



MS-PDU User Manual

(Metered and Switched Power Distribution Unit)



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MS-PDU User Manual

I. MS-PDU Summary

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 is designed in combination of network communication, power distribution and network management.

II. Main functions

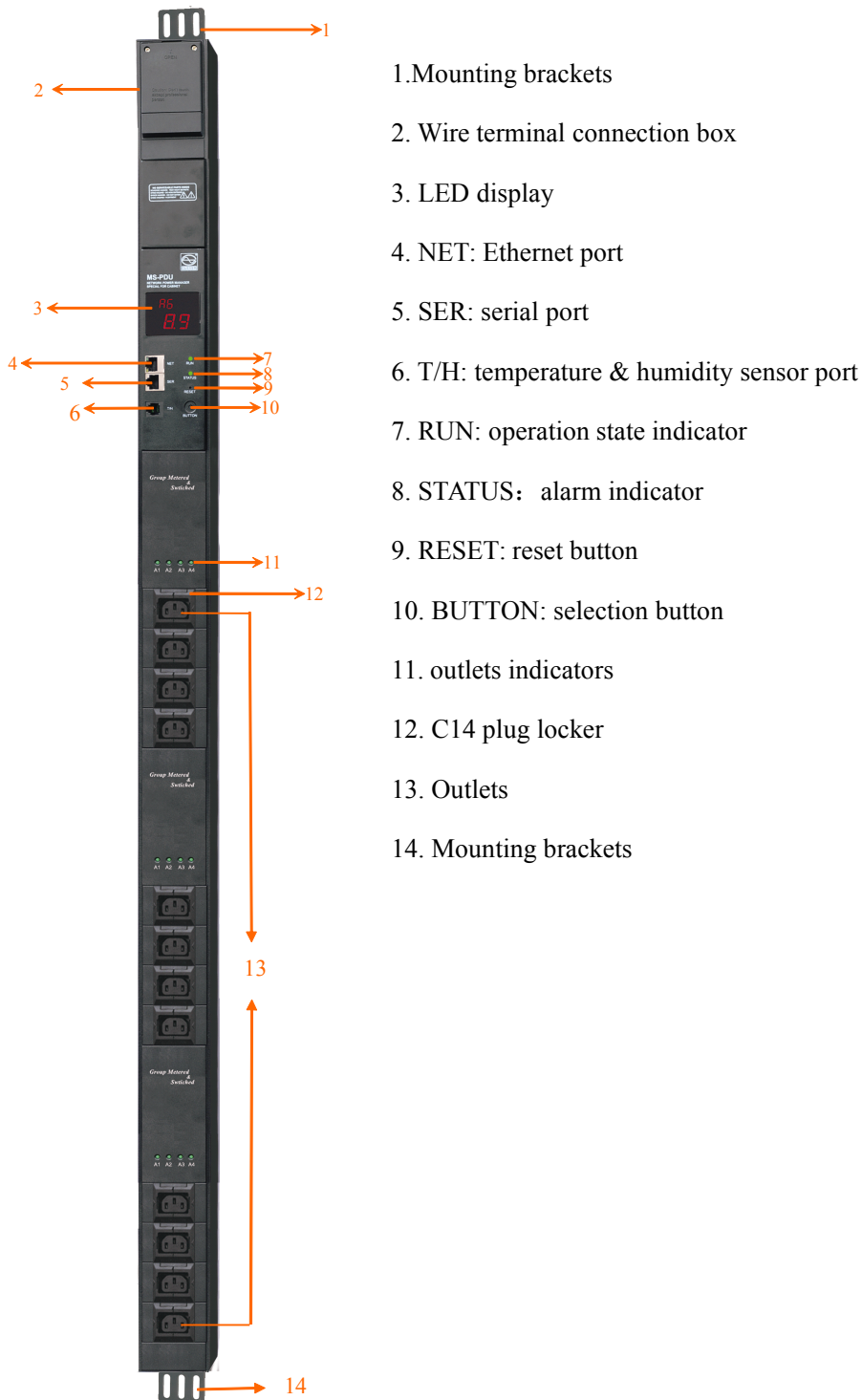
1. **Monitor:** total load current, on/off status of each outlet, temperature and humidity
2. **Control:** Switch on/off each outlet, set the delay of outlets sequential switching
3. **Keep the former state of outlets after reset.**
4. **Self-defined alarm:** set the threshold of total load current, temperature and humidity.
5. **System default alarm:** when threshold of total load current is exceeded; when threshold of temperature and humidity is exceeded.
6. **Alarm methods:** buzzer alarm; red words alerts on web interface; Email alarm; SNMP trap alarm.
7. **User management:** user name and password configurable.
8. **Access method:** Web based, access via IE; SNMP (v1); Serial access via command line control.

