

UPS Power Monitor User's Manual_Ver 1.0.0.35_C

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Introduction

This software is designed for monitoring and setting UPS. Before using this software to connect to UPS, it is necessary to know its Modbus protocol data mode (ASCII/ RTU), Address and Baud rate, there are two ways to connect with UPS: If using RS-485 communication, a "485-232-adaptor" is necessary to connect 485 port of UPS and computer's Serial port. If using RS-232 communication, a serial cable can be connected directly from UPS 232 port to the computer's Serial port.

1. Hardware Connection of UPS and PC

1.1 Serial Communication Introduction

1.1.1 Introduction to serial ports

There are two types of 9 pins serial interfaces, one is 9 pins (Male type) interface, another one is 9 holes (Female type) interface. As shown in Figure 1-1 and 1-2.



Figure 1-1 Male type interface



Figure 1-2 Female type interface

1.1.2 RS_232 Definition

1) Male type pins' definition of RS_232 Port is shown in Figure 1-3.

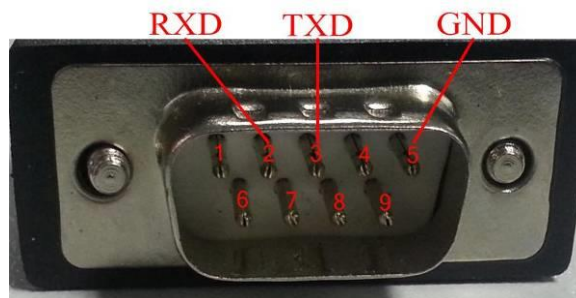


Figure 1-3 Male type pins definition of RS_232 Port

pin2--- RXD

pin3--- TXD

pin5--- GND

2) Female type holes' definition of RS_232 Port is shown in Figure 1-4.

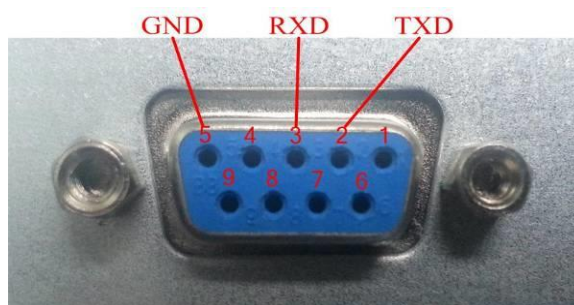


Figure 1-4 Female type definition of RS_232 Port

pin2--- TXD

pin3--- RXD

pin5--- GND

1.1.3 RS_485 Definition

The 9 cores RS_485 interfaces definition is shown in Figure 1-5.

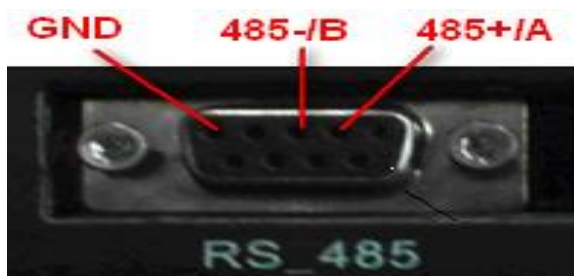


Figure 1-5 RS_485 interface definition

pin2--- 485+/A

pin3--- 485-/B

pin5 --- GND

The 3 pins and 2 pins pluggable terminal block definition are shown in Figure 1-6.



Figure 1-6 RS_485 interface definition

1.2 Connection between UPS and PC

1.2.1 RS_232 Connection of UPS to PC Monitoring System

As usual, the desktop computer's serial communication port is shown in Figure 1-7. There is no serial communication port on the notebook computer. Need to use a USB to RS_232 cable and install a relative drive program at PC, as shown in Figure 1-8.

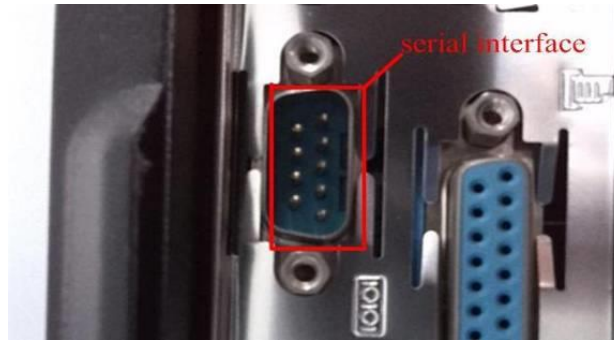


Figure 1-7 Desktop computer serial communication port



Figure 1-8 USB-RS_232 cable and the driver compact disc

1) To communicate with standard RS_232 cable

The standard RS_232 cable is shown in Figure 1-9. As usual, the computer's serial communication port is male type. If your UPS's serial communication port is also male type, you can connect the computer and UPS with a **crossed female to female terminal RS_232 cable**. If your UPS's serial communication port is female type, you need a **directly connected RS_232 cable** with a female to male terminal.



Figure 1-9 RS_232 cable

- 2) Connect directly with communication wires

The detailed is shown in Figure 1-10.

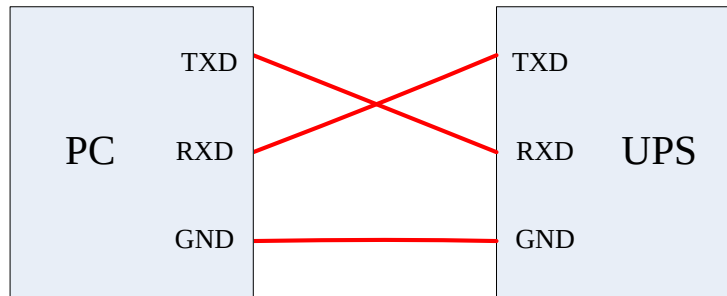


Figure 1-10 PC RS_232 port to UPS RS_232 port

For example, if the PC RS_232 port is male type, UPS RS_232 is female type, the connection way is shown in Figure 1-11.

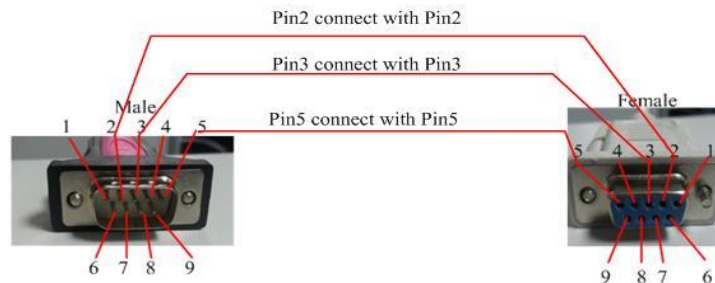


Figure 1-11 PC RS_232 port to UPS RS_232 port

1.2.2 RS_485 Connection of UPS to PC Monitoring System

The connection of the **UPS to PC monitoring system** is as follows:

- 1) Connect the **485-232 adaptor** to the **485-port of UPS** using a customized serial cable.

NOTE: Pins definition of this Serial cable is different from the normal one.

- 2) Connect the **serial port of PC** to **232 port of 485-232-adaptor** using a normal serial cable.

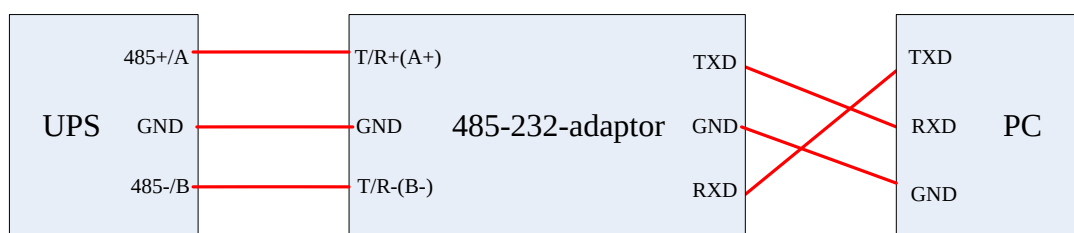


Figure 1-12 UPS and PC monitoring system connection

1.2.3 USB Connection of UPS to PC Monitoring System

RMD series UPS provide a USB Type-B interface, you can connect the computer and UPS with a standard USB Type-B cable.

2. Software Introduction

2.1 Software Installation

This software is a green software that does not require installation. You can extract the compressed software package to any directory, but the extracted folders and files cannot be deleted or moved to other directories arbitrarily. The simple instructions for extracting files are as follows:

MTR.exe: UPS Execution program of monitoring software

Language: Language files

Note: The folders and files extracted from the software compression package cannot be deleted or moved to other directories arbitrarily!!!

As the hardware connection finished, double click "MTR.exe" to start the monitoring software. The monitoring interface is shown in Figure 2-1:

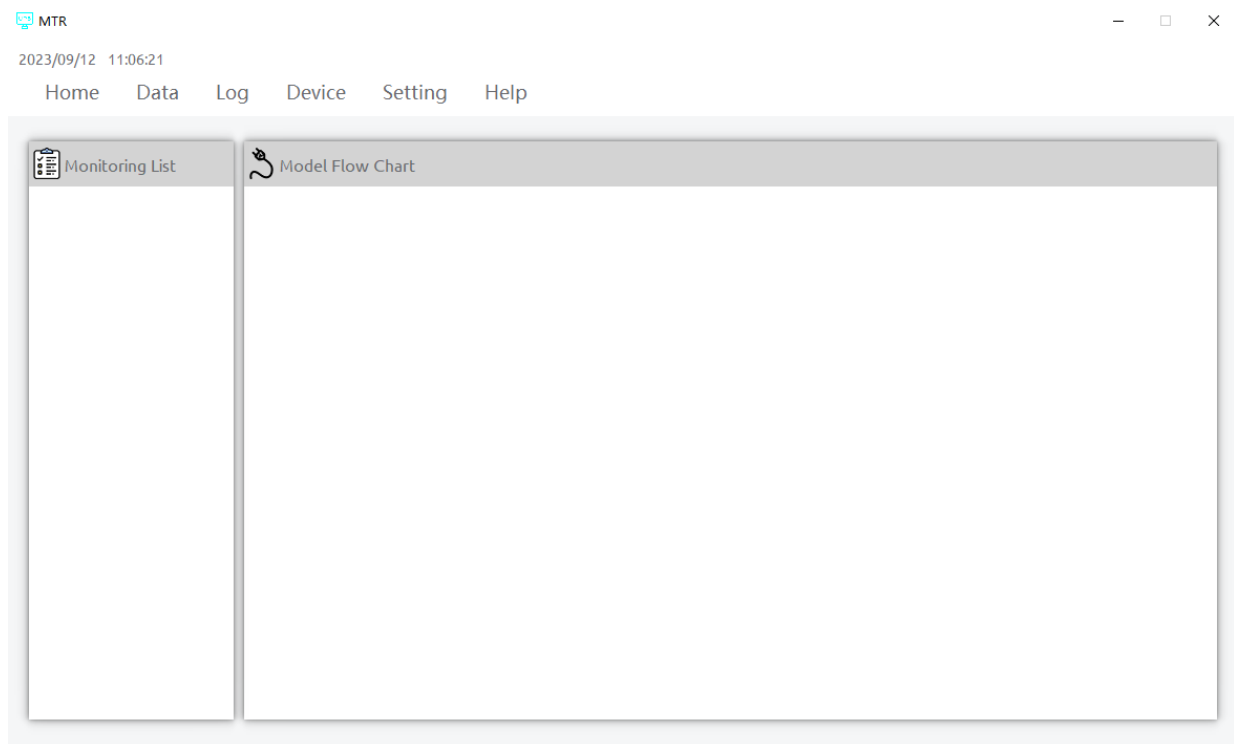


Figure 2-1 Monitoring interface

2.2 UPS communication protocol settings

It is necessary to set the UPS communication protocol as Modbus before using UPS Power MTR.

