User Manual

Single-phase & Three-phase

Smart IP PDU Meters

JSY1053

JSY-MK-341

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1. Introduction

The professional-grade network remote monitoring and management power distribution system is the latest scientific research achievement achieved after years of dedicated research in the field of power distribution technology. This product is based on the development trend of the world's future power distribution monitoring and management technology, combined with the technical requirements of the modern data center application environment, and adopts the latest core technology with completely independent intellectual property rights, as well as network communication, power distribution, and electric energy metering technologies to integrate the latest network remote monitoring and management power distributor.

2. Product Introduction

2.1 Product Overview

The single-phase and three-phase smart PDU meters are based on the innovative SUM (Sustainable, Upgradable and Maintainable) design concept technology. As a key component of the metering cabinet power distribution unit (PDU), after being installed in the PDU body, they can provide active metering functions to achieve energy optimization and circuit protection. User-defined alarm thresholds can effectively reduce risk by providing warnings of potential circuit overloads through real-time local and remote alarms. Metered rack PDUs provide power usage data to support data center managers in making informed decisions on load balancing and proper IT sizing, significantly reducing total cost of ownership. Users can configure the metered cabinet PDU via Ethernet access or RS485. This series of products can be widely used in data center rooms such as IDC, bank, securities, government, and enterprises.

2.2 Function Introduction

<table>
<tr><th colspan="4">Performance parameters</th><th>Technical indicators</th></tr>
<tr><td rowspan="8">Electrical parameters</td><td rowspan="4">Input optional</td><td rowspan="2">Single-phase</td><td>Input voltage</td><td>176-264V</td></tr>
<tr><td>Maximum total load current</td><td>63A</td></tr>
<tr><td rowspan="2">Three-phase</td><td>Input voltage</td><td>3*220V</td></tr>
<tr><td>Maximum total load current</td><td>3*63A</td></tr>
<tr><td rowspan="3">Output</td><td colspan="2">Output voltage</td><td>176-264V</td></tr>
<tr><td colspan="2">Output Current</td><td>8A, optional high current 20A</td></tr>
<tr><td colspan="2" rowspan="2">Output Port</td><td>Optional, magnetic latching relays up to 36 ports</td></tr>
<tr><td>Optional, ordinary relays up to 12 ports</td></tr>
<tr><td colspan="3">Frequency</td><td>50Hz or 60Hz</td></tr>
<tr><td colspan="2" rowspan="3">User interface</td><td colspan="2">Display screen</td><td>TFT color screen</td></tr>
<tr><td colspan="2">Operation buttons</td><td>Up, down, set, reset buttons</td></tr>
<tr><td colspan="2">Communication interface</td><td>Ethernet * 1, RS485 * 2</td></tr>
</table>

		Temperature and humidity interface	1 port
Electrical parameter measurement and control function		Total PDU measurement	Voltage, current, power, electric energy
		Measurement of each output	Voltage, current, power, electric energy
		Each output can be remotely turned on/off	Yes
		Customized power-on/off timing and interval time for each output	Yes
		Administrator permissions can be defined in different levels.	Yes
		Customized alarm signal thresholds	Voltage and current are adjustable
		Cascade function	Yes, 4 meters can be cascaded
Monitoring function		Load current monitoring	
		Load power monitoring	
		Voltage monitoring	
		Electric energy monitoring	
		Ambient temperature and humidity monitoring	
Setting the function		Load current upper and lower limit settings	
		Ambient temperature and humidity upper and lower limit settings	
		Email alarm address settings	
		SNMP (V1, V2 C, V3) settings	
		Network parameter settings (IP, gateway, mask, DNS)	
Alarm function	System Alerts	When the load current exceeds the rated value	
		When the temperature and humidity exceed the limit	
	Customized Alarm	When the load current exceeds the rated value	
		When the temperature and humidity exceed the limit	
	Alarm method	Buzzer beeps	
		LCD value flashes	

		Automatically send E-mail to the system administrator	
		SNMP sends Trap alarm status information	
		Serial communication background sends alarm status information.	
Access method		WEB access control through IE	
		SNMP (V1) access control through standard network management workstation	
User Management		User ID and password settings	
Environment		Operating temperature	-10 ~ 50℃
		Extreme operating temperature	-20 ~ 60℃
		Relative humidity	10 ~ 90%
		Storage and transportation extreme temperature	-40 ~ 70℃

2.3 Model selection

- JSY1053 represents the single-phase intelligent PDU meter .
- JSY-MK-341 represents the three-phase intelligent PDU meter .
- JSY1054 represents the 4-channel Magnetic Latching Relay, current specification: 8A.
- JSY1084 represents the 4-channel Magnetic Latching Relay, current specification: 20A .

3. Main functions

3.1 Real-time monitoring function

The display screen can view the monitored total load current, total voltage, total power, total electric energy, power factor, and load current parameters of each independent unit: the content displayed on the LCD screen can be viewed on the Web page, and the closed/open state of each independent unit, temperature/humidity sensor data and operating status can be controlled. 2-channel I/O ports, functions can be customized.

3.2 Socket unit control

◆ Control the closing and opening of a single relay, or control multiple relays simultaneously.

◆ You can set the sequential delay power-on, up to 6 seconds. (This means that when two or more channels are controlled continuously, after the previous channel is completed, you need to wait 6 seconds before the next channel starts to operate.)

◆ Each relay can be set to start at a fixed time .

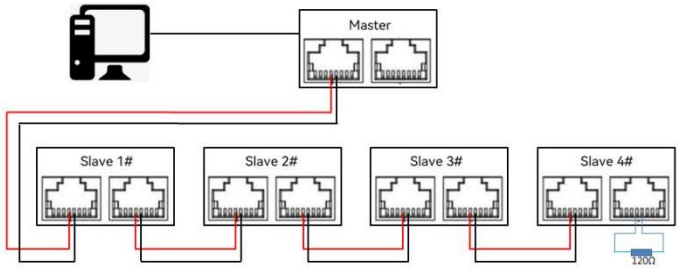
3.3 Customized alerts

◆ The total load current/voltage over-limit threshold can be customized, the load current over-limit threshold of each socket unit can be customized, and the temperature/humidity over-limit threshold can be customized.

◆ The buzzer sounds. an email is sent to the system administrator. SNMP sends a trap alarm status information.