III. Application

1. MS-PDU is applicable to server racks, network racks.
2. Outlet types and numbers are customized according to specific requirement.
3. MS-PDU is applicable to 110VAC/32A(16A), 220VAC/32A(16A).

IV. Product structure diagram

A. Vertical Series MS-PDU :



B. Horizontal Series MS-PDU :

1. Mounting brackets
2. LED display
3. RUN indicator
4. STATUS: alarm indicator
5. Button: selection button
6. NET port
7. SER: serial port RS232
8. T/H: temperature and humidity sensor port
9. RESET: reset button
10. Outlets
11. Mounting brackets
12. Overload protection
13. Power input

V. Mounting method

Vertical Series MS-PDU Vertical installation, and Horizontal Series MS-PDU Horizontal installation.

VI. Software instruction

1. Software summary

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

2. Access methods

MS-PDU can be accessed via Web (support Internet Explorer, Google Chrome, Firefox), SNMP v1 and serial.

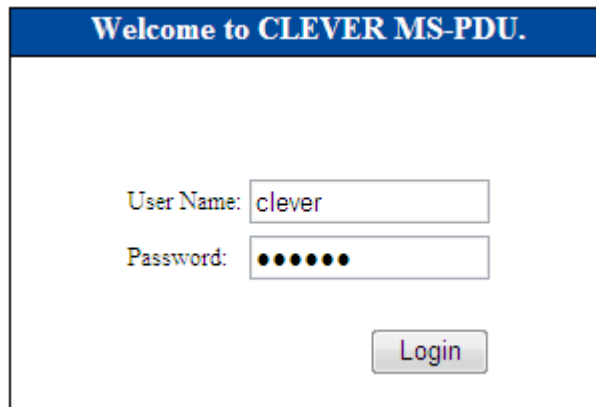
2.1 Web access

2.1.1 How to access the Web?

1. Connect one MS-PDU to the PC directly with the patch cable provided.
2. Check the IP of the PC, make sure it's in the same network segment of the IP of MS-PDU (The factory default IP is 192.168.1.163).

For example: change the IP of the PC to be 192.168.1.X (X can be 0 to 255 except 163)

3. Input the IP of the MS-PDU into the web browser and enter, the login window will pop up. The default User name is **clever** and Password is **clever**. Main interface as below.



Welcome to CLEVER MS-PDU.

User Name: clever

Password: ●●●●●●●

Login

The screenshot shows the MS-PDU web interface. On the left, there are two main panels: 'Device Manager' and 'Service Settings'. The 'Device Manager' panel contains 'Device State', 'Threshold Settings', and 'Device Settings'. The 'Service Settings' panel contains 'User Settings', 'Network', 'SNMP', 'E-mail Alarm Settings', and 'Restart'. The main content area displays a table of 8 outputs, all with 'ON' status and 0A current. Below the table, there are summary statistics for input voltage (223V), input current (0A), and all outputs control (On/Off). At the bottom, there are sensor status indicators for temperature and humidity, both showing '--'.

Item	Output Name	Output State	Output Current (A)	Output Control
1	Output1	ON	0	<input type="button" value="On"/> <input type="button" value="Off"/>
2	Output2	ON	0	<input type="button" value="On"/> <input type="button" value="Off"/>
3	Output3	ON	0	<input type="button" value="On"/> <input type="button" value="Off"/>
4	Output4	ON	0	<input type="button" value="On"/> <input type="button" value="Off"/>
5	Output5	ON	0	<input type="button" value="On"/> <input type="button" value="Off"/>
6	Output6	ON	0	<input type="button" value="On"/> <input type="button" value="Off"/>
7	Output7	ON	0	<input type="button" value="On"/> <input type="button" value="Off"/>
8	Output8	ON	0	<input type="button" value="On"/> <input type="button" value="Off"/>

Input Voltage (V)	Input Current (A)	All Outputs Control
223	0	<input type="button" value="On"/> <input type="button" value="Off"/>

Temperature	State (°C)	Humidity	State (%)
Temperature Sensor1	--	Humidity Sensor1	--

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Main interface includes 2 parts: **Device Manager** and **Server settings**.

