Smart PDU User Manual

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1. Smart PDU Overview

The Smart PDU (Smart Power Distribution Unit) is a network-security-hardened remote monitoring and management power distribution system. It employs a new type of hydraulic circuit breaker with dual overload and over-current protection, features an integrated sheet metal and low-energy-consumption structural design, and supports remote upgrades, multiple global network protocols, multi-unit cascading, and centralized control. It can accurately and effectively monitor real-time status changes such as current, voltage, power, and energy consumption of electrical equipment in data center server rooms.

2. APPLICABILITY

- The Smart PDU product is suitable for use in server cabinets, network cabinets, and similar applications.
- The output quantity of the Smart PDU can be configured with a selectable number of outlets (24, 36, or 42 positions) and various outlet types, including IEC320 C13, IEC320 C19, and C39 standards, according to specific requirements.
- The Smart PDU product complies with the requirements of the RoHS directive. It is applicable for 100V~250V single-phase AC power supplies and 380V three-phase AC power supplies, with input options of 32A, 63A, 3x16A, and 3x32A. This versatility meets the diverse needs of customers across different countries and regions worldwide.

3、Terms & Definitions

Parameters and Units

Parameter	Definition	Unit	Remark
U	Output Voltage	V	
I	Load Current	A	
S	Apparent Power	kVA	
P	Active Power	kW	
PF	Power Factor	--	
E	Total Energy	kWh	
T1/T2	Temperature	℃	
H1/H2	Humidity	%RH	

Smart PDU SERIES & FEATURES

IM. Input-level Monitored

OM. Outlet-level Monitored

SI. Switched and Input-level monitored

SO. Switched and outlet monitored

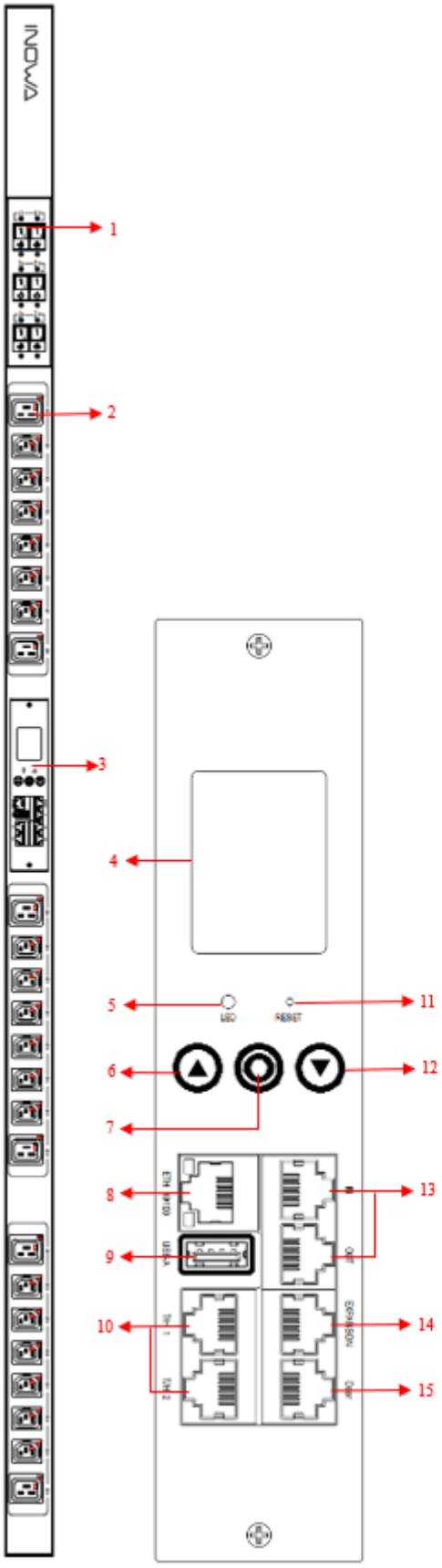
Key Features	PDU Series			
	IM	OM	SI	SO

Monitoring of total voltage per phase	●	●	●	●
Monitoring of total load current per phase/branch	●	●	●	●
Monitoring of total load power	●	●	●	●
Monitoring of the total power factor per phase	●	●	●	●
Monitoring of total energy metering per branch	●	●	●	●
Monitoring of temperature/humidity, door access, water leakage, and smoke status	●	●	●	●
Monitoring of load current per outlet		●		●
Monitoring of the power factor per outlet		●		●
Monitoring of energy per outlet		●		●
Monitoring of On/Off status per outlet			●	●
High/Low threshold setting for total voltage per phase	●	●	●	●
High/Low threshold setting for load current per phase/branch	●	●	●	●
High/Low threshold setting for temperature and humidity	●	●	●	●
High/Low threshold setting for load current per outlet		●		●
Remote On/Off power control per outlet			●	●
Schedule an outlet event			●	●
Overload power-off per outlet				●
Power On/Off delay setting			●	●

Note: ● Indicates that this function is available in this product series

4、Product Diagram & INSTALLATION GUIDE

Product Diagram



1. Hydraulic Circuit Breaker;
2. Locking Outlets
3. Network Management Controller
4. LCD screen
5. RUN Indicator
6. Page Up Button
7. MENU Button
8. 10/100 Ethernet Port
9. Local Upgrades USB
10. T/H1 Temperature & Humidity sensor Port 1

    T/H2 Temperature & Humidity sensor Port 2
11. Reset Button
12. Page Down Button
13. IN: Daisy-chain in

    OUT: Daisy-chain out
14. Expansion Port for more Sensors
15. Door Sensor Port

Figure 1: Product diagram

INSTALLATION GUIDE

Vertical Installation (0U)

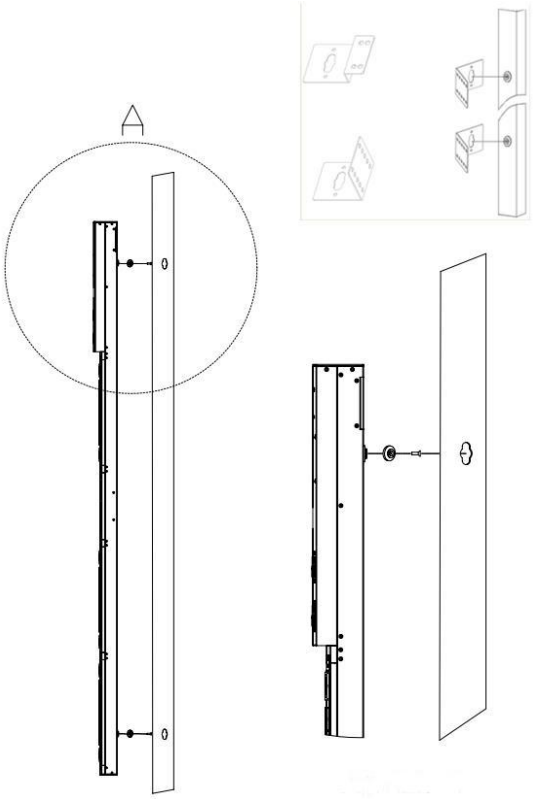


Figure 2: Installation Diagram

5、INSTRUCTIONS FOR HARDWARE USE

Network Management Controller

	Function	**Description**
RUN	RUN Indicator	Flashes with 1-second intervals (on/off)
ETH10/100	Ethernet port	Network Port WAN/LAN communication interface
EXPANSION	Serial port	RS-485 serial communication interface
IN/OUT	Daisy-Chain Port	Smart PDU cascading
UP	Page UP Button	Scroll up
DOWN	Page UP Button	Scroll down
MENU	Menu Button	Menu select
RESET	Reset Button	Firmware reset
LCD Screen	Data display	Displays monitored data and alarm status of the unit
T/H	Sensor port	Interface for connecting the temperature & humidity sensor
DOOR	Sensor port	Interface for connecting the door access sensor

Energizing the PDU

- Attach the input power cord to a matching power source. Upon power-on, the panel LED indicators light up (dimly). After approximately 15 seconds, the buzzer emits a long beep, the RUN indicator starts flashing, the screen lights up, and the product enters normal operation mode.
- Use the UP and DOWN buttons to page through and view electrical parameters such as voltage, current, apparent power, active power, power factor, and energy consumption for each phase/circuit/outlet; view sensor status and device information such as series, baud rate, version number, IPv6 address, master/slave mode, buzzer on/off status, DHCP on/off status, etc.

HARDWARE SETTING

Reset Setting

Press the RESET button to reset, the LCD display restarts and functions normally

Restore to factory settings:

Press the MENU button, then use the UP/DOWN button to select "Factory Mode," press MENU to confirm. The PDU will begin restarting until the RUN indicator flashes.

Daisy-Chain setting

Daisy-chaining via Ethernet protocol

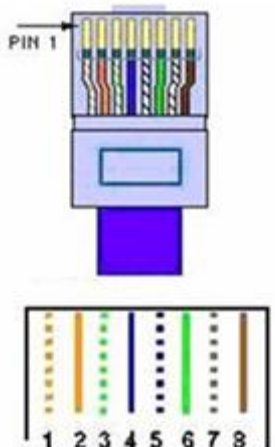
The devices can be accessed via web through daisy-chaining of Ethernet ports. Connect the OUT port of one device to the IN port of the next device to form a daisy-chain connection. A single master unit can support up to 9 slave units, allowing a total of 10 devices to be connected in one chain.

Daisy-chaining via serial protocol

Serial port cascading primarily uses the Modbus RTU protocol to access devices. A MODBUS serial server connects to the IN port, and the OUT interface of the previous unit connects to the IN interface of the next unit, forming a daisy-chain cascade. The maximum number of cascaded units is 32.

RS485 Interface RJ45 Terminal Pinout Description

Pin #	Color	Description
1	Orange & white	RS485-B
2	Orange	RS485-A
3	Green & whitle	-
4	Blue	RS485-B
5	Blue & white	RS485-A



6	Green	-
7	Brown & white	-
8	Brown	-

6、Smart PDU Software User Guide

Software Overview

The system runs on a real-time operating system and provides various network services such as a web server, SNMP, TELNET/SSH, SMTP/SMTPS, MODBUS, and NTP. Users can access the device through a browser or other access methods. It also offers extensive secondary development and integration interfaces, making it easier for users to monitor and manage the device.

Access methods

Users can monitor and control the device through various access methods, including Web (compatible with major browsers such as Microsoft Edge and Google Chrome), SNMP (V1/V2c/V3), Telnet/SSH (network command-line monitoring), and MODBUS RTU/TCP (serial interface).

Web Interface

Open a browser and enter the correct device IP address in the address bar (default factory IP: https://192.168.1.158). A user registration window will pop up. After completing the registration, log in to access the main interface.

- On first login, user registration is required.
- Account rules: The account can only contain uppercase letters, lowercase letters, and numbers, and must be at least 5 characters and at most 16 characters.
- Password rules: The password must contain uppercase letters, lowercase letters, and numbers, and must be at least 8 characters and at most 16 characters.

Figure 3: Registration Window

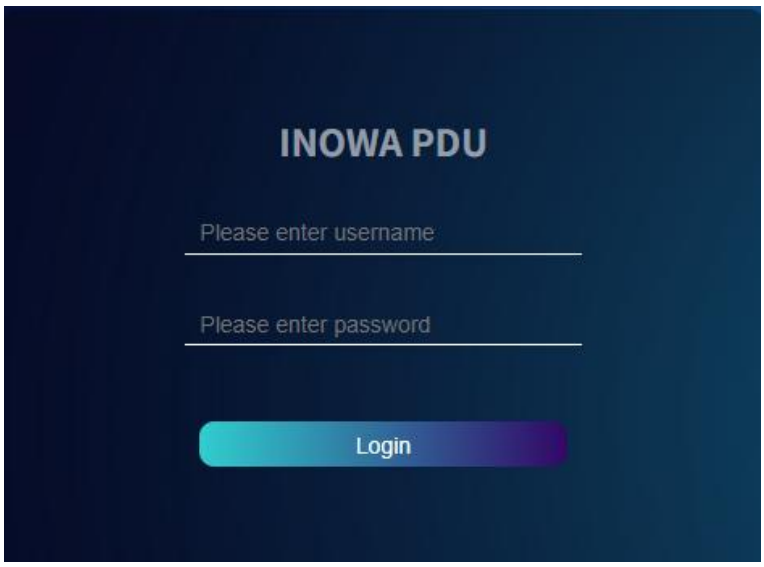


Figure 4: Login Window

Device Interface Overview

The main interface of the system consists of three parts: Device Information, Navigation Menu, and Interface Status Information.

- **Navigation Menu**: Provides access to all functions.
- **Interface Status Information**: Displays the status corresponding to the selected navigation menu item.
- **Device Information**: Includes operating status, PDU location, operation time, product name and series, and product version number.
- The interface supports switching between Chinese and English, as well as logout functionality.

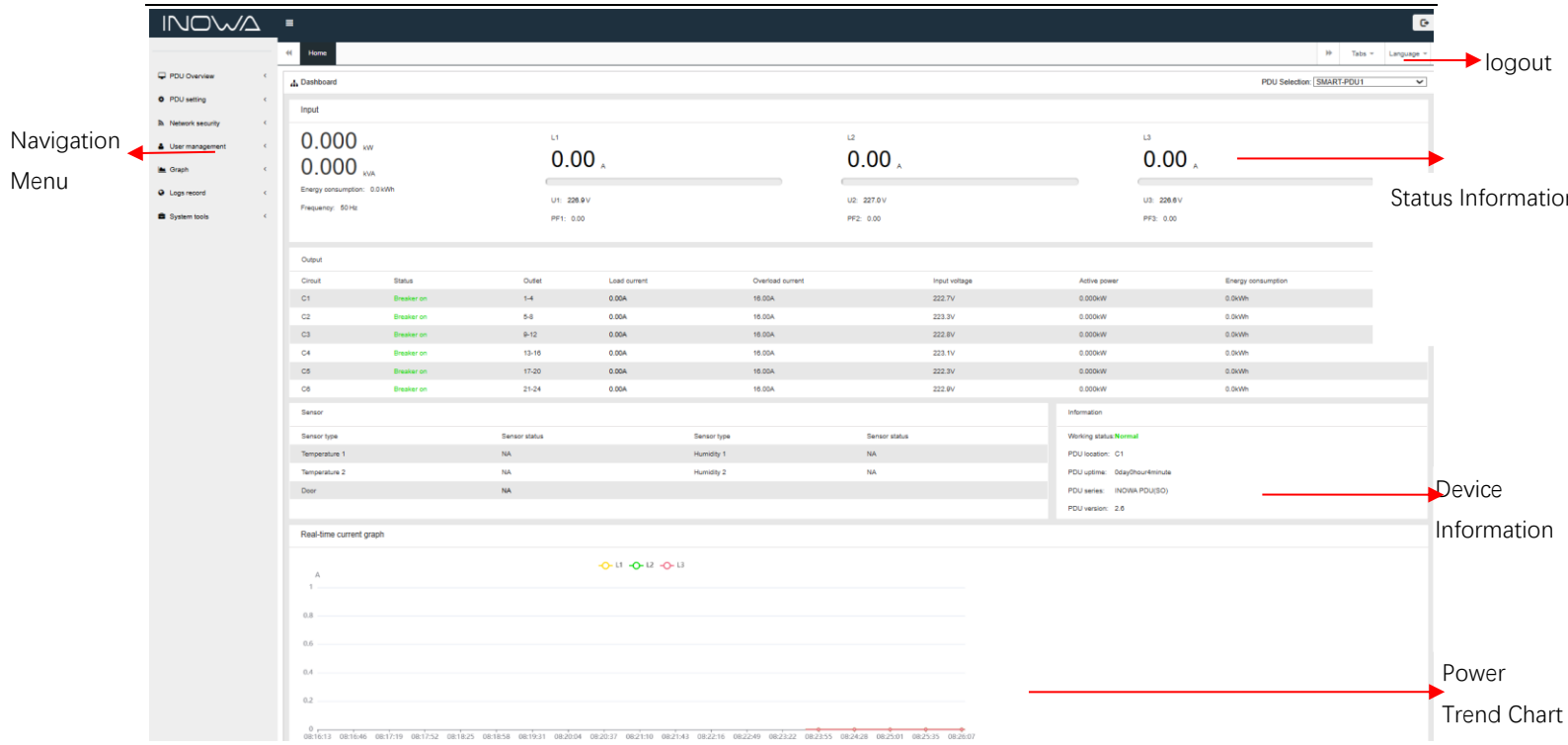


Figure 5: Main Software Interface

Device Monitoring

PDU Overview

Path: PDU Overview> Dashboard

This screen provides access to basic monitoring information for the equipment.

- Overall Status Monitoring: Displays the total load current (single-phase L1 or three-phase L1/L2/L3), input voltage, total load power, total energy consumption, and frequency.

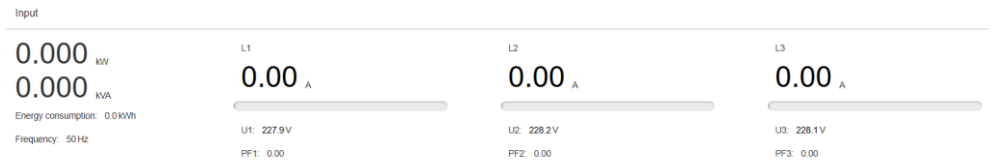
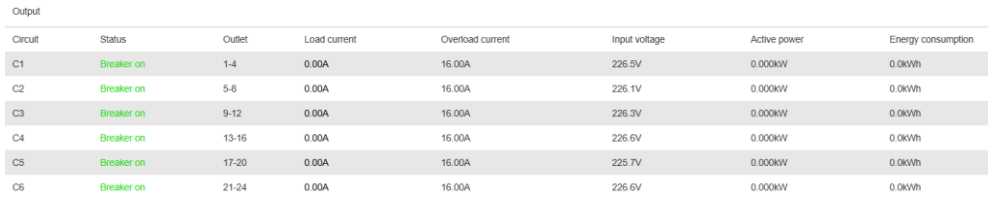


Figure 6: Overall Status

- Branch Circuit Status Monitoring: Displays the On/Off status of each circuit breaker, the outlet numbers for each branch circuit, real-time load current, overload current, real-time voltage, active power, and energy consumption.



