

ABAT100 Series Battery Management System

Installation and Operation Instruction V1.1

Acrel Co.,LTD

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Declaration

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1 Summary

This product is used for centralized display and management of data and alarms of battery.

2 Networking Architecture

Solution 1: Touch Screen Serial Port Networking Solution

Upload to third-party platforms

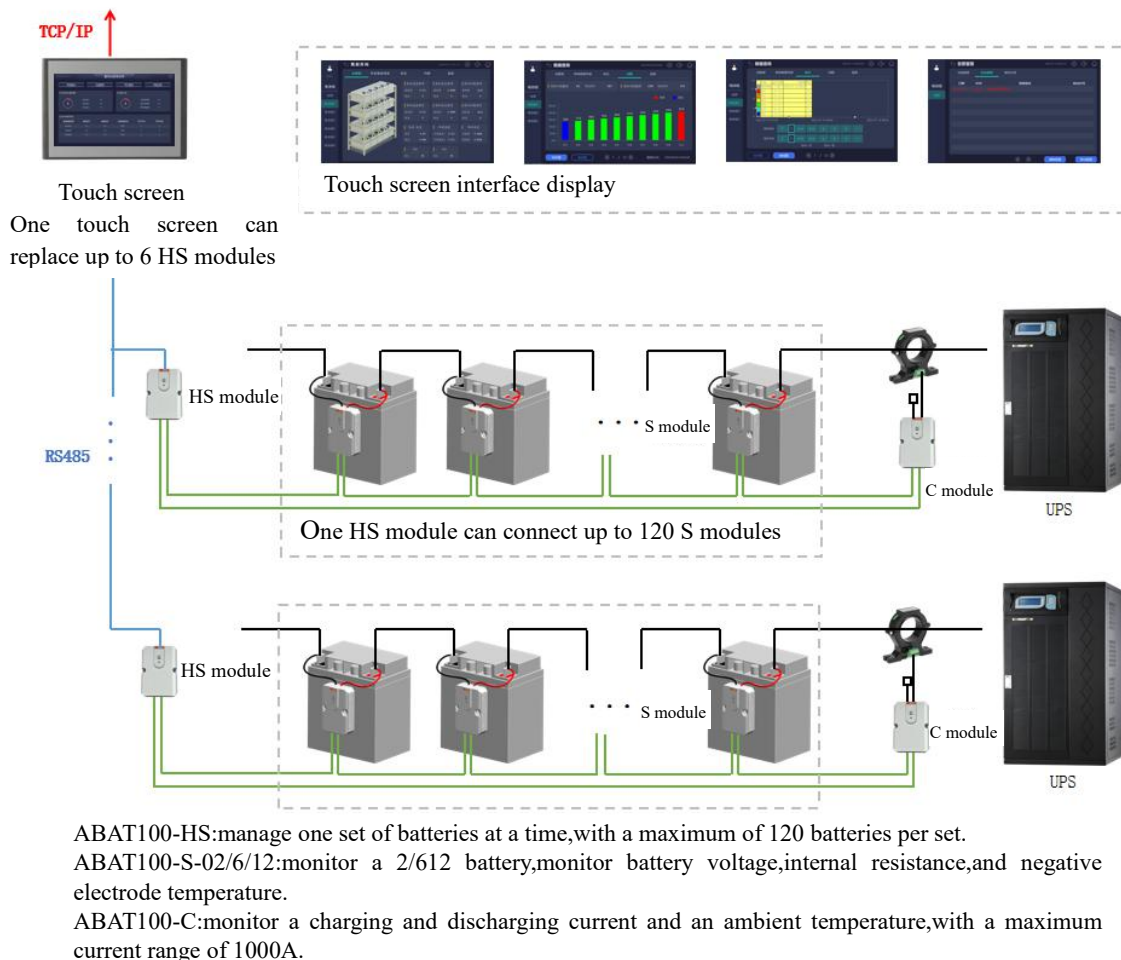
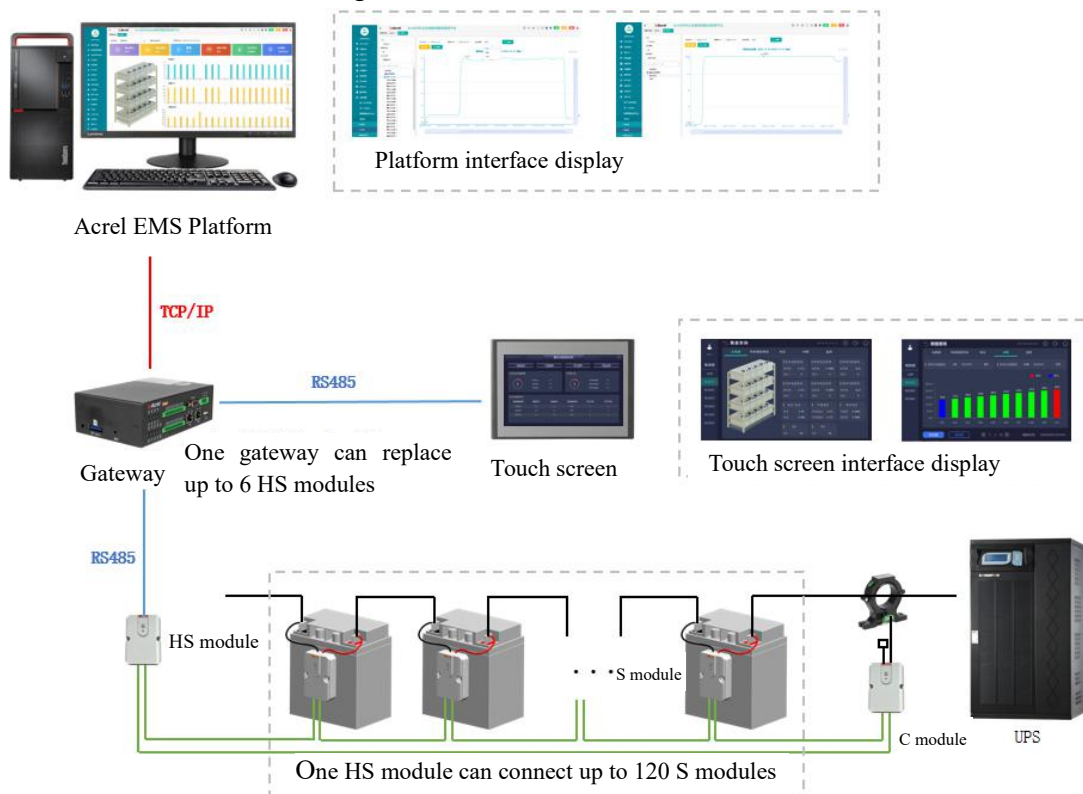


