

RS PRO User Manual



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User Manual

I . Introduction

The Hot-Swapple and AC/DC integration IP-PDU is our company's newest scientific achievement in the power distribution filed in 2016. On the trend of future power distribution management technology development, combining the technology requirement of the modern data center application environment, adopting key technology with fully independent intellectual property, the product IP-PDU is designed in combination of network communication, AC/DC integration, power distribution, network management and hot-swappable technology.

II . Main functions

1. Monitor input voltage
2. Monitor total load current
3. Monitor total power (kW)
4. Monitor energy consumption (kWh)
5. Monitor the micro-environment in the cabinet

III. Monitoring method

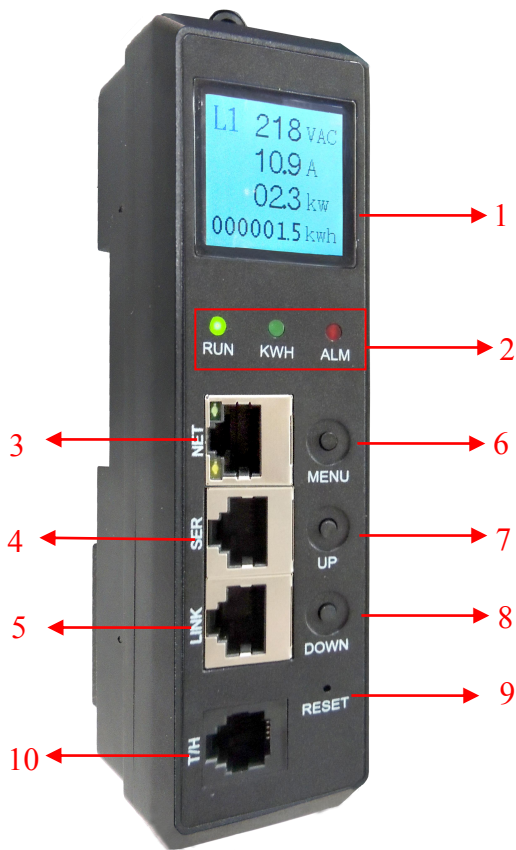
Via software: IP-PDUs can be monitored and managed though centralized management software--- CLEVER Manager

IV. Applications

Apply to single phase 100 Vac~240 Vac up to 63A, 3-phase 200 Vac~400 Vac up to 32A and 100 Vdc~350 Vdc power source. The outlet type and quantity can be customized at request.

IP-PDU is widely applied to the data centers of industries like network communication, telecom, electric power, finance, insurance, aerospace, transportation, information processing, education, medical and E-government.

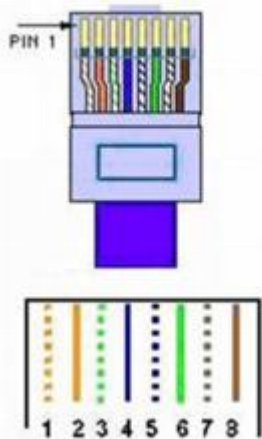
V. Product sketch



1. Screen: TFT screen
2. RUN: Run indicator
KWH: kWh indicator
ALM: Alarm indicator
3. NET: Ethernet port
4. SER: Daisy-chain port
5. LINK: Daisy-chain port
6. MENU: Menu Key
7. UP: Function set key
8. DOWN: Position selection key
9. RESET: Restart button
10. T/H: Temperature/Humidity sensor port

VI. Instruction on the RS485 port and RJ45 terminal pin

RJ45 terminal pin



Color	Instructions
1. Orange & White	GND
2. Orange	GND
3. Green & White	RS485-A
4. Blue	RS485-A
5. Blue & White	RS485-B
6. Green	RS485-B
Brown & White	GND
8. Brown	GND

VII. Mounting method

IP-PDU products can be vertical installation.

VIII. Hardware introduction

1. Front panel introduction:

Panel composition	Function	Description
RUN	Run indicator	Flash frequency is 1 second
KWH	kWh indicator	Flash frequency depends on the load
ALM	Alarm indicator	Light on if there is a alarm happening
NET	Ethernet port	LAN/WAN Ethernet communication port
SER	Daisy-chain port	RS-485 daisy-chain communication port
LINK	Daisy-chain port	RS-485 daisy-chain communication port
MENU	Menu key	View the LCM displayed information: Light up the LCM background, save the configuration by pressing the ENTER key. Restore to factory settings: Hold the MENU key and press the RESET button to restore Mute alarm: Press and hold the MENU key for 4 seconds to turn On/Off the alarm
UP	Function set key;	Light up the LCM background, set the Master or Slave address cord, the maximum threshold of voltage, current, temperature and humidity from 0 to 9
DOWN	Position selection key	Light up the LCM background, select the address cord, maximum threshold of voltage, current, temperature and humidity
RESET	Restart button	Restart the device
Screen	View the states	Displays the power and environment date
T/H	Temperature and humidity sensor port	

2. Initialization

When powered on, the RUN indicator will flash and the PDU works normally after initializing the LCD indicator and TFT screen. The LCD will now display the content introductions from the direct current power , single phase and three phase power:

2.1 Direct Current modular:

1st screen: Amps(0.1A), Volts(220VDC), Power(0.0kW), kWh(0.0kWh) (Figure 1)

