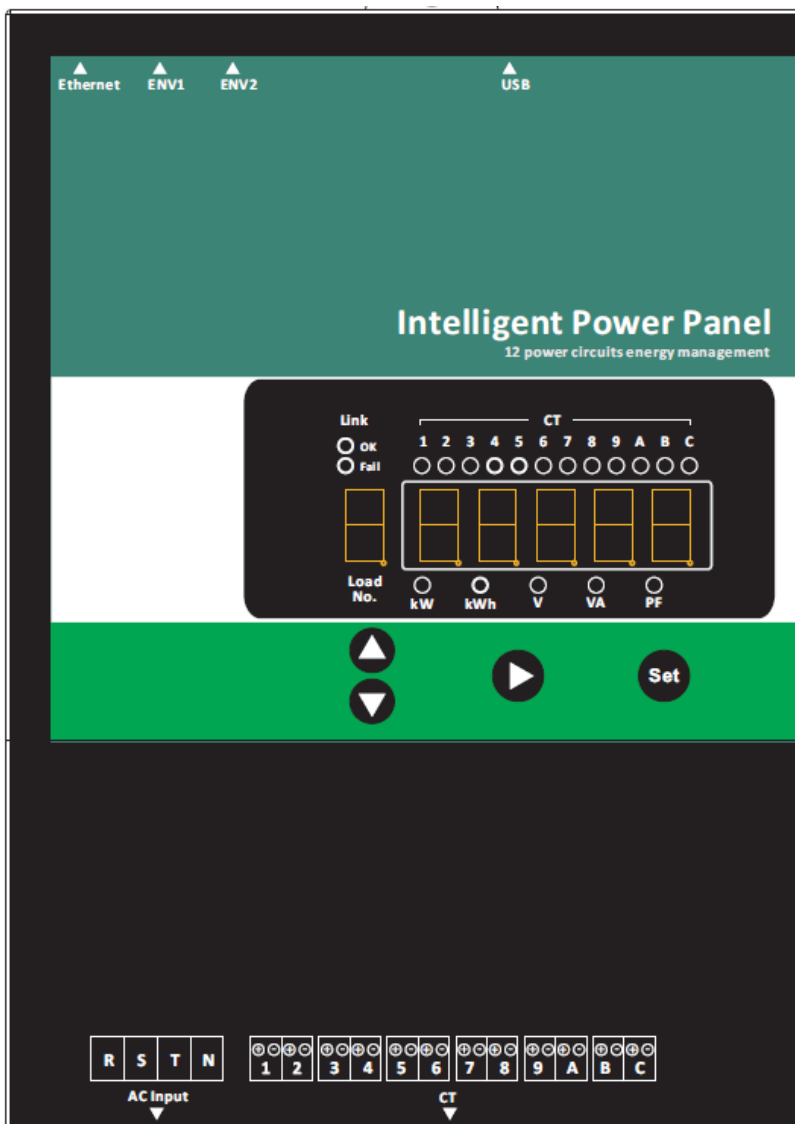


# 2015

## Intelligent Power Panel Installation Guide



Digipower Inc.

