The DC power supply monitoring system

PMU17A

skill

art

try to persuade

bright

write

Version number: V1.2

Shijiazhuang HuaHeng Electronic Technology Co., LTD

catalogue

Chapter 1 Overview

1.1 A Brief Introduction of the composition of the electric power monitoring system

The power monitoring system developed by Shijiazhuang HuaHeng Electronic Technology Co., Ltd. fully takes into account the diversity of power system applications. The monitoring host and the underlying data collection unit adopt the modular design idea, and the host and the underlying module can be combined freely. All the bottom modules are of the same overall size for easy installation. The monitoring host includes the PMU17A. The underlying module includes battery inspection module, switching capacity module, insulation detection module, and AC measurement module. The monitoring equipment specification table is shown in Table 1-1.

device name	specifications and models	Brief description of function
Monitor the host	PMU17A	Color 800480 Dot matrix LCD, Touch Monitor
Comprehensive measurement module	SPU-2	Detect 1 AC voltage detection 3 DC voltage, 2 current, 1 temperature detection 24 switch input, 8 switch output
Battery inspection module	BMU-19	Check 19 battery voltage, 1 circuit temperature
Battery inspection module	BMU-55	Check 55 battery voltage, 2 circuit temperature
Insulation detection module	IMU-64	Check bus insulation of 1 section and insulation of 64 branch
Insulation detection module	IMU-32	Check the bus insulation of 1 section and 32 road branch insulation
Switch volume module	DMU-64	Check 64 switch input and 8 switch output
AC measurement module	AMU-1	Test 1 AC voltage 1 AC current
AC measurement module	AMU-2	Test 2 AC voltage and 2 AC current

Table 1-1 Specification Table of Monitoring Equipment

The monitoring system adopts a 7-inch color touch screen, which has the characteristics of small volume, simple and beautiful structure, convenient installation, and flexible configuration system. The monitoring system has a beautiful and generous interface, simple operation, compact and reasonable data organization,

and provides a better human-computer interaction experience. The main interface can display the main wiring diagram of the power system, and display the operating conditions and information of each functional unit in real time. Perfect monitoring function, high intelligent, sound and light alarm. Local and remote monitoring of all components of the system is realized. Provide the Modbus communication regulations for users to choose from.

1.2 service environment

The ambient temperature shall not be less than-5℃, not higher than + 40℃, and the ambient temperature stored by the device shall be-10℃ ~ + 60℃.

Environmental maximum relative humidity shall not exceed 90% (ambient temperature 25℃).

The operating site has no conductive dust, no gas or vapour that can corrode metals or destroy insulation.

Use it indoors.

If there are special requirements, please propose them to ensure that the product can be operated reliably.

Chapter 2: PMU17A Monitoring Host

2.1 PMU17A, Introduction to the monitoring host

2.1.1 Human-machine interface

- The 7-inch color touch screen display, graphical interface, visual display of the system single-line diagram, can realize the system parameter setting, the system working parameter display, the system fault indication;
- Chinese character menu display, touch screen operation, can easily set parameters and query information;
- Injection molding panel, beautiful and generous;
- The number of historical fault storage bars is related to the remaining storage space;
- With the switch output dry contact, the preset dry contact closing event, each dry contact is freely configured;

2.1.2 Alarm management

- All kinds of alarm information is displayed in Chinese characters, intuitive fault, clear positioning.
- Can store 4096 historical faults, and the historical faults are not lost after power failure.
- When the fault occurs, the main interface displays the alarm, the LCD screen is turned on, the built-in buzzer in the chassis emits the alarm sound, and the alarm light is on.
- Each alarm threshold can be set.

2.1.3 Battery management

- The battery charge and discharge are automatically managed through the pre-set battery charging operation parameters.
- The battery inspection module is configured to detect the single battery voltage, which can detect 1 group of 108 batteries.
- Battery test function.

2.1.4 Insulation detection

- Two IMU-64 modules can be configured to detect the insulation of 1 bus and 128 branch.
- When the insulation detection module is not configured, the bus insulation is detected by the I MU17A host (this function is not available).
- With the AC string-in detection function.

2.1.5. Switch quantity detection

- Users can customize the access mode, display mode and starting number of the switch quantity input as required.
- Provides a switch volume input where 24 users can choose a name.
- Users can customize the switch volume output type as needed.
- Eight DMU-64 modules are configured for up to 536 switching inputs.

2.1.6, Upper computer communication

- Communication Interface RS485;
- The communication regulation can choose the MODBUS-RTU;
- Communication port rate selection of 2400,4800, or 9600,19200;
- The check bit can be set to ODD, EVEN, NONE;
- Default upper computer communication port COM6;

- The device communication address can set the range of 0~255.

2.1.7 Other functions

- Screen saver time can be set (5,10,15,20,25,30 minutes) to automatically enter the screen saver function.
- The real-time clock shows that the clock runs normally after the power failure.

