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Electrical Safety Precautions

- The staff responsible for installation and commissioning of the equipment must be trained to master the correct equipment operating procedure and understand the rules on safe use of electricals before the installation and commissioning.
- Do not wear watches, rings or similar metal objects when operating the equipment.
- During operating process, use insulating tools, such as protective clothing and rubber gloves.
- When installing the equipment, install the protective grounding cable first. When removing the equipment, remove the cable last.
- Before connecting load cables and battery cables, check the polarity of the cable terminals to prevent reverse connection.
- When touching any sensitive component or circuit board, wear ESD gloves and do not touch any chips.
- After installing the equipment, remove any conductive residues, such as conductor, metal wire, and screw.

Mechanical Safety Precautions

Notes: Do not drill holes on the cabinet.

- Before drilling any hole, check the cables and load accessories inside the cabinet to provide safe space for drilling operations.
- Wear goggles and protective gloves when drilling.
- To prevent metal debris from falling into the cabinet, clean the site immediately after completion of drilling to remove any metal debris.

1 Intelligent Power Environment Monitoring & Management System - Introduction

This Intelligent Power Environment Monitoring and Management System consists of power environment monitoring management module and monitoring components.

The power environment monitoring management module is integrated into the local LCD system, that is, the intelligent monitoring screen (ePAD). It is equipped with interface-expandable single-cabinet control module (eCTRL) for device expansion and control. It supports local and remote system management, system status monitoring, system alarm management, and system configuration and operation. In addition, the power environment monitoring management module can also provide a visual interface, facilitating users to maintain the internal equipment of the system.

1.1 Overview of ePAD

1.1.1 Appearance

Appearance: (Front view)

Figure 1-1

Appearance:(Back view)

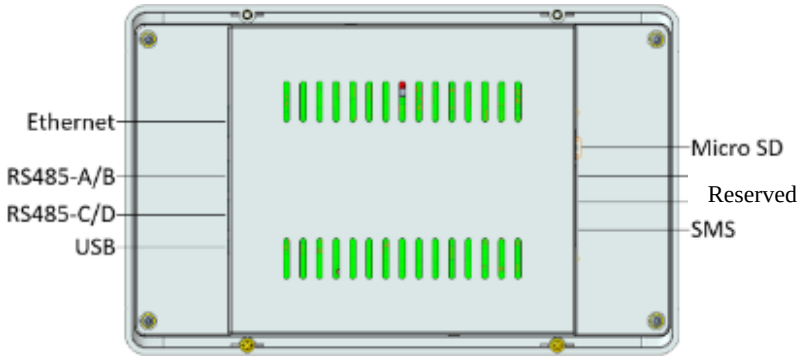


Figure 1-2

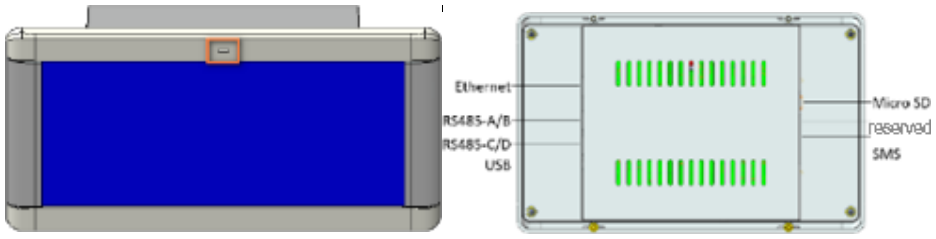
Structure parameters:

Parameter	Value
Screen size	10.1 inch
Screen resolutions	1024*600

Table 1-1

1.1.2 Physical interface

Physical interface:



Physical interface functional description:

Name	Functional description
Operation indicator	Start-up: Yellow light ON Normal state: Green light on
Ethernet interface	It is used to access the Internet or monitor networking
RS485-A/B communication port	Supports two RS485 ports
RS485-C/D communication port	Supports two RS485 ports
USB	Supports one USB2.0 device connected
Micro SD card	The maximum storage space is 32GB. When an SD card is inserted, history data will be stored in it.
RS232 interface reserved	Reserved interface
RS232 interface reserved	Reserved interface
SMS	Supports access to SMS alarm device

Table 1-2

1.1.3 Technical parameters

Technical parameters table:

Parameter	Indicator
Power input	● Supports two DC power supplies ● Input voltage:12VDC ● Input rated current: mA
CPU	ARM Cortex-A8 32-Bit
System	Embedded Linux
Flash	256M Byte nand falsh
Memory	512M Byte DDR3
Watchdog	Check the inside of the chip regularly, and send a restart signal to the chips in case of error.
Real-time clock	High-precision RTC to realize time retention in case of power outage.
Network interface	One 10M/100M adaptive network port
RS485	Supports four two-port RJ45 RS485 ports with 12VDC power input and a default communication speed of 9,600bps
RS232	One SMS alarm port and two reserved ports
USB port	One USB port for USB device expansion

Micro SD card	The maximum storage space is 32GB, used to store data such as history records for more than ten years.
Network protocol	HTTP, FTP, SMTP, DNS, Telnet, SSH, DHCP
Northbound interface	
Alarms	Local audible and visual alarms, e-mail alarm, short message alarm, and voice call alarm
Indicator light	Normal operation indicator light - green;start-up indicator light - orange;
Monitoring means	Web, APP, and IoT

Table 1-3

1.1.4 Communication Interface Description

The ePAD provides the following RJ45 ports. The RJ45 pin sequence is given as follows:

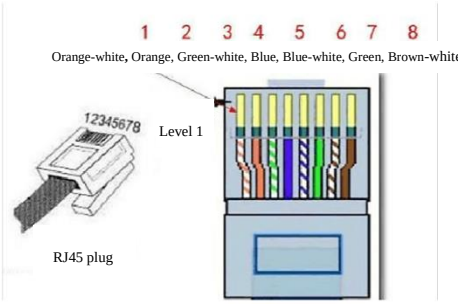


Figure 1-4

Ethernet interface sequence definition table

P1	P2	P3	P4	P5	P6	P7	P8
TX+	TX-	RX+	-		RX-	-	

RS485-A/B interface sequence definition table

P1	P2	P3	P4	P5	P6	P7	P8
A-RS485+	A-RS485-	B-RS485+	+12V		B-RS485+	GND	

Table 1-5

RS485-C/D interface sequence definition table

P1	P2	P3	P4	P5	P6	P7	P8
C-RS485+	C-RS485-	D-RS485+	+12V		D-RS485+	GND	

Table 1-6

1.2 Overview of eCTRL

1.2.1 Appearance

Appearance:(Front view)

Figure 1-5

Figure 2-2 Appearance (Back view)

Figure 1-6

Structure parameters:

Parameter		Value
Dimensions (L ×W ×H)		482.5mm*130mm*45mm
Color		Black
Installation specifications		Installation space available for 1U standard cabinet

Table 1-7

1.2.2 Physical interface

Physical ports on the front panel:

Figure1-7

Physical ports on the rear panel:

Figure 1-8

Physical interface function description:

SN	Name	Functional description
1	Power switch	Used to switch the control module ON/OFF
2	RS485 communication interface	Supports three channels of configurable RS485 ports. Each channel provides two RJ45 ports for cable connection by means of RJ45.
3	ID setting switch	The DIP switch is in 4-bit binary format XXXX, with value ranging 1-15. 1111 is ID15, and 1000 is ID1. For related settings, refer to the following example:

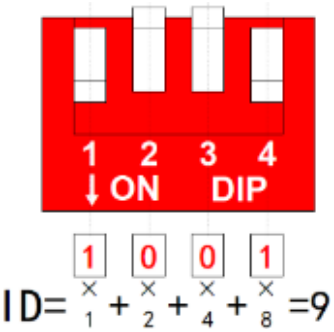
		Push the switch up or down, the value in the lower box is 0 or 1, and then multiplied by the related number, and the final result is ID, as shown below: Only switches for Bits 1 and 4 are pushed down, and the multiplier is respectively 1 and 8, while the rest are 0, added up to 9. 
4	LCD/expansion interface	Four RJ45 ports are provided for connection to the RS485 communication port on the intelligent monitoring screen and the next expansion module and power the intelligent monitoring screen through these ports.
5	Dry contact	● J1 output dry contact for front magnetic door lock ● J2 output dry contact for front door lighting ● J3 output dry contact for rear magnetic door lock ● J4 output dry contact for back door lighting ● J5 output dry contact for LED ambient lighting ● J6 output dry contact for audible and visual alarms ● J7 reserved dry contact for output ● J8 input dry contact for front door detection ● J9 input dry contact for back door detection ● J10 input dry contact for smoke sensor ● J11 access controller 1 ● J12 access controller 2 ● J13 input dry contact for infrared detection ● J14 input reserved dry contact
6	Power indicator	Indicate the status of power supply to control module, and be steady on normally
7	Power input port 1	AC input interface 1 from public mains
8	Power input port 2	AC Input interface 2 from UPS

Table 1-2

1.2.3 Technical parameters

Parameter	Indicator
Power input	● Supports two AC power supplies ● Input voltage range: 85~264Vac ● Working frequency: 50/60Hz ● Input rated current: 0.56A
RS485	● The LCD/expansion port provides four RJ45 ports for connection to the

	RS485 communication port on the intelligent monitoring screen and the next expansion module and supplies power to the intelligent monitoring screen through these ports. ● RS485 communication port supports three channels of configurable RS485 ports. Each channel provides two RJ45 ports for cable connection by means of RJ45 at default communication speed of 9600bps.
Dry contact	● Supports nine output dry contact ports, six of which support NC or NO signals, and the other three support NO signals. ● Supports seven input dry contact ports.

Table 1-9

1.2.4 Communication ports and Terminals

The eCTRL provides the following RJ45 ports. The RJ45 pin sequence is given as follows:

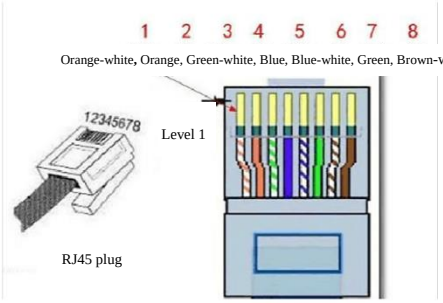


Figure 1-2

RS485 A、B、C interface sequence definition table

P1	P2	P3	P4	P5	P6	P7	P8
RS485+	RS485-	/	+12V		/	GND	

Table 1-10

LCD/Expended Interface A/B Interface Line Sequence Definition Table

P1	P2	P3	P4	P5	P6	P7	P8
A-RS485+	A-RS485-	B-RS485+	+12V		B-RS485+	GND	

Table 1-11

LCD/Expended Interface C Interface Line Sequence Definition Table

P1	P2	P3	P4	P5	P6	P7	P8
C-RS485+	C-RS485-	D-RS485+	+12V		D-RS485+	GND	

Table 1-12

Output dry contact ports (J1-J7) in seven groups and nine channels:

Figure1-3

Output dry contact interface (except J5) function definition table:

Parameter		Description
Pin	1	12V
	2	NC (normally closed)

	3	NO (normally open)
	4	COM (common terminal)

Table 1-33

The J5 output dry contact has three NO signals:

Parameter		Description
Pin	1	12V
	2	NO (normally open)
	3	NO (normally open)
	4	NO (normally open)

Table 1-44

Input dry contact and access controller ports (J8-J14) in five groups and seven channels, including two groups of access controller:

Figure1-41

Output dry contact interface (J8-J10) function definition table:

Parameter		Description
Interface	1	12V
	2	Input signal
	3	12V
	4	GND

Table 1-55

Output dry contact ports (J13-J14) and access controller (J11) function definition table:

Parameter		Description
Interface	1	12V
	2	Input signal 1
	3	Input signal 2
	4	GND

Table 1-66

Access controller (J12) dry contact interface function definition table:

Parameter		Description
Interface	1	12V
	2	485+
	3	485-
	4	GND

Table 1-77

1.3 Southbound Equipment Introduction

1.3.1 Access control

The access control device manages the permission for personal access and collects statistics on the access records. It supports multiple operation modes such as card swiping, fingerprint, and

password.

External view:

Figure1-52

Technical parameters:

Item	Parameter
Working voltage	12VDC
Identification means	Fingerprint, ID card, IC card, password
Screen display	2.0-inch TFT HD color screen
Display language	Chinese and English languages
Communication	TCP/IP, USB, RS485, Wiegand (one group respectively for input and output)
Operating Environment	Temperature: -10℃ ~ +50℃ Relative humidity: ≦95%(no condensation)
Dimensions	140*44*20mm

Note: An administrator account 888888 and password 888888 are assigned for the access control device upon factory delivery. The customer has all permissions (to change the user name, password, fingerprint, and add or delete users). It is recommended to change the account and password upon the initial use to ensure system security.

1.3.2 Smoke sensor

The smoke sensor is used to detect the smoke and gives alarm signals promptly in case of fire.

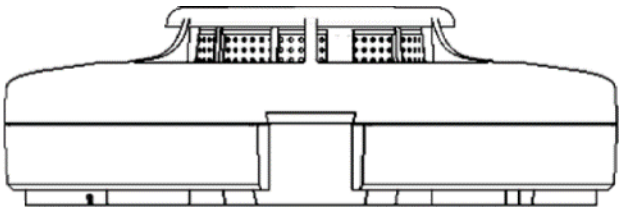
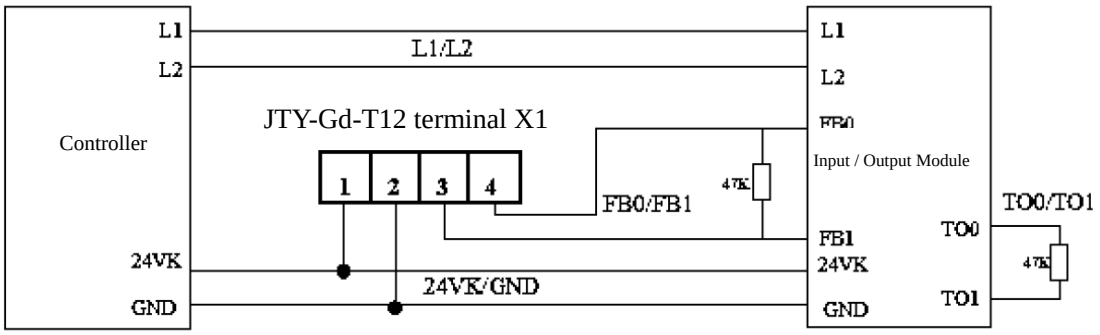


Figure 1-6Smoke Sensor

The smoke sensor interface is defined as follows:



Pins D1 and D2 are power ports with working voltage of 12V or 24V. Pin 1 is connected to positive terminal and pin 2 is connected to the ground.

Pins 3 and 4 are signal output interfaces, and is normally closed (NC) by default. When an alarm occurs, it turns to be disconnected, and can also be set to normally open (NO) through jumper.

Technical parameters:

Item	Parameter
Working voltage	12/24VDC, voltage ranging 8-28VDC
Working current	<2mA@12VDC in monitoring status <30mA@12VDC in case of fire alarm
Contact output	1A/30VDC，0.3A/60VDC
Operation indication	Monitoring status: Indicator (green) blinks once every 60 seconds Alarm status: The indicator (red) is steadily on, and the buzzer makes a rapid "beep" sound every 1.5 seconds Fault status: The buzzer beeps briefly every two seconds
Operating Environment	Temperature:-10℃ - +50℃ Relative humidity: ≦95%(no condensation)
Dimensions	120*39mm (OD * HEIGHT)
Design Criteria	GB4715-2005

1.3.3 Infrared sensor

Infrared sensor is used to detect human activities in target area. When an intruder passes through the area, alarm signals will be given promptly.

Figure 1-7 Infrared Sensor

The infrared interface is defined as follows:

+12V is DC positive pole, and GND indicates the DC negative pole.

ALARM is the output interface for detecting ALARM signals. The default interface is NC.

When an ALARM occurs, the interface turns to be disconnected, and can also be set to NO through jumper.

TAMPER is the output interface of anti-removal alarm signal, normally closed, and turns to be disconnected in case of alarm.

Technical parameters:

Item	Parameter
Working voltage	12VDC, voltage ranging 9-16VDC
Working current	≤50mA@12VDC
Contact output	100mA/ 60VDC for detection alarm and 100mA/28VDC for anti-removal alarm
Operation indication	Power-on self-test: The red indicator light turns on for 60 seconds during power-on self-test process. Monitoring status: Indicator light is off Detection alarm status: Red indicator light is on
Operating Environment	Temperature:-10℃ - +50℃ Relative humidity:≦95%(no condensation)
Dimensions	95*57*38mm

1.3.4 Audible and visual alarm

It is used to monitor the host in equipment room and realize linked audible and visual alarm in the room.

Figure 1-8 Audible and Visual Alarm

The audible and visual alarm interfaces are defined as follows:

The red and black cables at the bottom are for power ports. The operating voltage is 12V. The red cable is connected to positive pole and the black cable is connected to the ground.

Technical parameters:

Item	Parameter
Working voltage	12VDC
Working current	≤45mA
Maximum alarm volume	90dB
Operation mode	Analog rotating LED lighting
Operating Environment	Temperature:-30℃ - +70℃ Relative humidity:≦95%(no condensation)
Dimensions	95*165mm (OD * HEIGHT)

1.3.5 T/H sensor

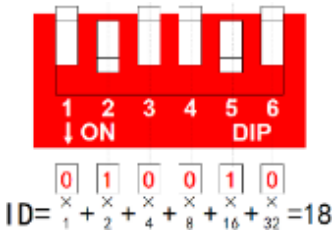
The T/H sensor is used to detect the operating temperature and humidity inside a closed channel.

Figure 1-9 T/H Sensor

On the right side of the T/H sensor, the ID setting switch is in DIP pattern, with its value in 6-bit binary XXXXXX format, ranging 1-63. 111111 is ID63, and 100000 is ID1. For related settings, refer to the following example:

Push the switch up or down, the value in the lower box is 0 or 1, and then multiplied by the related number, and the final result is ID,

as shown below:Only switches for Bits 2 and 5 are pushed down, and the multiplier is respectively 2 and 16, while the rest are 0, added up to 18.



Each T/H sensor has an RJ45 RS485 port respectively above and below it. The device can be connected to a controller module in a cabinet either in series or separately. The ports are defined as follows:

P1	P2	P3	P4	P5	P6	P7	P8
RS485+	RS485-	--	+12V		--	GND	

A maximum of 15 T/H sensors can be connected in series through one 485 port on the control module of a cabinet.

iSmart® micro-module System is equipped with one cold channel T/H sensor in standard configuration. A number of T/H sensors can be provided as required.

Technical parameters:

Item	Parameter
Temperature detection range	-40℃-+125℃
Temperature detection accuracy	±0.2℃
Humidity sensor operating temperature	-20℃-+85℃
Humidity detection range	0~100% RH
Humidity detection accuracy	±2%
Working voltage	12VDC
Dimensions	67.9*46*26mm

1.3.6 Water sensor

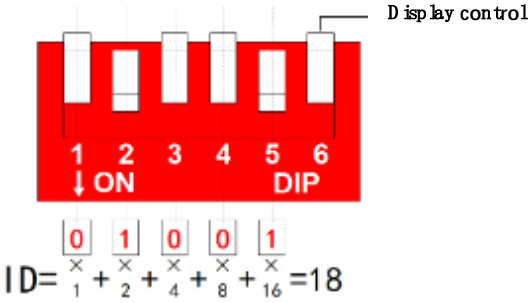
The water sensor is used to check whether there is water on the floor of the equipment room. There are two types of water sensors: the water sensor with or without location detection.

Figure 1-10 Water Sensor

At the bottom of the water sensor, the ID setting switch in DIP mode is XXXXX in five-bit binary format, ranging 1-31. 11111 is ID31, and 10000 is ID1. For related settings, refer to the following example:

Push the switch up or down, the value in the lower box is 0 or 1, and then multiplied by the related number, and the final result is ID,

as shown below: Only switches for Bits 2 and 5 are pushed down, and the multiplier is respectively 2 and 16, while the rest are 0, added up to 18.



There are two RS485 ports in RJ45 pattern above the water sensor. The device can be connected to the controller module of a single cabinet either in series or separately. The ports are defined as follows:

P1	P2	P3	P4	P5	P6	P7	P8
RS485+	RS485-	--	+12V		--	GND	

The 485 port on the control module in a single cabinet can be connected to a maximum of seven water sensors in series.

Water sensor parameters:

Item	Parameter
Working voltage	12VDC
Operating Environment	-20℃ ~ +80℃, 0 ~ 95%RH (no condensation)
Precision	Suitable for use with positioning sensor, 1 m
Dimensions	125*64*37mm

1.3.7 Webcam

Figure 1-11 Webcam

The webcam can be directly connected to the network through a network cable. If a video recorder is equipped, the camera must be connected to the network port of the video recorder. If the number of cameras exceeds the number of ports on the VCR, it is necessary to configure another network switch.