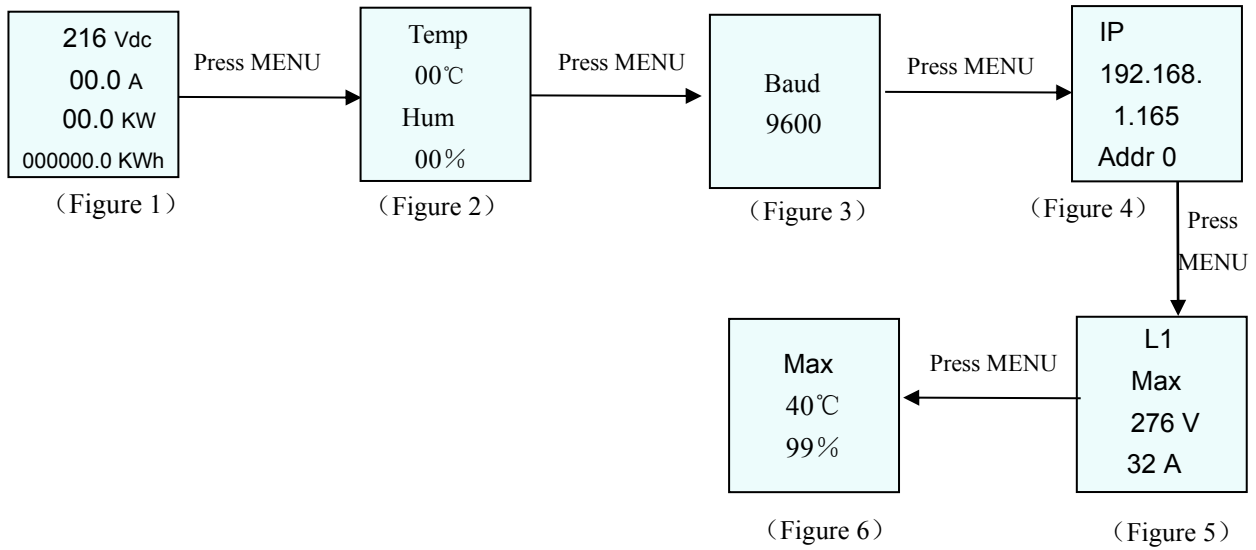
2nd screen: Temperature and Humidity date (figure 2)

3rd screen: Brad rate(4800/9600/19200/38400) (Figure 3)

4th screen: Device IP, Address code(from 0 to 4) (Figure 4)

5th screen: Threshold of the current (32A) and voltage (276VDC) (Figure 5)

6th screen: Threshold of the temperature (40°C) and humidity (90%) (Figure 6)



2.2 The single phase modular:

1st screen: Amps(0.1A), Volts(220VAC), Power(0.0kW), kWh(0.0kWh) (Figure 1)

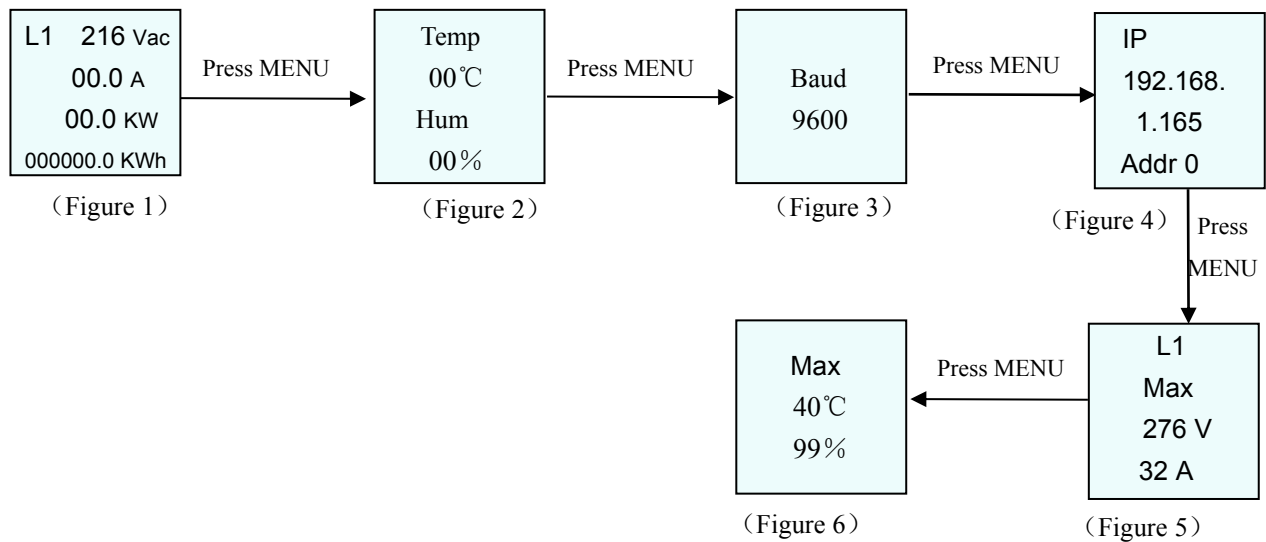
2nd screen: Temperature and Humidity date (figure 2)

3rd screen: Brad rate(4800/9600/19200/38400) (Figure 3)

4th screen: Device IP, Address code(from 0 to 4) (Figure 4)

5th screen: Threshold of the current (32 A) and voltage (276 Vac) (Figure 5)

6th screen: Threshold of the temperature (40°C) and humidity (90%) (Figure 6)



2.3 The 3-phase modular:

1st screen: L1 Amps (0.1A), Volts (220 Vac), Power (0.0kW), kWh (0.0kWh) (Figure 1)

2nd screen: L2 Amps (0.1A), Volts (220 Vac), Power (0.0kW), kWh (0.0kWh) (Figure 2)

3rd screen: L3 Amps (0.1A), Volts(220 Vac), Power (0.0kW), kWh (0.0kWh) (Figure 3)