2.2 PMU17A, monitoring the host wiring

Open size

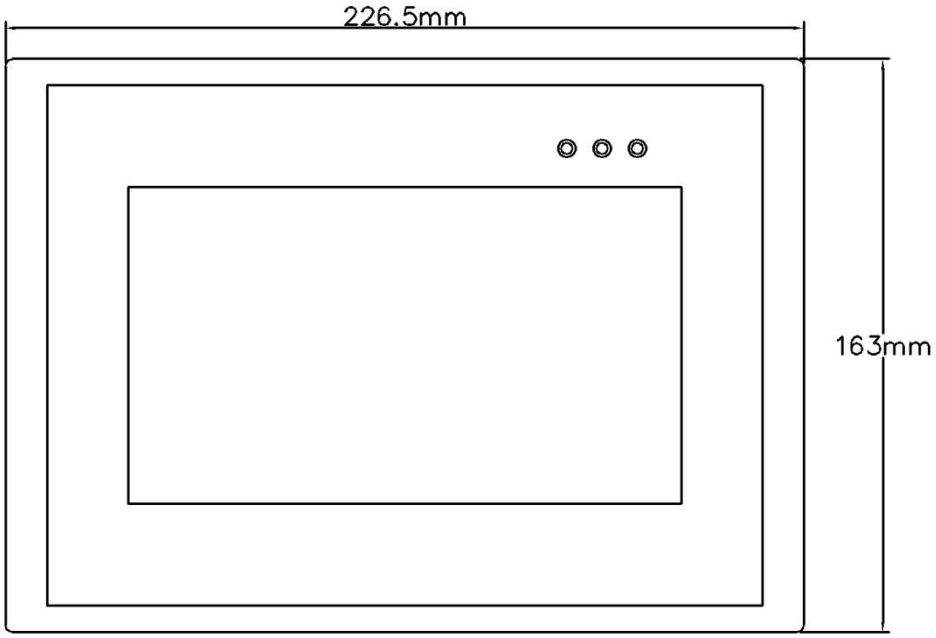


Figure 2-1 Installation size of the front panel

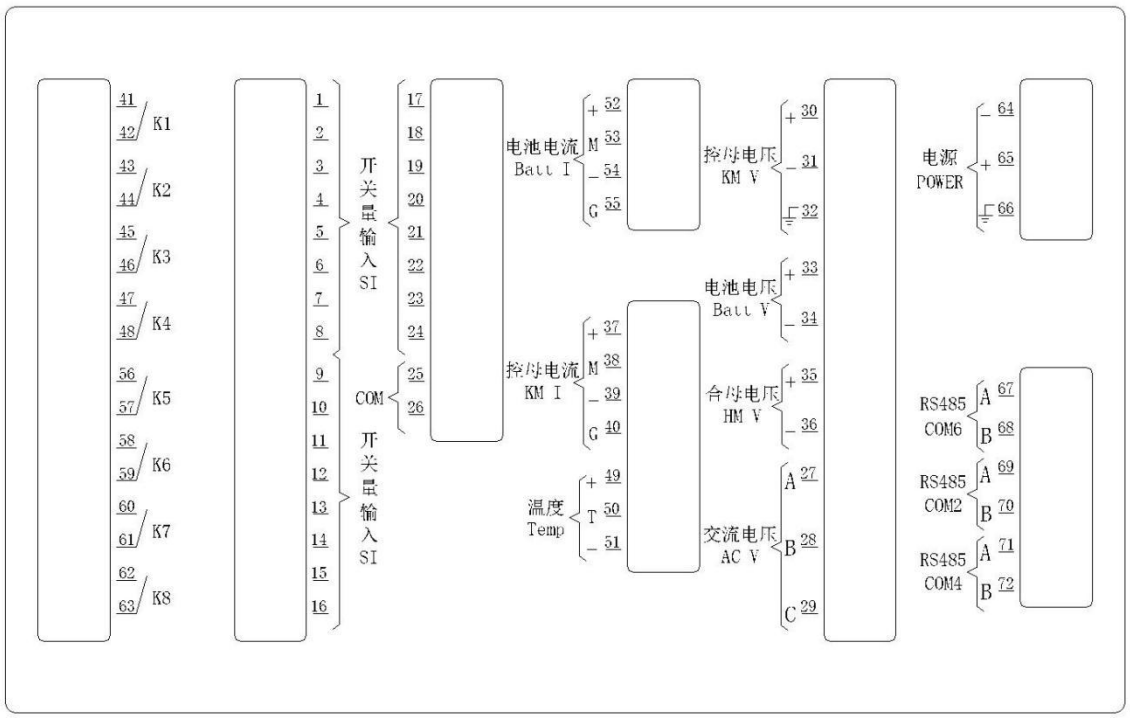


Figure 2-2 The PMU17A rear panel

denoter	functional description	
COM2(RS485)	Battery inspection, insulation monitoring, switching capacity, charging module, DC / DC module, AC measurement, communication interface	
COM4(RS485)	The UPS / INV module communication interface	
CAN	reserve	
RS232	reserve	
COM 6(RS485)	Upper-computer communication interface	
source POWER	Monitor the power supply interface. Power supply range: DC90V-DC300V.	
K1-K8	Switch output. Relay output, often open the node. Capacity of AC250V/0.1A, DC30V / 1A.	
alternating voltage	The AC voltage sampling interface.3 Phase 3 line. Measurement range: 0~440VAC (line voltage); the measurement error is ± 1% within the 170VAC~265VAC range.	
Control mother voltage	⏚busbar voltage. Screprinting is the large place when measuring bus insulation.	Measurement range: 0~300VDC; the measurement error within 90%~130% rated voltage range is ± 0.5%.
cell voltage	battery voltage.	
The mother voltage	Switch bus voltage	
battery current	Measurement range: 0~ ± 100A. Measurement error ± 1% in 20% to 20% 100%.	
Control mother current	Measurement range: 0~100A. Measurement error ± 1% in 20% to 20% 100%.	

temperature	Measurement range: -10℃ ～+ 60℃. Measurement error is ± 3℃.
on-off input SI	Switch quantity input signal, requiring passive dry contact
COM	Switch volume input signal common end

Table 2-1: PMU17A interface definition

Current sensor wiring

Four-core plastic copper shield sheath flexible cable is used to connect to the current sensor, and the four wires connected to the current sensor are: + 12V, -12V, measurement output, GND. Figure 2-3 shows the schematic diagram of the current sensor wiring.

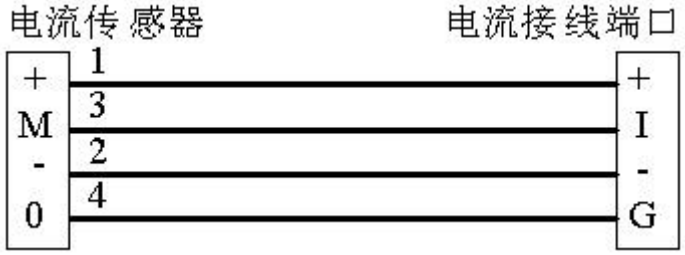


Figure 2-3 Schematic diagram of the current sensor wiring

Temperature detection

The temperature sensor is a finished product and plugs the temperature sensor terminal into the Temperature sampling port. Figure 2-4 shows a schematic diagram of the temperature sensor.

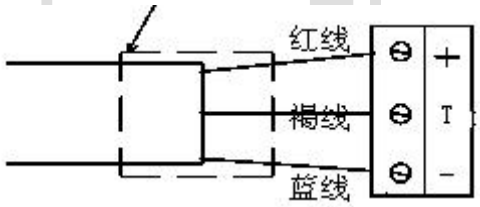


Figure 2-4. Temperature Sensor

Switch quantity input detection

Switch quantity input node wants to be a passive node. The terminal with "switch quantity input" is 1~32 switch quantity input, and the terminal with "COM" is the public end with switch quantity input. Figure 2-5 is the schematic diagram of the switch volume input wiring.

