

UPS Power Monitor User's Manual_Ver 1.19_C

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Introduction

This software is designed for monitoring and setting UPS. There are two ways to connect with UPS: RS-232&RS-485. 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 Serial Communication Interface Introduction

There are two types of 9 pins serial interfaces, one is 9 pins (Male type) interface, another one is 9 holes (Female type) interface. Their Figures are as below:



Fig 1-1 Male type interface (for RM060/120/200)



Fig 1-2 Female type interface (For the other products)

1.1.2 RS_232 Definition

- 1) Male type pins definition of RS_232Port is shown in Fig1-3.

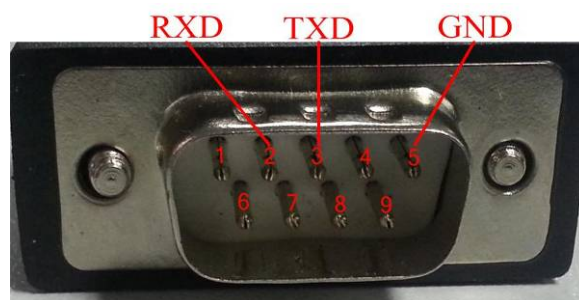


Fig 1-3 Male type pins definition of RS_232Port

pin2--- RXD

pin3--- TXD

pin5--- GND

- 2) Female type holes' definition of RS_232Port is shown in Fig1-4.

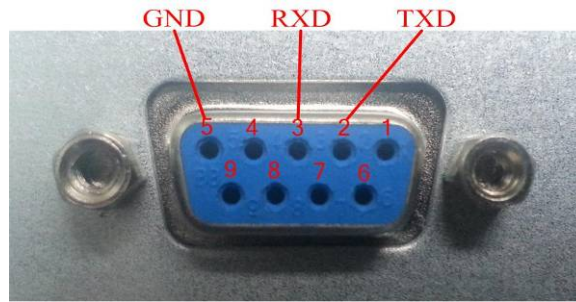


Fig1-4 Female type definition of RS_232Port

pin2---TXD

pin3---RXD

pin5 --- GND

1.1.3RS_485 Definition

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

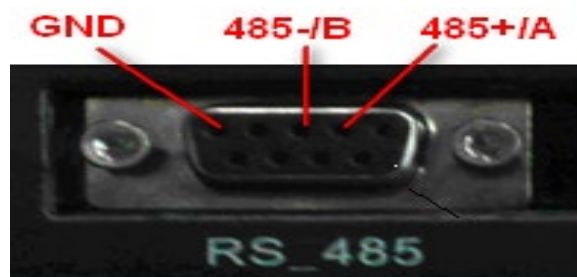


Fig 1-5 RS_485 interface definitions (For RM060/120/200)

pin2--- 485+/A

pin3--- 485-/B

pin5 --- GND

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

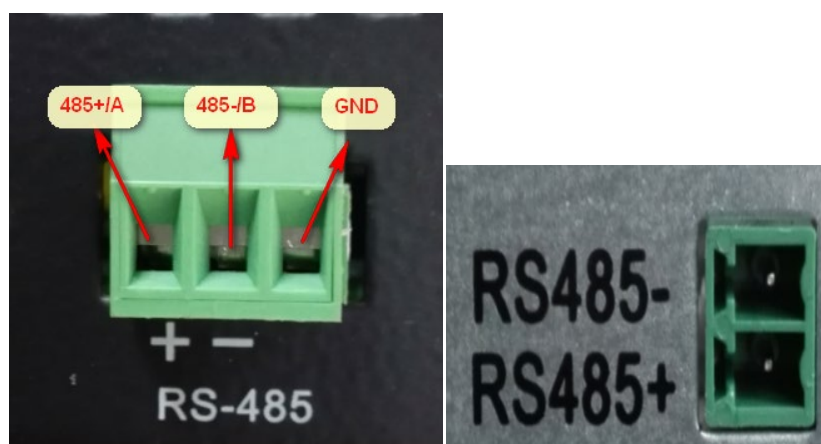


Fig 1-6 RS_485 interface definitions (For the other UPS type)

1.2 Connection between UPS and PC

1.2.1 RS_232 Connection of UPS- PC Monitoring System

As usual, the desktop computer's serial communication port is shown in Fig1-7. There is no serial communication port on the notebook computer. The users need a USB-RS_232 cable and install a relative drive program at PC, as shown in Fig 1-8.

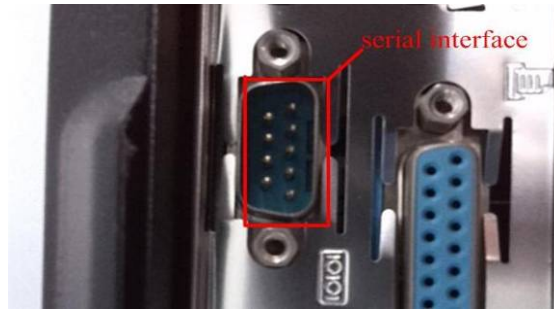


Fig 1-7 Desktop computer serial communication port



Fig 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 Fig 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.



Fig 1-9 RS_232 cable

(2) To communicate with lead wire

The detailed way is shown in Fig 1-10:

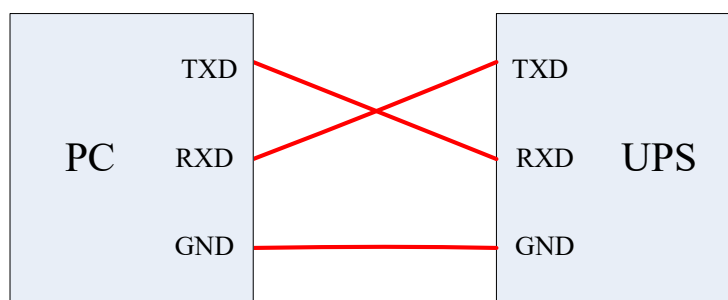


Fig 1-10 PC RS_232 port to UPS RS_232 port

For example, if the PC RS_232 port is male type, UPS RS_232 is female type, the connection way is shown as below:

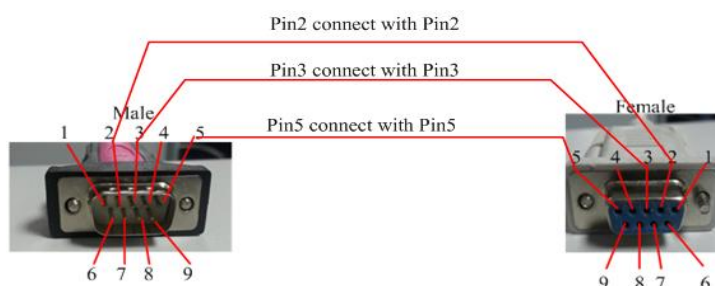


Fig 1-11 PC RS_232 port to UPS RS_232 port

1.2.2RS_485Connection of UPS- PC Monitoring System

The connection of the **UPS- PC monitoring system** is shown in Fig.1-12.

1) Connect the **485-232 adaptor** to the **485-port of UPS** using a customized serial cable, which is an accessory of UPS.

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

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

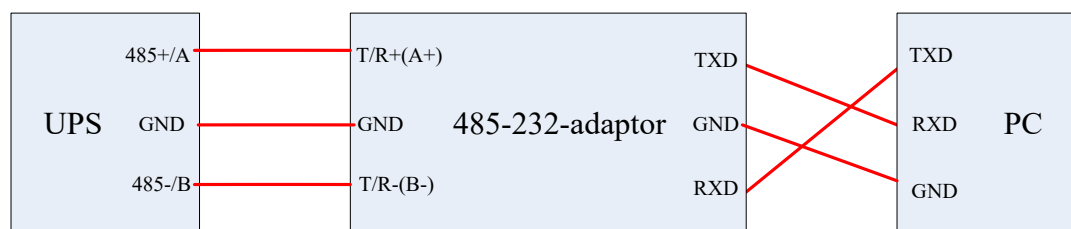


Fig 1-12 UPS and PC monitoring system connection

3) If there are more than one UPS connected, the communication bus of RS485 could be applied as below, please set the UPS with a different address, and choose the right address when starting the software connection.

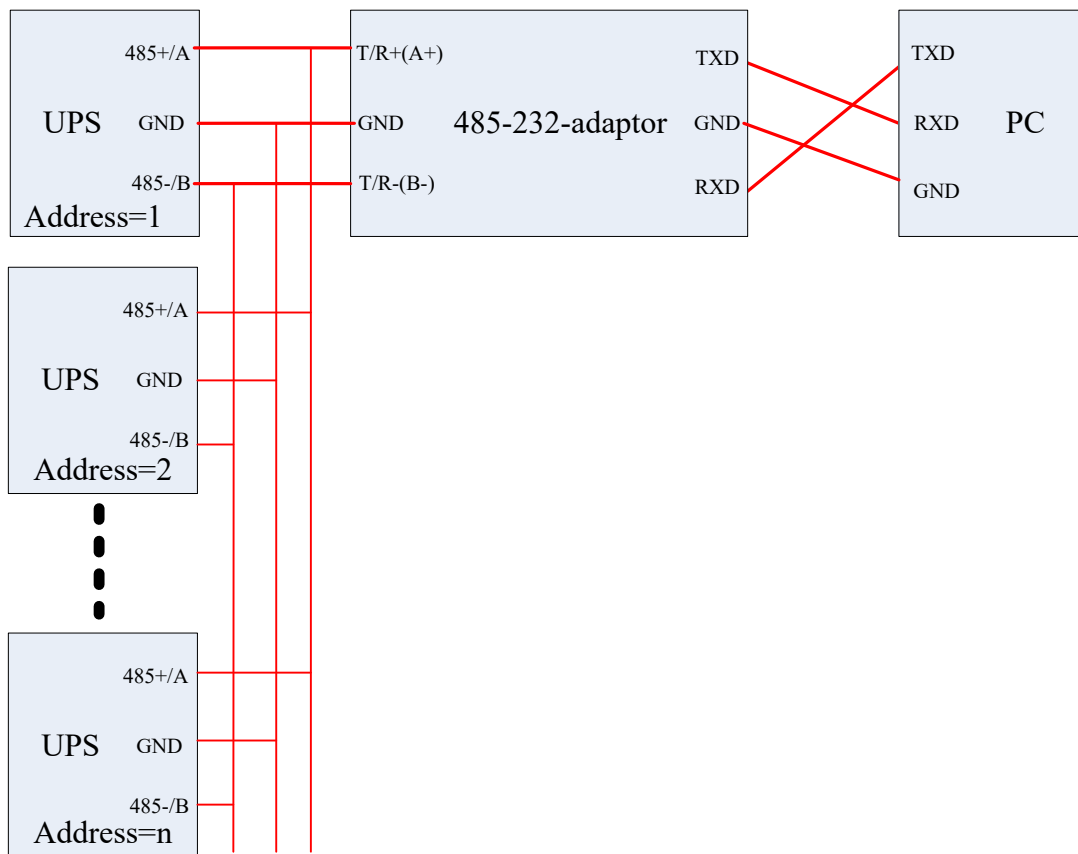


Fig 1-13 UPS and PC monitoring system connection by RS-485 bus

1.2.3 USB Connection of UPS to PC Monitoring System

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



Fig 1-14 Universal serial bus Type-B cable

2. How to Use The UPS POWER MONITOR(MTR) Software

2.1 Software Introduction

After Decompressing, the software can be used directly, need not install it. Please make sure that all 4 files should be put in the same directory, which are described as follows:

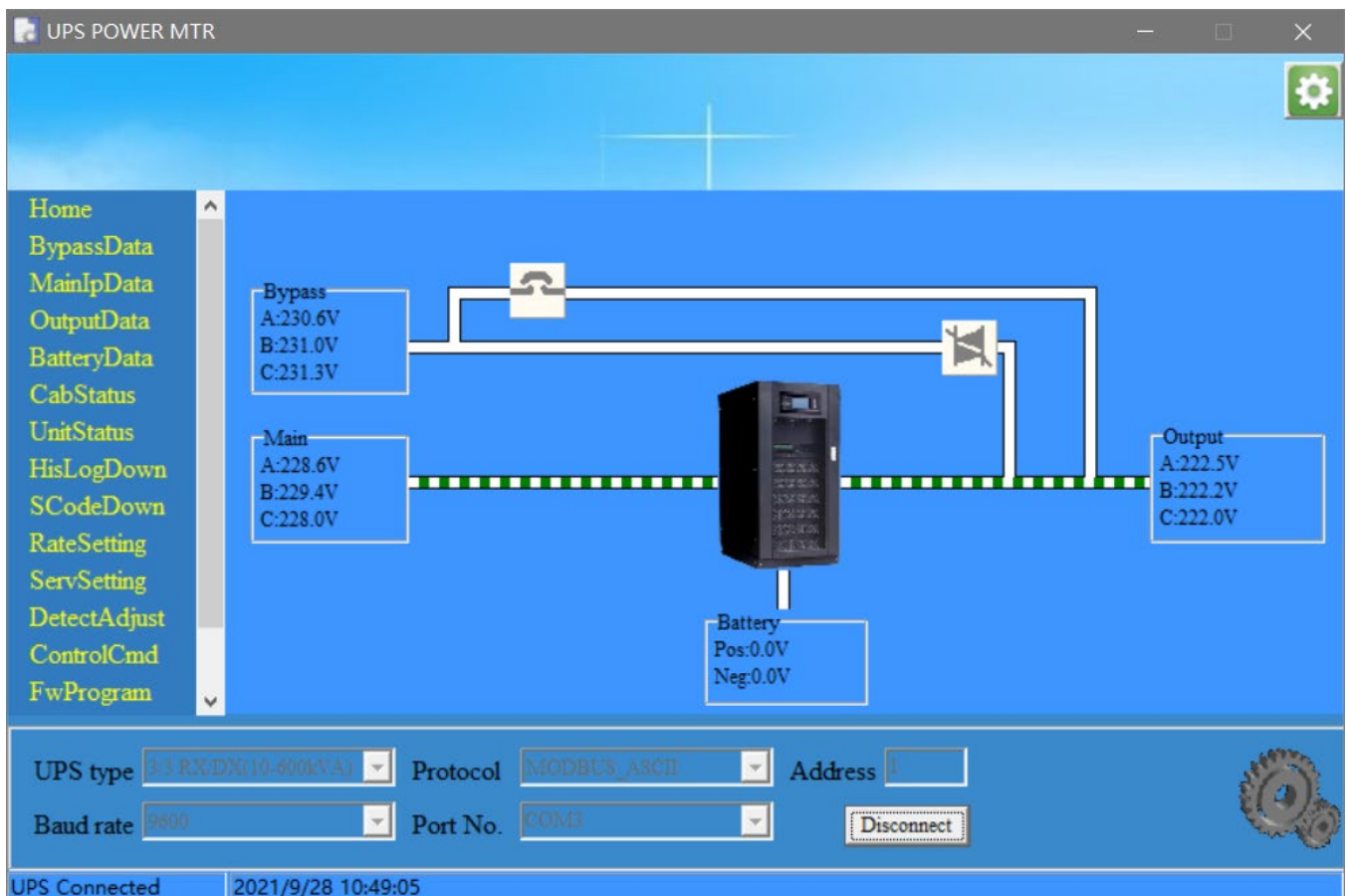
UPSPowerMTR.exe: Executable file

UPSPowerMTR.CHS: Language file

UPSPowerMTR.ENU: Language file

CLOSEAPP.EXE: Close application

As the hardware connection finished, double click “UPSPowerMTR.exe” to start it. Then Home is visible as shown in Fig 2-1. The left side of the software window is the **function selection menu**, the right side is the **energy-flow diagram**.



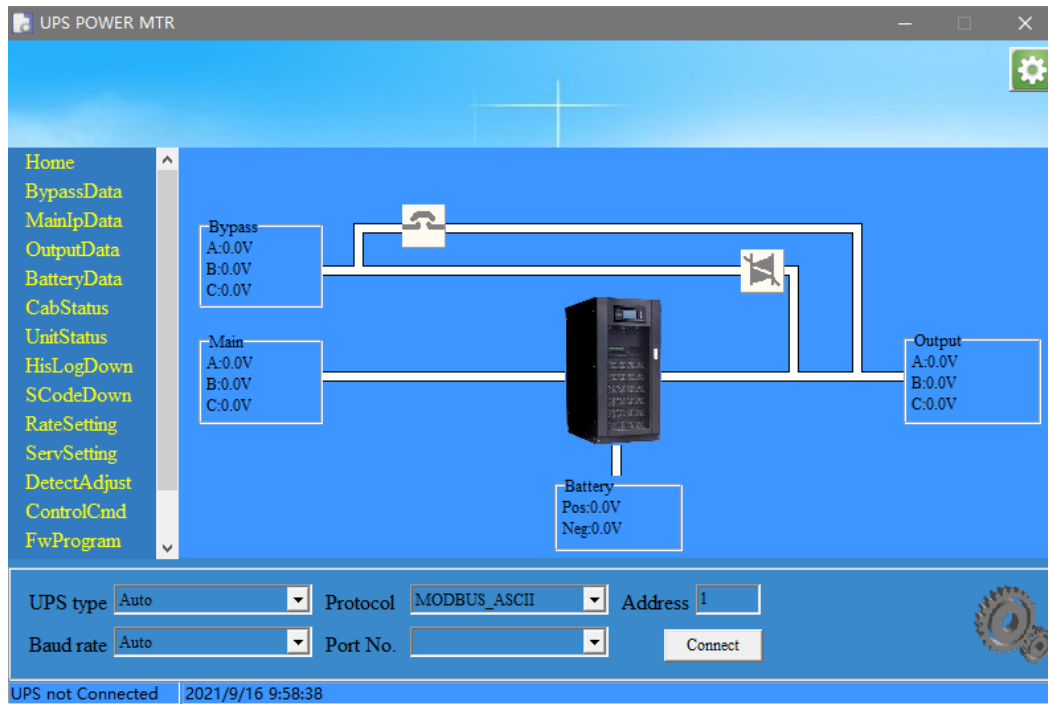
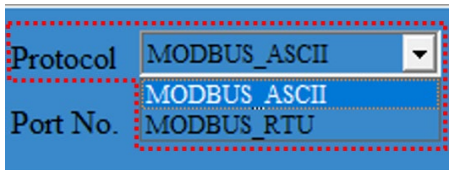


Fig 2-1 Home page

2.2 UPS Setting on the LCD

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



Different series of UPS have different display screens, and the specific setting methods are also different.

