# MS-PDU
# User Manual

# Contents

# MS-PDU User Manual

## 1. MS-PDU Summary：

MS-PDU is the latest scientific achievement of CLEVER after many years of dedicated research. 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.

## 2. Main functions

2.1 Monitor：total load current, on/off status of each outlet, temperature and humidity

2.2 Control: Switch on/off each outlet, set the delay of outlets sequential switching

2.3 Keep the former state of outlets after reset.

2.4 Self-defined alarm: set the threshold of total load current, temperature and humidity.

2.5 System default alarm: when threshold of total load current is exceeded; when threshold of temperature and humidity is exceeded.

2.6 Alarm methods: buzzer alarm; red words alerts on web interface; Email alarm; SNMP trap alarm.

2.7 User management: user name and password configurable.

2.8 Access method: Web based, access via IE; SNMP (v1); Serial access via command line control.

## 3. Application

3.1 MS-PDU is applicable to server racks, network racks.

3.2 Outlet types and numbers are customized according to specific requirement.

3.3 MS-PDU is applicable to 110VAC/32A(16A), 220VAC/32A(16A),380VAC/32A(16A)

## 4. Product structure diagram


1. Mounting brackets
2. Wire terminal connection box
3. LED display
4. NET: Ethernet port
5. SER: serial port
6. T/H: temperature & humidity sensor port
7. RUN: operation state indicator
8. STATUS： alarm indicator
9. RESET: reset button
10. BUTTON: selection button

11: outlets indicators

12: C14 plug locker

13: outlets/sockets

14； Mounting brackets

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## 5. Mounting method

Horizontal or Vertical installation.

## 6. Software instruction

### 6.1 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.

### 6.2 Access methods

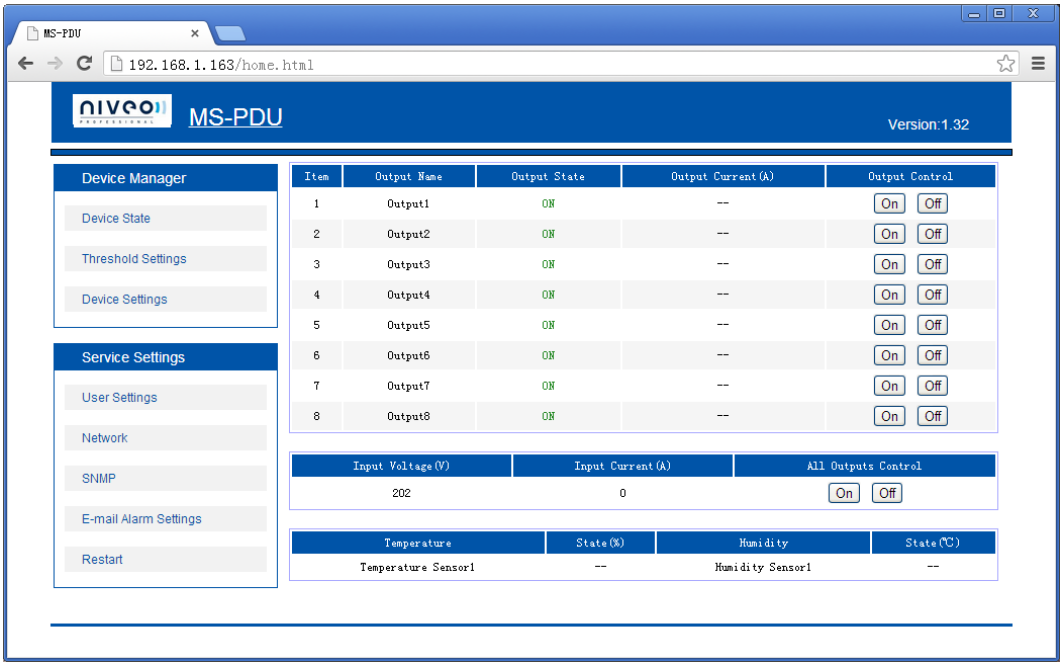
MS-PDU can be accessed via Web (support Internet Explorer, Google Chrome, Firefox), SNMP v1 and serial.

#### 6.2.1 Web access

**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 192.168.1.161).

   For example: change the IP of the PC to be 192.168.1.X (X can be 0 to 255 except 161)
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 niveo and Password is niveo. Main interface as below.