4th screen: Temperature and Humidity date (figure 4)

5th screen: Brad rate (4800/9600/19200/38400) (Figure 5)

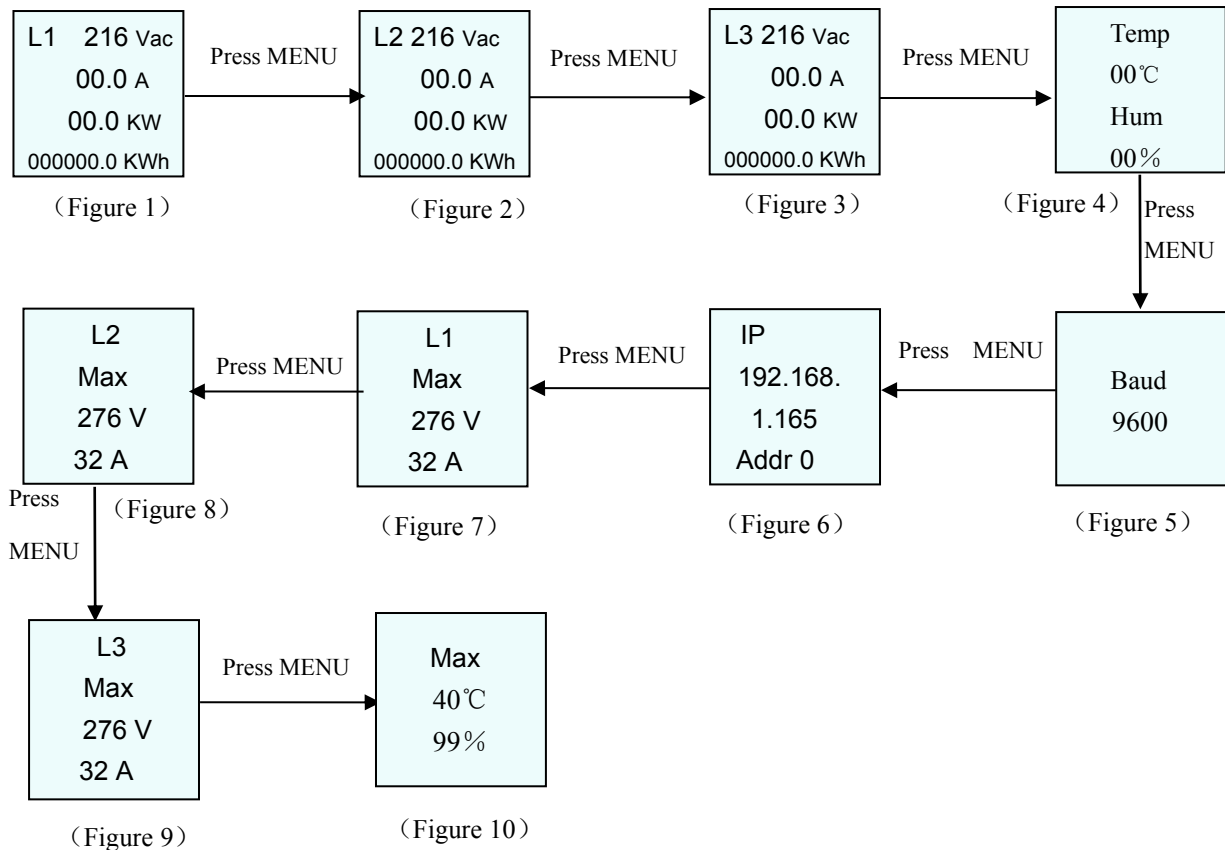
6th screen: Device IP, Address code(from 0 to 4) (Figure 6)

7th screen: L1 threshold of the current (32 A) and voltage (276 Vac) (Figure 7)

8th screen: L2 threshold of the current (32 A) and voltage(276 Vac) (Figure 8)

9th screen: L3 threshold of the current (32 A) and voltage(276 Vac) (Figure 9)

10th screen: Threshold of the temperature (40°C) and humidity (90%) (Figure 10)



3. Hardware settings

3.1 Address code settings: To locate the address code page (like Add -0) from the LCD screen, press the DOWN key to set the value (4 to 0) for the master or slave address code and press the UP key to set the value (0 to 4).

3.2. Current or Voltage threshold settings: To locate the threshold setting page (like L1 32.0A 276VAC), press the DOWN key to select the value that needs to be set. The select position will flash and then press UP key to set the threshold value. The allowed maximum current is 32 A and maximum voltage is 276 Vac.

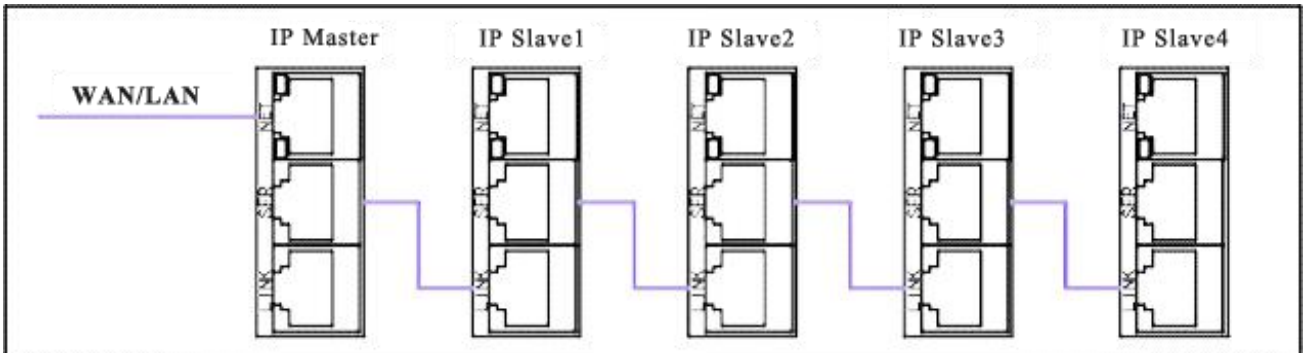
Note: All above settings must be saved by pressing the MENU key. A beep will sound and the settings will take effect. If this does not happen, all settings will not be saved.