2.2.1 Color Touch Screen

The UPS with color touch screen display as shown on Fig 2-2, communication setting way as below:

a. Communication setting for RS_232 cable:

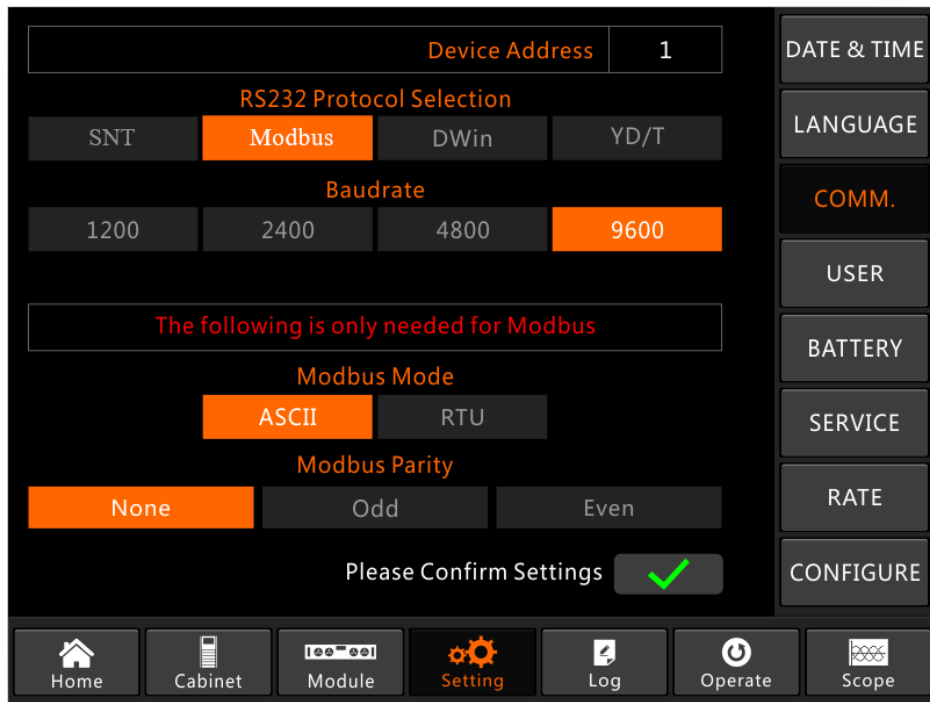


Fig. 2-2-1 Setting method for RS-232 cable

Click the icon , you will get the setting manual, then click the icon  to enter the communication setting page, as shown on Fig 2-2, and set each item step by step:

- 1) RS_232 Protocol Selection:  Modbus;
- 2) Baudrate: 9600 or any other value, but it must be the same as monitoring software;
- 3) Modbus Mode: ASCII or RTU, but it must be the same as monitoring software;
- 4) Modbus Parity:  None;
- 5) Device Address: 1;
- 6) After setting, click the confirm icon  to complete the setting.

b. Communication setting for RS_485 cable:

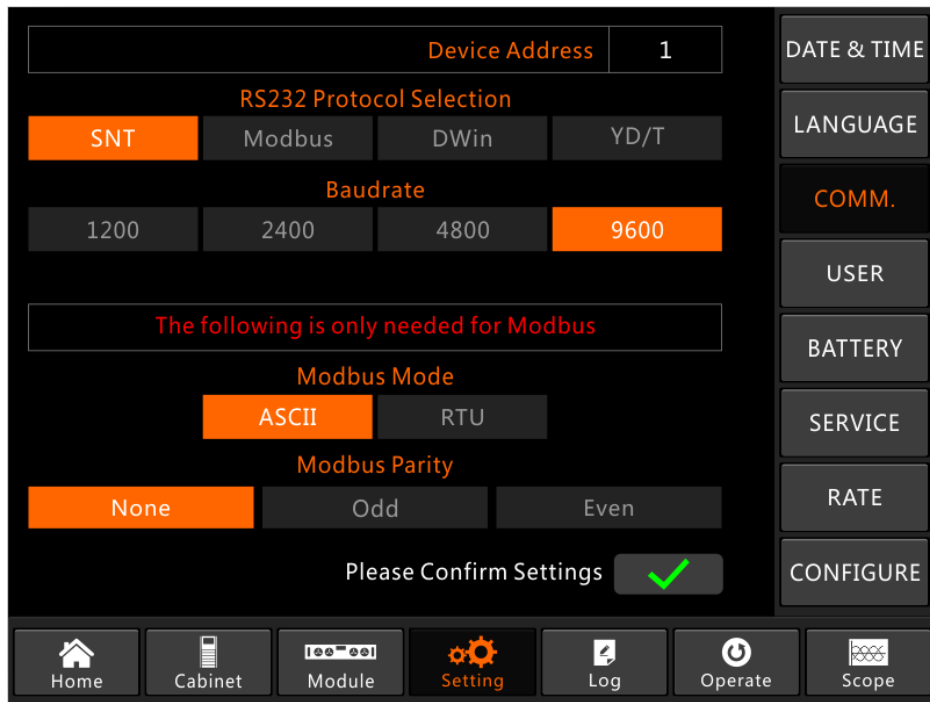


Fig. 2-2-2 Setting method for RS-485 cable or USB Type-B cable

Click the icon , you will get the setting manual, then click the icon  to enter the communication setting page, as shown on Fig 2-2, and set each item step by step:

- 1) RS_232 Protocol Selection:  SNT;
- 2) Baudrate: 9600 or any other value, but it must be the same as monitoring software;
- 3) Modbus Mode: ASCII or RTU, but it must be the same as monitoring software;
- 4) Modbus Parity:  None;
- 5) Device Address: 1 (If there are more than one UPS, please set the address to a different number);
- 6) After setting, click the confirm icon  to complete the setting.

c. Communication setting for USB cable:

The USB port communication setting method is the same as the RS_485 port communication setting method,

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

2.2.2 Monochrome Touch Screen

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

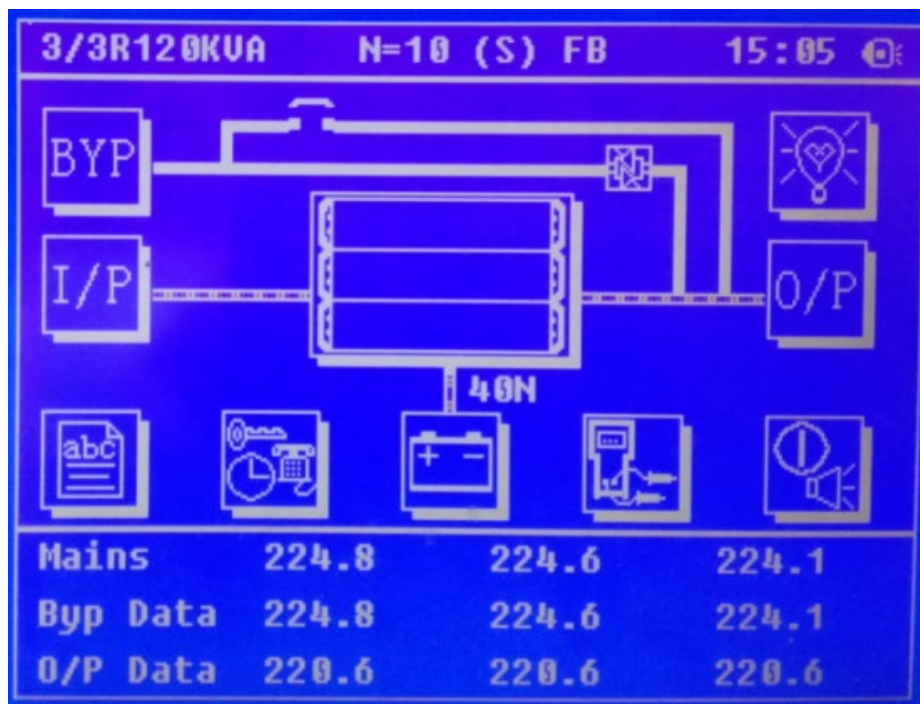


Fig 2-3 Monochrome touch screen display

a. Communication setting for RS_232 cable:

Note 1: UPS monitoring firmware version should be higher than 003.018.

Note 2: It is not allowed to use RS_232 and RS_485 at the same time.

The UPS monitoring firmware version can be read by: click  first at LCD home page, then click . The detailed setting is as below:

1) click  at the home page of UPS LCD, then click , then click  to set communication protocol as “Modbus”.

2) click  to enter protocol setting manual;

3) click  to enter Modbus setting manual, then click  to set Modbus communication mode as “ASCII” mode, you can also choose “RTU” mode, but it must be the same as monitoring software;

4) back to the protocol setting manual, click  to set Modbus device address as “1”(If there are more than one UPS, please set the address to a different number);

5) back to the protocol setting manual, click  to set Modbus Baud rate as “9600”, you can also choose other values, but it must be the same as monitoring software;

6) back to the protocol setting manual, click  to set Modbus parity bit as “None”.

b. Communication setting for RS_485 cable:

1)click  at the home page of UPS LCD display, then click , then click  to set communication protocol as “Modbus”.

2) click  to enter protocol setting manual;

3)click  to enter Modbus setting manual, then click  to set Modbus communication mode as “ASCII” mode, you can also choose “RTU” mode, but it must is the same as monitoring software;

4)back to protocol setting manual, click  to set Modbus device address ;

5) back to the protocol setting manual, click  to set Modbus Baud rate as “9600”, you can also choose other values, but it must is the same as monitoring software;

6)back to the protocol setting manual, click  to set Modbus parity bit as “None”.

7)click , back to the protocol choosing page, click  to set the current RS_232 communication protocol as “SNT”.

c. Communication setting for USB cable:

The setting method of USB communication is the same way with RS_485, so the setting method of RS_485 can be referred.

Note: 1. USB port and RS_485 port do not support simultaneous use;

2. Only RMX series UPS (second-generation modular UPS) support USB interface.

2.2.3 Small LCD

The UPS with small LCD display as shown Fig 2-4:

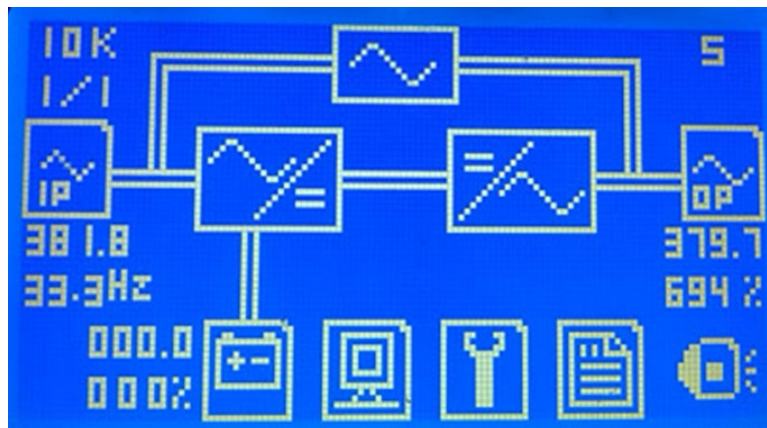


Fig 2-4 Small LCD

Note 1: The UPS rectifier version must be advanced than Version 001.001 when using the RS_232 cable.

Note 2: Port RS_485 interface is forbidden to use when occupying the RS_232 interface.

Select icon  in the main display interface of UPS LCD, then enter “Version” interface, then you will see UPS REC version.

a. Setting for RS_232 cable:

- 1) Select icon  in the LCD of UPS to enter“COMM. SET” interface;
- 2) **In the “COMM. SET” interface**, set current communication protocol to “ModBus”;
- 3) **In the “MODBUS SET” interface**, set Modbus communication mode to “ASCII” or “RTU”, set device address to “1”, set baud rate to “9600” or other, as shown on Fig 2-5:

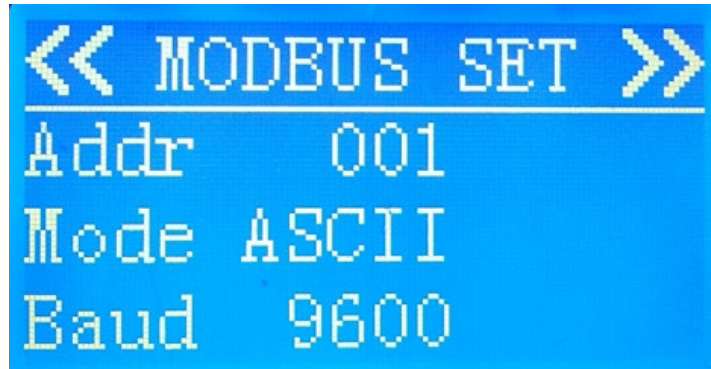


Fig 2-5 Modbus Setting

b. Setting for RS_485 cable:

- 1) Select icon  in the LCD of UPS to enter“COMM. SET” interface;
- 2) In the “COMM. SET” interface, set the current communication protocol to “SNT”;
- 3) In the “MODBUS SET” interface, set Modbus communication mode to “ASCII” or “RTU”, set device address to “1”, set baud rate to “9600” or other, as shown on Fig 2-5:

Note: No RS_485 interface on the HT31 10~20kVA and HT11 6~20kVA UPS.

2.2.4 1/1T (1-3kVA) series UPS Communication Setting

The 1/1T (1-3kVA) series UPS LCD display as shown on Fig 2-6:



Fig 2-6 1/1T (1-3kVA) series LCD Display

a. Communication setting for RS_232 cable:

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

Note: Without RS_485 interface for 1/1T(1-3kVA) UPS.

2.2.5 3/1D(5-20kVA) Color Touch Screen

The 3/1D(5-20kVA) UPS LCD display as shown on Fig 2-7:

a. Setting for RS_232 cable:

Click the button in the row of icons  at the bottom of the homepage to enter the setting page, and click the icon  on the right side of the setting page to enter the communication setting page, as shown in Fig 2-7.

Set in order in the communication setting interface:

- 1) RS232/USB Protocol: Modbus;
- 2) RS232/USB Baudrate: 9600 or any other value, but it must be the same as monitoring software;
- 3) RS232/USB Device Address: 1;
- 4) RS232/USB Modbus Mode: ASCII or RTU, but it must be the same as monitoring software;
- 5) RS232/USB Modbus Parity: None;
- 6) After setting, click the confirm icon  to complete the setting.

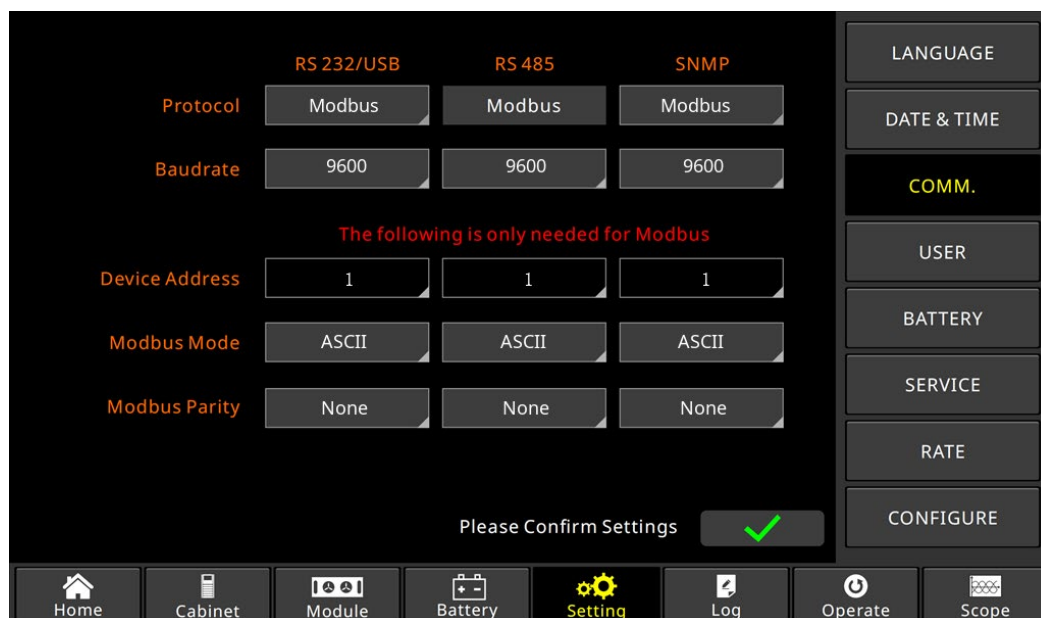


Fig 2-7 3/1D(5-20kVA) color touch screen

b. Setting for RS_485 cable:

Please refer to fig 2-7.

2.2.6 HR33/40C Color Touch Screen

The HR33/40C UPS color touch screen as shown on Fig 2-8.

In the icon on the right side of the home page, click the icon  to go to the settings page, and in the lower left corner of the settings page, click the icon  to go to the communication settings page, as shown in Figure 2-8. Set it in turn in the communication settings interface:

- 1) Device Address: 1
- 2) RS232 Protocol Selection: Modbus;
- 3) Baudrate: 9600 or any other value, but it must be the same as monitoring software;
- 4) Modbus Mode: ASCII or RTU, but it must be the same as monitoring software;

- 5) After setting, click the confirm icon  to complete the setting.



Fig 2-8 HR33/40C color touch screen

2.3 Connecting UPS with PowerMTR

To start monitoring UPS, UPS type, Protocol, Address, Baud rate, Serial port number need to be set correctly, click the button “**Connect**” to make the software communicate with UPS.

After a few seconds, if the hardware connection and the software setting are correct, the status bar at the bottom of the window should display “**UPS connected**”, as shown in Fig 2-9. If not, please check the hardware and your setting.

When connected, clicking the button ‘disconnect’ will make the software disconnect with UPS.

The settings are as follows:

UPS type: Auto or choose a type according to your UPS. (Note, some old UPS do not support auto choose)

Baud rate: Auto, you can also choose other values, but it must be the same as UPS

Protocol: MODBUS_ASCII or MODBUS_RTU, it must be the same as UPS

Address: set to the same address as the equipment being accessed.

Note 1: “UPS type” must be set correctly.

Note 2: The software can scan serial port numbers of a computer. If there is only one serial port for a computer, no need to choose.