Fig1 Networking solution 1

Solution 2: EMS, EIOT Networking Solution



ABAT100-HS: Manage one set of batteries at a time.

ABAT100-S-02/6/12: Monitor a battery, monitor battery voltage, internal resistance, and negative electrode temperature.

ABAT100-C: Monitor a charging and discharging current and an ambient temperature.

Fig2 Networking solution 2

3 Installation of Touch Screen

3.1 appearance and installation

3.1.1 7-inch touch screen appearance and installation

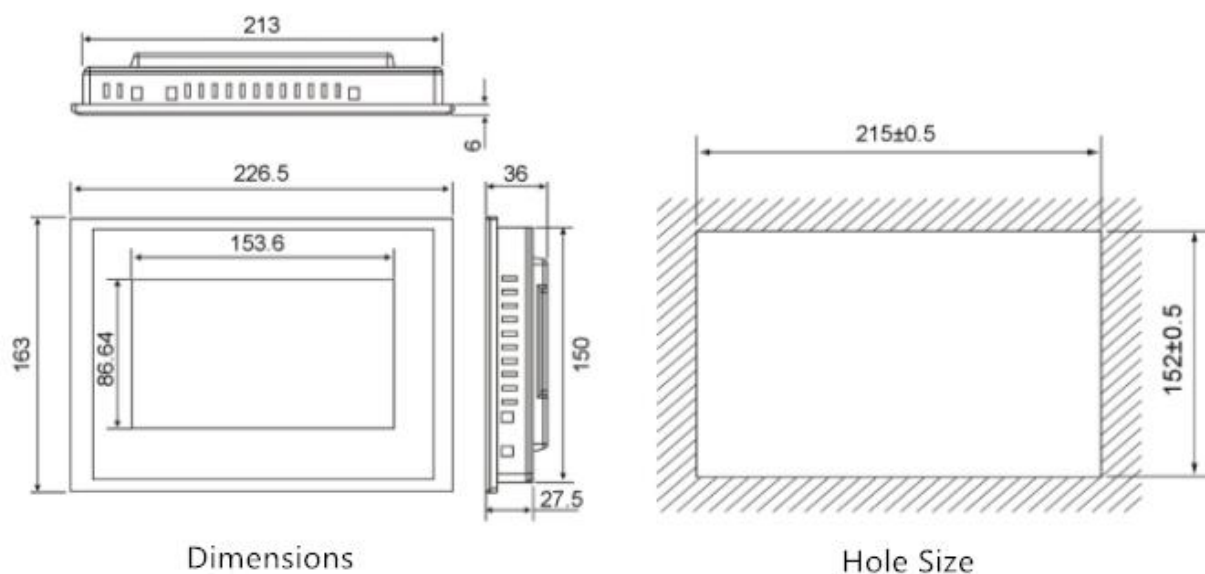


Fig3 7-inch touch screen installation

3.1.2 10-inch touch screen appearance and installation

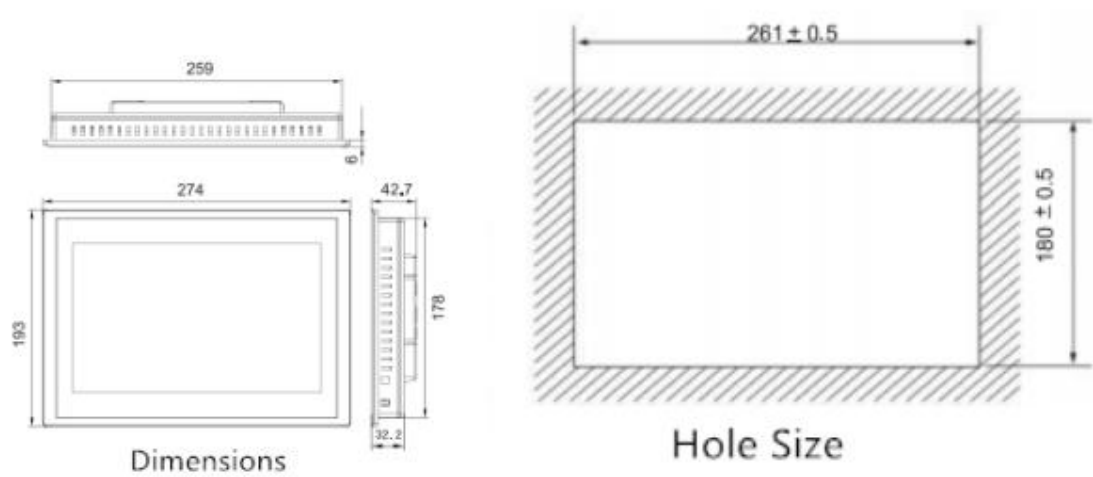
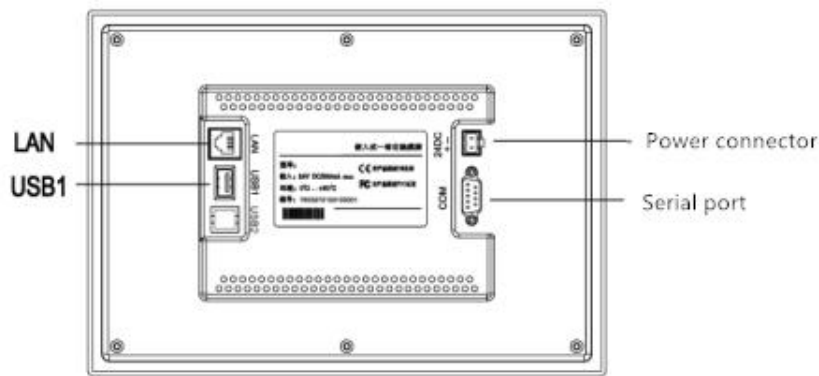