A. Device Manager has 3 sub menus, see below.

The screenshot shows the 'Device Manager' menu with three options: 'Device State', 'Threshold Settings', and 'Device Settings'.

a. Device State: click it to the main interface displaying the on/off state of outlets and the state of temperature and humidity.

b. Threshold Settings: to set the threshold of load ampere, temperature and humidity. See below.



MS-PDU
Version:1.0.1

Device Manager

Device State

Threshold Settings

Device Settings

Item	Output Name	State (A)	Min (A)	Max (A)	Save
1	Output1	0	<input type="text" value="0"/>	<input type="text" value="10"/>	<input type="button" value="Save"/>
2	Output2	0	<input type="text" value="0"/>	<input type="text" value="10"/>	<input type="button" value="Save"/>
3	Output3	0	<input type="text" value="0"/>	<input type="text" value="10"/>	<input type="button" value="Save"/>
4	Output4	0	<input type="text" value="0"/>	<input type="text" value="10"/>	<input type="button" value="Save"/>
5	Output5	0	<input type="text" value="0"/>	<input type="text" value="10"/>	<input type="button" value="Save"/>
6	Output6	0	<input type="text" value="0"/>	<input type="text" value="10"/>	<input type="button" value="Save"/>
7	Output7	0	<input type="text" value="0"/>	<input type="text" value="10"/>	<input type="button" value="Save"/>
8	Output8	0	<input type="text" value="0"/>	<input type="text" value="10"/>	<input type="button" value="Save"/>

Name	State	Min (A)	Max (A)	Save
Input	0	<input type="text" value="0"/>	<input type="text" value="16"/>	<input type="button" value="Save"/>

Item	Output Name	State	Min	Max	Save
1	Temperature Sensor1	0	<input type="text" value="0"/>	<input type="text" value="50"/>	<input type="button" value="Save"/>
2	Humidity Sensor1	0	<input type="text" value="0"/>	<input type="text" value="99"/>	<input type="button" value="Save"/>

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c. Device Settings: see below

MS-PDU
Version:1.0.1

Device Manager

Device State

Threshold Settings

Device Settings

Device Settings

Device Type: D series

Device Name:

Output power on delay: s

Output power off delay: s

Web server port:

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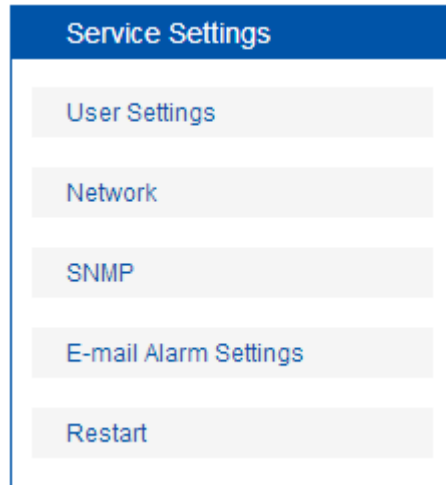
Device Name: set the name of PDU (name length 1-16 digits)

Output power on delay: set the interval of outlets sequential switching on (1-255s).