2.2.1 INVT Color Touch Screen

The UPS with INVT color touch screen display as shown in Figure 2-2, communication setting way as below:

a) Communication setting for USB port

Click on the "Settings" button in the row of icons below the homepage to enter the settings page, then click on the "Communication Settings" button on the right side of the settings page to enter the communication settings page, as shown in Figure 2-2. Set in sequence on the communication settings interface:

- 1) USB Port Protocol Selection: Modbus;
- 2) Baud rate: Recommends 9600;

- 3) Modbus Mode: ASCII or RTU, but it must be the same as monitoring software;
- 4) Modbus Parity: None;
- 5) Device Address: 1, after setting up, click the "Confirm" button to complete the setup.

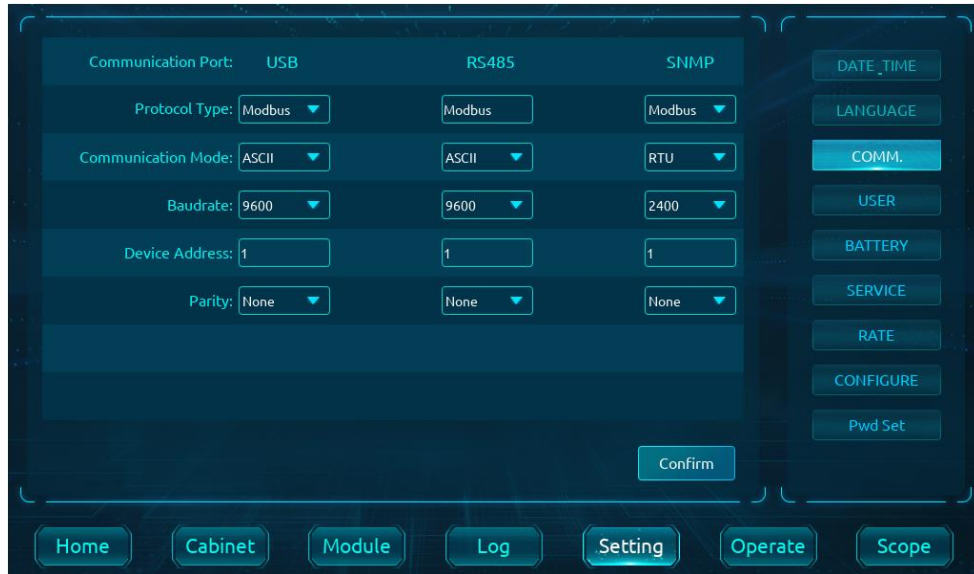


Figure 2-2 INVT Color touch screen

b) Communication setting for RS_485 cable:

Click on the "Settings" button in the row of icons below the homepage to enter the settings page, then click on the "Communication Settings" button on the right side of the settings page to enter the communication settings page, as shown in Figure 2-2. Set in sequence on the communication settings interface:

- 1) Baud rate: 9600 is recommended;
- 2) Modbus Mode: ASCII or RTU, but it must be the same as monitoring software;
- 3) Modbus Parity: None;
- 4) Device address: 1, after setting up, click the "Confirm" button to complete the setup.

Note: USB port and RS_485 port do not support simultaneous use.

2.2.2 HT11 (1-3kVA)

The UPS with monochrome touch screen display as shown in Figure 2-3, communication setting method as below:



Figure 2-3 HT11 (1-3kVA) LCD Interface

a) Communication setting for RS_232 cable:

The steps to set up a RS232 port to connect to the backend are as follows:

- 1) Press "ON/OFF" and "FUNC" at the same time for 5 seconds, then UPS will enter the function setting menu;
- 2) In the function setting menu, press "ON/OFF" to select  , press "FUNC" to change the code to be "0CC", it means that the current communication protocol is "Modbus".

Note: HT11 (1-3kVA) UPS don't support RS_485.

2.3 Monitoring software communication settings

Click on the "Home" option in the monitoring software menu, then select "New Monitoring Model" in the Pull-down Menu, select the corresponding UPS type, Protocol, Address, Baud rate, Serial port number, that are

consistent with UPS communication settings, then right-click  , click "Connect" in the pop-up menu, and if the connection is successful, the UPS monitoring version number will be displayed, The model

flowchart will generate energy flow, and the device communication icon in the monitoring list will become  , as shown in Figure 2-4; If the connection is not successful, please check the hardware and settings. To disconnect from the UPS, right-click and select the Disconnect option. To delete the created monitoring device, right-click and select Delete.

Please set the following settings for new monitoring models:

- 1) Series Number: Select the currently used serial port number;
- 2) UPS Type: Select the corresponding UPS model;
- 3) Baud rate: only supports 9600;
- 4) Protocol: Select the corresponding protocol based on UPS settings (MODBUS_ASCII/ MODBUS_RTU), HT11 (1-3kVA) only supports MODBUS_ASCII mode;
- 5) Address: 1 (Consistent with the Modbus address set by UPS);

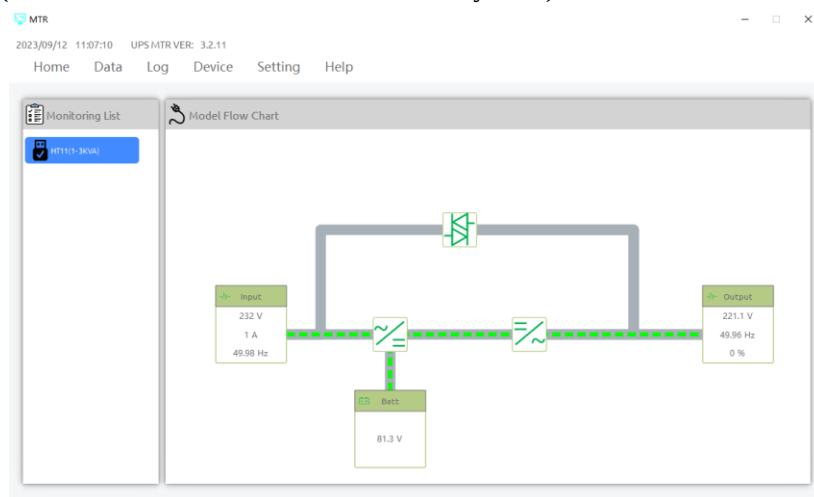


Figure 2-4 UPS Connected

Once UPS is connected, UPS status and data are shown on the PC. Clicking the menu items on the left side of the window, corresponding data will be shown.

2.4 Monitoring software system settings

Click the "Setting" option in the monitoring software menu, click "Other Setting" in the Pull-down menu, and enter the password in the MTR password box that pops up. The initial password is 1234. On this page, you can set MTR password, UPS password, UPS unlock password, other setting, and shutdown setting (Only supports HT11(1-3KVA) Series), as shown in Figure 2-5.

MTR Pwd Set: Here you can modify the password according to your own needs, initialize the password to 1234.

MTR communication password: Can protect the settings data and remote control operations, while analog data reading, download history, and maintenance code normal execution without password. The machine does not have an MTR communication password by default.

UPS Set Unlock: If you set up an MTR communication password, you can enter the password here and click "Unlock", the password is unlocked correctly and successfully pop up "Unlock ok!" you can set the data and perform remote control operations.

UPS Pwd Set: Set a new password in the UPS password settings box, the password can only be set 4 digits, click on the settings if the pop-up "Settings successful", indicating that the settings have been successful.

Note: After the UPS password setting is complete, make sure to keep the password in mind, the system has no password retrieval function, once you forget the password, that is, you cannot unlock the UPS settings, you need to return the UPS factory initialization before you can reset the password.

UPS Data Save: Click the "Data Save" button to save the system data to the local disk.

Recover: Click on the "Data Recovery" button and select the locally saved data file to restore the data to the monitoring software.

Auto Start: After checking, the monitoring software will automatically start after the device that installs this monitoring software restarts.

Automatic Connection: After checking, the monitoring software will automatically create a new monitoring device and make communication connections after startup.

Figure 2-5 Other setting

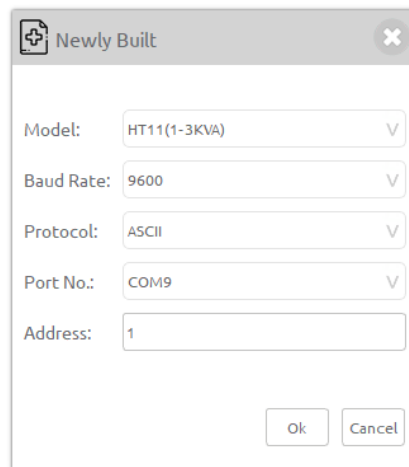
3. Function selection menu

3.1 Home

"Home" includes "Newly Built", "Model Flow Chart" and "Serial Port Info."

3.1.1 Newly Built

You can monitor the device by "Newly Built", select the model, baud rate, protocol, serial port number, and serial port address corresponding to the monitored devices. Devices with the same serial port but different serial port addresses can be created. The interface is shown in Figure 3-1.



The "Newly Built" dialog box is a window with a title bar containing a plus icon and the text "Newly Built". It contains five input fields: "Model:" with a dropdown menu showing "HT11(1-3KVA)", "Baud Rate:" with a dropdown menu showing "9600", "Protocol:" with a dropdown menu showing "ASCII", "Port No.:" with a dropdown menu showing "COM9", and "Address:" with a text input field showing "1". At the bottom right, there are two buttons: "Ok" and "Cancel".

Figure 3-1 Newly Built

The newly built device is displayed in the monitoring list on the left. If multiple devices are in the monitoring list, you can click to switch between selected devices. All the displayed data sources and interactive objects are selected devices. The multi-device monitoring is shown in Figure 3-2.