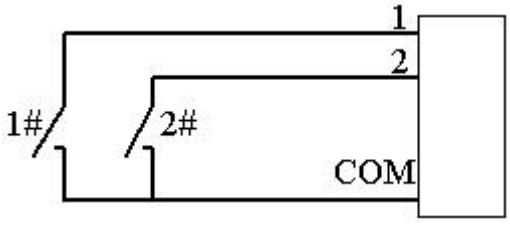


Figure 2-5 Schematic diagram of switch volume input wiring

Switch output

Provide 8 switch volume output, relay junction capacity of AC250V/0.1A, DC30V / 1A. The 8 switch volume outputs are marked as K1~K8 respectively. The switch volume output definition is determined by

the monitoring host. Among them, K1, K2, and K3 can be used for silicon chain control. Figure 2-6 is a schematic of control level 7 silicon chain, and Figure 2-7 is a schematic of control level 5 silicon chain.

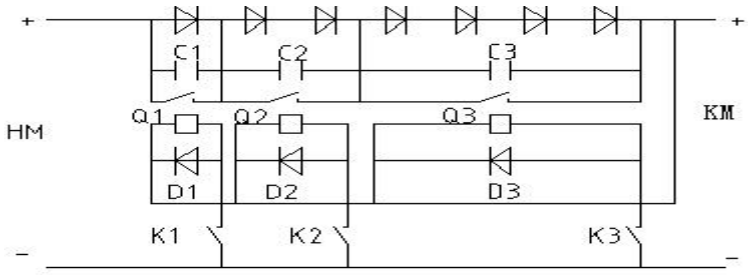


Figure 2-6 Schematic diagram of the control level 7 silicon chain

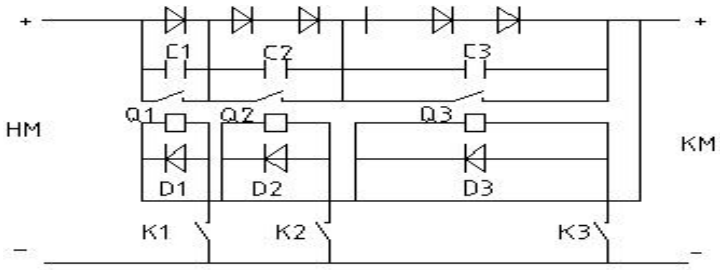


Figure 2-7 Schematic diagram of the control-level-5 silicon chain

matters need attention

1、 When there are other insulation test equipment in the system, take the "bus voltage" sampling terminal The needle number 32 was disconnected from the earth.

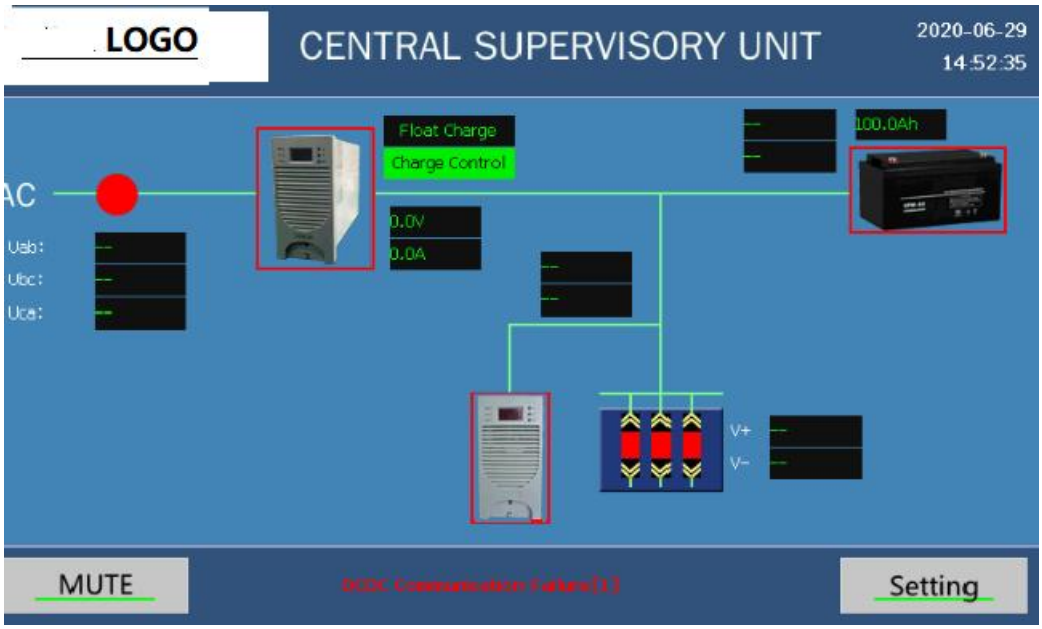
2、 Before energup, carefully check the wiring of the current sensor to is high, immediately disconnect the power supply and check the wiring. Note the primary side current direction of the current sensor.

3、 Current sensor power supply cannot be used as a power supply for other equipment.

4、 The temperature sensor has been wired, if you need to rewiring, must pay attention to the correct wiring. The temperature sensor interface signal lines can not be connected to the temperature signals of other equipment.

2.3 The PMU17A Operation Description

2.3.1 Data description of the main interface



main interface

The system operation adopts the menu layered structure, simple, clear and convenient operation. Enter the main interface when the system is switched on. The interface displays the system time, AC feed line, battery voltage and current, bus voltage and current and the current state. Click on the corresponding icon to view the various data.

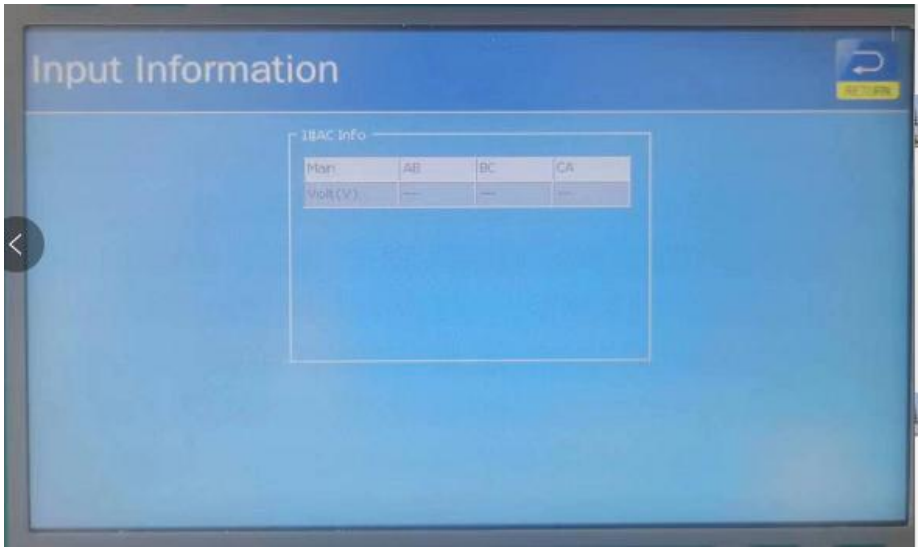
When the system fails, click "fault" to enter the current fault query interface;