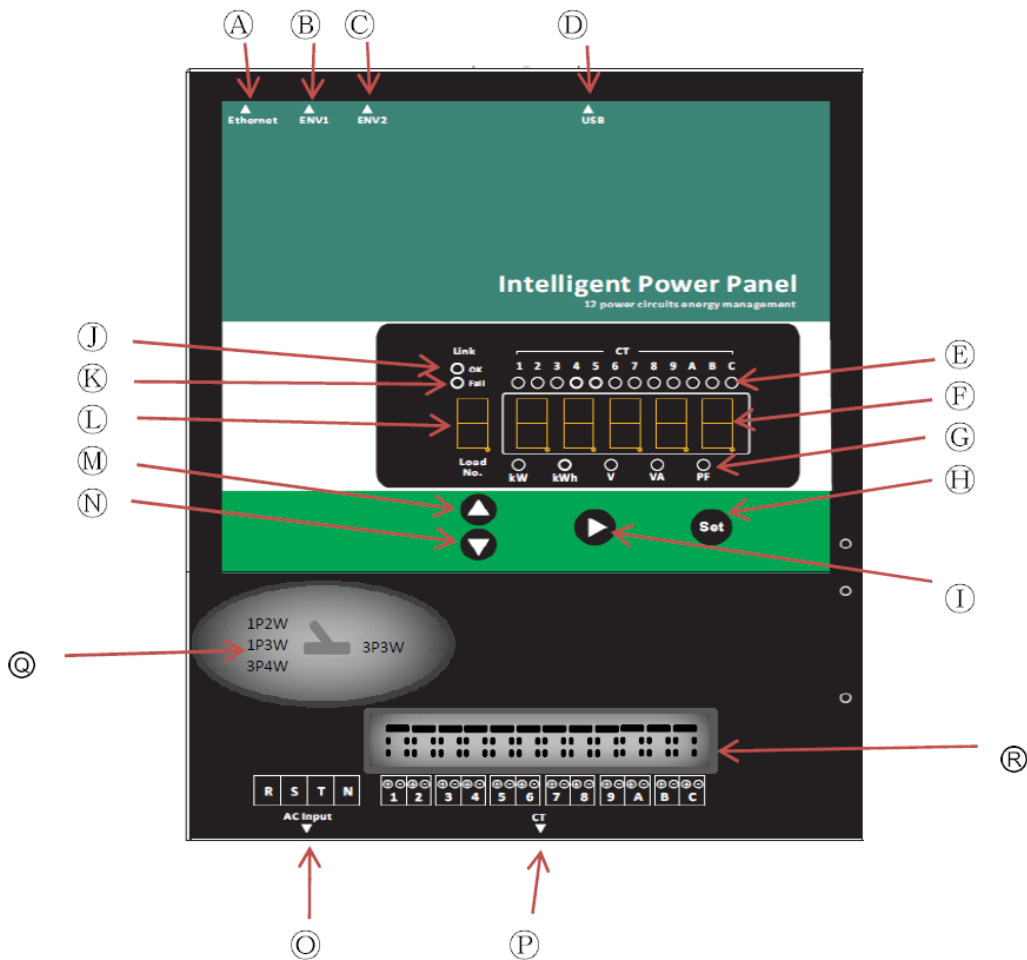
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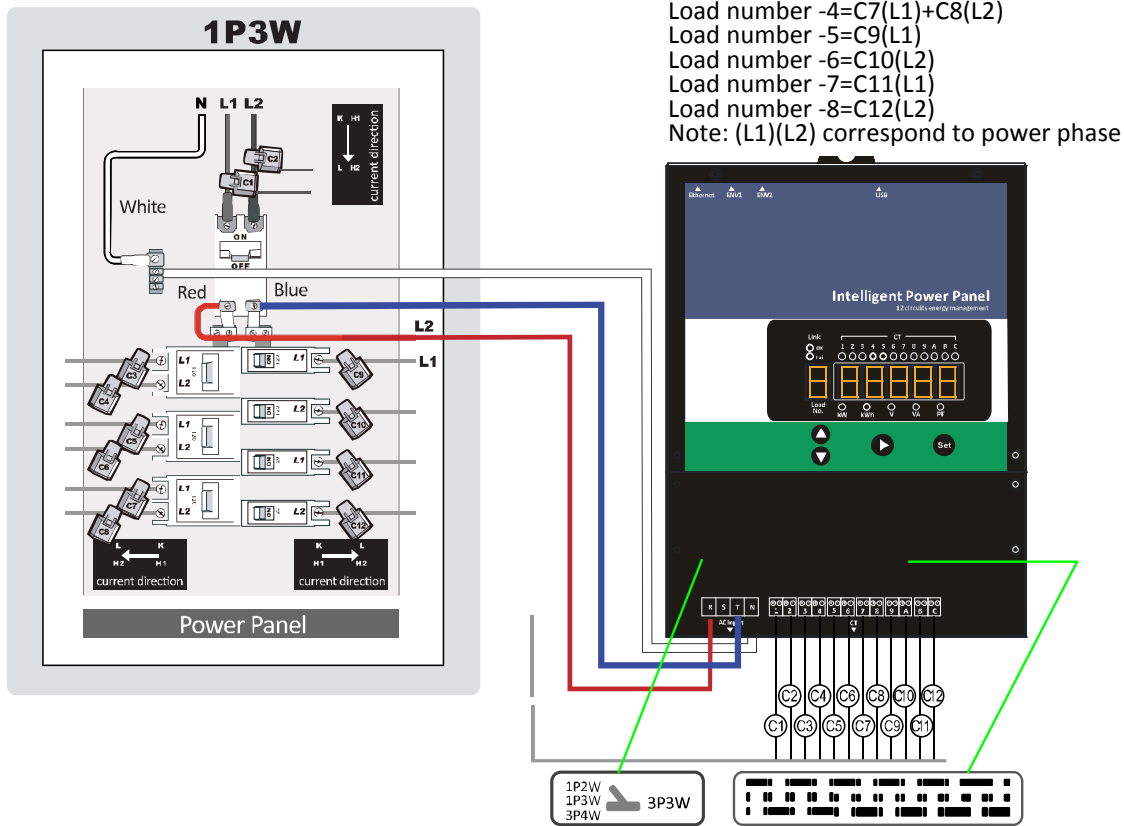
# Installation Diagram