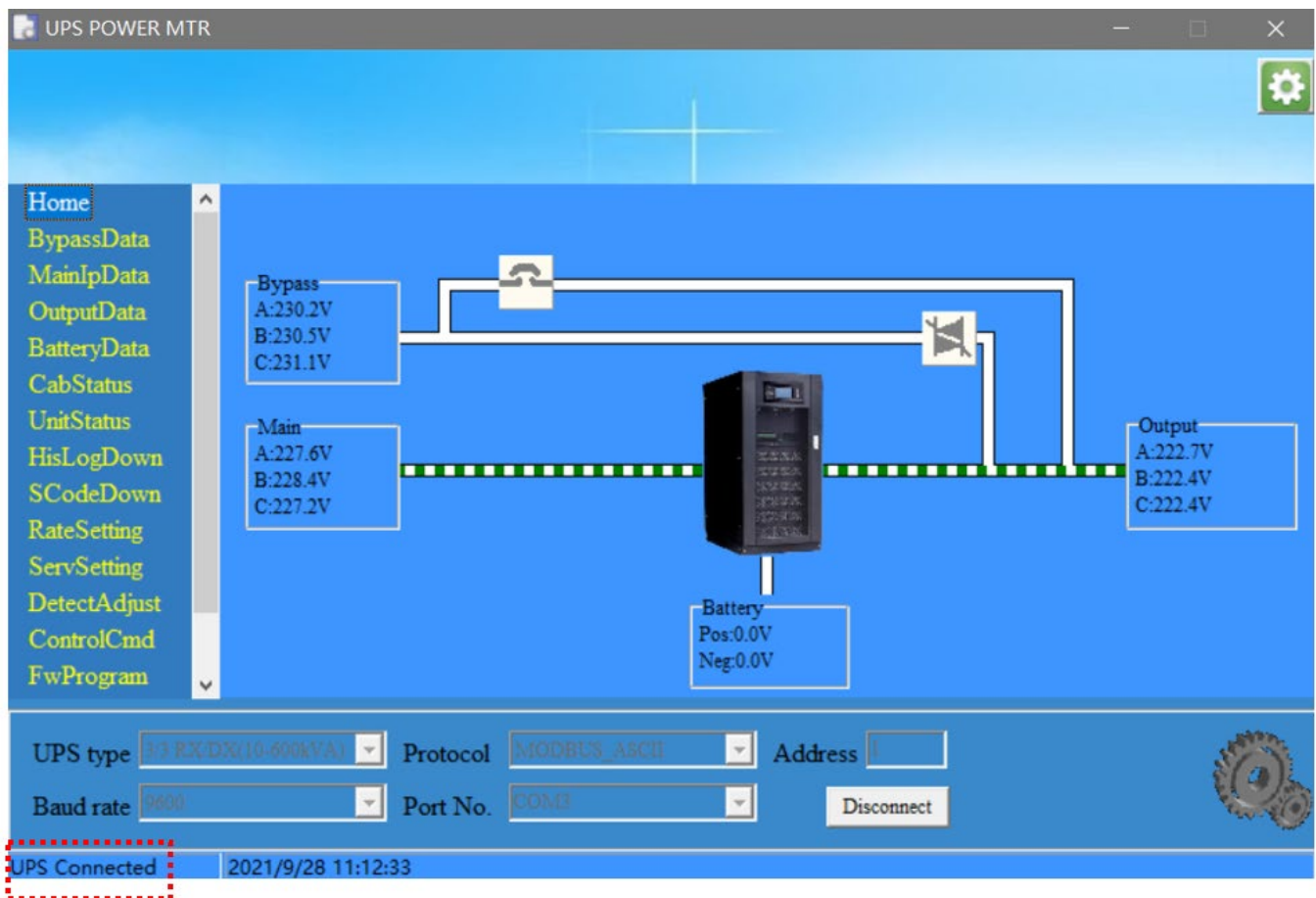
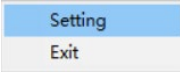


Fig 2-9 UPS connected

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 UPS Power MTR system setting

Click the icon  at the top-right corner of UPS Power MTR or right-click the system tray icon and choose 'Setting' , then a system setting dialog will popup, as shown in Fig 2-10. In this dialog, you can set the action when clicking the close button, and you also can set the password if you like, the initial password is 12345678.

Window Setting: Check this option when the energy window is closed, and if you want to exit the software, you can right-click "Exit" on the tray icon.

MTR Password Setting: Here you can modify the password according to your own needs, initialize the password to 12345678.

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 settings 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 Password Setting: 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

The image shows a 'Setting' window with a blue background and a grey title bar. It contains four distinct sections, each with a title and specific settings or input fields.

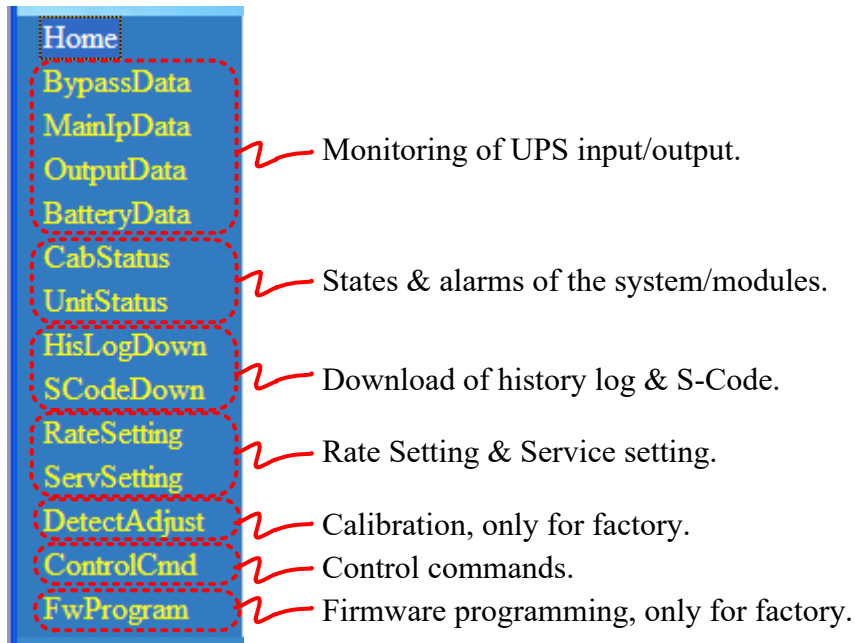
- Window Setting:** Features a checkbox labeled 'Minimizing to the system tray when close'. A 'Set' button is located at the bottom right of this section.
- MTR Password Setting:** Contains three text input fields labeled 'Please Enter Old Password', 'Please Enter New Password', and 'Please Enter New Password Again'. A 'Set' button is at the bottom right.
- UPS setting unlock:** Includes a single text input field and an 'Unlock' button to its right.
- UPS Password Setting:** Contains two text input fields labeled 'Please Enter New Password' and 'Please Enter New Password Again'. A 'Set' button is at the bottom right.

Fig 2-10 Setting

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 can not unlock the UPS settings, you need to return the UPS factory initialization before you can reset the password.

3 Function selection menu

The MTR software has the functions of monitoring, setting, and control of the UPS, the functions are shown as below.



3.1 Home

Home Page displays the **energy-flow diagram** and information of main input voltage, bypass voltage, output voltage, and battery voltage. The interface appears to be two different types according to the UPS model selected. Type A with 1/1T(1-3kVA)、1/1T (6-20kVA)、3/1T (10-20kVA) selected as is shown in Fig.3-1; Type B with other types selected as is shown in Fig.3-2.

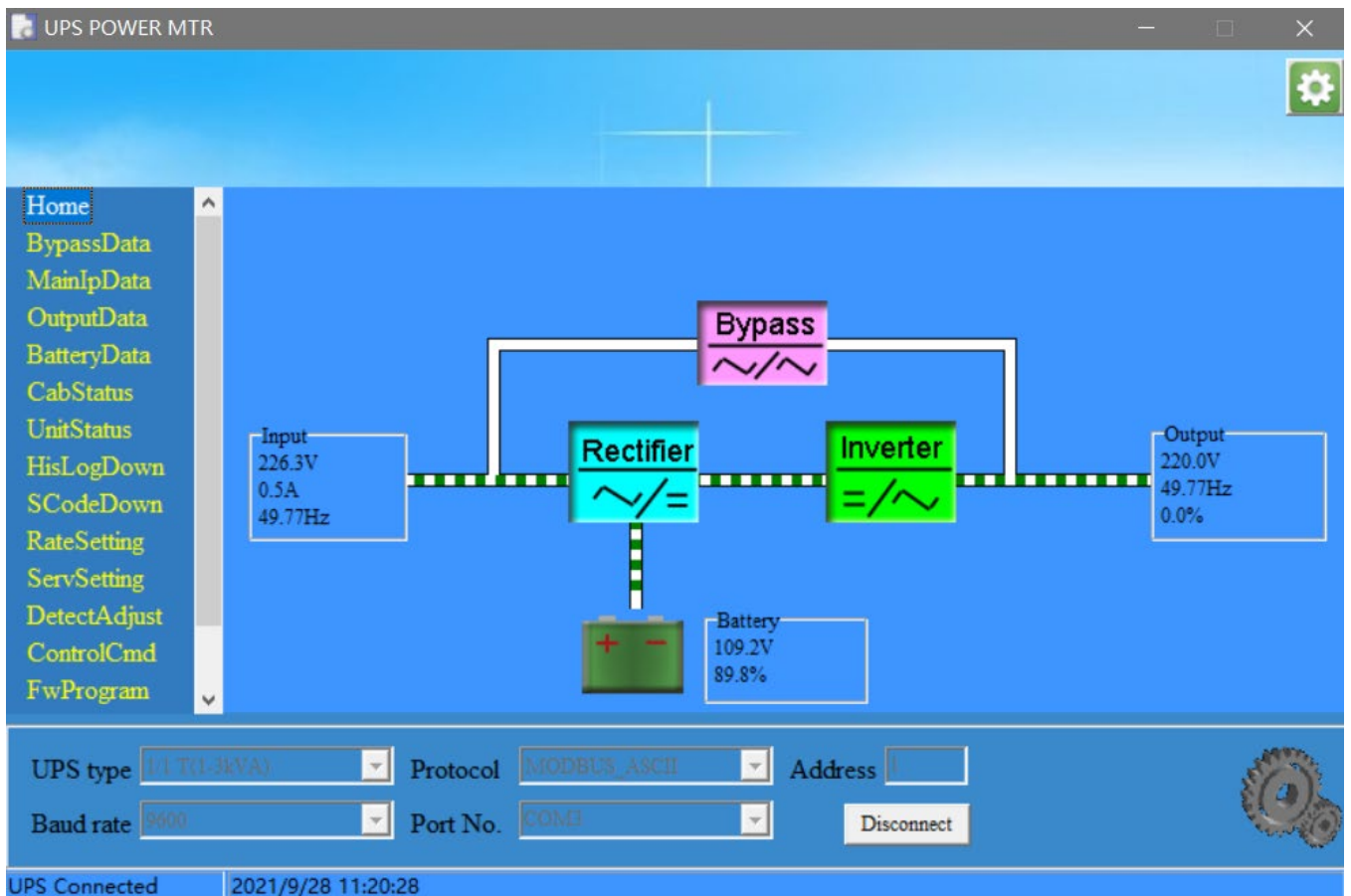


Fig.3-1 Homepage-Type A

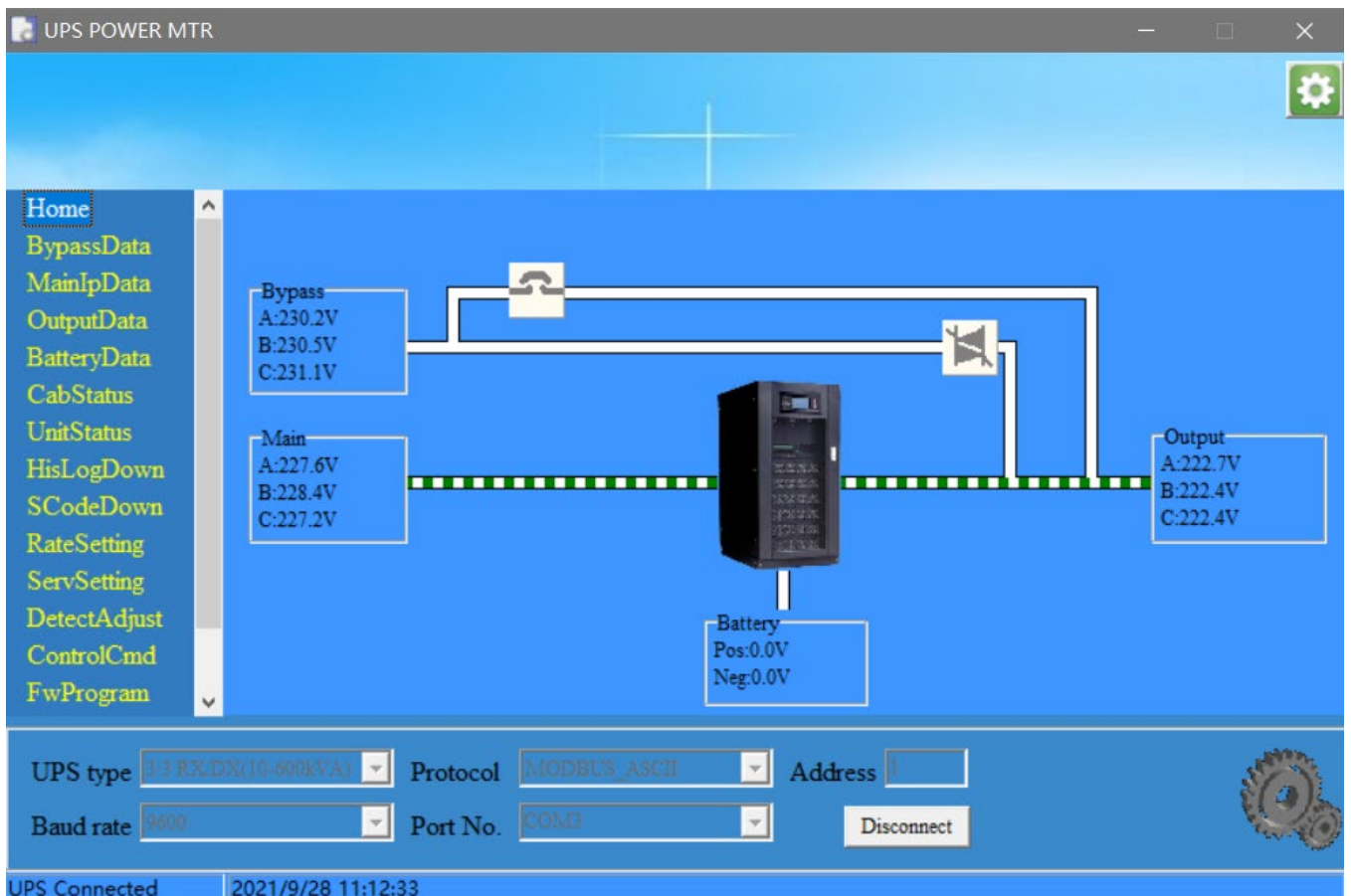


Fig.3-2 Homepage-Type B

3.2 BypassData

This page is to show the data of **UPSbypass input**, including voltage, current, frequency, and power factor, as shown in Fig.3-3.

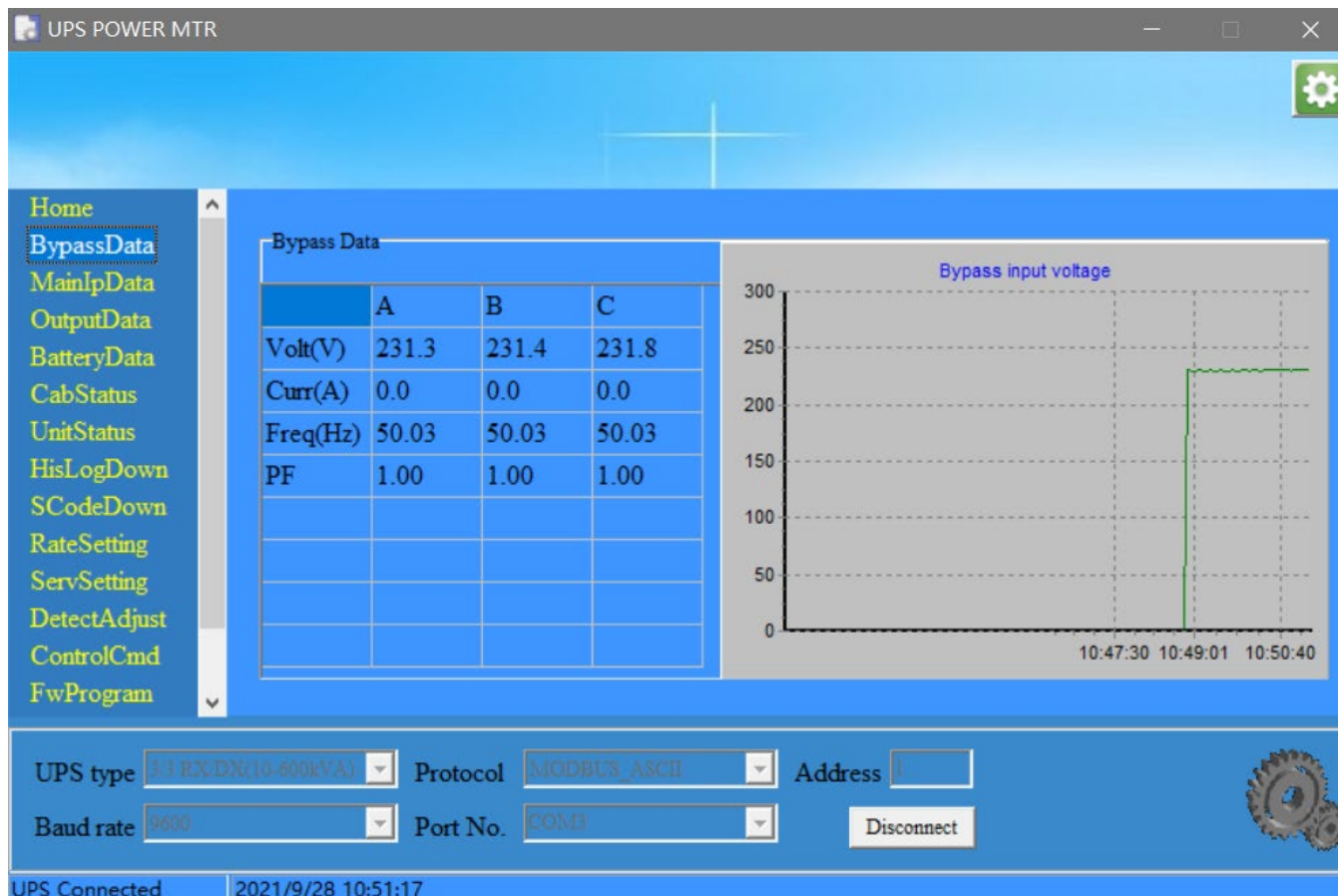


Fig.3-3 Bypass Data

3.3 MainIpData

This page is to show the data of UPS main input, also including voltage, current, frequency, and power factor, as shown in Fig.3-4.