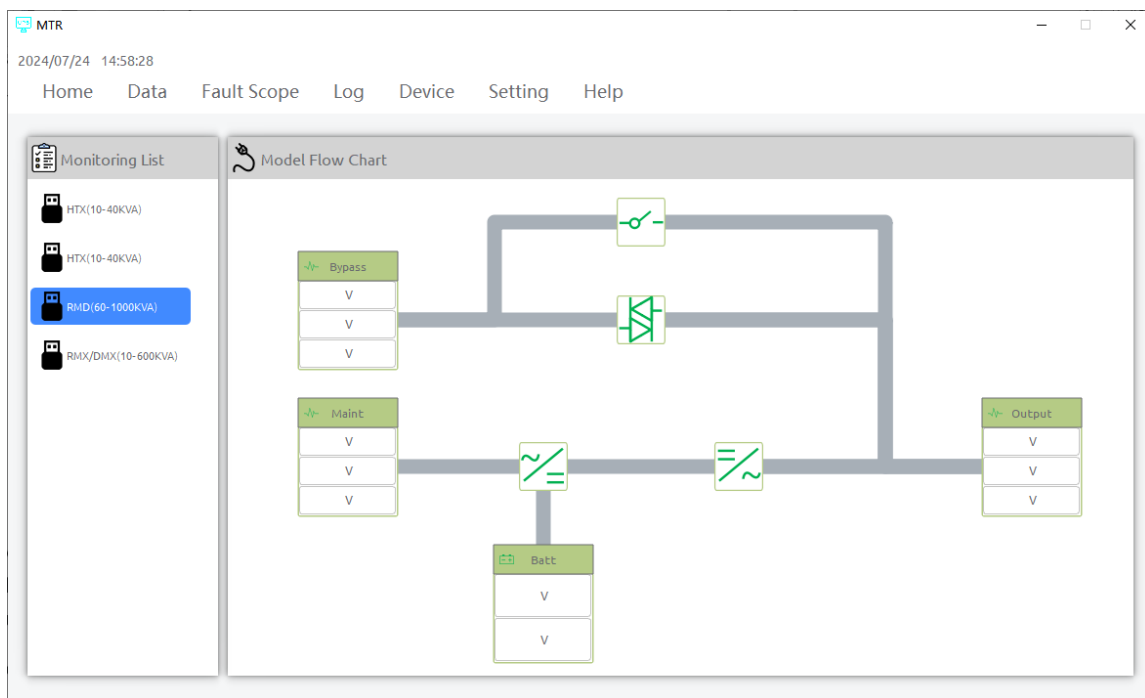


Figure 3-2 Multi-device monitoring

3.1.2 Model flow chart

Model flow chart displays the energy-flow diagram, current alarm (Only RMD (60-1000kVA) are supported,

right-click  and choose "View Current Alarms" from the shortcut menu. When an alarm is generated, a yellow triangle icon will be generated , the number in the icon represents the current number of alarms) and information of main input voltage, bypass voltage, output voltage, and battery voltage. Depending on the model, there are two different interfaces. The interface of RMD (60-1000kVA) and HT11 (1-3KVA) are shown in Figure 3-3 and Figure 3-4.

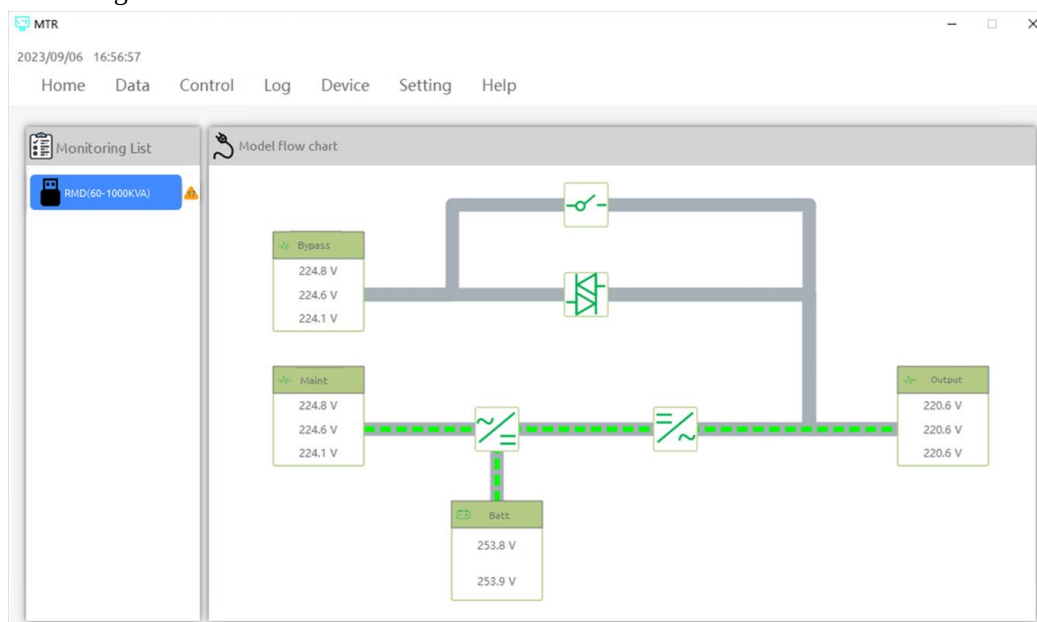


Figure 3-3 Home page of RMD (60-1000kVA)

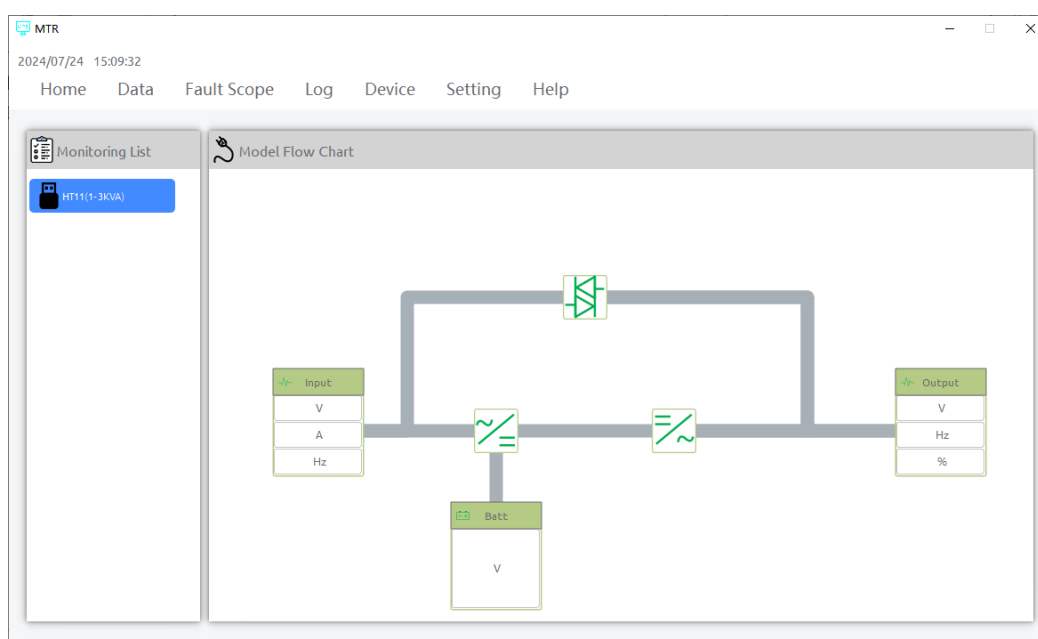


Figure 3-4 Home page of HT11 (1-3KVA)

3.1.3 Serial Port Info

"Serial Port Info" displays the serial port information of the selected device, including the device name, serial port number, baud rate, protocol, and serial port address, as shown in Figure 3-5. The device name consists of the device model plus underscores "_" and five digits. The first two digits indicate the serial port number, and the last three digits indicate the serial port address. Device names are unique when multiple devices are monitored simultaneously.



A dialog box titled "Serial Port Info." with a close button in the top right corner. It contains five input fields with the following values:

Field	Value
Device Name:	RMX/DMX(10-600KVA)_09001
Port No.:	COM9
Baud Rate:	9600
Protocol:	ASCII
Address:	1

Figure 3-5 Serial Port Info.

3.2 Data

The "Data" displays the Bypass Data, Main Data, Output Data, Battery Data (input voltage, current, frequency, power factor, etc.) of UPS, and displays the bypass, main circuit, output (input voltage curve), and battery voltage curve in the form of a chart, as shown in Figure 3-6.

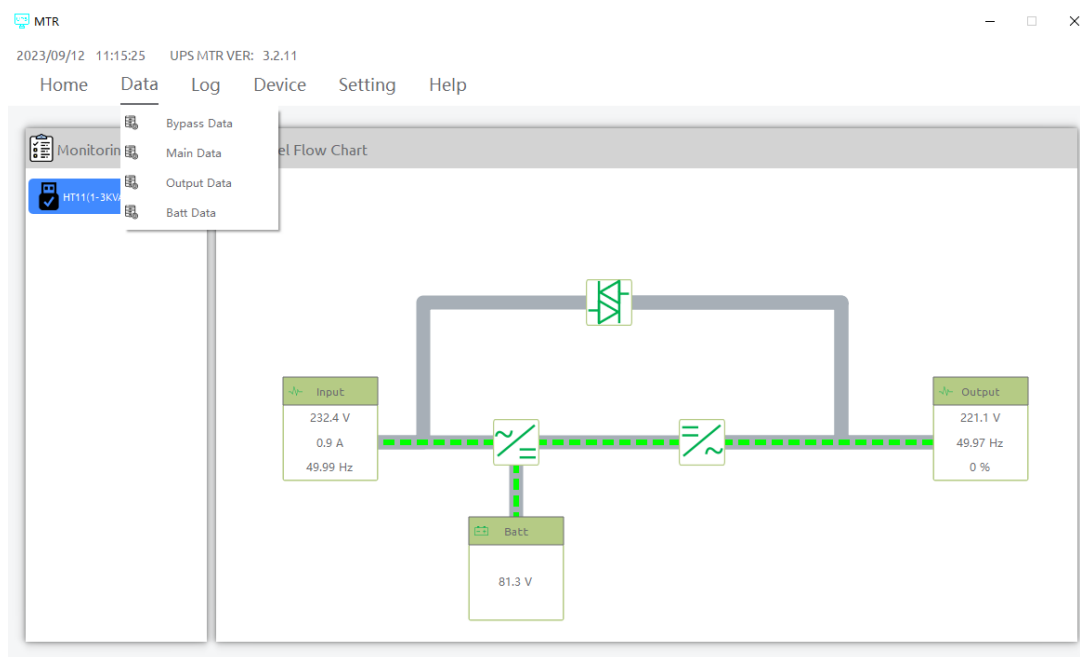


Figure 3-6 Data

3.2.1 Bypass Data

The "Bypass Data" displays the UPS data of the Bypass Voltage, Current, Frequency, and Power Factor, and displays the curve of the bypass input voltage in the form of a chart, as shown in Figure 3-7.

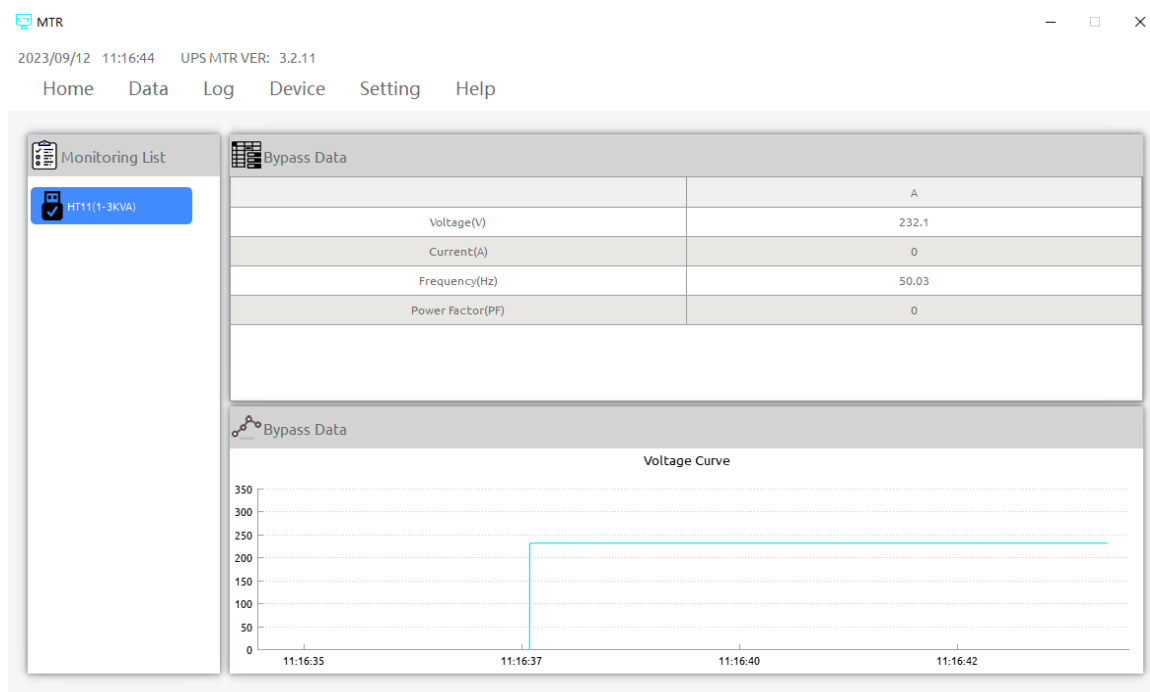


Figure 3-7 Bypass Data

3.2.2 Main Data

The "Main Data" displays the Input Voltage, Current, Frequency, Power Factor, and other data of the UPS main circuit, and displays the curve of the main circuit input voltage in the form of a chart, as shown in Figure 3-8.