Webcam parameters:

Item	Parameter
Pixels	2 megapixels in 1/3 inch step-by-step scan
Maximum resolutions	1920*1080
Power supply	DC 12V with PoE
Frame rate	1-30, adjustable
Coding standard	1080P@30fps、720P@30fps、D1@25fps
Protection grade	IP66
Operating Environment	-30℃-+60℃, 0-95%RH
Dimensions	D110.7*84.3mm

1.3.8 SMS alarm

When an alarm occurs in the equipment room, the manager will be notified of the alarm by short message or by both short message and voice call. This SMS alarm supports mobile, telecom, unicom SIM card. SIM card is not supplied upon delivery, but need to be purchased by user.

The appearance of the device is shown in the figure:

Figure 1-129

The dry contact interface parameters are listed in the table

Interface	Description
1	Input power (7-48v), standard 12V
2	GND
3	GND
4	Reset (5s active low)

5	RX-RS232
6	TX-RS232
7	RS485-A
8	RS485-B

LED light	Status	Description
Power	Blinking	Equipment in operation
DATA	Blinking	Network connected successfully

1.4 Topology of Centralized Monitoring Management System

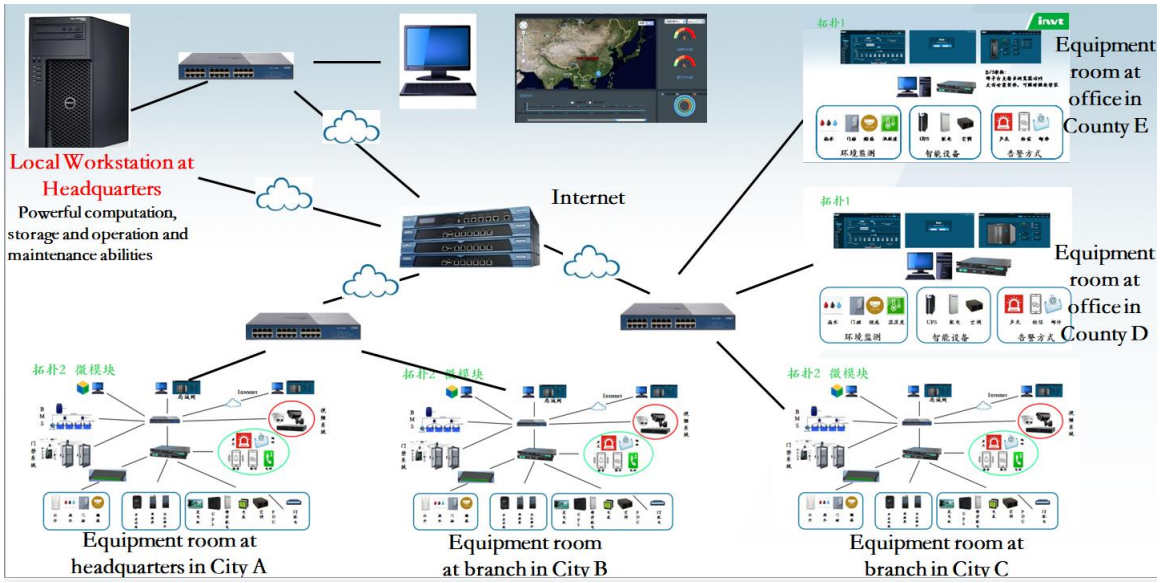


Figure 1-20

1.5 Configuration of Basic environment for Login to Web

Configuration of basic web environment:

Memory	4G or above
OS	Windows7 or higher
Web browser	Recommendation:Google's CHROME or Firefox browser of the latest version, and Internet Explorer 11 or later

Table 1-88

Operating Procedure:

Step 1:

Use an RJ45 cable to connect the PC network port to the Ethernet port on ePAD. The default IP address of the ePAD is: 192.168.0.100. If the IP address is changed, you can view it at System Settings > Network Settings page on the monitoring screen.

Step 2:

Allocate the IP address of the PC and the IP address of the Ethernet port on the ePAD in one network segment. If the IP address of the Ethernet port on ePAD is 192.168.0.100, the subnet mask is 255.255.255.0, and the default gateway is 192.168.0.1, then your PC IP address can be set to

192.168.0.111, subnet mask 255.255.255.0, and default gateway 192.168.0.1.

Step 3:

Log in to the Web UI in ePAD.

1. Open the browser on your computer and enter HTTP://IP address of ePAD (e.g., http://192.168.0.100) in the address box, and press Enter to access the Web login page.
2. Figure 2-20 Web Login Page

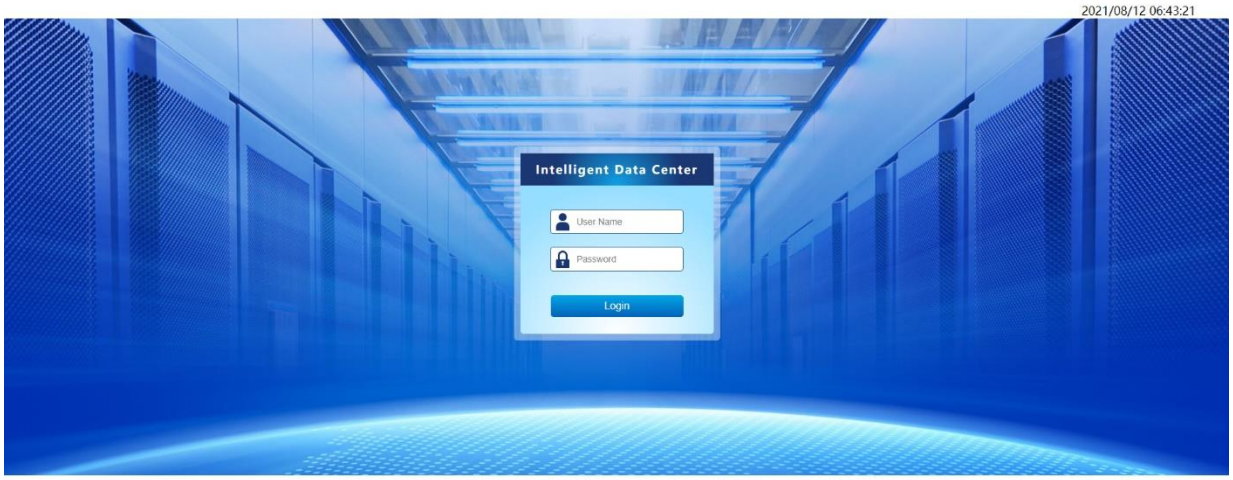


Figure 1-21

3. On the login page, enter the preset user name "admin" and password "123456", and click Login button.

2 Web Interface Description

2.1 Web menu structure

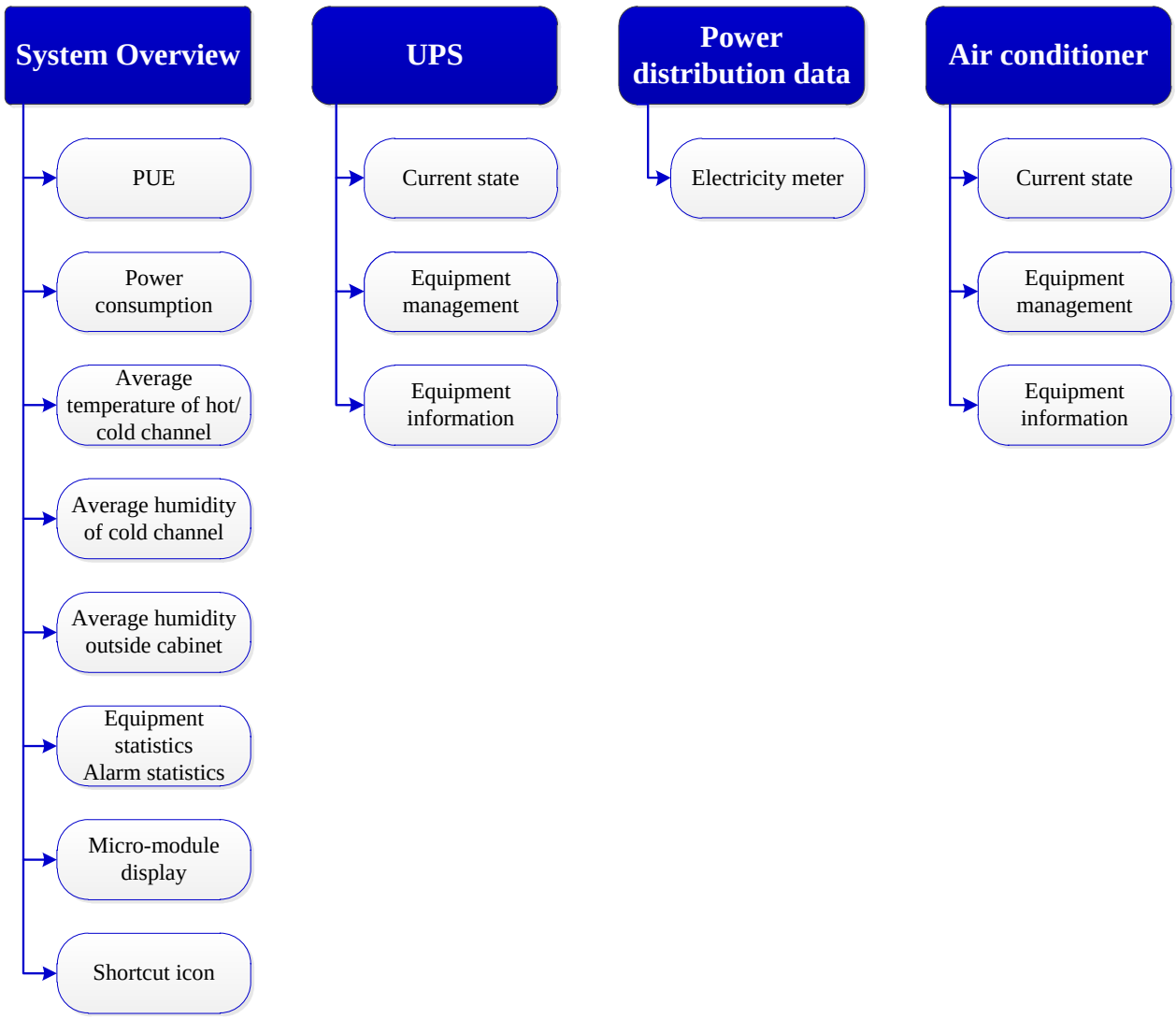


Figure2-1

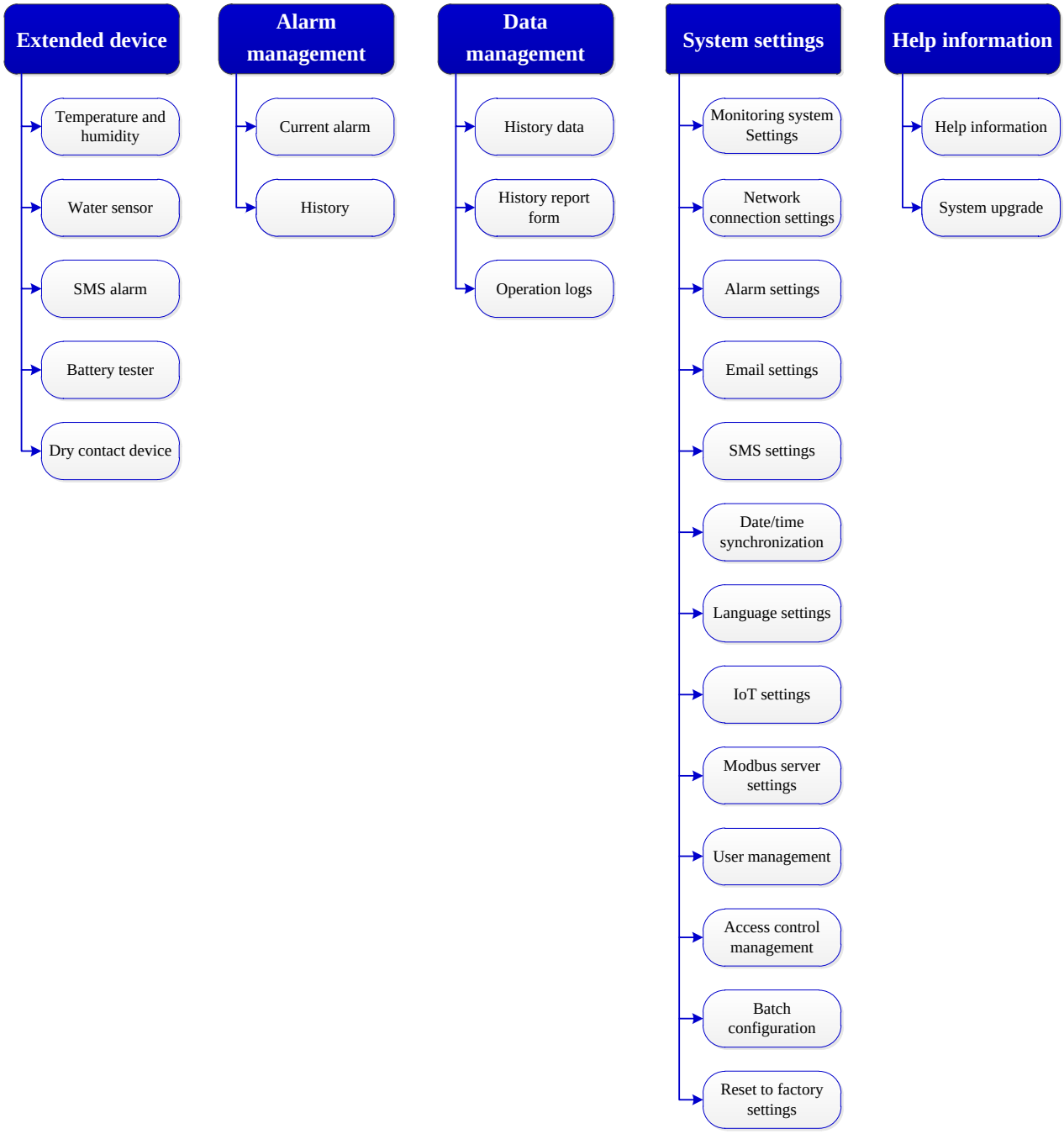


Figure2-2

2.2 Web Function Interface Table

Level 1 menu	Level 2 menu	Function	Remark
System Overview	-	● Display single cabinet model diagram, real-time status monitoring of smoke sensor, infrared detector, door magnetic door lock	You can select and switch the display content of each module. For example, user can

		currently connected to the system, provide camera management, access control management entrance. ● Displays the current PUE value of the system. ● Displays the current system power consumption data. ● Displays the total number of connected devices, online devices, and alarm-active devices. ● Displays the current event and alarm information. ● Shows the temperature and humidity trend diagram of hot and cold channels.	switch the temperature and humidity trend diagram of the channel outside the cabinet.
UPS	Current state	● Monitor in real time the current UPS operating parameters (such as main input and output, bypass voltage (V), current (A), frequency (Hz), battery capacity (%), voltage (V), current (A), and remaining time (min), Load apparent power (kVA), active power (kW), load rate (%) data) and whether all statuses are	The default data refresh interval is 10 seconds, and optional intervals are 5s, 10s, 30s, and 60s. This setting is saved to the local browser cache (applicable to the current computer only).

		normal.	
	Equipment management	● Manage the control functions of UPS, such as alarm muting, manual bypass and exit, and battery test commands.	-
	Equipment information	● Display the basic information, rated data (rated input/output voltage (V) and rated input/output frequency (Hz) of the UPS, port position for connecting to the UPS, modbus address, and alias and remarks of the UPS.	The alias and remarks can be set only when the device is online.
Power distribution data	Electricity meter	● Monitor in real time the current electricity meter operating status and parameters, such as total active power consumption (kW•h), phase voltage (V), current (A), frequency (Hz), power factor, and active power (kW). Display the port location and Modbus address of the device, and set the alias and remarks of the electricity meter.	-
Air conditioner	Current state	● Monitor the running status and operating parameters of	-

		current air conditioner in real time, such as the running time (Hour) and cooling capacity (kW) of the internal/external fan and compressor.	
	Equipment management	● Control ON/OFF of air conditioner and setting of configuration parameters, such as cooling point, cooling range, and high/low temperature alarm values.	-
	Equipment information	● Display the port location, Modbus address, alias and remarks of air conditioner.	-
Extended device	Temperature and humidity	● Monitor the running status and parameters of T/H sensor connected to the cold, hot, and external channels in real time, such as temperature (℃), humidity (RH%), and display port position, Modbus address and remark information of the device.	-
	Water sensor	● Monitor the running status and parameters of the water sensor connected to the device in real time, for example, water leakage	

		position (m), and display port position, Modbus address and remark information of the device.	
	SMS alarm	● Monitor the running status of the SMS alarm in real time, display the signal strength, interface position, alias and remarks of the device connected.	
	Dry contact device	● Monitor operating status of current connected dry contact devices, such as infrared alarm, smoke sensor, magnetic door lock.	
Alarm management	Current alarm	● Display all current events and alarm information in the system.	(1) Minor alarm:If this option is chosen, all minor alarms will be selected from current alarms. This alarm severity mainly indicates the faults that cannot be handled immediately. (2) Major alarm:If this TAB is chosen, all major

			alarms will be selected from current alarms. This alarm severity level indicates the fault that needs to be handled immediately.
	History	● Search for and download historical alarm records in the system.	-
	Operation logs	● Search for and download system operation logs, including control logs and login logs.	(1) Control logs: Operations such as UPS control, air conditioner control, and adding or deleting devices will be recorded. (2) Login logs:Record the person that successfully logs in to the system, IP address, and date. These two types of logs can be downloaded in the

			form of excel file and saved to local PC.
Data management	History data	● Search for and download history data on device.	All devices are selected by default. You can also search for one or more devices of a single type.
	History report form	● View the trend chart of one or more parameters of a device within a time range.	
System settings	Monitoring module	● Basic settings for monitoring system, such as the storage mode and data saving interval.	
	Network connection settings	● Set IP address based on the operating environment.	If no DNS server is available, you can fill in only one of them. Note that the IP address of the preferred DNS server and the alternate DNS server cannot be the same.
	Alarm settings	● Set alarm event severity level and enable audible and visual alarm for each device	

		type.	
	Email settings	● Configure the email server, and add alarm events and recipient's email box address.	
	SMS settings	● Add alarm events and contacts for notification by phone or SMS.	
	Date/time synchronization	● Automatically synchronize current date and time settings.	
	Language settings	● Set the language for web page, email and SMS.	
	IoT settings	Enable/disable IoT and set IoT server information.	
	Modbus server settings	● Set Modbus server.	In addition to MQTT IoT northbound interface, the system also supports MODBUS TCP/IP protocol.
	User management	● Add, modify, delete users, and manage user's permissions.	
	Batch configuration	● Upload and download batch configuration files (*.cfg) to facilitate synchronization of multiple	This configuration only includes the system settings, but excludes the

		eMTR system configurations.	settings of email events, alarms, and contacts for and SMS.
	Reset to factory settings	● Restore factory settings.Clear history records and data.	
Help information	Help information	● Displays system model and software version information.	
	System upgrade	● Upgrade the system online.	

2.3 System overview page

After logging in to the system, the system is overall in a vertical structure: the upper part is the fixed header and menu bar (public part), while the lower part is the content page, varying depending on the menu active, as shown in Figure 3-3:

Figure 3-3

(1) Menu bar; (2) Content page

The menu bar includes:

1) System Overview
2) UPS
3) Power distribution data
4) Air conditioner

5) Extended device
6) Alarm management
7) Data management
8) System settings
9) Help information
10) conversion icon, alarm icon, current date/time, and administrator information on system overview page.

The system overview is shown in Figure 3-3, which is divided into the following parts: **(3) PUE, (4) Power consumption, (5) Average cold aisle temperature, (6) Average cold aisle humidity, (7) Average hot aisle temperature, (8) Average humidity outside the cabinet, (9) Current alarm, (10) Device statistics, ⑪ Micro module display,⑫ Shortcut icon**.

The shortcut icons are shown in Figure 3-4: ① Webcam management icon ② Access management icon ③ Smoke sensor management icon ④ Infrared sensor management icon ⑤ Magnetic door lock management icon.

Figure 3-4

2.3.1 Camera management

Click **(1) Webcam management** in Figure 3-4 to enter it. A list of VCR and camera links and management page are displayed, as shown in Figure 3-5.