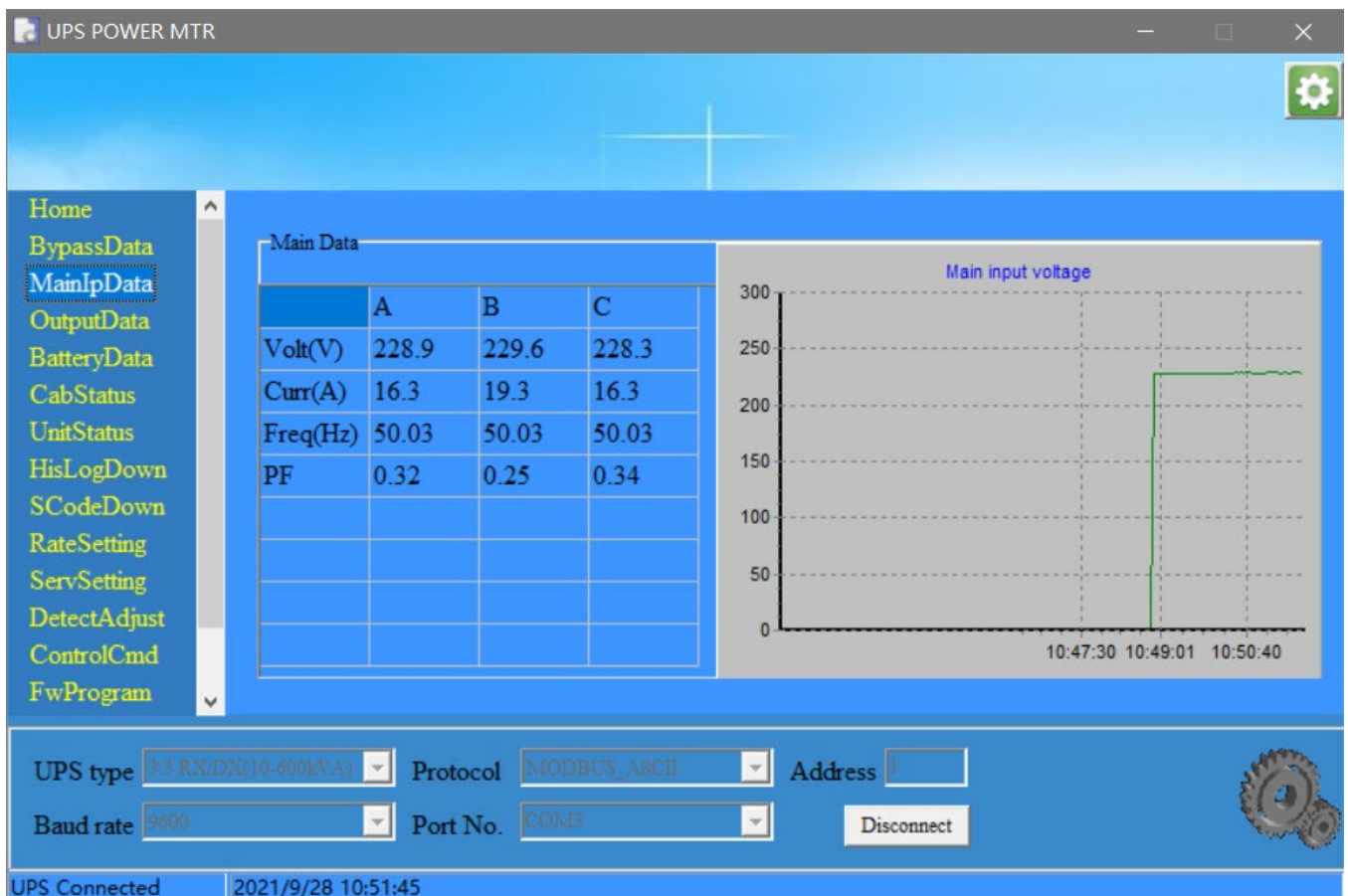


Fig.3-4 Main Input Data

3.4 OutputData

This page is to show the data of UPS output, including voltage, current, frequency, power factor, power, and load percents, as shown in Fig.3-5.

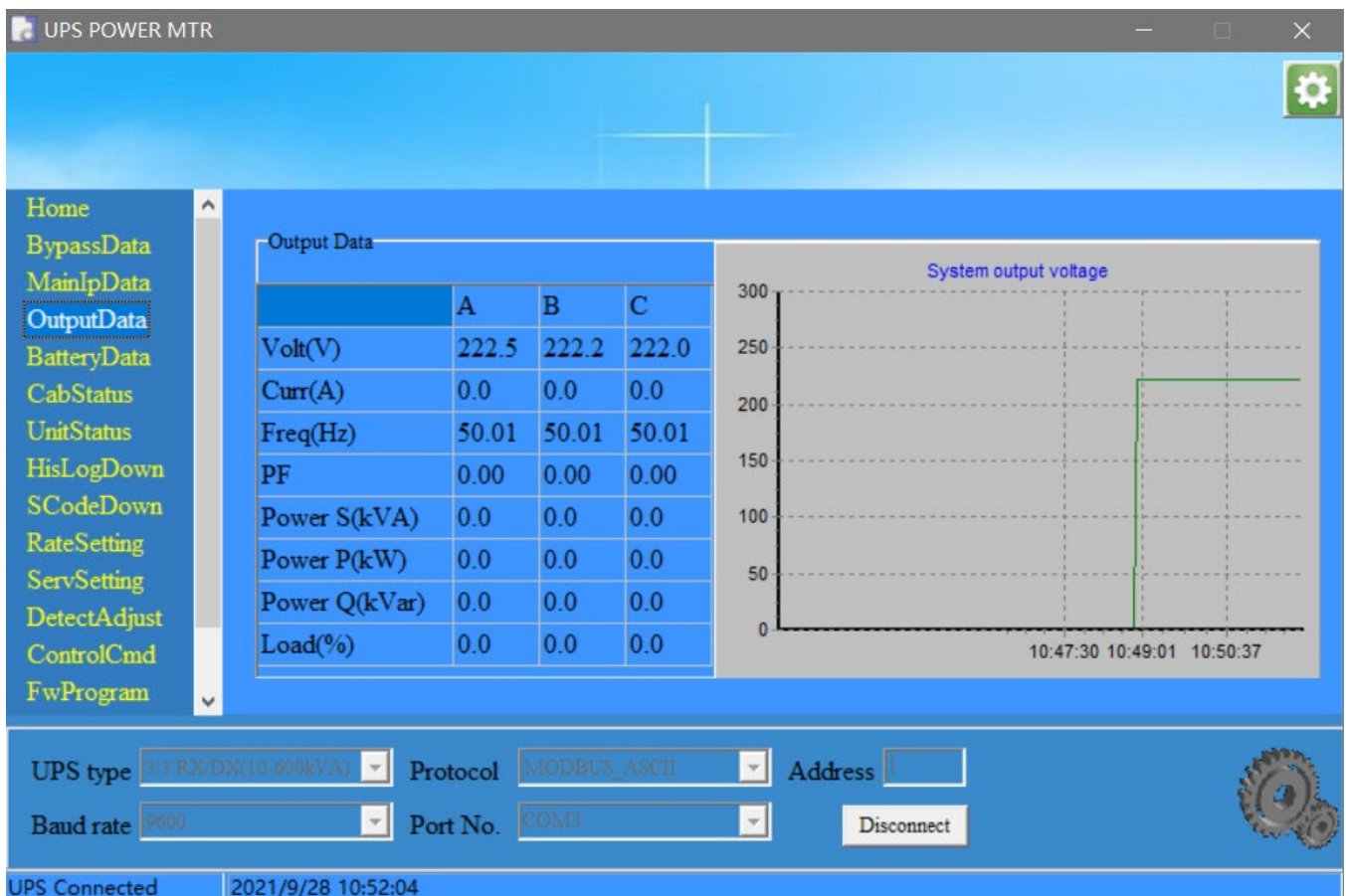


Fig.3-5 Output Data

3.5 BatteryData

This page is to show the data of the **UPS Battery**, including voltage, charge/discharge current, capacity and remind time. The capacity and reminder time data are effective when UPS is discharged, as shown in Fig.3-6(without battery).

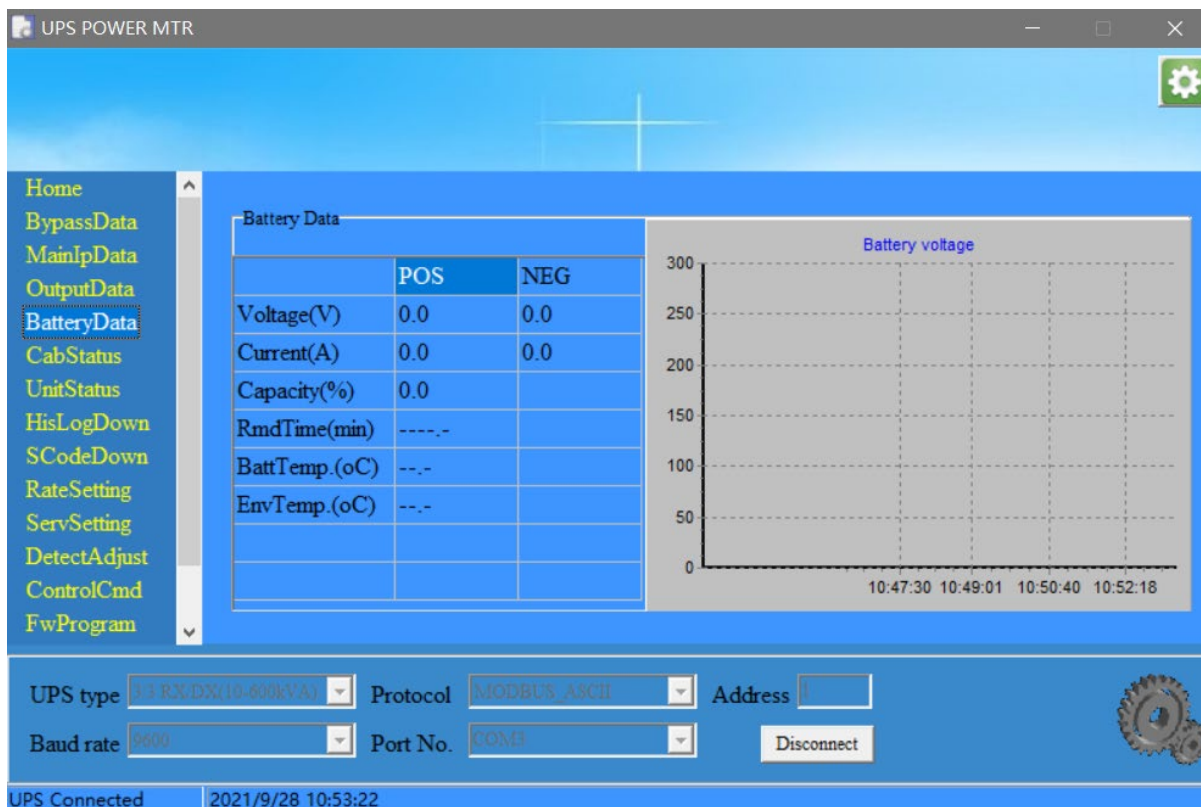


Fig.3-6 Battery Data

3.6 CabStatus

This page is to show the status of the cabinet. As it's shown in Fig 3-7, the description in the yellow frame indicates the status listed in the red frame. Take the first row as an example, the 'By UPS' in the yellow frame indicates the power supply source is UPS.

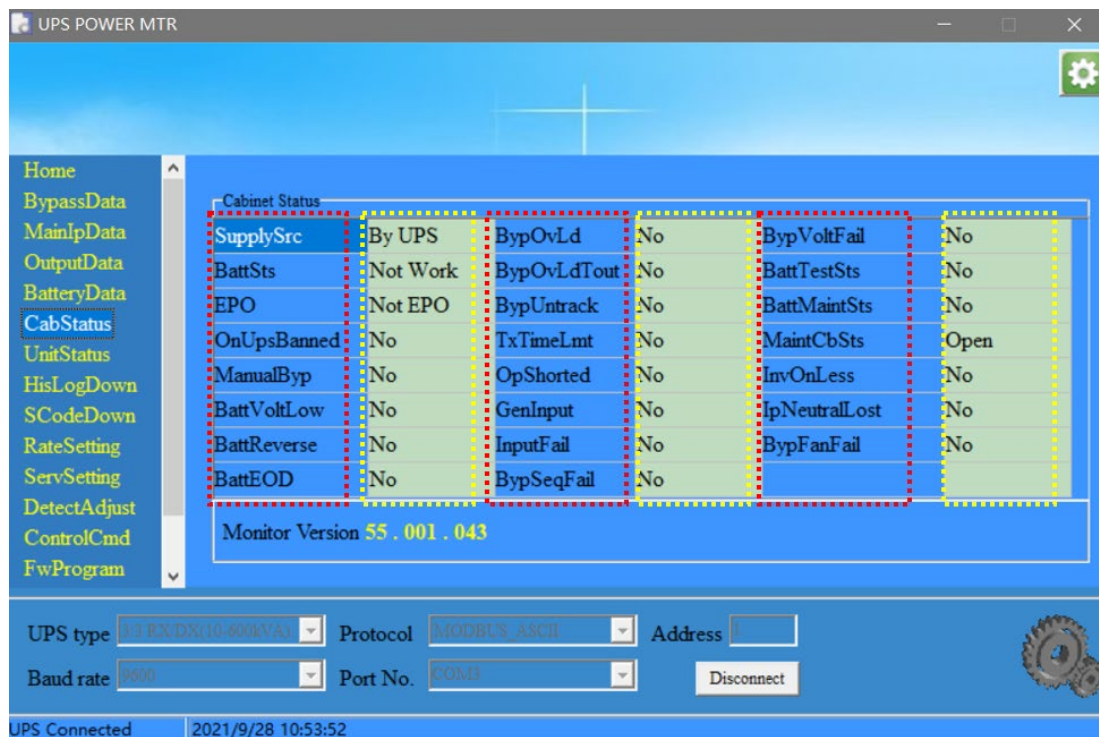


Fig.3-7 Cabinet Status

Cabinet status items explanation:

Display Items	Means
SupplySrc	System power supply source. Available states: None, By UPS, Bypass.
BattSts	The work status of battery. Available states: Not Work, Float, Boost, Discharge.
EPO	Emergency power off. Available states: Not EPO, EPO.
OnUpsBanned	Whether UPS power on is banned. Available states: No, Yes.
ManualalByp	Whether transfer to bypass mode manually. Available states: No, Yes.
BattVoltLow	Whether battery voltage is low. Available states: No, Yes.
BattReverse	Whether battery reversed connected. Available states: No, Yes.
BattEOD	Whether battery End Of Discharge occurred. Available states: No, Yes.
BypOvLd	Whether bypass over load. Available states: No, Yes.
BypOvLdTout	Whether bypass over load timeout. Available states: No, Yes.
BypUntrack	Whether bypass frequency untrack occurred. Available states: No, Yes.
TxTimeLmt	Whether the times of transfer to bypass reach its limit. Available states: No, Yes.
OpShorted	Whether Output short circuit occurred. Available states: No, Yes.
GenInput	Whether generator input. Available states: No, Yes.
InputFail	Whether input fail occurred. Available states: No, Yes.
BypSeqFail	Whether bypass sequence fail. Available states: No, Yes.
BypVoltFail	Whether bypass voltage fail. Available states: No, Yes.
BattTestSts	Battery test status. Available states: No, Ok., Fail, Testing
BattMaintSts	Battery maintenance status. Available states: No, Ok., Fail, Maintaining
MaintCbSts	Maintain CB status. Available states:Open, Close.
InvOnLess	Whether Inverter Capacity is less than required. Available states: No, Yes.
IpNeutralLost	Whether input neutral lost. Available states: No, Yes.
BypFanFail	Whether bypass fan fail. Available states: No, Yes.

3.7 UnitStatus

The UnitStatus page has two display modes: dynamic mode and static mode. Both display modes are automatically detected by the software and static mode is used as compatible with older versions. The software automatically detects the current online module after connection, and if UPS supports dynamic mode and the number of online modules is not 0, it automatically enters dynamic mode, otherwise it enters static mode.

3.7.1 Dynamic Mode

Entering the dynamic mode interface in Figure 3-8, click on the "Unit Status" and "Module Data" buttons above this page to view the status information and analog values of the current online module. Unit Status displays status information for the current online module, which can be viewed up to 30 modules, which can be viewed by dragging the horizontal scroll bar when the module exceeds the right line. The first behavior module number of the table, the first list of states on the left. The intersection of the column where a certain module is located and the row where a certain state quantity is located displays the current state of the corresponding state quantity of this module. For the mark,

the“” indicates the normal operation; the mark”” indicates fault occur.

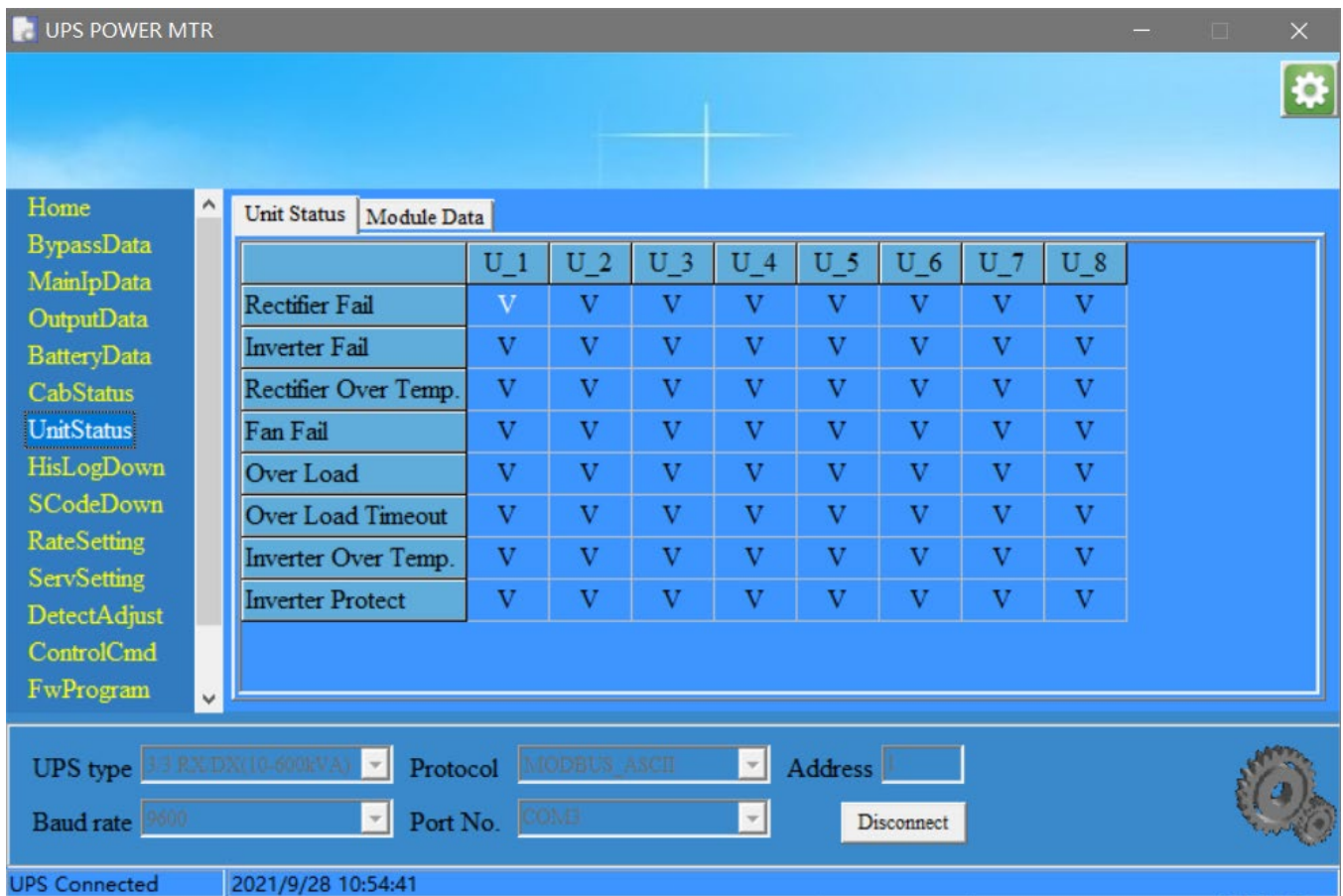


Fig3-8 Dynamic mode UnitStatus page

The “Module Data” displays the analog value of the current selected module As is shown in Fig 3-9,the number in the red frame is the selected module. By pulling-down menu in the yellow frame and confirm click, users can change the information displayed for different module.

