kW Average
- kWH
- Power Factor
- kW demand capacity
- Maximum power demand capacity
7. Main Menu Display and Functions
A. Status Indicator Display

Status indicator display “Normal” and “Abnormal” status.

- Green: Normal
- Red: Abnormal or Alarm

➢ Click the status indicator to show the PMMS (iPDU) status.

<table>
<thead>
<tr>
<th>Item</th>
<th>Node</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Input</td>
<td>Voltage Interrupt</td>
</tr>
<tr>
<td>2</td>
<td>Input#1</td>
<td>Voltage Interrupt</td>
</tr>
<tr>
<td>3</td>
<td>Main Breaker#1</td>
<td>Voltage Interrupt</td>
</tr>
<tr>
<td>4</td>
<td>Main Breaker#2</td>
<td>Voltage Interrupt</td>
</tr>
</tbody>
</table>

Main Breaker#2 - Voltage Interrupt | SD Card 8% Used | 2013-01-24 09:05:20
B. Menu List

- Click Menu to display the function list: Meter, Setting, Event Logs, About

C. Main Parameter Measurement (MPMB) Alarm & Branch Current Measurement Board (BCMB) Alarm

- Click the Input#1 to view the Input#1 alarm status.

D. PMMS Status Bar

E. Display the SD Card Capacity.

F. Display System Time.
7.1 Meter Menu

The meter menu allows user to view the various data measurement.

- Click [Meter] from the menu list

7.2 Main Parameter Measurement Board (MPMB)

- Click [Input] / [Input#1] / [Main Breaker#1] / [Branch#1] to view various parameters measurement.
7.2.1 Input / Input #1

The table below shows the measurement available for Input, Input#1 and Main breaker.

<table>
<thead>
<tr>
<th></th>
<th>Voltage &amp; Current</th>
<th>Power</th>
<th>Waveform</th>
<th>Spectrum</th>
<th>Max. &amp; Avg.</th>
<th>Demand &amp; Max Demand</th>
<th>Chassis Temperature</th>
<th>Transformer Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input#1</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Main Breaker</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7.2.2 Voltage & Current

Display three phase voltage and current parameters.
7.2.3 Power
Display three phase kW, kVA, kvar PF, CosΦ, kWh, kVAh and Kvarh parameters.

7.2.4 Waveform
Display the voltage or current waveform. Click the buttons on the left to view the desired voltage or current.

The table shows the selectable voltage and current display in Input, Input#1 and Main Breaker.

<table>
<thead>
<tr>
<th></th>
<th>V12</th>
<th>V23</th>
<th>V31</th>
<th>V1</th>
<th>V2</th>
<th>V3</th>
<th>I1</th>
<th>I2</th>
<th>I3</th>
<th>I_n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Input#1</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Main Breaker</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>
7.2.5 Spectrum
Display the voltage or current spectrum. Click the buttons on the left to view the desired voltage or current.

The table shows the selectable spectrum display in Input, Input#1 and Main Breaker.

<table>
<thead>
<tr>
<th></th>
<th>V12</th>
<th>V23</th>
<th>V31</th>
<th>V1</th>
<th>V2</th>
<th>V3</th>
<th>I1</th>
<th>I2</th>
<th>I3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Input#1</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Main Breaker</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>
7.2.6 Max & Avg
Display the following maximum and average parameters.
- Frequency
- Three phase voltage
- Three phase current
- Three phase KW
- Three phase KVA
- Three phase Kvar

Click ◄ or ► button to switch between pages.

7.2.7 Demand & Max. Demand.
Display the following demand and maximum demand parameters.
- Three phase current
- Three phase KW
- Three phase KVA
7.2.8 Temperature
Display the cabinet temperature.

7.2.9 Transformer Temperature
Display the transformer (iPDU-TX only) temperature.
7.3 Branch Current Measurement Board (MCMB)

- Click [Branch #1] or [Branch #2] to view various parameters measurement.

- Click the individual parameter to view detailed information.
7.3.1  Current
Display each branch circuit’s real-time current.

7.3.2  Current Avg.
Display each branch circuit’s average current.

7.3.3  Current Max.
Display each branch circuit’s maximum current.
7.3.4 kW
Display each branch circuit’s real power.

7.3.5 kW Avg.
Display each branch circuit’s average real power.

7.3.6 kW Max.
Display each branch circuit’s maximum real power
7.3.7 Power Factor
Display each branch circuit’s power factor.