Fig4 10-inch touch screen installation

3.2 Touch Screen Interface Description



Serial port (DB9)	2×RS485
USB1	Main port, compatible with USB2.0 standard
LAN (RJ45)	Ethernet interface
Power connector	24V DC ±20%

Fig5 Touch screen interface description

DB9 Definition

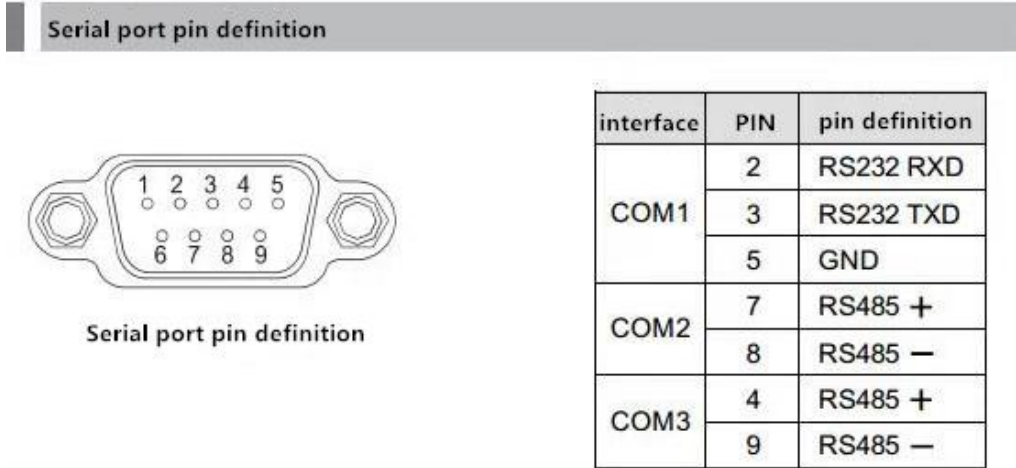


Fig6 Serial port pin definition diagram



Fig7 Supporting adapter board for touch screen

Communicate by serial port as shown above: 7,8 To gateway

3.3 Installation

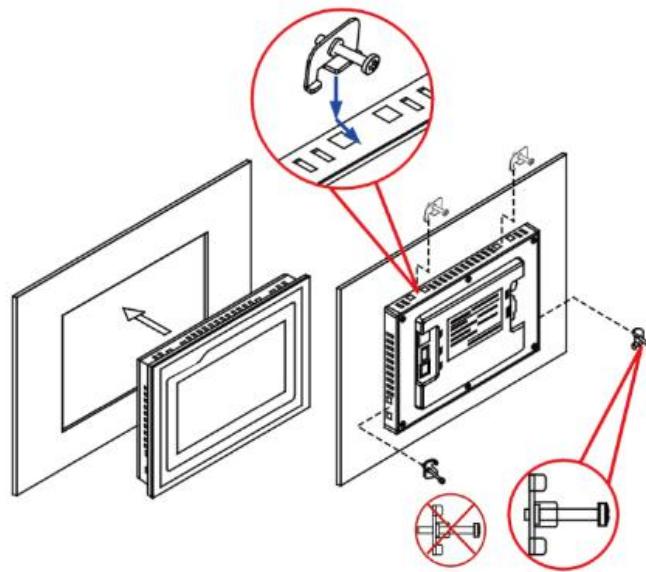


Fig8 Installation diagram of touch screen