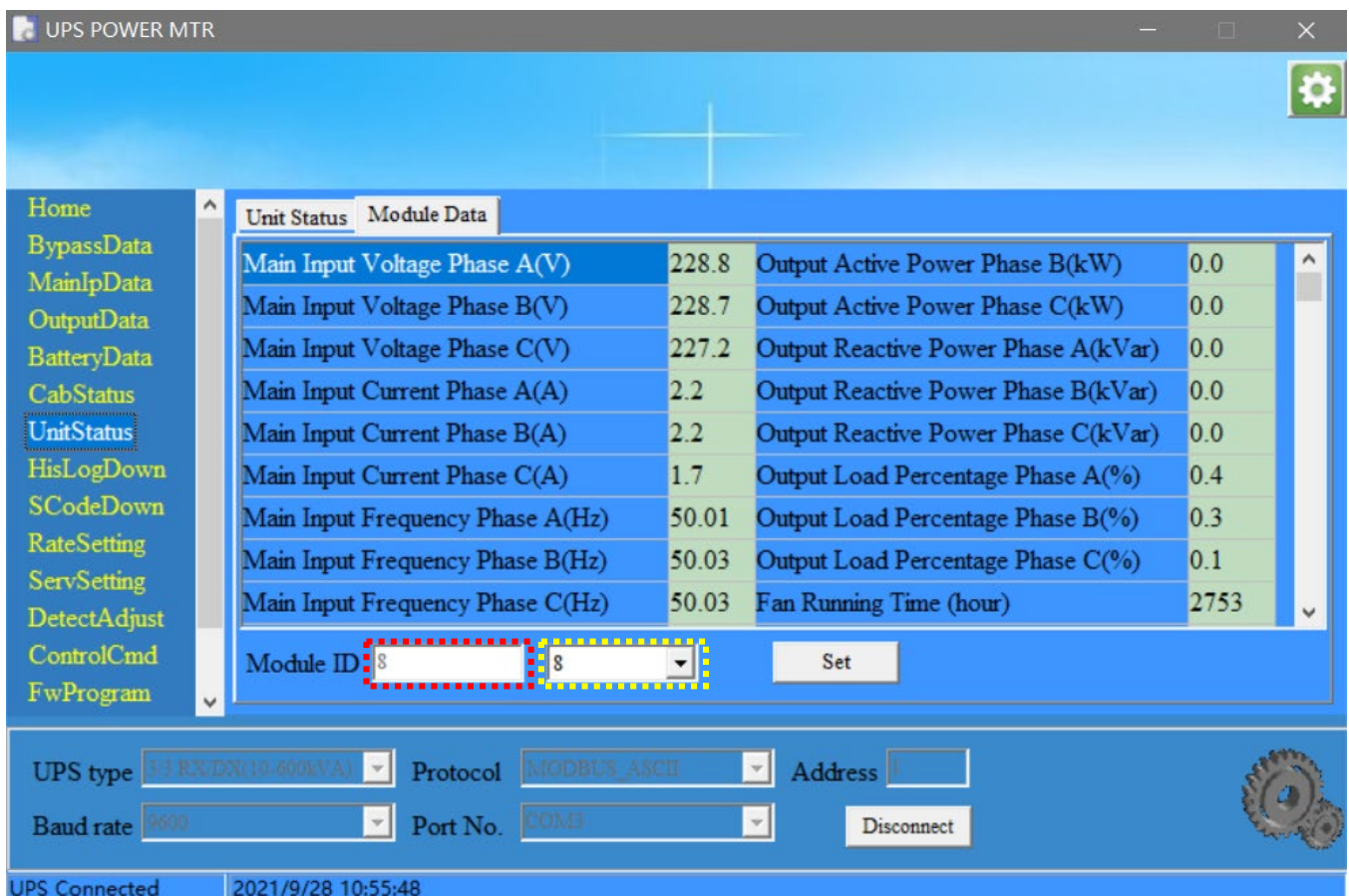


Fig 3-9 Module Data

3.7.2 Static Mode

In static mode, only the status information of the module can be viewed, and only 10 modules are supported. As shown in Figure 3-10, the first line of the table is the module number, and the first column on the left is the state quantity. The intersection of the column where a certain module is located and the row where a certain state quantity is located displays the current state of the corresponding state quantity of this module. If the corresponding cross point is “?”, it

means the unit does not exist; “V” means normal; “X” means malfunction.

Note: HT series UPS are displayed as "Unit One"!

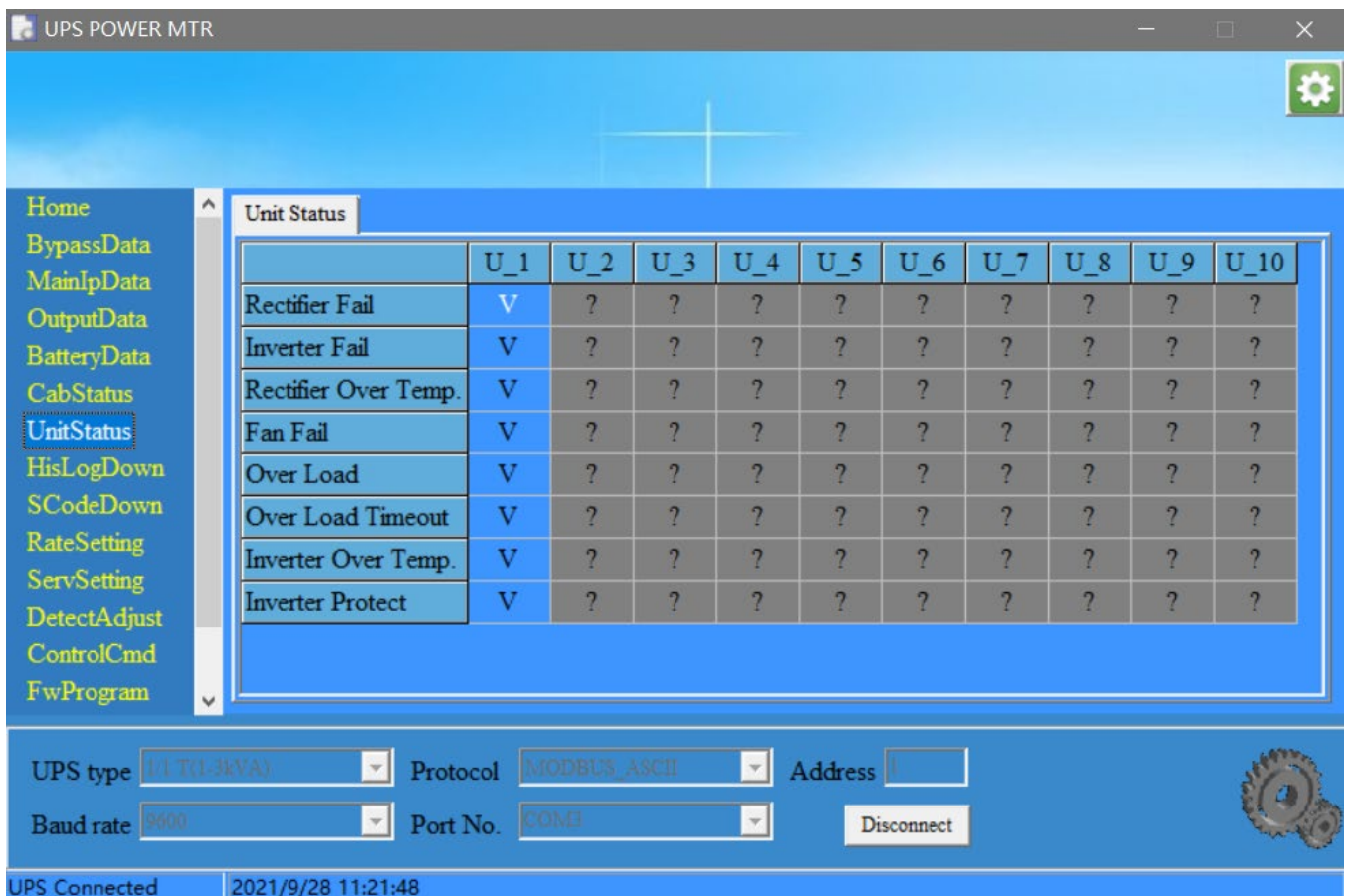


Fig 3-10 Static mode UnitStatus page

3.8 Hislog Down

UPS history log can be downloaded to PC on this page. Click 'Download' to download history log from UPS which then would be displayed on PC. Click 'Save' to save history log to PC as a file. It's shown in Fig.3-11.

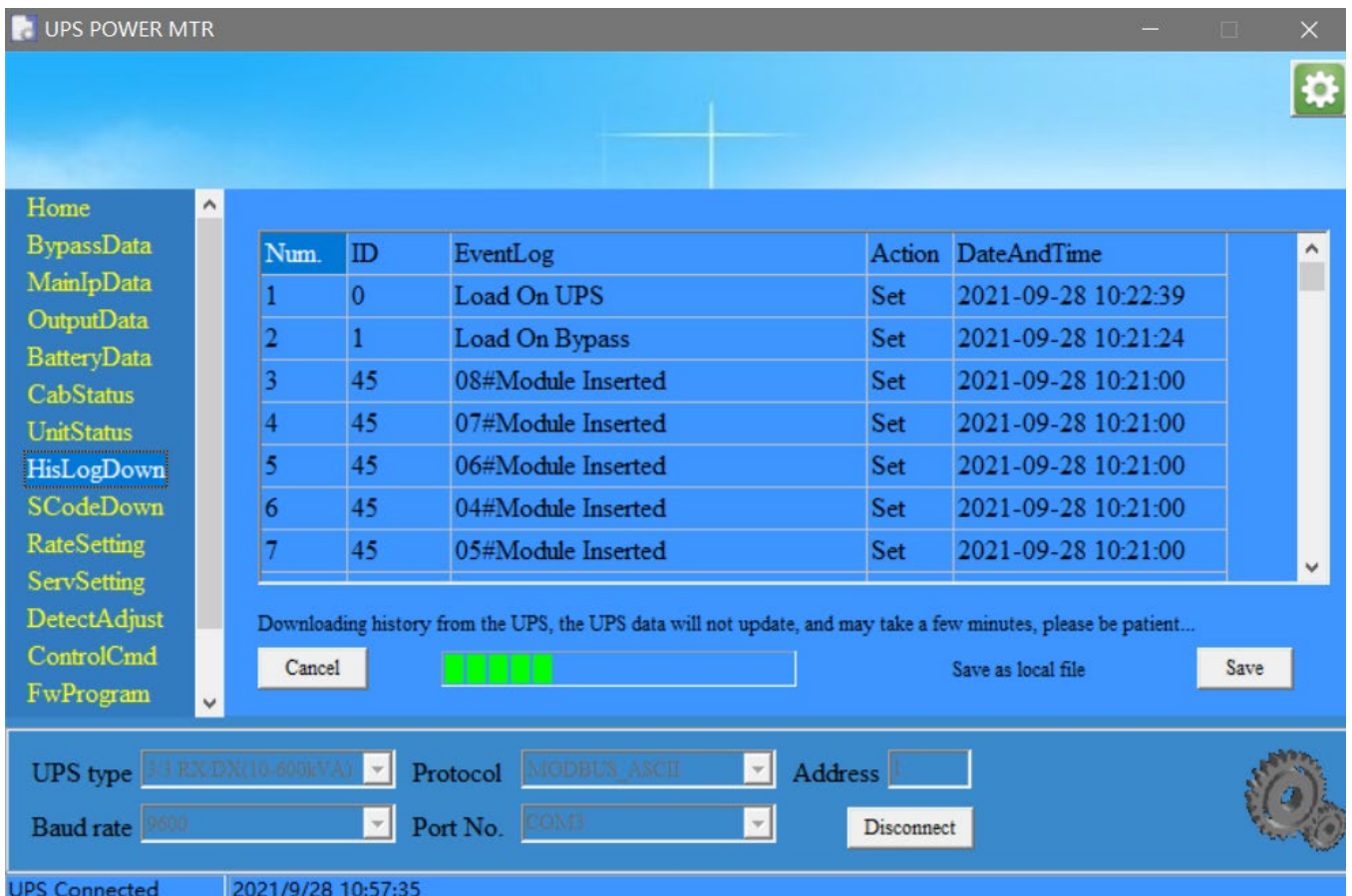


Fig.3-11Hislog Down

3.9 SCodeDown

“SCode download” interface is shown in Fig 3-12. The SCode can be downloaded to the grid on the left by simply clicking the “Download”button,and click “Save” to save the SCode to the local computer.

If you want to analyze theSCode that was download from UPS, you can input it to the box on the right and click the button “Analyze”then the “Analyzedialogwindow”will showasFig3-13.

There are three methods to input the SCode into the SCode box :

(a)Double-click the SCode title on the left, theSCode will be copy to the SCode box, as shown in Fig 3-12.

(b)Save the SCode to the local file andcopy it to the SCode box.

(c)Directly type the SCode to the SCode box, make sure the format is as same as the one on the left box. Normally you can copy and paste from the SCode file.

Note: (1) The input of a single SCode must be complete and the format must be correct;

(2) A single SCode cannot be entered repeatedly;

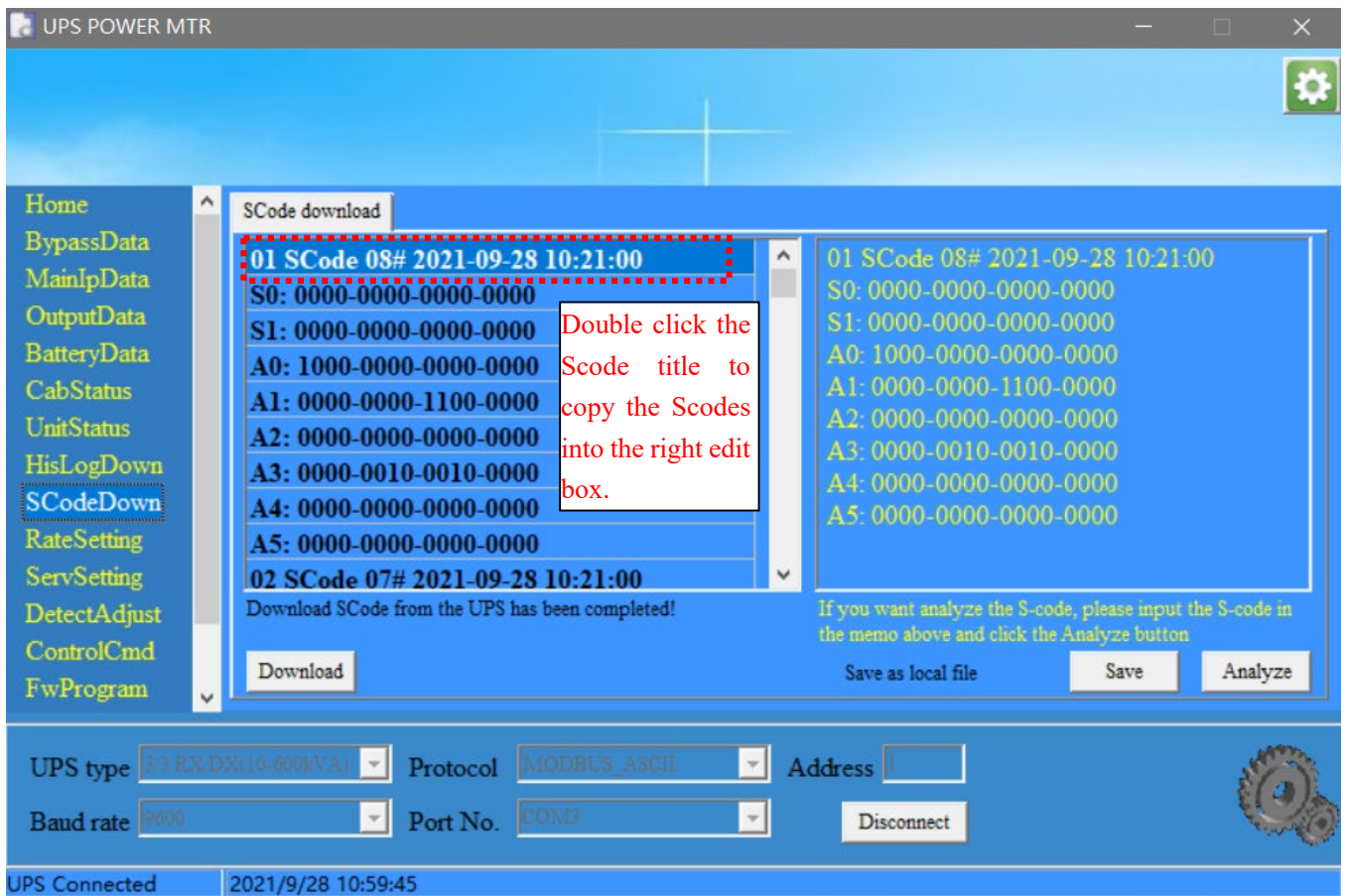


Fig 3-12 Scode Download

“Analyzedialogwindow”as shown in Fig 3-13, the failure will be shown in red in order to attract attention. For the mark ?, it meansthe parameter is not detected, the mark X it indicates the data is out of range.

SCode Analyze				
1	S0	1	Output Power Source	None
2			Rectifier Status	OFF
3			Inverter Status	OFF
4			Bypass Status	Abnormal
5		2	Battery Status	Disconnect
6			Input CB Status	Open
7			Bypass CB Status	Open
8		3	Output CB Status	Open
9			Maintenance CB Status	Open
10			Postive Battery String CB Status	Open
11			Negative Battery String CB Status	Open
12		4	Postive Battery String Connect Status	Disconnect
13			Negative Battery String Connect Status	Disconnect
14			Inverter On Allow Status	Enable
15			Inverter Working Status	Not Ready
16			Generator Connect Status	Disconnect

Fig 3-13 Scode analyze

3.10 RateSetting

"RateSetting" need to enter the correct password before relevant settings can be made for factory use.

3.10.1 RateSetting

"RateSetting" menu can set the rated system voltage and frequency. The values in red rectangle are currently used by UPS, while in yellow rectangle are the new values to be set. Click button "set" can save the data to the UPS, as is shown in Fig.3-14.