There is a close warning tone button in the lower left corner;

2.3.2 Operation instructions

.12.3.2 Communication information query interface

Click the main interface "AC" after the dot, enter the communication information query interface;

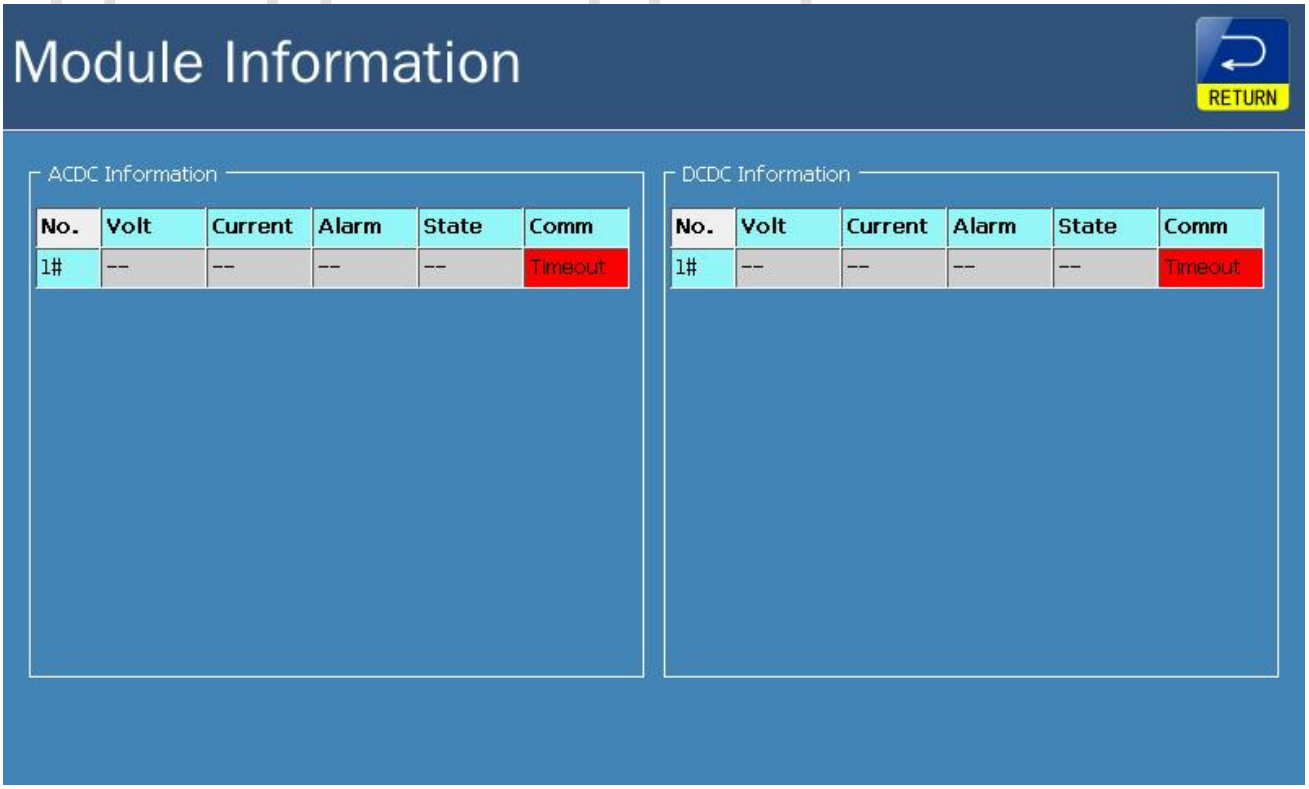


AC data when the incoming line is an AMU

AC data when the incoming line is an SPU

2.3.2.2 module data query interface

Click the ACDC icon of the main interface to enter the module data query interface;



Module data query

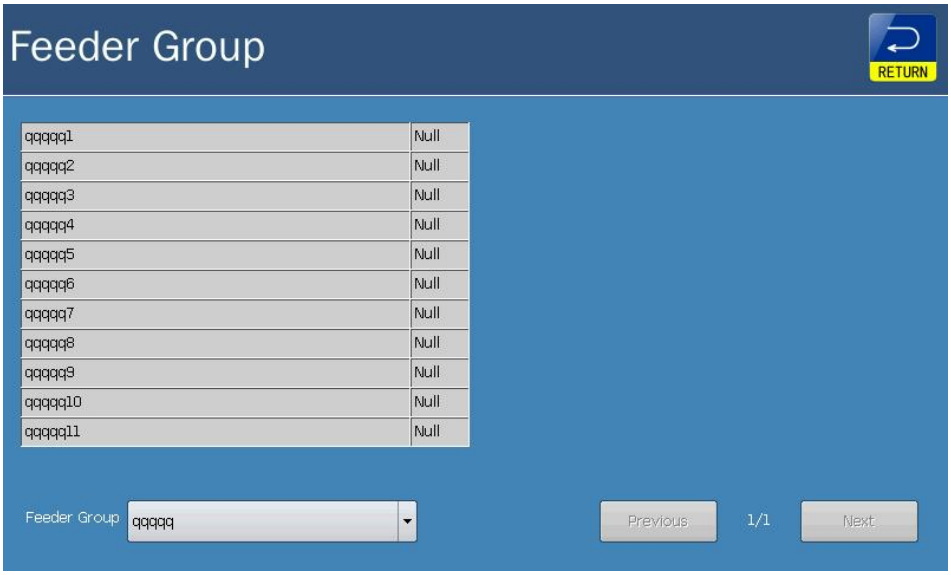
2.3.2.3 DC data query interface

Click the main interface battery logo, and enter the DC data query interface;

Dc data query

2.3.2.4 Feeder query interface

Click the feed-out logo and enter the feeder information query interface;