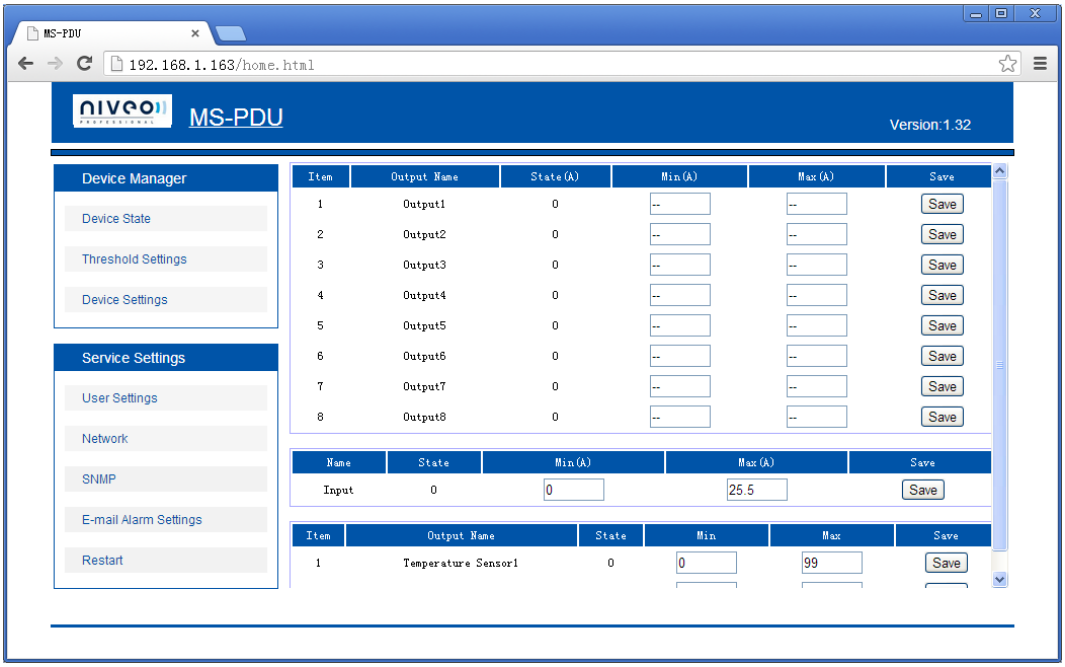


Main interface includes 3 parts: company logo & product name, Device Manager and Server Settings.

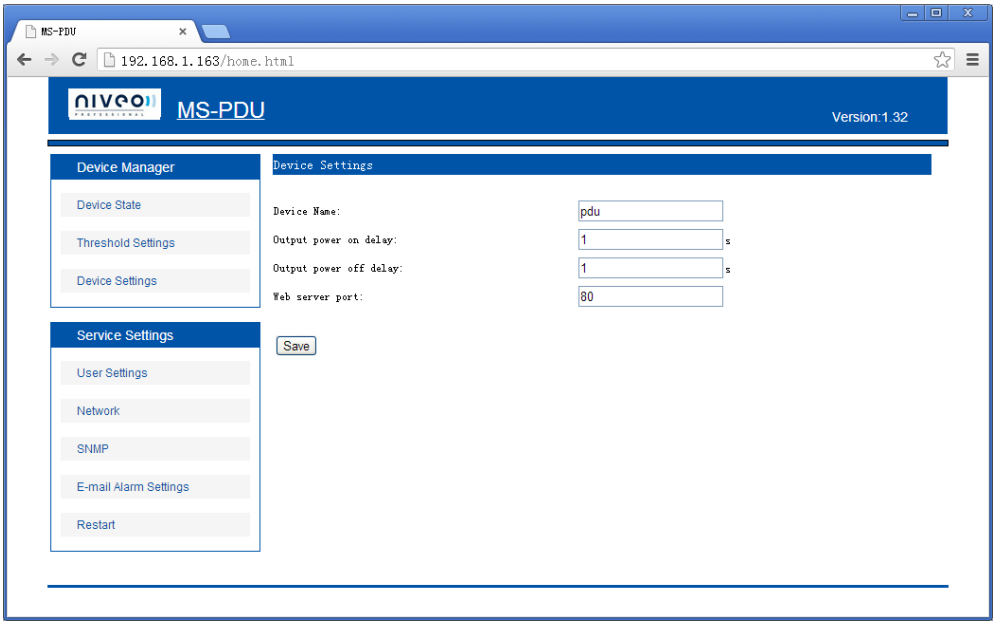
Device Manager has 3 sub menus， see below.