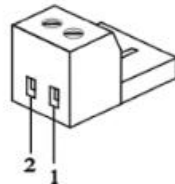
3.4 Wiring

Step 1: Strip the 24V power cord and insert it into the power plug terminal

Step 2: Use a flat-blade screwdriver to tighten the power plug screws

Step 3: Insert the power plug into the power socket of the product

schematic diagram and pin definition of the power plug are as follows



PIN	definition
1	+
2	-

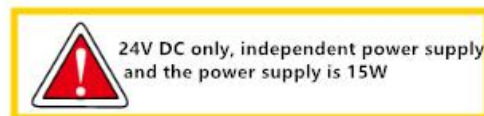


Fig9 Touch screen power wiring step diagram

4 Touch Screen Instructions

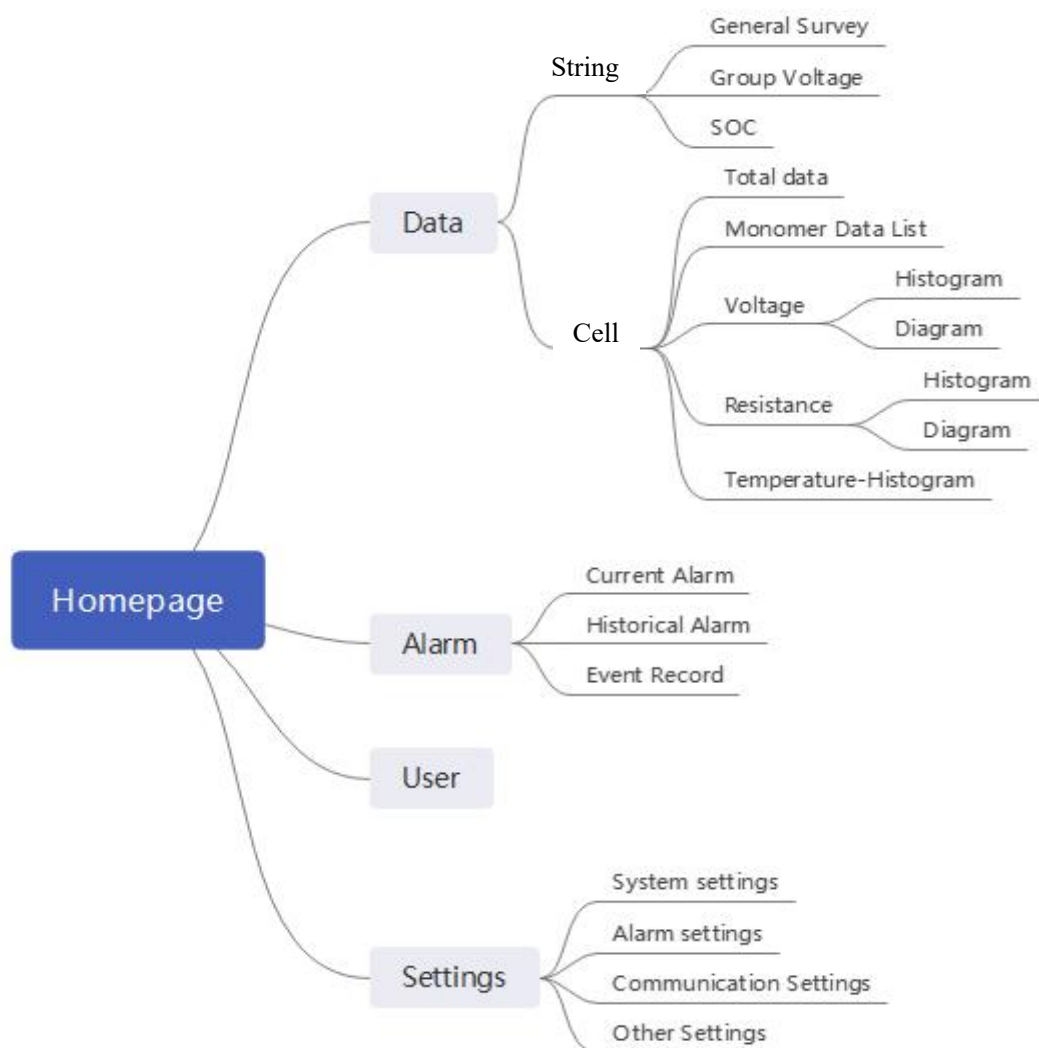
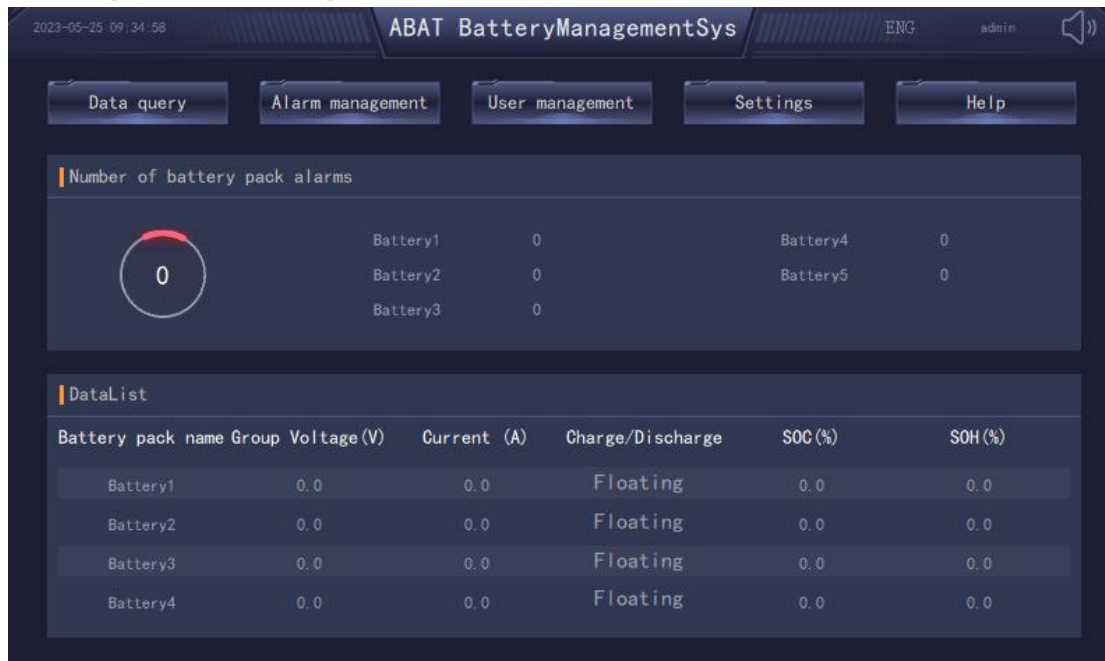