Output

Circuit	Status	Outlet	Load current	Overload current	Input voltage	Active power	Energy consumption
C1	Breaker on	1-4	0.00A	16.00A	226.5V	0.000kW	0.0kWh
C2	Breaker on	5-8	0.00A	16.00A	226.1V	0.000kW	0.0kWh
C3	Breaker on	9-12	0.00A	16.00A	226.3V	0.000kW	0.0kWh
C4	Breaker on	13-16	0.00A	16.00A	226.6V	0.000kW	0.0kWh
C5	Breaker on	17-20	0.00A	16.00A	225.7V	0.000kW	0.0kWh
C6	Breaker on	21-24	0.00A	16.00A	226.6V	0.000kW	0.0kWh

Figure 7: Branch Circuit Status

- Environmental Sensor Status Monitoring: Displays status information for Temperature/Humidity Sensors 1 and 2, and the Door Access Sensor.

Sensor

Sensor type	Sensor status	Sensor type	Sensor status
Temperature 1	NA	Humidity 1	NA
Temperature 2	NA	Humidity 2	NA
Door	NA		

Figure 8: Environmental Sensor Status

- Real-time Current Trend Chart

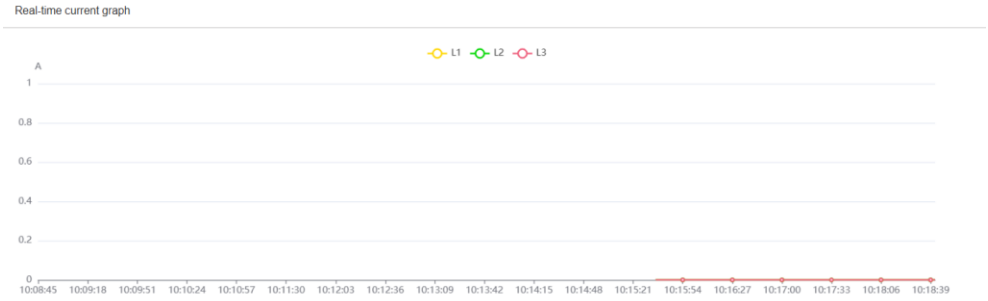


Figure 9: Real-time Current Trend Chart

Outlet Monitoring

Path: PDU Overview> Outlet

This interface allows users to view the name of each outlet, the On/Off status of each outlet, real-time load current, power factor, active power, energy consumption per outlet, and current load status (Normal, Warning, Alarm).

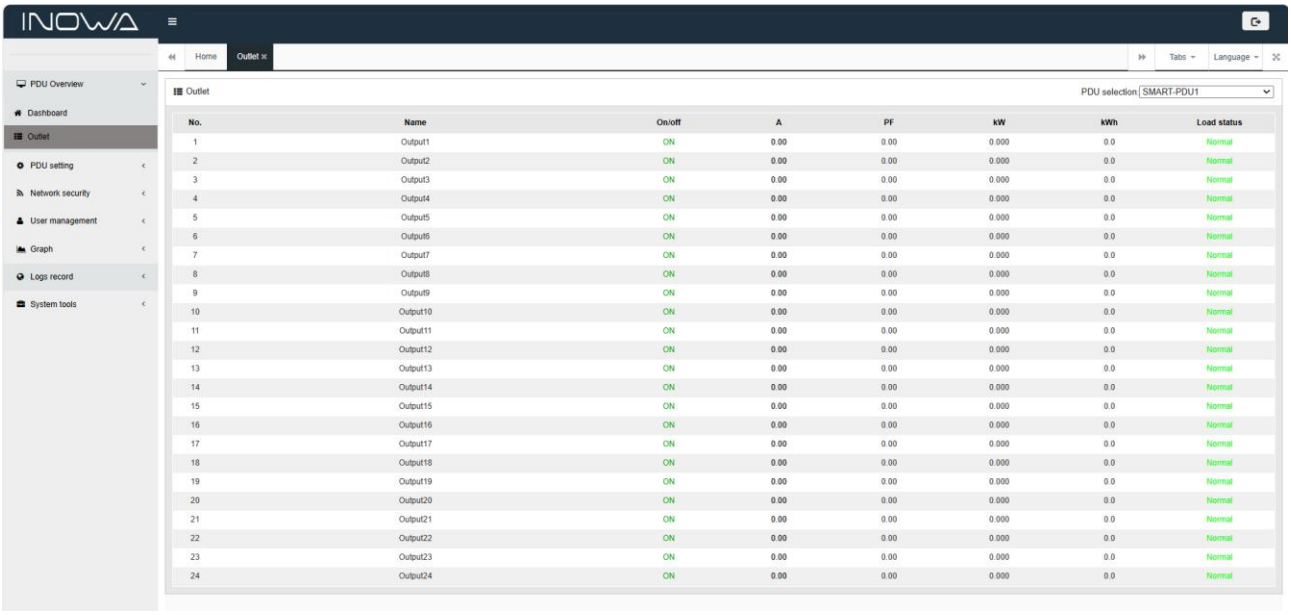


Figure 10: Outlet Status

PDU Setting

Mode Settings

Path: PDU Settings > Daisy-Chain Setting

This interface allows users to configure the connection method based on actual usage requirements.

- **Daisy-Chain Setting**: Choose between TCP/IP network cascade and Modbus RTU serial cascade (factory default is Modbus RTU cascade). The system must be restarted after saving for the configuration to take effect.

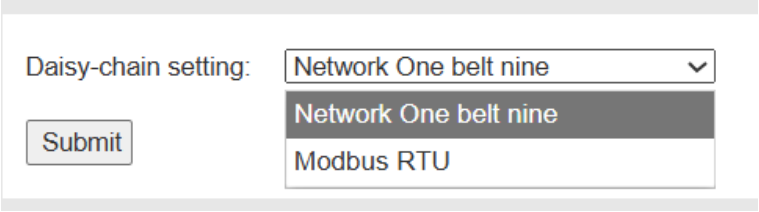


Figure 11: Daisy-Chain Mode

- **Master/Slave Mode Setting**: One master unit can Daisy chain up to 9 slave units. Select the dropdown menu options to modify the master/slave status of the cascaded devices. Click the Save button, and the configuration will take effect after a restart

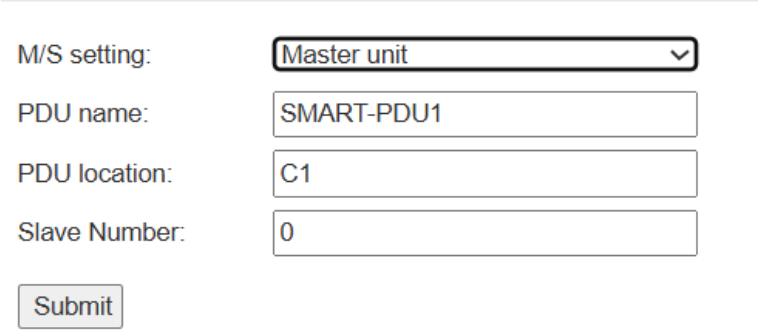


Figure 12: Master/Slave Mode

- Modbus-RTU setting: configure Modbus-RTU address (1-255), baud rate (9600, 19200, 38400, 57600, 115200), data bits (6, 7, 8), parity (None, Even, Odd) and stop bits (1, 2).

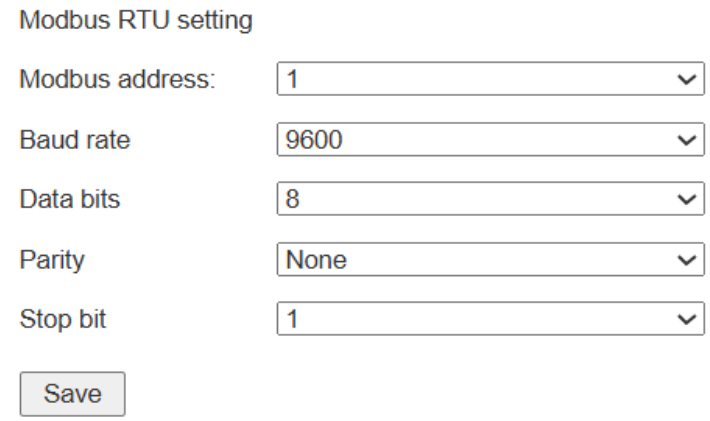


Figure 13: Modbus-RTU Configuration

- Modbus TCP setting: configure the port and click the Save button.

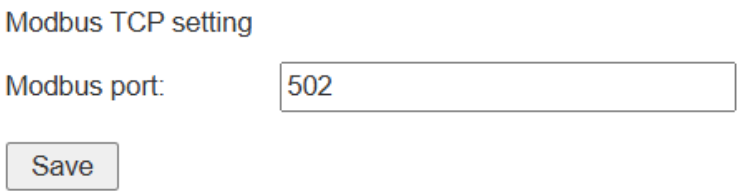


Figure 14: Modbus TCP Configuration

- Buzzer Mode: Select "On" from the dropdown menu to enable the buzzer when device exceeds the threshold; select "Off" to mute the buzzer.

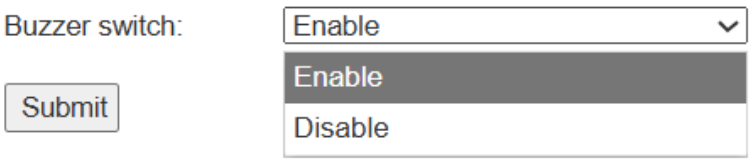


Figure 15: Buzzer Mode

- Outlet Restart Delay Setting: The restart delay time can be set in the input field (setting range: 5–3600 seconds).

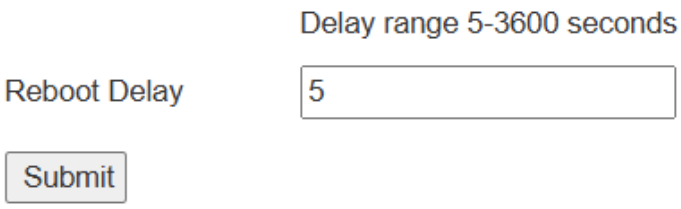


Figure 16: Reboot Delay

- Detect USB Drive Status

Figure 17: USB Port Status

Configure Outlet Groups

Path: PDU Setting> Outlet Grouping

This interface allows users to configure outlet groups according to actual usage requirements.

- Based on specific needs, each output unit can be individually selected and assigned to any of the 8 groups. Enable the grouping function by selecting the option in the lower-left corner and click Submit to activate grouping successfully.

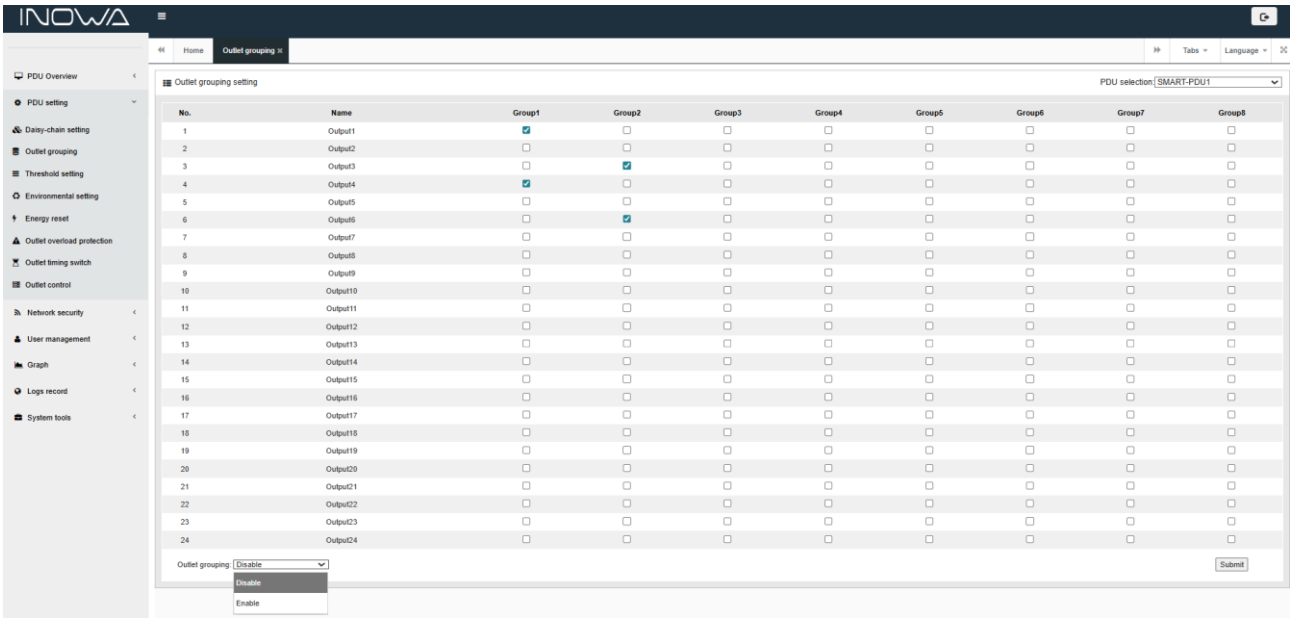


Figure 18: Configure Outlet Groups

Outlet Settings

Path: PDU Settings> Threshold setting

This interface allows users to customize the parameters of individual outlet based on actual usage requirements.

- Outlet Name: Users can customize the name of each output unit (names may include letters, numbers, characters, spaces, or combinations thereof; maximum length of 30 characters).
- Power On/Off Delay: Users can define the power-on or power-off delay time, either unified or time-segmented sequential (setting range: 0–15 seconds, values must be integers).
- Near-overload Warning Threshold: Users can set a Near-overload warning threshold for each output unit (setting range: 0–16A; the set value must be less than the overcurrent threshold).
- Overload Alarm Threshold: Users can set a custom Overload warming threshold for each individual outlet (setting range: 0–16A; the set value must be greater than the warning threshold).

After configuring the parameters, click the checkbox on the far right for the corresponding unit and then click the Submit button at the bottom right for the settings to take effect.

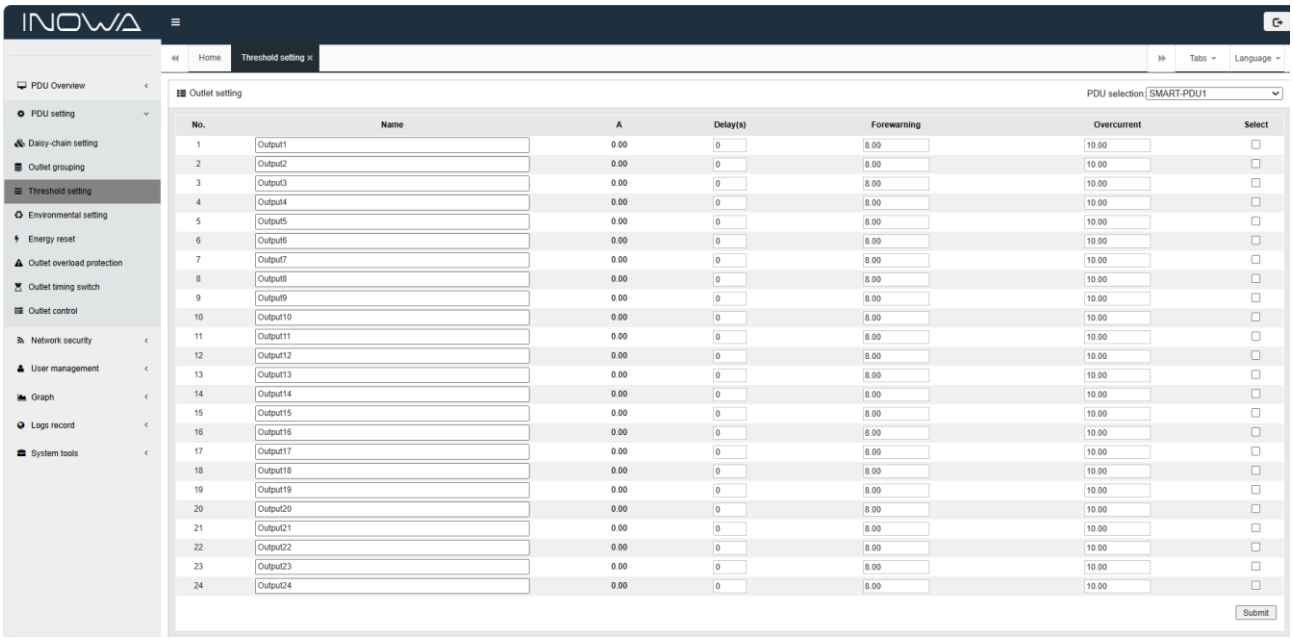


Figure 19: Outlet Setting

Environmental Setting

Path: PDU Setting > Environmental Setting

This interface allows users to customize the environmental parameters based on actual usage requirements.

- Temperature/Humidity Maximum and Minimum Thresholds: After setting the desired parameters, check the box on the right and click the Submit button for the settings to take effect (recommended temperature range: 0–90°C, humidity range: 0–99%, with the minimum value needing to be less than the maximum).

No.	Name	Real time value	Min	Max	Select
1	Temperature 1	0	0	40	☐
2	Temperature 2	0	0	40	☐
3	Humidity 1	0	0	99	☐
4	Humidity 2	0	0	99	☐

Submit

Figure 20: Maximum or Minimum T/H Threshold

- Near-overload Warning Threshold and Overload Threshold for per branch circuit/per phase: After setting the desired parameters in the corresponding fields, check the box on the right and click the Submit button for the settings to take effect (Circuit current setting range: 0–16A; Total current setting range: 0–32A or 0–63A; The warning value must be less than the overload value).

No.	Name	Real time value	Forewarning	Overcurrent	Select
1	Circuit current(C1)	0.00	12.80	16.00	☐
2	Circuit current(C2)	0.00	12.80	16.00	☐
3	Circuit current(C3)	0.00	12.80	16.00	☐
4	Circuit current(C4)	0.00	12.80	16.00	☐
5	Circuit current(C5)	0.00	12.80	16.00	☐
6	Circuit current(C6)	0.00	12.80	16.00	☐
7	Phase current(L1)	0.00	25.60	32.00	☐
8	Phase current(L2)	0.00	25.60	32.00	☐
9	Phase current(L3)	0.00	25.60	32.00	☐

Submit

Figure 21: Configuring Branch Circuit Load Thresholds

- Input Voltage Thresholds per Phase (Minimum/Under/Over) : After setting the parameters in the corresponding fields, check the box on the right and click the Submit button for the settings to take effect (Voltage setting range: 0–276V; Minimum voltage value < Undervoltage value < Overvoltage value).