3.4 Master-slave (cascade) communication

The two interfaces are the same RS485 communication bus, providing two interfaces for easy cascading. RS485 communication cascade can connect up to 4 instruments. Communication cables can use ordinary shielded twisted pair cables. When RS485 communication cables are routed outdoors, attention should be paid to grounding the cable shielding layer. The total length of the communication cable should not exceed 1200 meters. The positive and negative polarities of the RS-485 ports of each device must be connected correctly. If the shielded twisted pair cable is long, it is recommended to connect a 120 Ω resistor at the end and reduce the transmission rate to improve the reliability of communication.



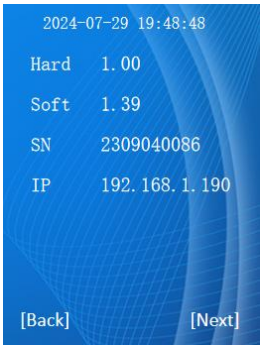
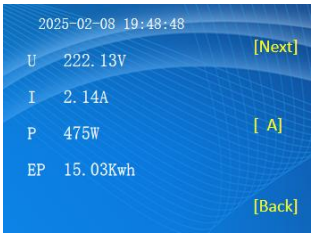
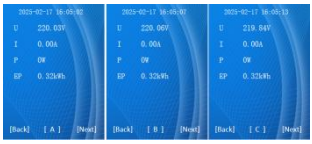
4. Technical parameters and installation

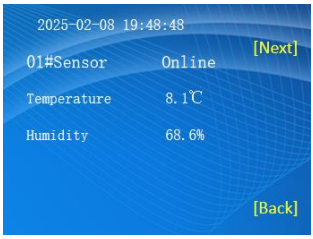
4.1 User interface and parameters

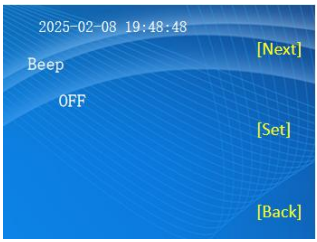
Product Structure Diagram	No.	Item	Parameter	
	1	LCD display	Display Mode	TFT color screen
			Display content	Meter information
			Display Direction	Horizontal
			Refresh Time	1 second
			The backlight turns off after 5 minutes without any operation.	
	2	Up key	Turn the page, move the flashing position to the right, return to the measurement page	
	3	Setting Key	Set menu, confirm setting items, save	
	4	Down key	Display page turning, flashing digit value decreasing	
	5	Reset key	Short press to restart	
	6	Communication light	Yellow, flashing during cascade communication	
	7	Running light	Emerald green, flashing when the system is running	
	8	Warning light	Red, flashing when in alarm	
	9	Temperature and humidity port	Temperature and humidity sensor detection port	
	10	Ethernet port	Network connection, remote access	
	11 12	RS485	Cascade, parameter configuration	
	13	USB	Software Upgrade	
	14	Power and RS485	Connecting relay metering control board	
	15	I/O Port	2-channel I/O ports, functions can be customized.	

Note: Provide secondary development interface . SNMP (V1/V2c/V3).

4.2 Display interface introduction

<table>
<tr><th colspan="2">LCD display infographic</th><th rowspan="2">Parameter Description</th></tr>
<tr><th>Single Phase</th><th>Three-phase</th></tr>
<tr><td> 
</td><td> 
</td><td>System main menu
Host Information
Socket Information
Environmental Information
System Information</td></tr>
<tr><td colspan="3">Host Information</td></tr>
<tr><td> 
</td><td> 
</td><td>Hardware version number
Software version number
Equipment No.
IP address</td></tr>
<tr><td> 
</td><td>  </td><td>Voltage
Resolution : 0.01V
Current
Resolution: 0.01A
Electricity
Resolution: 0.01KWh
power
Resolution: 1W
Accuracy: ±1%
Response time: ⩽1 s</td></tr>
<tr><td colspan="3"></td></tr>
</table>

<table>
<tr><th colspan="3">Socket Information</th></tr>
<tr>
<td> 
</td>
<td> 
</td>
<td>1 - 16 output parameters,
The maximum number of magnetic latching relays is 36.
Current, power, electrical energy.
Communication abnormality shows offline.
Relay settings.
Password: 8310</td>
</tr>
<tr><th colspan="3">Environmental Information</th></tr>
<tr>
<td> 
</td>
<td></td>
<td>1 channel temperature and humidity,
Communication abnormality is displayed as offline
Temperature and humidity resolution 0.1 Accuracy
Temperature: ±0.5℃
Humidity: ± 2%
Response time: ⩽1 s</td>
</tr>
<tr><th colspan="3">System Information</th></tr>
</table>



Network Settings:

DHCP

Status: ON, OFF

IP address

Subnet Mask

Gateway

MAC Address

Mode settings:

Master/Slave#~4#

Language settings:

[Chinese][English]

Buzzer settings:

Status: ON, OFF

Setting the number of people and machines:

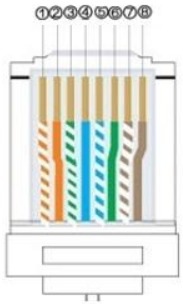
1-4 cascade up to 4

4.3 Terminal Definition

4.3.1 RS485 interface terminal

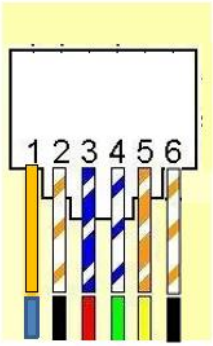
RS485 interface, Pin4 (blue) 485 A, Pin5 (blue and white) 485 B.

Note: The wiring color of RJ45 may be incorrect, it depends on the actual usage.



Color	Functional Description
1 Orange and white	NC
2 Orange	NC
3 Green and white	NC
4 Blue	RS485-A
5 Blue and white	RS485-B
6 Green	NC
7 Brown and white	NC
8 Brown	NC

4.3.2 Temperature and humidity interface terminal

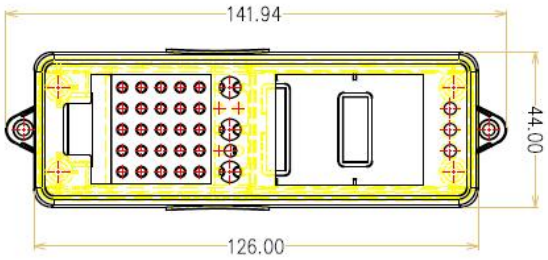


HT1 interface	
No.	Functional Description
1	GND
2	NC
3	SCL1
4	SDA1
5	GND
6	DC 5V

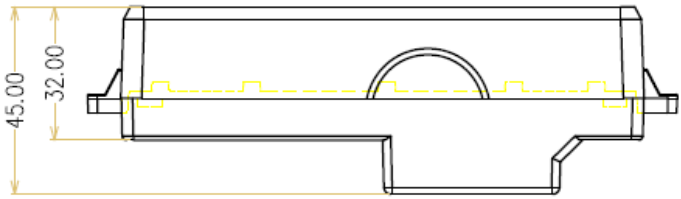
Note: The above wiring colors may be incorrect, please refer to the actual wiring situation .