Feed information query

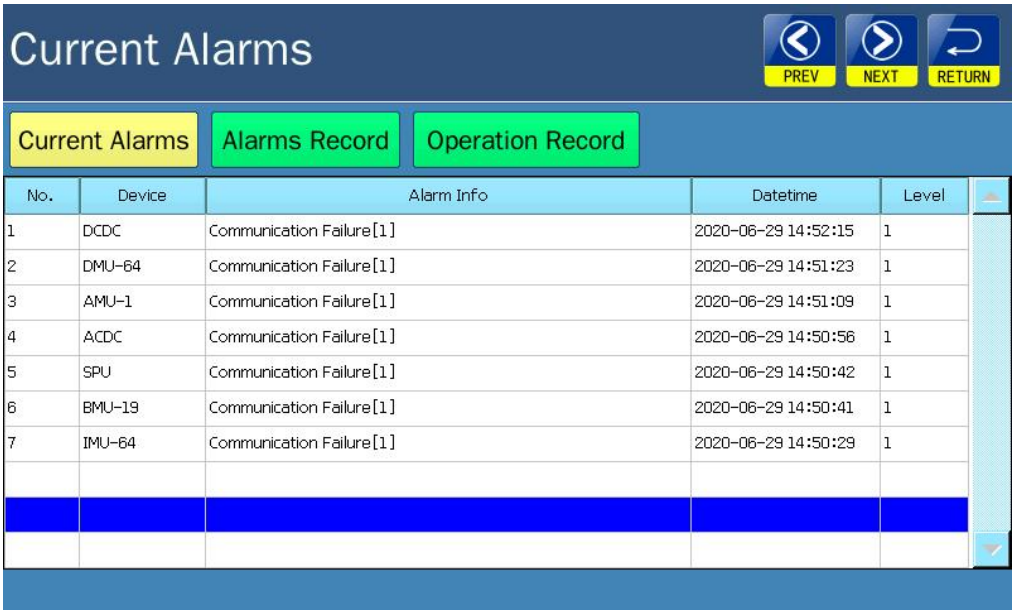
2.3.2.5 UPS data query Interface

Click UPSlogo to enter the UPS data query interface;

UPS query and pivot

2.3.2.6 Current alarm and query interface

Click the fault query button, (between the close warning tone and system setting button), to enter the current alarm interface;



Current alarm

In this interface can switch to query the current alarm and the historical alarm, and the operation record interface, click the empty record input password to empty the record;

2.3.2.7 Historical alarm query interface

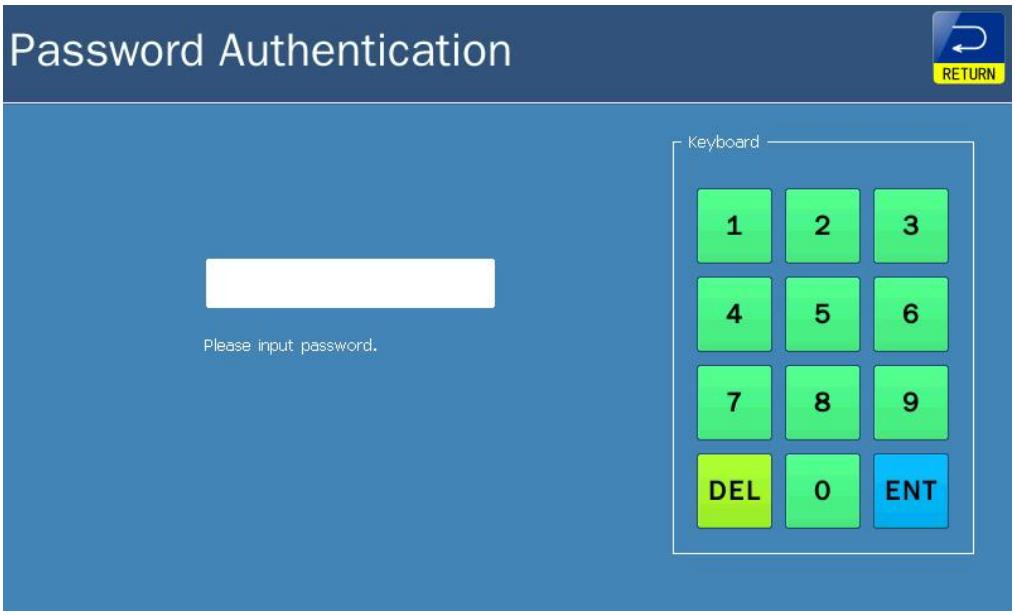
Historical alarm

2.3.2.8 Operation record and query interface

operation note

2.3.3 System setup

Click the system setting button in the lower right corner of the main interface, enter the password 0 in the password verification interface and enter the parameter setting interface;



password authentification

2.3.3.1 Parameter setting

parameter setting

System setting parameter table		
order numbe	parameter	explain

r		
1	Number of integrated acquisition of SPU modules	Range 1, which comes with an SPU, is not set.
2	Number of AC acquisition AMU modules	Range 0-2.1 Is collecting 1 AC line, 2 is collecting 2 AC line.
3	Number of battery inspection BMU modules	Range 0-2.
4	Switch quantity DMU module number	Range 0-8.
5	Insulation monitoring IMU module number	Range 0-2.
6	Number of charging module ACDC	Range 0-8.
7	Number of communication DCDC modules	Range 0-8.
8	Number of UPS / INV modules	Range 0-4.
9	Number of communication roads	Range 1 road, 2.
10	Communication type	Range: Single-phase, Three-phase.
11	AC1 / AC2 Sampling Selection	Set 1 # AMU, 2 # AMU, SPU (AC1), SPU (AC2)
12	Screen time	Five minutes, 10,15,20,25,30
13	time calibration	It can be manually modified to the current time
14	Password Settings	0-99999999
15	Sensor Settings	Load end, the module end