No.	Name	Real time value	Low pressure value	Undervoltage value	Overpressure value	Select
10	Phase voltage(L1)	232.5	80.0	170.0	276.0	☐
11	Phase voltage(L2)	232.8	80.0	170.0	276.0	☐
12	Phase voltage(L3)	232.6	80.0	170.0	276.0	☐

Submit

Figure 22 Voltage Thresholds

Energy Reset

Path: PDU Settings > Energy Reset

This interface allows users to view the energy consumption of each outlet as well as the total energy consumption. It also enables users to reset the energy consumption of individual outlet or clear the total energy consumption (Series A/C only displays the total energy consumption per circuit).

- To view the energy consumption of each outlet, click the reset button to the right of the desired output unit. This will initialize the energy consumption value for that specific outlet and restart its energy metering (the total energy consumption will be reduced by the energy value cleared from that output unit).
- Clicking the reset button in the bottom-right corner of the bottom bar on the page will clear the energy consumption values of all outlet at one time and restart energy metering for all of them.

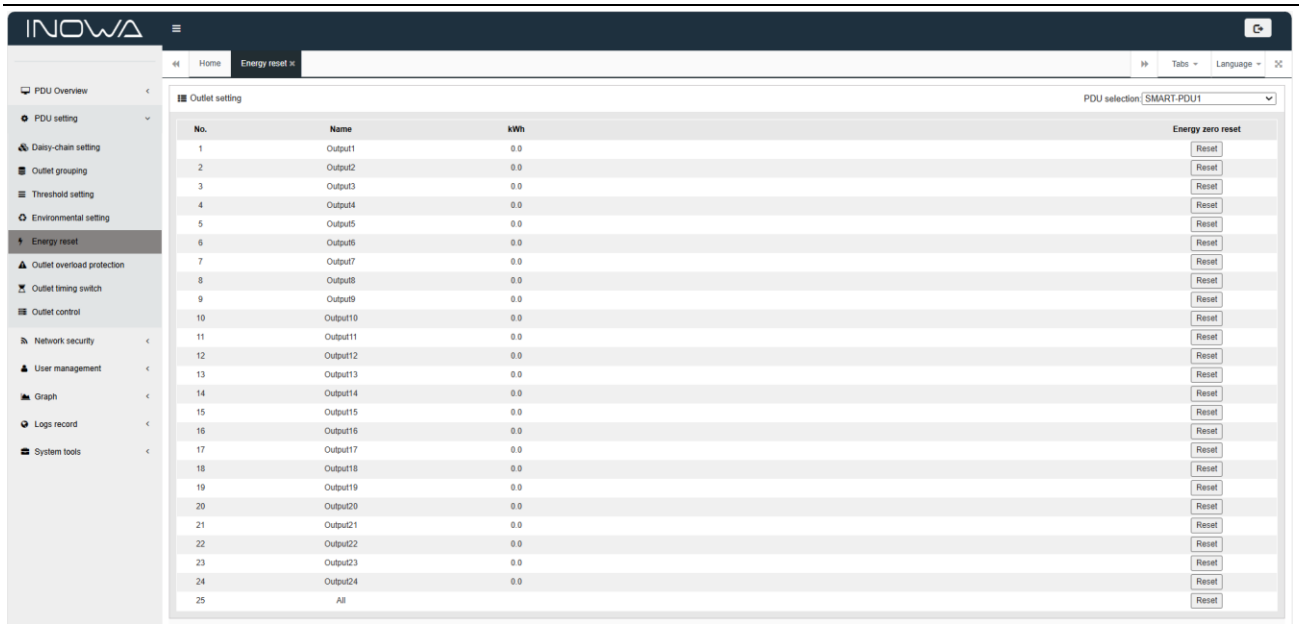


Figure 23: Energy Reset

Outlet Shut-off Protection

Path: PDU Settings > Outlet Overload Protection

This interface allows users to select the checkbox on the far right of the desired outlet(s) based on actual needs, choose "Enable" at the bottom of the page, and then click Submit to activate the over-limit power-off function (When it is enabled, the outlet will automatically shut off power if the set current threshold is exceeded. Note: A/B/C Series do not support this function).

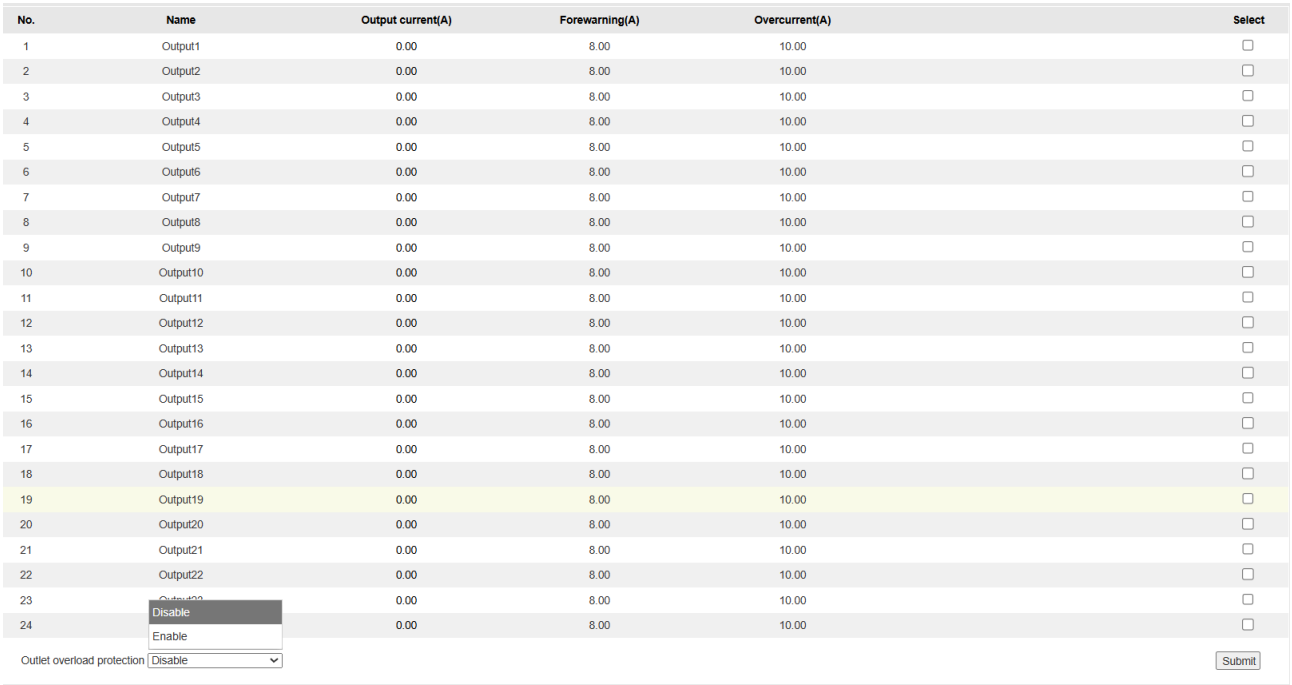


Figure 24 Outlet Shut-off Protection

Scheduling Outlet Actions

Path: PDU Settings > Outlet Timing Switch

On this interface, users can schedule power-on or power-off actions for each outlet.

- Set the power-on delay or power-off delay for the outlet. Select the checkbox on the far right of the outlet unit, then choose Enable at the bottom of the settings interface and click Submit. The

outlet unit will then power on or off exactly at the scheduled time.

- Select the Cycle checkbox, and the outlet unit will power on or off at the same time every day.
- Choose Disable at the bottom of the settings interface and click Submit to cancel the scheduled outlet actions.

Note: The device time must be calibrated before scheduling any outlet event.

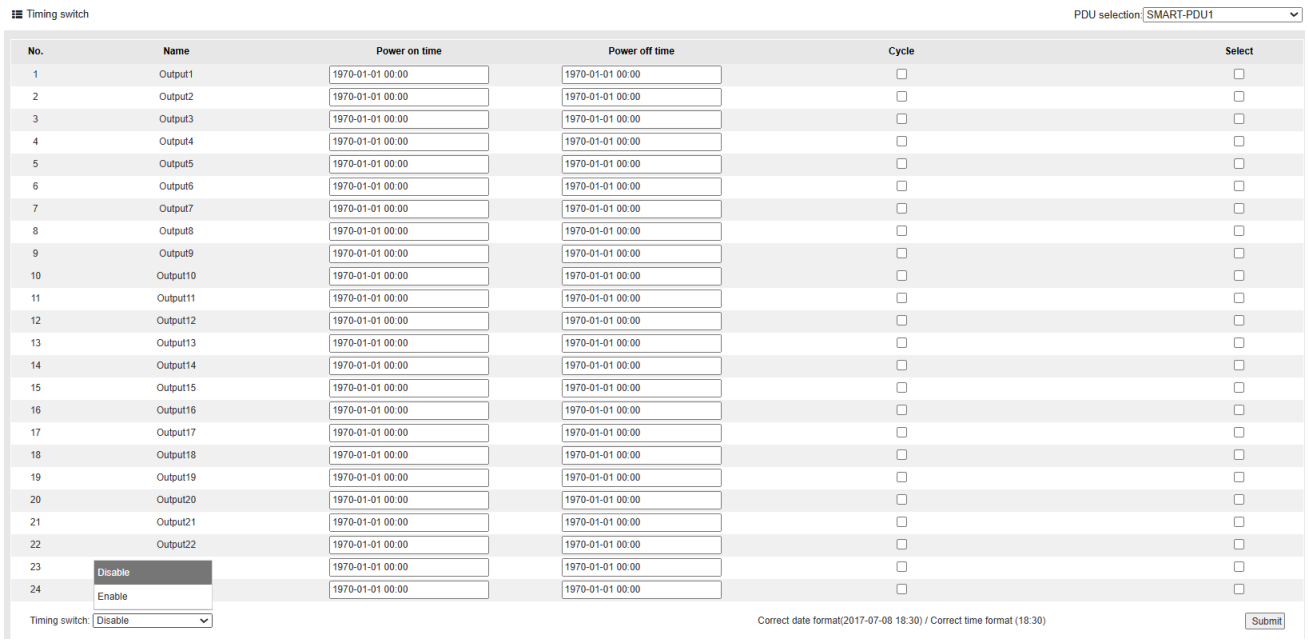


Figure 25 Scheduling Outlet Actions

Outlet Control

Path: PDU Settings > Outlet Control

This interface allows users to configure and control the individual outlet

- View the On/off status of each outlet
- Click the On, Off, or Reboot button for the individual outlet to control its operation.
- Click the All On or All Off button to simultaneously turn on or off all outlet units (a power-up/off delay applies with a configured interval).

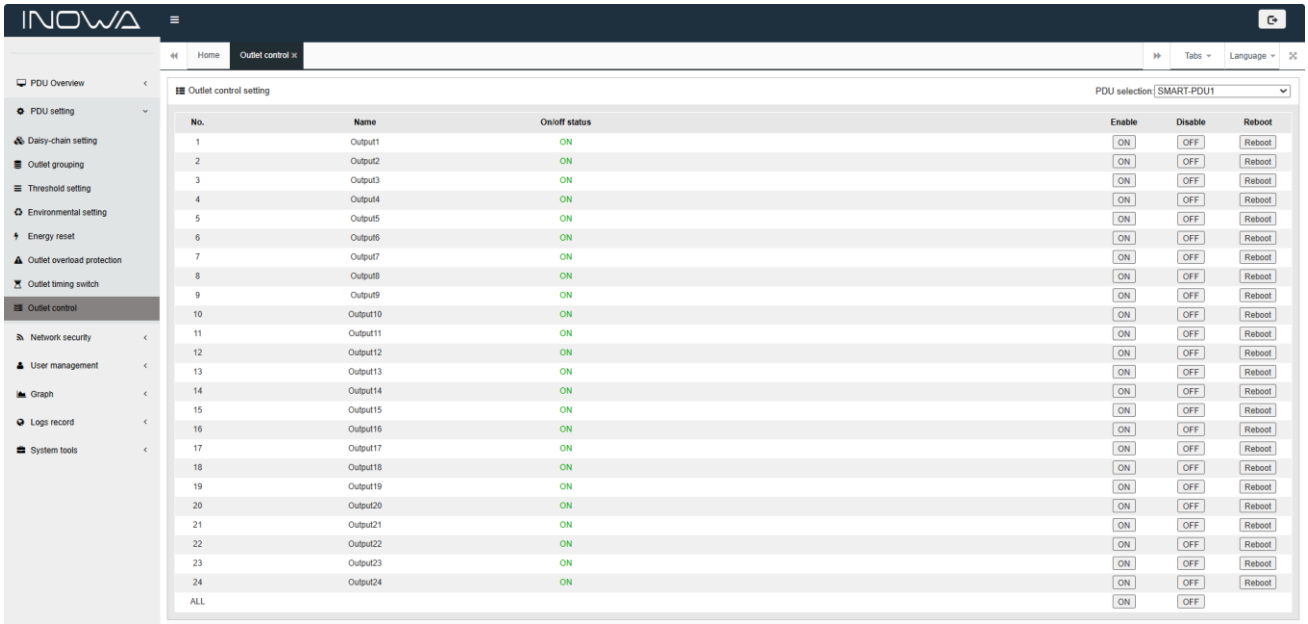


Figure 26: Outlet Control

Network Security

Local Connectivity

Path: Network Security > Local Connectivity

This interface allows users to configure manual or automatic modes for IPv4 and IPv6.

- IPv4 Settings:
  IP Address: 192.168.1.158 (factory default IP address)
  Subnet Mask: 255.255.255.0
  Gateway: 192.168.1.1
  DNS Server: Default is 202.96.128.86.
  Enter the correct DNS server address to ensure proper email functionality.
- **Mode Settings:**
  When **Automatic Mode** is selected, click the **Submit** button and restart the device. The device will then automatically obtain an IP address based on the router settings in the same local area network. The assigned IP address can be viewed on the device's LCD screen.
  Select **Static** to manually configure an IPv6 address. Select **DHCP** to automatically obtain an IPv6 address. IPv6 Access Format https://[fd00:f46d:2f75:e612:1010] (Note: The IPv6 address must be enclosed in square brackets "[ ]" when entering it in a browser.)

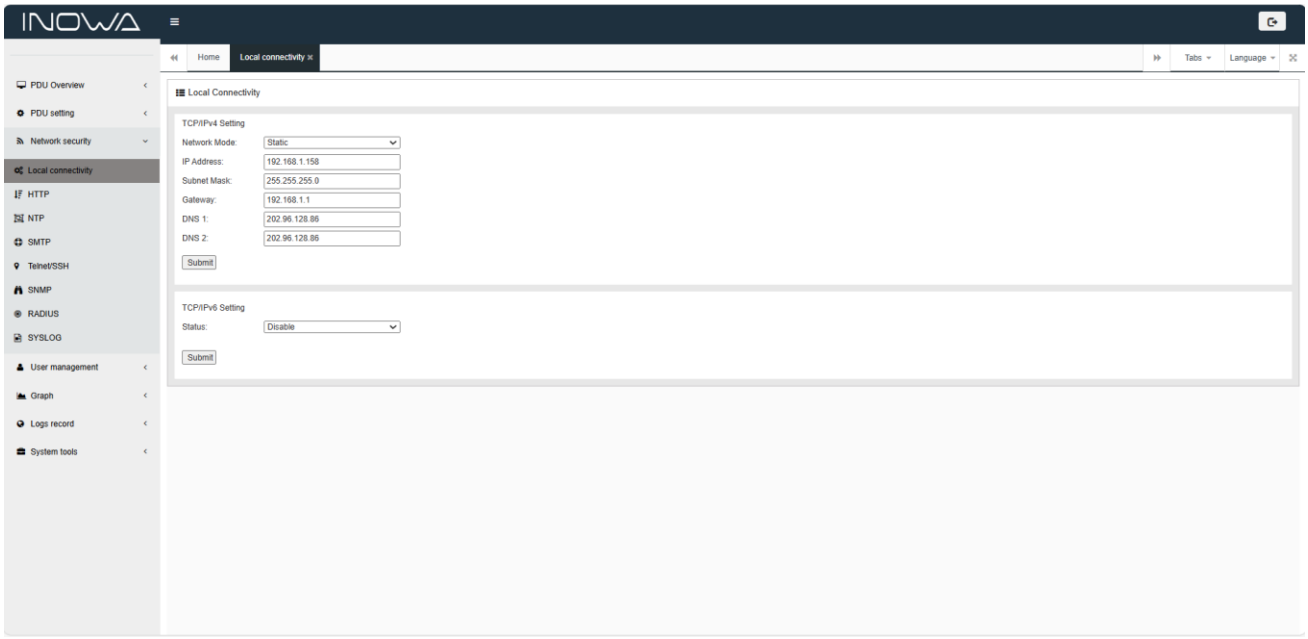


Figure 27: Local Connectivity

HTTP Service

Path: Network Security > HTTP

This interface allows users to select the appropriate operating mode based on actual requirements.

- Set the device to **Normal Mode** or **SSL Mode** and save the settings
- Modify the port number as needed
- Click **Choose File**, select the SSL certificate, and then click **Submit** to upload the certificate
- Click the **Submit** button and restart the system for the changes to take effect

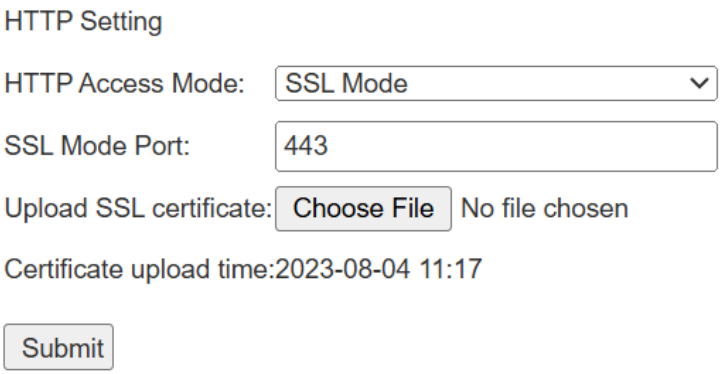


Figure 28: HTTP Configuration

NTP Service

Path: Network Security > NTP

This interface allows users to calibrate the device time, ensuring the device displays the correct current time (all device log records are based on this system time).