4.4 Product size

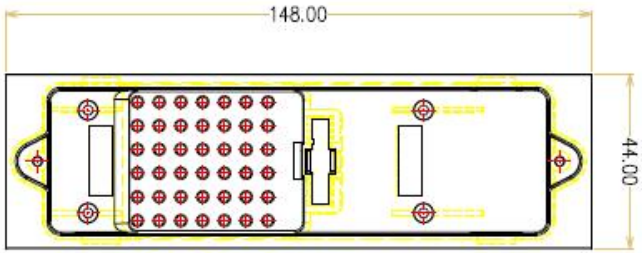
- Product front appearance dimensions

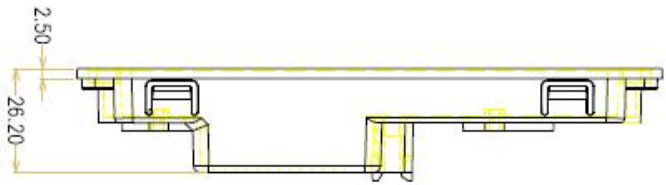


- Product side appearance dimensions

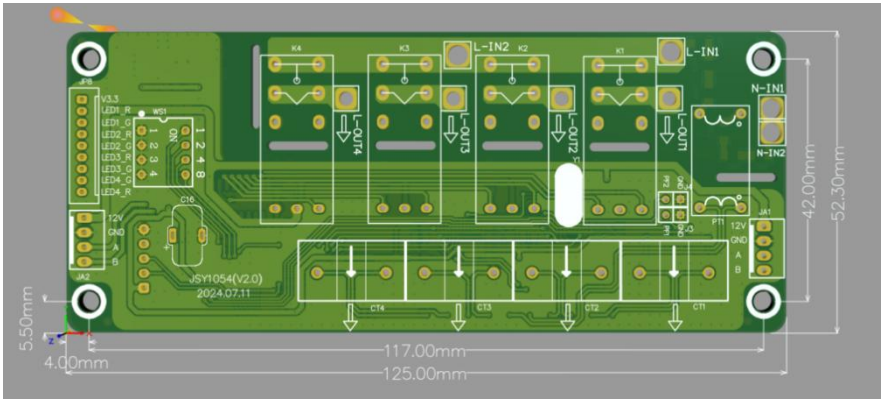


- Product bottom cover appearance dimensions

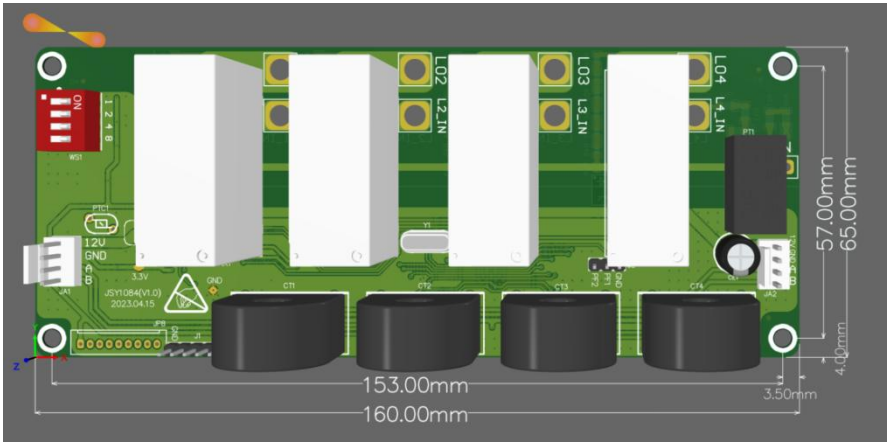




◆ JSY1054 4-channel relay control module dimensions



◆ JSY1084 4-channel relay control module dimensions



5. Web Network Operation

5.1 Supported browsers

You can access the PDU through its web interface using IE, Google 360, or Microsoft Edge . Other commonly used browsers may work but have not been fully tested.

5.2 Cascade Setting Instructions

- You can use the PDU's system IP address as the URL of the web interface and log in using a case-sensitive username and password.
- The PDU uses a static IP address by default when it leaves the factory. The default address is 192.168.1.192. The current IP address can be queried from the network status page on the LCD display of the display module. If you need to configure a dynamic IP, you need to enable the DHCP function of the device.
- Before using the cascading function, you need to select the master-slave mode for each PDU configuration. The master mode has only one PDU, and the slave mode can be configured with 4 PDUs by default .

5.2.1 Cascade settings

After the PDU is powered on, plug the network cable into its network port. At this time, in the LCD display of the display module, by short pressing the button, you can query the IP address from the host information, as shown in Figure 5.2.1 : 192.168. 1 .1 92.

Figure 5.2.1

5.2.2 Log in

Enter the IP address of the PDU in the URL address field of the web browser (http://192.168.1.192 in the web page)

As shown

The default username and password for the super administrator is: " admin", then click Login. as shown in Figure 5.2.2:

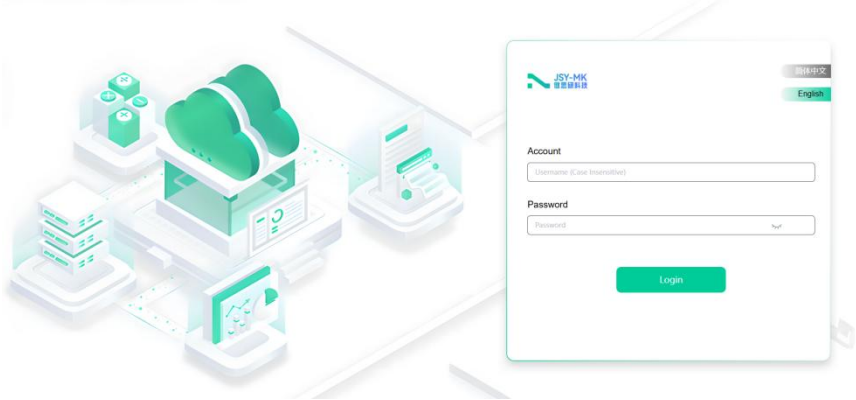


Figure 5.2.2

The main interface consists of three parts: main menu bar, status information, and login status.