## Faceplate Functional Description



- A: Ethernet connector(RJ-45)
- B: ENV connector(RJ-11)
- C: ENV connector(RJ-11)
- D: USB connector(Wi-Fi USB Dongle)
- E: Selected CT indicator
- F: 5 digits numeric display
- G: Selected function indicator
- H: Set button
- I: Enter button
- J: Link ok indicator
- K: Link fail indicator
- L: Load number display
- M: Up button
- N: Down button
- O: Working Power and reference power
- P: CT inputs
- Q: Phase and Wires selector (Inside of the case)
- R: CT reference phase jumper (Inside of the case)

# 1P3W installation Diagram

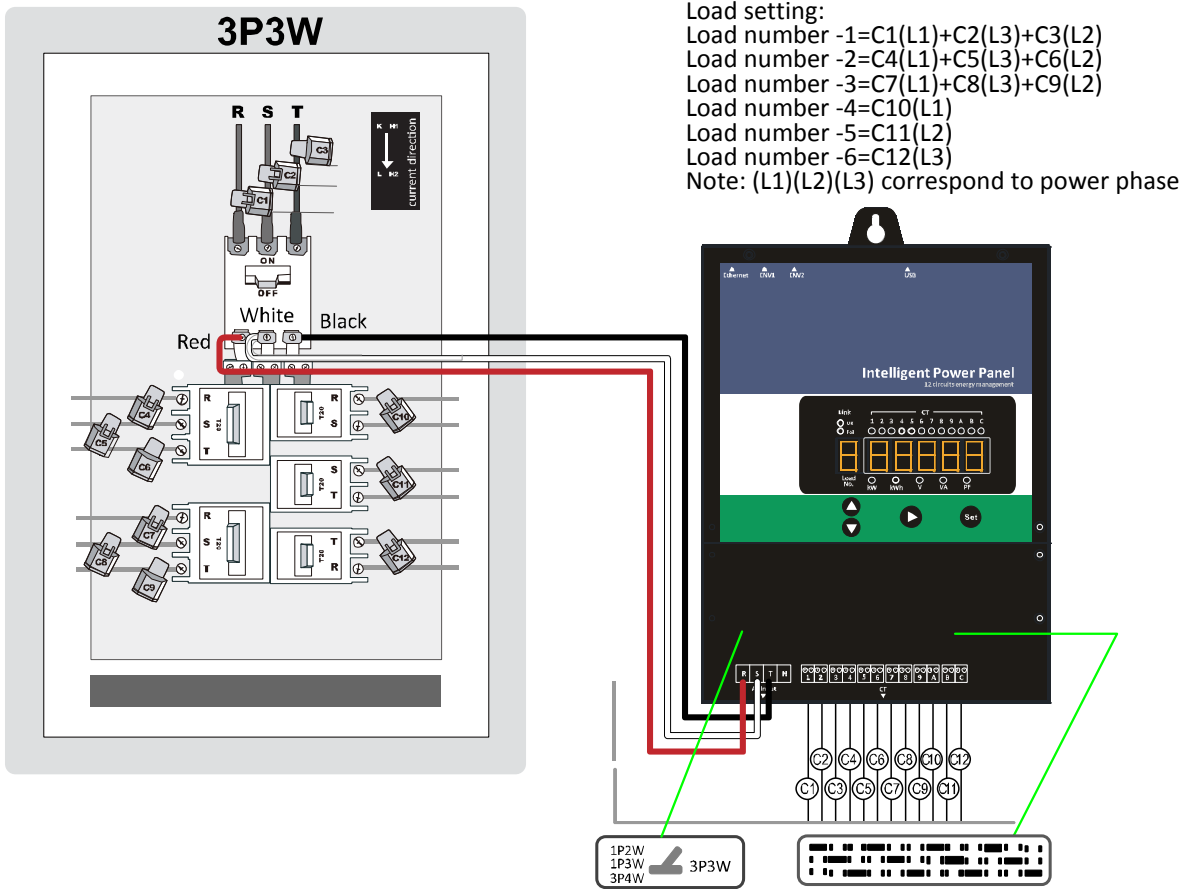


## Notes:

1. The figure Shows 110V / 220V single-phase three-wire power supply system used in the general household.
2. N stand for Neutral, L1-N and L2-N are 110V, L1-L2 is 220V.
3. C1, C2 detect power source. C3, C4 and C5, C6 and C7, C8 detect 220V. C9~C12 detect 110V.
4. In the measurement of single-phase three wires power consumption, the N as the reference point, with two wattmeter measurement, measure the voltage between L1-N with current L1, L2-N with current L2. C1 detects L1 current on A(L1-N), C2 detects L2 current on C(L2-N). The rest C3, C4, or, C5, C6 or C7, C8 can be done in the same manner.
5. The Formula and define of single-phase three-wire synthesized as follows:
 

$VAVG(\text{Average voltage})=(V1+V2)$	$PFEQ(\text{equivalent PF})=WT/VAT$
$IEQ(\text{equivalent current})=VAT/VAVG$	$KWHT(\text{TOTAL KWH})=KWH1+KWH2$
$WT(\text{TOTAL W})=W1+W2$	$KVAHT(\text{TOTAL KVAH})=KVAH1+KVAH2$
$VAT(\text{TOTAL VA})=VA1+VA2$	
6. C9, C11 detect L1 current on A(L1-N) separately. C10, C12 detect L2 current on A(L2-N) separately.