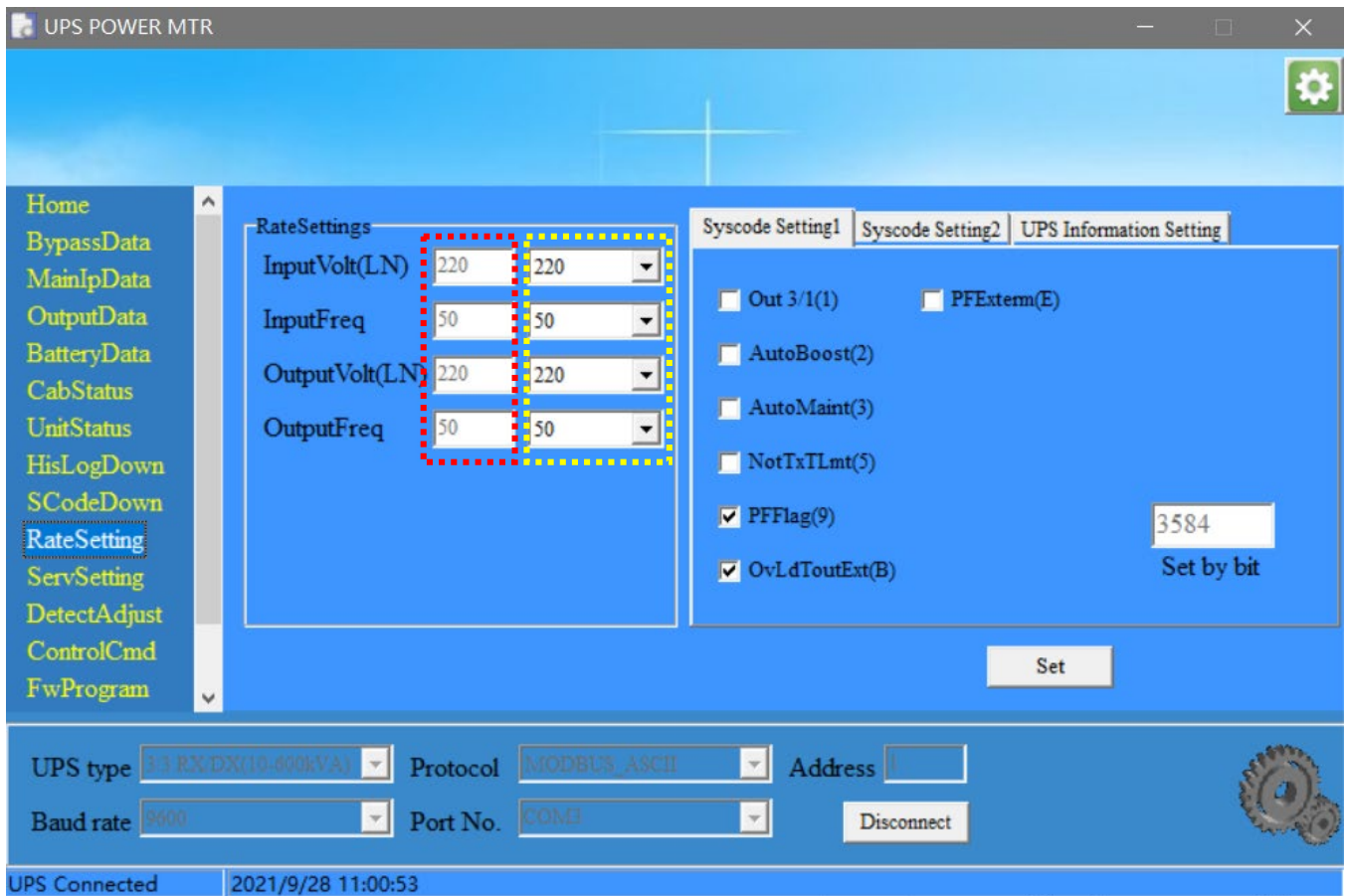


Fig 3-14 RateSetting

The items are described as follows:

Contents	Description
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)

3.10.2 Syscode setting1

The syscode setting1 is set by bit. Different bit may has different meaning to different model of UPS. Users can check or uncheck the checkbox and click “Set” to save the setting to the UPS. As is shown in Fig3-15.

Fig3-15 Syscode setting1

System code is set by bit, described as follows:

Setting items	Choose (1)	Not choose (0)
11/31:	Enable system single-phase input single-phase output	Enable system three-phase input and single-phase output
Out 3/1	Single phase output (Do not choose this function unless confirmed by manufacturer)	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	Disable frequency self adaptive function
PFFlag:	Combine with PFExterm to set different output PF. PFFlagPFExtermPF 0 0 0.8 0 1 0.7 1 0 0.9 1 1 1	
PFExterm:	See PFFlag	See PFFlag
OvLdToutExt(B)	Long inverter overload time	Short inverter overload time
DcBusLevel:	Enable high bus voltage	Disable high bus voltage
FanFailBzOnEn:	Enable fan failure buzzer alarm	Disable fan failure buzzer alarm
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 speed 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

Note: Different UPS model has different system code.

3.10.3 Syscode setting 2

The syscode setting 2 is set by bit. Different bit may have different meaning to different model of UPS. Users can check or uncheck the checkbox and click “Set” to save the setting to the UPS. As is shown in Fig3-15.

The screenshot shows a software interface for 'Syscode Setting2'. It has three tabs at the top: 'Syscode Setting1', 'Syscode Setting2' (which is active), and 'UPS Information Setting'. The main area is blue and contains five settings, each with an unchecked checkbox and a label: 'In 3/1(1)', 'DispLLVolt(3)', 'SntComAlmEn(5)', 'OpShortClrEn(B)', and 'FastBoostEn(C)'. To the right of these is a numeric input field containing the value '0'. Below the input field is the text 'Set by bit'. At the bottom center of the interface is a 'Set' button.



Fig3-16 Syscode setting2

System code is set by bit, described as follows:

Setting items	Choose (1)	Not choose (0)
In3/1:	Enable system single-phase input	Enable system 3-phase input
RB:	Set UPS mode as RB(In-built battery pack)	Not RB mode
ButtFncPwdL1:	Set monochrome touch LCD function page password for 1level	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 fact boost charge mode	
NeutralLostClr:	Neutral line lost auto clear faults	Normal logic
EpoNormClose:	Epo terminalnormal close	Epo terminalnormal open
HiEfficiency:	Enable high performance	Disable high performance
DryNormOpen:	The dry contact terminal is normally open (dry contact signal is generated when closed)	The 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
PFFExterm:	See PFFlag in Syscode setting1	See PFFlag in Syscode setting1

3.10.4 UPS information setting

The UPS information setting include: UPS Mode, UPS Type, Company Name, as is shown in Fig3-17. You can set the UPS Type and Company Name by input it in right edit, then click set button. Among them, "UPS Mode" is the information displayed on the LCD display, with a maximum of 10 characters. "Company Name" can be displayed in the SNMP card information, up to 15 characters. When the UPS mode is set to 0, the UPS model can only be set as the companys product model; when the "UPS mode" is set to 1, other product models can be set.

Syscode Setting1	Syscode Setting2	UPS Information Setting
UPS Mode	0	0
UPS Type	RM300/30X	RM300/30X
Company Name	INVT CO., LTD.	INVT CO., LTD.
Set		

Syscode Setting1	Syscode Setting2	UPS Information Setting
UPS Mode		
UPS Type		
Company Name		

Fig3-17 UPS information setting

3.11 ServSetting

In the “ServSetting” menu, a password is needed before entering. The submenu “System Setting”, “Battery Setting”, “Customization”, “DryContactSet” are for factory use, the “Warning Set” and “Shutdown setting” are for customer use.

3.11.1 System Setting

“System Setting” interface is shown as Fig3-18. The values in red rectangle are currently used by UPS, while in yellow rectangle are the new values to be set. Click “Set” to send new values to UPS. In the system Settings page, click the “SaveAll” button can save all the data and setting to the local disk, also the data can be restored to the monitoring software from the local disk by clicking the “Recover”.

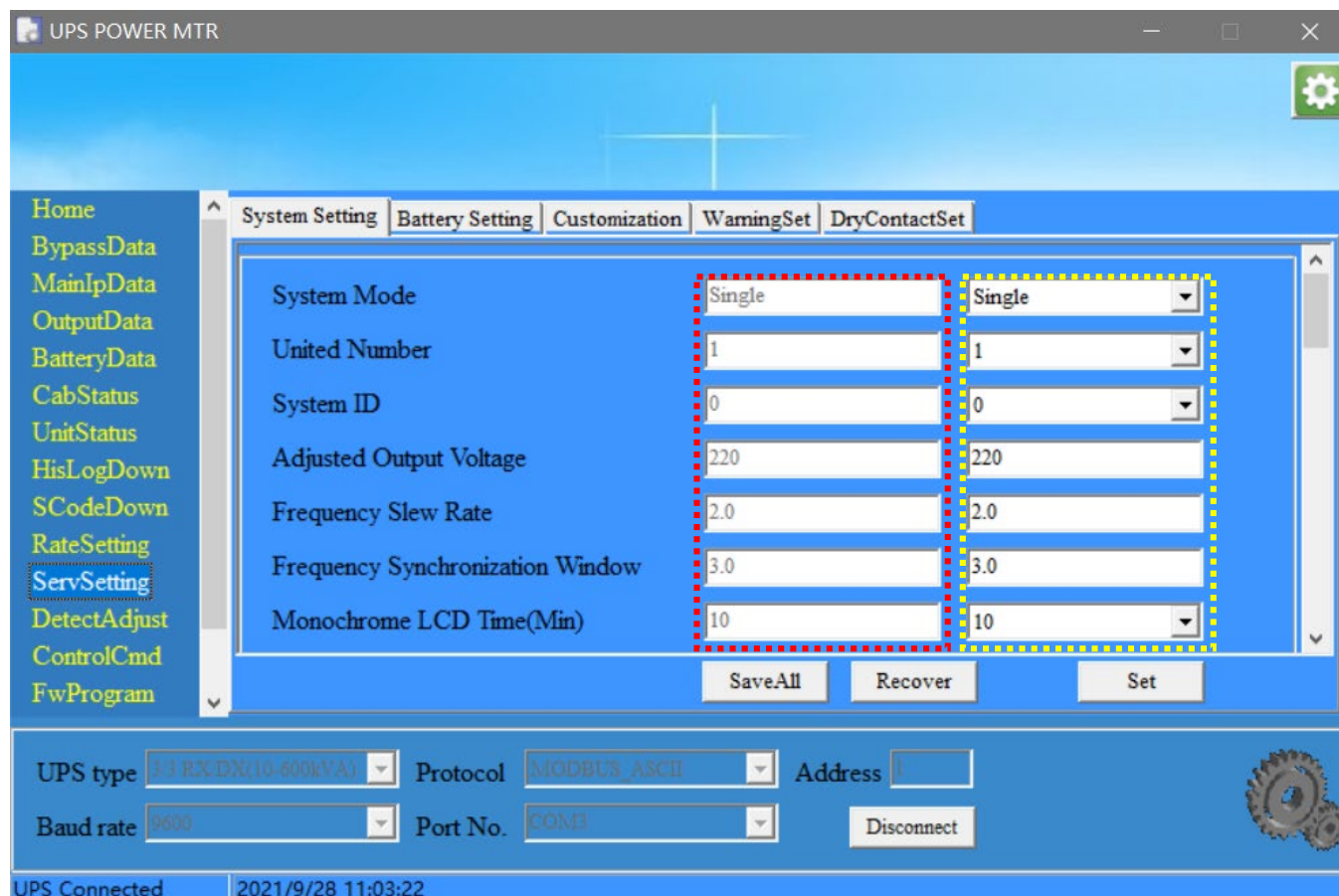


Fig 3-18 System Setting

The items of System Setting are described as follows (Different UPS type may have different items):

#	Setting items	Description
1	System Mode	Set the operation modes of UPS. Single: Single mode Parallel: Parallel mode SingleECO: ECO mode in single unit ParallelECO: ECO mode in parallel system LBS: Load Bus Synchronizer installed for dual bus system, see more detail of the technical doc of LBS. ParallelLBS: Dual bus system built up with parallel units, see more

#	Setting items	Description
		detail of the technical doc of LBS Selfaging: Selfaging mode, see more detail of technical doc of selfaging. The selected operation mode could be active after confirmed by the button of “Set”.
2	United Number	Set thenumber of UPS in parallel system
3	System ID	Set the ID of UPS in parallel system For parallel system, the ID starts from 0.
4	Adjusted Output Voltage	Adjusted output voltage, Unit: V
5	Frequency Slew Rate	Slew rate of track, Unit: Hz/s
6	Frequency Synchronization Window	Frequency Synchronization window, Unit: Hz
7	Monochrome LCD Time(Min)	Set the time of LCD screen saver, Unit: Min
8	Logo Show Time(s)	Set logo page show time, Unit: s
9	Serial Number	Range:00000000~99999999, 8 Bits
10	Redundant Module Number	Set the number of N+X redundant modules; Range: 0~29(only for modular UPS); If the redundant modules are less than the set number, there could be an alarm of “Lost Redundancy”; For example, if 5 modules installed ,the redundant module number is set to 2, if the load rate is higher than 60%, there could be an alarm.
11	Bypass Voltage Upper Limit(%)	Set bypass voltage up limited
12	Bypass Voltage Lower Limit(%)	Set bypass voltage down limited
13	Bypass Frequency Limited(Hz)	Set the range of frequency fluctuation, Unit: Hz
14	Battery Transfer to Main Delay(s)	Set the delay time from battery transfer to main
15	System Auto Start Mode After EOD	Set system auto start mode after EOD, that means, after battery EOD, when the AC input recover, the system should behave as below: Normal: auto restart and transfer to inverter mode BypOnly: auto restart of rectifier, but the inverter does not start, the system stays on bypass NoneOp: no any action with just the controller and LCD are active
16	Aging Current(%)	Used in Aging mode to set aging current from 30%-100% of nominal current. See more detail of the technical doc of selfaging.
17	Fan Speed 3 Level Enable	Enable or disable fan speed 3 level Yes: There are 3 levels of fan speed according to the load rate (slow, medium, fast) No: There are 2 levels of fan speed according to the load rate (medium, fast)
18	Allow Lost Phase Work	Enable or disable UPS lost phase work Yes: If one of the phases lost, rectifier could continue to work if only the current is lower than the set limit. No: Rectifier will stop if one phase lost.
19	Temperature Rise Limit Level	Set temperature rise(outlet temperature to inlet temperature) limit

#	Setting items	Description
		level, there are different settings according to the product, please do not change the value unless confirmed by the manufacturer.
20	Inlet Temperature Level	Set inlet temperature level. It's about the internal control logic and please do not change this setting.
21	Inlet High Temperature	Set whether to allow high temperature at the air inlet
22	Motor Mode	Enable or disable motor mode. This function is used for motor application. Yes: System start with inverter (not bypass), with a current limit and different control algorithm. No: System start with bypass as normal.
23	Frequency Convertor Mode	Enable or disable frequency convertor mode, this allow the system operates as a frequency converter. Yes: Operates as a frequency converter and disable the alarm of bypass frequency fail. No: Normal mode
24	Bypass Backfeed Protected Enable	Enable or disable bypass backfeed protected Yes: Enable the bypass Backfeed detection No : Disable the bypass Backfeed detection
25	Input Overvolt Fast Check Enable	Enable or disable input overvoltage fast detection. This function is used for the applications that unexpected transient spike of input presents in the input. It could be more sensitive to the spike and transfer to battery mode in case of any abnormal voltage.
26	Charger Fail Alarm Enable	Enable or disable charger fail alarm
27	Output Short Transfer Bypass Enable	Enable or disable output short-circuit switch bypass enable
28	Module Fan Maintenance Period	Set the maintenance period of module fan
29	Bypass Fan Maintenance Period	Set the maintenance period of bypass fan
30	Module Capacitor Maintenance Period	Set the maintenance period of module capacitor
31	Generator In Charger Off Enable	Set if disable charger when generator switch in Yes: Disable the charger if a generator is connected No : Enable the charger if a generator is connected
32	Main Backfeed Detect Enable	--
33	Cab Based Power Modules	--
34	Generator In Extra Charger Off Enable	After the generator is connected, enable or disable the charger to charge.
35	Cab Dust Filter Maintenance Period(Day)	Set the dust-proof net maintenance cycle Range: 30-3000 days
36	Tx Times Limit(Per hour)	Set the limit of the number of transfers to bypass per hour Range: 1-20 times
37	System Time	Launch the system time of PC to the controller, it's only available for the monochrome LCD.

3.11.2 Battery Setting

“Battery Setting” interface is shown in Fig3-19. The values in red rectangle are the current parameter of UPS, while in yellow rectangle are the new values to be set. Click “Set” to send new values to UPS.

The screenshot displays the 'Battery Setting' window of the 'UPS POWER MTR' software. The window has a sidebar with navigation options like Home, BypassData, MainIpData, OutputData, BatteryData, CabStatus, UnitStatus, HisLogDown, SCodeDown, RateSetting, ServSetting, DetectAdjust, ControlCmd, and FwProgram. The main area shows a table of battery parameters. The current values are highlighted with a red dashed border, and the new values to be set are highlighted with a yellow dashed border. The parameters and their values are as follows:

Parameter	Current Value (Red Box)	New Value (Yellow Box)
Battery Type	VRLA	VRLA
Battery Number	40	40
Battery AH	12	12
Float Charge Voltage/Cell(V)	2.25	2.25
Boost Charge Voltage/Cell(V)	2.28	2.28
EOD Voltage/Cell, @0.6C Current(V)	1.65	1.65
EOD Voltage/Cell, @0.15C Current(V)	1.75	1.75

A 'Set' button is located at the bottom right of the parameter table. Below the table, there are fields for 'UPS type' (13 RX/DX/10-600kVA), 'Protocol' (MODBUS_ASCII), 'Address' (empty), 'Baud rate' (9600), and 'Port No.' (COM3). A 'Disconnect' button is also present. The bottom status bar indicates 'UPS Connected' and the time '2021/9/28 11:03:43'.

Fig3-19 Battery Setting

The items of Battery Setting are described as follows (Different UPS type may have different items):

Setting item	Description
Battery Type	Set the type of battery used by your UPS. VRLA or Lithium-ion battery is available.
Battery Number	Set battery number
Battery AH	Set battery AH Pay attention that the max charging current is limited to $0.2 \times \text{AH}$
Float Charge Voltage /Cell(V)	Set the float charge voltage of battery cell Calculate the charging voltage as below, $V_{\text{chg}} = \text{cell voltage} \times 6 \times \text{battery number}$
Boost Charge Voltage/Cell(V)	Set the boost charge voltage of battery cell Normally it's recommended no higher than 2.35V/cell.
EOD Voltage/Cell, @ 0.6C Current(V)	EOD voltage of Battery cell at 0.6c
EOD Voltage/Cell, @ 0.15C Current(V)	EOD voltage of Battery cell at 0.15c
Charge Current Percent Limit%	Set charge current limit. Calculate the charging current as below $I_{\text{chg}} = \text{Set Percentage \%} \times P_{\text{out}} / (2.35 \times 6 \times \text{battery number})$
Battery Temperature Compensate	Battery temperature compensate, unit: mV/°C Optional battery temperature sensor is needed.
Boost Charge Time Limit	Boost charge time limit, unit: hour

Auto Boost Period	Auto boost period, unit: hour. The parameter is only valid after enable the function of Auto Boost.
Auto Maintenance Discharge Period	Auto maintenance discharge period, unit: hour The parameter is only valid after enable the function of Auto Maintenance.
Deep Discharge Time	Deep discharge time, unit: hour It's only valid for single phase UPS.
No Battery Detect Period	No battery detect period, unit: minute It's only valid for single phase UPS.
No Battery Detect Time	No battery detect time, unit: minute It's only valid for single phase UPS.
Critical Battery Temperature	Critical battery temperature, unit:°C Set the battery temperature limit for alarm.
Critical Battery Ambient Temperature	Critical battery ambient temperature, unit:°C Set the ambient temperature for alarm.
Charge module current limit	Set the max charging current of each charging module, unit:A.