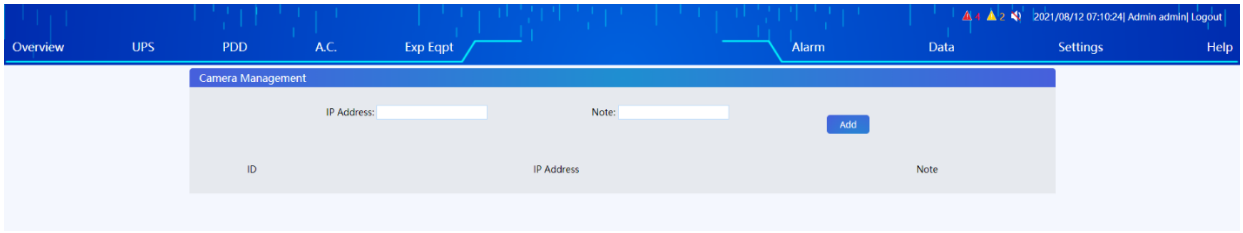


Figure 3-5

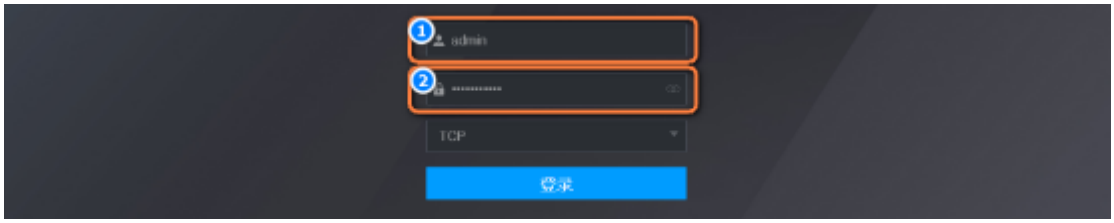
In Figure 3-5, click **(1) Add** to add a new camera or VCR link. User can add up to 20 links.

As shown in Figure 3-5, click **(2) Modify/Delete**, the information in current line will automatically turn editable. After completing modification, click "OK" button to save it, or click "Cancel" to give it up.

If the link is set correctly, click it to access the camera management system.

Log in to DVR: Enter the user name and password.

The login interface is as follows:



The homepage of DVR management is as follows:

Log in to webcam: Enter the user name and password.

The login interface is as follows:

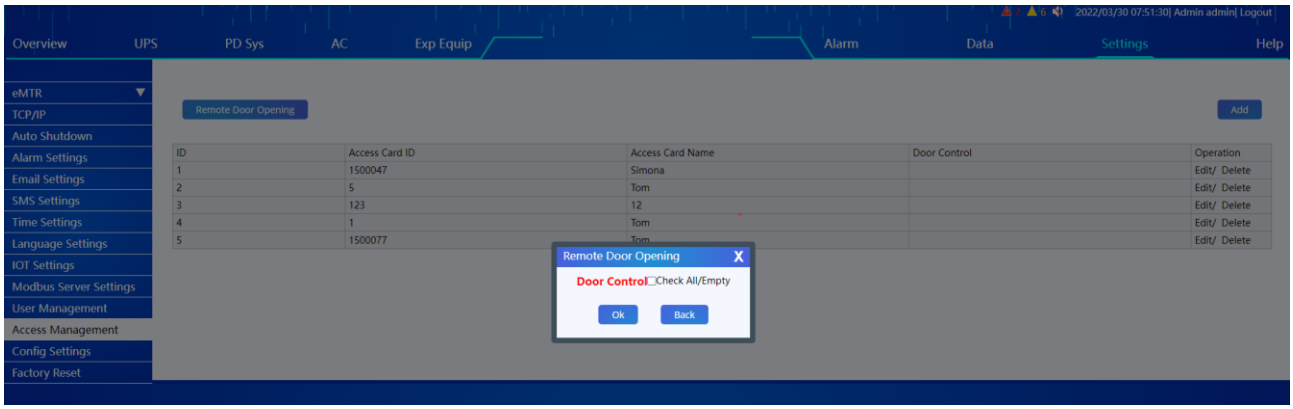
The homepage of webcam management page is as follows:

2.3.2 Access control management

In Figure 3-4, click **(2) Access control management** to display the page for setting access control management, as shown in Figure 3-6.

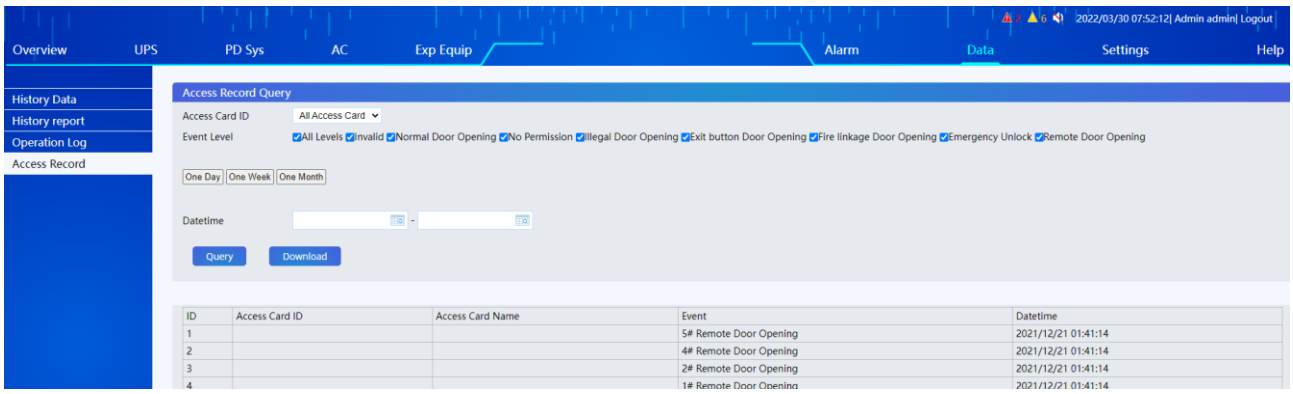
Figure 3-6

In Figure 3-6, click **(1) Remote door opening** to pop up a list of all single-cabinet control modules, as shown in the figure below:



Select a single-cabinet control module for remote door opening operation, and click "OK" to open the selected door, and click "Back" to return to the previous interface.

In Figure 3-6, click **(2) Add** to display the interface for adding access control card, as shown in the figure below:



You can enter the access control card number manually or swipe the card on the access control machine. The system will automatically obtain the card number and fill it in. Select the single-cabinet control module to which the access control card is bound, and click OK to save the Settings. If you do not want to save the Settings, click Cancel. After saving, the access control card can open the front/rear door of the single cabinet controlled by the bound module.

In Figure 3-6, **(3) Access list** displays a list of access cards that have been added, including access card numbers and the related single-cabinet control modules. This list can be modified or deleted.

Notes: Before adding an access card on the web page, you must first add a user on the access control device.

Instructions on adding a user on access control device:

Step 1: Click **OK** button to enter the access control system.

Step 2: Click **User Management** to enter the user management interface.

Step 3: Click **User registration** to add a user.

In the user registration options, you can edit **Employee ID** and add fingerprint, access card, and password for the user.

When user inputs fingerprint/swipe card/input password, the page terminal will automatically obtain a **card number** and display it on the web page. Enter **Employee ID** or **Card number** in column **Access card number** on the web page to bind a single-cabinet control module to the user.

After adding user, you must bind the control module on the web page so that the user can open the door by using fingerprint, password or card. If no card is bound, the screen will prompt that the card is invalid when the user tries to open the door.

Notes: If you check **Administrator** in Permission for user registration, you must use the administrator ID and password to unlock the access control page each time you add a user, or otherwise, any new user cannot be added. The access control interface is locked by default as long as an administrator user exists in the access control system.

2.3.3 Smoke sensor management

In Figure 3-4, click **(3) Smoke sensor management** to display a list of smoke sensor management list, as shown in Figure 3-7.

Figure 3-7

2.4 UPS page

The UPS page displays real-time UPS data, UPS controls, and UPS device information.

In Figure 3-8, **(1) UPS menu bar** mainly contains the following: 1) Current UPS status; 2) UPS device management;3) UPS device information.

In Figure 3-8, **(2) Online device bar** mainly displays online device number, as well as alias of device, if it has been added. If related remark information have been added , hover the mouse over the option for a few seconds to display related device alias and remarks.

In Figure 3-8, **(3) Content display** will display related content based on the selected menu.

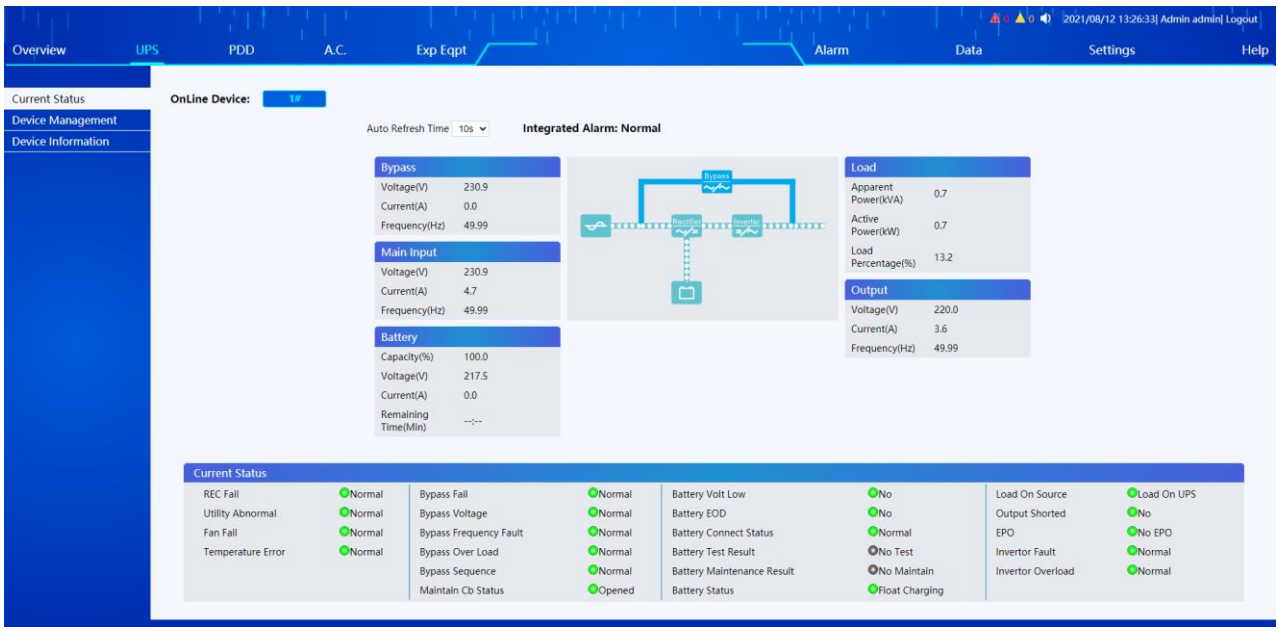


Figure 3-8

2.4.1 Current UPS status

In Figure 3-8, **(3) Content display**: Displays the current operation data and status of the first UPS device.

The default interval for refreshing data is 10 seconds. You can click "Auto refresh interval" to set it to 5s, 10s, 30s, or 60s. The setting is saved to the local browser cache and takes effect only on the current PC.

The energy flow diagram will change the flow position according to the actual conditions of the equipment.

2.4.2 UPS Device Management

The UPS management page displays some control functions of the UPS,

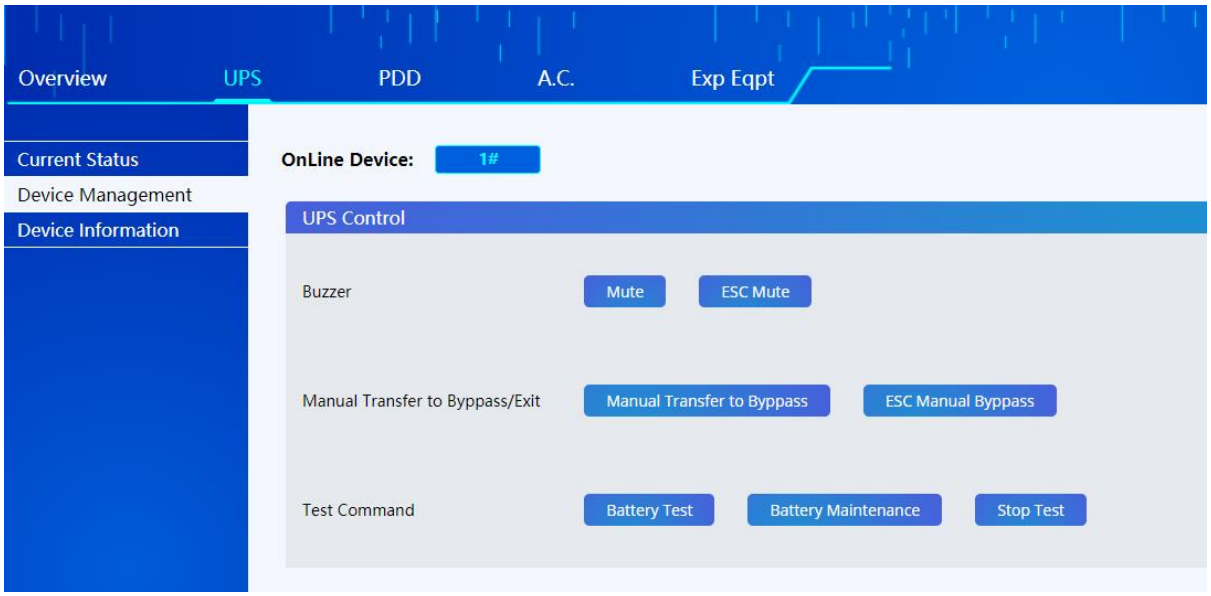


Figure 3-9

as shown in Figure 3-9: Include the following controls:1) Mute alarm; 2) Manually switch to bypass and exit; 3) Battery test command.

1) Mute alarm:Turn off or on the UPS buzzer.

2) Manual switch to bypass and exit: Switch to or exit the bypass mode.

3) Battery test command: Battery self-test and battery maintenance can be performed. In the process of self-test or maintenance, click "Stop test" to terminate the current execution.

2.4.3 UPS device information

The UPS device information page displays the ratings, port positions, alias and remarks of the UPS devices, as shown in Figure 3-10.

The alias and remarks can be set only when the device is online. They cannot be set when the device is offline.

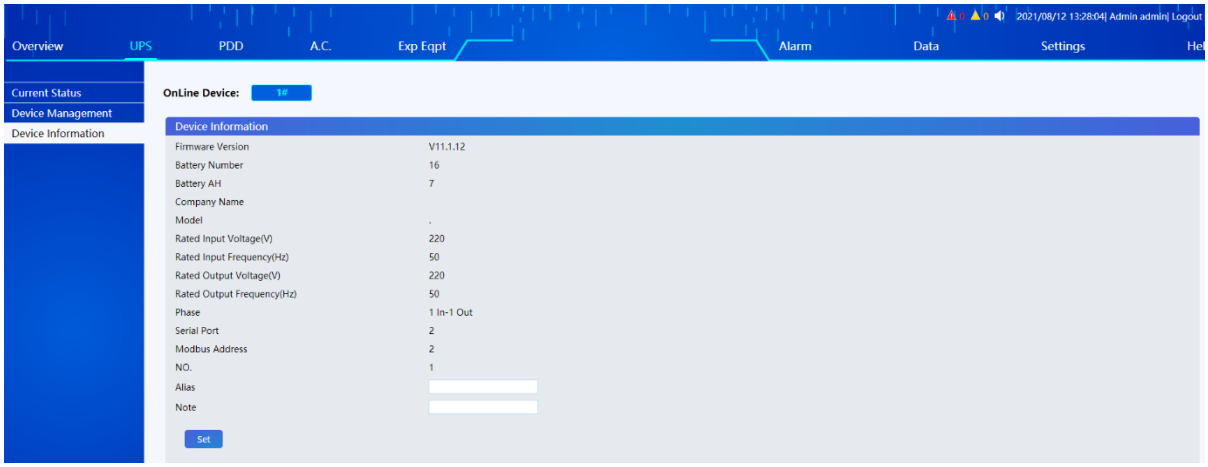


Figure 3-10

2.5 Power distribution data

The power distribution data page is shown in Figure 3-11. On the left side is (1) power distribution device sub-menu bar (all power distribution devices added to the ePAD are displayed here), and on the right side is (2) power distribution device content panel, which varies depending

on the power distribution device as selected.

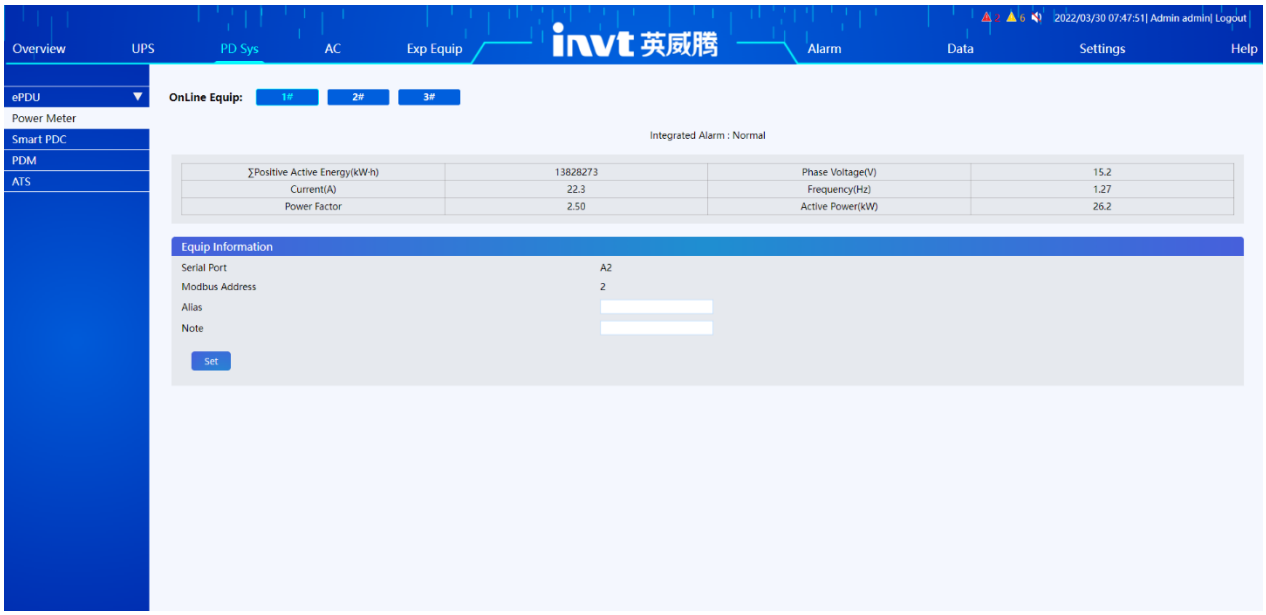


Figure 3-11

2.6 Air conditioner

An air conditioner page is shown in Figure 3-12, which displays real-time air conditioner data, air conditioner controls, air conditioner parameter settings, and air conditioner device information.

In Figure 3-12, **(1) Air conditioner menu bar** contains the following: 1) Current air conditioner status; 2) Air conditioning equipment management; 3) Air conditioning equipment information.

In Figure 3-12, **(2) Online device bar** mainly displays the number of the online device number, as well as alias of device, if it has been added. If related remark information have been added , hover the mouse over the option for a few seconds to display related device alias and remarks.

In Figure 3-12, **(3) Content display** displays related content based on the selected menu.

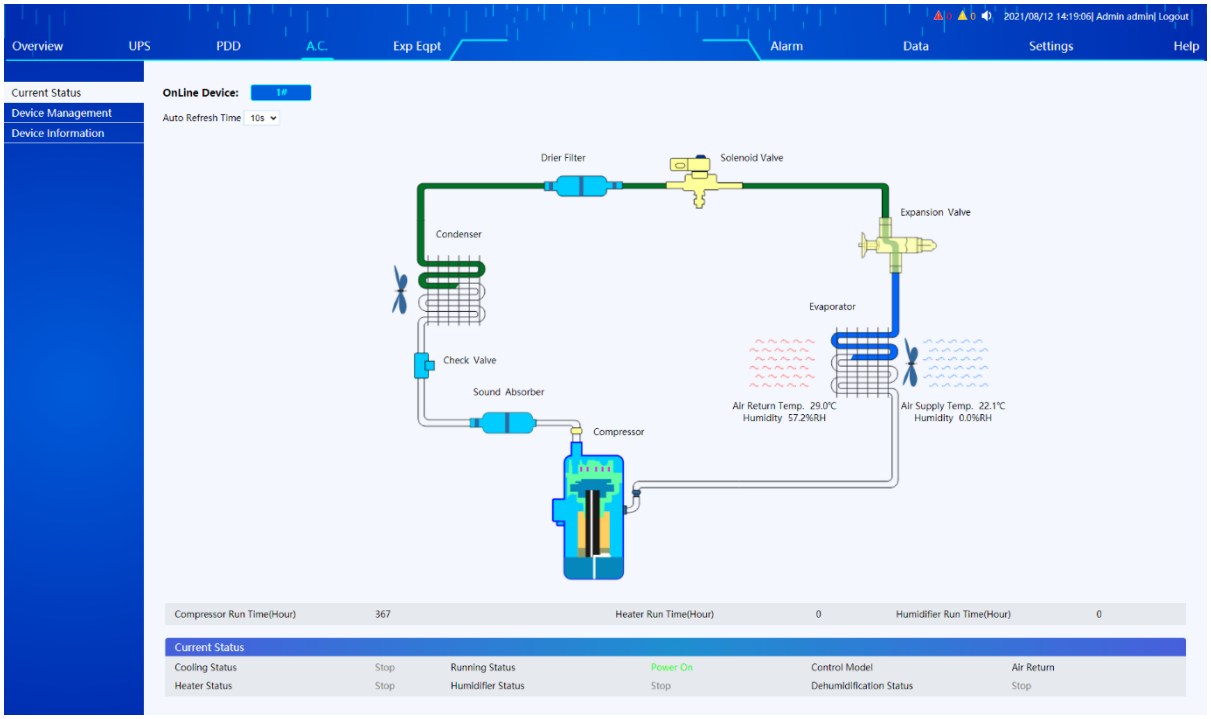


Figure 3-12

2.6.1 Current air conditioner status

In Figure 3-12 **(3) Content display**: Displays the current operating data and status of the third air conditioning equipment;

The default interval for refreshing data is 10 seconds. You can click "Auto refresh interval" to set it to 5s, 10s, 30s, or 60s. The setting is saved to the local browser cache and takes effect only on the current PC.