# 3P3W installation Diagram

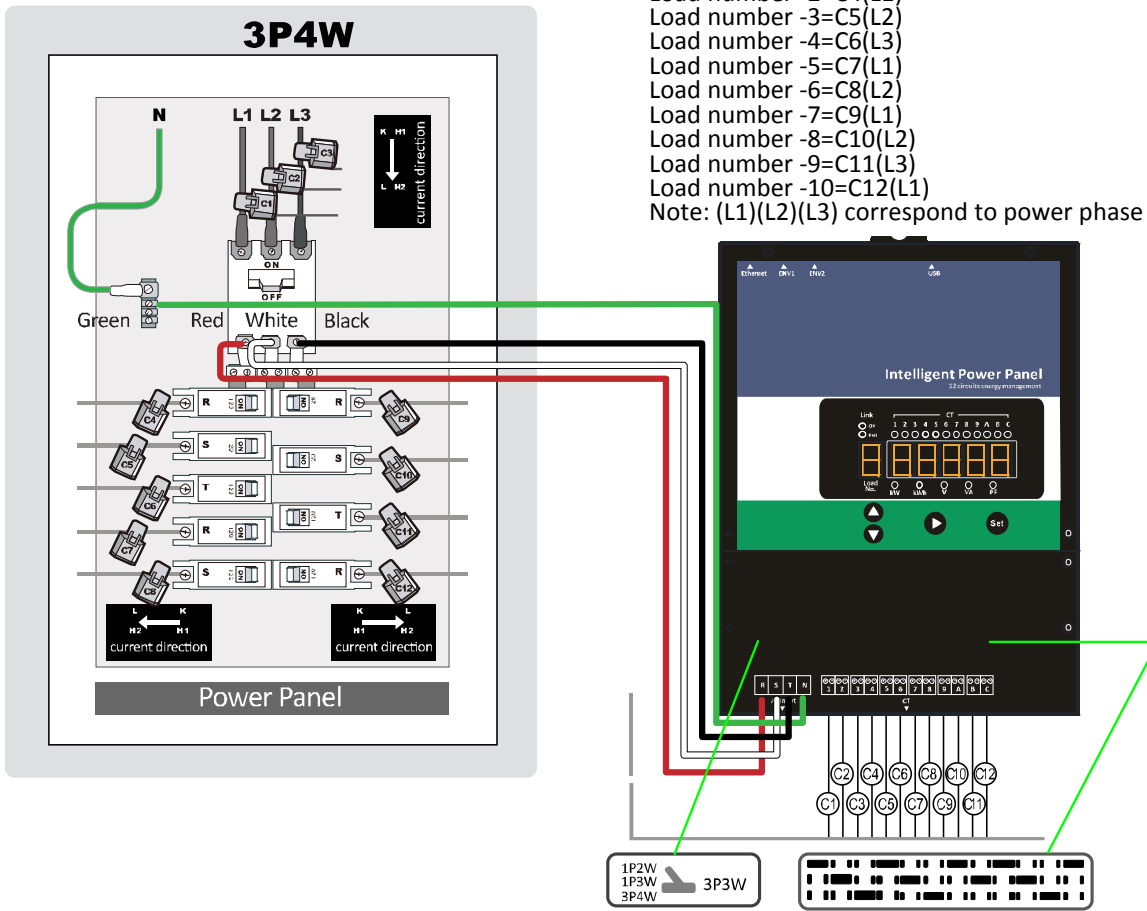


## Notes:

1. L1-L2 is 220V, L2-L3 is 220V and L3-L1 is 220V. The figure shown C1, C2, C3 detect 3P3W total power source, C4, C5, C6 and C7, C8, C9 detect the other two 3P3W power source. C10, C11 and C12 detect the one of three phases separately.
2. In the measurement of three phase three wires power consumption, the L2 as the reference point, with two wattmeter measurement, measure the voltage between L1-L2 with current in L1 and L3-L2 with current in L3 to get 3P3W power consumption. The figure shown C1 detects L1 current, the voltage is L1-L2. The figure shown C2 detects L2 current, the voltage is L3-L1. The figure shown C3 detects L3 current, the voltage is L2-L3.
3. The Formula and define of three-phases four-wires synthesized as follows:
 

$V_{AVG}(\text{Average voltage}) = (V1 + V3) / 2$	$P_{FEQ}(\text{equivalent PF}) = WT / VAT$
$I_{EQ}(\text{equivalent current}) = VAT / V_{AVG}$	$KWHT(\text{TOTAL KWH}) = KWH1 + KWH3$
$WT(\text{TOTAL W}) = W1 + W3$	$KVAHT(\text{TOTAL KVAH}) = KVAH1 + KVAH3$
$VAT(\text{TOTAL VA}) = VA1 + VA3$	
4. The figure shown C10 detects L1 current, the voltage is L1-L2. The figure shown C11 detects L2 current, the voltage is L2-L3. The figure shown C12 detects L3 current, the voltage is L3-L1.