3.3 Restore Factory Settings: Press and hold the MENU key with power on or hold the MENU key and press the RESET button till the normal screen is displayed.

3.4 Mute Alarm: Press and hold the MENU key for 5-6 seconds when the alarm is sounding to turn off/on the alarm. When the alarm was turned on, an 'O' in red will be displayed on the screen. When the alarm is turned off, an 'F' in red will be displayed on the screen.

4. Daisy- Chain Connection

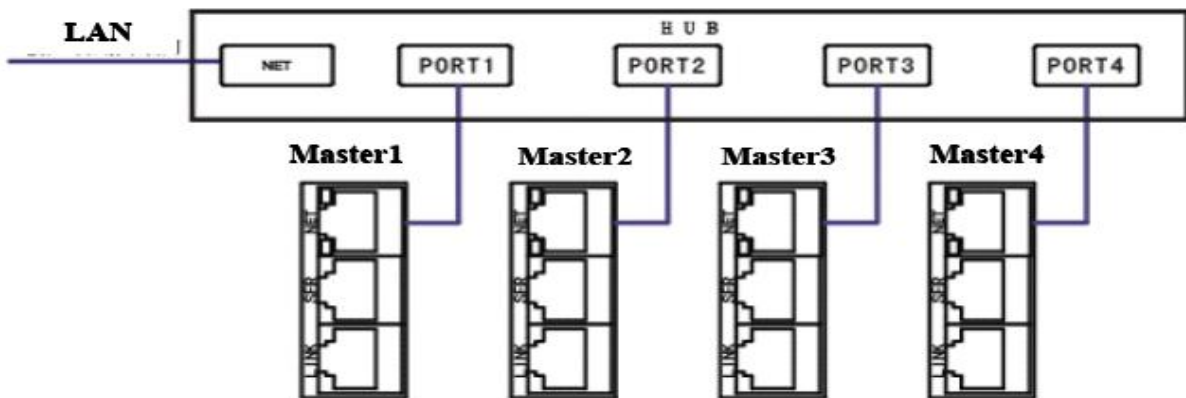
Serial Daisy-Chain Mode:



(Figure 1)

4.1. Setting one IP-PDU as Master unit and the rest as Slave unit. The maximum daisy-chain is 4 pcs. Apply to IP-PDU6, refer to figure 1

Ethernet Daisy-Chain Mode:



(Figure 2)

4.2. Connect the PDU to the port from the HUB and connect the Net port from HUB to the internet. No limitation for the PDU quantity. Please see figure Figure 3.

4.3 Connecting the Master net port with computer net port, then access via IE.

IX. Software Introduction

User can access the IP-PDU through WEB interface, SNMP(v1) or Telnet command console

1. Web Browser Access

User can access, monitor and control the IP-PDU by web browser like Internet Explorer, Google Chrome and so on by inputting the correct IP address in the address bar. The pop-up login window is illustrated as figure 1

Figure1

User will see the home page (as figure 2) after entering the correct user name and password in the login dialog box

Item	Name	Status	Unit
1	Line 1 Current	0	A
2	Line 1 Voltage	211	V
3	Line 1 Power	0	kW
4	Line 1 Energy	26.4	kWh
5	Temperature	0	℃
6	Humidity	0	%

Figure 2

Main interface includes 3 parts: Company Logo, Menu and Device States.

A. Device State:

A. Device State: Click the Device State (AC or DC). User can check the current, voltage, power and energy consumption of the IP-PDU as figure 2

Input: From the drop-down list , view the Power Date of L1,L2 or L3 (Single phase module does not have drop-down list)

From the drop-down list , view the Power Date or Master unit or Slave units. One Master unit can support up to 4 slave units (Slave 1- Slave 4)

B. Threshold setting: to set threshold of total load current.See below.

User can set up the threshold of current, voltage, temperature and humidity from the threshold settings page as figure 3.