Based on the actual operating conditions of the device, the air conditioner system diagram shows the related dynamic diagram to check whether each component of the air conditioner is in operation.

2.6.2 Air conditioning equipment management

Click **Device Management** on the menu bar to enter air conditioner management page, which displays the ON/OFF control and parameter configuration of the air conditioner, as shown in Figure 3-13.

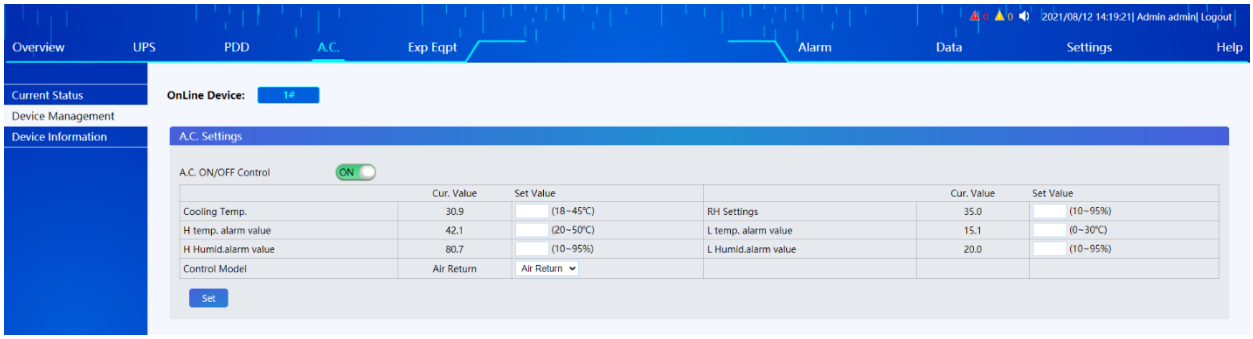


Figure 3-13

As shown in Figure 3-13 **(1) Switch air conditioner ON/OFF**: Upon entry to the page, it shows the current air conditioner status (ON/OFF). Click this button to toggle between ON and OFF within a few seconds after the button caption is updated successfully. if it is not updated, it indicates that the air conditioner fails to be set successfully for a certain reason. In such case, check

whether the air conditioner is connected properly. If the fault continues even after several attempts, contact the post-market staff.

As shown in Figure 3-13 **(2) Air conditioner parameter configuration**: Set values for air conditioning refrigeration point and other options. The set value shall not be out of the range as specified in the brackets at the rear. After setting, wait a few seconds to check whether the set value has been applied successfully to the equipment. If not, make sure that the air conditioner is connected properly. If the fault continues even after several attempts, contact the post-market staff.

2.6.3 Air conditioning equipment information

Click Device Info on the menu bar to access the air conditioner information page, which displays the port location, alias, and remarks of the air conditioner, as shown in Figure 3-14.

The alias and remarks can be set only when the device is online. They cannot be set when the device is offline.

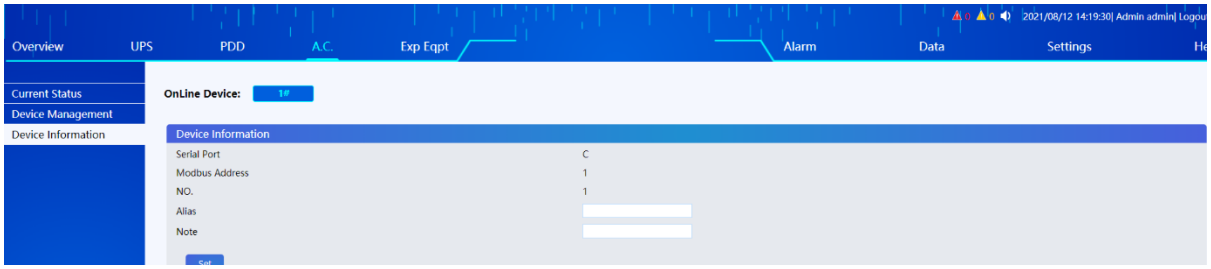


Figure 3-14

2.7 Extended device

An extended device page is shown in Figure 3-15. On the left side is **(1)** Non-power distribution device sub-menu bar (all extended devices added to the ePAD are displayed here), and on the right side is **(2)** Extended device content panel, which varies depending on the extended device as selected.

Figure 3-15

2.7.1 Temperature and humidity

As shown in Figure 3-15, **(2) Content panel**: Click one of the device block diagrams to enter the temperature and humidity details page, as shown in Figure 3-16 below.

As shown in Figure 3-16, **(1) Current temperature and humidity parameters**: Displays the real-time data and status of the current temperature and humidity device.

As shown in Figure 3-16, **(2) Temperature and humidity parameter configuration** : Set the alarm threshold for the temperature and humidity device, which shall not exceed the limits displayed in the brackets. After setting, wait a few seconds to check whether the set value has been

successfully applied to the device.

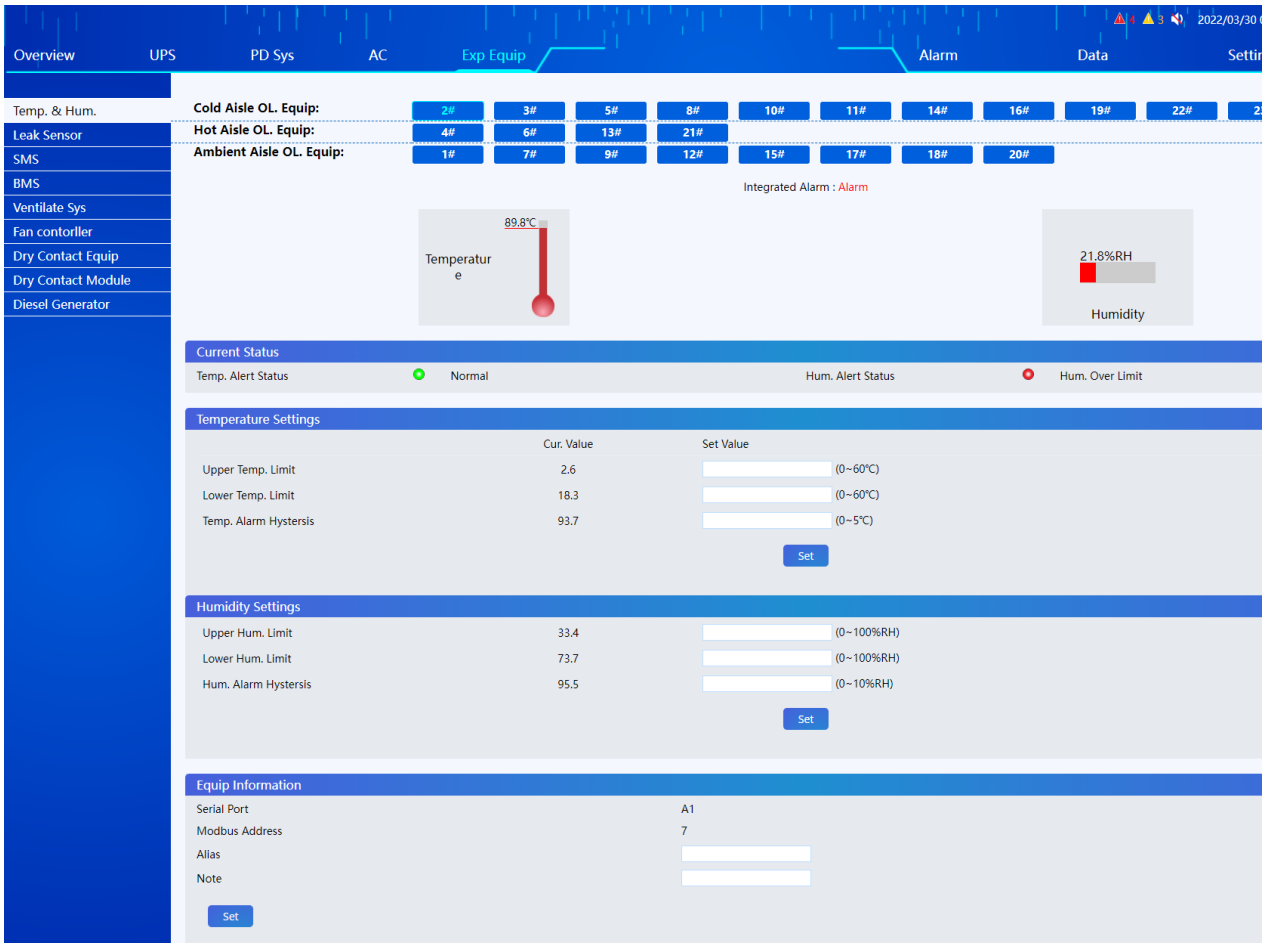


Figure 3-16

2.7.2 Water sensor

Click **Water sensor** in menu bar to enter water sensor overview page, as shown in Figure 3-17. Click one of the device block diagrams to enter the details page, as shown in Figure 3-18 below.

Figure 3-17

As shown in Figure 3-18 **(1) Current water sensor operating parameters**: Displays the real-time status of the current water sensor.

As shown in Figure 3-18 **(2) Water sensor parameter configuration**: Set the resistivity and sensitivity for the water sensor, which shall not exceed the limits displayed in the brackets. After setting, wait a few seconds to check whether the set value has been successfully applied to the device.

As shown in Figure 3-18 **(3) Water sensor information**: Display the information on the interface to which the device is connected, as well as its aliases and remarks.

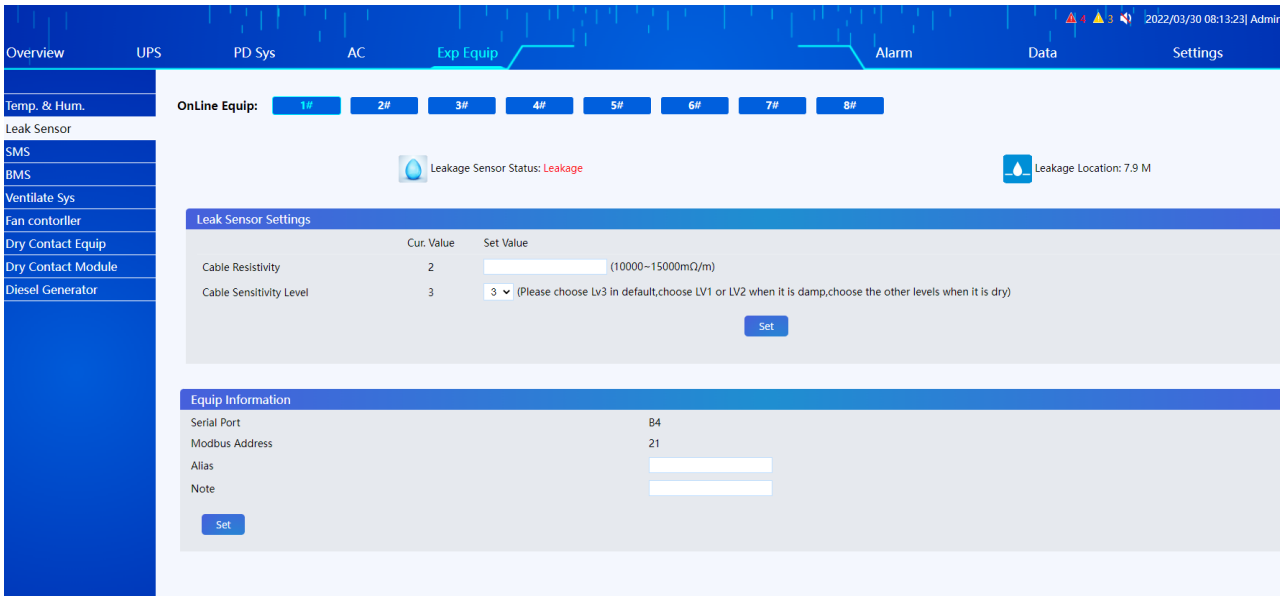


Figure 3-18

2.7.3 SMS alarm

Click **SMS Alarm** in menu bar to enter the SMS alarm page. As shown in Figure 3-19, after the SMS alarm has been communicated successfully, pay attention to the signal strength and place the device in a position where the number of signal bars is greater than or equal to 3.

Figure 3-19

2.7.4 Dry contact device

Click **Dry Contact Device** in menu bar to enter the dry contact device page. As shown in Figure 3-20, the information on dry contact for connection to the ePAD is displayed in it.

Figure 3-20

2.8 Alarm Management

As shown in Figure 3-21, the alarm management page displays current alarms and history

records. **(1) is the menu bar; (2) is content display**.

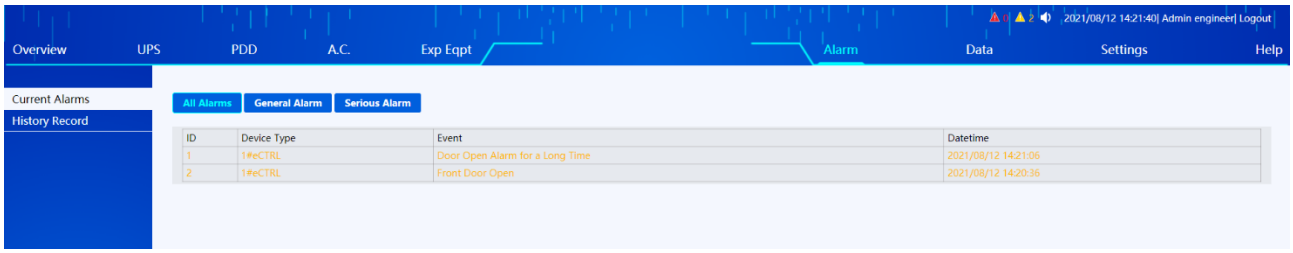


Figure 3-21

2.8.1 Current alarm

Figure 3-21 **(2) Content display**: Upon entry, the tab **All Alarms** is chosen by default to display all current alarms in the system.

1) Minor alarm:

If this option is chosen, all minor alarms will be selected from current alarms. This alarm severity mainly indicates the faults that cannot be handled immediately.

2) Major alarm:

If this TAB is chosen, all major alarms will be selected from current alarms. This alarm severity level indicates the fault that needs to be handled immediately.

The number of alarms at each severity level can be viewed on the top bar of any page, by clicking which you can access a page to view related details.

2.8.2 History records

In Figure 3-21 **(1) Menu bar**, click **History records** to enter the history page, as shown in Figure 3-22.

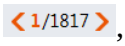
Figure 3-22 **(1) Search Part**:

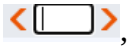
1) Recent day, week, or month: Click it to search for the records from the current date back to the last day, week, or month, which will be displayed by date in descending order.

2) Date and time: If this parameter is not specified, all records will be searched for.

3) Download: Filter and automatically download the records in the form if Excel files based on conditions as specified and save them to the local PC.

As shown in Figure 3-22 **(2) Search Result**:

Move the mouse to the bottom right corner of the search results and click the number 

, it will become the form of an input box  , and then enter the jump page number, click any place other than the input box and wait a moment, the search results will be automatically refreshed to the data on the page as specified.

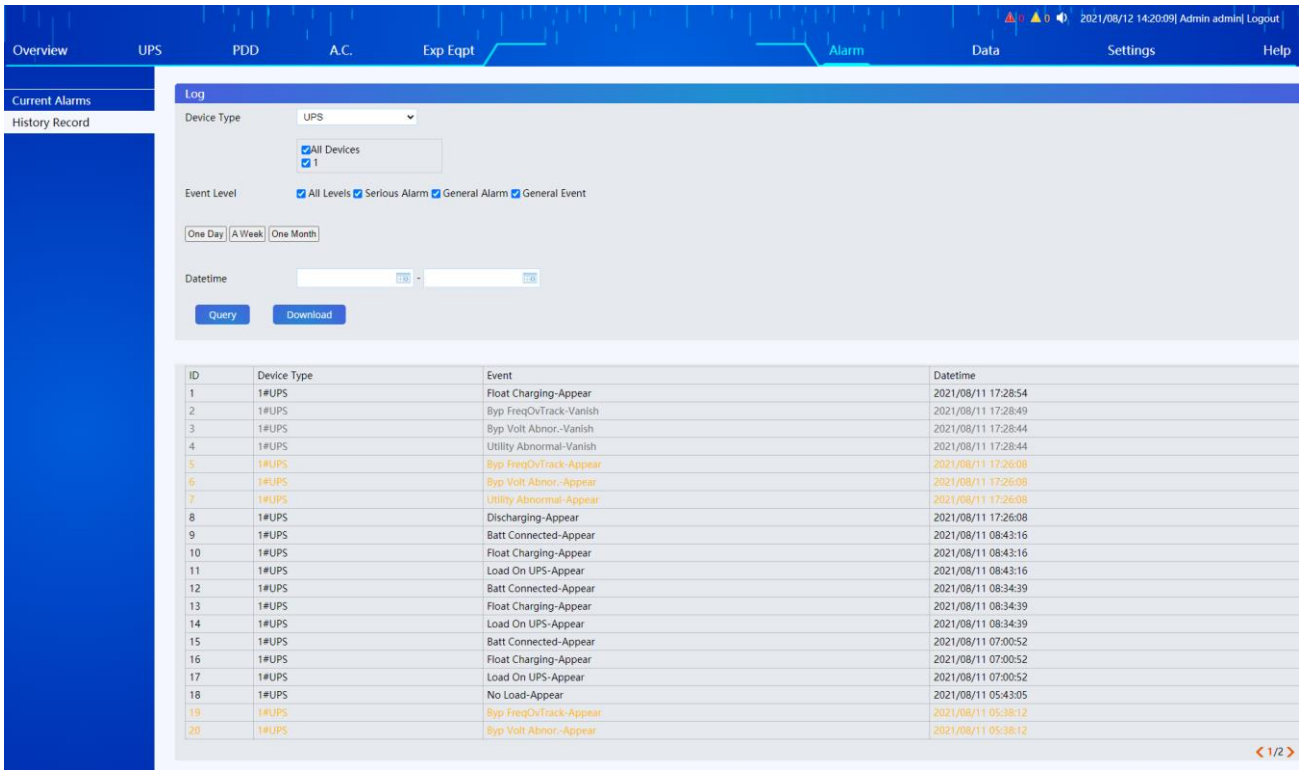


Figure 3-22

2.9 Data management

As shown in Figure 3-23, the data management page displays history data and operation logs of history reports. **(1) Menu bar, (2) Content display**.