Main menu: including PDU Logo and navigation function menu.

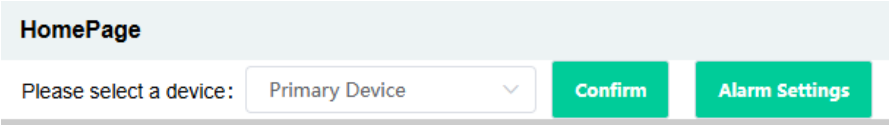
Status information: mainly includes temperature and humidity information, slave/divided relay status and voltage, current, power, power factor, electric energy , PDU voltage , total current, total power and other information.

5.2.3 Host and slave connection method

After one host PDU and four slave PDUs (up to four) are set to the host-slave mode respectively, the network port of the host PDU is connected to the network cable, and the network ports of the four slave PDUs (up to four) are left unconnected. the host and slave, and slave and slave are connected in series through the RS485 interface in turn, so that the host PDU and slave PDU are cascaded, and the user can control the host PDU and slave PDU through web pages by simply logging into the Web interface of the host PDU.

5.3 Device Status Description

The device selection includes the device information of the host and slave, power-related data, temperature and humidity information, and alarm status information.



In the Web interface, click Device Selection, and the host data is displayed by default. You can select the host and slave (up up to 4) data information through the drop-down menu. as shown in Figure 5.3.0

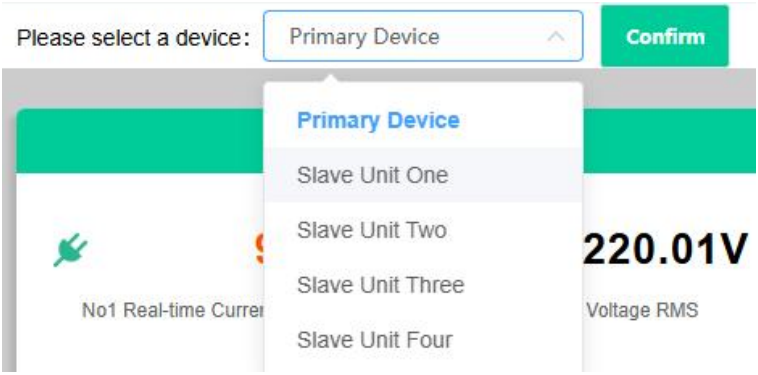


Figure 5.3.0

5.3.1 System Information

PDU system information includes system operation status, device information (product model, version number, etc.), network status and other related information. as shown in Figure 5.3.1

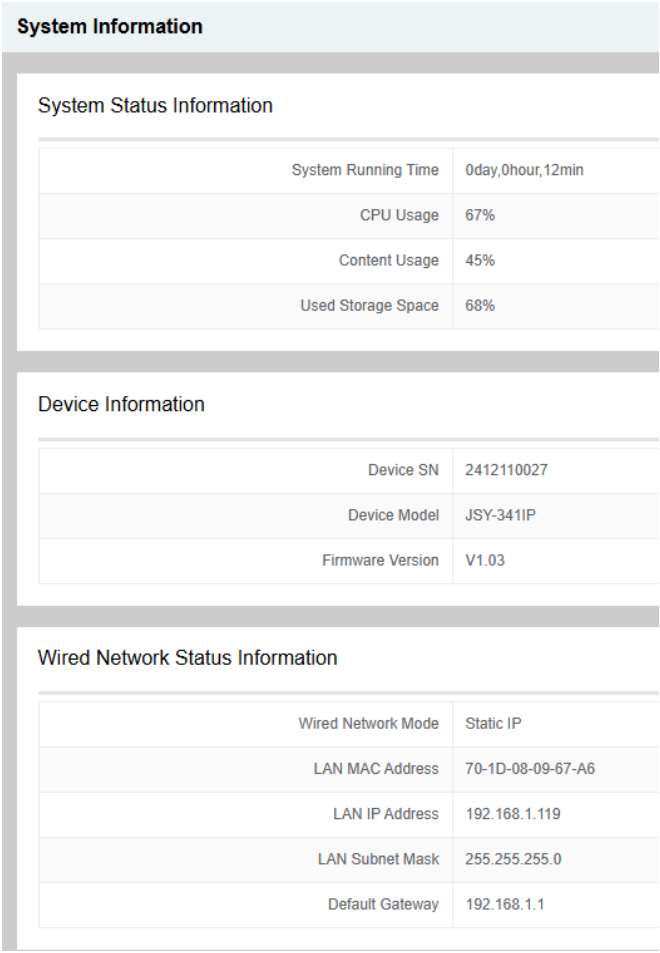
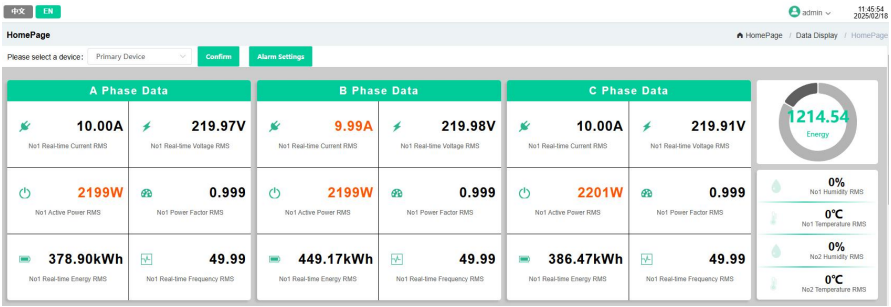
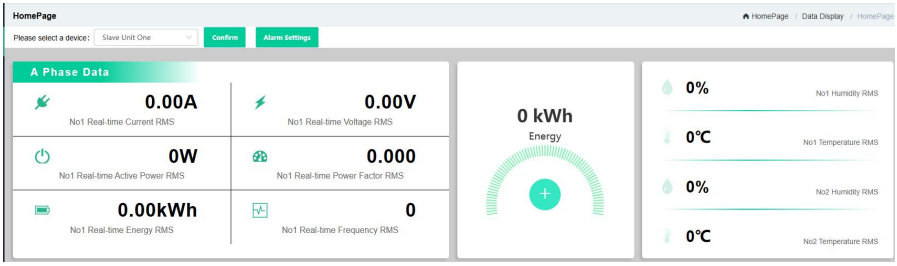