7.3.8 kWh
Display each branch circuit’s kWh.

7.3.9 Current Demand
Display each branch circuit’s current demand.
7.3.10 Max. Current Demand
Display each branch circuit's maximum current demand.

7.3.11 kW Demand
Display each branch circuit's real power demand.

7.3.12 Max. Power Demand
Display each branch circuit's real maximum real power demand.
7.4 Menu Setup Illustration Table

- **Main Menu**
  - **Meter Input**
  - **Main Breaker Input**
    - **Voltage & Current**
    - **Power**
    - **Waveform**
    - **Spectrum**
    - **Demand & Max. Demand**
    - **Temperature**

- **Branch**
  - **Current**
    - **Current Avg.**
    - **Current Max.**
    - **KW**
    - **KW Avg.**
    - **PF**
    - **KWH**
    - **Current Demand**
    - **Max. Current Demand**
    - **KW Demand**
    - **Max. Power Demand**

- **Event Logs**

- **Setting**
  - **Configuration**
    - **Input电压, t.f. Rate**

  - **Communication**

  - **Set Alarm**
    - **Input Voltage**
    - **Current**
    - **Frequency**
    - **THDv**
    - **Branch Over Current**
    - **Under Current**
    - **Delay Time**

  - **Demand Subinterval**
    - **Buzzer/Alarm**
    - **Language**
    - **Date/Time**
    - **Reset Timer**
    - **Password**
    - **Restore Factory Setting**
    - **Update Software**
    - **Screen Timeout**
    - **Database**

*Ablerelex is Power Converter*
8 Settings Procedure

The setting menu allows user to configure the iPDU, describes button operation and alarm list.

- Click [Setting] from the menu list to setup the iPDU.

The below display screen appears when the iPDU is power up.

- Key in password and click [Enter] to enter the Setting screen.
- If there is no password provided, leave the password box blank and click [Enter].
8.1 Structure Setting

- Click [Structure] from the Settings menu to setup system structure.

- Check the boxes to select the measurement point.
- Click [Exit] and a save dialog box will appear.
- Click [Y] to save settings.
- Click [N] to exit without saving.
8.2 Configuration

- Click [Configuration] from the Settings menu to setup system.

- Click the button [Input], [Input#1], [Main Breaker#1], [Main Breaker#2]
- Click the item to be modified.
- Input the value and click [Enter].

Input#1 - Voltage

220

1  2  3  4  ← Backspace
5  6  7  8  Enter
9  0

- Click [Save] to save the modified parameter value.
- Upon successful saving, a dialog box “Set Successfully” will appear.
- Click [Exit] to return to the Setting screen.
8.3 Set Alarm

During event failure, the status indicator will turn red and buzzer will sound the alarm to indicate abnormal status or alarm.

8.3.1 Alarm Setting for Main Parameter Measurement Board

- Click [Set Alarm] from the Settings menu to setup alarm and warning level.

- Click [Input] / [Input#1] / [Main Breaker #1] to set alarm

<table>
<thead>
<tr>
<th></th>
<th>Voltage</th>
<th>Current</th>
<th>Frequency</th>
<th>THDv</th>
<th>Temperature</th>
<th>Ground Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Input#1</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Main Breaker</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>
8.3.2 Voltage

- Set the alarm and warning level for voltage.

<table>
<thead>
<tr>
<th></th>
<th>Volts(V)</th>
<th>Delay(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over-voltage Alarm</td>
<td>437</td>
<td>5</td>
</tr>
<tr>
<td>Over-voltage Warning</td>
<td>418</td>
<td>5</td>
</tr>
<tr>
<td>Under-voltage Warning</td>
<td>342</td>
<td>5</td>
</tr>
<tr>
<td>Under-voltage Alarm</td>
<td>323</td>
<td>5</td>
</tr>
</tbody>
</table>

- Select the value to change.
- Input the value and click [Enter].

**Over-voltage Alarm - Volts(V)**

450

1 2 3 4 ← Backspace
5 6 7 8 Enter

9 0
- Click [Exit] and a save dialog box will appear.
- Click [Y] to save alarm setting and exit

### 8.3.3 Current
- Set the alarm and warning level for current
- Repeat the above steps to change values.

<table>
<thead>
<tr>
<th>Over-current Alarm</th>
<th>144</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over-current Warning</td>
<td>132</td>
<td>5</td>
</tr>
<tr>
<td>Low-current Warning</td>
<td>108</td>
<td>5</td>
</tr>
</tbody>
</table>
8.3.4 Frequency

- Set the alarm and warning level for Frequency.
- Repeat the above steps to change values.