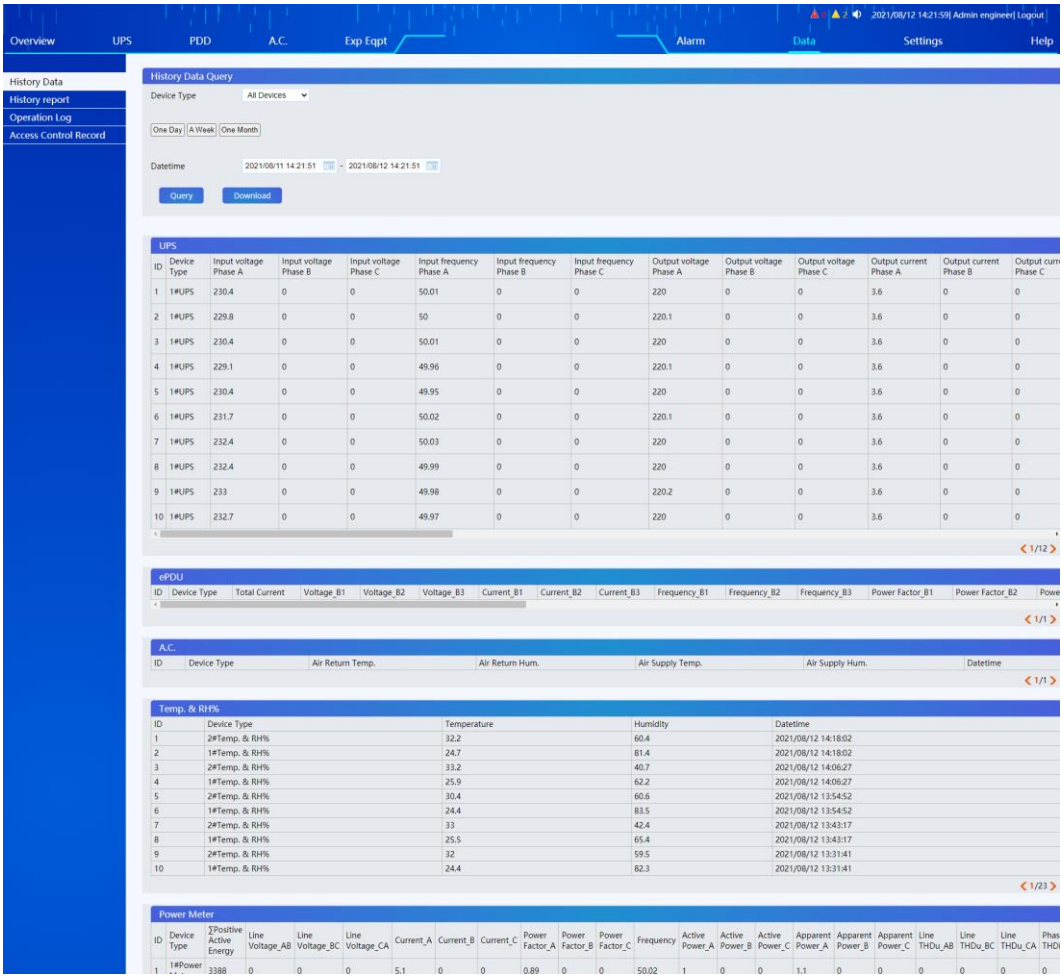


Figure 3-23

2.9.1 History data

As shown in Figure 3-23 **(2) Content display**: On Search for history data page, all devices are selected by default. You can also search for one or more devices of a single type.

Recent day, week, or month: Click it to search for the data from the current date back to the last day, week, or month, which will be displayed by date in descending order.

You must specify the date and time to search from. On search results, move the mouse to the bottom right corner of the search results and click the number  , it will become the form of an input box  , and then enter the jump page number, click any place other than the input box and wait a moment, the search results will be automatically refreshed to the data on the page as specified.

When you download all device data, you can download data in sequence by type or in a short time range to avoid too large files over a long period of time (a large file may make it slow or even fail to open excel file).

2.9.2 History report form

In Figure 3-23 **(1) Menu bar** click History Report to go to the history report page and search for the trend of one or more parameters for a device in a time range, as shown in Figure 3-24.

In Figure 3-24 **(1) Device type**: You can select only one device of a certain type to search for.

Figure 3-24 **(2) Parameter**: You can search for one or more items and generate a trend chart

based on the selected items.

In Figure 3-24 **(3) Trend diagram**: The trend chart is generated based on the number of boxes as checked. Pull the left and right blue cursors  in the area block to zoom and display the data area, or pull the transparent part in the middle of the two cursors to shift to another interval segment and view the data trend in this interval segment. Above each trend chart is a legend that shows or hides a particular curve.

Notes: You must specify the date and time to search from.

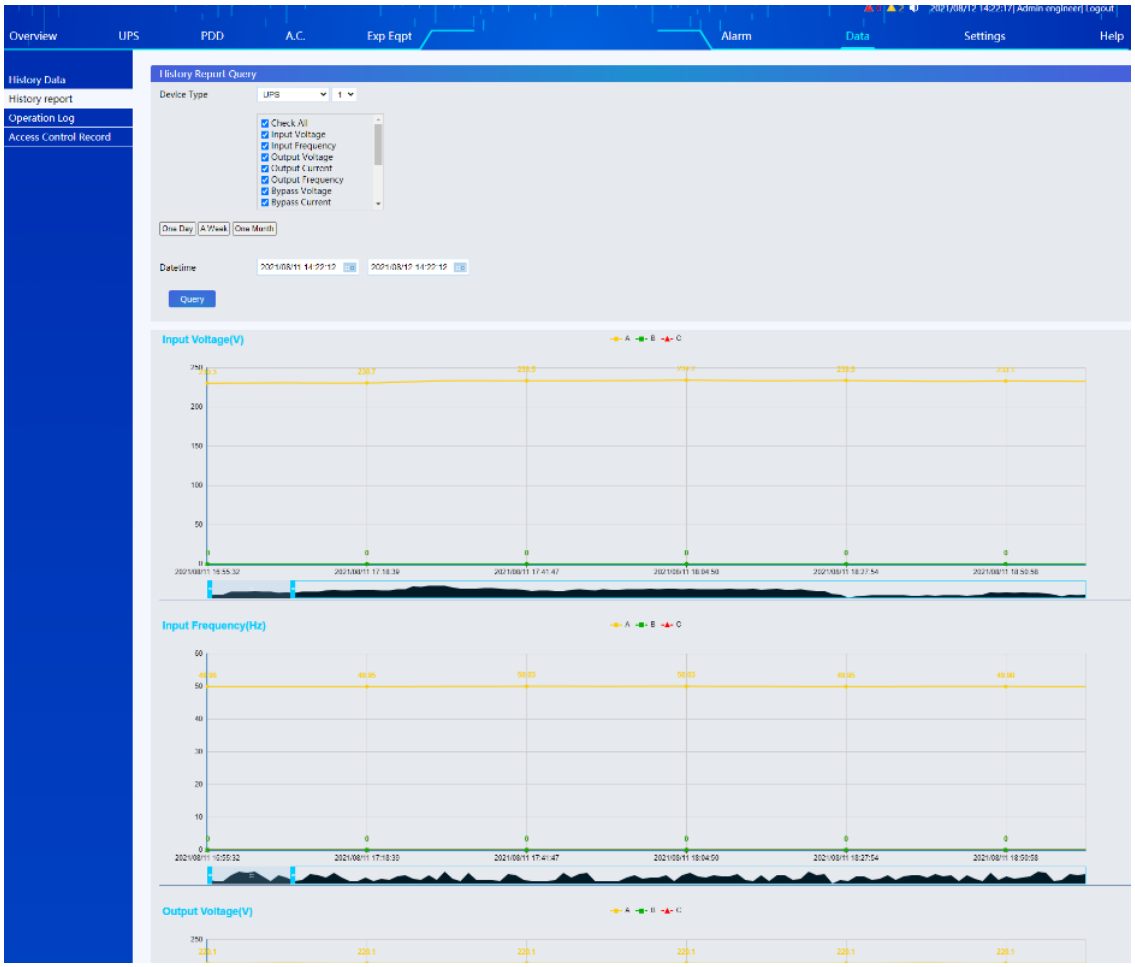


Figure 3-24

2.9.3 Operation logs

From Figure 3-23 **(1) Menu bar**, click **Operation Logs** to enter the operation logs page, as shown in Figure 3-25.

Figure 3-25 **(1) Log Type**: contains 1) control logs and 2) login logs.

1) Control logs: Operations such as UPS control, air conditioner control, and adding or deleting devices will be recorded.

2) Login logs: Record the person that successfully logs in to the system, IP address, and date.

These two types of logs can be downloaded in the form of excel file and saved to local PC.

Notes:Date and time are required.

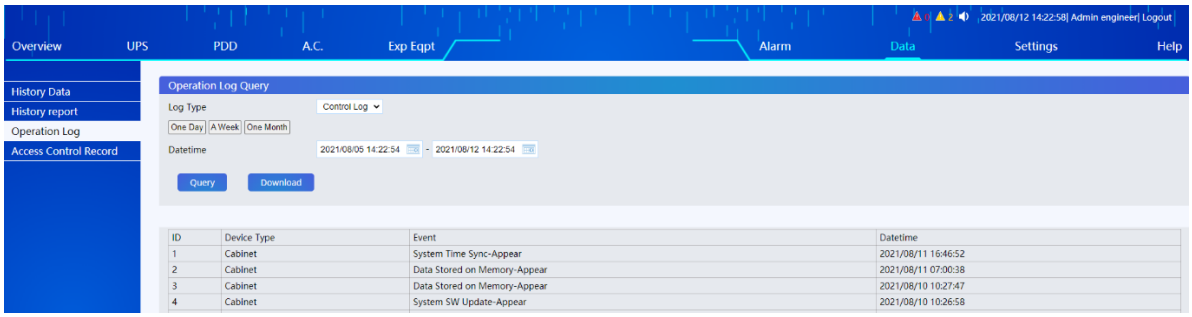
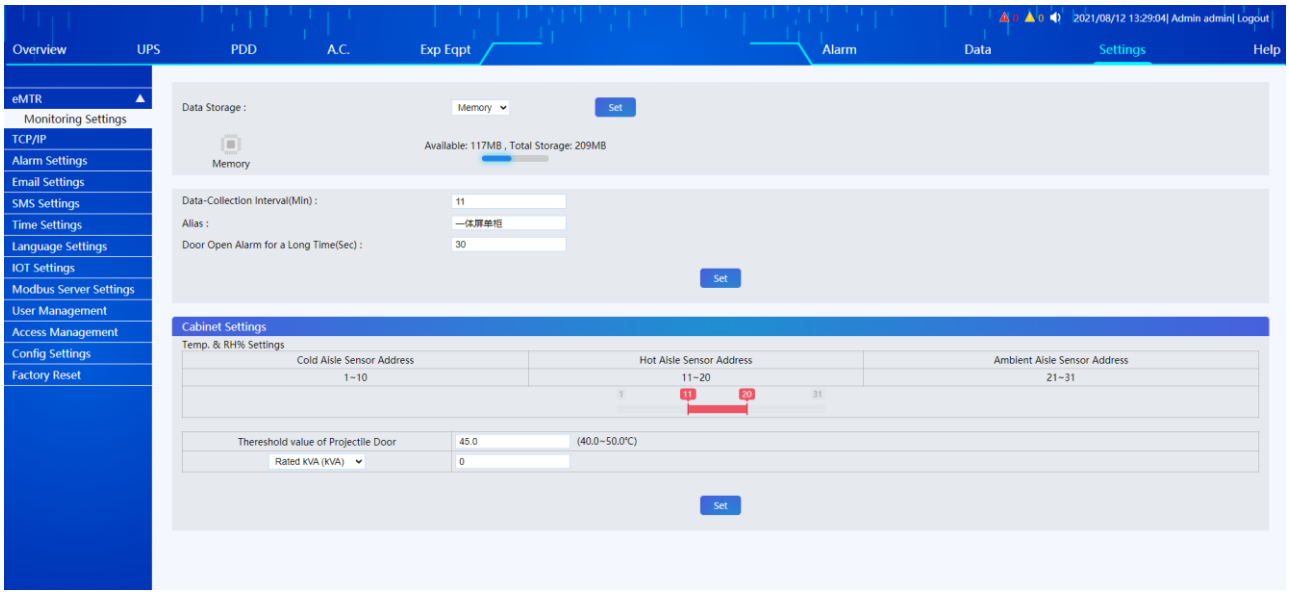


Figure 3-25

2.10 System settings

As shown in Figure 3-26, system settings page includes monitoring system settings, network connection settings, alarm settings, email settings, SMS settings, time calibration, language settings, IoT settings, Modbus server settings, user management, batch configuration, and restoration to factory settings. **(1) menu bar, (2) content display**.

Figure 3-26



2.10.1 Monitoring system Settings

In Figure 3-26 **(2) content display** contains basic settings of the monitoring system, including (3) storage mode, (4) data storage interval and system alias, (5) Modbus range for channels outside hot/cold cabinets, and (6) temperature setting for door open condition.

Figure 3-26 **(3) Storage mode**: The default storage destination is internal storage. When an SD card is inserted, the system will recognize it and displays its storage space at the right side. In this case, storage destination can be set to the SD card. If an SD card fails to be recognized in several seconds, try the following methods:

1) Remove and then re-connect it for several times.

2) Try to connect another SD card.

3) Insert an SD card and restart the monitoring host.

If the fault continues, contact the post-market staff. When the internal storage or external SD card is about to be full, the free space will be displayed in red color and an alarm message will be

given.

Figure 3-26 **(4) Data saving interval and system alias**:

1) Data saving interval: History data are saved at an interval in minute. The default interval is 11 minutes.

2) System alias: When email or short message is sent, alias will be used to facilitate user to determine which monitoring host is faulty so that the alarm is activated.

Figure 3-26 **(5) Modbus range planning**: Move the two cursors to determine the address range boundary between cold and the hot channels (left cursor), and the address range boundary between hot channel and external channel (right cursor). When the cursor is moved, the address range of each channel displayed on the top will change.

If the modbus address of T/H device is set within the modbus range of a channel, it indicates that the device is in the channel and is part of the average temperature or humidity of the channel.

Figure 3-26 **(6) Temperature setting for door open condition**: This setting applies only to the iSmart®and IWit® series. When the average temperature of the cabinet reaches this value, the front and rear doors will automatically open to prevent heat dissipation of the devices in the cabinet due to failure in air conditioner or other reason.

2.10.2 Network connection settings

From Figure 3-26 **(1) Menu bar** , click **Network Connection Settings** to enter the network connection settings page, as shown in Figure 3-27 below.

User can set the IP address and other information based on the environment. If no DNS server is available, you can fill in only one of them. Note that the IP address of the preferred DNS server and the alternate DNS server cannot be the same.

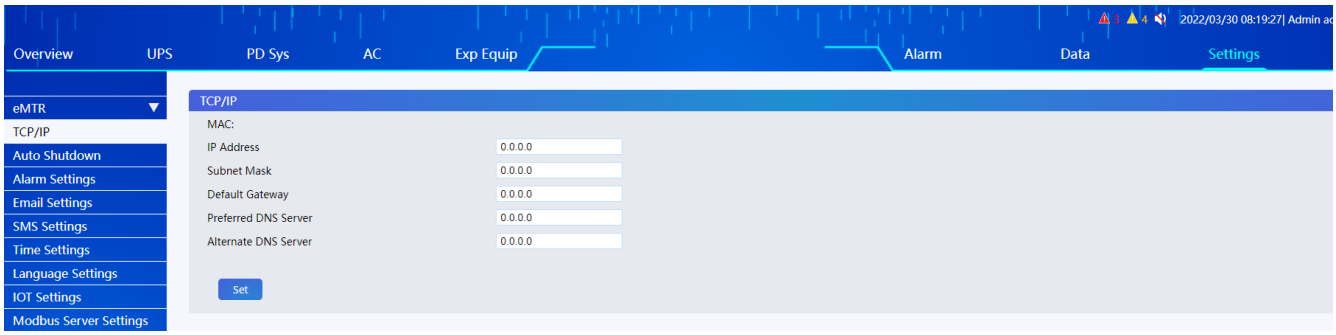


Figure 3-27

2.10.3 Alarm settings

From Figure 3-26 **(1) Menu bar** , click **Alarm Settings** to enter the alarm settings page, where user can set alarm levels and enable audible and visual alarms, as shown in Figure 3-28 below.

Figure 3-28 **(1) Device Type tab**: Switch to set alarm levels for different device types and enable audible and visual alarms.

Figure 3-28 **(2) Shortcut settings**: These settings are used to set the alarm level and audible and visual alarm activation to the same values for all events of this device type.

You can change alarm levels and enable audible and visual alarms only for existing events. After all events are changed, click to set them. You do not need to click to set each type.

After the modification is successful, the event text on the left is automatically changed to the color for related alarm severity.

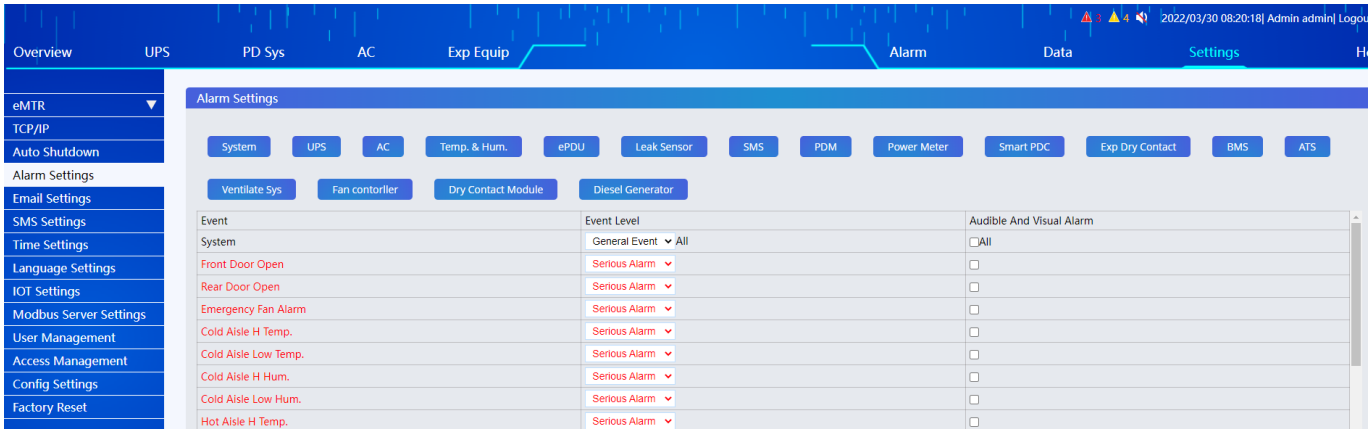


Figure 3-28

2.10.4 Email settings

From Figure 3-26 **(1) Menu bar**, click **Email Settings** to enter the email settings page, as shown in Figure 3-29, where user can set the email server and contact to whom event alarm is sent.

Figure 3-29 **(1) Email server setting**: Contains email server address, port number, sender's email address, user name, password, and testing whether sending is valid.

Fill in the information about the email server. The SSL encrypted communication function is unavailable for the time being.

Figure 3-29 **(2) Test email**:

1) Fill in all information about the email server.

2) Fill in the receiving email address in the input box and click **Send Test Email** button.

3) A message "Sent successfully" appears above the email server address, indicating that the communication between the eMTR host and the email server is normal and the email is sent successfully.

4) Check whether there are emails with the words "EMTR" and "Mail test" in the mailbox that receives the test email. If yes, it indicates that the mailbox server responded to the EMTR email sending request. If there are no emails, check whether Step 3 succeeded; if yes, contact the email server manager to ask whether to intercept the request of sending email.

5) After receiving the test email, click (3) **Settings** as shown in Figure 3-29 to save the email server information.

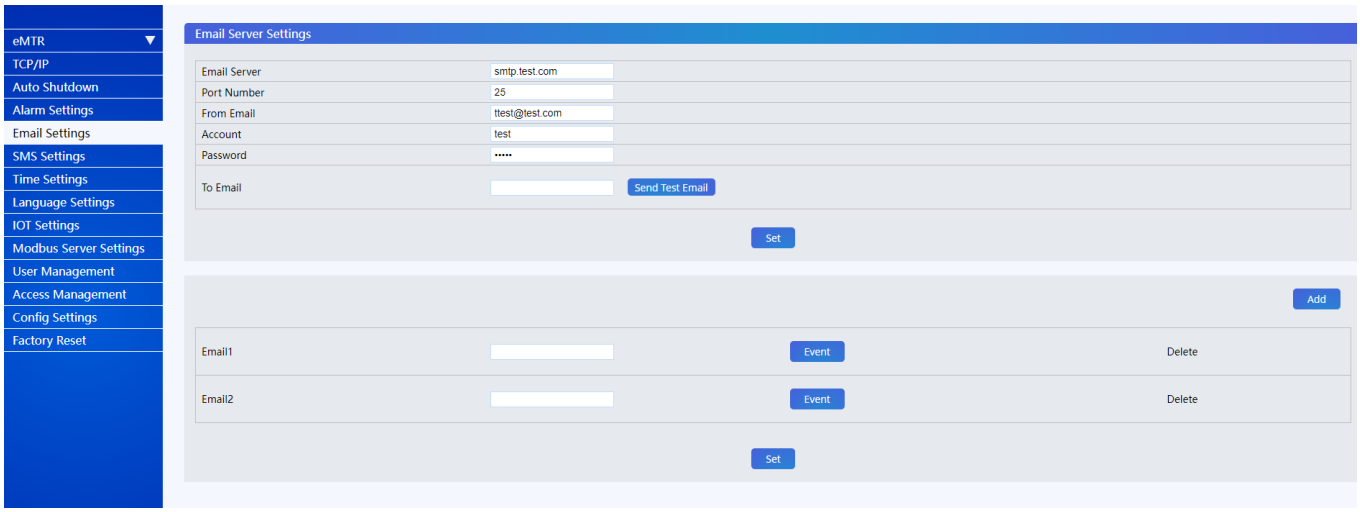


Figure 3-29

As shown in Figure 3-30: When the checked event occurs, an email will be sent to the

recipient.