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

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



Device Settings: see below



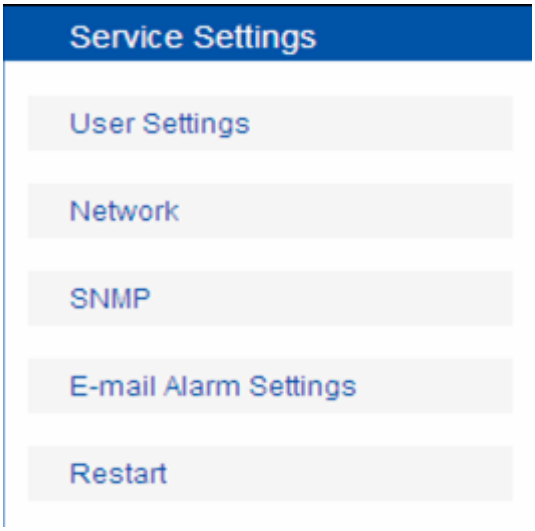

Device Name: set the name of PDU (name length 1-16 digits)

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

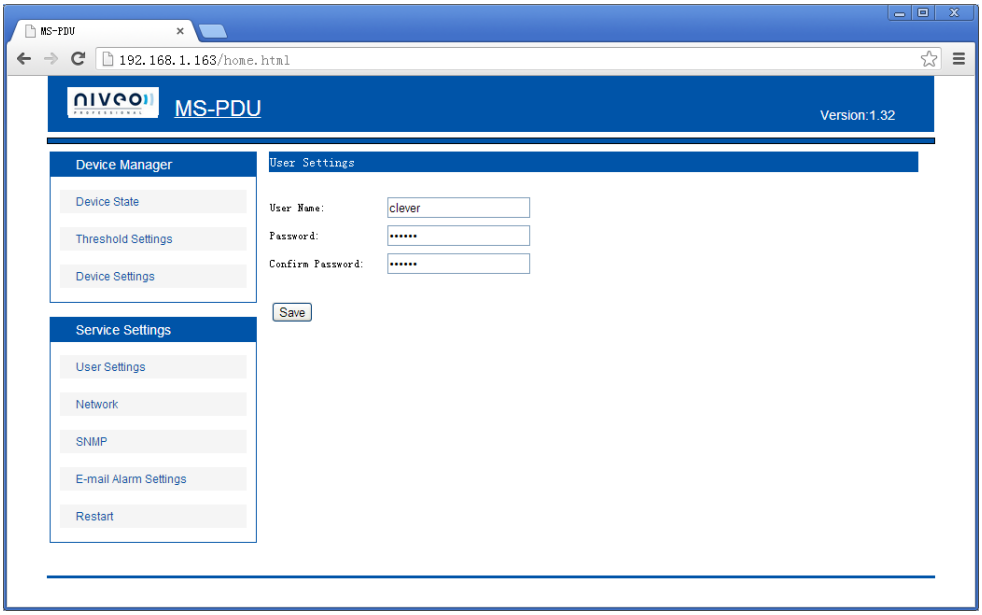
Output power off delay: set the interval of outlets sequential switching off (1-255s).