<table>
<thead>
<tr>
<th>Frequency Type</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Frequency Alarm</td>
<td>63</td>
</tr>
<tr>
<td>High Frequency Warning</td>
<td>62</td>
</tr>
<tr>
<td>Low Frequency Warning</td>
<td>58</td>
</tr>
<tr>
<td>Low Frequency Alarm</td>
<td>57</td>
</tr>
</tbody>
</table>

8.3.5 THDv

- Set the alarm and warning level for THDv.
- Repeat the above steps to change values.

<table>
<thead>
<tr>
<th>THDv Type</th>
<th>Volts(V)</th>
<th>Delay(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over THDv Alarm</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Over THDv Warning</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>
8.3.5 **Temperature**
- Set the alarm and warning level for Temperature.
- Repeat the above steps to change values.

<table>
<thead>
<tr>
<th></th>
<th>Temp. (°C)</th>
<th>Delay(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over Machine Temp. Alarm</td>
<td>50</td>
<td>5</td>
</tr>
<tr>
<td>Over Machine Temp. Warning</td>
<td>40</td>
<td>5</td>
</tr>
<tr>
<td>Over Transformer Temp. Alarm</td>
<td>130</td>
<td>5</td>
</tr>
<tr>
<td>Over Transformer Temp. Warning</td>
<td>110</td>
<td>5</td>
</tr>
</tbody>
</table>

8.3.6 **Ground Current**
- Set the alarm and warning level for Ground Current.
- Repeat the above steps to change values.

<table>
<thead>
<tr>
<th></th>
<th>Amps (mA)</th>
<th>Delay(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over-current Alarm</td>
<td>1000</td>
<td>5</td>
</tr>
<tr>
<td>Over-current Warning</td>
<td>500</td>
<td>5</td>
</tr>
</tbody>
</table>
8.4 Alarm Setting for Branch Current Measurement Board

- Click [Branch#1] / [Branch#2] from the Set Alarm menu to setup alarm and warning level for Branch current.

8.4.1 Enable Alarm

- Enable alarm and warning level for Branch Current.
- Click [Enable Alarm]

- Check the boxes besides the numbers to select the individual branch circuit breaker or click [Select All] to enable alarm function.
- Uncheck the boxes to disable alarm function.
- Click [Exit] and a save dialog box will appear.
- Click [Y] to save alarm setting.
- Click [N] to exit without saving.
### Branch#1 - Enable Alarm

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>08</td>
<td>15</td>
<td>22</td>
<td>29</td>
</tr>
<tr>
<td>02</td>
<td>09</td>
<td>16</td>
<td>23</td>
<td>30</td>
</tr>
<tr>
<td>03</td>
<td>10</td>
<td>17</td>
<td>24</td>
<td>31</td>
</tr>
<tr>
<td>04</td>
<td>11</td>
<td>18</td>
<td>25</td>
<td>32</td>
</tr>
<tr>
<td>05</td>
<td>12</td>
<td>19</td>
<td>26</td>
<td>33</td>
</tr>
<tr>
<td>06</td>
<td>13</td>
<td>20</td>
<td>27</td>
<td>34</td>
</tr>
<tr>
<td>07</td>
<td>14</td>
<td>21</td>
<td>28</td>
<td>35</td>
</tr>
</tbody>
</table>

#### Select All

#### Deselect All

---

**Main Breaker#2 - Voltage Interrupt**

<table>
<thead>
<tr>
<th>SD Card</th>
<th>Used</th>
<th>2013-01-24 14:31:37</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 %</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 8.4.2 Over-Current Alarm

- Set each branch circuit over-current alarm level.
- Select the value to change.

<table>
<thead>
<tr>
<th>Set Alarm</th>
<th>Branch#1 - Over-current Alarm (Amps)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>24.00 08 24.00 15 24.00 22 24.00 29 24.00 36 24.00</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>24.00 09 24.00 16 24.00 23 24.00 30 24.00 37 24.00</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>24.00 10 24.00 17 24.00 24 24.00 31 24.00 38 24.00</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>24.00 11 24.00 18 24.00 25 24.00 32 24.00 39 24.00</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>24.00 12 24.00 19 24.00 26 24.00 33 24.00 40 24.00</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>24.00 13 24.00 20 24.00 27 24.00 34 24.00 41 24.00</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>24.00 14 24.00 21 24.00 28 24.00 35 24.00 42 24.00</td>
<td></td>
</tr>
</tbody>
</table>

- Input the value and click [Enter].