1) Click "Add" button. Ignore this step if it is unnecessary (a maximum of 20 email addresses can be added).

2) Enter the recipient's email address.

3) Click "Event" on the right of the recipient in Step 2).

4) Select the events that need to trigger email sending, and click the "X" in the upper right corner to close the box.

Figure 3-30 **(1) All types of devices**: Switch the events of different types of devices.

Figure 3-30 **(2) Select All/Clear button**: This button is used to select or clear all events for all types of devices.

Figure 3-30 **(3) Check box**: Check box is used to check or uncheck all events of the current device type.

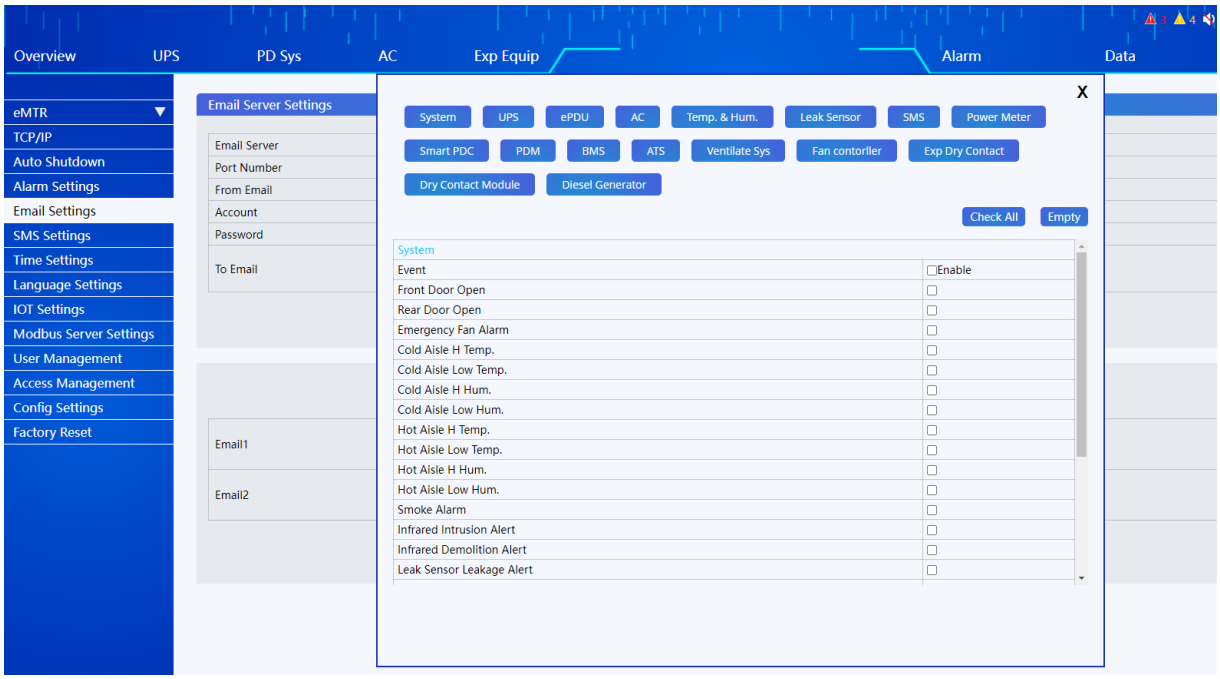


Figure 3-30

Notes: As shown in Figure 3-31 ①, you need to click ② "Settings" to save the operations such as modifying the email address, adding the event mailbox, deleting the event mailbox or modifying the event check box. Otherwise, the background will continue to send emails according to the previous settings.

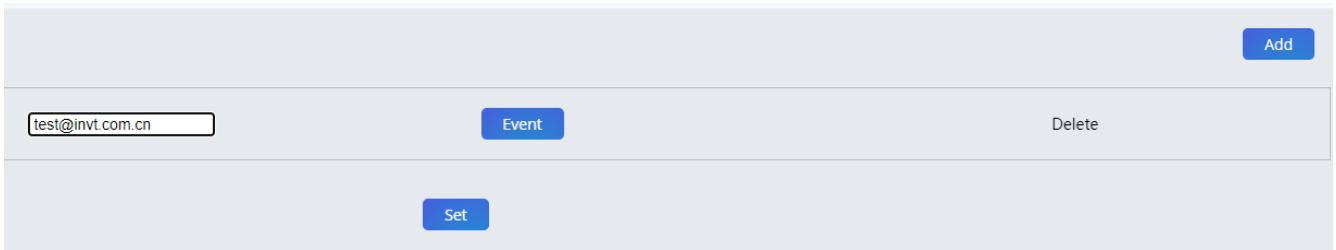


Figure 3-31

2.10.5 SMS settings

From Figure 3-26 **(1) Menu bar**, click **SMS Settings** to enter the SMS settings page, as shown in Figure 3-32.

Function usage and event selection in SMS Settings are consistent with the events in Email Settings (up to 20 contacts are supported).

Enter the mobile phone number, as shown in Figure 3-32 **(1)**.

As shown in Figure 3-32 **(2)**, check "Notification by Call" if necessary.

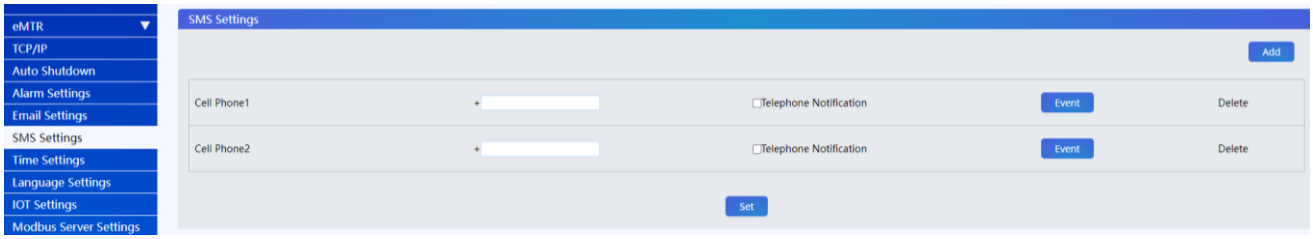


Figure 3-32

As shown in Figure 3-33, add an event to the administrator's mobile phone number. It is notable that only an event is added to trigger an SMS alarm or a voice message.

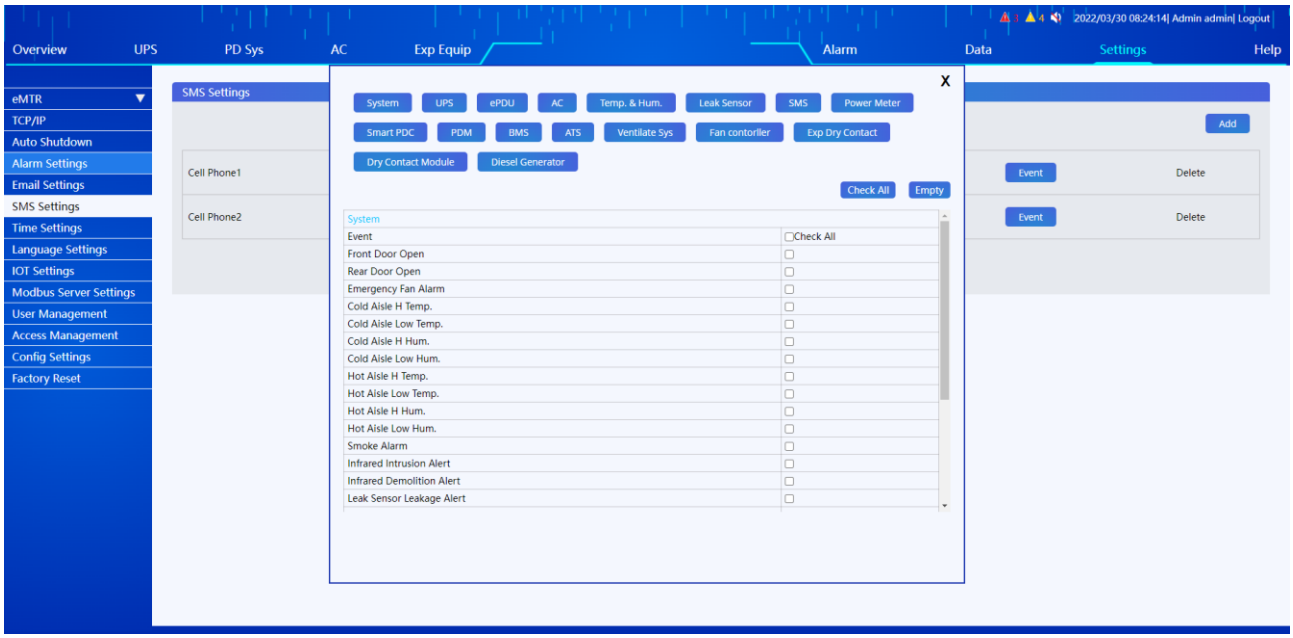


Figure 3-33

2.10.6 Date/time synchronization

From Figure 3-26 **(1) Menu bar**, click "Time synchronization" to enter the time synchronization page, which contains two parts: **(1)** Automatically synchronize time and **(2)** Current date and time, as shown in Figure 3-34.

Figure 3-34 **(1) Automatically synchronize time**:

Automatic synchronization cycle: Time synchronization is disabled by default. The system automatically synchronizes time with the time server every 12 hours, as shown in the following figure. You can set the synchronization cycle as required.

Time server: Select an accessible time server address. If you select a server address in the domain name format, note that the DNS address must be set in Network connection settings; otherwise, the connection will fail. The system provides several main time server addresses by default. To add your own time server address, click Modify in Figure 3-35 **(3)** and add or delete a time server address in the dialog box that is displayed, as shown in Figure 3-35.

After setting, words "Please wait a moment while synchronizing with the time server..." is displayed on the title bar.

After synchronization succeeds, words "synchronized with the time server successfully" is displayed on the title bar.

If synchronization fails, words "synchronized with the time server unsuccessfully" is displayed

on the title bar.

Figure 3-34 **(2) Current date and time**:

(4) Set value The input box displays the local time, which can be changed manually. After changing, click "Update immediately" next to the input box, and the date and time in the input box will be updated.

(5) Synchronize the local date and time: Local date and time will be synchronized and updated immediately when this button is clicked.

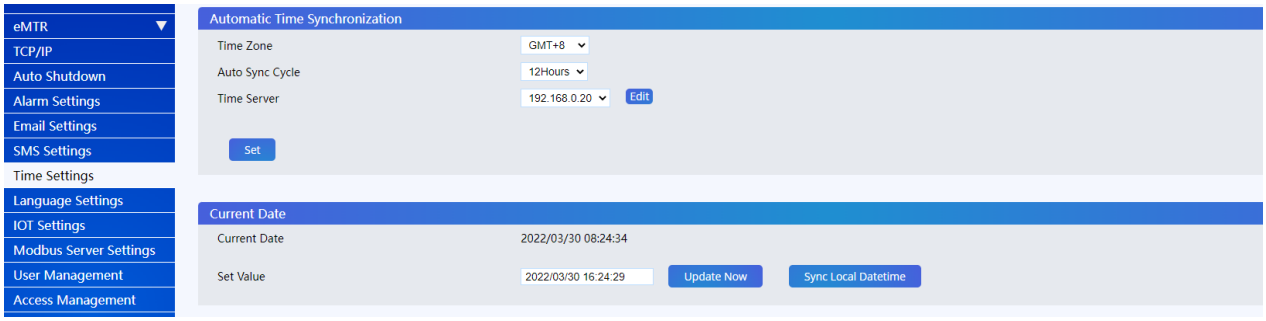


Figure 3-34

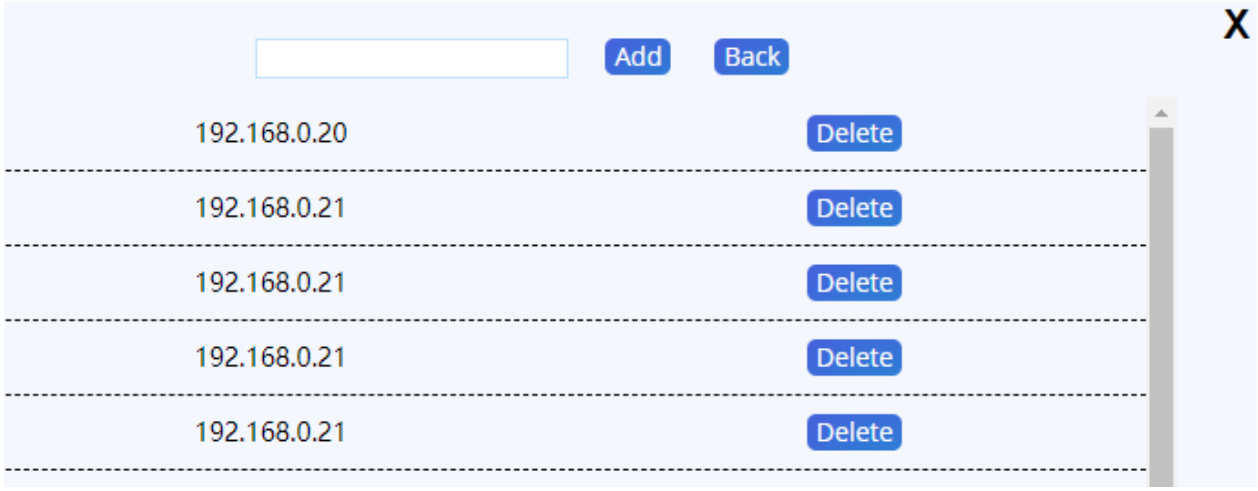


Figure 3-35

2.10.7 Language settings

From Figure 3-26 **(1) Menu bar**, click "Language Settings" to enter the language settings page, which contains two parts: **(1)** Web page language setting and **(2)** Content language setting, as shown in Figure 3-36.

Figure 3-36 **(1) Web page language setting**: Web page language can be specified respectively for each computer without interference with each other. Currently only Chinese and English languages are available.

Figure 3-36 **(2) Content language setting**: This setting is universal, and after setting, all contents sent to any recipient will be displayed in the same language. Currently only Chinese and English languages are available.

Figure 3-36

2.10.8 IoT settings

From Figure 3-26 **(1) Menu bar**, click "IoT Settings" to enter the IoT Settings page, which contains two parts: **(1)** Enable IoT and **(2)** Set IoT server, as shown in Figure 3-37.

IoT Settings relates to northbound interface, using MQTT protocol.

Figure 3-37 **(1) Enable IoT**: After choosing an IoT server, select the enable switch and click "Setting" button.

Figure 3-37**(2) IoT server Settings**: User can add, modify, or delete configuration items of IoT server, including IoT server name (English only), IP address, port number, user name, and password.

If the IP address of the IoT server is based on an extranet, check whether the network where the ePAD host resides supports access to the extranet.

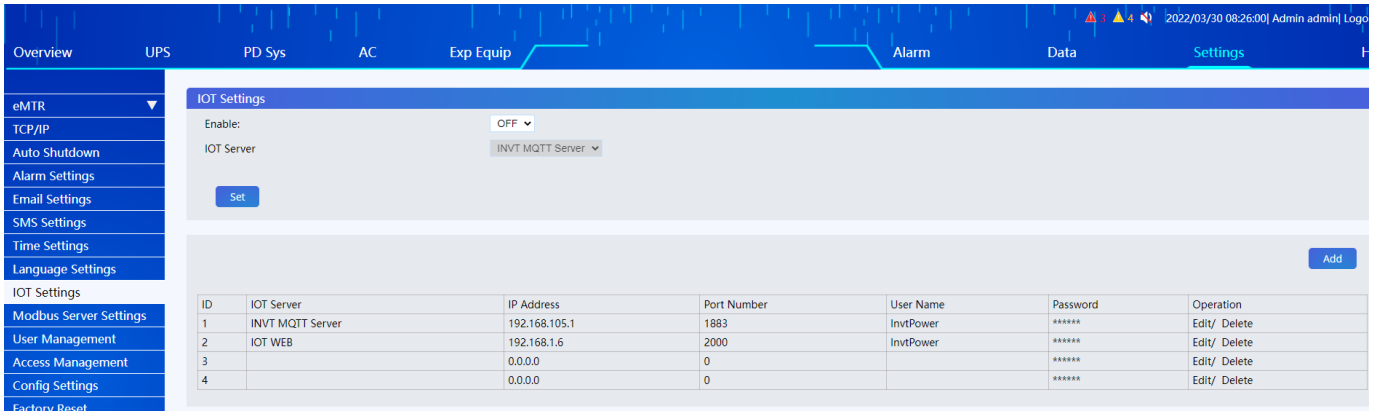


Figure 3-37

2.10.9 Modbus server settings

From Figure 3-26 **(1) Menu bar**, click **Modbus Server Settings** to ener Modbus server settings page, as shown in Figure 3-38.

In addition to MQTT northbound interface for IoT, this system also supports modbus TCP/IP protocol. The area in the red box in Figure 3-38 indicates the content required for Modbus TCP/IP:

1) Modbus address, ranging 1 to 254.

2) Network port (the default value is 502), can be changed to other values according to the actual receiver port.

Use the default values for the other two options.

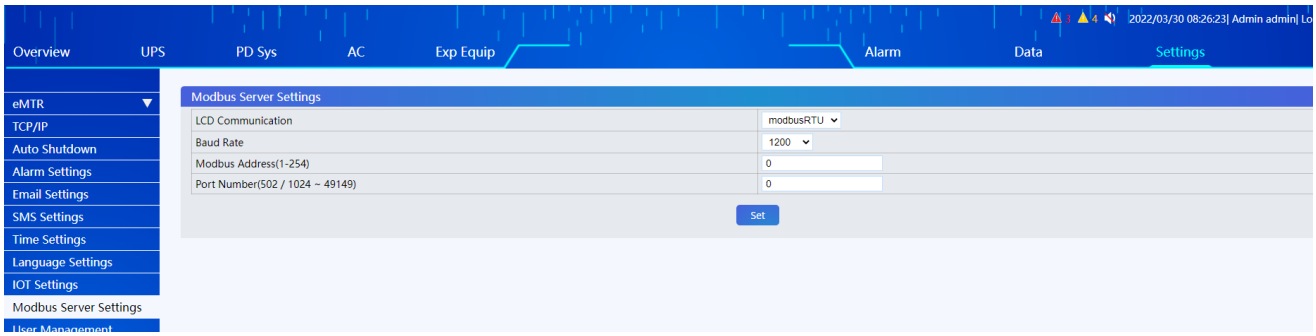


Figure 3-38

2.10.10 User management

From Figure 3-26 **(1) Menu bar**, click **User Management** to enter the user management page, as shown in Figure 3-39.

Figure 3-39 **(3) User list**: You can modify or delete any user currently existing in the system.

Figure 3-39 **(1) Add user**: Add a new user and grant administrator or user permissions to it. The permission of a new administrator is lower than that of the administrator "admin".

Permissions List 3-1

	System Overview		UPS		Power distribution data		Air conditioner		Extended device		Alarm management	Data management
Function	Access control and camera access	Access control and camera management	Display	Setting and control	Display	Setting and control	Display	Setting and control	Display	Setting and control	Query and download	Query and download
admin	√	√	√	√	√	√	√	√	√	√	√	√
General administrator	√	√	√	√	√	√	√	√	√	√	√	√
User	√	×	√	×	√	×	√	×	√	×	√	√

Table 2-1

Permissions List 3-2

	Monitoring system Settings	Network connection settings	Alarm settings	Email settings	SMS settings	Date/time synchronization	IoT settings	Modbus server settings	User management	Batch configuration	Restoring factory settings
Function	Display and setting	Display and setting	Display and setting	Display and setting	Display and setting	Display and setting	Display and setting	Display and setting	Display and setting	Display and setting	Display and setting
admin	√	√	√	√	√	√	√	√	√	√	√

General administrator	√	√	√	√	√	√	×	×	×	×	×
User	×	×	×	×	×	×	×	×	×	×	×

Table 2-2

	Help information	System upgrade
Function	Display	Display and operations
admin	√	√
General administrator	√	×
User	√	×

Table 2-3

Figure 3-39 **(2) Delete user**: These two options need to be used together. First check a or more users to delete, and then click "Delete User" button, and a prompt box will pop up to confirm your deletion to prevent misoperation.