- Local Time Calibration: Disable NTP settings, manually set the desired time, and click "Get Local Time". The device system time will be updated according to your computer's local time.
- **Network Time Calibration:** Enable NTP settings, click **"Save"**, and then click **"Sync"**. The device will automatically obtain the current date and time for the selected time zone from the network based on the configured NTP server address and time zone, and update the system time accordingly (this requires the product to be connected to a WAN).

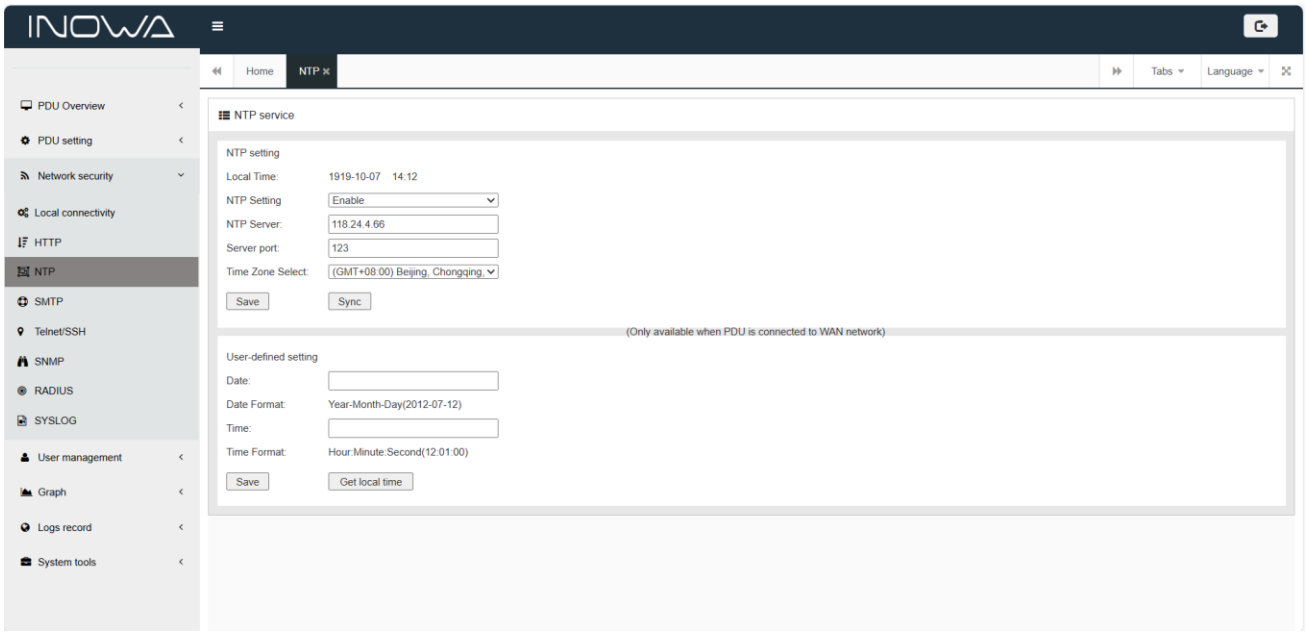


Figure 29: NTP Configuration

SMTP Service

Path: Network Security > SMTP

This interface allows users to configure SMTP service parameters.

- Enter the correct SMTP account, password, SMTP server address, port, and authentication method. Click the **Save** button and restart the device for the settings to take effect
- To test the SMTP configuration, enter a test email address in the "Recipient Email" input field under the SMTP test section. Click the **Test** button and check the test email inbox. If a test email is received, the SMTP settings are successful. Otherwise, please reconfigure the settings

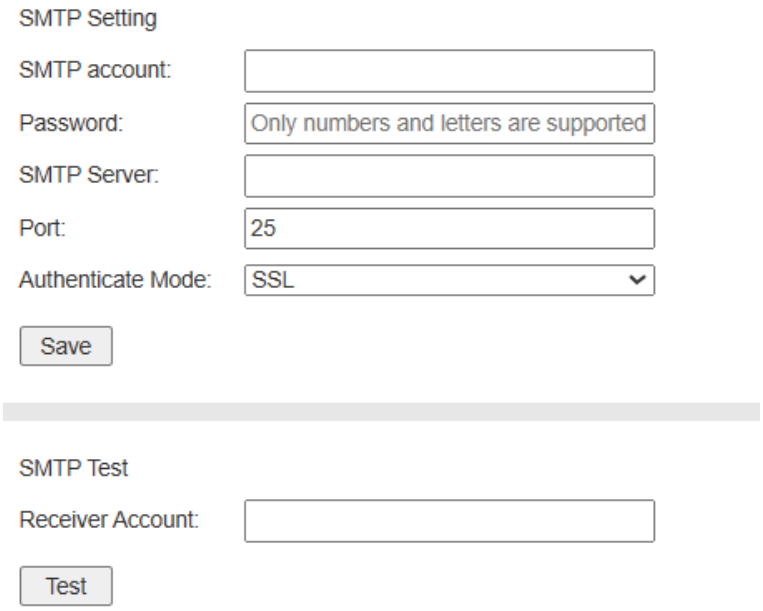


Figure 30: SMTP Configuration

TELNET/SSH Service

Path: Network Security > TELNET/SSH

This interface allows users to enable or disable TELNET/SSH services and configure related parameters.

- TELNET/SSH Service: Select Enable or Disable, click the Save button, and restart the device to activate or deactivate the TELNET/SSH service
- Configure the TELNET account and password, and set the TELNET port number to 23
- Configure the SSH login account and password, and set the SSH port number to 22

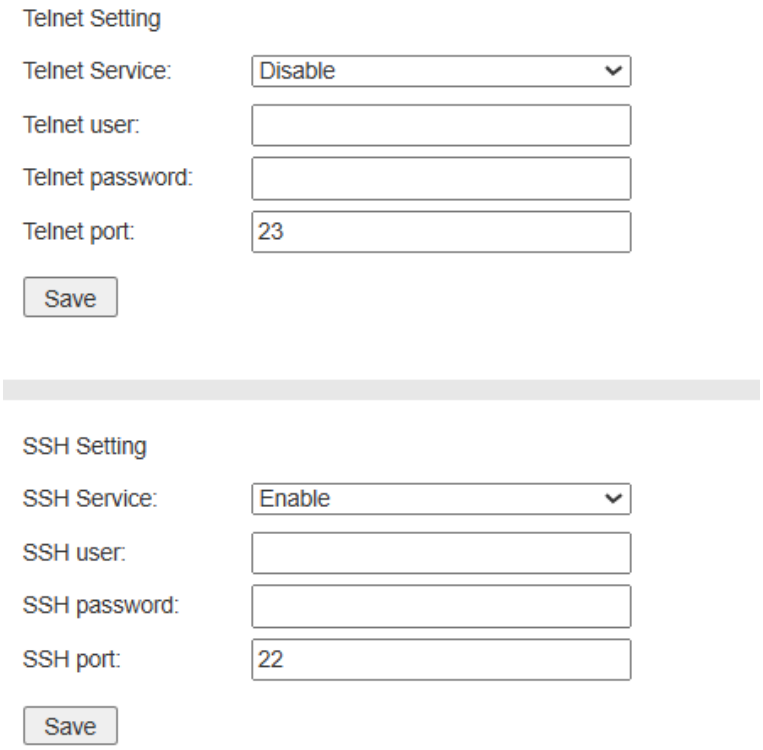


Figure 31: Telnet/SSH Configuration

SNMP Service

Path: Network Security> SNMP

This interface allows users to enable or disable SNMP and configure related parameters

1. SNMP V1/V2c Configuration:

- Select Enable SNMP agent v1/v2c.
- Set the **Write community** (default: private); this can be modified by the user
- Set the **Read community** (default: public); this can be modified by the user
- Enter the target addresses of the SNMP management platform in the **Trap 1 and Trap 2** input fields. Trap information will then be automatically sent to the corresponding addresses
- Click **Save**, restart the device, and the settings will take effect

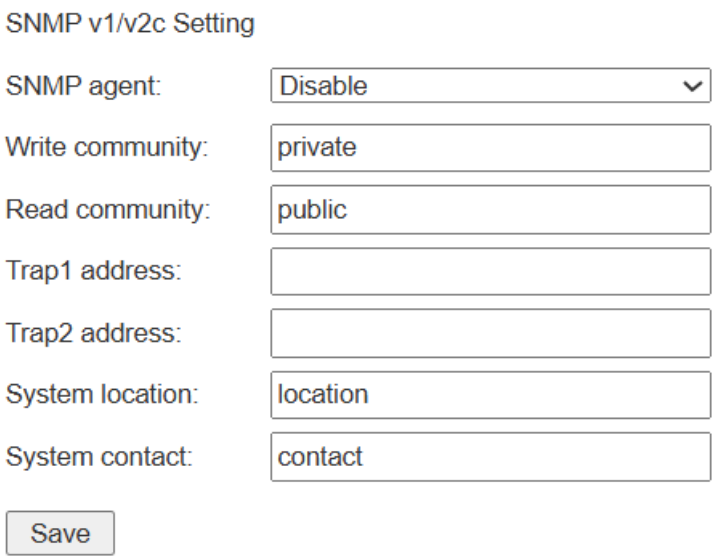


Figure 32: SNMP V1/V2c Configuration

2. SNMP v3 Configuration:
   - Select Enable SNMP agent v3
   - Set the Username, Authentication Password, and Privacy Password
   - Click **Save**, restart the device, and the settings will take effect

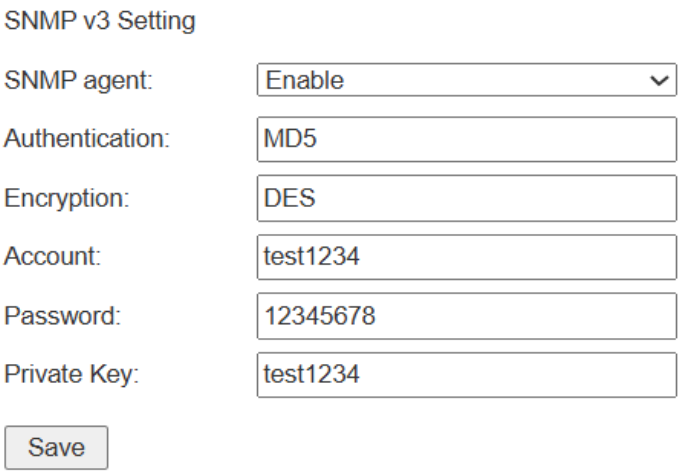


Figure 33: SNMP V3 Configuration

RADIUS Service

Path: Network Security > RADIUS

- Enable RADIUS Authentication
- Enable Local Authentication if RADIUS Server Does Not Respond (When the RADIUS server is unavailable, log in using the PDU's local account and password. After one minute, the system verifies the credentials, and following an additional 50-second wait, access to the web interface is granted).
- Enter the **Remote RADIUS Server Authentication Key**
- Enter the **Authentication Port**
- Enter the **Accounting Port**

Note: The device must be restarted for the RADIUS authentication configuration to take effect. Once successfully configured, log in using the RADIUS server account and password

on the login screen. Access to the device is granted only after successful authentication via the remote RADIUS server.

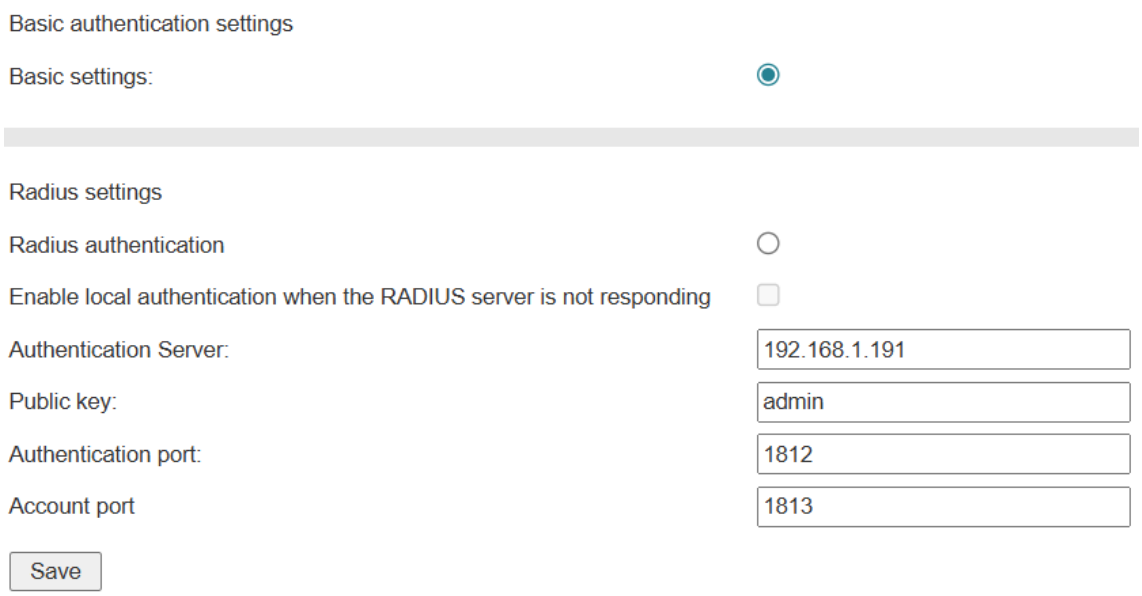


Figure 34: Radius Configuration

SYSLOG Service

Path: Network Security> SYSLOG

On this interface, users can set SYSLOG related parameters

- Fill in the local IP address
- Select the reception type
- Open the SYSLOG software to receive PDU alarm information

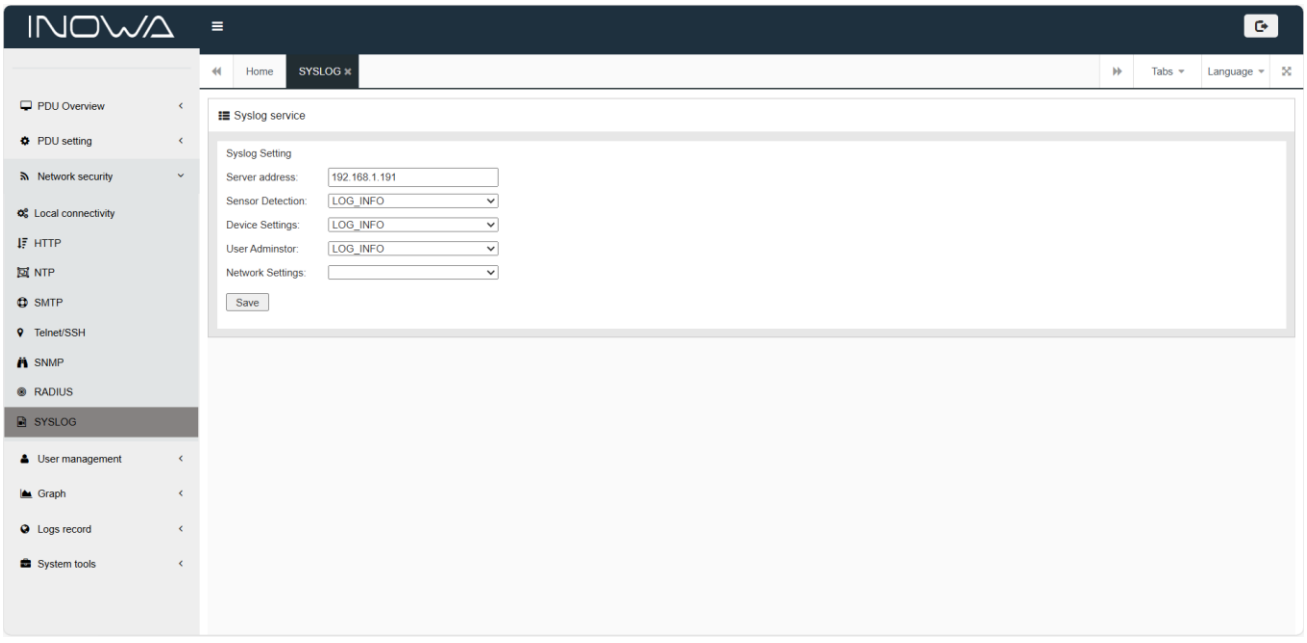


Figure 35: SYSLOG Configuration

User Management

User Settings

Path: User Management> User Settings

- **Add User**: Enter a username and password, confirm the password, and click **Add** to complete the addition.
- **Modify User:** Enter the new username and password in the corresponding fields next to "Username" and "Password," confirm the password, and click **Modify** to update the information
- **Delete User:** Select the username to be deleted from the dropdown menu next to "Select User," and click **Delete** to remove it
- **Email Alerts:** Enter a valid email address in the **Email Address** field and click **Add** to receive alarm notifications when product alerts occur (up to 3 addresses can be added)
- **User Grouping**: In the **User Group** section, select a group and click Add to assign the user to the corresponding group