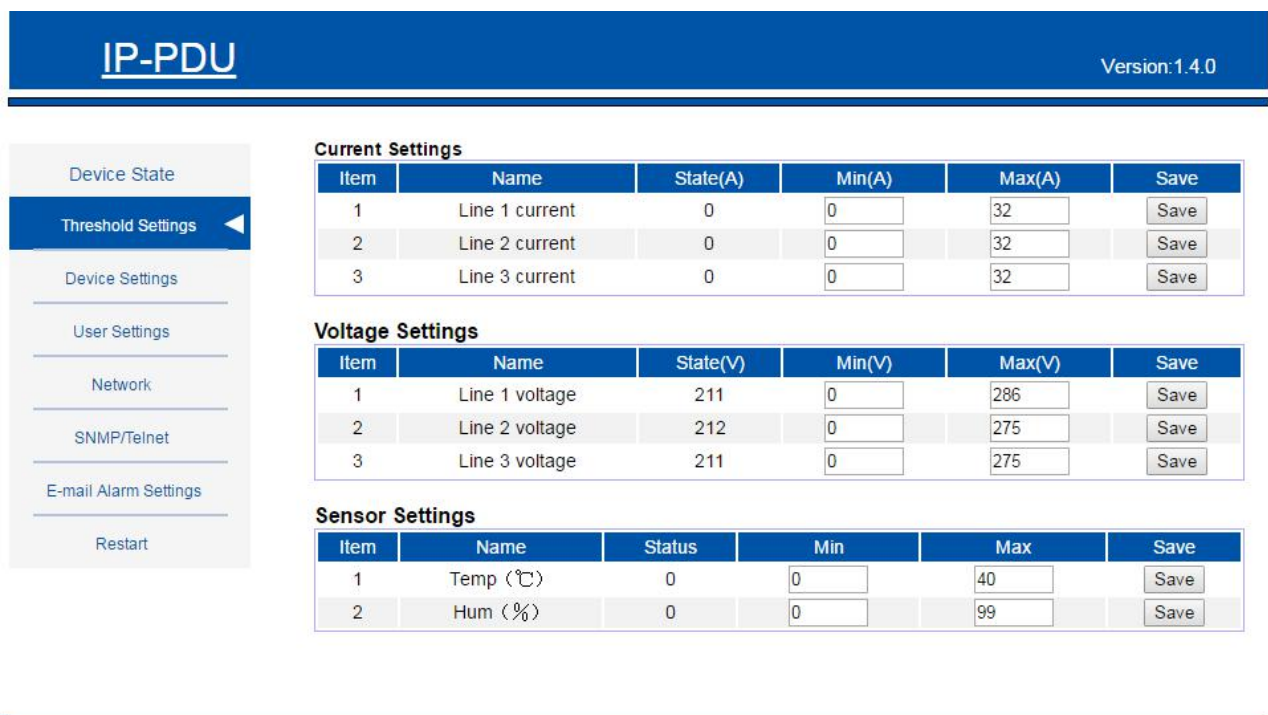


Figure 3

Set up the threshold of current, voltage, temperature and humidity

The current of single phase range from 0-63 A; 3-phase range from 0-32 A and direct current range from 0-60 A

The input voltage range from 170-276 Vac

The temperate range from 0-40°C and humidity range from 0-99%

C. Device Settings as figure 4

a. Device Settings

Device Name: Input device name and then save it.

Web Server Port

Work model: Revise master and slave mode to set slave 1, 2 etc. (Virtual Value:1-4)

b. Energy Setting:

Clear energy line1: Click button.

(The same operation for Line 2 and Line 3 in 3-phase products.)