### Branch#1 - Over-current Alarm (01)

![Over-current Alarm Input Interface]
- Click [Exit] and a save dialog box will appear.
- Click [Y] to save alarm setting and exit

<table>
<thead>
<tr>
<th>Set Alarm</th>
<th>Branch #1 - Over-current Alarm (Amps)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>01 30.00 08 24.00 15 24.00 22 24.00 29 24.00 36 24.00</td>
</tr>
<tr>
<td></td>
<td>02 24.00 09 24.00 16 24.00 23 24.00 30 24.00 37 24.00</td>
</tr>
<tr>
<td></td>
<td>03 24.00 10 24.00 31 24.00 38 24.00</td>
</tr>
<tr>
<td></td>
<td>04 24.00 11 24.00 32 24.00 39 24.00</td>
</tr>
<tr>
<td></td>
<td>05 24.00 12 24.00 33 24.00 40 24.00</td>
</tr>
<tr>
<td></td>
<td>06 24.00 13 24.00 20 24.00 27 24.00 34 24.00 41 24.00</td>
</tr>
<tr>
<td></td>
<td>07 24.00 14 24.00 21 24.00 28 24.00 35 24.00 42 24.00</td>
</tr>
</tbody>
</table>

**Main Breaker #2 - Voltage Interrupt**

**8.4.3 Over-Current Warning**
- Set each branch circuit over-current warning level.
- Repeat the above steps to change values.

<table>
<thead>
<tr>
<th>Set Alarm</th>
<th>Branch #1 - Over-current Warning (Amps)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>01 22.00 08 22.00 15 22.00 22 22.00 29 22.00 36 22.00</td>
</tr>
<tr>
<td></td>
<td>02 22.00 09 22.00 16 22.00 23 22.00 30 22.00 37 22.00</td>
</tr>
<tr>
<td></td>
<td>03 22.00 10 22.00 17 22.00 24 22.00 31 22.00 38 22.00</td>
</tr>
<tr>
<td></td>
<td>04 22.00 11 22.00 18 22.00 25 22.00 32 22.00 39 22.00</td>
</tr>
<tr>
<td></td>
<td>05 22.00 12 22.00 19 22.00 26 22.00 33 22.00 40 22.00</td>
</tr>
<tr>
<td></td>
<td>06 22.00 13 22.00 20 22.00 27 22.00 34 22.00 41 22.00</td>
</tr>
<tr>
<td></td>
<td>07 22.00 14 22.00 21 22.00 28 22.00 35 22.00 42 22.00</td>
</tr>
</tbody>
</table>
### 8.4.5 Under-Current Alarm

- Set each branch circuit under-current warning level.
- Repeat the above steps to change values.

<table>
<thead>
<tr>
<th>Set Alarm</th>
<th>Branch#1 - Under-current (Amps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>0.50</td>
</tr>
<tr>
<td>02</td>
<td>0.50</td>
</tr>
<tr>
<td>03</td>
<td>0.50</td>
</tr>
<tr>
<td>04</td>
<td>0.50</td>
</tr>
<tr>
<td>05</td>
<td>0.50</td>
</tr>
<tr>
<td>06</td>
<td>0.50</td>
</tr>
<tr>
<td>07</td>
<td>0.50</td>
</tr>
</tbody>
</table>

### 8.4.6 Delay Time Alarm

- Set each branch circuit delay time warning level.
- Repeat the above steps to change values.

<table>
<thead>
<tr>
<th>Set Alarm</th>
<th>Branch#1 - Delay Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Delay(s)</td>
</tr>
<tr>
<td>Over-current Alarm</td>
<td>5</td>
</tr>
<tr>
<td>Over-current Warning</td>
<td>5</td>
</tr>
<tr>
<td>Low-current Warning</td>
<td>5</td>
</tr>
</tbody>
</table>

Main Breaker#2 - Voltage Interrupt  SD Card  8% Used  2013-01-24 14:38:11
8.5 Communication

The iPDU allows user to communicate via RS-485 or Ethernet connection.

- Click [Communication] from the Settings menu to setup system communication.
- Select [Disable] from the drop down list to disable system communication.
- Select [Enable] from the drop down list to enable system communication via RS-485 or Ethernet connection.
- Set ID and Baud Rate for RS-485 communication.