Figure 5.3.1

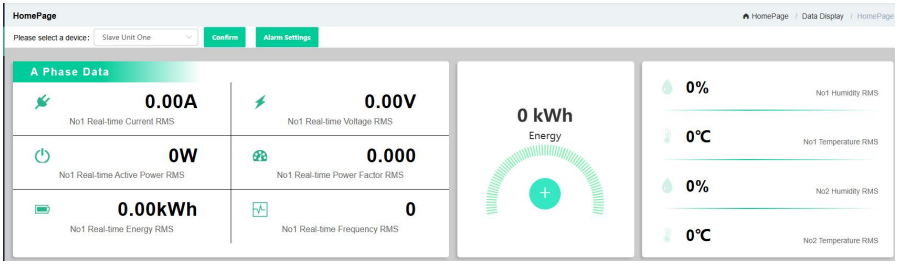
5.3.2 Electrical parameter information

- Intelligent PDU module meter includes : voltage, current, power, power factor, electric energy and other information parameters, as shown in the figure





- The electrical parameter information of the slave intelligent PDU module meter includes: voltage, current, power, power factor, electric energy and other information parameters, as shown below.



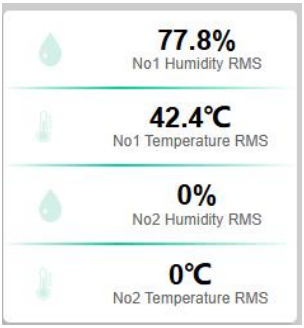
- The electrical parameter information of the output control unit (JSY1054 4-channel intelligent control module) includes: voltage, current, power, power factor, electric energy and other information parameters. the magnetic latching relay can be connected to up to 9 control modules and up to 36 channels. (or optional JSY1084 high current control module). as shown in the figure

All Socket Basic Information Table

No.	Alias	Status	Effective Voltage	Effective Current	Active Power	Energy Consumption
1		Off-line	0.00V	0.000A	0.0W	0.000kWh
2		Off-line	0.00V	0.000A	0.0W	0.000kWh
3		Off-line	0.00V	0.000A	0.0W	0.000kWh
4		Off-line	0.00V	0.000A	0.0W	0.000kWh
5		Off-line	0.00V	0.000A	0.0W	0.000kWh
6		Off-line	0.00V	0.000A	0.0W	0.000kWh
7		Off-line	0.00V	0.000A	0.0W	0.000kWh
8		Off-line	0.00V	0.000A	0.0W	0.000kWh

5.3.3 Temperature monitoring

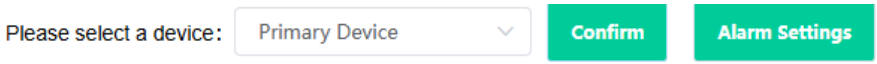
The temperature and humidity status of the PDU displays the current temperature and humidity data, as shown in the figure



- If the system fails to read information from the temperature and humidity sensor, a " 0 " will be displayed.
- The device has only one temperature and humidity interface by default.

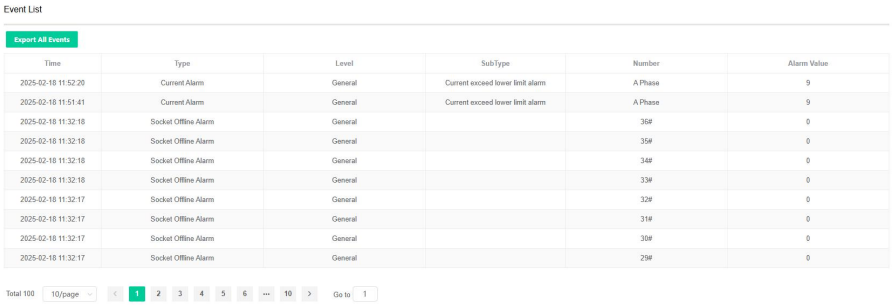
5.3.4 Alarm status

P DU displays the voltage, current, temperature and humidity, IO (switch input) node sensors (access control/water immersion/smoke sensors, etc.) relative to the corresponding thresholds .



5.3.5 Event Log

The PDU will record two types of logs: event log and alarm log



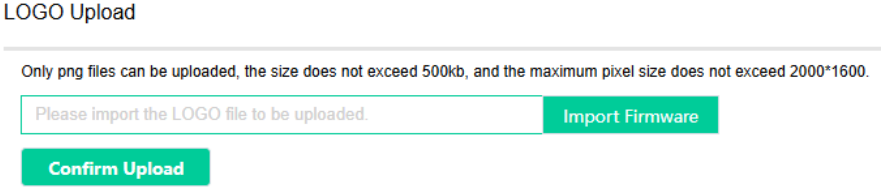
◆ The log information includes: offline alarm from the host/slave, control module, undervoltage alarm, overvoltage alarm, overcurrent alarm, temperature and humidity offline alarm, temperature upper and lower limit alarm, humidity upper and lower limit alarm.

◆ The information content is in the format of: time-type-level-subtype-serial number-alarm value.

◆ 100 alarm messages can be stored , and the latest alarm message will overwrite the previous message.

5.3.6 LOGO upload

Support user-defined uploaded pictures.

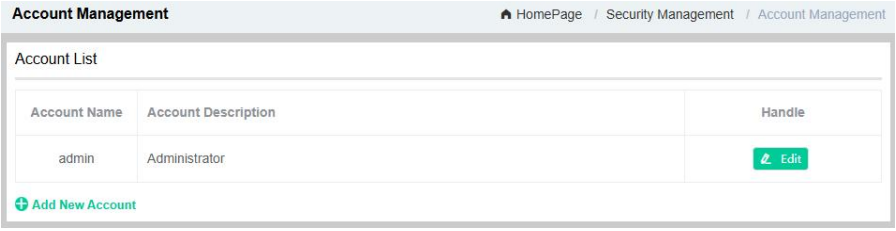


The LOGO , company abbreviation and full name of the W EB page can be changed according to needs. The LOGO can only upload png files with a file size not exceeding 500KB and a size of 2000 * 1600 pixels . After filling in the information, click "Confirm Upload" .

5.4 System parameter settings

5.4.1 Account Addition

In the web interface, click Account Management



◆ In account management, it is used to add, modify or delete users.

◆ The default username and password for the administrator are both "admin". The username and password for the administrator can be modified.