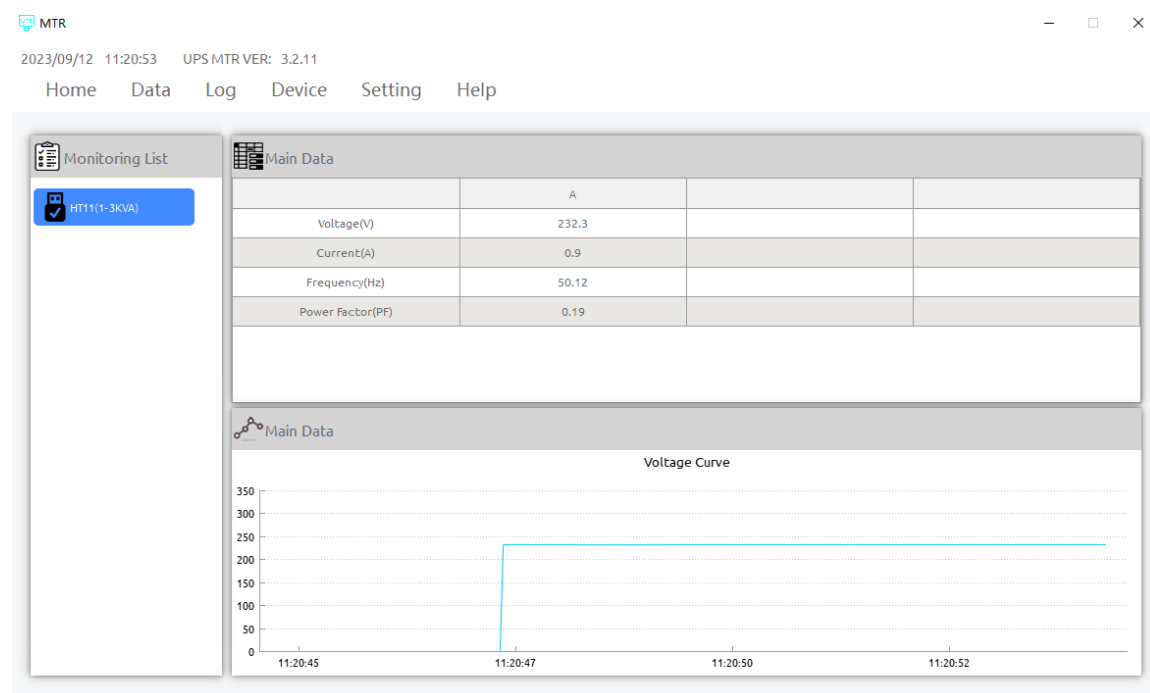


Figure 3-8 Main Data

3.2.3 Output Data

The "Output Data" displays the system Output Voltage, Current, Frequency, Power Factor, Apparent Power, Active Power, Reactive Power, Load Percentage, and other data of UPS, and displays the curve of the system output voltage in the form of a chart, as shown in Figure 3-9.

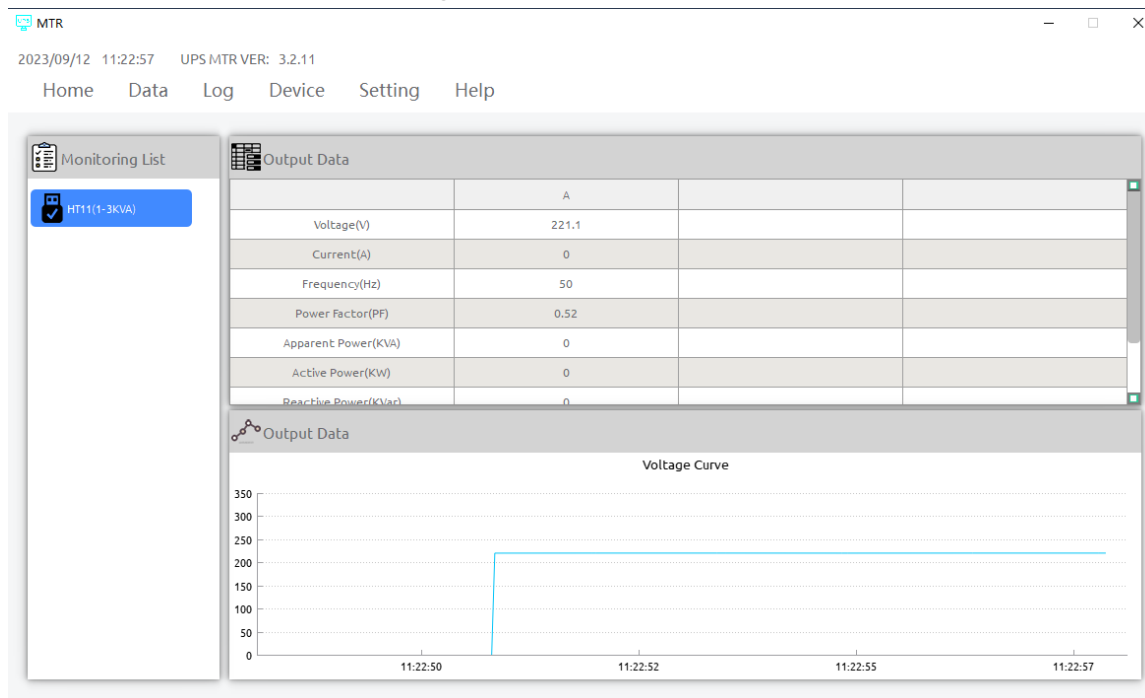


Figure 3-9 Output Data

3.2.4 Battery Data

The "Battery Data" displays the Battery Voltage, Current, Battery Temperature, Battery Capacity, Ambient Temperature, and other data of the UPS, and displays the battery voltage curve in the form of a chart, as shown in Figure 3-10.

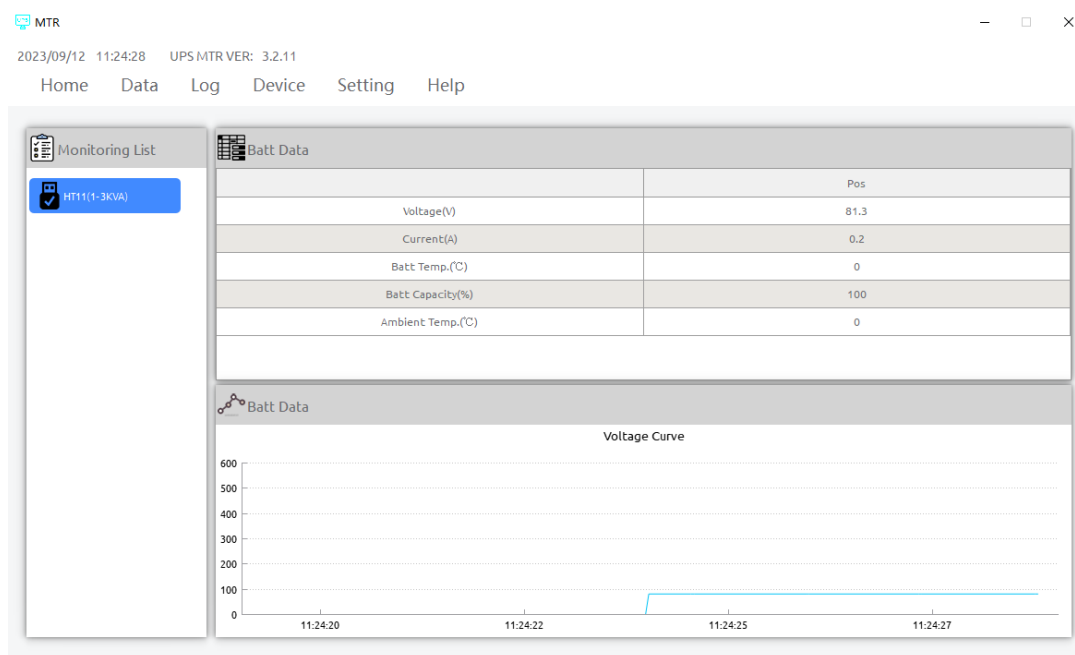


Figure 3-10 Battery Data

3.3 Fault scope

"Fault scope" includes "Debugging" and "Remote Command"

3.3.1 Debugging

This function displays rectification waveform data, inverter waveform data, and debugging data in Debugging Command, and provides data export and import functions, as shown in Figure 3-11.

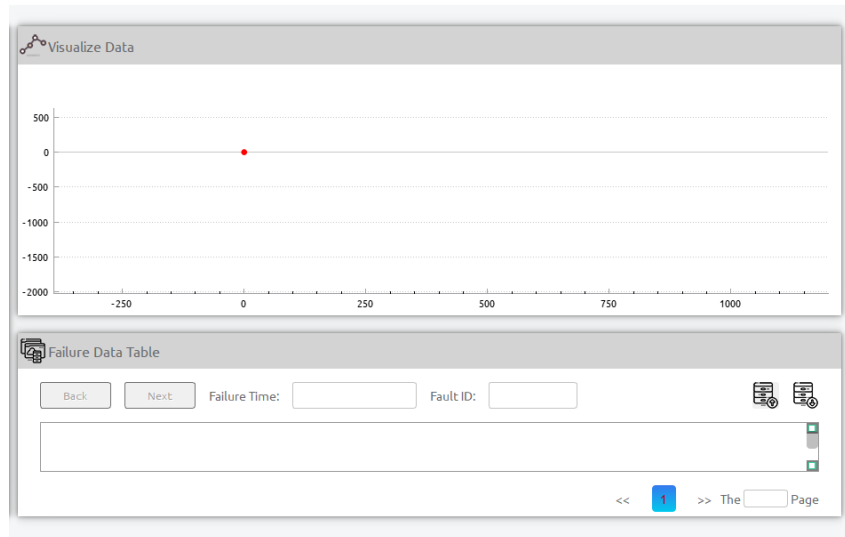


Figure 3-11 Debugging

3.3.2 Remote Command

This function is used to obtain the rectifier waveform data, inverter waveform data, debugging data and specific register value of the device. Set data conversion parameters and clear device fault waveform data, as shown in Figure 3-12.

Figure 3-12 Remote Command

3.4 Log

"Log" includes "Score Download" and "History Download".