# 3P4W installation Diagram



## Notes:

1.  $V_{L1-N} = V_{L2-N} = V_{L3-N}$  ,  $V_{L1-L2} = V_{L2-L3} = V_{L3-L1} = \sqrt{3} * V_{L1-N}$
2. The figure shows C1, C2 and C3 detect 3P4W Y type power source. C4~C12 detect phase to Neutral.
3. In the measurement of three phase four wires power consumption, the N as the reference point, with three wattmeter measurement, measure the voltage between L1-N with current in L1, L2-N with current in L2 and L3-N with current in L3 to get 3P4W power consumption.  
 The figure shown C1 detects L1 current, the voltage is L1-N.  
 The figure shown C2 detects L2 current, the voltage is L2-N.  
 The figure shown C3 detects L3 current, the voltage is L3-N.
4. The Formula and define of three-phases four-wires synthesized as follows:  
 $V_{AVG}(\text{Average voltage}) = (V1+V2+V3) / 3$        $P_{FEQ}(\text{equivalent PF}) = WT/VAT$   
 $I_{EQ}(\text{equivalent current}) = VAT/V_{AVG}$        $K_{WHT}(\text{TOTAL KWH}) = KWH1+KWH2+KWH3$   
 $WT(\text{TOTAL W}) = W1+W2+W3$        $K_{VAHT}(\text{TOTAL KVAH}) = KVAH1+KVAH2+KVAH3$   
 $VAT(\text{TOTAL VA}) = VA1+VA2+VA3$
5. The figure shown C4, C7, C9, C12 detect L1 current, the voltage is L1-N.  
 The figure shown C5, C8, C10 detect L2 current, the voltage is L2-N.