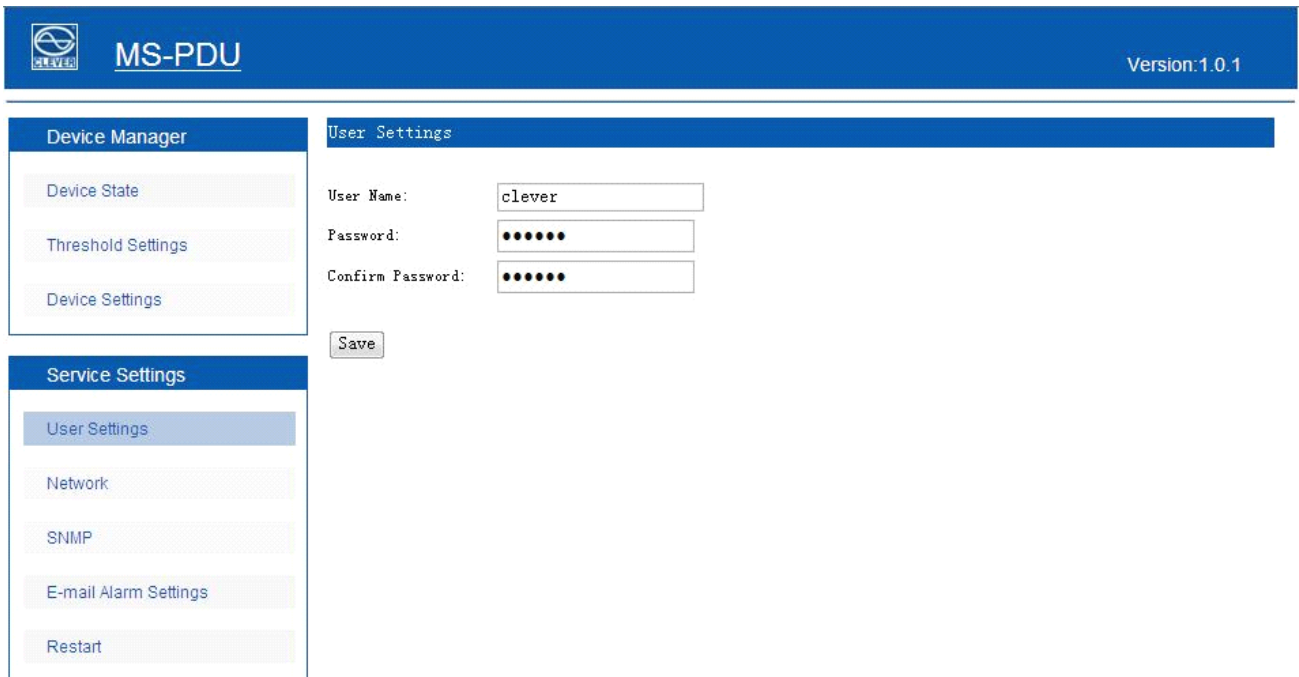
Output power off delay: set the interval of outlets sequential switching off (1-255s).

Web server port: fill in the port and save (1-65535).

B. Service Settings: see below



a. User Settings: set or modify the user name and password (Max. 16 digits)



The image shows a screenshot of the MS-PDU web interface. The top header is blue and contains the CLEVER logo, the text 'MS-PDU', and 'Version:1.0.1'. Below the header, there is a navigation menu on the left with 'Device Manager' and 'Service Settings'. The 'Service Settings' menu is expanded, showing 'User Settings' as the selected option. The main content area is titled 'User Settings' and contains three input fields: 'User Name' with the value 'clever', 'Password' with six dots, and 'Confirm Password' with six dots. A 'Save' button is located below the input fields.

b. Network: System IP: 192.168.1.163 (factory default IP)

Subnet Mask: 255.255.255.0



Default Gateway: 192.168.1.1

DNS: default as 202.96.128.86. Please fill in the right DNS in order to make the email alert.

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

The screenshot shows the MS-PDU web interface. At the top, there is a blue header with the CLEVER logo, the text 'MS-PDU', and 'Version:1.0.1'. Below the header, there are two main sections. On the left, a 'Device Manager' sidebar contains 'Device State', 'Threshold Settings', and 'Device Settings'. Below it, a 'Service Settings' sidebar contains 'User Settings', 'Network' (which is highlighted), 'SNMP', '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 these fields.

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c. SNMP: see below (support SNMP v1)



Device Manager

- Device State
- Threshold Settings
- Device Settings

SNMP

Get community:

Set community:

Trap1 ip:

Trap2 ip:

Service Settings

- User Settings
- Network
- SNMP
- E-mail Alarm Settings
- Restart

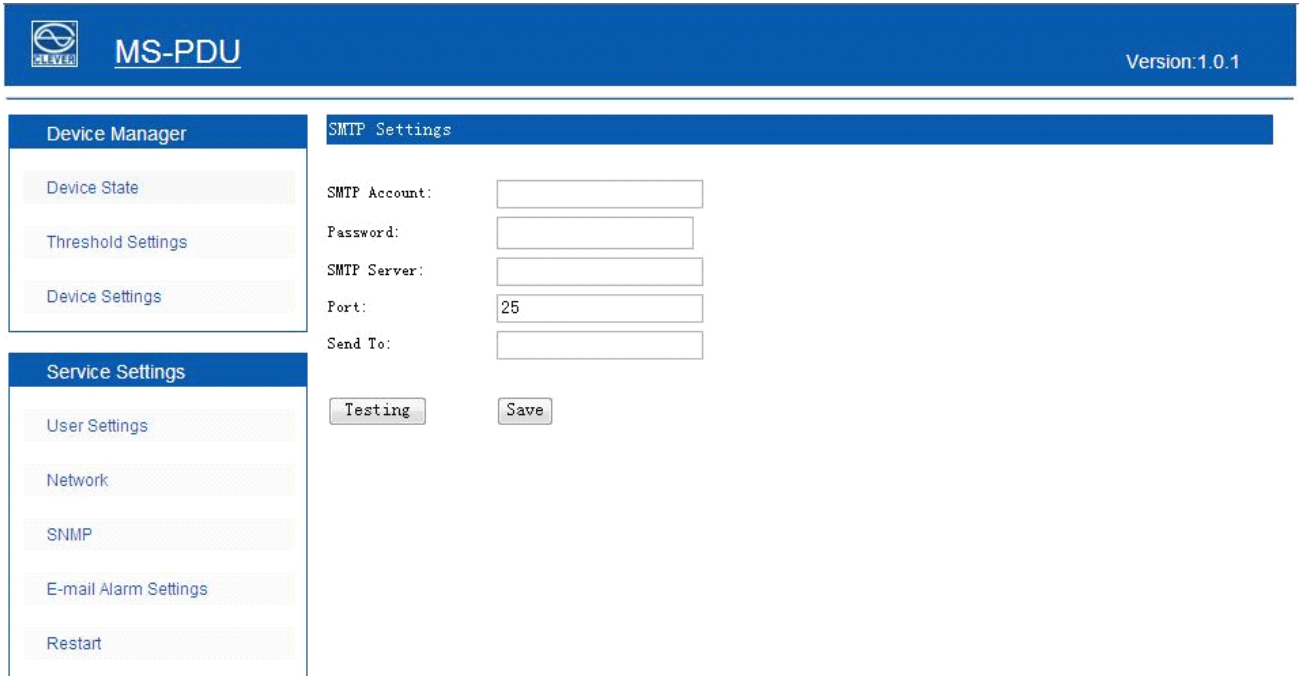
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The default get community is “public” and set community is “private”. User can modify according to the specific application.

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

Note: a software restart is necessary after a setting of SNMP.