2.3.3.2 Communication settings

This interface is set up for the upper-position computer communication

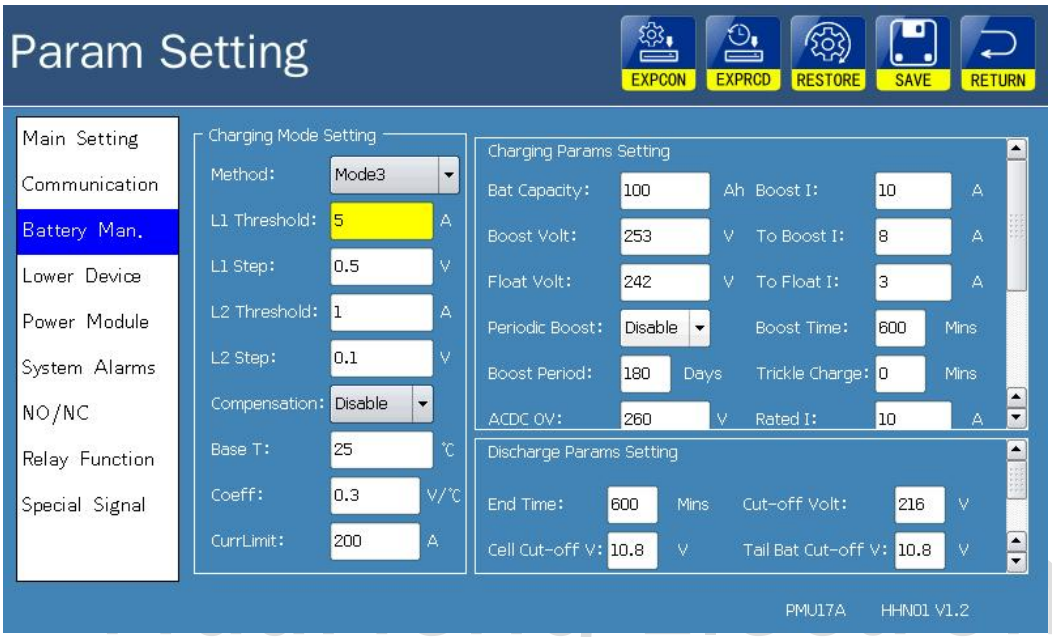
communications setting

Serial port communication parameter table		
order number	parameter	explain
1	communicating protocol	MODBUS-RTU
2	mailing address	0-255
3	CI	COM6
4	Baud rate	1200、2400、4800、9600
5	check bit	NONE、ODD、EVEN

Network port communication parameter table		
order number	parameter	explain
1	IP address	Default machine 192.168.9.200
2	MASK a sign	The default is 255.255.255.0

	or object indicating number	

2.3.3.3. Setting of charge and discharge parameters



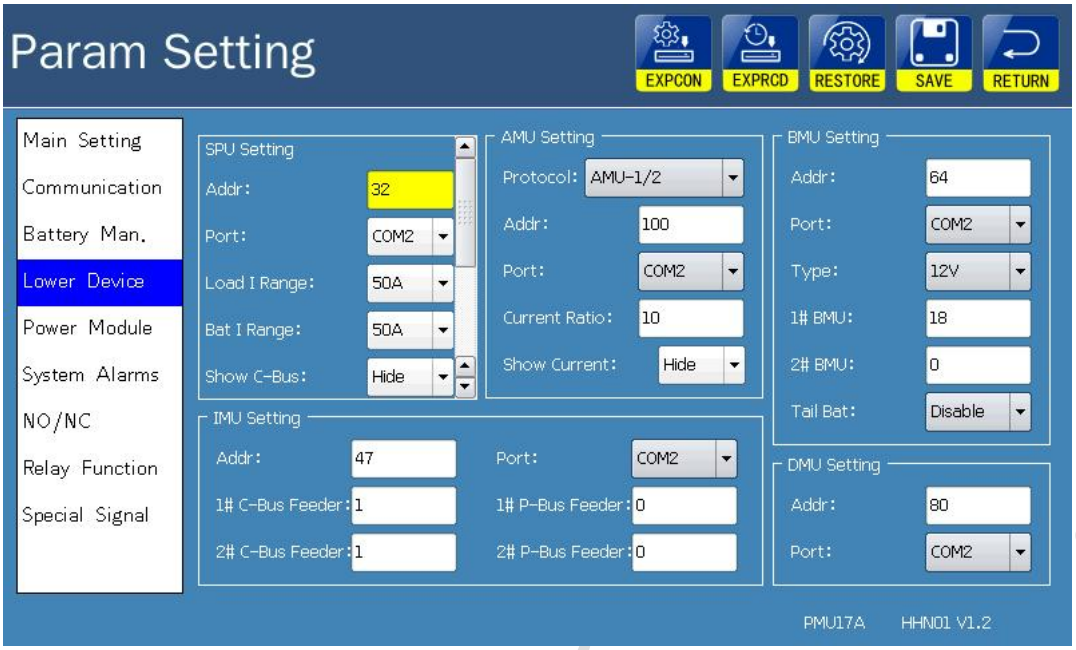
Charge and discharge parameters

Mode setting			
order number	parameter	explain	
1	Charging strategy	Range "module flow limit", "voltage regulation flow limit"	
2	Fast tuning threshold	Range: 0.1-99.9A	Only works in the "pressure regulation and flow limiting" mode
3	Fast step in	Range: 0.1-99.9V	
4	Slow-tune threshold	Range: 0.1-99.9A	
5	Slow step in	Range: 0.1-99.9V	
6	temperature compensation	Range is disabled, enabling the	
7	datum temperature	Range of 0-50℃	
8	compensation factor	Range is 0.001-1 V / ℃, and the current temperature is T_{CUR}; Set the temperature and fill center temperature as: T_{SET}; The	

		temperature compensation coefficient is f; the current floating charge voltage is V_F; The compensation voltage is $V_F=V_F+(T_{SET}-T_{CUR})\times f$
Charging management parameters		
1	battery capacity	Range of 10-2000 Ah
2	Generalized voltage	Range: 0-260V
3	floating charge voltage	Range: 0-260V
4	Cycle is charged	Range is disabled, enabled
5	Equal charge cycle	Day 1-999, with a default value of 180 days
6	All charging flow	Range of 1-600A. This value is the flow limit value of the module.
7	Floating average current	Range of 1-600A. Note: the communication must be normal again, the battery pack, the single battery (except the undervoltage) is normal, the bus has no overvoltage, and the underlying communication is normal, before the transfer and charge.
8	All turn floating current	Range: 1-600A
9	Equal charge time	Range of between 60-999 points
10	Tail charge time	Range of 0-99 points
11	ACDC overvoltage	Range: 0-300V
12	ACDC undervoltage	Range: 0-300V
13	rated current	The rated current of the configured module and the important parameters of floating charge must be set correctly
14	system voltage	24V, 48V, 110V, 220V, 230V are optional
15	Lower voltage at a time	This function is used when the 48V system battery discharges, that is, part of the voltage value
16	Secondary electric voltage	Two disconnected partial light load voltage
17	A time-lapse	One delay time of partial overload disconnection
28	A time-lapse	Two time delay time of disconnected partial light load
Setting of discharge parameters		
1	cut-off time	Range of between 60-999 points
2	cutoff voltage	Range: 90-260V

3	Single cut-off voltage	Range of 1.8-15V
4	Tailcell off voltage	Range of 1.8-15V
5	Cycle discharge	Range is disabled, enabled
6	Discharge cycle	Day-1-999 9