3.4.1 Score Download

This function supports HTX(10-40kVA), RM(10-200kVA), RMD31(5-20kVA), RMX/DMX(10-600kVA) and RMD(60-1000KVA) models to download, save and parse device Score. As shown in Figure 3-13, the Score can be

downloaded to the grid on the left, by simply clicking the "Download" button , after download is complete,

click "Save" button  to save the Score to the local computer. After Score download is completed, the confirm button can be used. If you need to download the record again or stop obtaining the record, you need to click the

cancel button. Click to select a Score data node and click  button, the "SCORE Parse" dialog box will pop up, as shown in Figure 3-14. If you need to analysis external Scores, you need to click the "Input Score Resolution"

button  to pop up the corresponding "Input Score Resolution" dialog box, as shown in Figure 3-15.

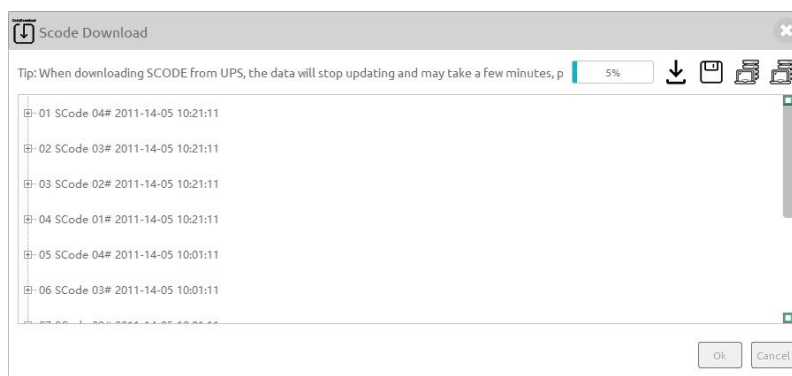


Figure 3-13 Score Download

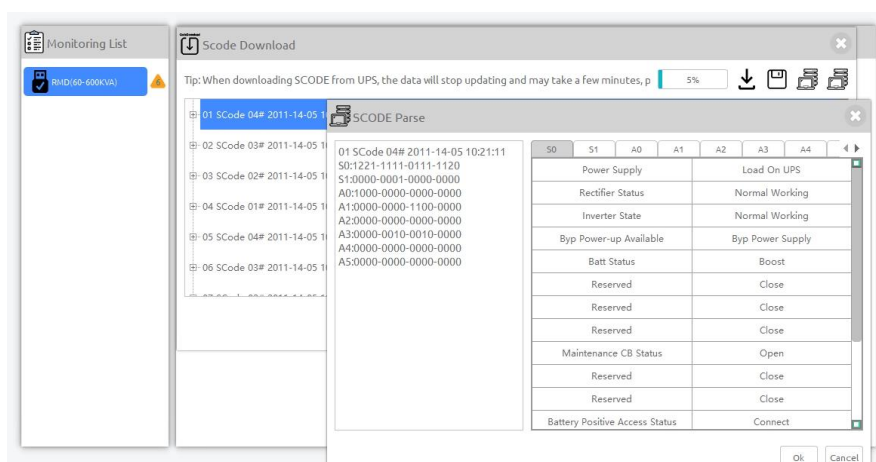


Figure 3-14 Score Parse



Figure 3-15 Input Scode Resolution

3.4.2 History Download

"History Download" allows you to download historical records from UPS and save them to your computer, making it easy to understand past operations and operating conditions of UPS. Click "Download" button  to download the history log from UPS; Click  you can save the downloaded history locally, after download is complete, the confirm button can be used. If you need to download the record again or stop obtaining the record, you need to click the cancel button, as shown in Figure 3-16.

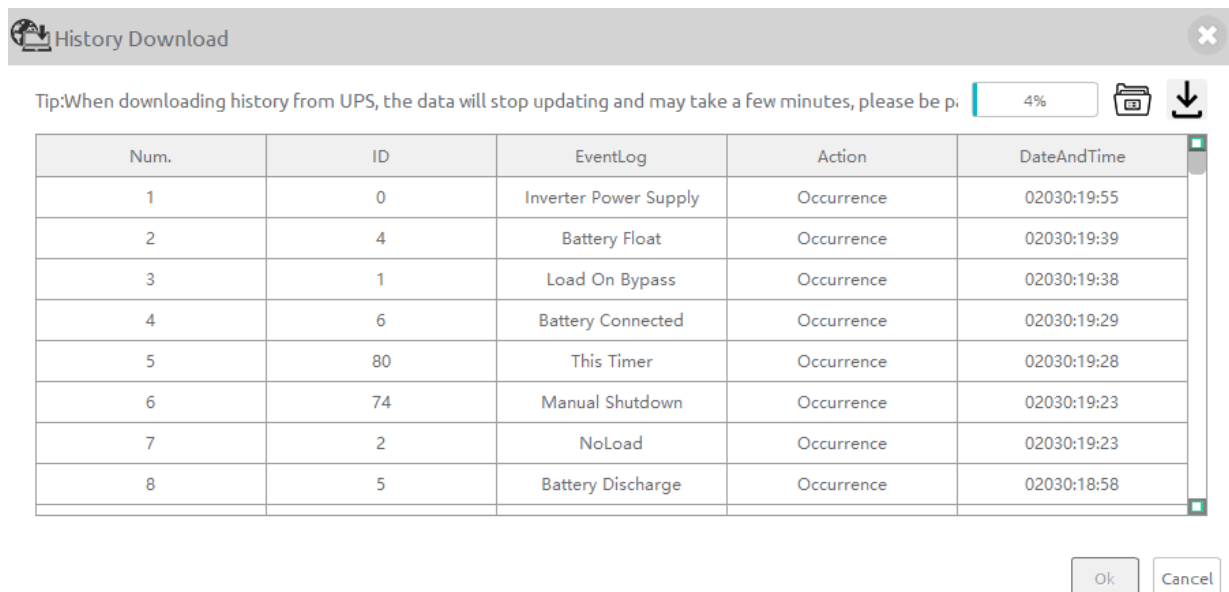


Figure 3-16 History Download

3.5 Device

"Device" includes "Equipment Status" and "Module Data".

3.5.1 Cabinet State

The "Equipment Status" includes "Cabinet Status" and "Module Status". The "Cabinet Status" displays the cabinet status information of the UPS, as shown in Figure 3-17. The white background box represents the UPS status quantity, while the gray background box represents the corresponding current status quantity. For example, "Power supply method" and "Load on UPS" indicate that the current load's power supply method is loaded on UPS.

Power Supply ...	Load On UPS	Bypass Failure	Normal	Battery ...	Test Not ...	CT Welding ...	Normal
Batt Status	Battery Float	Bypass Overload	No Overload	Disable	Allow Power On	Electrolyte ...	Normal
Batt Connectio...	Connect	Bypass Overload ...	Normal	Manual Transfer ...	Maint	Battery Temp. ...	Connect
Maintenance ...	Disconnection	Bypass Over ...	Normal	Batt Low Volt	Batt Not Low Volt	Ambient Temp. ...	Connect
EPO	No Emergency ...	Filter Maintenanc...	Times Not ...	Battery Reverse	Batt Not COMM...	Integrated Alarm	Normal
Inverter Starting...	Sufficient Invert...	Output Short ...	Output Not ...	Rectifier Status	Normal Working		
Generator Input	Disconnection	Batt EOD	Batt Not EOD	Input N Wire ...	Not Disconnected		
AC Input Failure	Normal	Batt Testing Begin	Batt Free Test	Bypass Fan Fail	Normal		

Figure 3-17 Cabinet Status

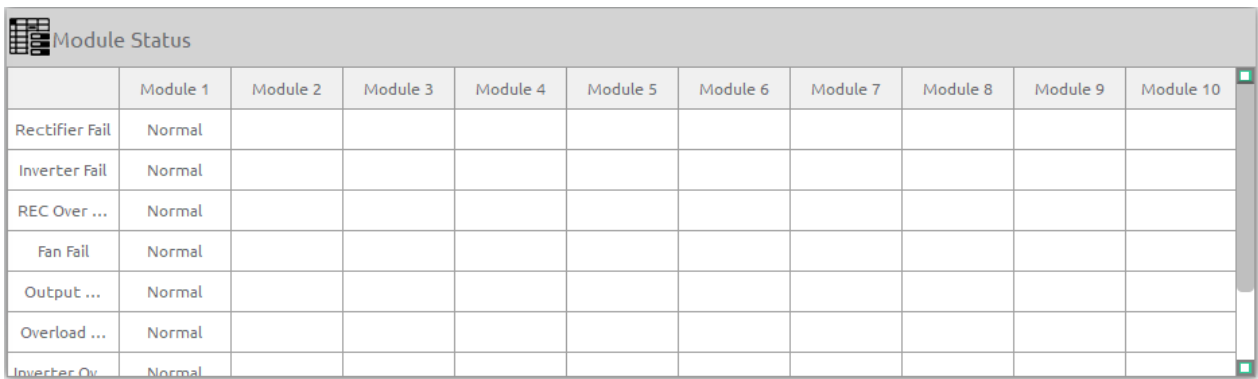
Machine items explanation:

Display Items	Means
Power supply mode	System power supply source. Available states: None, By UPS, Bypass.
Batt Status	The work status of battery. Available states: Not Work, Float, Boost, Discharge.
EPO	Emergency power off. Available states: Not EPO, EPO.
Prohibition of power	Whether UPS power on is banned. Available states: No, Yes.
Manual Transfer Byp	Whether UPS transfer to bypass mode manually. Available states: No, Yes
Batt Low Volt	Whether battery voltage is low. Available states: No, Yes.
Battery Reverse	Whether battery is reversed connected. Available states: No, Yes.
Batt EOD	Whether battery end of discharge is occurred. Available states: No, Yes.
Side-by-Side Traffic	Whether bypass is overloaded. Available states: No, Yes.
Side-pass overload Timeout	Whether bypass overload is timeout. Available states: No, Yes.
Bypass over tracking	Whether bypass frequency untrack is occurred. Available states: No, Yes.
Transfer Time Limit	Whether the times of transfer to bypass reach its limit. Available states: No, Yes.
Output Short Circuit	Whether output short circuit is occurred. Available states: No, Yes.
Generator Input	Whether generator is in a connected state. Available states: No, Yes.
AC Input Failure	Whether AC input fail is occurred. Available states: No, Yes.
Bypass Phase Sequence Fault	Whether the bypass phase sequence fault is occurred. Available states: No, Yes.
Bypass Voltage Fault	Whether bypass voltage is failed. Available states: No, Yes.
Batt Self-test Status	Battery test status. Available states: No, Ok, Fail, Testing

Batt maintenance Status	Battery maintenance status. Available states: No, Ok, Fail, Maintaining
Maintenance CB Status	Maintain CB status. Available states: Open, Close.
Inverter Starting Capacity insufficient	Whether Inverter Capacity is less than required. Available states: No, Yes.
Input Neutral Lost	Whether input neutral is lost. Available states: No, Yes.
Bypass Fan Fault	Whether bypass fan is failed. Available states: No, Yes.

3.5.2 Module Status

The "Module Status" page displays the status information of the current online modules, RMD31(5-20kVA), RMX/DMX(10-600kVA) and RMD(60-1000KVA) can view up to 20 modules, and other models can view up to 10 modules, as shown in Figure 3-18.