The figure shown C6, C11 detect L3 current, the voltage is L3-N.

## Installation Notes

1. The maximum voltage measurement is 400V.
2. Check that the voltage and current phases are connected properly.
3. Measuring the diameter of the conductor (the bare wire) with the insulation removed and selecting the suitable size of detachable CT.
4. Measuring voltage: Make sure the CT's on phases and wires are correct as installation diagram.
5. Measuring current: The positive output can be obtained when the direction of current carrying conductor is the same as the direction of arrow marked on the CT.
6. The installation of loads combination refers to Installation Diagram.
7. The hardware setting refers to Installation Diagram.
8. Working power supply: AC 115V/230V on terminal R & T, the pinout as shown in Installation Diagram.
9. The software setting refers to Operation.
10. Communication interface: RJ-45, TCP/IP

## Operation





### Normal Mode

Item	Key	Description
1.1	 or 	Show Loops and CT combination.
1.2		Display the following items: (1) kW (2) kWh (3) V (4) I (5) PF
1.3	 + 	Ignore
1.4	 + 	Pressed 3 seconds simultaneously, enter Brightness adjusting Mode, show version number and IP address.
1.5	 + 	Pressed 3 seconds simultaneously, enter 1P3W/3P3W/3P4W setting Mode.
1.6	 + 	Pressed 3 seconds simultaneously, enter Test Mode.
1.7	 + 	Pressed 3 seconds simultaneously, enter Load setting Mode.

1.8	 + 	Pressed 3 seconds simultaneously, enter Meter Series Number setting Mode.
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## Brightness adjusting

In this mode, adjust LED brightness from 1~9.

Item	Key	Description
2.1		Increase
2.2		Decrease
2.3		One click enters Show IP address mode. Pressed 3 seconds return to Normal Mode.
2.4		Pressed 3 seconds to save then return to Normal Mode.




## Show IP address

In Brightness adjusting mode, pressed  enter Show IP address mode.


Item	Key	Description
2.1		Decrease segment display
2.2		Increase segment display
2.3		One click enters Brightness adjusting mode. Pressed 3 seconds return to Normal Mode.
2.4		Pressed 3 seconds to save then return to Normal Mode.

## 1P3W/3P3W/3P4W setting

In this mode, select 1P3W/3P3W/3P4W in accordance with wires installation.





Item	Key	Description
3.1	 or 	Select 1P3W/3P3W/3P4W
3.2		Pressed 3 seconds return to Normal Mode.



3.3		Pressed 3 seconds to save then return to Normal Mode.
-----	---	---







## Test Mode setting

In this mode, inspect each CT information.

Item	Key	Description
4.1	 or 	Select CT number
4.2		Display the following items in sequence: (1) kW (2) kWh (3) V (4) I (5) PF
4.3		Pressed 3 seconds return to Normal Mode.



## Load setting




In this mode, set CT combination in each loop.

Item	Key	Description
5.1	 or 	Select loop
5.2		Select CT number
5.3		Pressed 3 seconds return to Normal Mode.
5.4		Added/exit loop
5.5		Pressed 3 seconds to save then return to Normal Mode.

## Meter ID setting

In this mode, set Meter ID from 1~99.

Item	Key	Description
6.1	 or 	Select Meter ID

6.2		Select 1st digit or 2nd digit
6.3		Pressed 3 seconds return to Normal Mode.
6.4		Pressed 3 seconds to save then return to Normal Mode.