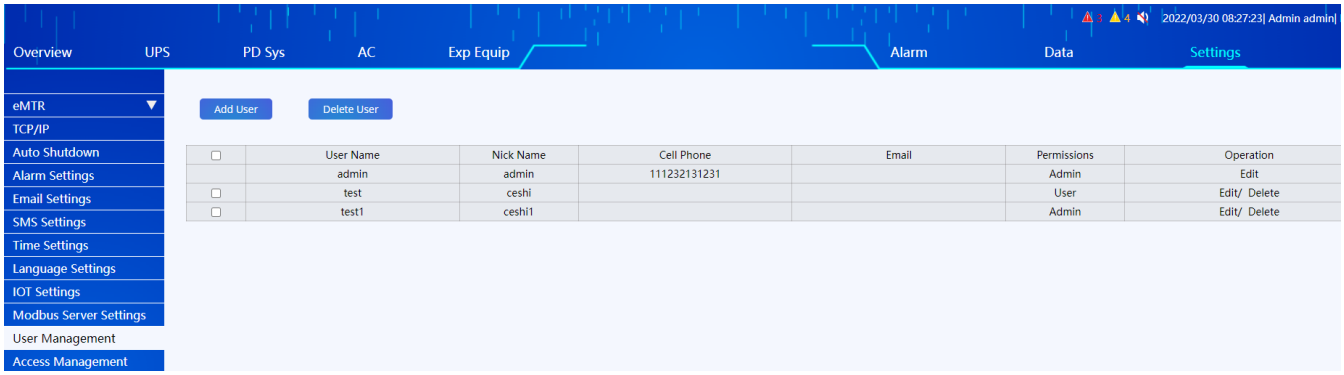


Figure 3-39

2.10.11 Batch settings

From figure 3-26 **(1) Menu bar**, click "Batch Configuration" to enter the batch configuration page, which contains two parts: **(1)** Upload configuration and **(2)** Download configuration, so that a number of ePAD system configurations will be synchronized, as shown in Figure 3-40.

This configuration only includes the system settings, but excludes the settings of email events, alarms, and contacts for and SMS. After completing configuration on one ePAD monitoring host, click **Download** as shown in Figure 3-40 (2) to download the configuration file (xxx.Cfg), and then click **Choose file** as shown in Figure 3-40 (1) to choose the file previously downloaded (xxx.Cfg), and click "Upload" as shown in Figure 3-40 **(1)**. A progress bar appears below the button and shows the upload progress.

Notes: In case that no response is made when clicking on Choose file in IE9 or lower edition or 360 Browser, download Adobe Flash Player plugin and install it, and then refresh the page.

Figure 3-40

2.10.12 Restore factory settings

From Figure 3-26 **(1) Menu bar**, click Restore Factory Settings to enter the factory setting restoration page, as shown in Figure 3-41.

Figure 3-41 **(1) Clear history records**: All historical records will be cleared and a log about clear-up of history records will be recorded in operation logs.

Figure 3-41 **(2) Clear history data**: All history data is cleared and a log about clear-up of history data is recorded in the operation logs.

Figure 3-41 **(3) License code**: A license code for products customized for customers is provided.

Figure 3-41

2.11 Help information

As shown in Figure 3-42, the help page contains the information on help and system upgrade. **(1) menu bar, (2) content display**.

Figure 3-42

2.11.1 Help information

Figure 3-42 **(2) Content display**: Contains information on system model and software version

numbers.

2.11.2 System upgrade

From Figure 3-42 **(1) Menu bar**, click **System Upgrade** to enter system upgrade page, as shown in Figure 3-43.

Figure 3-43 **(1) Choose file**: Click it to choose the file (xx.bin) provided by the post-market staff, and confirm it.

Figure 3-43 **(2) Upload**: After completing the above steps, click the button, and a progress bar will appear below the button, showing the upload progress.

Notes: In case that no response is made when clicking on Choose file in IE9 or lower edition or 360 Browser, download Adobe Flash Player plugin and install it, and then refresh the page.

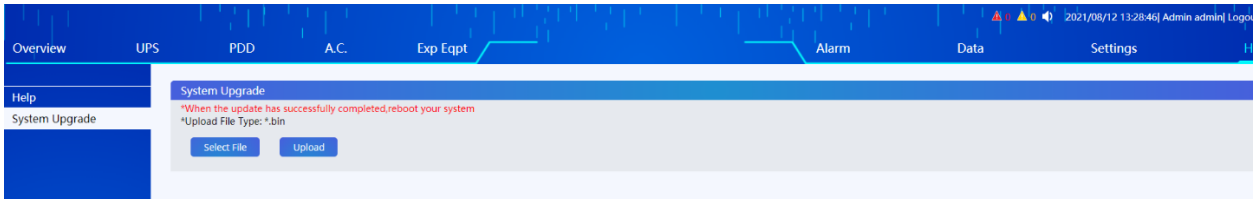
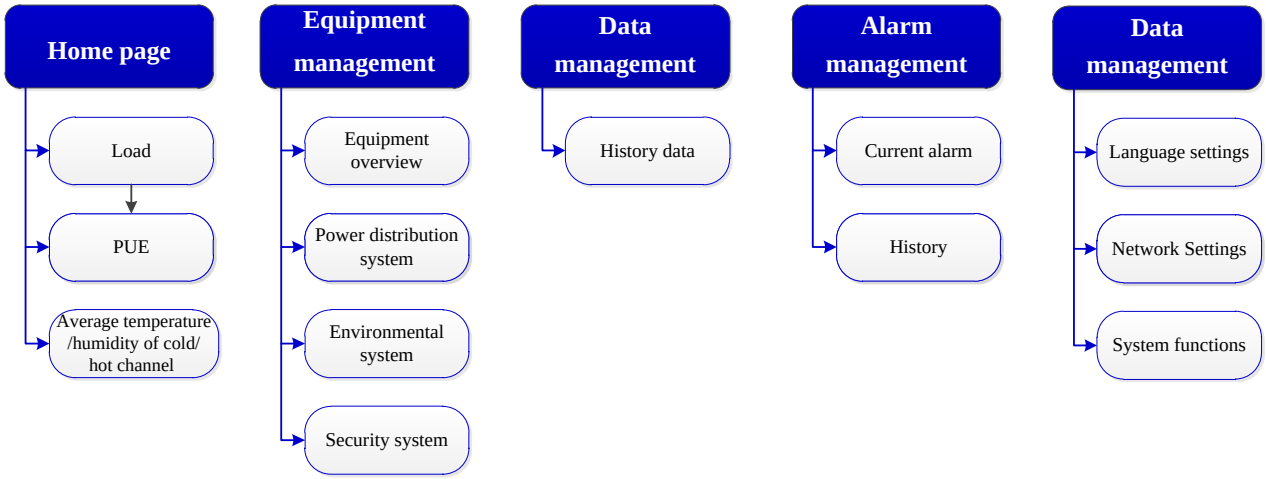


Figure 3-43

3 LCD Interface Description

3.1 Menu Structure on Intelligent Monitoring Screen



3.2 Intelligent Monitoring Screen Function Table

Level 1 menu	Level 2 menu	Function	Remark
Home page	-	● Displays single cabinet model diagram. ● Displays the current PUE value of the system. ● Displays current system load. ● Displays temperature and humidity of the current cold and hot channels. ● Displays the current event and alarm information.	The toolbar in the upper right corner of the screen contains: (1) Current time. (2) Scrolling alarm list.The scrolling list displays each alarm message in current alarm list repeatedly. When a new alarm occurs, the latest alarm message will be displayed. (3) Sound ON/OFF button. When an alarm event occurs, audible alarm will be activated, and user can use this button to mute it. (4) Login/logout button.
Equipment management	Equipment overview	● Display the connection and operation of each device in real time.	If a device is successfully connected and no alarm is activated, the device icon is in green color. When an alarm is activated for a device, the device icon is blinking in red color. If a device is not connected properly, the device icon is in gray color.
	Power distribution	● Monitor the status and operating	The data are refreshed at an interval of 3s by default.

	system	parameters of power distribution system equipment such as UPS and electricity meter in real time. Manages device control functions.	
	Environmental system	● Monitor status and operation parameters of air conditioning, temperature and humidity, water sensor and other environmental system equipment in real time. Manages device control functions.	
	Security system		
Data management	History data	● Search for history data of the device.	All devices are selected by default. You can also search for one or more devices of a single type.
	History report form	● View the trend chart of one or more parameters of a device within a time range.	
Alarm management	Current alarm	● Display all current events and alarm information in the system.	(1) Minor alarm:If this option is chosen, all minor alarms will be selected from current alarms. This alarm severity mainly indicates the faults that cannot be handled immediately. (2) Major alarm:If this TAB is chosen, all major alarms will be selected from current alarms. This alarm severity level indicates the fault that needs to be handled immediately.
	History	● Search for history alarm records in the system.	-
	Operation logs	● Search system operation logs, including control logs	(1) Control logs:Operations such as UPS control, air conditioner control, and adding or deleting

		and login logs.	devices will be recorded. (2) Login logs:Record the person that successfully logs in to the system, IP address, and date. These two types of logs can be downloaded in the form of excel file and saved to local PC.
System settings	Language settings	● Basic settings for monitoring system, such as the storage mode and data saving interval.	
	Network Settings	● Set IP address based on the operating environment.	If no DNS server is available, you can fill in only one of them. Note that the IP address of the preferred DNS server and the alternate DNS server cannot be the same.
	System functions	● Perform basic settings of the monitoring system, such as screen-aver and logout of current user. Display information on internal storage.	

3.3 Home page

3.3.1 Login on LCD

The standard system configuration contains a 10-inch color touch LCD, which is used to monitor and set each device in the system.

When logging in to the system for initial time, an authentication interface will appear, as shown in Figure 4-1. The IDcode displayed in screen shall be sent to our Customer Service so that a login password will be sent to the customer.

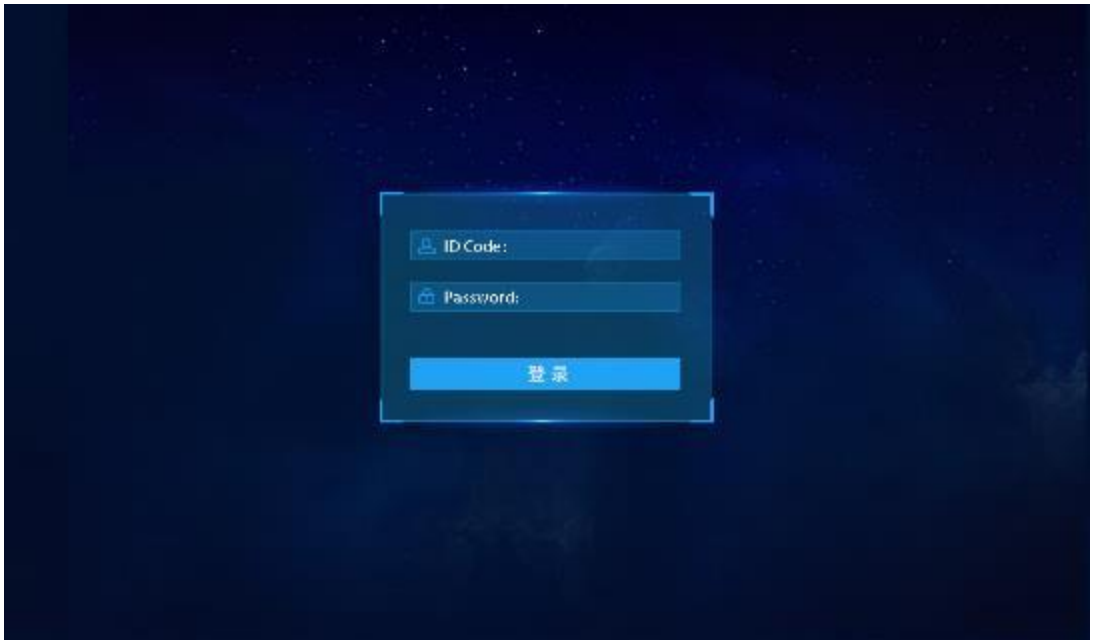


Figure 3-1 Authentication Page for Initial Login on LCD

Upon initial login to the system, the user will be granted user permissions by default, so user cannot perform any settings except display language setting and accessing page content and data.

The system functions page is displayed under System Settings, as shown in Figure 4-2. Click Not **Login** button under **Login Information** and enter user name and password in the pop-up login dialog box. The default user name and password for administrator account are "admin" and "123456" respectively. The administrator has permission to set device parameters and system parameters.

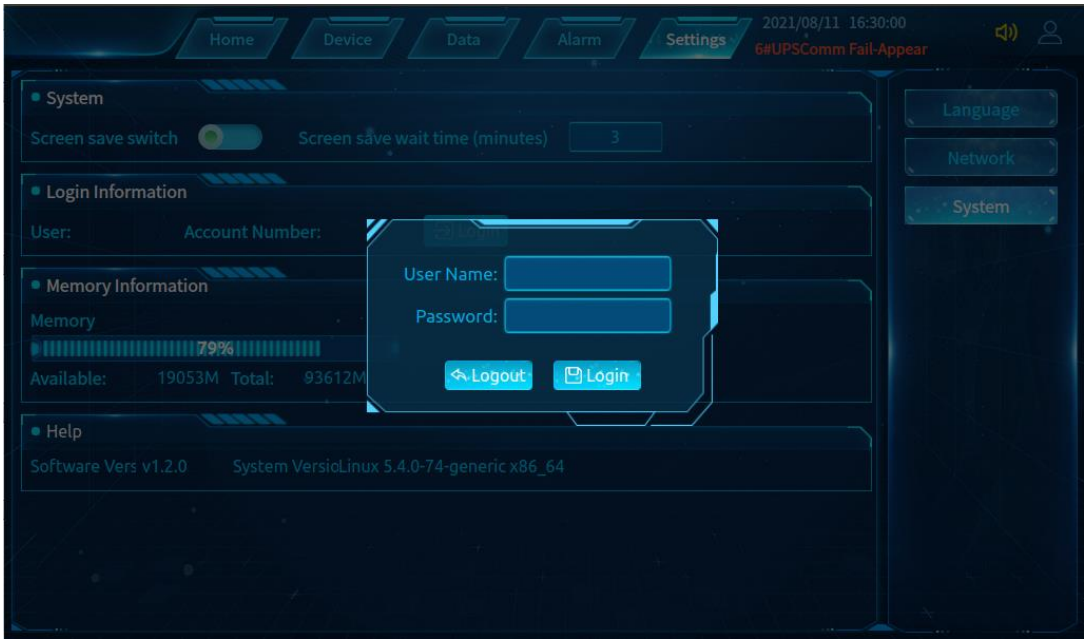


Figure 3-2Login Page on LCD

3.3.2 Home page

The home page on LCD displays logo, Mute button and system date/time at the header.

The home page contains system PUE, load, temperature and humidity of cold and hot channels, and cabinet diagram. When an alarm is activated indicating that front or rear door is open, the cabinet diagram will change accordingly.

At the bottom of the home page is the menu bar. Click the menu to enter other pages.

Figure 3-3 Home Page

3.3.3 Door Open Pop-Up

A Door Open pop-up will open when a worker open cabinet door by using card, fingerprint, or password on the access control device. Press related button on the pop-up to open the associated door.

Notes: Before opening the door by using card, user must add an access control card on the access control machine and the web page (for details, see 3.3.2 Access Control Management); otherwise, a message "invalid card" will be displayed on the pop-up window.

In case that the communication between intelligent monitoring screen and single-cabinet control module is faulty, all doors will be opened by swiping a card on the access control device.

Figure 3-4Door Open Pop-Up on Home page

3.4 Equipment management

3.4.1 Equipment overview

On the menu bar at the bottom of the screen, click **Device Management** to enter device overview page, as shown in Figure 4-6. On this page, you can view the status of each device in the system. Icons are displayed in green color indicating normal status, or in red color indicating an alarm, or in gray color indicating disconnection.

On the device details page (Figure 4-3 UPS Device Details Page), you can click each device button to view operating parameters and device information of the current device and perform related settings.

Figure 3-5 Equipment Overview

3.4.2 Power distribution system

You can view devices such as UPS and electricity meter on the power distribution system page.

UPS device details page

On the UPS page, you can view the operating status and device information, and perform related settings of the current UPS.

Figure 3-6UPS Device Details Page

Click **Device Information** to view the current UPS information and operating parameters.

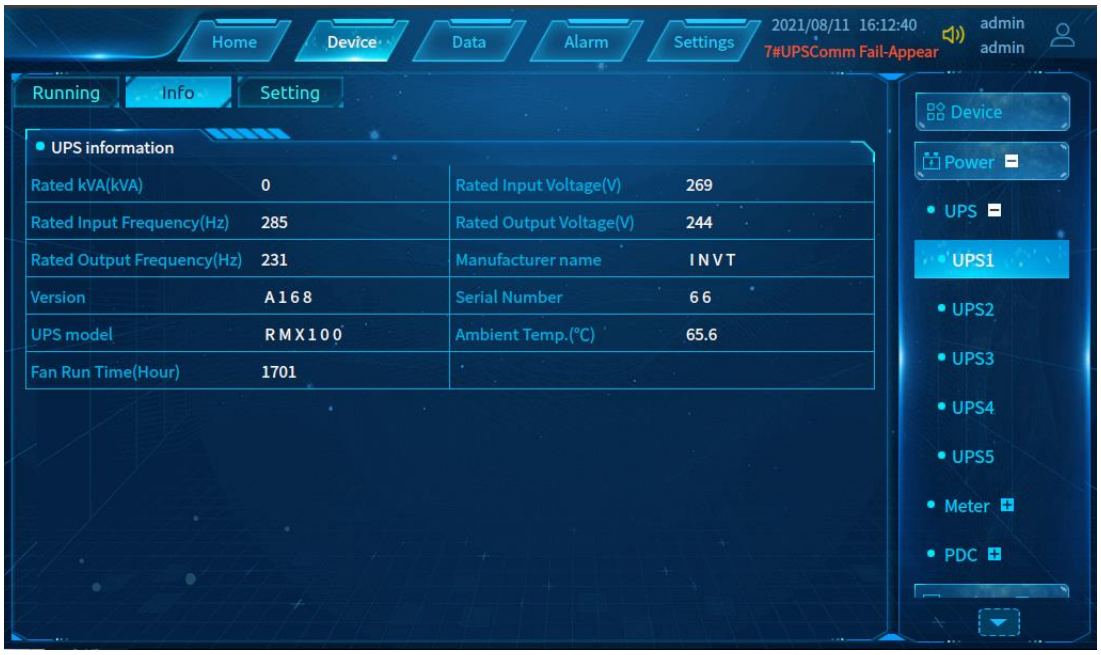


Figure 3-7UPS Device Information

Click **Parameter Setting** to remotely control the current UPS.

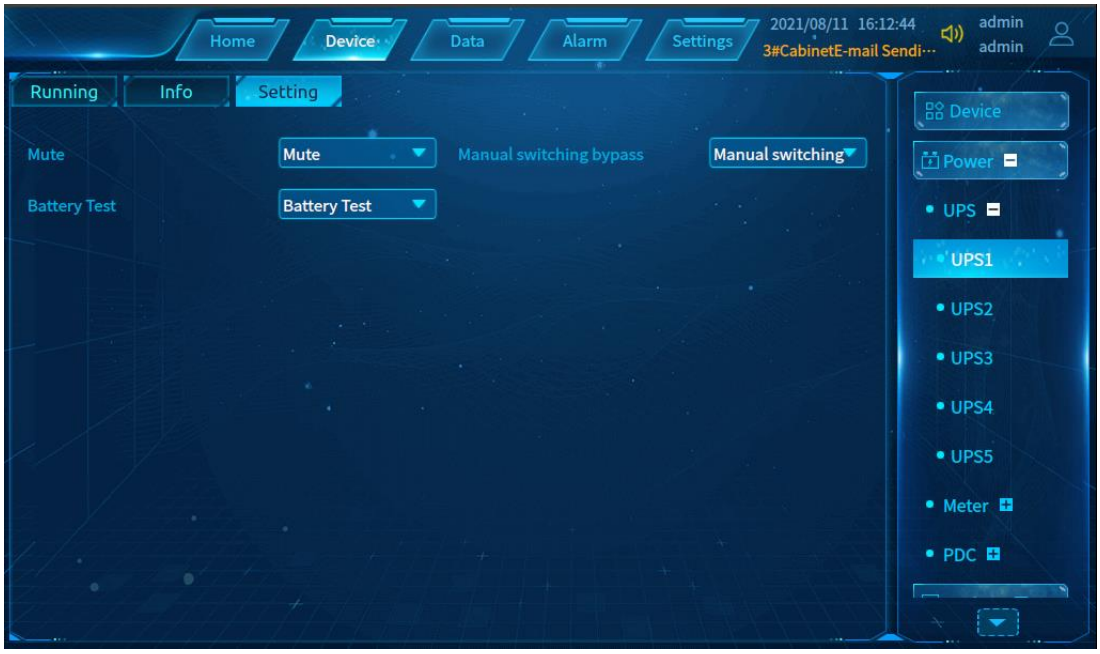


Figure 3-8UPS Parameter Setting

Electricity meter device details page

On the electricity meter page, you can view the operating parameters of the current electricity meter.

Figure 3-9 Electricity Meter Device Information

3.4.3 Environmental system

On the environment system page, you can view operation of air conditioner, T/H device and water sensor.

Air conditioning equipment details page

On the air conditioner page, you can view the operating status and device information, and perform parameter settings of the current air conditioner.