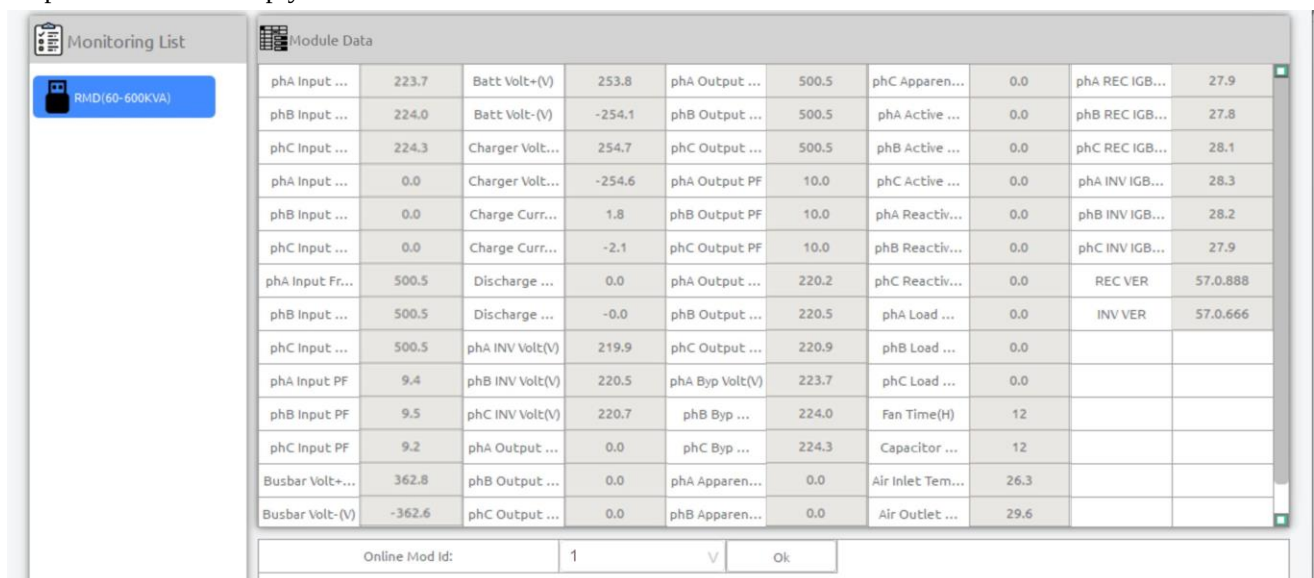


	Module 1	Module 2	Module 3	Module 4	Module 5	Module 6	Module 7	Module 8	Module 9	Module 10
Rectifier Fail	Normal									
Inverter Fail	Normal									
REC Over ...	Normal									
Fan Fail	Normal									
Output ...	Normal									
Overload ...	Normal									
Inverter Ov	Normal									

Figure 3-18 Module Status

3.5.3 Module Data

The "Module Data" page can display analog data of one module in the current online module at a time, as shown in Figure 3-19. To view the data of the online module, you need to select the module number in the drop-down menu on the right side of the "Online Mod id:" label, and then click the OK button; If there is no online module, the drop-down menu is empty.



RMD(60-600KVA)

phA Input ...	223.7	Batt Volt+(V)	253.8	phA Output ...	500.5	phC Apparen...	0.0	phA REC IGB...	27.9
phB Input ...	224.0	Batt Volt-(V)	-254.1	phB Output ...	500.5	phA Active ...	0.0	phB REC IGB...	27.8
phC Input ...	224.3	Charger Volt...	254.7	phC Output ...	500.5	phB Active ...	0.0	phC REC IGB...	28.1
phA Input ...	0.0	Charger Volt...	-254.6	phA Output PF	10.0	phC Active ...	0.0	phA INV IGB...	28.3
phB Input ...	0.0	Charge Curr...	1.8	phB Output PF	10.0	phA Reactiv...	0.0	phB INV IGB...	28.2
phC Input ...	0.0	Charge Curr...	-2.1	phC Output PF	10.0	phB Reactiv...	0.0	phC INV IGB...	27.9
phA Input Fr...	500.5	Discharge ...	0.0	phA Output ...	220.2	phC Reactiv...	0.0	REC VER	57.0888
phB Input ...	500.5	Discharge ...	-0.0	phB Output ...	220.5	phA Load ...	0.0	INV VER	57.0666
phC Input ...	500.5	phA INV Volt(V)	219.9	phC Output ...	220.9	phB Load ...	0.0		
phA Input PF	9.4	phB INV Volt(V)	220.5	phA Byp Volt(V)	223.7	phC Load ...	0.0		
phB Input PF	9.5	phC INV Volt(V)	220.7	phB Byp ...	224.0	Fan Time(H)	12		
phC Input PF	9.2	phA Output ...	0.0	phC Byp ...	224.3	Capacitor ...	12		
Busbar Volt+...	362.8	phB Output ...	0.0	phA Apparen...	0.0	Air Inlet Tem...	26.3		
Busbar Volt-(V)	-362.6	phC Output ...	0.0	phB Apparen...	0.0	Air Outlet ...	29.6		

Online Mod id:	1	V	Ok
----------------	---	---	----

Figure 3-19 Module Data

3.6 Setting

The "Rate", "System Setting", "Battery", "Custom Code", "Dry Contact", and "Other" pages require the correct password to be entered before relevant settings can be made (only once) for factory use.

3.6.1 Language

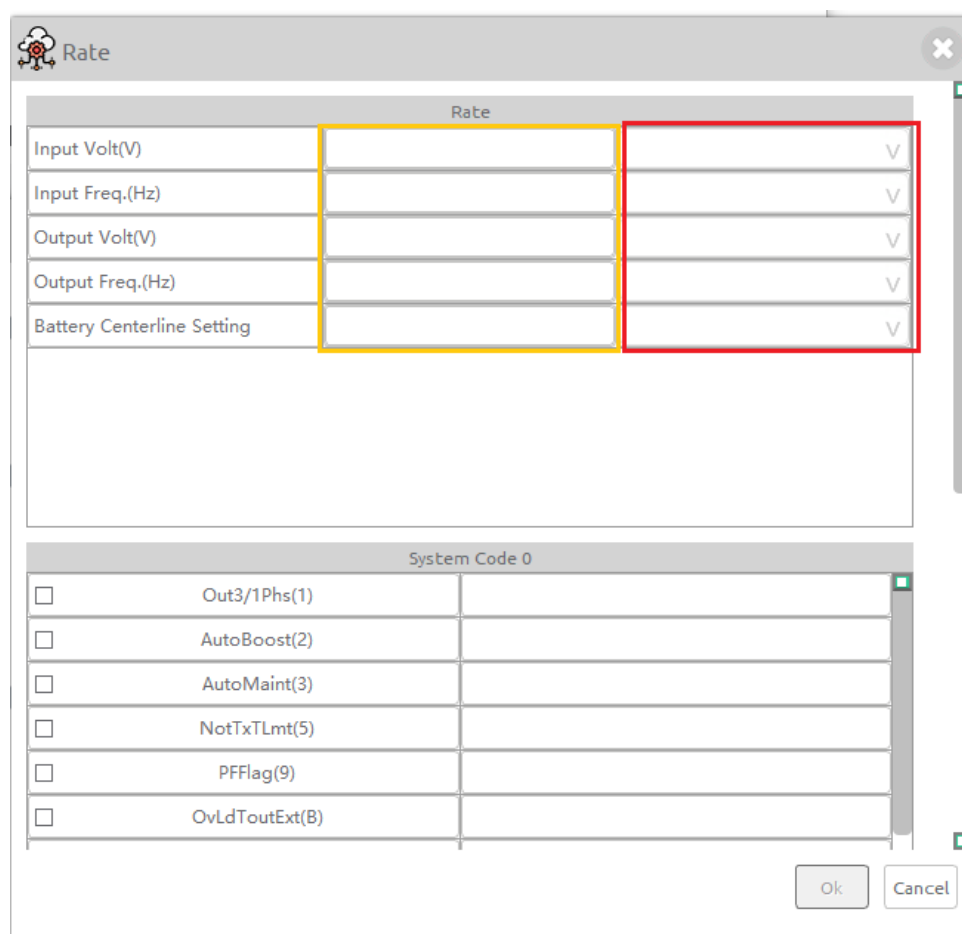
The "Language" page allows you to set the software language and supports switching between Chinese and English languages, as shown in Figure 3-20.



Figure 3-20 Language Setting

3.6.2 Rate

The "Rate" group box sets the system voltage, frequency, and other rated values, as well as the battery neutral line settings. The part in the yellow box represents the current set value of the UPS, and the current value can be changed in the red box. After making the changes, click "OK" to save the newly set data to the UPS, as shown in Figure 3-21.



Rate	
Input Volt(V)	
Input Freq.(Hz)	
Output Volt(V)	
Output Freq.(Hz)	
Battery Centerline Setting	

System Code 0	
☐	Out3/1Phs(1)
☐	AutoBoost(2)
☐	AutoMaint(3)
☐	NotTxTLmt(5)
☐	PFFlag(9)
☐	OvLdToutExt(B)

Figure 3-21 Rate Setting

The description of rated setting items is as follows:

Setting items	Means
InputVolt	The system rated input voltage (V)
InputFreq	The system rated input frequency (Hz)
OutputVolt	The system rated output voltage (V)
OutputFreq	The system rated output frequency (Hz)
Battery neutral line Settings	Set whether the battery group has a neutral line

3.6.3 System Code 0

Set the system Code 0 by bit. The meaning of the corresponding bit for different models is different. Check or cancel the corresponding option in the setting box, and then we can click the "OK" button to save the newly set data to the UPS, as shown in Figure 3-22.

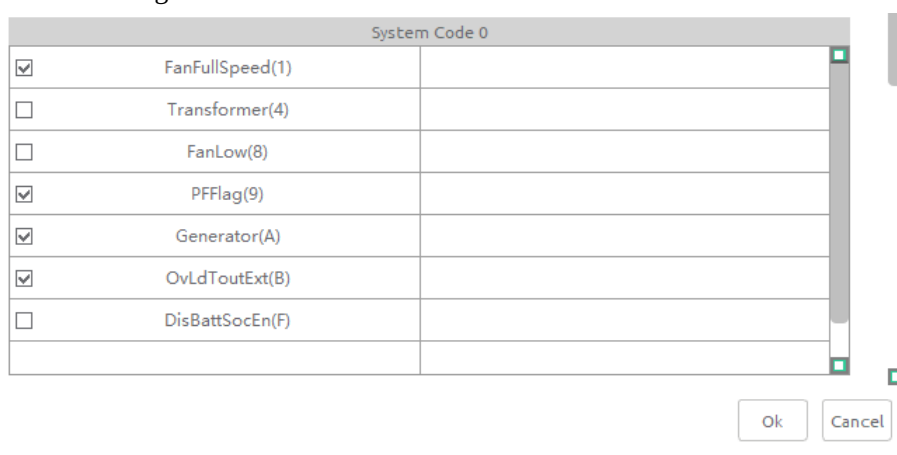


Figure 3-22 System Code 0

The system code setting 0 is described as follows (different models may have different Settings):