Note:

1. Set Meter ID = 0, restore factory setting as following:

Meter ID = 01

Load 1 = CT-01

Brightness = 1

3P4W

2. Set Meter ID = 100, restore test setting as following:

Meter ID = 01

Load 1 = CT-01

Load 1 = CT-02

Load 1 = CT-03

Load 1 = CT-04

Load 1 = CT-05

Load 1 = CT-06

Load 1 = CT-07

Load 1 = CT-08

Load 1 = CT-09

Load 1 = CT-10

Load 1 = CT-11






Load 1 = CT-12

Brightness = 1

3P4W

## Meter Series Number setting

In this mode, set Meter Series Number.

Item	Key	Description
7.1	 or 	Select Meter Series Number
7.2		Select digit
7.3		Pressed 3 seconds return to Normal Mode.
7.4		Pressed 3 seconds to save then return to Normal Mode.

## Technical Specification

Model	IPP-M series
Phase& Wire	1P2W / 1P3W / 3P3W / 3P4W
Module	12 power monitoring modules with 1P2W

### Communication

Display	5 digits LED display power information and IP address in turn; 1 digit LED load number
Ethernet	RJ45, Wi-Fi (USB Dongle option)
Temperature & Humidity	RJ11 (ENV Probe option)
Comm. Protocols	ICMP, ARP, IP, TCP, UDP, DHCP, HTTP, HTTPS, SNMPv1,V3
Signal	Communication and Lost signal
<b>Operation</b>	
Power Usage	lower than 3W, AC 115V/230V
Certification	FCC & CE EMC EN61326-1
Operation Temperature	-20~+60 Celsius degree
Operation Humidity	20%~95%RH
Size	192x253x42 mm
Weight	1.8 kg

Note:

Nominal equipped with 12 10ΦCTs, rated current 15(60)A.

Optional 16ΦCTs, rated current 30(120)A.

24ΦCTs, rated current 50(200)A.

# Web interface

The default setting for the way to get IP address is DHCP. If PDU cannot get the IP from DHCP server, the IP address will stay at **192.168.0.xx**

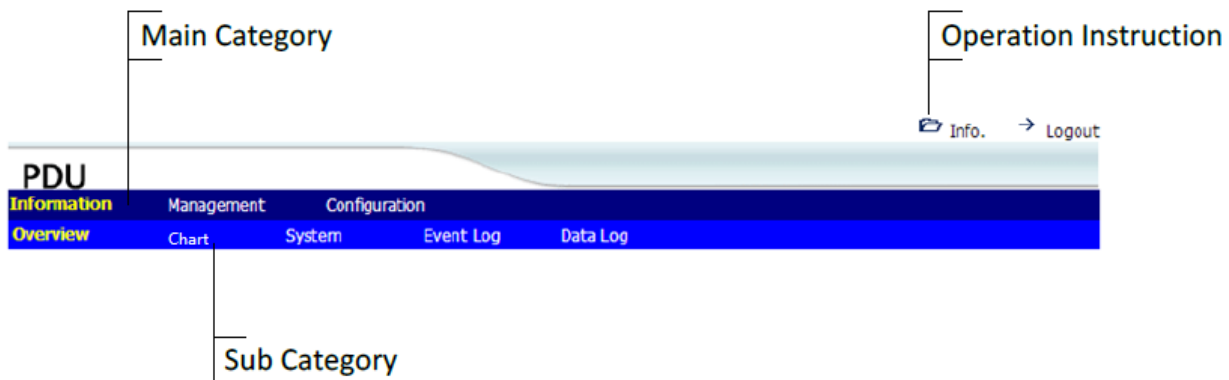


Login Name:   
Login Password:

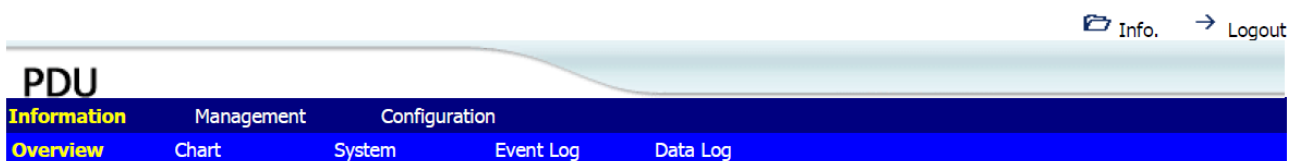
Default ID: **snmp**

Default Password: **1234**

After login to web, user can check all operation instruction in web page of "Info."