Fig10 Instructions for using touch screen software

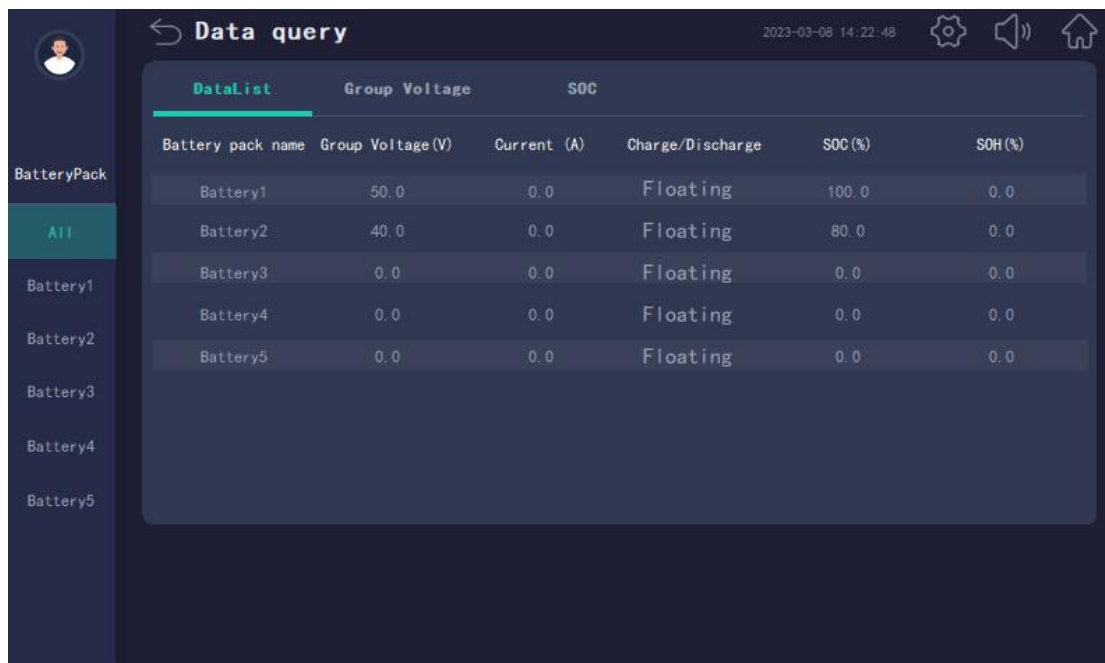
4.1 Homepage

The first page as shown. Display battery String general survey and alarm number.



4.2 Data Query-Battery String Data General Survey

Display group voltage, current, charge status, SOC, SOH and other data of battery String.



4.3 Data Query-Battery String Group Voltage General Survey

Display group voltage by histogram.



4.4 Data Query-Battery String SOC General Survey

Display SOC by histogram.



4.5 Data Query-Total Data of Cell Battery

Display voltage, temperature, resistance, SOC, of Cell battery String.



4.6 Data Query-Monomer Data List

Display battery name, alarm status, voltage, temperature, resistance, SOC, SOH of each battery in each String. Each battery String can have 120 batteries data at most.

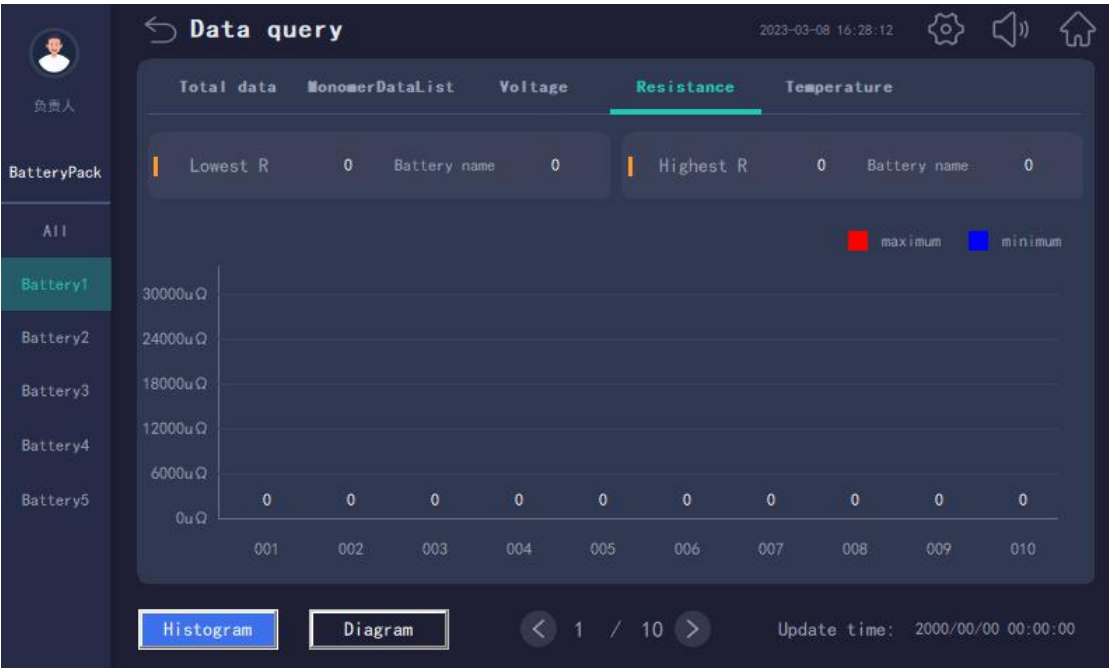
The 'Data query' interface displays the 'MonomerDataList' for a cell battery string. The sidebar on the left shows 'BatteryPack' and 'All' tabs. The main area features a table listing individual battery data.