◆ By default, ordinary users do not have output loop control permissions. Administrators can add output loop control permissions for ordinary users.

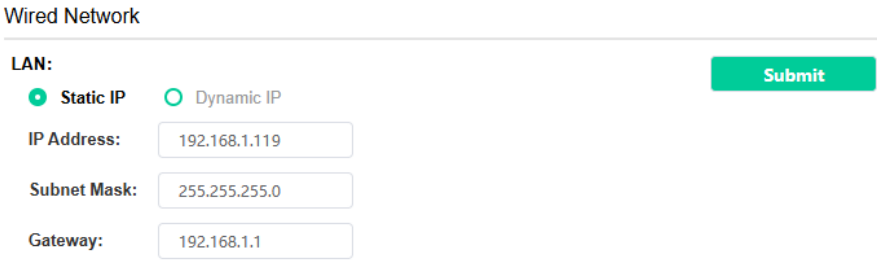
◆ The super user has the highest permissions on the device and can access or modify any options that can be set and modified.

5.4.2 TCP/IP Settings

◆ In TCP/IP settings, DHCP is selected as "ON" by default, and the PDU will automatically obtain the IP address assigned from any DHCP server. If DHCPP is "ON", the input in the IP address, mask and gateway boxes will be invalid.

◆ Network settings include IP address settings, SNMP settings, web login settings, email settings, upgrade settings etc.

The device supports the setting of static IP address or dynamic IP address.

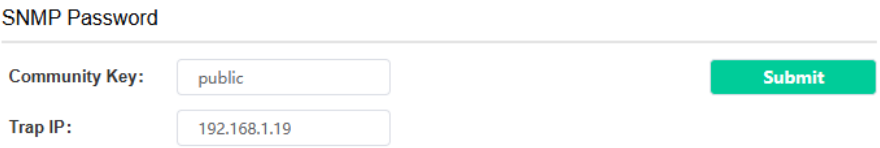


When selecting a static IP address, the user can set a fixed IP address, mask, and gateway according to the existing network environment. if a dynamic IP address is selected, the IP address will be automatically obtained according to the router settings in the LAN where the device is located.

Note: After modifying the network configuration information, you need to restart the system to take effect.

5.4.3 SNMP Settings

PDU supports SNMPv1, SNMPv2c and SNMPv3. When users select SNMPv1, SNMPv2c and SNMPv3, they can operate SNMP by setting the community name and proxy server IP:

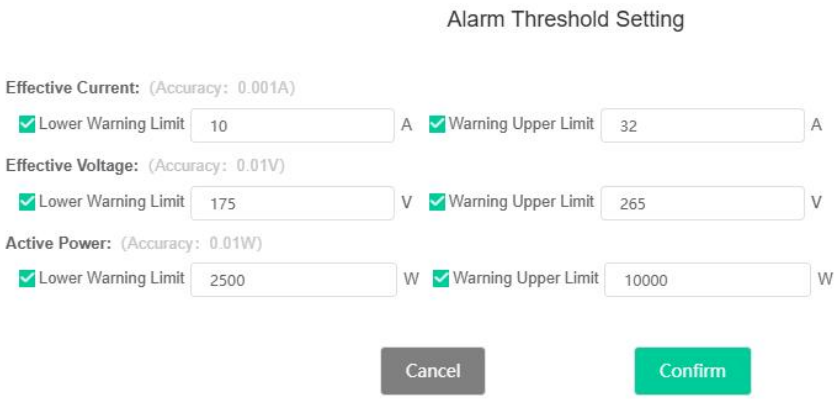


completing the SNMP settings, you need to install the corresponding SNMP management software.

5.4.4 Alarm threshold setting

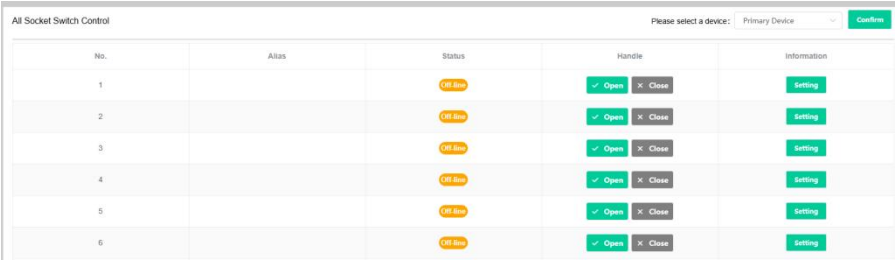
Note: The alarm contents are overvoltage, undervoltage, and overcurrent. the overvoltage threshold range is 1 10-300VAC , the default is 2 65V . the undervoltage alarm threshold range is 0 -300VAC , the default is 1 75V . the overcurrent alarm threshold range is 0 -63A , the default is 6 3A (fill in the threshold with an integer)

- In the Wed interface, click Alarm Settings to set the main circuit alarm threshold settings. as shown in the figure



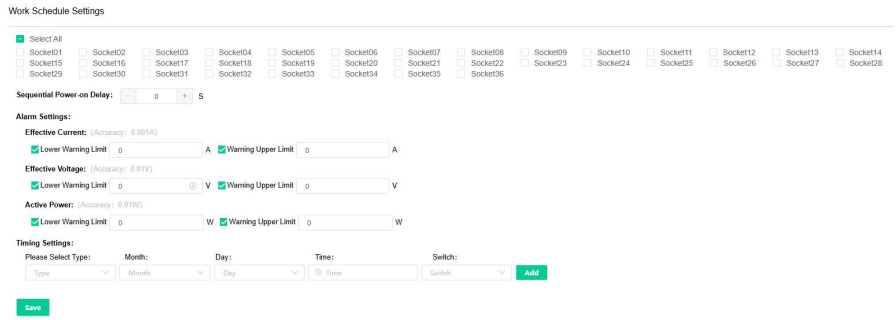
The voltage/current threshold is used to set the upper and lower alarm thresholds of the current voltage/current. When the measured value is within the threshold range, it will display green "normal", and when the measured value exceeds the threshold, it will display red "warning"

- Output control unit alarm threshold setting. single loop setting.