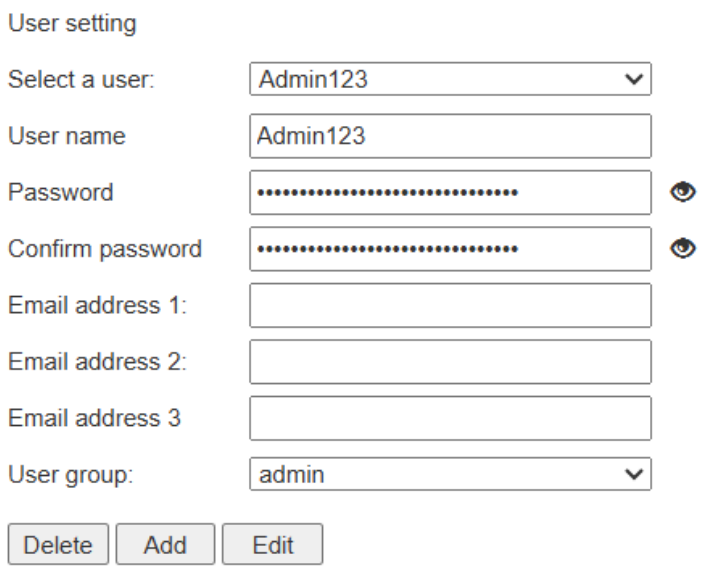


图 36：用户设置界面

User Group Settings

Path: User Manager> User Group Settings

- **Add User Group:** Click **User Group Settings**, enter the user group name in the corresponding input field next to "User Group Name," set the group permissions, and click **Save** to successfully add a new user group
- **Modify User Group:** Enter the user group name to be modified in the corresponding input field next to "User Group Name," and click **Save** to successfully update the user group
- **Delete User Group:** Select the user group name to be deleted from the dropdown menu next to "Select User Group," and click **Delete** to successfully remove it
- **Set Group Permissions:** Select a user group, check the permission options under "User Group Name" to configure group permissions, and click **Save** to apply the settings successfully

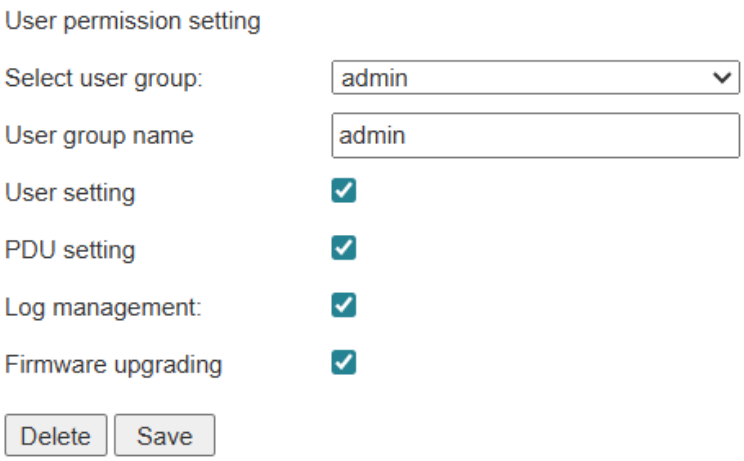


Figure 37: User Group Settings

Outlet Permission Settings

Path: User Management> Outlet Permission Settings

- Select a user group to configure permissions for users, user groups, and the outlet units of each device associated with the group.
- Based on different user groups and device selections, user can edit the outlet permissions for multiple daisy-chained devices. Click **Save** or **Delete** to apply the changes

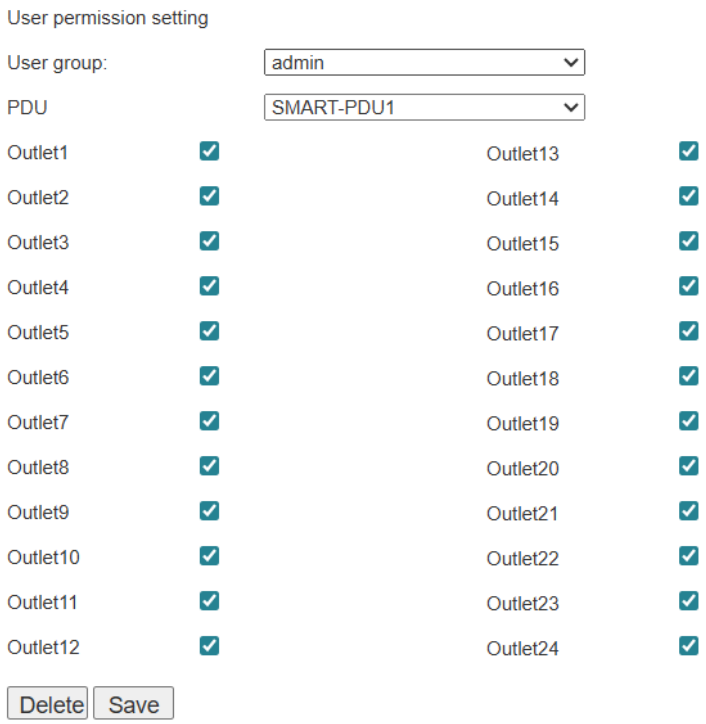


Figure 38: Outlet Permission Settings

Graph Information

Temperature Curve

Path: Graph Information > Temperature Curve

On this interface, users can view the temperature variation curve for the past 24 hours

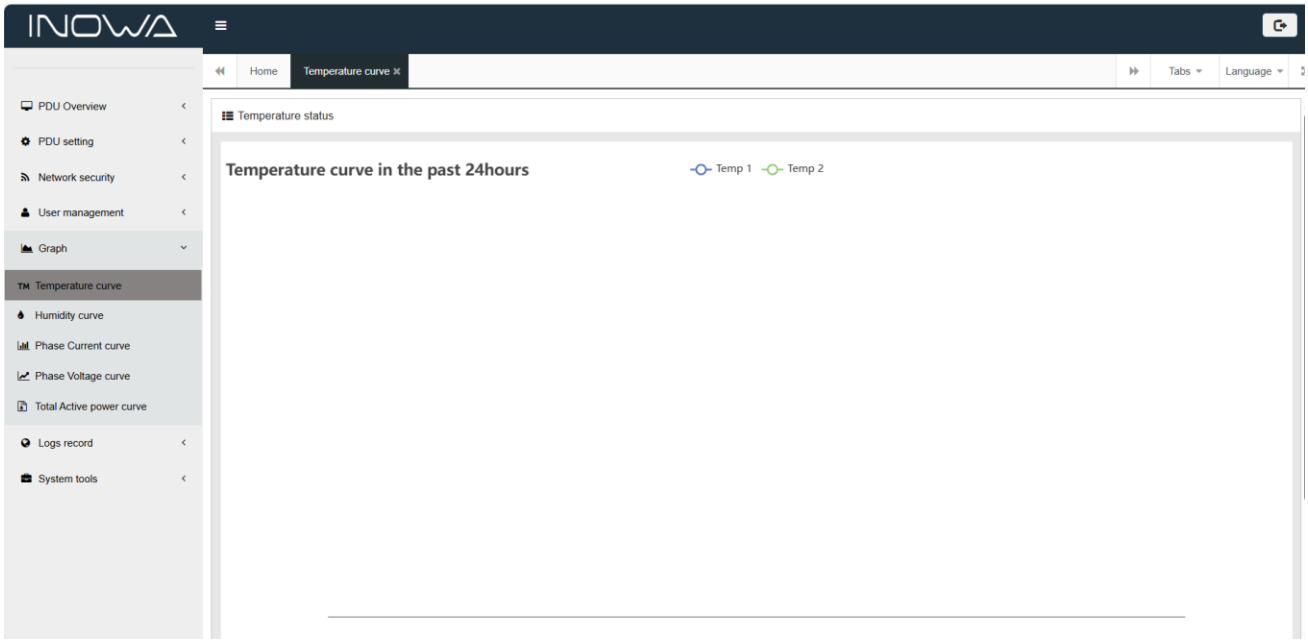


Figure 39: Temperature Curve

Humidity Curve

Path: Graph Information > Humidity Curve

On this interface, users can view the humidity variation curve for the past 24 hours

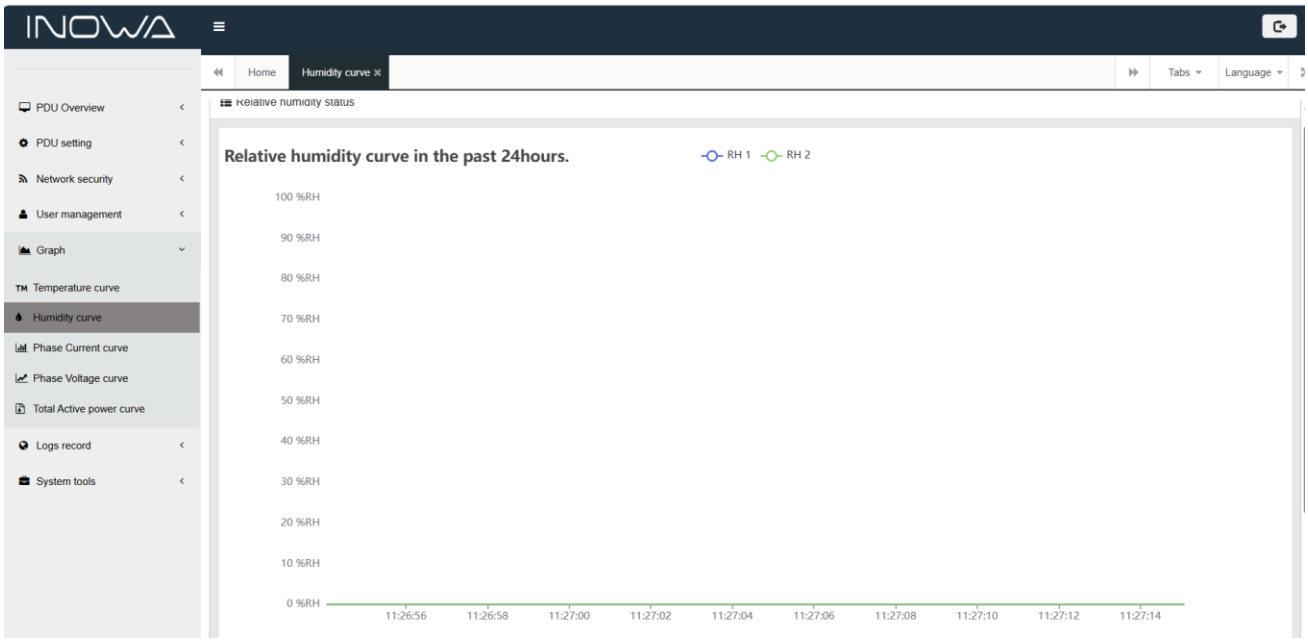


Figure 40: Humidity Curve

Phase Current Curve

Path: Graph Information> Phase Current Curve

On this interface, users can view the phase current variation curve for the past 24 hours.

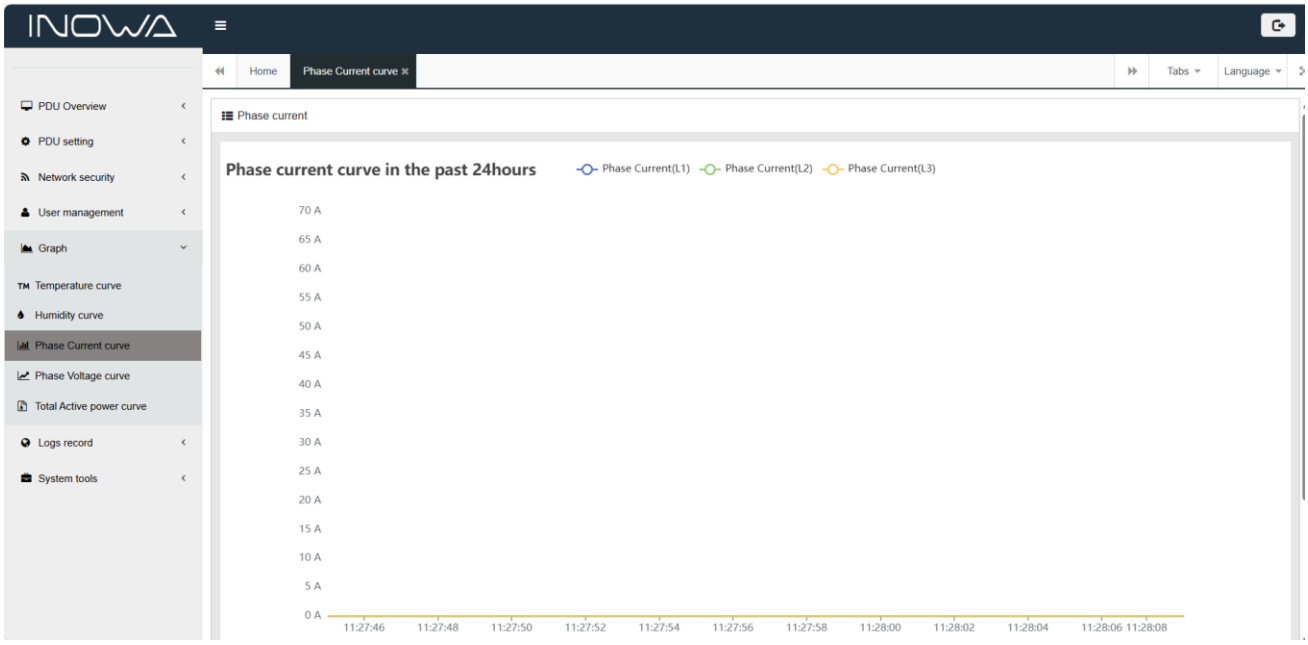


Figure 41: Phase Current Curve

Phase Voltage Curve

Path: Graph Information> Phase Voltage Curve

On this interface, users can view the phase voltage variation curve for the past 24 hours.

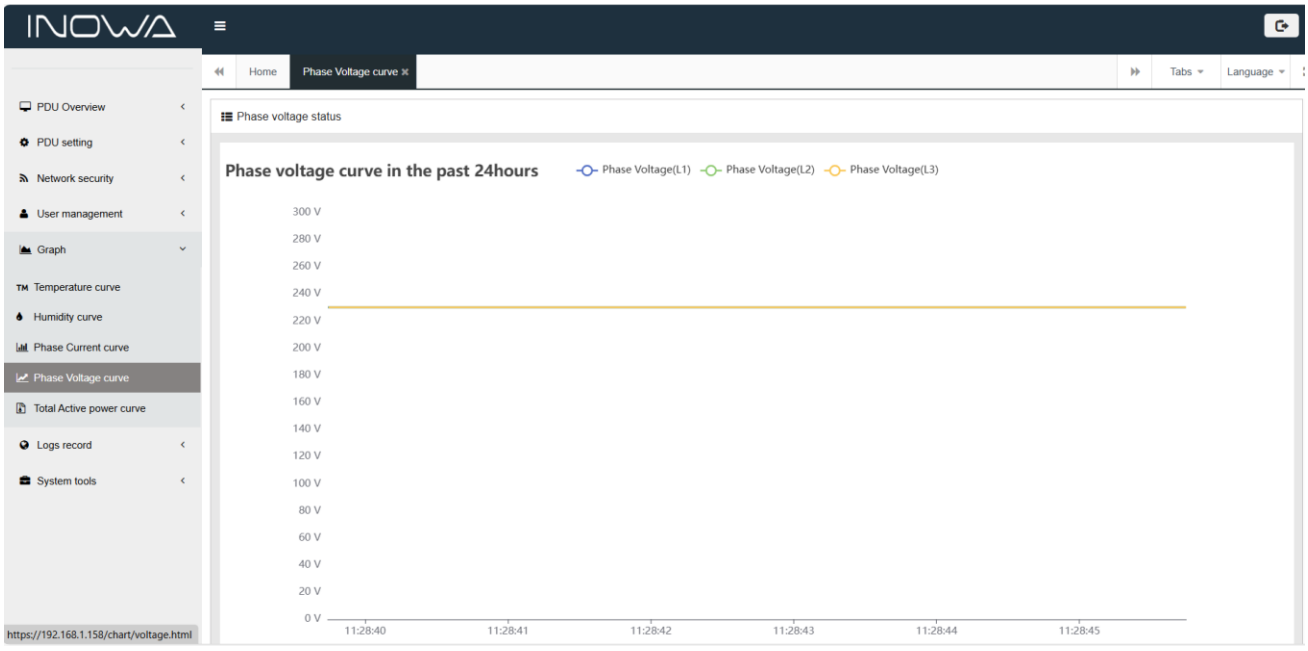


Figure 42: Phase Voltage Curve

Total Active Power Curve

Path: Graph Information> Total Active Power Curve

On this interface, users can view the total active power variation curve for the past 24 hours

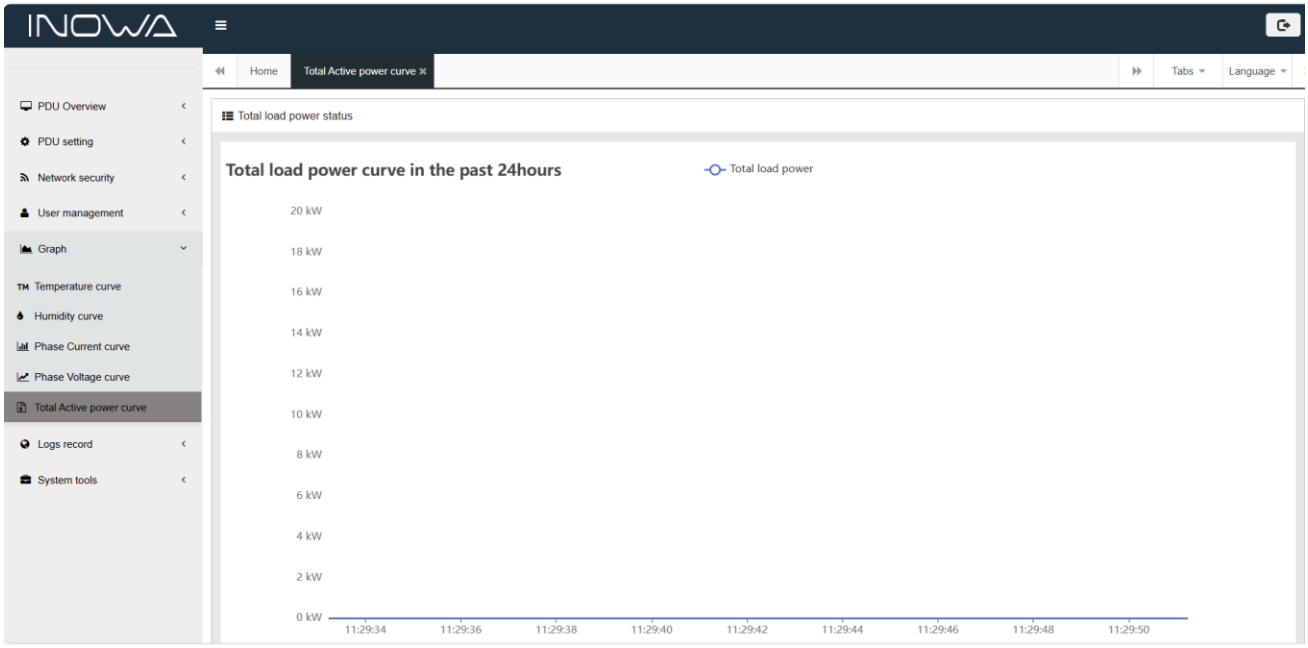


Figure 43: Total Active Power Curve

Logs

Operation Log

Path: Logs Record> Operation Logs

On this interface, users can view log information including operation time, username, operation type, and details. They can also delete or export logs (Log capacity: up to 100 MB).