Setting items	Choose (1)	Not choose (0)															
11/31:	Enable single phase input and single phase output	Enable three phase input and single phase output															
Out3/1Phs:	Enable Single phase output	Enable 3 phase output															
AutoBoost:	Enable battery auto boost	Disable battery auto boost															
AutoMaint:	Enable battery auto maintenance	Disable battery auto maintenance															
NotTxTLmt:	No switching limit to bypass times	Switching limit to bypass (5 times per hour)															
RecCtrWay:	Enable rectifier control mode	Disable rectifier control mode															
FreqSelfAdpt:	Enable frequency self-adaptive function, according to the input frequency automatically adjust the output frequency	Disable frequency self-adaptive function															
PFFlag:	Combine with PFExtern to set different output PF, choose to be 1 and not to be 0: <table border="1"> <thead> <tr> <th>PFFlag</th><th>PFExtern</th><th>OutputPF</th></tr> </thead> <tbody> <tr> <td>0</td><td>0</td><td>0.8</td></tr> <tr> <td>0</td><td>1</td><td>0.7</td></tr> <tr> <td>1</td><td>0</td><td>0.9</td></tr> <tr> <td>1</td><td>1</td><td>1</td></tr> </tbody> </table>	PFFlag	PFExtern	OutputPF	0	0	0.8	0	1	0.7	1	0	0.9	1	1	1	
PFFlag	PFExtern	OutputPF															
0	0	0.8															
0	1	0.7															
1	0	0.9															
1	1	1															

OvLdToutExt:	Enable Long inverter overload time	Enable Short inverter overload time
DcBusLevel:	Enable high bus voltage	Disable high bus voltage
FanFailBzOnEn:	Enable fan failure buzzer alarm	Disable fan failure buzzer alarm
PFFterm:	Refer to PFFlag	Refer to PFFlag
InvAutoStart:	Enable the inverter automatic startup function	Disable the automatic start-up function of the inverter
NoBattExistChk:	Prohibit detecting the presence or absence of batteries	Allow detection of battery
FanFullSpeed:	The fan keeps running at full speed	The fan follows the normal speed regulation logic
Transformer:	With transformer mode	Without transformer mode
FanLow:	Use a low fan feed control point	Normal speed control point
Generator:	Enable generator mode	Prohibit generator mode
DisBattSocEn:	Display the percentage of remaining battery capacity	Do not display remaining battery capacity

3.6.4 System Code 4

Set the system code 4 by bit, check or cancel the corresponding option in the setting box, and then we can click the "OK" button to save the newly set data to the UPS, as shown in Figure 3-23.

System Code 4	
☐	EpoNormClose(6)
☐	HiEfficiency(8)
☐	Eod2LevelEn(9)
☐	MuteMode(E)
☒	FanFailBuzzerOnEn(F)
☐	
☐	
☐	

Ok Cancel

Figure 3-23 System Code 4

The system code setting 4 is described as follows (different models may have different Settings):

Setting items	Choose	Not choose
In3/1Phs:	Enable system single-phase input	Enable system 3-phase input
RB:	Set UPS mode as RB (In-built battery pack)	Not RB mode
THDi:	Enable harmonic certification procedures	Disable harmonic certification procedures
ButtFncPwdL1:	Set monochrome touch LCD function page password for 1 level	Set monochrome touch LCD function page password for 2 level

DispLLVolt:	Display line voltage	Not display line voltage
SntComAlmEn:	Enable SNT communication alarm	Disable SNT communication alarm
OpShortClrEn:	Enable to clear output short circuit alarm	Disable clear output short circuit alarm
FastBoostEn:	Enable fast boost charge mode	Disable fast boost charge mode
NeutralLostClr:	Neutral line lost auto clear faults	Normal logic
EpoNormClose:	EPO terminal is normally closed (EPO signal is generated when disconnected)	EPO terminal is normally open (EPO signal is generated when closed)
HiEfficiency:	Enable high performance	Disable high performance
DryNormOpen:	Dry contact terminal is normally open (Dry contact signal is generated when closed)	Dry contact terminal is normally closed (Dry contact signal is generated when disconnected)
Eod2LevelEn:	Enable the second level EOD (0.15C)	Enable the first level EOD (0.6C)
AgeTxBattEn:	Enable self-aging transfer to battery mode	Disable self-aging transfer to battery mode
MuteMod:	Enable mute mode	Disable mute mode
PFFterm:	Refer to PFFlag in System code setting 1	Refer to PFFlag in System code setting 1
FanFailBuzzerOnEn:	Enable the fan fault buzzer alarm	Disable the fan fault buzzer alarm
DCBusOvVoltTxBattEn:	Enable transfer to battery when the bus overvoltage	Disable transfer to battery when the bus overvoltage
ChargerAllwaysON:	Enable turn on the charger with or without the battery	Disable turn on the charger with or without the battery

3.6.5 UPS Information Setting

The UPS information setting includes: UPS Mode, UPS Model, and Company Name, as shown in Figure 3-24. The "UPS model" is the information displayed on the LCD display screen, with a maximum length of 10 characters. The "Company Name" can be displayed in the SNMP card information, with a maximum length of 15 characters. When the UPS mode is set to 0, the UPS model can only be set to the product model of our company; When the UPS mode is set to 1, other product models can be set; Then click the "OK" button to save the newly set data to the UPS.

UPS Information Setting		
UPS Mode	0	0
UPS Model	HT1102CS	HT1102CS
Company Name	INVT	INVT

Ok Cancel

Figure 3-24 UPS Information Setting

3.6.6 System Setting

The "System Settings" page is shown in Figure 3-25, where the yellow box represents the current set value of the UPS. You can make changes to the current value in the red box. After making the changes, click the "OK" button to save the newly set data to the UPS.

"Shutdown Countdown Enable" can only be set to "Enable". That is, this function can be enabled only through background software Settings. After this function is enabled, the UPS starts to lock down the countdown time. You can set the countdown time by "Shutdown Countdown Days". "Shutdown Countdown Enable" can be disabled only by INVT Color Screen, which obtains the UPS unlock password and sends the shutdown command. If Shutdown Countdown Enable is selected, the Please Confirm Operation dialog box will display.

System Setting		
System Mode	Single	Single V
Output Voltage Adjustment	220	220
Slew Rate	2	2
Synchronization Window	5	5
LCD Backlight Time(Min)	10	10 V
Bypass Voltage Upper Limit	+15%	+15% V
Bypass Voltage Lower Limit	-20%	-20% V
Bypass Frequency Limit	+5Hz	+5Hz V
Power	Manual	Manual V
System Auto Start After EOD	Self-Aging Mode	Self-Aging Mode V

Ok Cancel

Figure 3-25 System Setting

The items of system setting are described as follows (Different UPS type may have different items)

Setting item	Means	Note
System Mode	Set the operation modes of UPS.	Different models can choose different operating modes
Parallel Number	Set the number of UPS in parallel system	Range: 1-10
Cabinet ID	Set the ID of UPS in parallel system	The ID number cannot be over than the number of UPS parallel number
Output Voltage Adjustment	Adjusted output voltage, unit: V	Adjustment range: rated output voltage plus or minus 10V
Slew Rate	Slew rate of track, unit: Hz/s	Range: 0.1-5 Hz/s
Synchronization Window	Frequency Synchronization	Range: 0.5-5 Hz

	window, unit: Hz	
LCD Time	Set the time of LCD screen saver, unit: Min	Default value: 1 Minute
Logo Show Time(s)	Set logo page show time	Range: 0-60 Second
System time	Set the time of system	Click  butt on to set the current system time
Sleep Load level	Set the sleep load level	Range: 20%—90%
Alternate Sleep Time	Set the alternate sleep time	
Environment Over Temp. shutdown Enable	Enable or disable environment over temperature shutdown function	
Batt over Temp. off charge Enable	Enables or disables battery over temperature shutdown of the charger	
Dust Net Automatic Dust Removal cycle	Set the automatic dust removal time of the dust net, unit: Day	Range: 1-3000 Day
Shutdown Countdown Enable	Enables or disables the shutdown countdown	
Shutdown Countdown Days	Set the number of days from shutdown to countdown, unit: Day	Range: 0-999 Day
Redundant Module Number	Set the number of N+X redundant modules	Range: 0-9
Bypass Voltage Upper Limit (%)	Set bypass voltage upper limit	Percentage of the rated value
Bypass Voltage Lower Limit (%)	Set bypass voltage lower limited	Percentage of the rated value
Bypass Frequency Limit (Hz)	Set the range of frequency fluctuation, unit: Hz	
Delay to Utility	Set the delay time from battery transfer to rectifier	In HTC11 (1-3kVA) models, this item is reused as an on-off mode
System Auto Start After EOD	Set system auto start mode after EOD	Different models can choose different start modes
Fan 3-stage Speed Regulation	Enable or disable fan speed 3 level	
Allowable Phase Missing Operation	Enable or disable UPS lost phase work	
Temp. Rise Limit Level	Set temperature rise limit level	
Air Inlet Temp. Level	Set inlet temperature level	The corresponding relationship between levels and degrees Celsius: Level 1 (30.5°C), Level 2 (32.5°C), Level 3 (35.5°C), Level 4 (37.5°C)
High Temp. Of Air Inlet	Set whether to allow high	

	temperature in the air inlet	
Motor mode	Enable or disable motor mode	
Frequency Converter Mode	Enable or disable frequency convertor mode	
Input High Voltage Quick Check Enable	Enable or disable input overvoltage fast detection	
Charge Fault Alarm Enable	Enable or disable charger fault alarm	
Enable Output Short-Circuit Bypass Switching	Enable or disable the output short-circuit bypass switching	
Module Fan Maintenance Cycle	Set the maintenance period of module fan	Range: 1000-60000 Hour
Bypass Fan Maintenance Cycle	Set the maintenance period of bypass fan	Range: 1000-60000 Hour
Main Circuit Backwash Detection Enable	Enable or disable the main circuit backwash detection cycle	Range: 1000-60000 Hour
Number of Cabinet Basic Power Modules	Set the number of basic power modules for a cabinet	Range: 0-19
Cabinet Dust Filter Maint period (Day)	Set the dust filter maintenance period	Range: 30-3000 Day
Limit of Switching Times Per Hour	Set the limited number of bypass cuts per hour	Range: 1-20 Times
EPO Confirmation Time	Set the EPO confirmation time	0.5 Seconds, 1 Second, 2 Seconds
Monochrome screen backlight time (Min)	Set the monochrome screen backlight time, unit: Min	1 Minute, 3 Minutes, 5 Minutes, 10 Minutes, 20 Minutes, 30 Minutes
On-off mode	Set the on-off mode	Manual, automatic inverter, automatic bypass
Serial number	Set serial number	Range: 00000000 to 99999999, 8 digits
Generator charging current level	Set generator charging current level	12.5%, 25%, 50%, 100%
Disable the charger when the generator is connected	Enable or disable the charger when the generator is connected	
Disable the charger module when the generator is connected	Enable or disable the charger module when the generator is connected	
Disable bypass overload timeout	Whether to disable bypass overload timeout	

3.6.7 Battery

The "Battery" page is shown in Figure 3-26, where the yellow box represents the currently set value of the UPS. The current value can be changed in the red box. After making the changes, click the "OK" button to save the newly set data to the UPS.