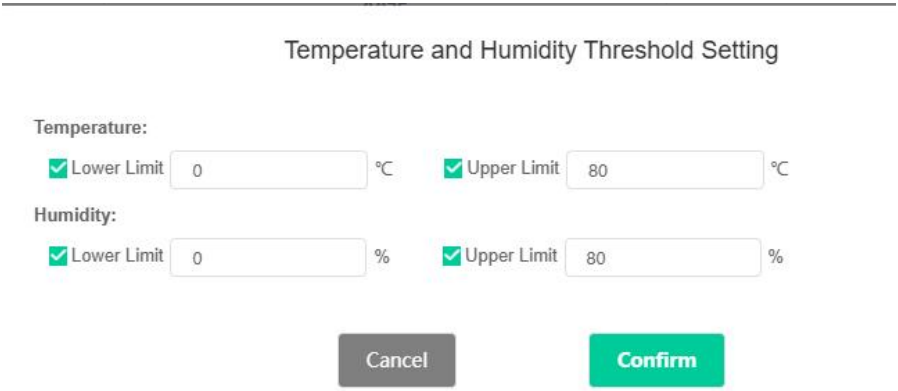
◆ Output control unit alarm threshold setting. batch setting and sequential power-on delay setting.

◆ When the measured value is within the threshold range, it will display green "Normal", and when the measured value exceeds the threshold, it will display red "Warning".



5.4.5 Temperature and humidity alarm threshold settings

◆ Temperature and humidity alarm threshold settings

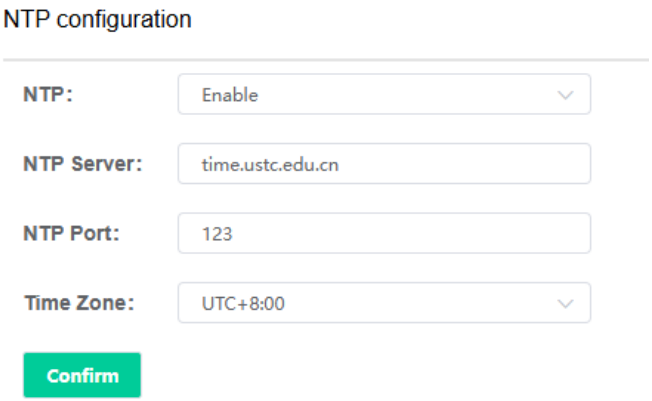


◆ The user can set the upper and lower alarm thresholds of the current temperature and humidity. The current device only supports setting one temperature and humidity interface .

5.4.6 NTP Settings

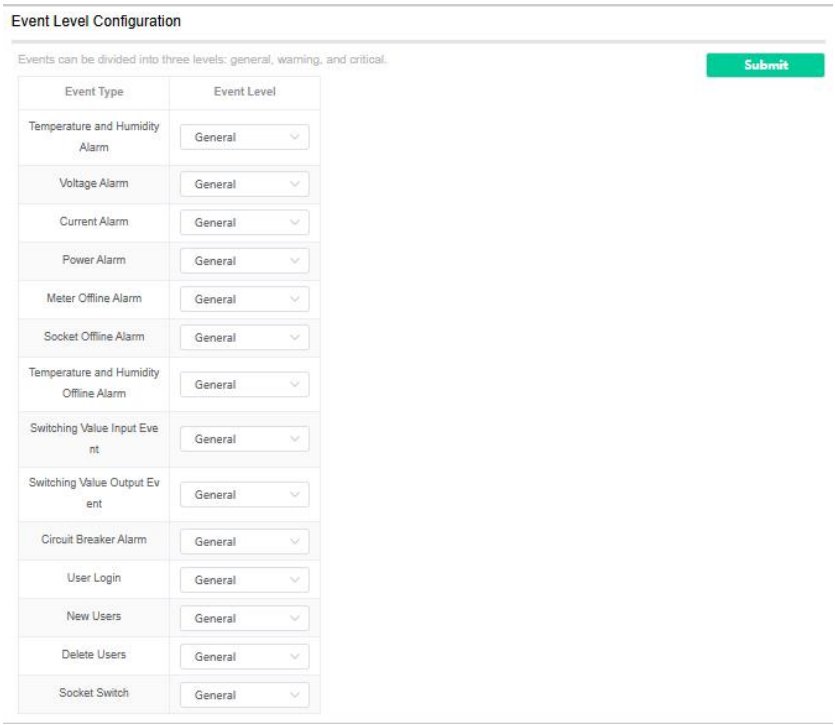
PDU supports NTP settings, and users can enable or disable NTP service according to usage .

Enable: Set and fill in the NTP server and NTP time zone, click the NTP setting button, and the device will obtain the time and date of the currently selected time zone in the network based on the NTP server and time zone filled in by the user, and update the device system time (automatically synchronized every 10 minutes).



5.4.7 Event Configuration Description

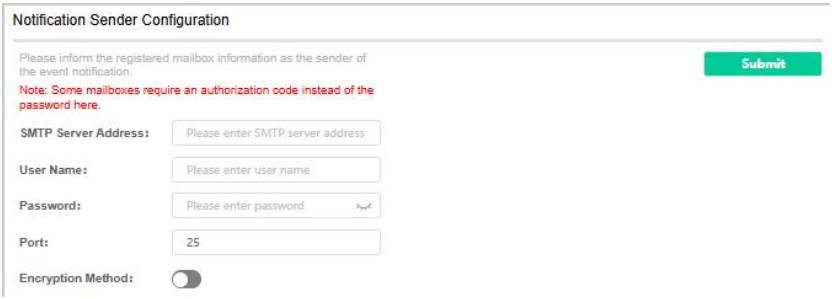
◆ Users can set the alarm level, and events can be divided into three levels: general, warning, and severe.



◆ The log supports downloading. Click " Export all events" and the log will be downloaded to the accessed PC through the browser.

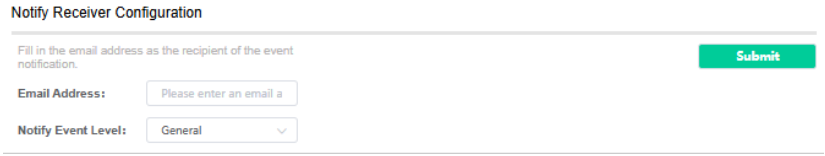
5.4.8 Email Settings

The mailbox supports SMTP to send warning emails to the specified mailbox:



After the user has set up all functions, the device needs to be restarted to make them effective. Then the user can click the "Send Test Email" button to test

whether the current configuration is effective.