- **View Logs:** Click **Previous** or **Next** to navigate through pages, or enter a page number directly and click **Go.**
- **Delete Logs:** Click the **Delete** button and follow the prompts to remove logs.
- **Export Logs:** Click the **Export** button to save logs locally.

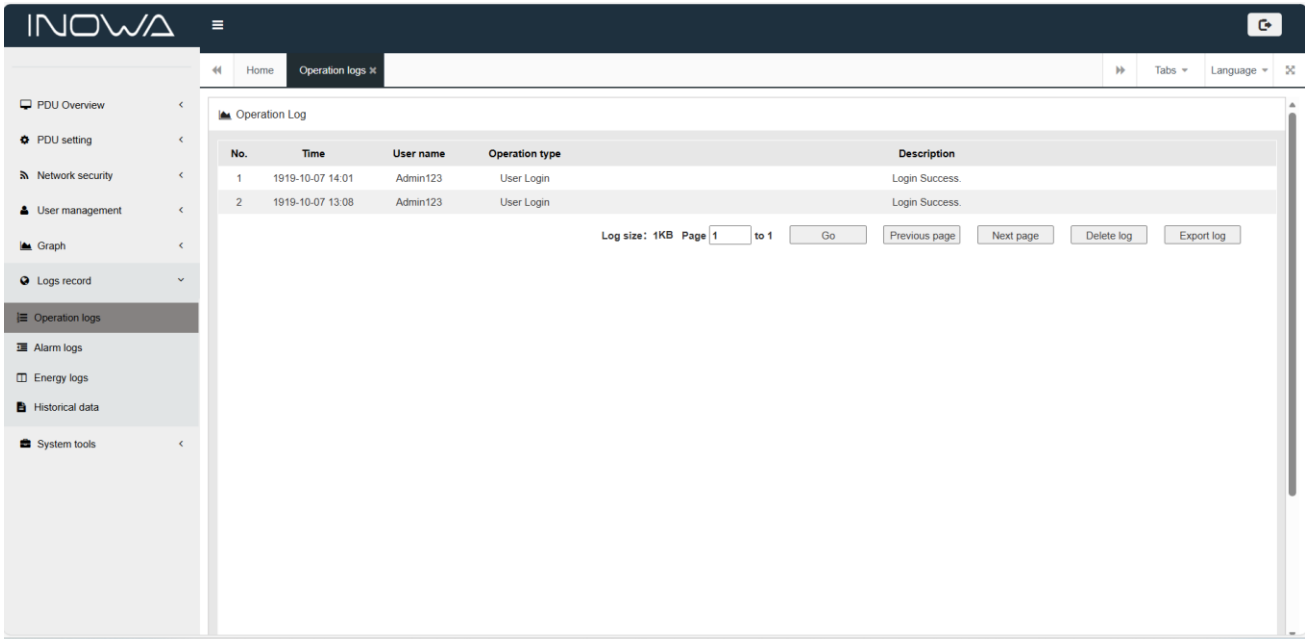


Figure 44 Logs Record

Alarm Logs

Path: Logs Recard > Alarm Logs

On this interface, users can view log information including alarm time, alarm type, name/category, and details. They can also delete or export logs (Log capacity: up to 100 MB)

- **View Logs:** Click **Previous** or **Next** to navigate through pages, or enter a page number directly and click **Go**。
- **Delete Logs:** Click the **Delete** button and follow the prompts to remove logs
- **Export Logs:** Click the **Export** button to save logs locally

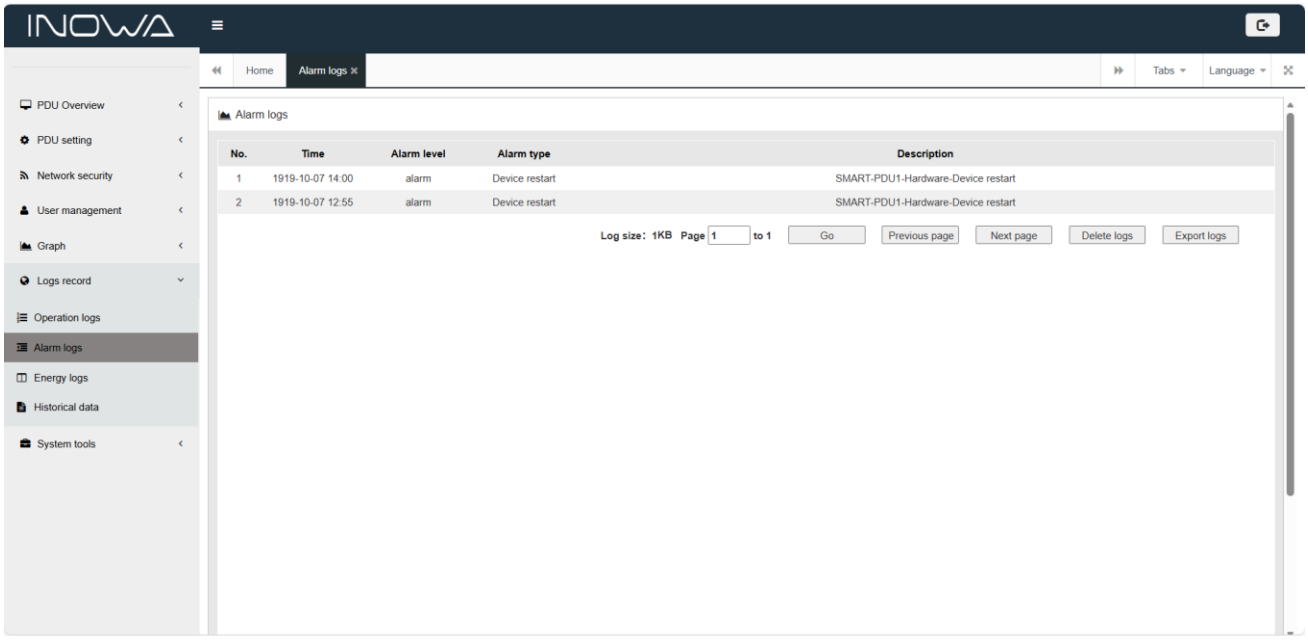


Figure 45: Alarm Logs

Energy Logs

Path: Logs Record > Energy Logs

On this interface, users can view energy records for a selected past period and save the records locally.

- Select a start time and end time, then click **View**. The device will display the energy reading at the start of the period, the energy reading at the end of the period, and calculate the energy consumption during the selected period
- **Export Records:** Click the **Export** button to save the records locally

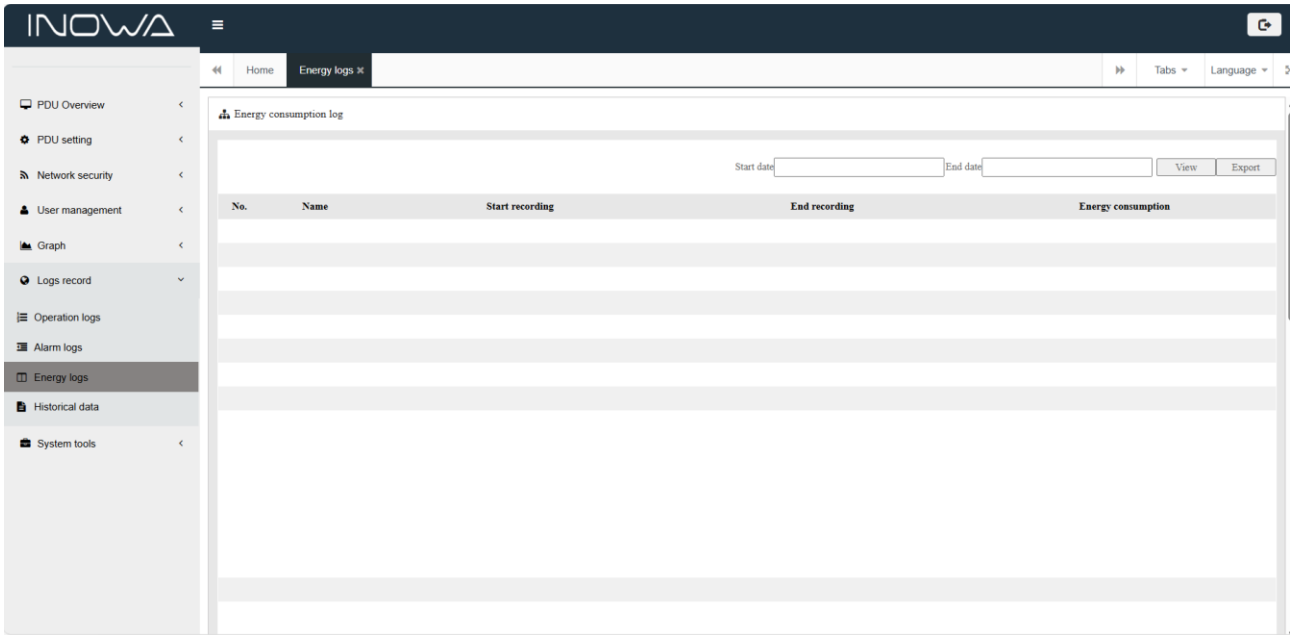


Figure 46: Energy Logs

Historical Data

Path: Logs Record > Historical Data

On this interface, users can view records of current, voltage, energy, temperature, and humidity for a selected past day

- Select a date, choose the query type, and click **View**. The device will display the requested records

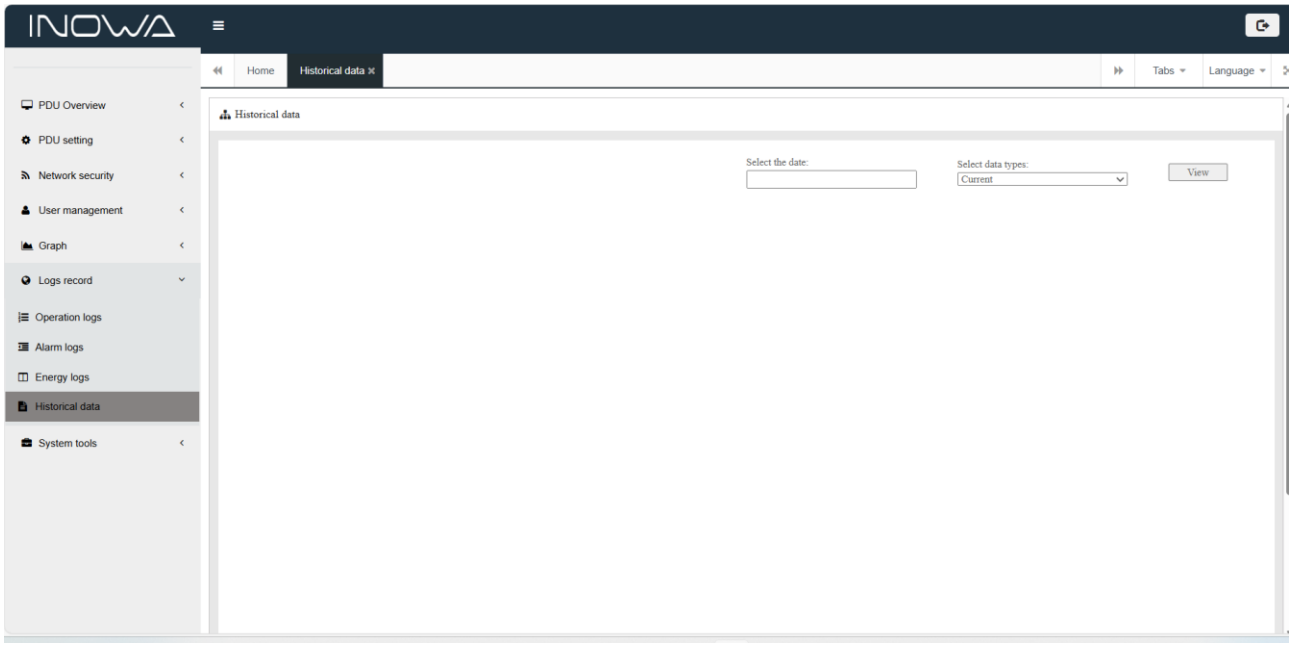


Figure 47: Historical Data

Note: If the dialog box "Server cannot create object!" pops up when exporting logs, please follow the steps below to resolve the issue and successfully export the logs:

Click **Tools** in the IE menu → Select **Internet Options** → Click the **Security** tab → Click the **Custom Level** button → Locate the setting **Initialize and script ActiveX controls not marked as safe for scripting** and select **Enable (Not Safe)** → Click **OK** → Click **OK** again

System Tools

System Information

Path: System Tools > System Information

On this interface, users can view device system information including processor, memory, system version, last system update time, MAC address, etc.

The following operations can also be performed on the system:

- Download the upgrade tool and use it along with the upgrade software provided to perform remote device upgrades
- Click the **MIB File** button to download and view the MIB file
- Click the **Settings File** button to download the configuration file
- Click the Choose File button to upload files in batches

Note: Before upgrading, connect the device and PC via an Ethernet cable (direct network connection)

During the system upgrade process, ensure that the device remains powered on and connected to the network. Do not perform any operations on any pages

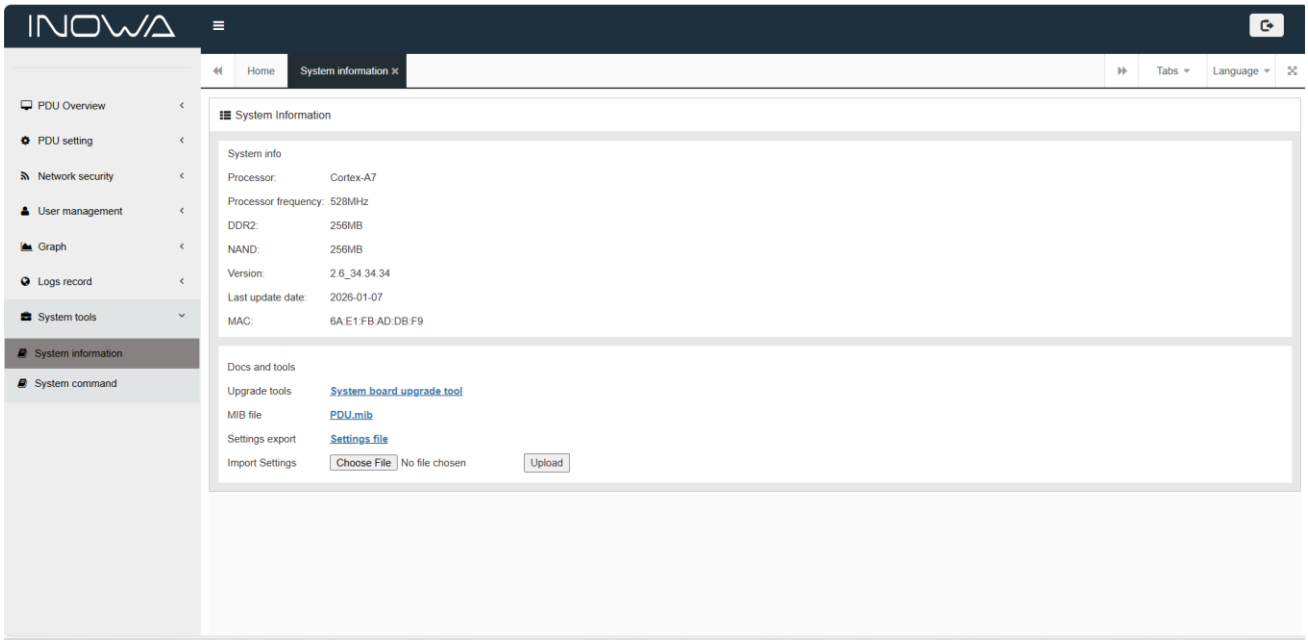


Figure 48: System Information

System Commands

Path: System Tools > System Commands

On this interface, users can restart the device or restore it to factory default settings

- Select **Restart Device** and click the **Submit** button to automatically restart the device
- Select **Restore To Factory Settings** and click the **Submit** button. The device will automatically restart and restore all settings to their factory defaults

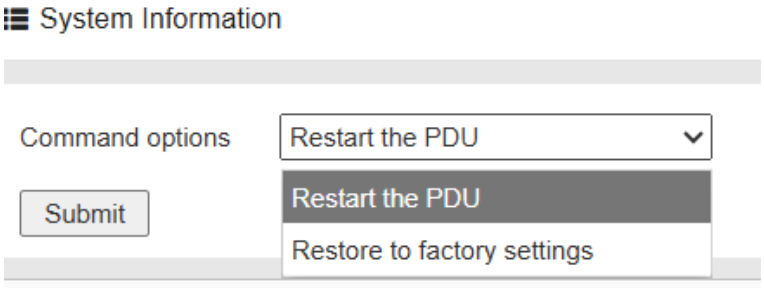


Figure 49: System Commands

SNMP Access

SNMP (Simple Network Management Protocol)

This software supports SNMP versions V1, V2c, and V3. The attached MIB file contains a private enterprise ID, enabling network management systems to manage the device via SNMP protocol. Users can view device and sensor status information and receive alarm notifications

After enabling SNMP, please install the corresponding SNMP management software

For the OIDs corresponding to device information managed via SNMP protocol, please refer to the relevant protocol documentation

Telnet Command Line Console Access

Telnet facilitates remote login, providing users with the capability to remotely control the device. End users can enter command lines in the Telnet program to control the device, offering better responsiveness. By entering a username and password via the Telnet command line console, users can remotely monitor and control the device status