3.11.3 Customization

“Customization” interface is shown in Fig3-20. The CustomCode on the left is set by bit, check or uncheck the box and click the “Set” button can send the data to the UPS; CustomCode on the right set the load level and rotation time of sleeping and waking.

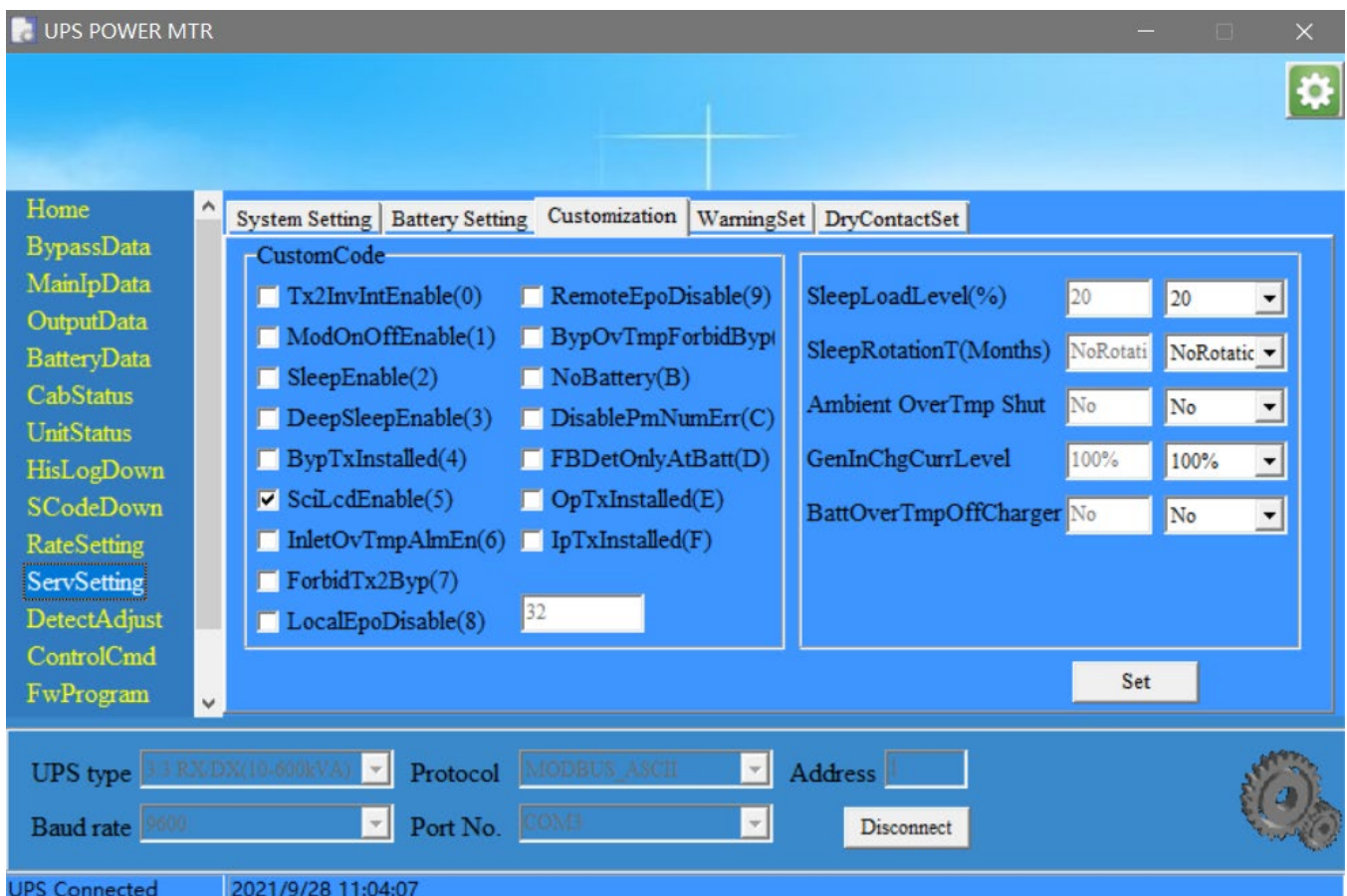


Fig3-20 Customization

Items	Checked	Unchecked
Tx2InvIntEnable	This function enable interrupt transfer to inverter, it should be manually operated and may lead to an interruption during transfer.	Disable interrupt transfer to inverter
ModOnOffEnable	Enable the individual operations of module power on/off. With this setting, operations shown in “ControlCmd-->Module operation command” could be available.	Disable module power on/off
SleepEnable	Enable sleep mode.	Disable sleep mode.
DeepSleepEnable	Enable deep sleep mode. This setting should be enabled together with the “SleepEnable” setting.	Disable deep sleep
KoreaEco	Enable KoreaEco(Korea nonstandard) This is an option for special model.	Disable KoreaEco
SciLcdEnable	ConfigureLcd as serial port screen	ConfigureLcd as blue and whitescreen
2PhasOut	Enable two phase output It's only valid for special model.	Disable two phase output
usedAsOne	Enable used as one phase output It's only valid for special model.	Disable used as one phase output
ForbidTx2Byp	Forbid transfer to bypass	Not forbid transfer to bypass
EpoDisable	Disable EPO	Enable EPO
LocalEpoDisable	Disable local EPO	Enable local EPO
RemoteEPODisable	Disable remote EPO	Enable remote EPO
BypOvTmpForbidByp	Forbiddenthe bypass output if bypass over temperature.	Bypass over temperature not forbid bypass
NoBattery	Disable the detection of “Battery not connected”	Enable the detection of “Battery not connected”

CustomCode on the right is described as the following table

Contents	Meaning	Note
Sleeping Load Rate	Setting the sleeping load rate	
Interval Time for sleeping	Setting the interval for the sleeping	The period of rotation for the sleep modules.

3.11.4 WarningSet

The “WarningSet” is shown in Fig 3-21. If the selected event occurs, there appears a warning window of the PC. The switch of beeper cancontrol the buzzing. Click the “SelectAll” button to select all the events and click the “ClearAll” to uncheck all the events.

Notes: This warning setting is only about the warning of the PC, NOT THE HISTORY LOG OF UPS ITSELF.

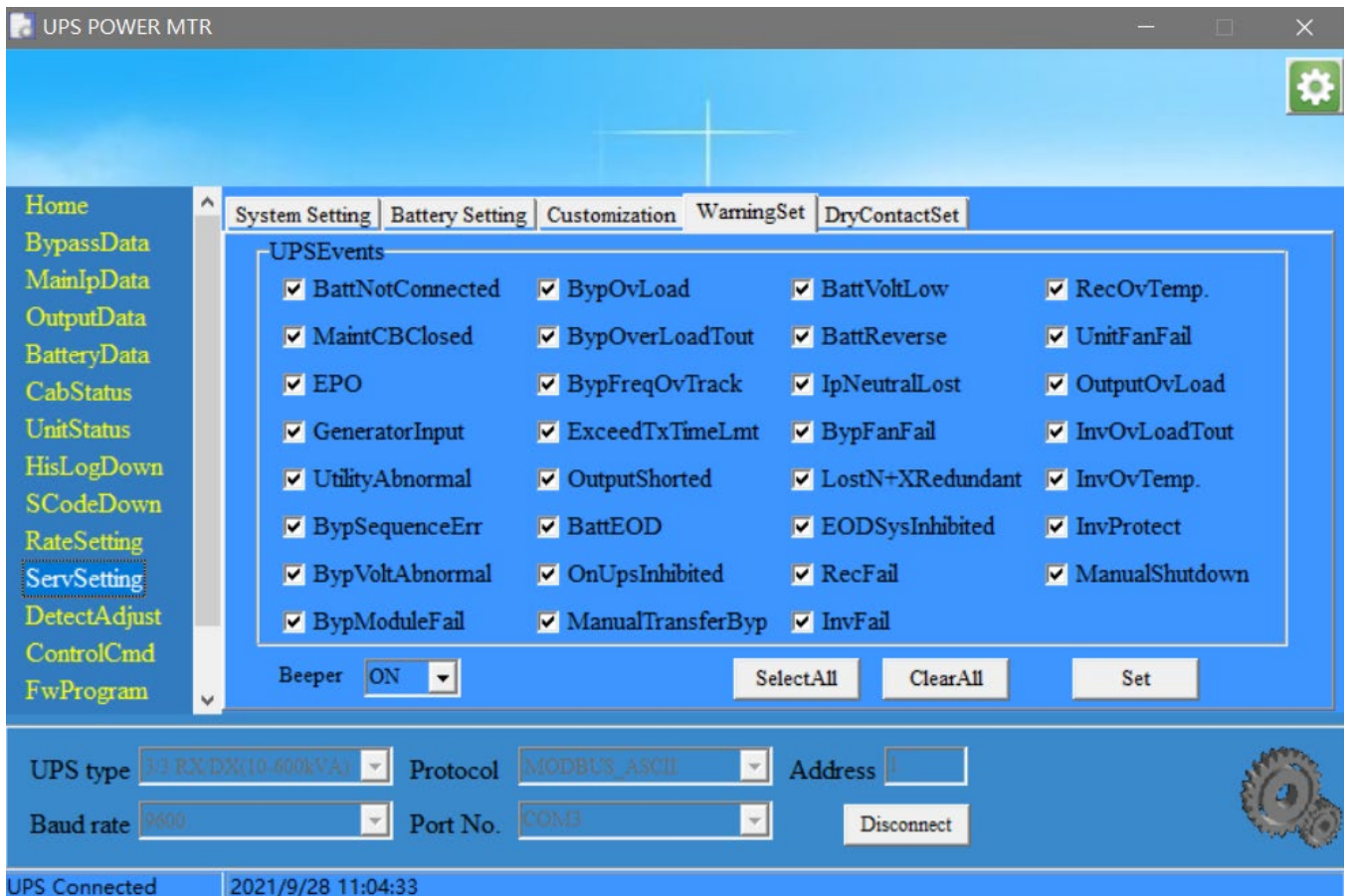


Fig 3-21 WarningSet

3.11.5 DryContactSet

“DryContactSet” interface is shown in Fig 3-22, The values in red rectangle are currently used by UPS, while in yellow rectangle are the new values to be set. Click “Set” to send new values to UPS.

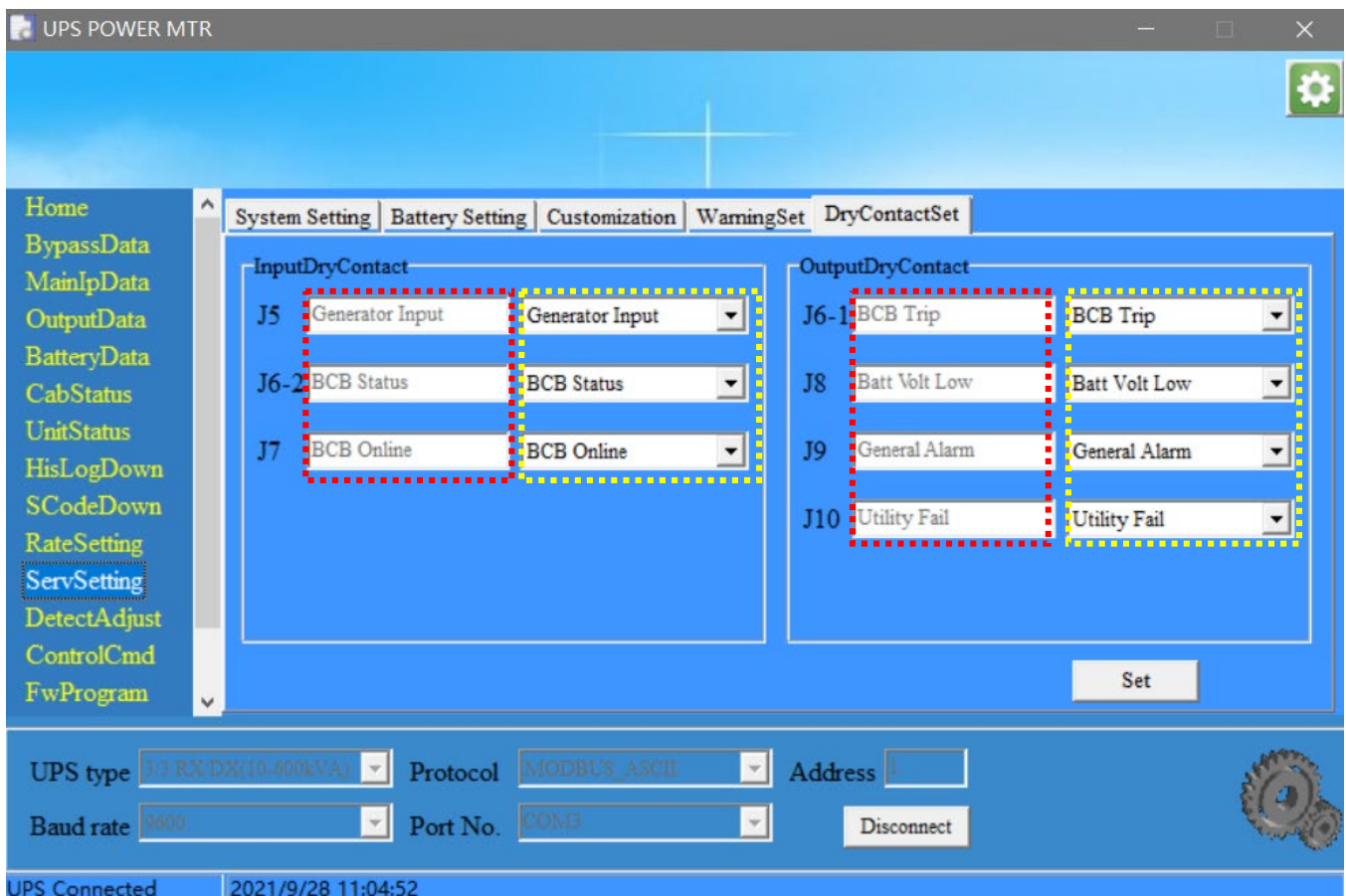


Fig 3-22 DryContactSet

Notes: The list of dry contact signals is subject to change with the upgrade of firmware, for more details, contact your technical support from factory.

3.11.6 Shutdown Setting

Shutdown setting page include “Shutdown Setting” and “Shutdown time setting”, this function only be allowed by the single phase 1-20K UPS.

Do not change the setting unless it's confirmed by the manufacturer.

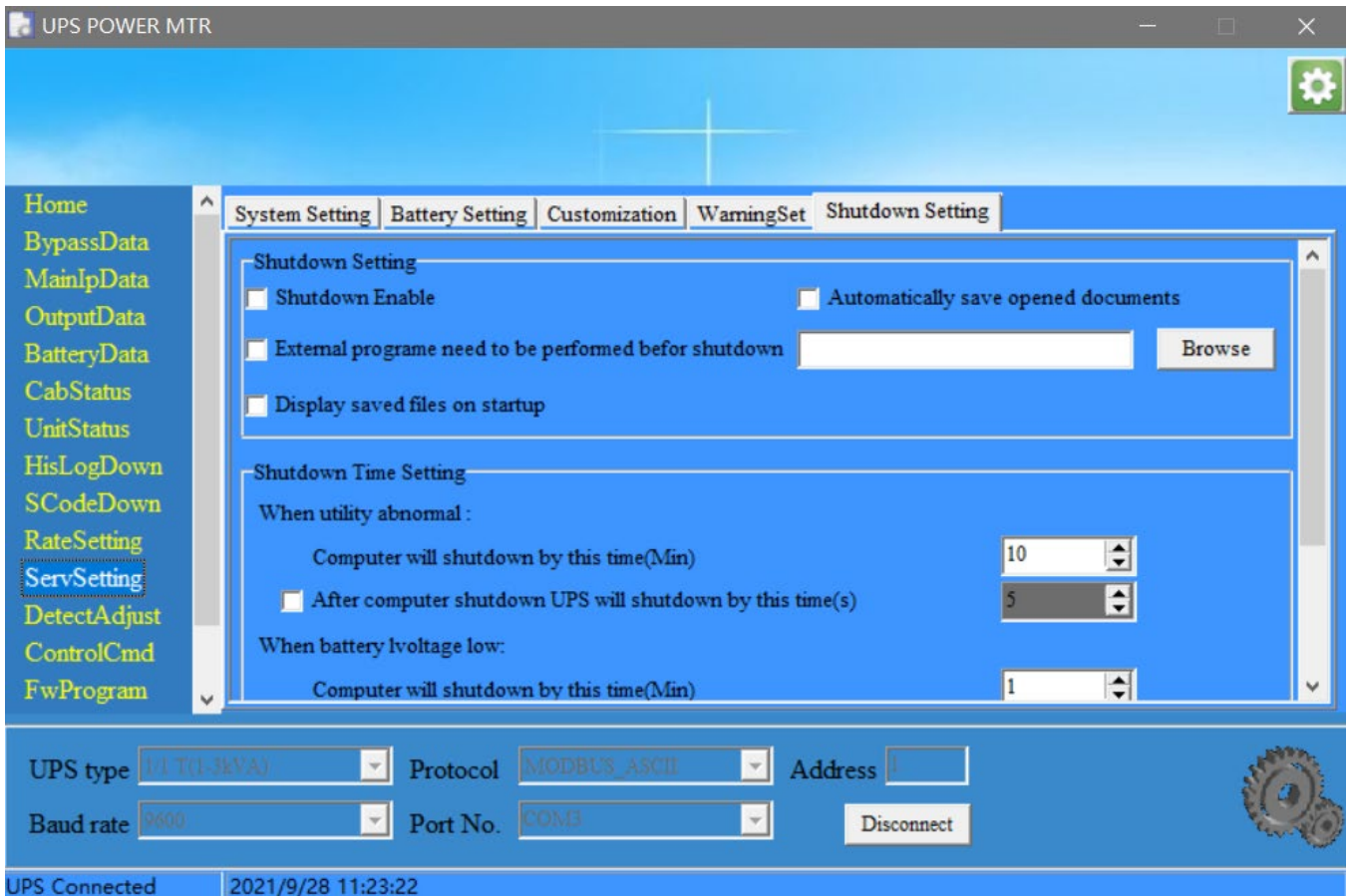


Fig3-23 Shutdown Setting

Shutdown Enable: After checking this option, the server will be shut down when a shutdown event occurs.

Automatically save opened documents: After checking this option, the open documents will be automatically saved when the server is shut down.

External program you need to be performed before shutdown: Check this box and select the corresponding program to execute the external application you want to execute before shutting down the server.

Display save files on startup: After checking this option, the file name saved during the last automatic shutdown will be displayed when the machine is turned on.

Shutdown time setting: Set the time to shut down or shut down the server after the corresponding event occurs.

3.12 DetectAdjust

This function is only for factory setting, disabled for users.