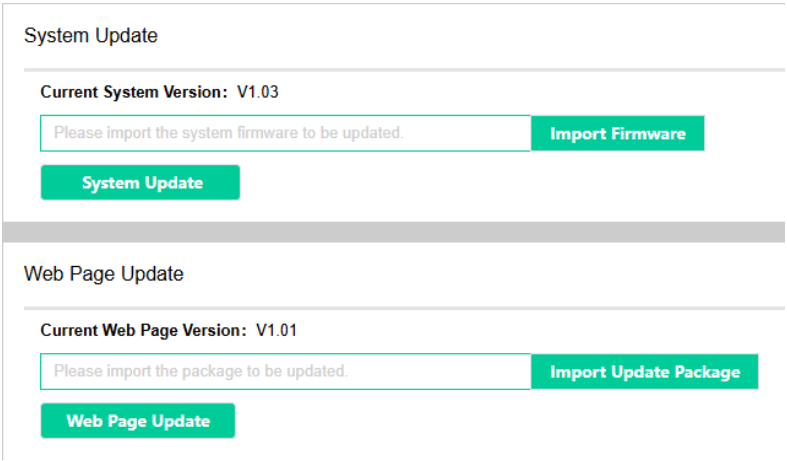


Fill in the email address in the corresponding "Receiving Account" input box. modify the notification event level: general, warning, serious.

5.4.9 System Upgrade

In the upgrade settings, you can see the system and web page firmware versions , and you can upgrade the current firmware information when new firmware is available.

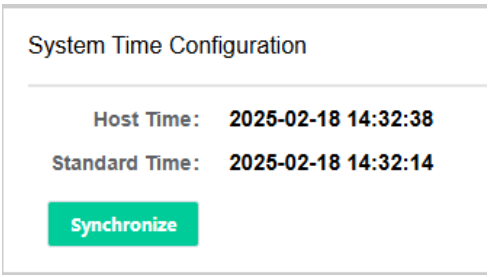
Import the firmware before upgrading. The firmware is a bin file. After the upgrade is completed, the P DU will automatically restart.



- If the power is cut off during the upgrade process, the device can continue to upgrade normally after it is powered on again.
- The PDU firmware is relatively large, so during the upgrade process, please wait patiently for the upgrade to complete and ensure that the network is unobstructed.
- During the PDU upgrade process, please do not perform other operations, such as clicking buttons, using SNMP, logging into the web page, etc.

5.4.10 System time acquisition

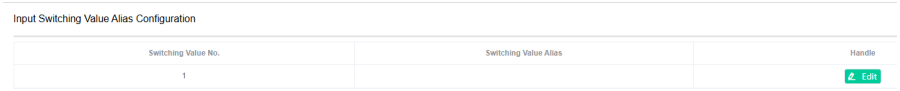
- After the user gets the PDU, it is recommended to set the time to ensure the accuracy of the system time.
- PDU supports directly obtaining the current PC time as the PDU time, and also supports accessing the NTP server for time synchronization.
- When the user uses the current PC time as the PDU time, he can directly click "Synchronize".



Note: When users use NGP server for time synchronization. refer to 5.5.3 NTP settings

5.4.11 Switch quantity alias modification

- Supports modification of switch quantity aliases. as shown in the figure



5.5 Other settings instructions

5.5.1 Display column description

There is a current status display bar in the upper right and upper left corners of the interface. It can display the current logged-in user, Chinese and English switching, and the current device time.

- Click the current login user name, you can choose to log out (exit) the current user, and switch between different users.
- Click "EN" to switch the device to the English interface display.

5.5.2 IP address acquisition

There are several ways for PDU to obtain IP address:

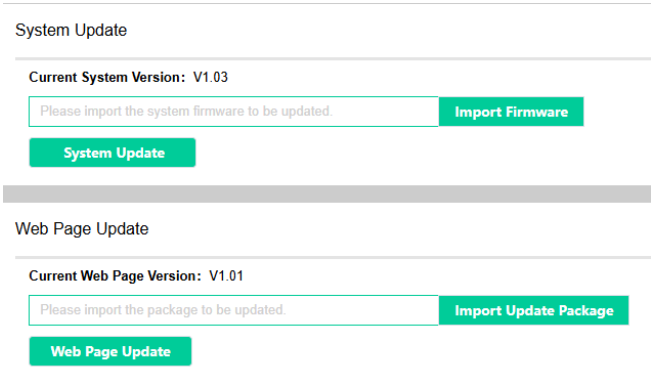
The first method: After the PDU is connected to the router, the IP address assigned by the router is obtained statically or dynamically.

The second method: After the PDU is directly connected to the PC via a network cable, the PC is set to a static IP address. At this time, if the PDU has been set to a static IP address and is in the same network segment as the PC, it can be accessed directly.

The third method: Users can directly set the dynamic or static address of the PDU through the LCD.

5.5.3 System version view

The system updates and records the current PDU firmware version. When the user needs after-sales service for the current device, the user can provide the current screenshot to our company, and our company can provide relevant after-sales service based on the information on the current interface.



6. Troubleshooting

6.1 Frequently Asked Questions

Question	Solution
Network disconnection	◆ Check if the LED indicator of the network port is flashing and make sure it is flashing normally. ◆ Check the integrity of the network cable ◆ Verify the PDU network settings
No access Web User Interface	◆ Verify that you can ping the IP address of the PDU ◆ Verify that the browser you are using supports PDU web browsing. See "Supported Browsers" ◆ Verify that the URL is entered correctly ◆ Reset the device
LCD display shows garbled characters	◆ Reset device parameters via LCD ◆ Restart by pressing the Reset button ◆ If the problem is still not solved, please contact our after-sales service

6.2 SNMP Issues

question	Solution
Unable to execute GET or SET	◆ Verify the community and view "SNMP Devices" ◆ Verify that UDP port 161 is open correctly ◆ Check whether the parameters are correct when using SNMP
Unable to receive trap	◆ Verify that the trap proxy server IP address is configured correctly ◆ Verify that UDP port 162 is open
The trap received by the network management system is not recognized	◆ Please refer to the documentation that came with your gateway to verify that these traps are correctly integrated into the alert/trap database.

Note: The equipment should be operated in a place without explosive, corrosive gas and conductive dust, and without significant shaking, vibration and impact.

7. Transportation and storage

1. The product should not be subjected to severe impact during transportation and unpacking, and should be transported and stored in accordance with the national standard GB/T13384-2008 "General Technical Conditions for Packaging of Electromechanical Products".
2. This product is an electronic device, so try to avoid heavy impact and bumps when transporting and placing it.
3. The ambient temperature of the storage location should be -40 ~ +70 ℃, the relative humidity should not exceed 85 % and there should be no corrosive harmful substances in the air .

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official website