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

Service Settings: see below



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



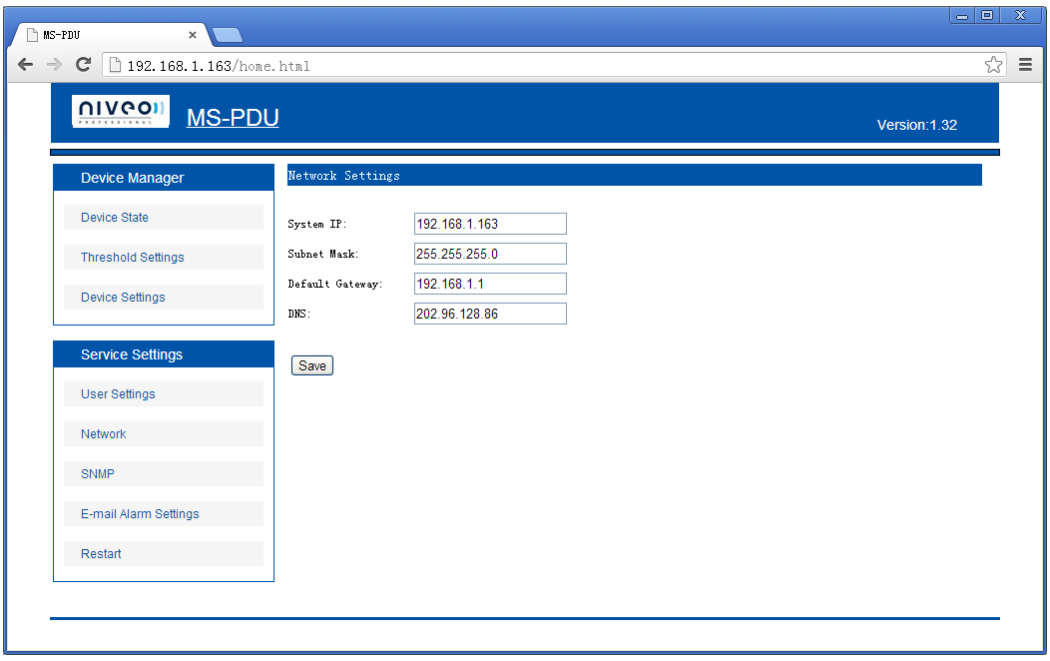

Network: System IP：192.168.1.163（factory default IP）

Subnet Mask：255.255.255.0

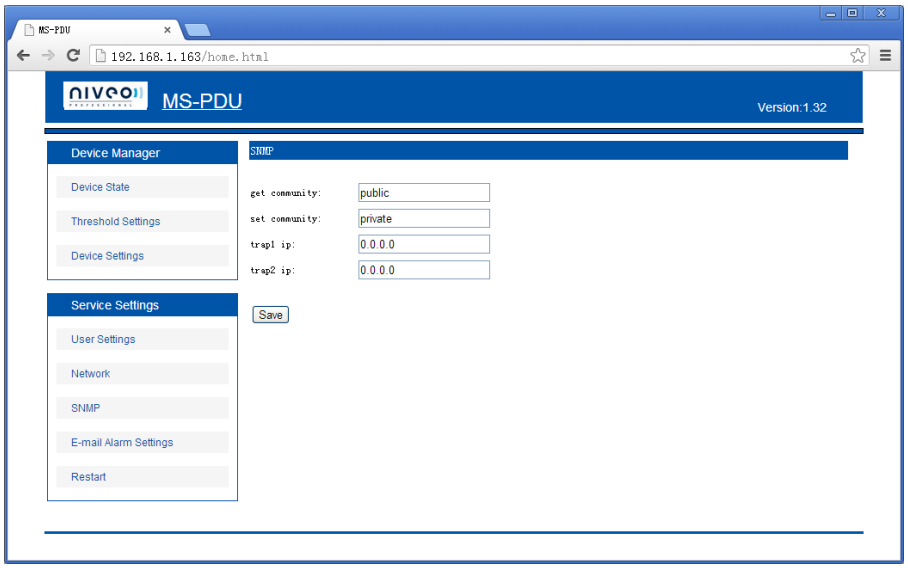
Default Gateway：192.168.1.1

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.



SNMP: see below (support SNMP v1)

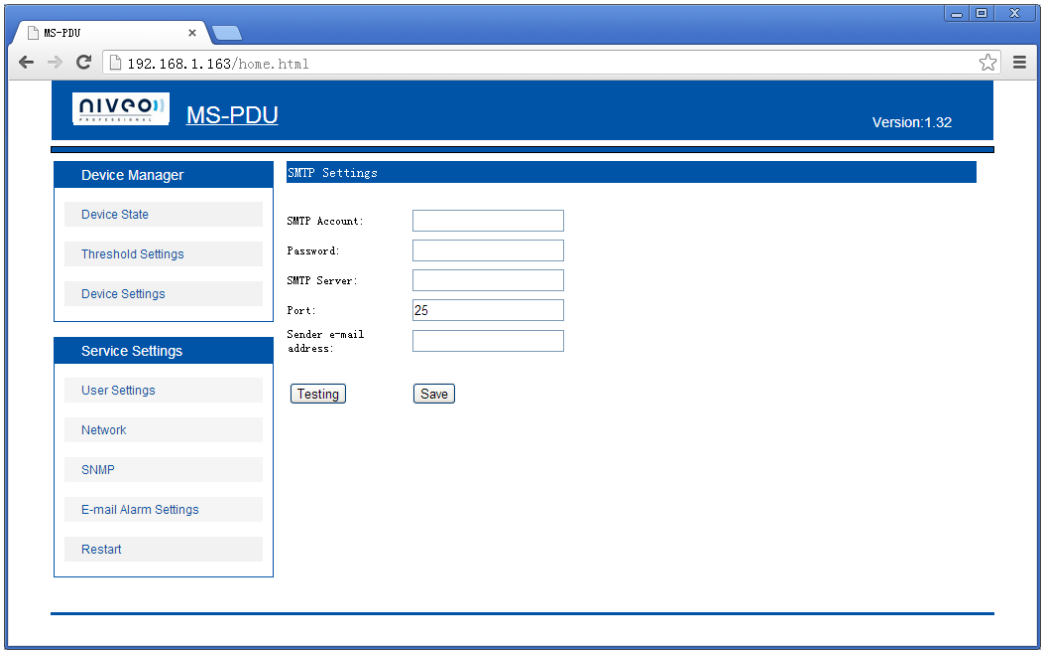



The default get community is “public” and set community is “private”. User can modify according to the specific application.