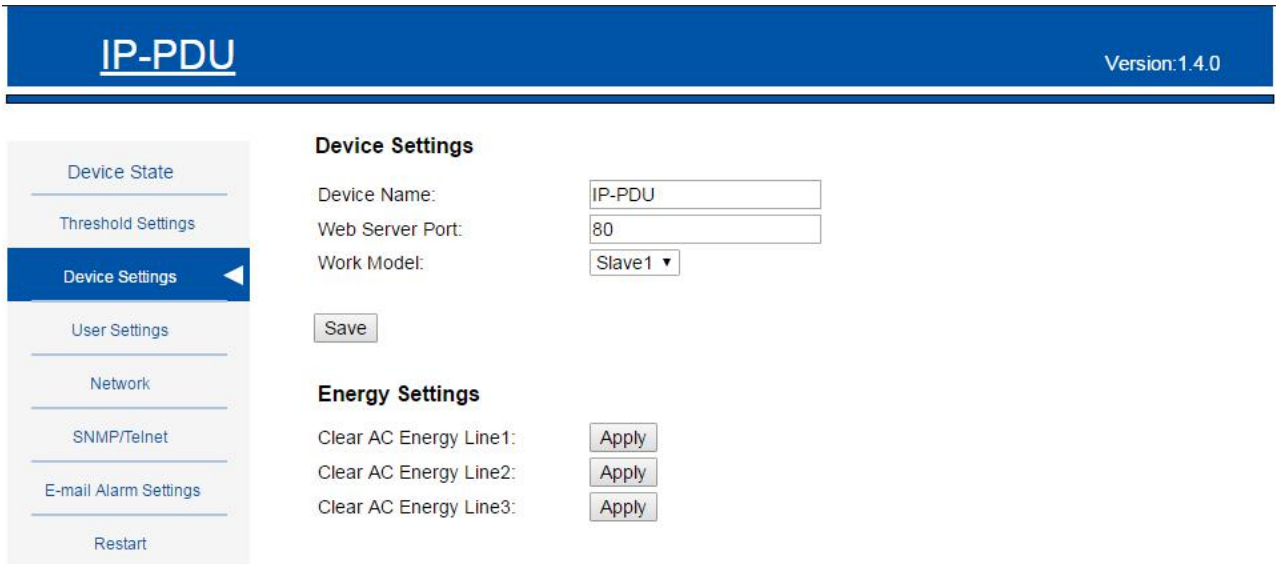


Figure 4

D. User settings as figure 5.

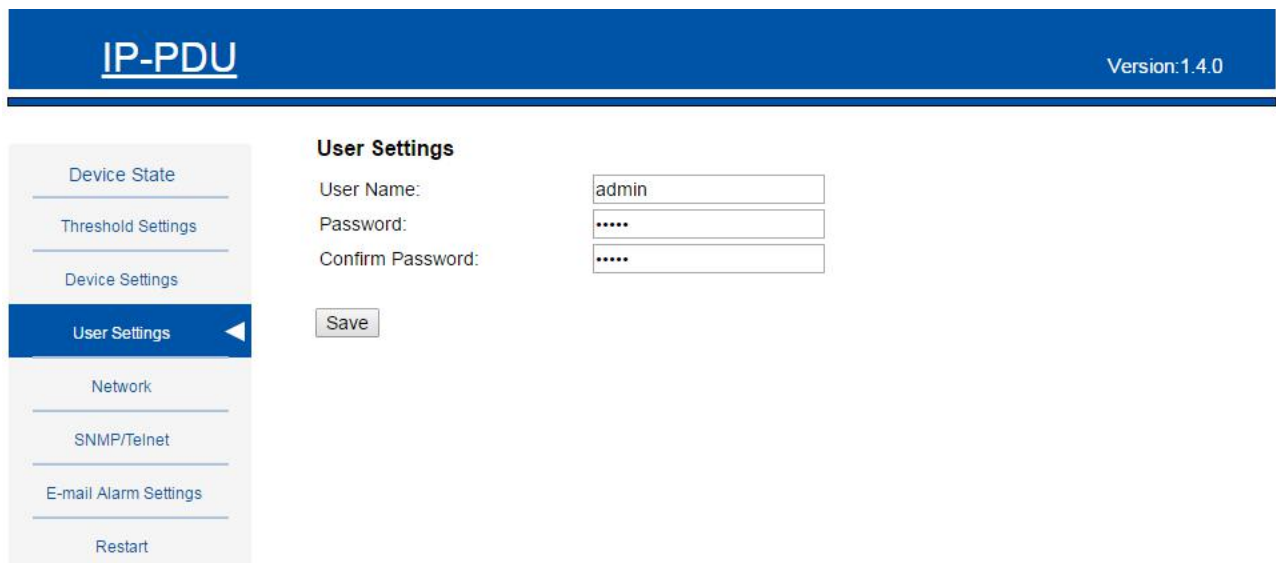


Figure 5

Operator can amend the user name and password (Max. length of user name and password is 16 digits.)

E. Networking Setting as figure 6

The screenshot shows the IP-PDU configuration interface. At the top, there is a blue header with 'IP-PDU' on the left and 'Version: 1.4.0' on the right. Below the header is a sidebar menu with options: Device State, Threshold Settings, Device Settings, User Settings, Network (highlighted in blue with a left-pointing arrow), SNMP/Telnet, E-mail Alarm Settings, and Restart. The main content area is titled 'Network Settings' and contains four input fields: System IP (192.168.1.163), Subnet Mask (255.255.255.0), Default Gateway (192.168.1.1), and DNS (202.96.128.86). A 'Save' button is located below the input fields.

Figure 6

Networking Setting: System IP: 192.168.1.163 (factory default IP Address)

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.1

DNS: factory default is 202.96.128.86

Please ensure the DNS address is correct to ensure that an email can be sent out.

Note: Restarting software is necessary after a modification of the network settings.

F. SNMP Setting, see below figure 7

The default is community. The set community is “public” and “private”. User can modify according to the specific application.

Fill in the trap address of SNMP management platform. Trap alarm will be sent automatically. There are 2 trap addresses.

Note: Restarting software is necessary after SNMP setting.

Telnet settings

Select from “Enable” or “Disable” to configure the Telnet feature. The default state is enabled.

IP-PDU
Version: 1.4.0

- Device State
- Threshold Settings
- Device Settings
- User Settings
- Network
- SNMP/Telnet
- E-mail Alarm Settings
- Restart

SNMP

Get Community:

Set Community:

Trap1 IP:

Trap2 IP:

Telnet

Telnet Server:

Figure 7

G. E-mail Alarm Settings as figure 8:

Set the SMTP including SMTP account, password, SMTP server, port and then save. Click testing and fill in the testing email address. If the test email is received, the setting is effective. See below interface.

IP-PDU
Version: 1.4.0

- Device State
- Threshold Settings
- Device Settings
- User Settings
- Network
- SNMP/Telnet
- E-mail Alarm Settings
- Restart

SMTP Settings

SMTP Account:

Password:

SMTP Server:

Port:

Send to:

Figure 8

H. Restart as figure 9

Select Activity: Restart the software or restore to factory default settings. Click "Save". When IP-PDU is buzzing, the software restart is successful. See below:

Note: Press and hold the MENU button when power is on to restore to factory settings.