d. Email Alarm Settings: see below



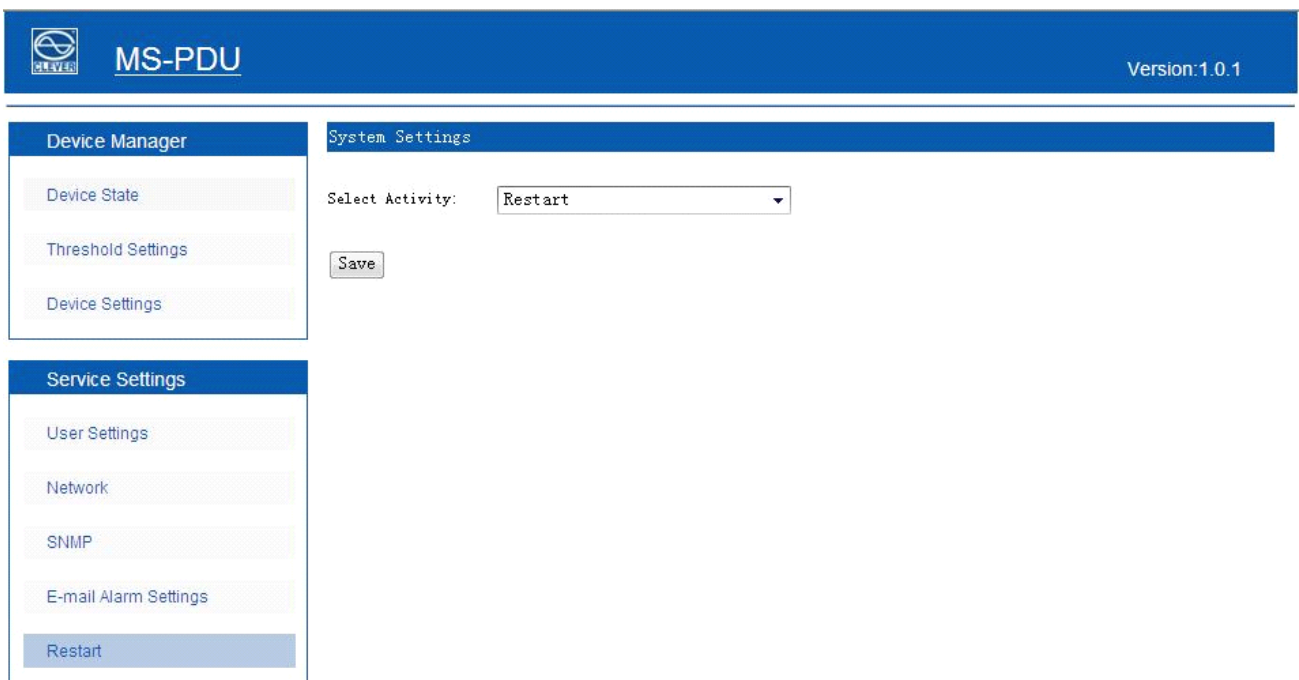
The screenshot shows the MS-PDU web interface. The top navigation bar is blue with the CLEVER logo on the left, 'MS-PDU' in the center, and 'Version:1.0.1' on the right. Below the navigation bar, there are two main sections: 'Device Manager' and 'Service Settings'. The 'Device Manager' section contains three items: 'Device State', 'Threshold Settings', and 'Device Settings'. The 'Service Settings' section contains five items: 'User Settings', 'Network', 'SNMP', 'E-mail Alarm Settings', and 'Restart'. The 'SMTP Settings' panel is active, showing fields for 'SMTP Account', 'Password', 'SMTP Server', 'Port' (with '25' entered), and 'Send To'. There are 'Testing' and 'Save' buttons at the bottom of the SMTP settings panel.

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Set the SMTP including SMTP account, password, SMTP server and port and save.

Click Testing and fill in the testing email address. If the test email is received, the setting is successful.

e. Restart: see below



The screenshot shows the MS-PDU web interface. The top navigation bar is blue with the CLEVER logo on the left, 'MS-PDU' in the center, and 'Version:1.0.1' on the right. Below the navigation bar, there are two main sections: 'Device Manager' and 'Service Settings'. The 'Device Manager' section contains three items: 'Device State', 'Threshold Settings', and 'Device Settings'. The 'Service Settings' section contains five items: 'User Settings', 'Network', 'SNMP', 'E-mail Alarm Settings', and 'Restart'. The 'System Settings' panel is active, showing a 'Select Activity:' dropdown menu with 'Restart' selected. There is a 'Save' button at the bottom of the System Settings panel.

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Select Activity: to restart the software or restore to factory default settings.

Note: 1. Click RESET button, product will restart.

- 2.Click **BUTTON** and **RESET** at the same time, will restore the factory setting.
- 3.Buzzing will not alarm while restarting and restoring the factory setting.
- 4.Status of output on/off delay will not effective while restoring the factory default, users need to set the delay time as they want by hand operation, and save it.

2.2 SNMP Access

The software supports SNMP v1. A MIB file is provided with an enterprise number.

OID table as below.