2.3.3.4 Unit Setting



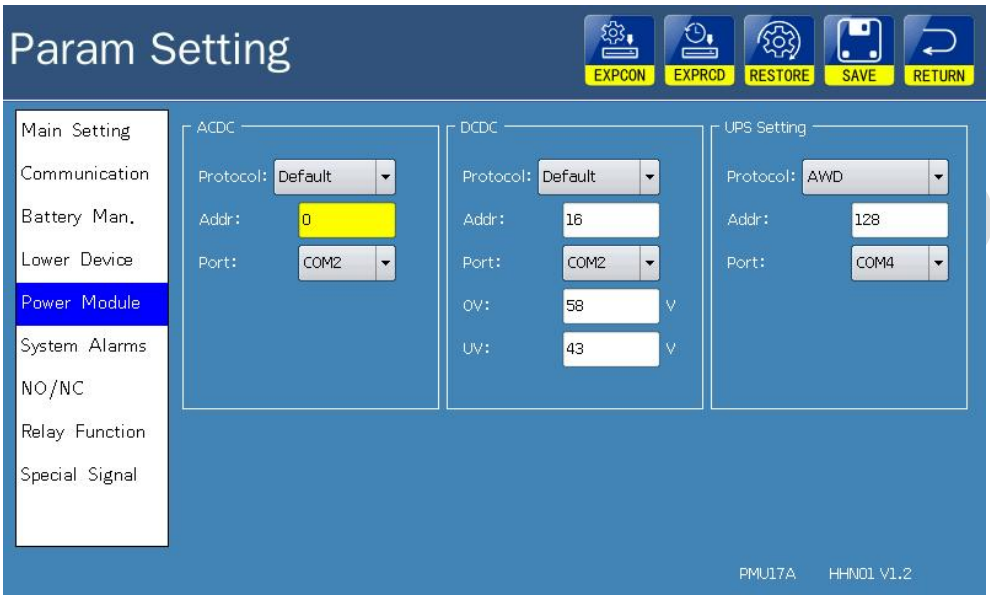
Unit setting

The SPU parameter setting parameter table		
order number	parameter	explain
1	start address	32
2	CI	COM2
3	Load current range	Range 50-1000A Optional
4	Battery current range	Range 50-1000A Optional
5	Show the control mother	Hide, display the optional,
6	Enable silicon chain	Disable, enable, and enable is enabled

7	Control mother voltage	90-260V Can be Set
The IMU parameter setting parameter table		
order number	parameter	explain
1	start address	47
2	CI	COM2
3	No.1. Control branches	Range 0-64
4	Number of 1 # joint branches	Range 0-64 (the sum of the control master branch shall not exceed 64)
5	Number of 2 #	Range 0-64
6	Number of 2 # joint branches	Range 0-64 (the sum of the control master branch shall not exceed 64)
AMU parameter setting parameter table		
order number	parameter	explain
1	model	AMU-1/2
2	start address	100
3	CI	COM2
4	Current ratio	Range: 0-800
BMU parameter setting parameter table		
order number	parameter	explain
1	start address	64
2	CI	COM2
3	Battery type	Range BMU19 (12v), BMU55 (2v)

4	Number of 1 # batteries	Range: 0-55
5	Number of 2 # batteries	Range: 0-55
6	The tail battery	Scope: Disabled, enabling
DMU parameter setting parameter table		
order number	parameter	explain
1	start address	80
2	CI	COM2

2.3.3.5 Module setting



Module Settings

Charging module ACDC setting parameter table		
order number	parameter	explain
1	model	Default (ZE protocol), Emerson (MODBUS protocol)
2	start address	Default: 0 range: 0-253

3	CI	COM2，COM4
4	rated current	Range: 0-999
5	Overpressure alarm	Range: 60-300V
6	Warrant alarm	Range: 60-300V
Communication module DCDC setting parameter table		
order number	parameter	explain
1	model	Default (ZE protocol), Emerson (MODBUS protocol)
2	start address	Default: 16 Range: 0-253
3	CI	COM2，COM4
4	Overpressure alarm	Range: 43-60V
5	Warrant alarm	Range: 43-60V
The UPS module setting parameter table		
order number	parameter	explain
1	model	Avveda, Incorre, Sker, Berson
2	start address	Range: 0-253
3	CI	COM4

2.3.3.6 Alarm setting

Warning setting instructions

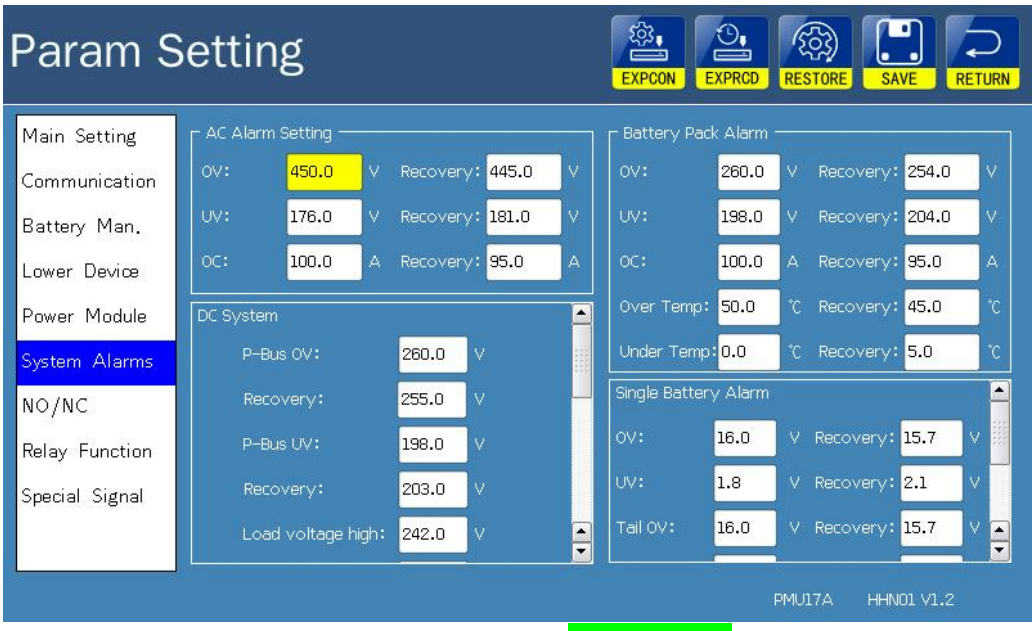
Overvoltage setting: the monitor alarm when the voltage value exceeds the overvoltage alarm setting.

Overvoltage recovery value setting: after the monitor overvoltage alarm, the voltage value is lower than the overvoltage recovery value, the monitor alarm will be eliminated.

Undervoltage value setting: when the voltage value is lower than the undervoltage alarm setting value, the monitor alarm.