Figure 3-10 Air Conditioning Equipment Details Page

Click **Device Information** to view the operating parameters of the current air conditioner.

Figure 3-11 Air Conditioning Equipment Information

Click **Parameter Setting** to remotely switch on and off the current air conditioner and set parameters of the air conditioner.

Figure 3-12 Air Conditioning Parameter Setting

Temperature and humidity device details page

On the T/H page, you can view the operating status of the current temperature and humidity device and set temperature and humidity parameters.

Figure 3-13 Temperature and Humidity Device Details Page

Click **Parameter Setting** to set the current temperature and humidity limit values.

Figure 3-14 Setting Temperature and Humidity Parameters

Water sensor device details page

On the water sensor page, you can view the operating status of the current water sensor and set related parameters.

Figure 3-15 Water Sensor Details Page

Click **Parameter Setting** to set the parameters of the current water sensor.

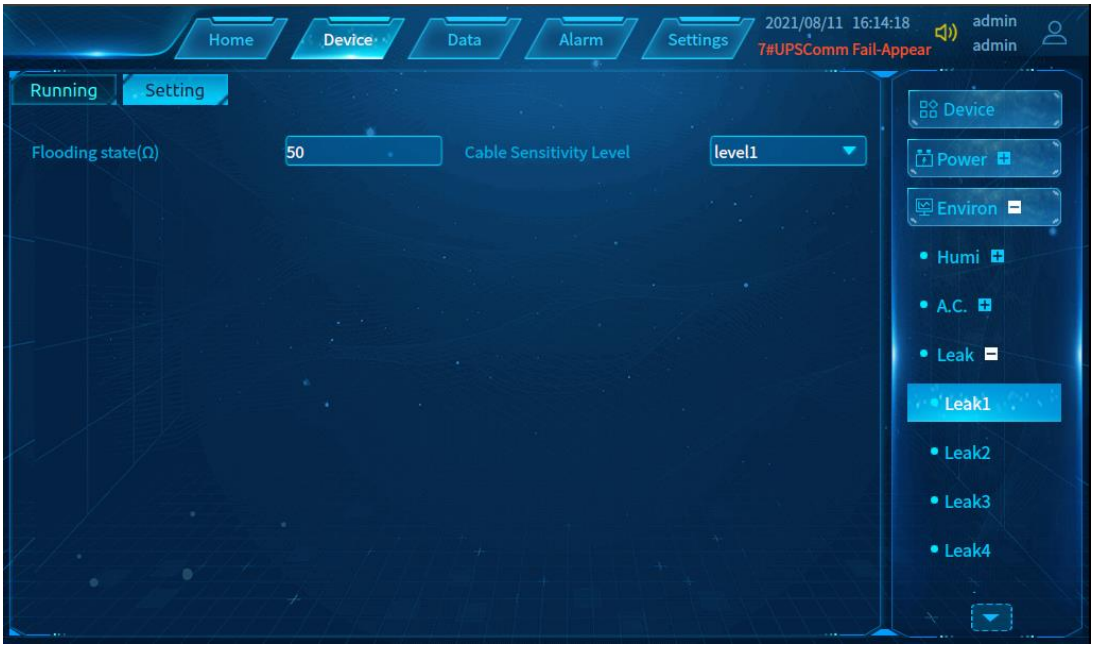


Figure 3-16 Water Sensor Parameter Settings

3.4.4 Security system

SMS alarm device details page

On the SMS alarm page, you can view the operation status and signal strength of the current SMS alarm.

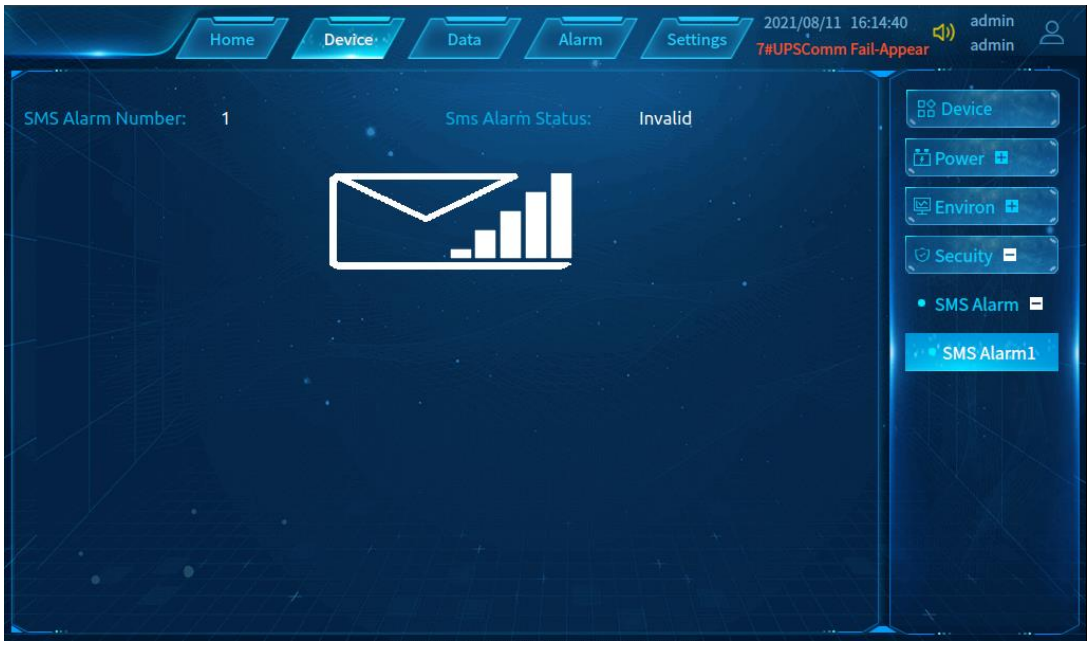


Figure 3-17 SMS Alarm Device Details Page

3.5 Data management

On this page, you can view the history data records in the system.

All devices are selected by default. You can also search for one or more devices of a single type.

Recent day, week, or month:Click it to search for the data from the current date back to the last day, week, or month, which will be displayed by date in descending order.

You must specify the date and time to search from。

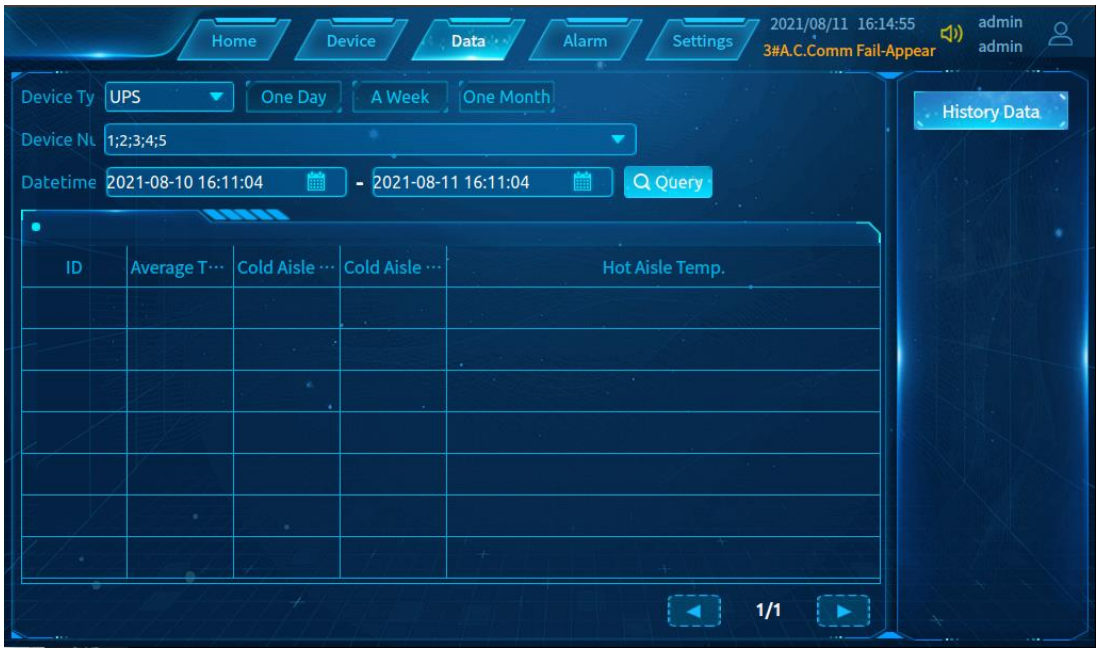


Figure 3-18 History Data

3.6 Alarm Management

Alarm management includes current active alarms and history records.

3.6.1 Current alarm

On the Current Alarm page, you can view all current alarms in the system. By default, all alarms are selected. You can switch to minor alarms or major alarms.

Figure 3-19 Current Alarms

3.6.2 History records

On the History Records page, you can view the history alarm records of all devices or selected devices within a specified time range. All devices are selected by default. You can also search for one or more devices of a single type.

Recent day, week, or month:Click it to search for the data from the current date back to the last day, week, or month, which will be displayed by date in descending order.

You must specify the date and time to search from。

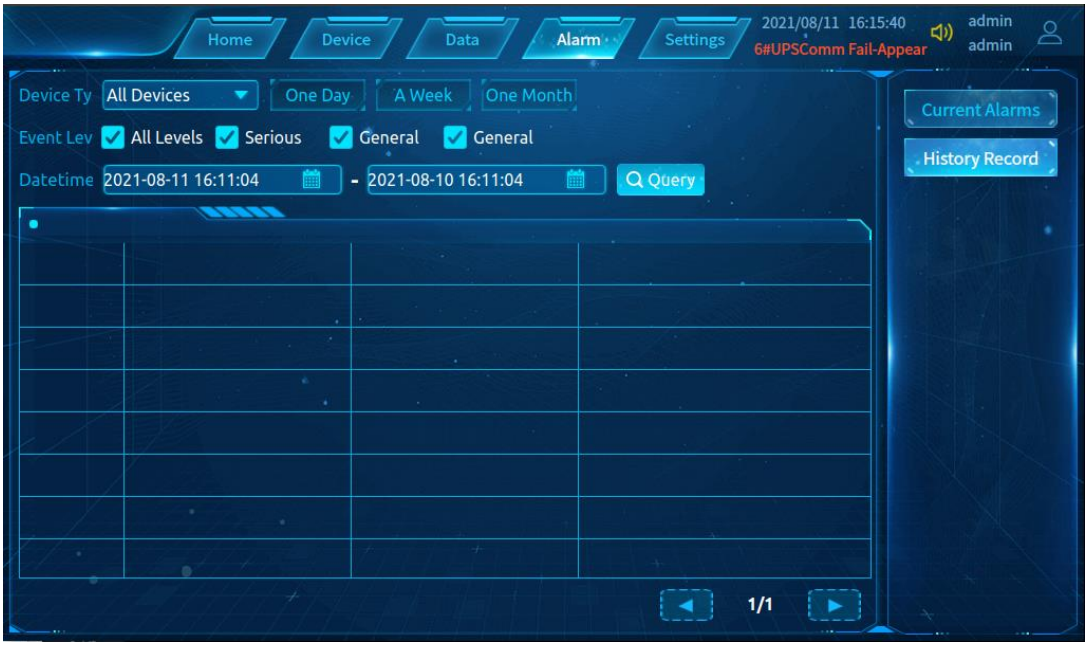


Figure 3-20 History Records

3.7 System settings

This page contains language settings, network settings, and system function setting. You can set system functions and view system data and information.

3.7.1 Language settings

Language setting contains Chinese and English languages. You can set the interface language to Chinese or English.

Figure 3-21 Language Settings

3.7.2 Network settings

In network settings, you can set IP address, subnet mask, default gateway, and DNS server for the power environment monitoring module.User can set the IP address and other information based on the environment.If no DNS server is available, you can fill in only one of these options.

Figure 3-22 Network Settings

3.7.3 System functions

The system functions consist of four modules.

1) Screen saver

You can enable/disable the screen saver and set the screen saver waiting time (in minute).

2) Login function

Display information about the current user: 1. User name (account number); 2. Permissions (administrator and user permissions).

You can log in/log out in this function module.

3) System storage overview

The free capacity/total capacity of the system storage is displayed.

4) System information

System model and software version numbers are displayed.

Figure 3-23 System Functions

4 Mobile phone APP overview

Run APP

On Cloud Settings page, set the IP address and port number of the power environment, as shown in 错误!未找到引用源。 below.

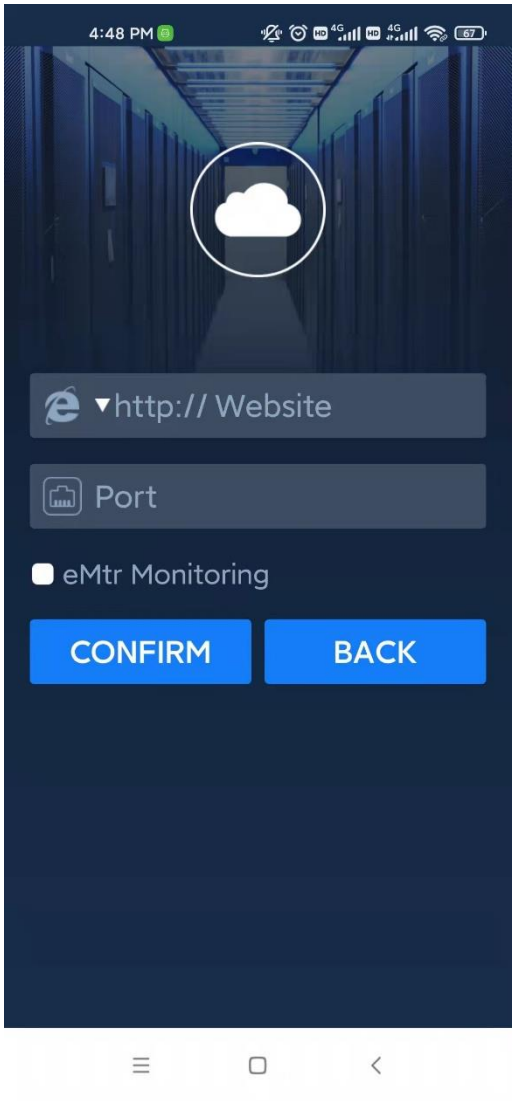


Figure 5-1

① Input the IP address. .

② Enter the port number (default value: 80).

☑ eMtr monitoring: You must check this option connection to the host, or uncheck it for connection to IoT or centralized monitoring, and then click "OK" button to save it.

The login page is shown in Figure 5-2.

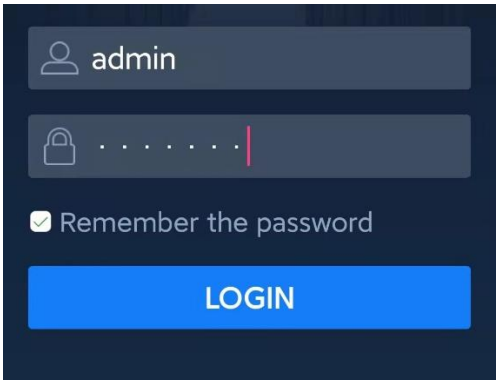


Figure 5-2

①Account name: admin

②Password: 123456

Enter the password for the account and click "Login" button.

As shown in Figure 5-3, the APP home page displays total number of devices, the proportion of online devices, and alarm message. Run the APP and you can view system operating status and alarm message.

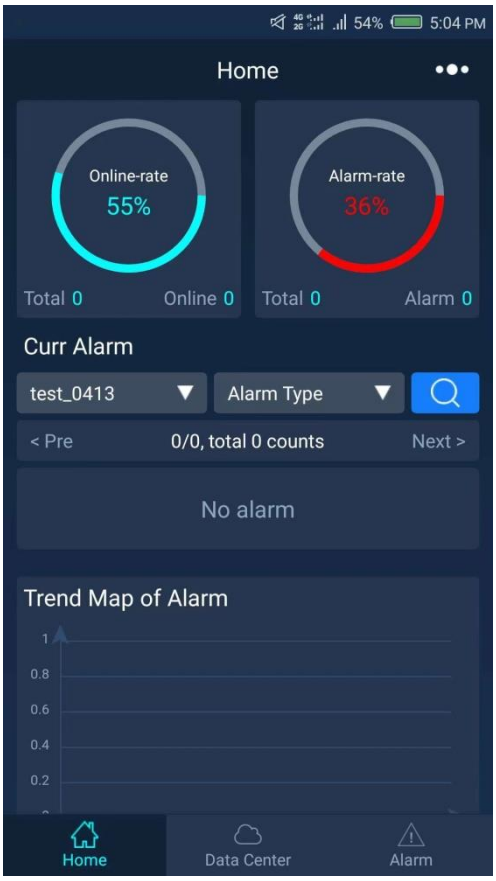


Figure 5-3

As shown in Figure 5-4, APP device list displays the devices by type.

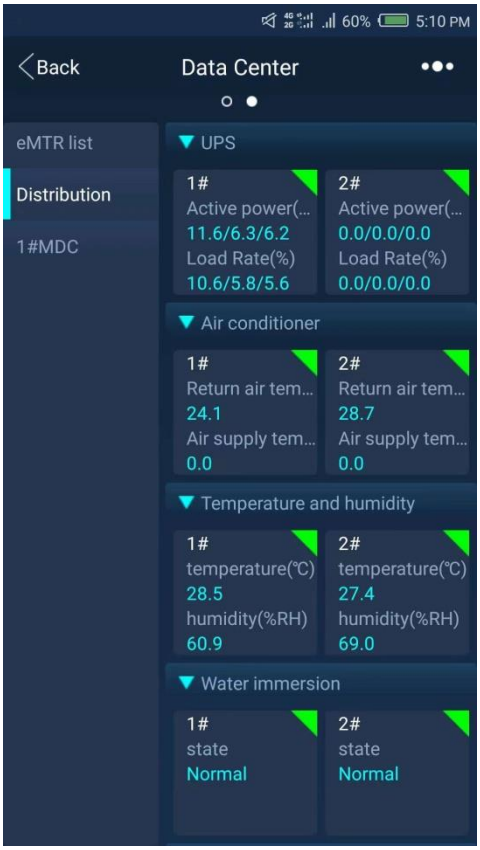


Figure 5-4

As shown in Figure 5-5, the details of each device are displayed in the APP.

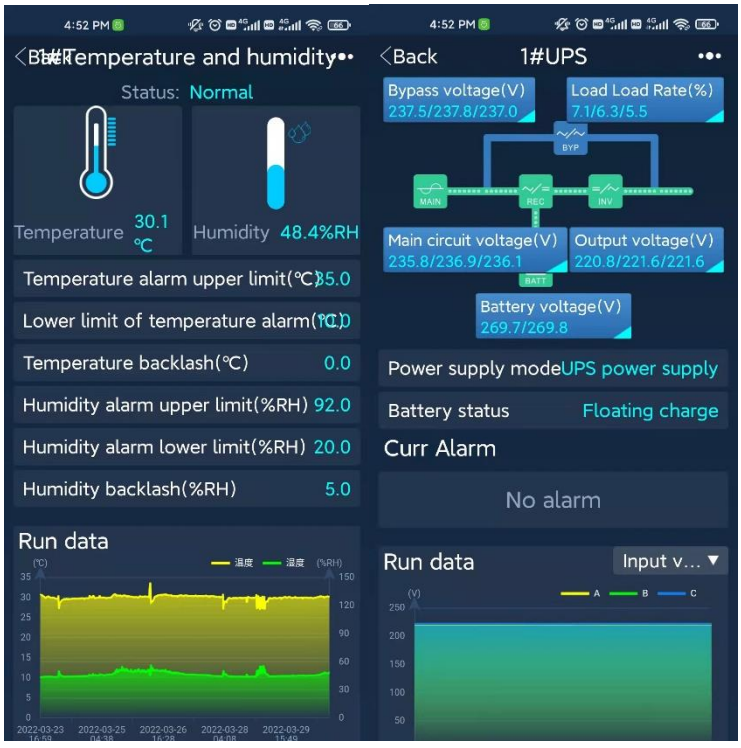


Figure 5-5

Table 5-1 APP Menu Functions

Level 1 menu	Level 2 menu	Function	Remark
Home page	-	● Displays the total number of devices connected to the system,	

		the number and proportion of devices, and the number and proportion of alarming devices. ● Displays current alarm message, and the trend curve of number of alarms.	
Device list	-	● Monitor the operating status and parameters of all types of device currently connected to the system.	Device icons are displayed in the upper right corner of each device module, in green color for normal operation, or in red color for alarm.
Alarm message	-	● Search for history alarm records in the system.	

Table 5-1

5 Abbreviations

ATS	Automatic transfer switching	Automatic Transfer Switch
APP	Application	Application
PDU	Power distribution diode	Power Distribution Unit
PUE	Power usage effectiveness	Power Usage Effectiveness
PoE	Power over Ethernet	Power over Ethernet
UPS	Uninterruptible Power Supply	Uninterrupted Power Supply

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