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.

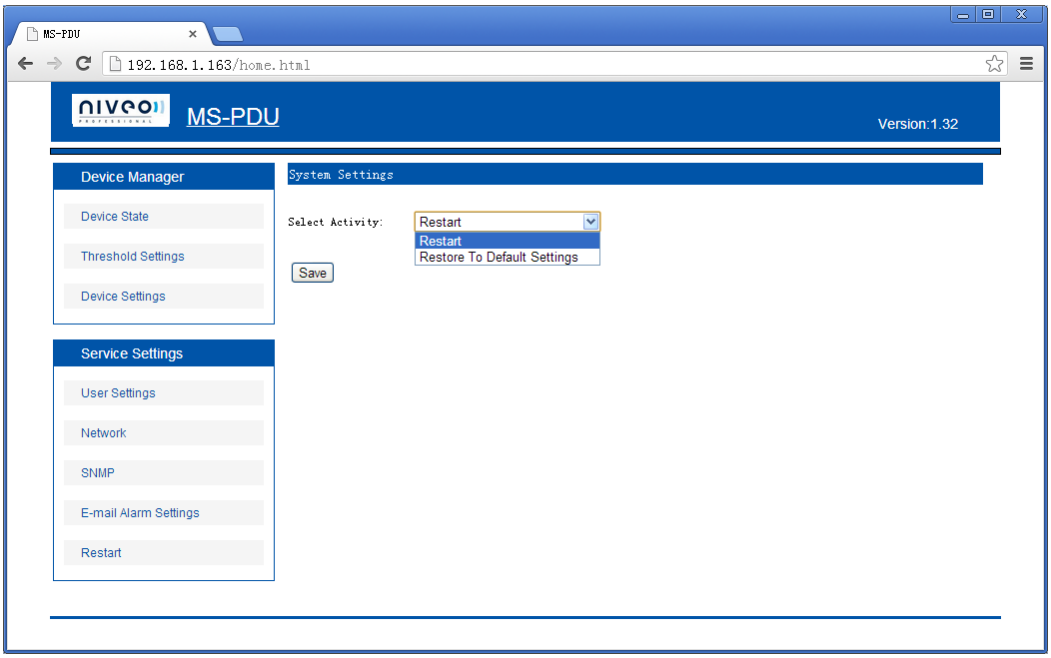
Email Alarm Settings: see below




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.

Restart: see below




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

6.2.2 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 |
| 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 |

6.2.3 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

## 7. Technical parameters

| No | Item | | Parameters |
|---|---|---|---|
| 1 | Input | Rated input voltage | 110/220V~ 0/60 Hz |

| | | | |
|---|---|---|---|
| | | Input plug | Standard: IEC60309 plug |
| | | Cable | 16A：3×2.5mm², 32A：3×6.0mm² |
| | | 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<br>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<br>Accuracy：±1％+ 0.2<br>Resolution：200mA; Response：400ms |
| | | Individual ampere | Full scale：25A<br>Accuracy：±1％+0.1<br>Resolution：100mA ; Response：400ms |
| 6 | Temperature | | Working condition：-40℃~+100℃,<br>Accuracy：±1℃; Response：4s |
| | Humidity | | Accuracy：±5％RH<br>Response：400ms |
| 7 | Dimension | L×W ×H | $X^2$×66.6×44.4mm |
| 8 | Case | Color | Black |
| 9 | Fittings | Mounting brackets | 2pcs |
| | | Ethernet wire | 2M, blue |

| | | | |
|---|---|---|---|
| | | Serial wire | 2M, yellow |
| | | User Manual | 1 x CD |
| 10 | Optional fitting | Sensor | Temperature & humidity sensor |
| 11 | Environment | Working condition | 0℃～55℃ |
| | | Relative humidity | 10～90% |
| | | Storage | -20℃~ +70℃ |
| 12 | ROHS | YES | |

## 8. 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.

Repairing Notice:

1. 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.
2. Please give a brief description of the repairing product about the problem and its operating process.
3. The customer should pay for the returning freight, all the tariffs and taxes.
4. Please write down your name, address and the telephone number by which we can contact you at anytime.