The Telnet command line access method does not support device daisy-chaining; users can only manage and monitor the master device

- On a PC, click **Start** > **Run**, enter **Telnet** in the Run dialog box, and click **OK** to open the Telnet client

- Enter the device's IP address, then provide the correct username and password to log in

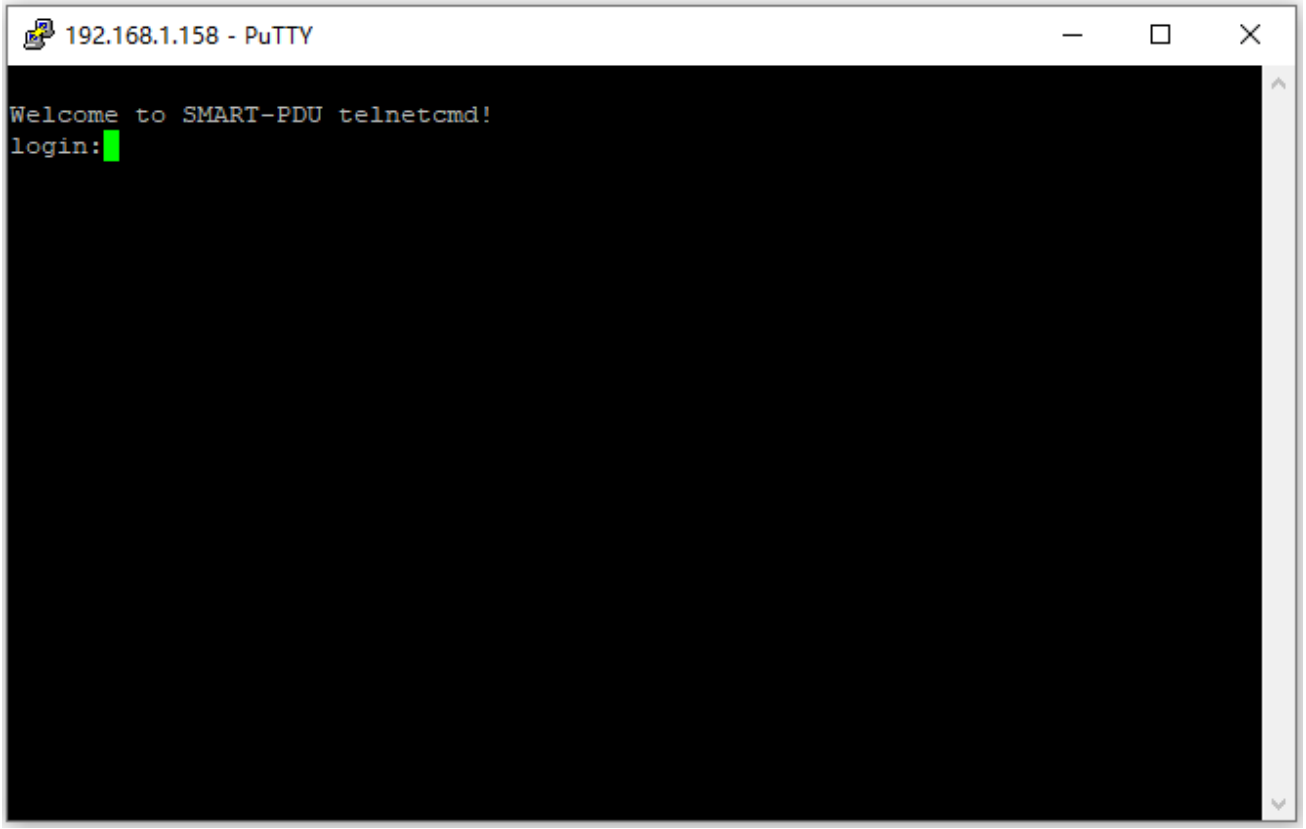


Figure 50: Telenet Login Interface

- "STATUS"Command

  1.View outlet information and PDU summary information

  2.Device summary information: Total current per phase/circuit, total voltage per phase, total power, total energy, circuit breaker status, circuit current, voltage, and energy

  3. Outlet unit viewable information: Current, on/off status, minimum current, maximum current, power, and energy

  4. Sensor status view: Temperature/humidity, smoke, water leakage, and door access sensor status

  - **Command line input format:** STATUS [index] [operation]

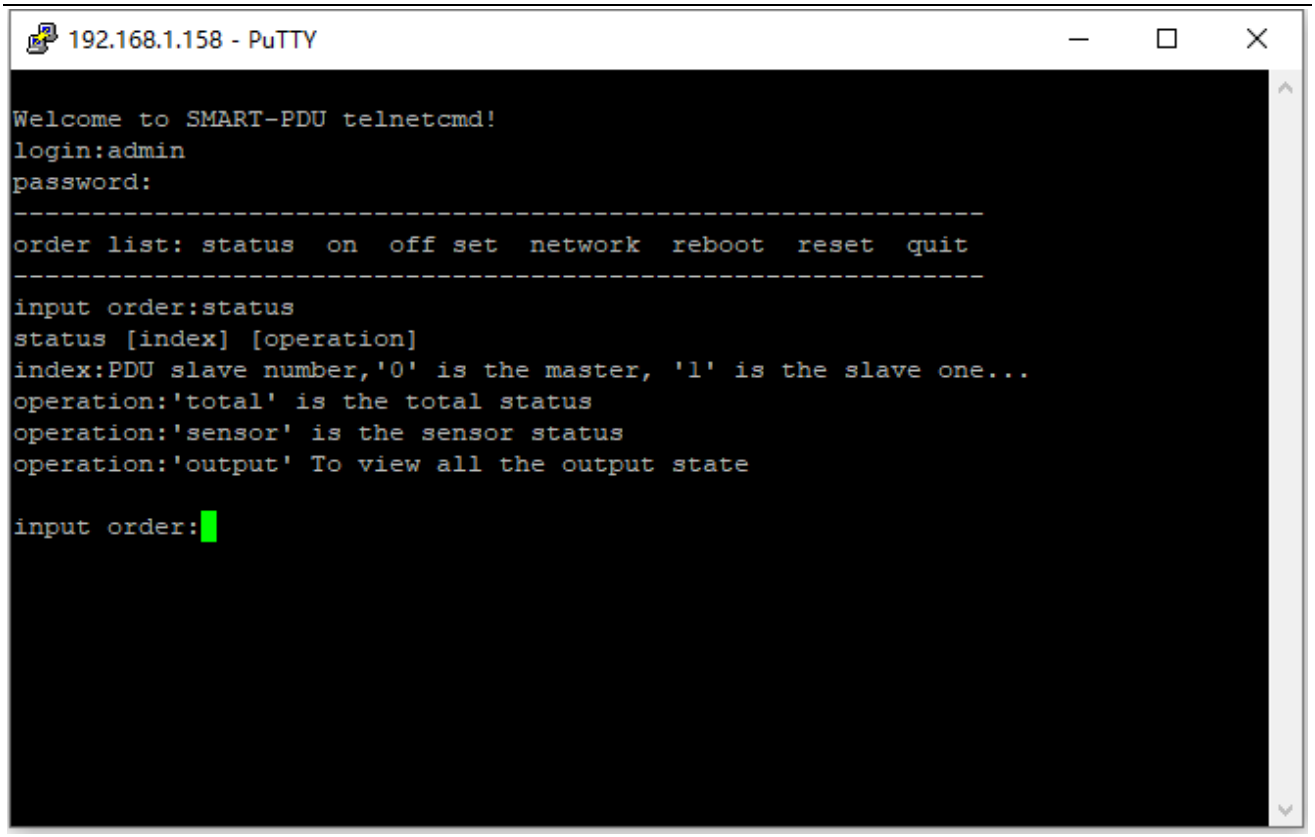


Figure 51: CLI STATUS【index】【operation】

- **【index】:** Device role/index (0-9, where 0 represents the master unit and 1-9 represent slave units)
- **【operation】:** Select the device information to view based on the option, as detailed below

【operation】	Description
Total	**Example:** status 0 total C6 Breaker closed 21-24 0.00 16.00 238.2 0.0 0.0 input order:status 0 total Device Series:PDU(D) Device output bits:24 L1 current:0.25A L1 voltage:238.1V L2 current:0.00A L2 voltage:238.0V L3 current:0.00A L3 voltage:238.4V total power:0.06kW total energy:0.0kWh Circuit Status Outlet Load current Overload current Input voltage Apparent power Energy C1 Breaker closed 1-4 0.25 16.00 237.9 0.1 0.0 C2 Breaker closed 5-8 0.00 16.00 237.8 0.0 0.0 C3 Breaker closed 9-12 0.00 16.00 237.9 0.0 0.0 C4 Breaker closed 13-16 0.00 16.00 237.9 0.0 0.0 C5 Breaker closed 17-20 0.00 16.00 237.8 0.0 0.0 C6 Breaker closed 21-24 0.00 16.00 237.9 0.0 0.0 input order: Enter **status** followed by the device index (0 for master, 1-9 for slave). Then type **total** and press Enter. The information shown in the figure above will be displayed
sensor	status 0 sensor input order:status 0 sensor temperature1:-- [--,--] humidity1:-- [--,--]% temperature2:-- [--,--] humidity2:-- [--,--]% door1:-- Type **status** followed by the device index (0 for master, 1-9 for slave). Then enter **sensor** and press **Enter**. The current sensor status of the

	master device will be displayed as shown in the figure above
Output	Example: status 0 output input order:status 0 output Item Name State Current(A) PrewarningValue(A) Overcurrent(A) Powerfactor Energy(kwh) 1 Output1 ON 0.00 8.00 10.00 0.000 0.0 2 Output2 ON 0.25 8.00 10.00 0.750 0.0 3 Output3 ON 0.00 8.00 10.00 0.000 0.0 4 Output4 ON 0.00 8.00 10.00 0.000 0.0 5 Output5 ON 0.00 8.00 10.00 0.000 0.0 6 Output6 ON 0.00 8.00 10.00 0.000 0.0 7 Output7 ON 0.00 8.00 10.00 0.000 0.0 8 Output8 ON 0.00 8.00 10.00 0.000 0.0 9 Output9 ON 0.00 8.00 10.00 0.000 0.0 10 Output10 ON 0.00 8.00 10.00 0.000 0.0 11 Output11 ON 0.00 8.00 10.00 0.000 0.0 12 Output12 ON 0.00 8.00 10.00 0.000 0.0 13 Output13 ON 0.00 8.00 10.00 0.000 0.0 14 Output14 ON 0.00 8.00 10.00 0.000 0.0 15 Output15 ON 0.00 8.00 10.00 0.000 0.0 16 Output16 ON 0.00 8.00 10.00 0.000 0.0 17 Output17 ON 0.00 8.00 10.00 0.000 0.0 18 Output18 ON 0.00 8.00 10.00 0.000 0.0 19 Output19 ON 0.00 8.00 10.00 0.000 0.0 20 Output20 ON 0.00 8.00 10.00 0.000 0.0 21 Output21 ON 0.00 8.00 10.00 0.000 0.0 22 Output22 ON 0.00 8.00 10.00 0.000 0.0 23 Output23 ON 0.00 8.00 10.00 0.000 0.0 24 Output24 ON 0.00 8.00 10.00 0.000 0.0 input order: Enter **status** followed by the device index (0 for master, 1-9 for slave). Then type **output** and press **Enter**. The status information of all outlets will be displayed as shown in the figure above

- “ON/OFF/CYCLE”命令 **"ON/OFF/CYCLE" Commands**

  The ON/OFF commands control individual outlet units or all outlet units simultaneously.

Command line input format

OFF/NO [index] output/group[number]

CYCLE [index] output/group[number]

```
input order:off
off [index] output[number]
index:PDU slave number,'0' is the master, '1' is the slave one...
number:'1' is the output1 switch ...


input order:
```

Figure 51： Command Line Format

- **【index】:** Device role/index (0-9, where 0 represents the master unit and 1-9 represent slave units)
- **【operation】:** Select the device information to view based on the option, as detailed below

【operation】	**Description**
Output	input order:on 0 output 1 the order is done. input order: For this option, simply enter the serial number of the outlet. Each command controls only one outlet at a time
Group	input order:off 0 group1 the order is done. input order: This option requires entering the group number and controls the on/off status of an entire group with each command.

Cycle	 This option accepts an outlet number or group number and controls the restart of the specified outlet or group with each command

- **SET Command**

  The SET command modifies outlet unit names, sets current thresholds for outlet units, configures temperature/humidity upper/lower limits, and changes IP address, subnet mask, gateway, DNS, and secondary DNS settings

  Command format: set <index> <operation>

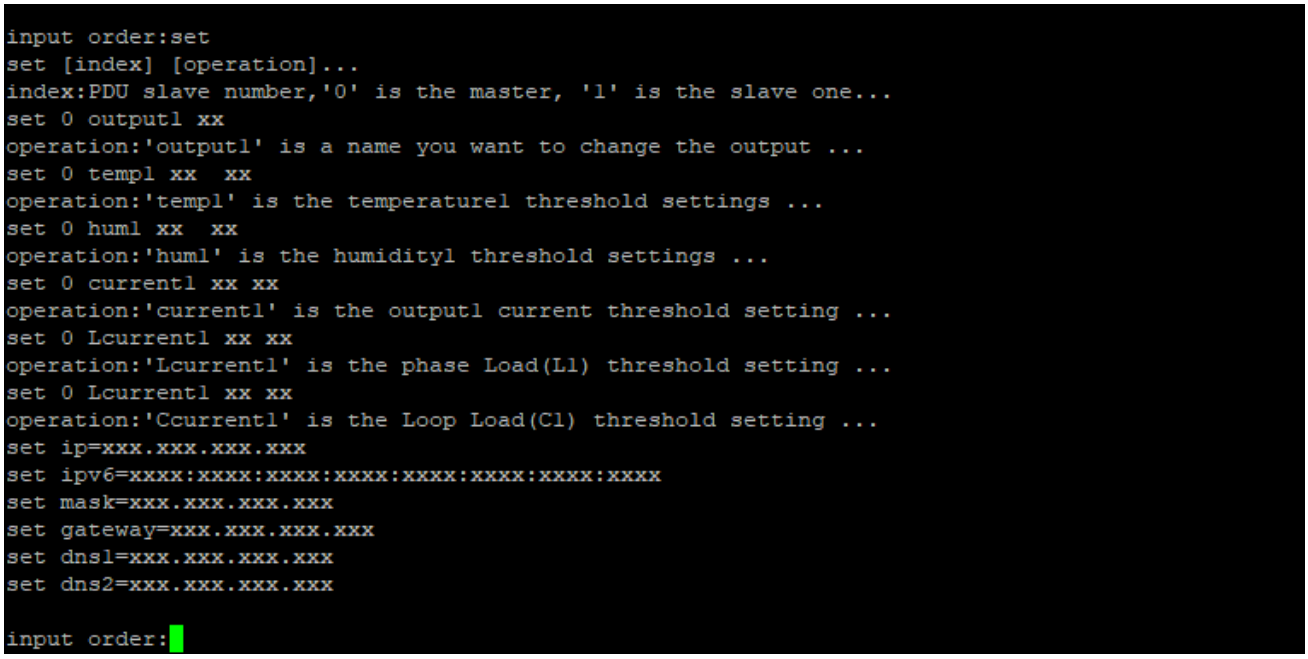
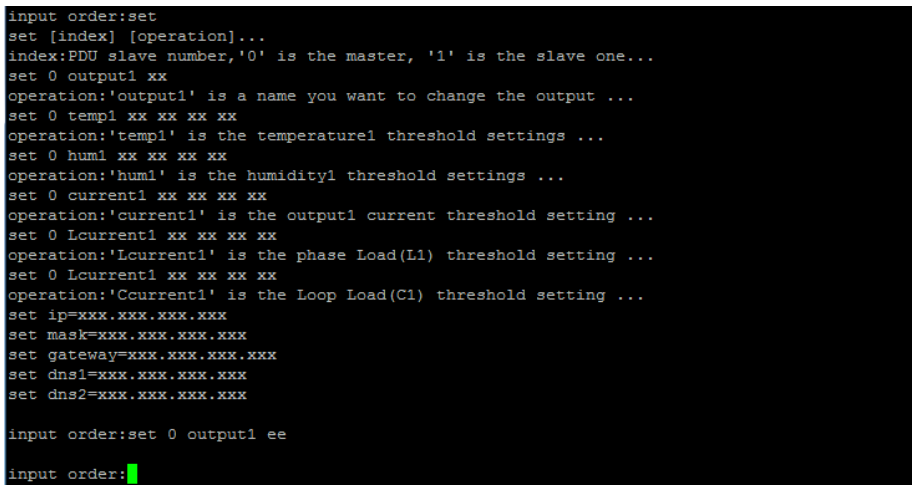
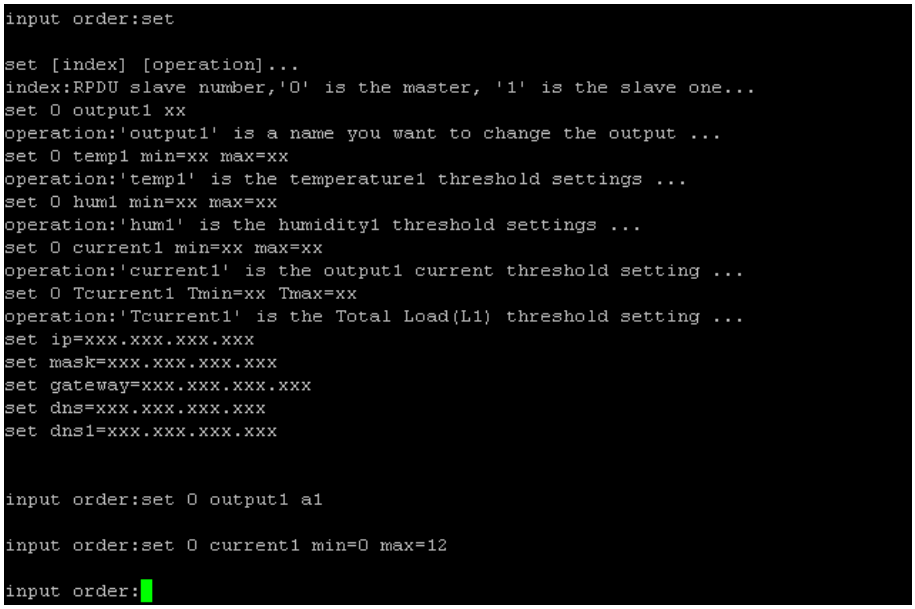
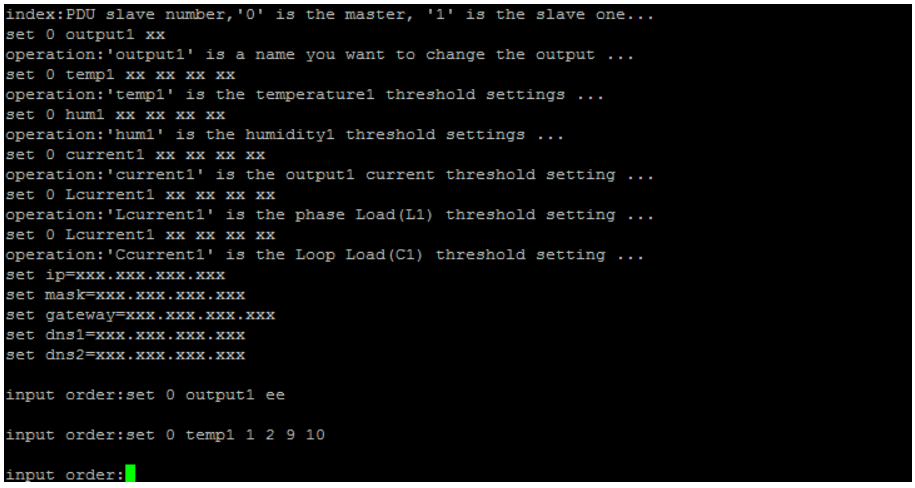
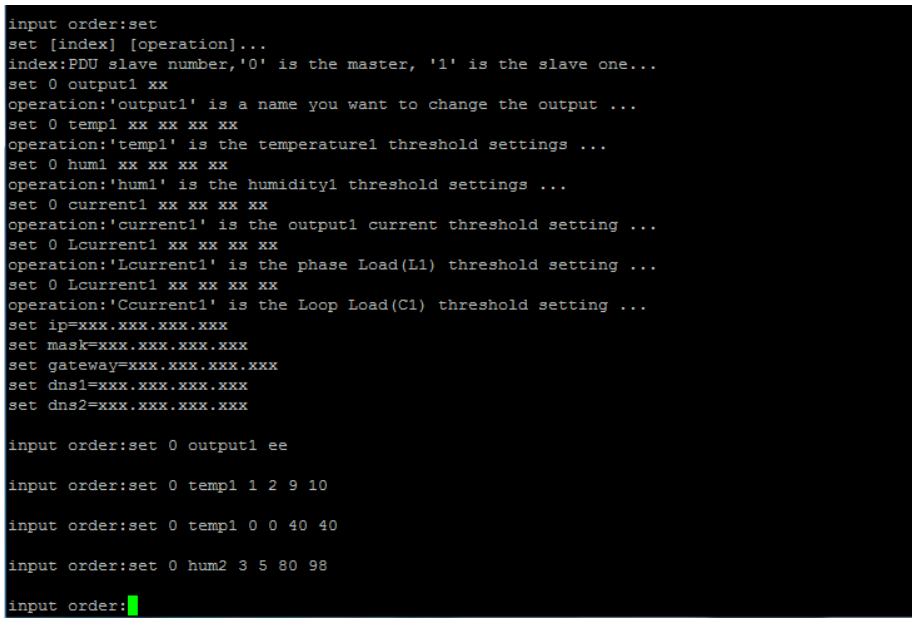