<table>
<thead>
<tr>
<th>Communication</th>
<th>Enable</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID</td>
<td>1</td>
</tr>
<tr>
<td>Communication Type</td>
<td>RS-485</td>
</tr>
<tr>
<td>Baud Rate</td>
<td>57600</td>
</tr>
</tbody>
</table>

- Set IP address and Port for Ethernet communication.

<table>
<thead>
<tr>
<th>Communication</th>
<th>Enable</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID</td>
<td>1</td>
</tr>
<tr>
<td>Communication Type</td>
<td>Ethernet</td>
</tr>
<tr>
<td>IP Address</td>
<td>192.168.1.2</td>
</tr>
<tr>
<td>Gateway</td>
<td>192.168.1.1</td>
</tr>
<tr>
<td>Port</td>
<td>1317</td>
</tr>
</tbody>
</table>
8.6 Demand Subinterval

- Click [Demand Subinterval] from the Settings menu to setup demand subinterval time.
- Input the value and click [Enter].
- Setting range: 1 – 3600s

![Demand Subinterval Settings](image)
8.7 Buzzer/Alarm Setup

I. Buzzer
- Click [Buzzer] from the Settings menu.
- Click [Enable] to enable the buzzer.
  When an alarm occurs, the buzzer will sound.
- Click [Disable] to disable the buzzer.
- Click [Test] to test the buzzer.
  The buzzer will sound for 5 seconds.

II. I/O
- Set Voltage Interrupt, Over Voltage, Over Transformer Temperature, Under Voltage, Event Trigger, K1 Relay

III. Alarm
- Set PMMS Alarm, Warning Event Trigger, Alarm LED
8.8 Reset Counter

The Reset Counter function allows the following parameters to be reset to zero as shown in the screen below.

- Click [Reset Counter] from the Settings menu.

- Click the parameter to reset. A confirmation dialog box will appear.
- Click [Y] to confirm reset.
- Once parameter is reset, a dialog box “Set Successfully” will appear.
8.9 Restore Factory Setting

The Restore Factory Setting function allows user to restore all settings to factory default as shown in the screen below.

- Click [Restore Factory Setting] from the Settings menu.
- A confirmation dialog box will appear.

- Click [Y] to reset all settings to factory default.
- To cancel reset, click [N] to return to Setting menu.
- Once restore settings is successful, a dialog box “Set Successfully” will appear.
8.10 Password Setting

The Password function allows user to change password as shown in the screen below.

- Click [Password] from the Settings menu.
- Click the “Old Password” text box.

Input the old password and click [Enter].
➢ Once the password is entered correctly, a checked mark will appear.

➢ Click the “New Password” text box.
➢ Input the new password and click [Enter] to update the password.
8.11 Language Setting

- Click Language from the Settings menu to display language.
8.12 Date and Time Setting

The iPDU enables date and time setup. In the event of failure, the actual date, time and sequence will be recorded. All records are saved in the event log (SD Card).

- Click [Date/Time] from the Settings menu.
- Use the [+] [-] key to set the desired year, month, day, hour, minute and second.
- Click [Update Time].
- Once time is updated, a dialog box “Set Successfully” will appear.
8.13 Software Update

The Software Update function allows user to update software using the SD card.

- Copy the updated “package emd” file into an SD card.
- Insert the SD card into the SD card slot on the panel device.
- Click [Update Software] from the Settings menu.
- A confirmation dialog box will appear as shown below.

- Click [Y] to update the software.
- Wait for a few minutes. The panel will restart automatically.
8.14 Screen Timeout

The Screen Timeout function allows user to enable or disable the iPDU sleep function.

- Select [Enable] to enable the sleep function.
- Input the timeout minutes.
- Select [Disable] to disable the sleep function.
8.15 Database

The Database function allows user to enable or disable the recording interval.

- Select [Enable] to enable the Database function. (The database will be stored in the SD card.)
- Select [Disable] to disable the Database function.
9. Event Log
Display the event log records.

- Click [Event Logs] from the main screen.

- Click [Main Breaker #1] to download event logs.
Select the event log download quantity. The default is 50 entries.

- Click [Download] to save the event log

The event log will be exported as excel sheet and save in SD card.

- Use Microsoft Excel to view saved event log.
10. About

The about page displays the Software version, the OS version, the Serial number of the Power Distribution unit and MAC address of the PMMM.

- Click [About] from the main screen.

- Click [OK] to exit.