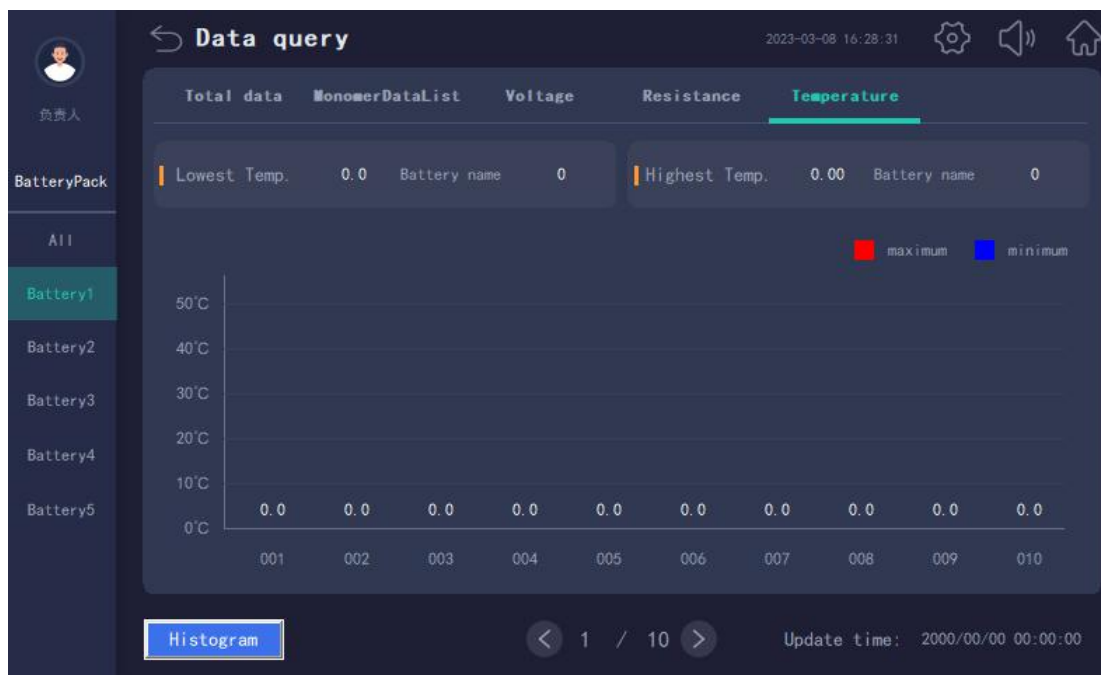
Battery name	Alarm status	Voltage (V)	Temperature (°C)	Resistance (uΩ)	SOC (%)	SOH (%)
001	normal	0.000	0.0	0	0.0	0.0
002	normal	0.000	0.0	0	0.0	0.0
003	normal	0.000	0.0	0	0.0	0.0
004	normal	0.000	0.0	0	0.0	0.0
005	normal	0.000	0.0	0	0.0	0.0
006	normal	0.000	0.0	0	0.0	0.0
007	normal	0.000	0.0	0	0.0	0.0
008	normal	0.000	0.0	0	0.0	0.0
009	normal	0.000	0.0	0	0.0	0.0
010	normal	0.000	0.0	0	0.0	0.0

Navigation: < 1 / 12 >

4.7 Data Query-Histogram of Cell Battery Voltage, Resistance and Temperature

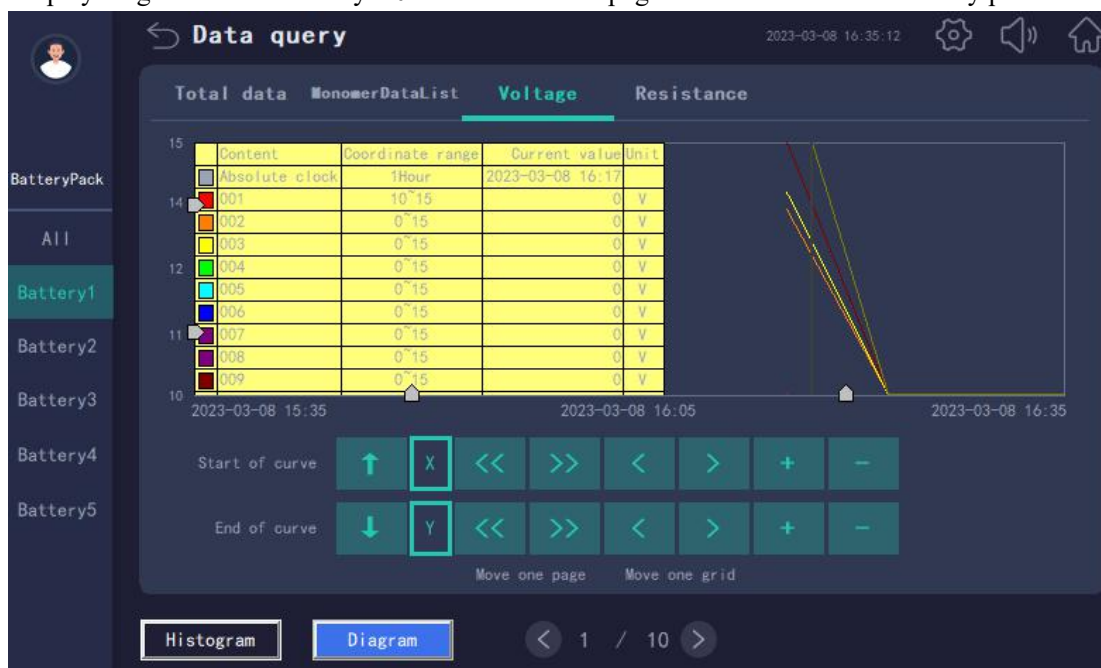
Display each battery data by histogram. Minimum in blue, Maximum in red.





4.8 Data Query-Diagram of Cell Battery Voltage, Resistance and Temperature

Display diagram of each battery. 10 Batteries in each page at most. Get data in brief by point at screen.



4.9 Alarm Query-Current Alarm

Press  can confirm alarm and make it silence.