## Information



Overview

Display Power information summary

Chart

Display All Power Information in trend.

System

Display System, Network and SNMP Information.

Event Log

Inquire event log by time.

Data Log

Inquire data log by time for each circuit.

Note: System memory can log up to 5000 entries.

## Management

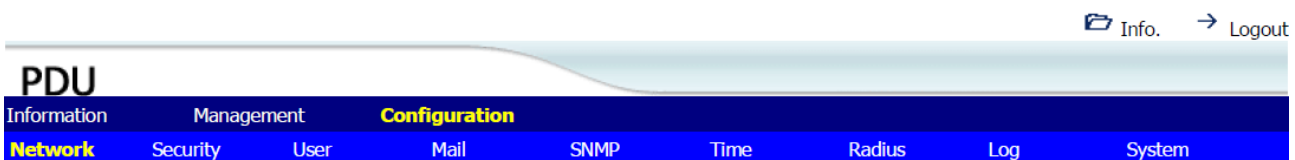


Device

Threshold configuration for Temperature, Humidity and circuit's current.

Circuit name definition

## Configuration



Network

IP Address Related Configuration.

Wireless Configuration:

1. Install USB wifi dongle
2. Set "Wireless Configuration" in the "Network Information"

3. Restart IPP after the “Wireless Configuration” setting is completed.

Note:

The default setting for the way to get IP address is DHCP. If PDU can not get the IP from DHCP server, the IP address will stay at 192.168.0.132.

The max. length of host name is 36 characters

## Security

Access Setup for Web, SSL, SSH and Telnet

Note:

Default login ID is snmp and password is 1234 for SSH and Telnet.

## User

Multiple Users Configuration

Note:

Users can add up to 8 accounts.

Admin: Full authority to monitor, control and configure PDU  
Default ID is snmp, password is 1234  
(Access Information/ Management/ Configuration)

Power user: Monitor PDU, control the specified outlets. No permission to configure PDU.

Default Password: password  
(Access Information/ Management)

View Only: Monitor PDU only. No permission to control and configure PDU.  
Default Password: password  
(Access Information)

## Mail

Mail Server Configuration

Send out alert message to pre-defined account when event occurs.

## SNMP

Simple Network Management Protocols Configuration

Support SNMPv1,v2 and v3

## Time

Time by NTP or Manually for Schedule and Log record

## Radius

Advanced Authentication

Note:

System supports the Remote Authentication Dial-in User Service protocol. (RADIUS). It provides a centralized network protocol to enable remote authentication and authorization.

## Log

### Log Setup

Note:

Export: Export events and data log in text format. Set the date to mail kWh usage information.

Syslog: Sent event log to the specified Syslog server.

Heartbeat Trap: Send trap to the specified IP to indicate PDU is alive.

Event Log: Check the box to enable to log the specified event

## System

Configuration files export and Import, Firmware Upgrade, Reset Functions.











Note:

System: Export to backup system configuration. Import system configuration from backup file.

Reset System: Restart network system through web.

# Mobile app

Scan the QR code on catalog or down load IPP-Gate app from Google play.

< Measurement List	< Information	< Information
Circuit4 	<b>Temperature</b> 28 C	<b>Load</b> 1
Circuit5 	<b>Humidity</b> 47 %	<b>CT Number</b> 1,0,0
Circuit6 	<b>Status of Temperature</b> Normal	<b>V</b> 109.62 V
Circuit7 	<b>Status of Humidity</b> Normal	<b>A</b> 0.00 A
Circuit8 	<b>Status of Device</b> Enable	<b>PF</b> 1.00
Circuit9 		<b>kW</b> 0.000 W
Circuit10 		<b>kWh</b> 124.815 kWh
Circuit11 		<b>Status</b> Normal
Circuit12 		
Env-1 	Time : 2015-08-04 02:31:29	Time : 2015-08-04 02:30:26
Env-2 