Item	OID	Description	Mode
Device Name	1.3.6.1.4.1.30966.10.2.1.1	Name of the device	Read/Write
Device Type	1.3.6.1.4.1.30966.10.2.1.2	Type of the device	Read/Write
Output Num	1.3.6.1.4.1.30966.10.2.1.3	Number of outlets	Read
Input Voltage	1.3.6.1.4.1.30966.10.2.2.1	Input voltage	Read
Input Current	1.3.6.1.4.1.30966.10.2.2.2	Input ampere	Read
Temperature	1.3.6.1.4.1.30966.10.2.2.3	Temperature of the device	Read
Humidity	1.3.6.1.4.1.30966.10.2.2.4	Humidity of the device	Read
Output Current1	1.3.6.1.4.1.30966.10.2.3.1	Ampere of outlet No.1	Read
Output Current2	1.3.6.1.4.1.30966.10.2.3.2	Ampere of outlet No.2	Read
Output Current3	1.3.6.1.4.1.30966.10.2.3.3	Ampere of outlet No.3	Read
Output Current4	1.3.6.1.4.1.30966.10.2.3.4	Ampere of outlet No.4	Read
Output Current5	1.3.6.1.4.1.30966.10.2.3.5	Ampere of outlet No.5	Read
Output Current6	1.3.6.1.4.1.30966.10.2.3.6	Ampere of outlet No.6	Read
Output Current7	1.3.6.1.4.1.30966.10.2.3.7	Ampere of outlet No.7	Read
Output Current8	1.3.6.1.4.1.30966.10.2.3.8	Ampere of outlet No.8	Read
Output Current9	1.3.6.1.4.1.30966.10.2.3.9	Ampere of outlet No.9	Read
Output Current10	1.3.6.1.4.1.30966.10.2.3.10	Ampere of outlet No.10	Read
Output Current11	1.3.6.1.4.1.30966.10.2.3.11	Ampere of outlet No.11	Read
Output Current12	1.3.6.1.4.1.30966.10.2.3.12	Ampere of outlet No.12	Read
Output Current13	1.3.6.1.4.1.30966.10.2.3.13	Ampere of outlet No.13	Read
Output Current14	1.3.6.1.4.1.30966.10.2.3.14	Ampere of outlet No.14	Read



Output Current15	1.3.6.1.4.1.30966.10.2.3.15	Ampere of outlet No.15	Read
Output Current16	1.3.6.1.4.1.30966.10.2.3.16	Ampere of outlet No.16	Read
Output Current17	1.3.6.1.4.1.30966.10.2.3.17	Ampere of outlet No.17	Read
Output Current18	1.3.6.1.4.1.30966.10.2.3.18	Ampere of outlet No.18	Read
Output Current19	1.3.6.1.4.1.30966.10.2.3.19	Ampere of outlet No.19	Read
Output Current20	1.3.6.1.4.1.30966.10.2.3.20	Ampere of outlet No.20	Read
Output Current21	1.3.6.1.4.1.30966.10.2.3.21	Ampere of outlet No.21	Read
Output Current22	1.3.6.1.4.1.30966.10.2.3.22	Ampere of outlet No.22	Read
Output Current23	1.3.6.1.4.1.30966.10.2.3.23	Ampere of outlet No.23	Read
Output Current24	1.3.6.1.4.1.30966.10.2.3.24	Ampere of outlet No.24	Read
Switch1	1.3.6.1.4.1.30966.10.2.4.1	On/off state of outlet No.1	Read/Write
Switch2	1.3.6.1.4.1.30966.10.2.4.2	On/off state of outlet No.2	Read/Write
Switch3	1.3.6.1.4.1.30966.10.2.4.3	On/off state of outlet No.3	Read/Write
Switch4	1.3.6.1.4.1.30966.10.2.4.4	On/off state of outlet No.4	Read/Write
Switch5	1.3.6.1.4.1.30966.10.2.4.5	On/off state of outlet No.5	Read/Write
Switch6	1.3.6.1.4.1.30966.10.2.4.6	On/off state of outlet No.6	Read/Write
Switch7	1.3.6.1.4.1.30966.10.2.4.7	On/off state of outlet No.7	Read/Write
Switch8	1.3.6.1.4.1.30966.10.2.4.8	On/off state of outlet No.8	Read/Write
Switch9	1.3.6.1.4.1.30966.10.2.4.9	On/off state of outlet No.9	Read/Write
Switch10	1.3.6.1.4.1.30966.10.2.4.10	On/off state of outlet No.10	Read/Write
Switch11	1.3.6.1.4.1.30966.10.2.4.11	On/off state of outlet No.11	Read/Write
Switch12	1.3.6.1.4.1.30966.10.2.4.12	On/off state of outlet No.12	Read/Write
Switch13	1.3.6.1.4.1.30966.10.2.4.13	On/off state of outlet No.13	Read/Write
Switch14	1.3.6.1.4.1.30966.10.2.4.14	On/off state of outlet No.14	Read/Write
Switch15	1.3.6.1.4.1.30966.10.2.4.15	On/off state of outlet No.15	Read/Write
Switch16	1.3.6.1.4.1.30966.10.2.4.16	On/off state of outlet No.16	Read/Write
Switch17	1.3.6.1.4.1.30966.10.2.4.17	On/off state of outlet No.17	Read/Write
Switch18	1.3.6.1.4.1.30966.10.2.4.18	On/off state of outlet No.18	Read/Write
Switch19	1.3.6.1.4.1.30966.10.2.4.19	On/off state of outlet No.19	Read/Write