Overvoltage recovery value setting: after the monitor undervoltage alarm, the voltage value is

higher than the undervoltage recovery value, the monitor alarm will be eliminated



Alarm setting

AC alarm parameter table		
order number	parameter	explain
1	Overpressure value	Range of 176-450V. Recovery value
2	Underpressure value	Range of 176-450V
3	Overflow value	Range: 0-9999A
DC alarm parameter table		
order number	parameter	explain
1	Overpressure value of complementary mother	Range: 0-300V
2	Co-mother owed pressure value	Range: 0-300V

3	Control mother overpressure value	Range: 0-300V
4	Control mother owed pressure value	Range: 0-300V
5	Communication runs into overpressure	Range: 10-100V
6	Overflow value	Range: 0-9999A
7	Insulation warning	Range: 5-200 kΩ
8	Insulation alarm	Range: 5-200 kΩ
Battery alarm parameter table		
order number	parameter	explain
1	Overpressure value	Range: 0-300V
2	Underpressure value	Range: 0-300V
3	Overflow value	Range: 0-9999A
4	Overtemperature	Range: 0-100℃
Single battery alarm parameter table		
order number	parameter	explain
1	Overpressure value	Range: 1-16V
2	Underpressure	Range: 1-16V

	value		
3	Tail overvoltage	Range: 1-16V	
4	Tail power underpressure	Range: 1-16V	
5	Overtemperature	Range: 0-100℃	In the unit setting, the BMU is set to collect the temperature and internal resistance of the battery. This feature is not available yet
6	Internal impedance alarm	25-30m Euro	

2.3.3.7 Open and close normally

Often open often closed

The switching amount input part of SPU / AMU module is frequently open nodes by default. If the node is connected to normally closed nodes, it can be set in this interface again, and each corresponding branch can directly reverse the configuration.

2.3.3.8 Open setting

Set up

This setting interface can set the definition of each switch volume output corresponding to the SPU / AMU / DMU and other modules, as defined as follows:

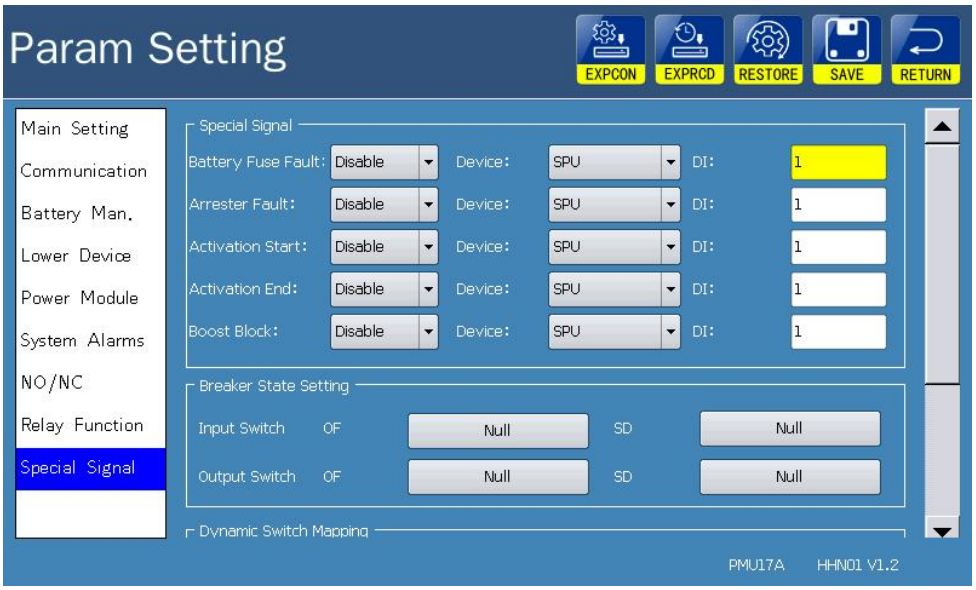
Comprehensive fault, AC abnormality, parent control, parent closure, abnormal insulation, AC inflow, battery abnormality, feeder abnormality, ACDC abnormality, DCDC abnormality, UPS-INV abnormality, battery fuse fault, arrester failure, discharge start, discharge stop, associated start.

remarks:

1. After the parameter is set, click the "Save" button in the upper right corner to save, and the save will restart the monitor;

2. PMU17G supports the import and export configuration function, (U disk format fat 32), U disk link https: / / item.jd.com/100005081414.html

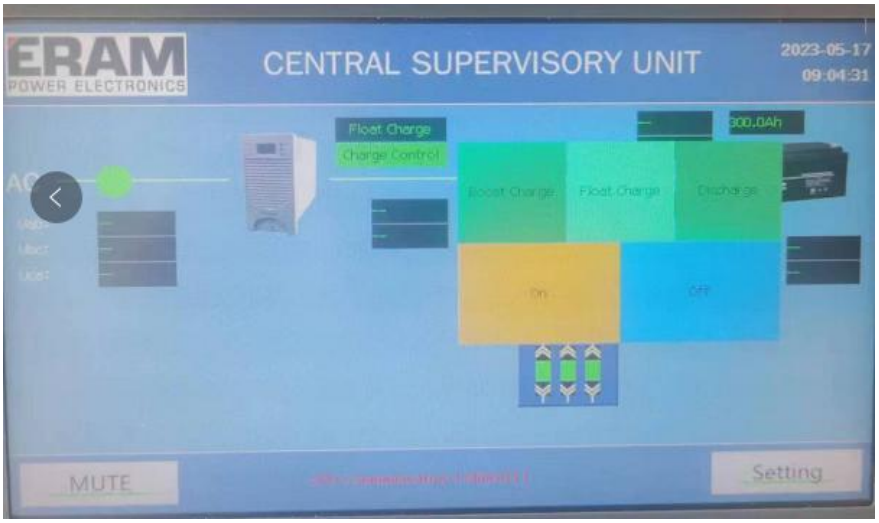
2.3.3.9 Special opening



This function is no switch volume configuration, directly select to the battery fuse fault, lightning arrester fault, activation start, activation stop, wiring switch volume shortcut way, and can be directly associated with the open.

2.3.4 Module control

Click the module control in the main interface, pop up the control command button window, click the control command to control the module action;



modular control

2.3.5 Branch road feeder editing

1. Click the system Settings on the main interface, pop up the password input interface,

enter "99999999", enter the editing interface, click Load configuration, and enter the following interface.

Click the group name in the packet information box, display the right packet configuration of each branch. Double-click the cell in the packet configuration box, click the lower right corner, and then set the input box will pop up, and modify the number of branches. In the left packet information box, click the number to be set and select the function of copying down and increasing down. After each group configuration modification is completed, click Save this page. After all groups are configured, click Save to the file, the system popup the configuration save success

dialog box, and restart the monitor. At this time, the feeder information in the feeder information query interface has been changed to the previously edited configuration.

2. Use the computer side tool to configure, refer to the configuration instructions in the toolkit.