Battery		
Battery AH	9	9
Float Charge Voltage/Cell	2.25	2.25
Boost Charge Voltage/Cell	2.28	2.28
EOD Cell,@ 0.6C Current	1.65	1.65
EOD Cell,@ 0.15C Current	1.75	1.75
PM Charge Current Percent Limit	1	1 V
Boost Charge Time Limit	12	12
Auto Boost Period	2160	2160
Auto Discharge Period	6480	6480

Ok Cancel

Figure 3-26 Battery Setting

Battery Settings are described as follows (Gray items cannot be set):

Setting item	Means	Note
Battery Type	Set the type of battery used by your UPS.	
Battery Number	Set the battery number	Different battery types can be set in different ranges
Battery AH	Set battery AH	Range: 1-30000 AH
Float Charge Voltage /Cell(V)	Set the float charge voltage of battery cell	Different battery types can be set in different ranges
Boost Charge Voltage/Cell(V)	Set the boost charge voltage of battery cell	Different battery types can be set in different ranges
EOD Cell,@ 0.6C Current	Set the EOD voltage of Battery cell at 0.6C	Different battery types can be set in different ranges
EOD Cell,@ 0.15C Current	Set the EOD voltage of Battery cell at 0.15C	Different battery types can be set in different ranges
PM Charge Current Percent Limit	Set the charging current limit percentage of the power module	Different battery types can be set in different ranges
Battery Temp. Compensation	Set battery temperature compensate, unit: mV/°C	Range: 0-5
Battery Boost Temp.	Set battery boost temperature	Range: 0-5

Compensation	compensation, unit: Hour	
Boost Charge Time Limit	Boost charge time limit, unit: Hour	Range: 1-48
Boost Period	Set auto boost period, unit: Hour	Range: 720-30000
Discharge Period	Set the automatic discharge period, unit: hour	Range: 720-30000
Battery maintenance prompt cycle	Set the battery maintenance prompt period, unit: day	Range: 0-3000
Battery over Temp. alarm	Set the battery over temperature alarm point, unit: °C	Range: 25-70
Environmental over Temp. warning	Set the battery environment over-temperature alarm point, unit: °C	Range: 25-70
Average charging minimum interval (H)	Set the minimum interval between average charging, unit: Hour	Range: 720-30000
Minimum average charging current	Set the minimum average current, unit: C	Range: 0.00-0.10
Batt Maintenance Time Limit (Min)	Set the battery maintenance time limit, unit: Minute	
Enable Staggered Peak Energy Storage	Enable or disable Staggered Peak Energy Storage	
Battery Discharge Remaining Capacity (%)	Set the remaining battery discharge capacity range	Range: 1-100
Start Time of Staggered Peak Energy Storage Discharging	Set the start time of Staggered Peak Energy Storage Discharging	
End Time of Staggered Peak Energy Storage Discharging	Set the end time of Staggered Peak Energy Storage Discharging	
Start Time of Staggered Peak Energy Storage charging	Set the start time of Staggered Energy Storage Charging	
Battery back up time	Set the battery back up time (unit: minute)	Range: 0-6000
Charging module charging current limit	Set the charging current limit of the charging module (unit: A)	Different models can be set in different ranges
Battery charging current limit	Set the battery charging current limit (unit: C)	The range varies according to the battery type

3.6.8 Custom Code

Custom codes 1 and 2 are set by bit, check or cancel the corresponding option in the setting box, and then we can click the "Set" button to save the newly set data to the UPS, as shown in Figure 3-27.

Custom Code
✕

Custom Code 1	
☐	Reserved(0)
☐	Reserved(1)
☐	Reserved(2)
☐	Reserved(3)
☐	KoreaEco(4)
☐	Reserved(5)
☐	Reserved(6)
☐	Reserved(7)
☐	Reserved(8)
☐	Reserved(9)
☐	Reserved(A)
☐	Reserved(B)
☐	Reserved(C)
☐	Reserved(D)
☐	Reserved(E)
☐	Reserved(F)

Figure 3-27 Custom Code

The instructions for custom code 1 are as follows (different models have different meanings for corresponding items):

Setting item	Choose	Not choose
Tx2InvIntEnable	Enable interrupt transfer to inverter	Disable interrupt transfer to inverter
ModOnOffEnable	Enable the individual operations of module power on/off	Disable module power on/off
SleepEnable	Enable sleep mode	Disable sleep mode
DeepSleepEnable	Enable deep sleep mode	Disable deep sleep
BypTxInstalled	Install bypass transformer	Not installed bypass transformer
KoreaEco	Enable KoreaEco (Korea nonstandard)	Disable KoreaEco
SciLcdEnable	Configure LCD as a serial port screen	Configuration screen is 5.7 inch blue and white screen
InletOvTmpAlmEn	Enable inlet over temperature alarm	Disable inlet over temperature alarm
2PhasOut	Enable two phase output	Disable two phase output
usdAsOne	Enable used as one phase output	Disable used as one phase output
ForbidTx2Byp	Forbid transfer to bypass	Not forbid transfer to bypass
LocalEpoDisable	Disable local EPO	Enable local EPO
RemoteEPODisable	Disable remote EPO	Enable remote EPO
BypOvTmpForbidByp	Forbidden the bypass output if bypass over temperature	Bypass over temperature not forbid bypass
NoBattery	No battery mode	Battery mode
DisablePmNumErr	Disabled power module number error	Enable power module number error
FBDetOnlyAtBatt	Detect feedback protection only in battery mode	Detect feedback protection not only in battery mode
ColoredPortraitMode	Use color LCD portrait mode	Use color LCD Landscape mode
ColoredLcdFourLang	Color LCD support four languages	Color LCD does not support four languages
PhaseErrStart	Support reverse phase connection but start	Not Support reverse phase connection but

	up	start up
OpTxInstalled	Install the output transformer	Not install the output transformer
IpTxInstalled	Install the input transformer	Not installed input transformer

The instructions for custom code 2 are as follows:

Setting item	Choose	Not choose
DisableBypassOverloadTimeout	Disable bypass overload timeout	Enable bypass overload timeout

3.6.9 Dry Contact

Note: Some models currently do not support this feature:

The "Dry Contact Settings" page is shown in Figure 3-28, which includes two parts: Input dry contact settings and AS settings. The part in the yellow box represents the current set value of the UPS, and the current value can be changed in the red box. After making the changes, click the "OK" button to save the newly set data to the UPS.

Dry contact function HT11(1-3kVA), HTX31/11(6-20kVA), HTX(10-40kVA), RM(10-200kVA), RMD31(5-20kVA), RMX/DMX(10-600kVA) and RMD(60-1000KVA) models are supported. The AS setting function is only supported by RMD(60-1000KVA).

Dry Contact		
Input Dry Contact 1	Generator Input	Generator Input ✓
Input Dry Contact 2	Generator Input	Generator Input ✓
Input Dry Contact 3	Generator Input	Generator Input ✓
Input Dry Contact 4	Generator Input	Generator Input ✓
Output Dry Contact 1	BCB trip	BCB trip ✓
Output Dry Contact 2	BCB trip	BCB trip ✓
Output Dry Contact 3	BCB trip	BCB trip ✓
Output Dry Contact 4	BCB trip	BCB trip ✓
Output Dry Contact 5	BCB trip	BCB trip ✓

AS Setting		
AS Input Config 1	Generator Input	Generator Input ✓
AS Output Config 1	BCB trip	BCB trip ✓
AS Output Config 2	BCB trip	BCB trip ✓
AS Output Config 3	BCB trip	BCB trip ✓
AS Output Config 4	BCB trip	BCB trip ✓
AS Output Config 5	BCB trip	BCB trip ✓

Ok Cancel

Figure 3-28 Dry Contact Setting

3.6.10 Shutdown Setting

Note: Some models currently do not support this feature:

This function only supports HT11(1-3KVA). The shutdown settings page is shown in Figure 3-29, which includes shutdown settings and shutdown time settings. The meanings of each item are as follows:

Shutdown Enable: When checked, the server will be shut down when a shutdown event occurs.

External program needs to be performed before shutdown: Check this option and select the corresponding program to execute the desired external application program before shutting down the server.

Shutdown time setting: Set the time for server shutdown or shutdown after the corresponding event occurs.

Shutdown Setting	
☐ Shutdown Enable	
☐ External programme need to be performed before shutdown	
	Browse
When utility abnormal:	
Computer will shutdown by this time(Min)	1
☐ After computer shutdown Ups will shutdown by this time(Sec)	5
When battery voltage low:	
Computer will shutdown by this time(Min)	1 V
☐ After computer shutdown Ups will shutdown by this time(Sec)	5
The upper-bound time to run external program(Min)	1 V
	Ok

Figure 3-29 Shutdown Setting

3.7 Help

The "Help" page includes the "User Manual" page and the "About" page.

3.7.1 User Manual

Brief description of the software is shown in Figure 3-30.

User Manual
1. This software applies to UPS monitoring, setting. 2. Before connecting UPS, need to know the modbus protocol data mode. (ASCII/RTU), address and baud rate. 3. Hardware connections: UPS 485 interface connect to the computer using "485-232 Converter". 4. Connect the UPS: click Newly built under Home Page on the menu bar, Set the "UPS type", "Protocol", "Address", "Baudrate" and "Port No." in the bottom of the window, then click "Connect". 5. Click "Model Flow Chart" under "Home Page" in the software menu bar to view the UPS operating status and flow chart. 6. Click Data in the menu bar to view the bypass main route and its corresponding voltage curve. 7. Click Device in the software menu bar to view UPS operational status, including "cabinet status" and "unit status". 8. Click Log in the software menu bar to download the UPS history and save it to the computer. 9. Click Setting in the software menu bar to set and read UPS parameters, you can set and read the UPS parameters. including "Rate Settings" and "ServiceSettings". Need a password before using.

Figure 3-30 User Manual

3.7.2 About

Version information of the software is shown in Figure 3-31.

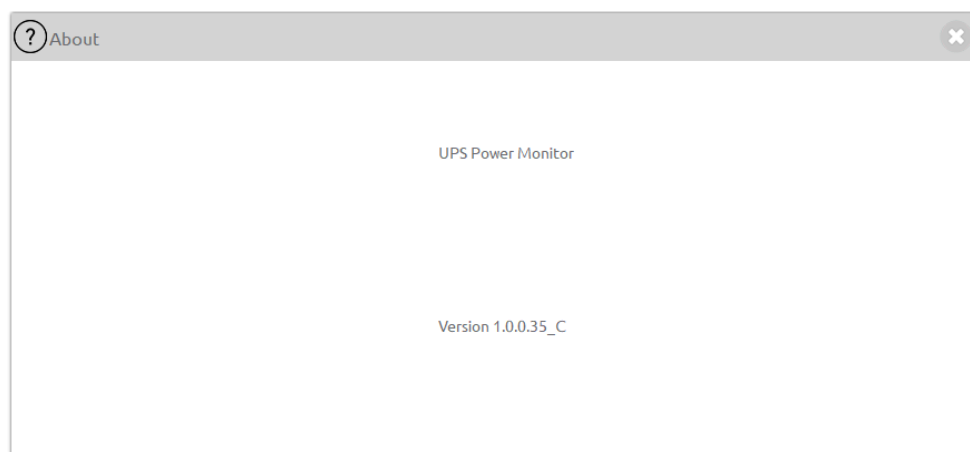


Figure 3-31 About

3.7.3 Note

When the software fails to communicate, the software will display a response message. If the software cannot communicate with the UPS, check whether the parameters set when creating a monitoring device are correct, such as the USB port, baud rate, monitoring model, and monitoring device address. If all Settings are correct but the UPS device cannot be connected, delete the created monitoring device and create a new monitoring device to test the connection. If the connection still fails, restart the software. If the operation fails again, restart the computer.