BatteryPack

All

Battery1

Battery2

Battery3

Battery4

Battery5

Alarm management

2023-03-08 16:40:44

Current alarm

Historical alarm

Event record

Date	Time	Object name	Alarm value	Alarm description
2023/03/08	16:39:56	ALMCJQCOMSTATUS_005	-2	Communication failure of collector 5
2023/03/08	16:39:56	ALMCJQCOMSTATUS_004	-2	Communication failure of collector 4
2023/03/08	16:39:56	ALMCJQCOMSTATUS_003	-2	Communication failure of collector 3
2023/03/08	16:39:56	ALMCJQCOMSTATUS_002	-2	Communication failure of collector 2
2023/03/08	16:39:56	ALMCJQCOMSTATUS_001	-2	Communication failure of collector 1

alarm silence

4.10 Alarm Query-Historical Alarm

Attention: Only login user “admin” can clear alarm successfully.

BatteryPack

All

Alarm management

2023-03-08 16:54:56

Current alarm

Historical alarm

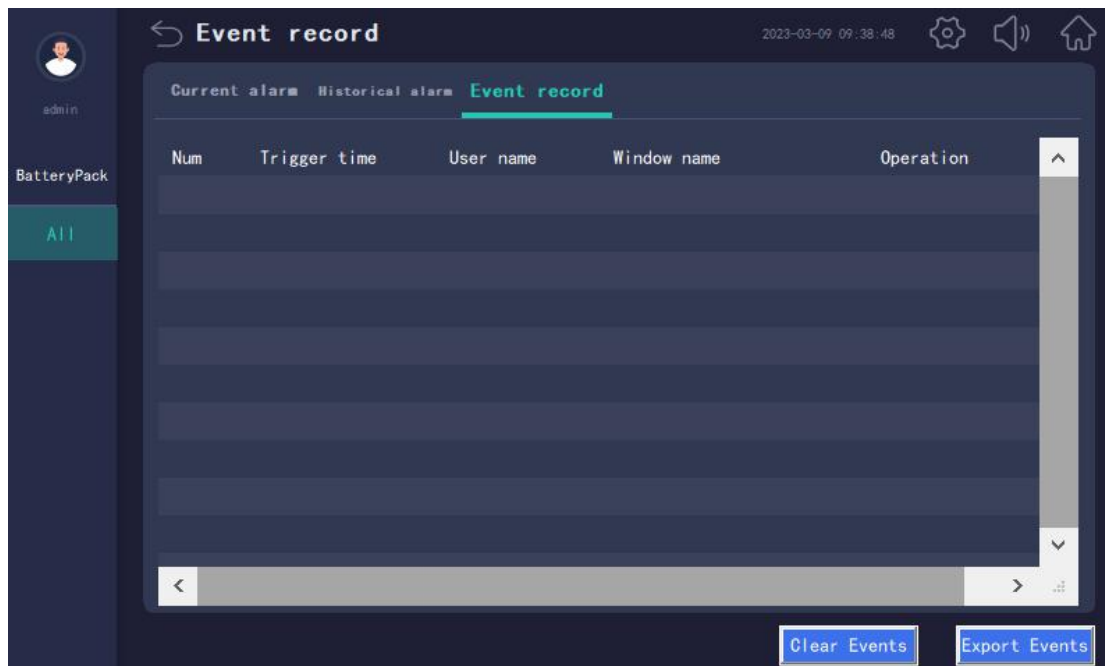
Event record

Date	Time	Object name	Alarm description
------	------	-------------	-------------------

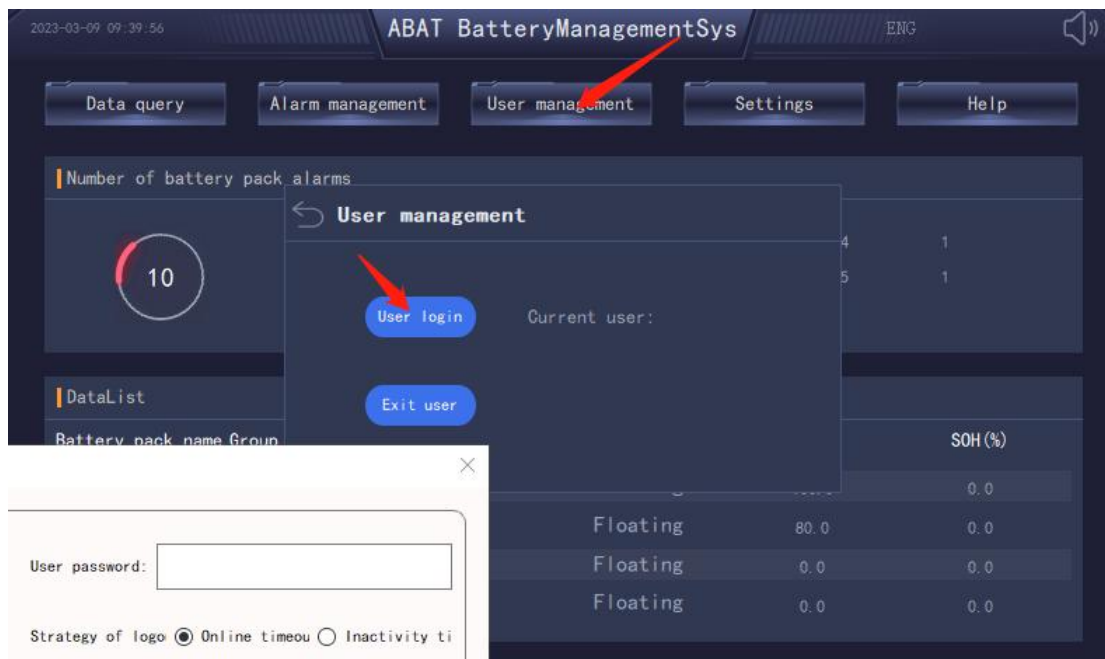
Clear alarmExport Alarms

4.11 Alarm Query-Event Record

Attention: Only login user “admin” can clear events successfully.