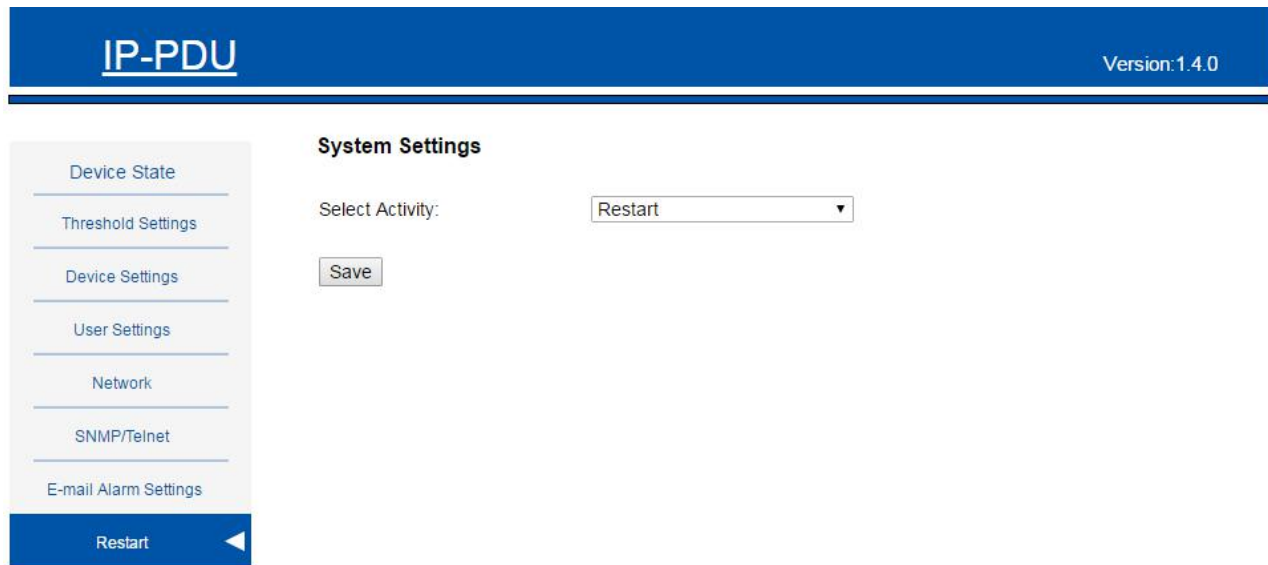


Figure 9

2. SNMP access

SNMP access: SNMP (V1)

	OID	Instructions
Device Name	1.3.6.1.4.1.30966.10.3.1.1	Master device name
mVoltage A	1.3.6.1.4.1.30966.10.3.2.1	Voltage of L1 for master device
mVoltage B	1.3.6.1.4.1.30966.10.3.2.2	Voltage of L2 for master device
mVoltage C	1.3.6.1.4.1.30966.10.3.2.3	Voltage of L3 for master device
mCurrent A	1.3.6.1.4.1.30966.10.3.2.4	Current of L1 for master device
mCurrent B	1.3.6.1.4.1.30966.10.3.2.5	Current of L2 for master device
mCurrent C	1.3.6.1.4.1.30966.10.3.2.6	Current of L3 for master device
mEnergy A	1.3.6.1.4.1.30966.10.3.2.7	Power energy of L1 for master device
mEnergy B	1.3.6.1.4.1.30966.10.3.2.8	Power energy of L2 for master device
mEnergy C	1.3.6.1.4.1.30966.10.3.2.9	Power energy of L3 for master device
mTem	1.3.6.1.4.1.30966.10.3.2.10	The temperature value of Master
mHum	1.3.6.1.4.1.30966.10.3.2.11	The humidity value of Master
sOneVoltage A	1.3.6.1.4.1.30966.10.3.2.12	Voltage of L1 for slave 1
sOneVoltage B	1.3.6.1.4.1.30966.10.3.2.13	Voltage of L2 for slave 1

sOneVoltage C	1.3.6.1.4.1.30966.10.3.2.14	Voltage of L3 for slave 1
sOneCurrent A	1.3.6.1.4.1.30966.10.3.2.15	Current of L1 for slave 1
sOneCurrent B	1.3.6.1.4.1.30966.10.3.2.16	Current of L2 for slave 1
sOneCurrent C	1.3.6.1.4.1.30966.10.3.2.17	Current of L3 for slave 1
sOneEnergy A	1.3.6.1.4.1.30966.10.3.2.18	Power energy of L1 for slave 1
sOneEnergy B	1.3.6.1.4.1.30966.10.3.2.19	Power energy of L2 for slave 1
sOneEnergy C	1.3.6.1.4.1.30966.10.3.2.20	Power energy of L3 for slave 1
sOneTem	1.3.6.1.4.1.30966.10.3.2.21	The temperature value of Slave 1
sOneHum	1.3.6.1.4.1.30966.10.3.2.22	The temperature value of Slave 1
sTwoVoltage A	1.3.6.1.4.1.30966.10.3.2.23	Voltage of L1 for slave 2
sTwoVoltage B	1.3.6.1.4.1.30966.10.3.2.24	Voltage of L2 for slave 2
sTwoVoltage C	1.3.6.1.4.1.30966.10.3.2.25	Voltage of L3 for slave 2
sTwoCurrent A	1.3.6.1.4.1.30966.10.3.2.26	Current of L1 for slave 2
sTwoCurrent B	1.3.6.1.4.1.30966.10.3.2.27	Current of L2 for slave 2
sTwoCurrent C	1.3.6.1.4.1.30966.10.3.2.28	Current of L3 for slave 2
sTwoEnergy A	1.3.6.1.4.1.30966.10.3.2.29	Power energy of L1 for slave 2
sTwoEnergy B	1.3.6.1.4.1.30966.10.3.2.30	Power energy of L2 for slave 2
sTwoEnergy C	1.3.6.1.4.1.30966.10.3.2.31	Power energy of L3 for slave 2
sTwoTem	1.3.6.1.4.1.30966.10.3.2.32	The temperature value of Slave 2
sTwoHum	1.3.6.1.4.1.30966.10.3.2.33	The temperature value of Slave 2
sThreeVoltage A	1.3.6.1.4.1.30966.10.3.2.34	Voltage of L1 for slave 3
sThreeVoltage B	1.3.6.1.4.1.30966.10.3.2.35	Voltage of L2 for slave 3
sThreeVoltage C	1.3.6.1.4.1.30966.10.3.2.36	Voltage of L3 for slave 3
sThreeCurrent A	1.3.6.1.4.1.30966.10.3.2.37	Current of L1 for slave 3
sThreeCurrent B	1.3.6.1.4.1.30966.10.3.2.38	Current of L2 for slave 3
sThreeCurrent C	1.3.6.1.4.1.30966.10.3.2.39	Current of L3 for slave 3
sThreeEnergy A	1.3.6.1.4.1.30966.10.3.2.40	Power energy of L1 for slave 3
sThreeEnergy B	1.3.6.1.4.1.30966.10.3.2.41	Power energy of L2 for slave 3
sThreeEnergy C	1.3.6.1.4.1.30966.10.3.2.42	Power energy of L3 for slave 3
sThreeTem	1.3.6.1.4.1.30966.10.3.2.43	The temperature value of Slave 3
sThreeHum	1.3.6.1.4.1.30966.10.3.2.44	The temperature value of Slave 3
sFourVoltage A	1.3.6.1.4.1.30966.10.3.2.45	Voltage of L1 for slave 4