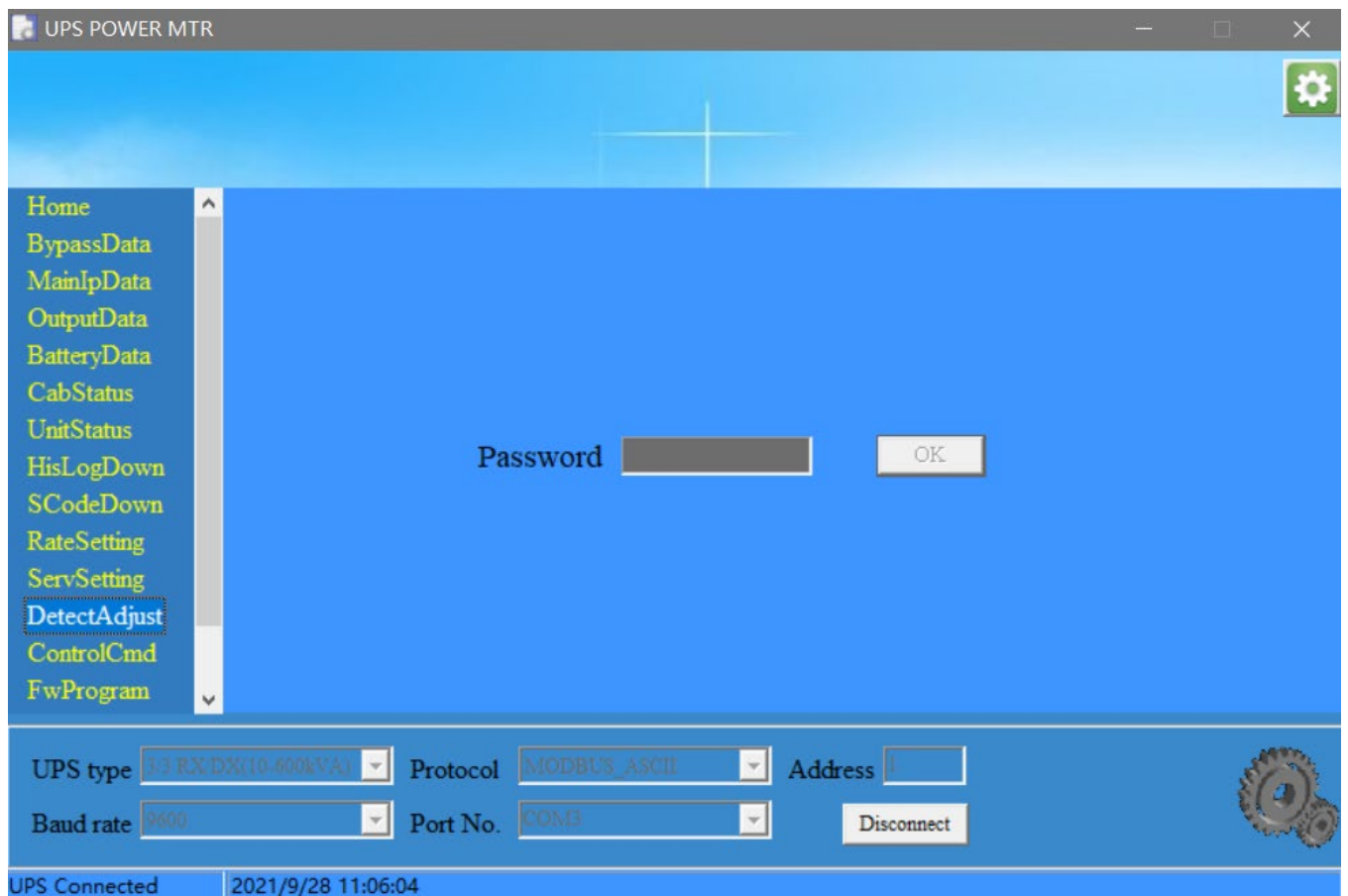


Fig3-24 DetectAjust

3.13 ControlCmd

This function is only for factory setting, disabled for users.

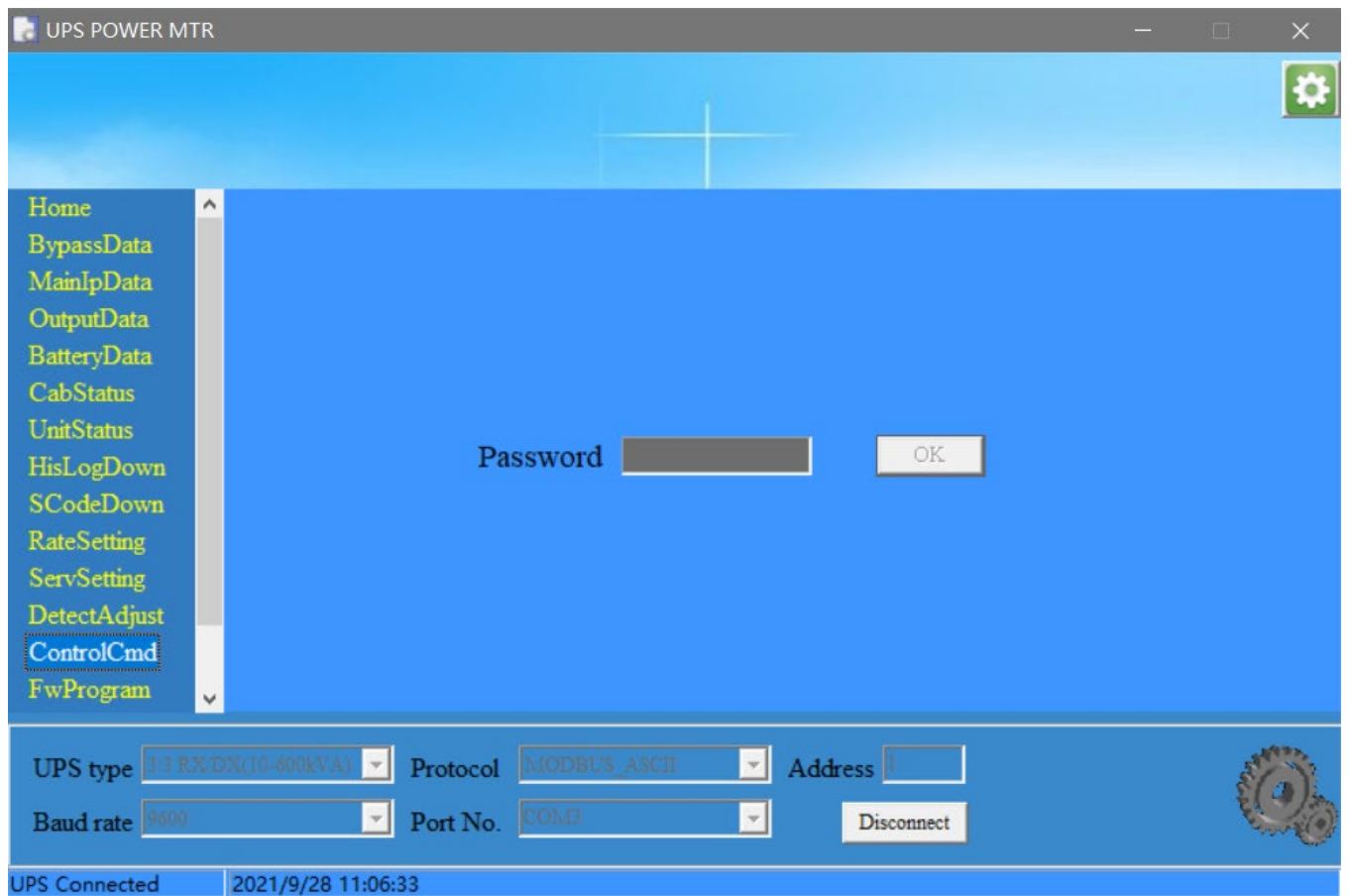


Fig3-25 Control commands

3.14 FWProgram

This function is only for factory setting, disabled for users.

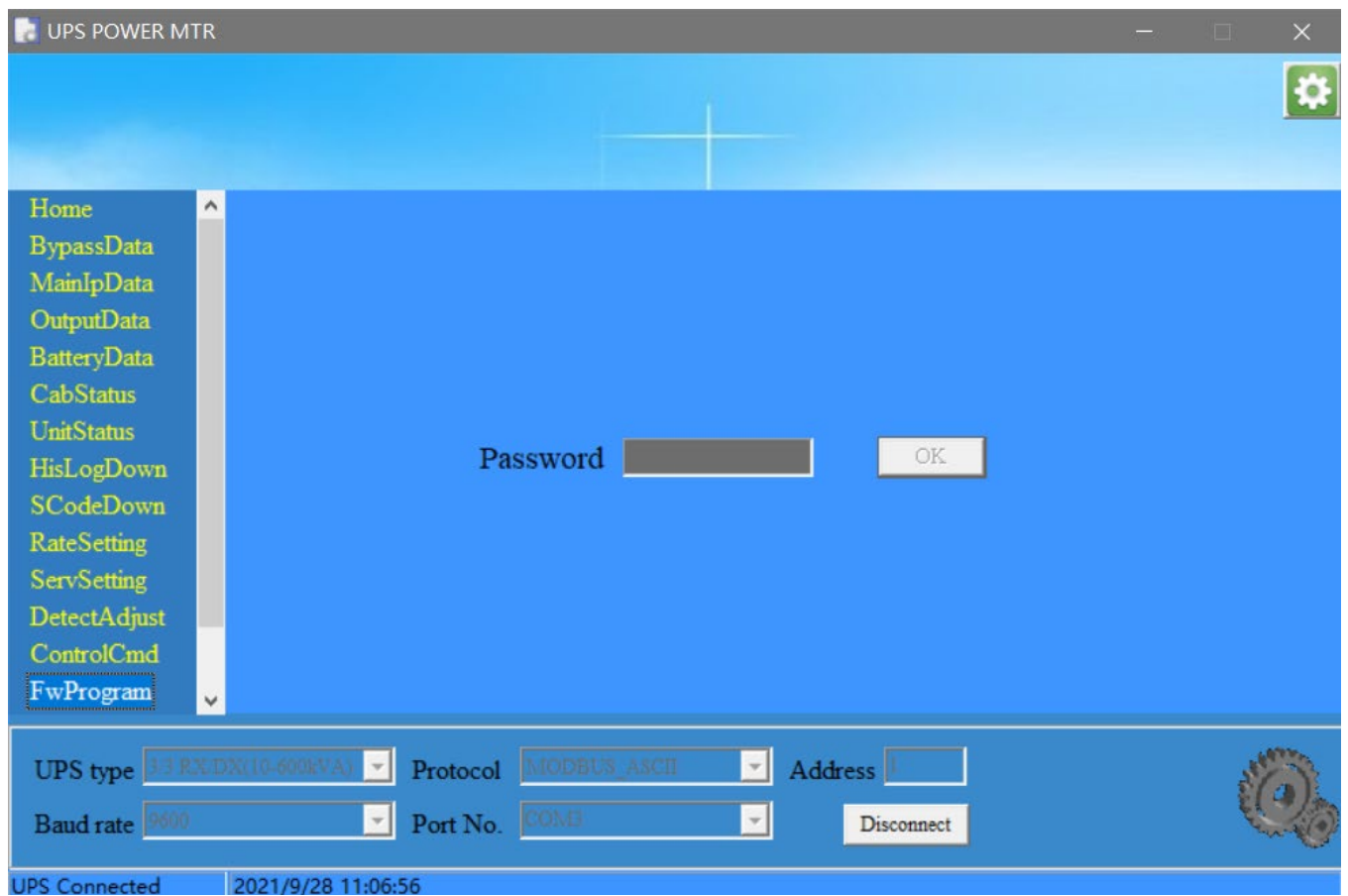


Fig3-26 Firmware program

3.15 Help

Brief description of the software, as shown in Fig.3-25.

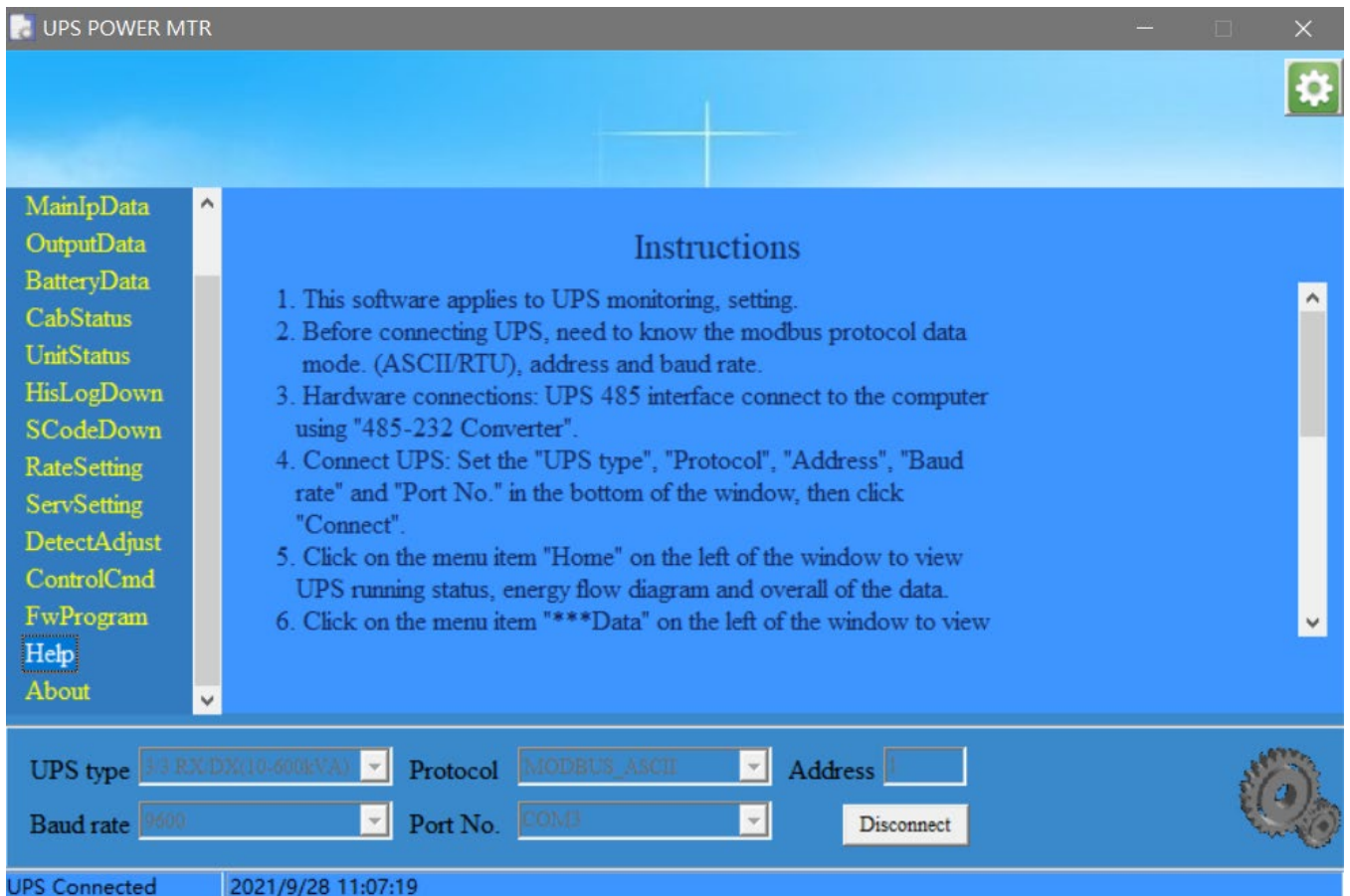


Fig.3-27 Help

3.17 About

Version information of the software, as shown in Fig.3-26.

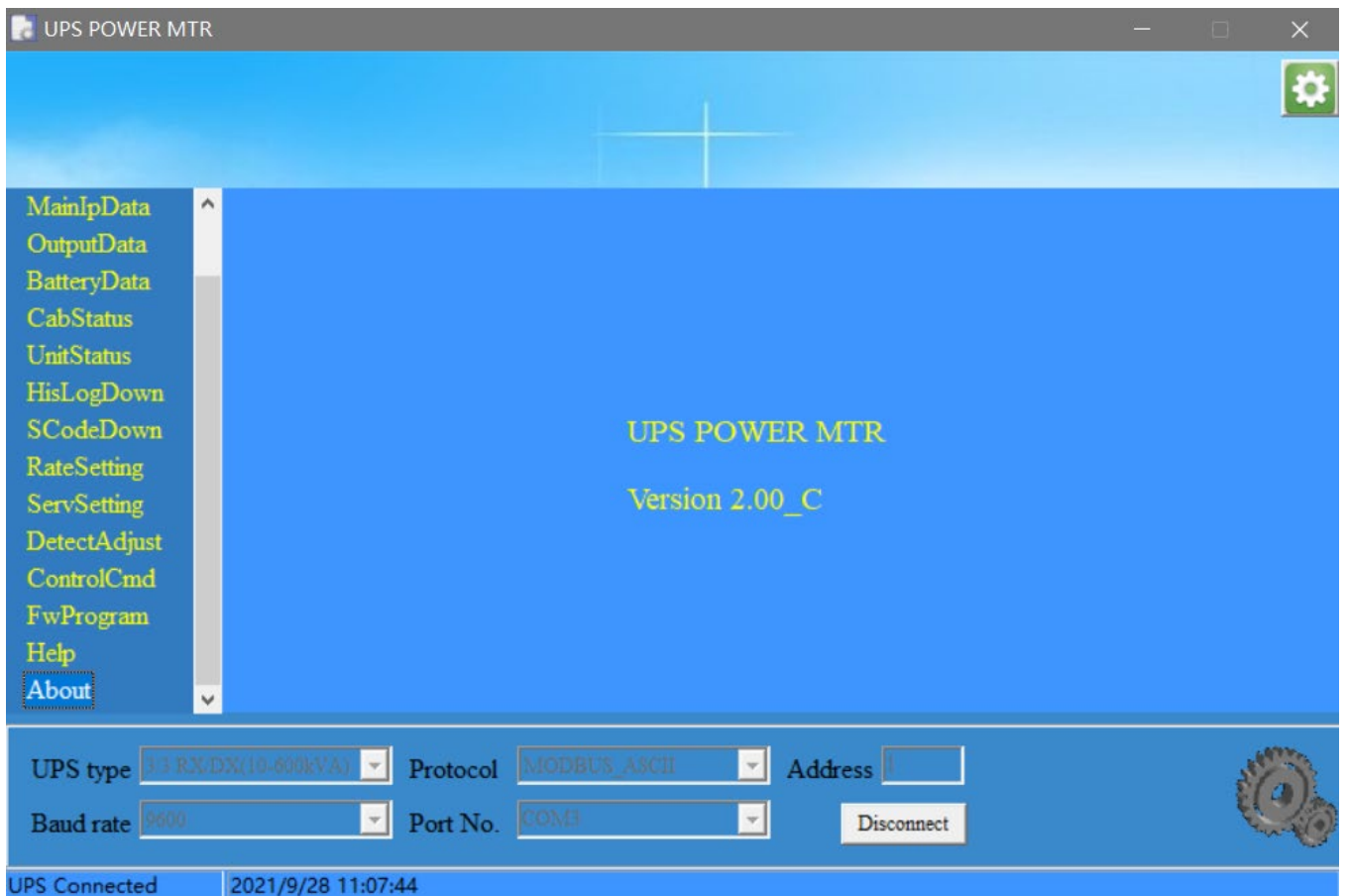


Fig.3-28 About