Switch20	1.3.6.1.4.1.30966.10.2.4.20	On/off state of outlet No.20	Read/Write
Switch21	1.3.6.1.4.1.30966.10.2.4.21	On/off state of outlet No.21	Read/Write
Switch22	1.3.6.1.4.1.30966.10.2.4.22	On/off state of outlet No.22	Read/Write
Switch23	1.3.6.1.4.1.30966.10.2.4.23	On/off state of outlet No.23	Read/Write
Switch24	1.3.6.1.4.1.30966.10.2.4.24	On/off state of outlet No.24	Read/Write

2.3 Serial access

Baud rate is 9600.

There are 5 commands: OUTPUT, INPUT, SWITCH, RESET and REBOOT.

OUTPUT command: OUTPUT X

For example: send command OUTPUT 1, get output 1 current: X A.

INPUT command: INPUT X (1 is voltage, 2 is current)

For example: send command INPUT 1, get total voltage: X V

send command INPUT 2, get total current: X A

SWITCH command: SWITCH X

For example: send command SWITCH 1, get the on/off state of output 1.

RESET command: to reset to factory default configuration.

REBOOT command: to reset the PDU

VII. Technical parameters

No	Item		Parameters
1	Input	Rated input voltage	110/220V~ 0/60 Hz
		Input plug	Standard: IEC60309 plug
		Cable	16A: 3×2.5mm ² , 32A: 3×6.0mm ²
		Max. load	16A, 32A
		Overload protection	Master circuit breaker 1P
2	Output	Rated output voltage	110/220VAC
		Max. load	16A, 32A



		Outlet types	Standard: IEC320 C13 Other sockets optional
		Outlet numbers	Optional
3	Ports	NET port	1 x RJ45
		Serial port	1 x RJ45
		Temperature/humidity sensor port	1 x RJ11
4	Display	Operation state	1 x LED
		Error state	1 x LED
5	Digital ammeter	Total ampere	Full scale: 32A/16A Accuracy: $\pm 1\% + 0.2$ Resolution: 200mA; Response: 400ms
		Individual ampere	Full scale: 25A Accuracy: $\pm 1\% + 0.1$ Resolution: 100mA ; Response: 400ms
6	Temperature		Working condition: $-40^{\circ}\text{C} \sim +100^{\circ}\text{C}$, Accuracy: $\pm 1^{\circ}\text{C}$; Response: 4s
7	Dimension	L×W ×H	X ² ×66.6×44.4mm
8	Case	Color	Black
9	Fittings	Mounting brackets	2pcs
		Ethernet wire	2M, yellow
		Serial wire	2M, gray
		User Manual	1 x CD
10	Optional fitting	Sensor	Temperature & humidity sensor
11	Environment	Working condition	0°C ~ 55°C
		Relative humidity	10~90%
		Storage	-20°C ~ +70°C
12	ROHS	YES	

VIII. Quality Warranty

The PDU warrants to be free for repairing in two years from the date of purchasing. During this period, our obligation is limited to repair, replace or return to our company for repair. If the product has been beyond the warrant for repairing time or it has been damaged by accident, negligence or misapplication, you should pay some repair charge.

The above warranty does not apply to the following situation:

1. The damage caused by customers' incorrect or inadequate repair;
2. The damage caused by unauthorized modification or misusing;
3. The damage caused by using out of the product allowed environment.
4. Repairing Notice:
5. If you want to return the product for repair, please make sure it packed in the bandbox or carton. The damage caused during the transportation is not warranted to repair.
6. Please give a brief description of the repairing product about the problem and its operating process.
7. The customer should pay for the returning freight, all the tariffs and taxes.
8. Please write down your name, address and the telephone number by which we can contact you at anytime.