sFourVoltage B	1.3.6.1.4.1.30966.10.3.2.46	Voltage of L2 for slave 4
sFourVoltage C	1.3.6.1.4.1.30966.10.3.2.47	Voltage of L3 for slave 4
sFourCurrent A	1.3.6.1.4.1.30966.10.3.2.48	Current of L1 for slave 4
sFourCurrent B	1.3.6.1.4.1.30966.10.3.2.49	Current of L2 for slave 4
sFourCurrent C	1.3.6.1.4.1.30966.10.3.2.50	Current of L3 for slave 4
sFourEnergy A	1.3.6.1.4.1.30966.10.3.2.51	Power energy of L1 for slave 4
sFourEnergy B	1.3.6.1.4.1.30966.10.3.2.52	Power energy of L2 for slave 4
sFourEnergy C	1.3.6.1.4.1.30966.10.3.2.53	Power energy of L3 for slave 4
sFourTem	1.3.6.1.4.1.30966.10.3.2.54	The temperature value of Slave 4
sFourHum	1.3.6.1.4.1.30966.10.3.2.55	The temperature value of Slave 4

3. Telnet access

The application of Telnet enables the user to remotely manager the PDU. The user can monitor and manage the device by entering the command line from the Telnet program. Telnet requires the customer terminal from the PC and there are free software like PUTTY available. The main command lines are as follows: STATUS, REBOOT, RESET and HELP

A. STATUS

“STATUS” command line can be used to view the device states like amps/volts/kWh or temperature/humidity:

Command form: STATUS 【INDEX】

【INDEX】 : 0 is master, 1-4 is slave

For example: Status 0 – To view the amps/volts/kWh and temperature/humidity of the master unit note, the actual value should be 10 x of display one

B. REBOOT

Entry REBOOT command line to restart the device.

C. RESET

Entry RESET command line to restore to factory settings.

X. Technical Specification

No.	Item		Parameters
1	Input	Single	Rating voltage 110/220 V 50/60 HZ
		phase	The max current 16 A、 32 A、 63 A

		3-Phase	Rating voltage	380 V 50/60 HZ	
			The max current	3×16 A, 3 × 32 A	
		Direct current	Rating voltage	240 V / 336 V	
			The max current	40 A / 60 A	
		Cable Spec	16 A: 3 × 2.5 mm ² ×3M 32 A: 3 × 6.0 mm ² ×3M 63 A: 3 × 16.0 mm ² ×3M 3×16 A: 5 × 2.5 mm ² ×3M 3 ×32 A: 5×6.0mm ² ×3M		
		Input terminal	16 A input: 3×2.5mm ² ×3M IEC60320 C20 input 32 A input: 3×6.0mm ² ×3M IEC60309 industrial plug 63A input : 3×16.0mm ² ×3M IEC60309 industrial plug 3×16A input : 5×2.5 mm ² ×3M IEC60309 industrial plug 3×32A input : 5×6 mm ² ×3M IEC60309 industrial plug		
Overload protector	Circuit breaker (optional)				
2	Output	Single phase	Rating voltage	110/220 V	
			The max current	16 A, 32 A, 63 A	
		3-Phase	Rating voltage	220 V	
			The max current	3×16 A, 3 × 32 A	
		Direct current	Rating voltage	240 V / 336 V	
			The max current	40 A / 60 A	
		Outlet standard	Optional		
Outlet quantity	Optional				
3	Display	Display method		LCD display	
		Display contents		Amps/volts/kWh/kW, IP address, address code, the temperature/humidity	
		Accuracy	Voltage	Accuracy: ±(1%+3byte) Resolution: 1V Display method: LCD; Vertical	Respond time: 400 ms Display direction:
			Current	Accuracy: ±(1%+1byte) Resolution: 100 mA 400ms Display method : LCD; Vertical	Respond time: Display direction :
			kWh	Accuracy: ±1% Resolution: 0.1kWh 400ms Display method: LCD;	Respond time: Display direction: Vertical
4	Physical Spec	Material	ABS+PC		

		Colour	Black
	Dimension	Build-in IP-PDU modular	155 mm
		Hot-Swap IP-PDU modular	180 mm
5	Installation	Vertical	
6	Monitor	Total load current	
		Input Voltage	
		Total energy consumption (kWh)	
		Total Power (kW)	
		Temperature/humidity	
7	Setting	Threshold of Amps/Volts/Temperature and humidity	
		Email alarm address	
		HTTP	
		SNMP (v1)	
		Network (IP, gateway, subnet mask, DNS)	
8	Alarm	System default alarm	When current exceed Max
			When voltage exceed Max
		User defined alarm	When current exceed the threshold
			When voltage exceed the threshold
			When Temperature/humidity exceed the threshold
		Alarm	Buzzer sounds
	Send E-mail to administrator automatically		
	SNMP sends trap alarm information		
	9	Central management	Compatible with CLEVER Manager software to do central management
10	Access	Web based, access via web browsers like IE, Firefox and Google	
		SNMP v1 support	
		Via console of serial communication	
11	User Management	User name and password configurable	
12	Environment	Temperature	0°C~45°C
		Relative humidity	30~90%
		Storage	-20°C ~ 70°C

XI. Quality Warranty

Please refer to our standard Terms & Conditions of sale.