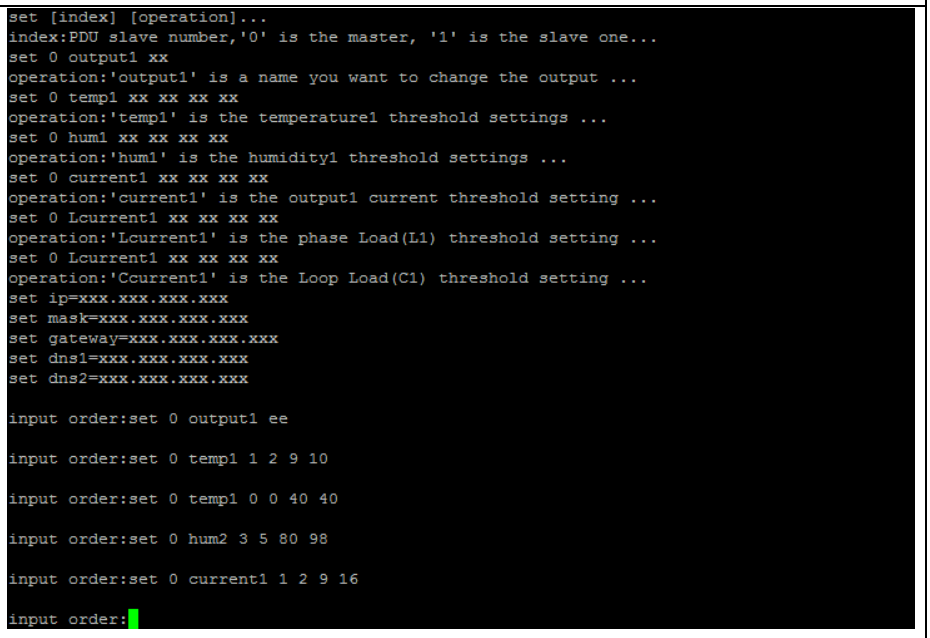
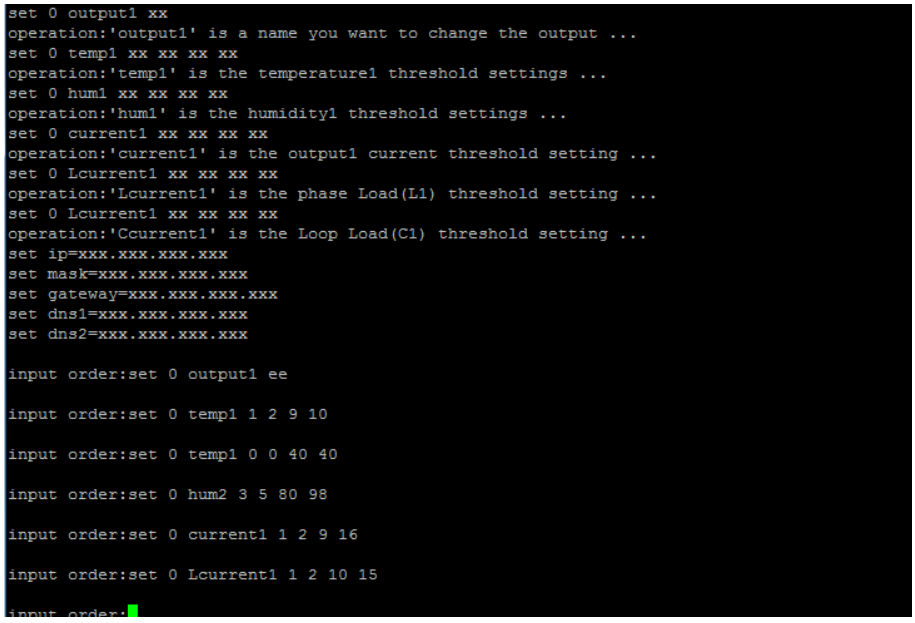
Figure 52: Set Command

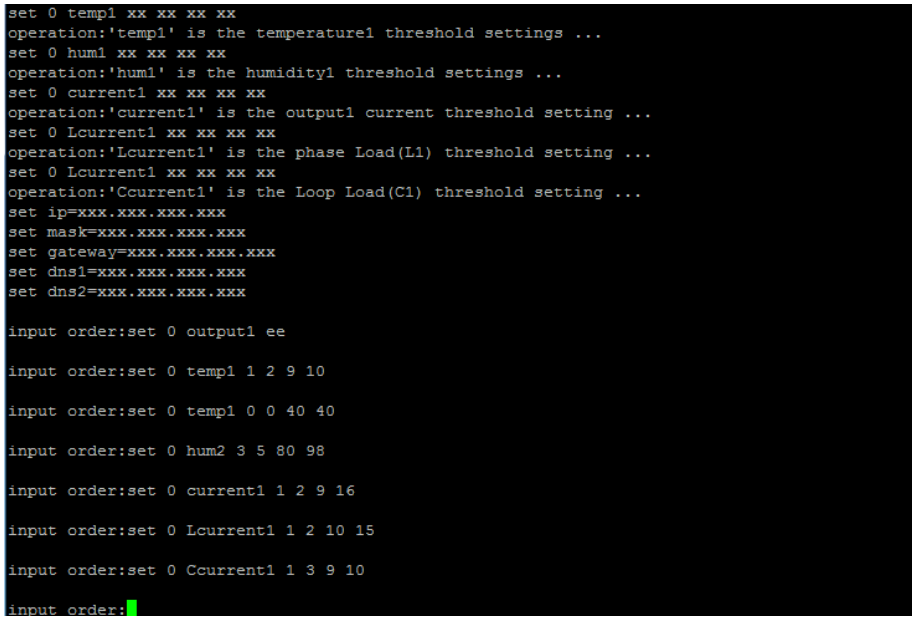
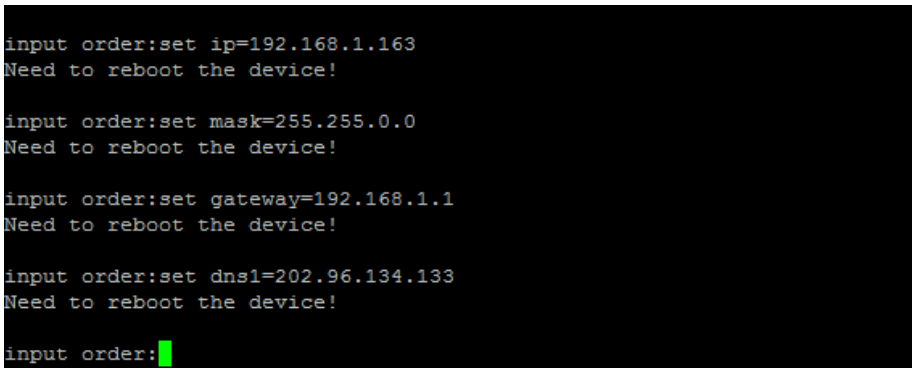
【index】: Device role/index (0-9, where 0 represents the master unit and 1-9 represent slave units)

【operation】: Select the device information to set based on the option, as detailed below

【operation】	Description
output	 **Command:** set 0 output1 ee – Sets the name of outlet 1 on the master device to "ee"

current	 **Command:** set 0 current1 min=0 max=12 – Sets the Min threshold to 0 and Max threshold to 12 for the current of outlet unit 1 on the master device
temperature	 **Command:** set 0 temp1 1 2 9 10 – Sets the temperature thresholds for sensor 1 on the master device: minimum=1, lower critical=2, upper critical=9, maximum=10
humidity	 **Command:** set 0 hum2 3 5 80 98 – Sets the humidity thresholds for sensor

	2 on the master device: minimum=3, lower critical=5, upper critical=80, maximum=98
Current	 **Command:** set 0 current1 1 2 9 16 – Sets the current thresholds for outlet unit 1 on the master device: minimum=1, lower critical=2, upper critical=9, maximum=16
Lcurrent	 **Command:** set 0 Lcurrent1 1 2 10 15 – Sets the total current thresholds for phase A on the master device: minimum=1, lower critical=2, upper critical=10, maximum=15

Ccurrent	 **Command:** set 0 Ccurrent1 1 3 9 10 – Sets the total current thresholds for branch circuit 1 on the master device: minimum=1, lower critical=3, upper critical=9, maximum=10
network	 **Command:** set ip=192.168.1.163 – Configures the master device IP address to 192.168.1.223. **Command:** set mask=255.255.0.0 – Configures the master device subnet mask to 255.255.0.0. **Command:** set gateway=192.168.1.1 – Configures the master device gateway to 192.168.1.1. **Command:** set dns1=202.96.134.133 – Configures the master device's primary DNS server to 202.96.134.133

- **REBOOT Command:** Restarts the device

Figure 53: Reboot Command

- **RESET Command:** Restores the device to its factory default settings

Figure 54: Reset Command

- **QUIT Command:** Log out the Telnet command console

Figure 55: Quit Command

SSH

SSH (Secure Shell) is a protocol that provides remote login and other secure network services over an insecure network. In addition to enabling secure network terminal sessions for configuration and power management, SSH sessions can be used to manage devices connected in a pass-through configuration. SSH requires configuration and a client on the PC. Many free sharewares or commercial SSH clients are available, such as the free client software **PUTTY**

The operation method for the SSH command-line console is the same as that for the Telnet command-line console. For detailed instructions, please refer to **Section 6.2.3 Telnet User Guide**

MODBUS RTU Access

MODBUS RTU access is achieved via a 2-wire RS-485 serial communication port. For the access protocol, please refer to the *Smart PDU MODBUS RTU Protocol and User Guide*

Modbus-RTU Protocol Settings: Includes Modbus-RTU communication address (1-99), baud rate (4800, 9200, 19200, 38400, 115200), data bits (8), parity (None), and stop bits (1)

Note: For data collection via the RS-485 port, refer to the Modbus-RTU protocol for details

7、FREQUENTLY ASKED QUESTIONS

How to Check the Device IP Address

Solution: Navigate through the pages; the device IP address will be displayed on the screen

Unable to Log In to the Device

Solution:

- Connect the master device directly to the PC. Modify the PC's network configuration so that it is on the same subnet as the master device's IP address. The factory default settings for the master device are: IP address: 192.168.1.158, Subnet Mask: 255.255.255.0, Default Gateway: 192.168.1.1. For example, set the PC's network IP to 192.168.1.2, Subnet Mask to 255.255.255.0, and Default Gateway to 192.168.1.1
- Open a browser and enter the default device IP address. Log in to the user management interface by entering the default username and password
- Once logged in, navigate to the **Network Settings** menu and modify the device's IP address to be on the same subnet as the PC's IP address
- Restore the PC's original network configuration, then log in to the user management interface using the modified device IP address

Email Notification Sending Failure

Solution:

- Check and ensure the device is connected to the network and the network is functioning properly
- Verify that the DNS settings are correct
- Check and ensure the SMTP server is correctly configured and matches the sender's email server, and that the SMTP port is entered correctly
- Ensure that the recipient's email address is correctly entered in the user settings

Restore Factory Settings

Solution:

- Press and hold the **UP** and **DOWN** buttons for 6 seconds. After the device restarts and the **RUN** indicator starts flashing, release the buttons. The factory reset is now complete

8、Technical Parameters

No.	Specifications		Technical Data
1	Input	Input Voltage Range	Single phase:100VAC~250VAC Frequency 50~60Hz; Three phase: 200VAC~430VAC Frequency 50~60Hz;
		Input Terminal Type	Standard： IE60309 Industrial plug
		Power Cord Specification	32A：3×6mm²、 63A：3×16mm²; 3*16A：5×2.5mm²、 3*32A：5×6.0mm²
		Power Cord Length	Standard: 3M
		Maximum Load Current	Single phase: 32A、63A Three phase:3*16A、3*32A
		Overload Protection	16A/32A Hydraulic Circuit Breaker
2	Output	Outlet types	Standard configuration：IEC320 C13、C19、C39
		Outlet quantity	24、36、42 Outlets
		Output Voltage Range	Single phase：100VAC~240VAC Frequency 50~60Hz;
		Maximum Total Load Current	Single phase：32A、63A
		Maximum Load Current per Phase	16A/32A
3		Network Port	1×RJ45 port
		Daisy-Chain Port	2×RJ45 port
		Expansion Port	1×RJ45 port
		Temperature/Humidity Sensor Port	2×RJ45 port
		Door Sensor Port	1×RJ45 port
		Upgrade Port	1×USB port
4	Display	IP Address, Monitoring Parameters, Alarm Status	2.0-inch LCD display
		RUN LED indicator	Green Flashing LED
5	Load Current Display Technical Specifications	Total Load Current	Full Scale: 32A/16A Accuracy: ±1% rdg. ±10 dgt Resolution: 0.01A Response Time: 500ms
		Branch Circuit Current	Full Scale: 10A/16A Accuracy: ±1% rdg. ±10 dgt . Resolution: 0.01A Response Time: 500ms
6	T/H Sensor Monitoring Accuracy	Temperature	Operating range: 0–60°C, Accuracy: ±1°C, Response time: 400ms
		Humidity	Operating range: 10–90% RH, Accuracy: ±5% RH, Response time: 400ms
7	Dimensions	Product size(H×W×D)	0U: 1830*56*52mm（24 outlets） 1830*60*60mm（36、42 outlet）

		Mounting distance	Toolless mounting pegs:1244mm
8	Chassis color	Color	Black
9	Optional accessories	Sensors	T/H sensor and Door Sensor
10	Environmental	Working Environment	Temperature: 0-60℃，Humidity: 5-95%
		Storage Environment	Temperature: -20-70℃， Humidity:5-95%
11	ROHS	Yes	

9、Quality Assurance

This product is warranted against defects in materials and workmanship for a period of two years from the date of purchase by the customer. During the warranty period, the company's obligation is limited to replacement, repair, or return of the product for repair. Warranty service is generally provided free of charge during this period. If the product is beyond the warranty period, or if the company determines that the issue resulted from improper operation, appropriate fees will be charged

The above warranty does not apply to problems caused by the following:

1. Failures resulting from incorrect or improper maintenance by the customer.
2. Failures caused by unauthorized modifications, alterations, or misuse.
3. Failures due to operating the product outside the specified physical environmental conditions.

Repair Notes:

1. If the product needs to be returned for repair, please ensure it is packed in protective rigid packaging. Damage incurred during transit is not covered under this warranty.
2. Provide a brief description of the product issue and the operational steps leading to it.
3. The customer must prepay shipping costs for returning the product to the company and is responsible for all applicable duties and taxes.
4. Please include your name, address, and a contact telephone number where you can be reached