4.12 User Management



Admin password: 10000. Allowed to “Settings” and setup.

4.13 Parameter Settings-System Settings

Set the number of batteries, voltage, battery String name, capacity of battery String, internal resistance test of each battery String.

Set the data in the collector pointed.

Press “Save settings” to save the change.

Settings 2023-03-15 16:51:53

admin

System Set.

Battery1

Battery2

Battery3

Battery4

Battery5

Battery6

Alarm Set.

Communication

Other Set.

Number of batteries: 0

Battery voltage (12V, 6V, 2V): 0

Battery pack name: Battery1

Battery capacity of battery pack (AH): 0

Single battery number: 1

Battery internal resistance test: Individual test

Charge and discharge state: Every 0 Days

Read settings Save settings

4.14 Parameter Settings-Alarm Settings

Settings 2023-03-09 14:01:09

admin

System Set.

Alarm Set.

Battery1

Battery2

Battery3

Battery4

Battery5

Battery6

Communication

Other Set.

Parameter name	Alarm value	Parameter name	Alarm value
Single U overcharge (V)	0.000	Overcurrent charging (A)	0.0
Single U over-discharge (V)	0.000	Discharge overcurrent (A)	0.0
Single over floating charge(V)	0.000	Ambient high temperature (°C)	0.0
Single under floating charge(V)	0.000	Ambient low temperature (°C)	0.0
Uneven individual voltage (V)	0.000	Battery over temperature (°C)	0.0
Pole D-value of individual U(V)	0.000	Battery low temperature (°C)	0.0
Overall voltage overcharge (V)	0.0	Uneven battery temperature (°C)	0.0
Overall U over-discharge (V)	0.0	Internal resistance early warning(%)	0
Overall over floating charge(V)	0.0	Over internal resistance alarm(%)	0
Overall under floating charge(V)	0.0	Inhomogeneous of Resistance (%)	0
Low SOC (%)	0	Under internal resistance(%)	0
Low SOH (%)	0		

Initialization Calculate alarm value by monomer value Read settings Save settings

The parameters in this page is read from communication collector directly. Set these parameters should transport into communication collector.

Set alarm limits value of Cell voltage overcharge, over-discharge, over floating charge, under floating charge and uneven individual voltage.

Set alarm limits value of group voltage overcharge, over-discharge, over floating charge and under floating charge.

Set alarm limits value of current overcharge and over-discharge.

Set alarm limits value of environmental over temperature, under temperature and temperature rise.

Set alarm limits value of battery over temperature, under temperature and uneven temperature.

Set alarm limits value of over ,under and uneven internal resistance.

Set alarm limits value of battery String insulation resistance.

Set lower alarm limits value of SOC and SOH.

4.15 Parameter Settings-Communication Settings

The screenshot shows the 'Communication' settings page. On the left is a sidebar with 'admin' at the top and menu items: 'System Set.', 'Alarm Set.', 'Communication' (highlighted), and 'Other Set.'. The main area has a title 'Communication' and a timestamp '2023-05-25 09:35:14'. It contains several settings: 'Acquisition mode' is a dropdown set to 'EMS'; 'IP address' consists of four input boxes with values '192', '168', '2', and '100'; 'Number of collectors' is an input box with '5'; 'Set meter address' is an input box with '1'; 'Read ADD.' is a blue button next to an input box with '0'; 'HMI Address' is an input box with '0'. A 'Save settings' button is at the bottom right.

Available acquisition mode: Serial port acquisition mode, EMS acquisition mode and EIOT acquisition mode.

Serial port acquisition mode: Touch screen collect data from ABAT100-HS by RS485.

EMS acquisition mode: An assorted EMS solution is provided. The data of ABAT100-HS collector use ANET gateway serial port to collect and transport by network port2 to the touch screen.

EIOT acquisition mode: An assorted EITO solution is provided. The data of ABAT100-HS collector use AWT200-1E4S gateway serial port to collect and transport by network port to the touch screen.

Set IP address: The IP address is belong to the touch screen.

Number of collectors: Set the number of ABAT100-HS collectors.

Set meter address: The ABAT100-HS collectors address only can be set when connect with Cell ABAT100-HS collector. The 1~6 address on the touch screen is corresponding to the battery String 1~6. **After setting,click on the read address to confirm whether the write was successful.**

Set 485 forwarding address:modify this address when using 485 forwarding data processing on the touch screen.

4.16 Parameter Settings-Other Settings

The screenshot shows the 'Settings' page. The sidebar on the left has 'admin' at the top and menu items: 'System Set.', 'Alarm Set.', 'Communication', 'Battery1' (highlighted), 'Battery2', 'Battery3', 'Battery4', 'Battery5', and 'Battery6'. The main area has a title 'Settings' and a timestamp '2023-03-15 16:52:22'. It contains three sections: 1. 'Battery equalization' with 'Battery No. (1~120)' set to '0', 'state' set to 'complete', and a 'Monomer equilibrium' button. 2. 'Set internal resistance reference value' with 'Set all inputs 61680', 'Set Average Input 257', 'Set single input battery number (1~120)' set to '0', and a right arrow button. 3. 'Modify current direction' with a 'Set' button, a 'Clear!' button, 'Device reset:' with '61680: HS module restart', '61696: S module restart', '0xf1xx, the first restart of group 1', an input box with '0', and a 'Set' button. At the bottom, there is a 'Low power consumption mode' section with an 'open' button and a 'Cancel' button.

Set battery equalization, internal resistance reference value, current direction, device reset and low power consumption mode.

Battery equalization: Balance the voltage of Cell battery not to high or to low.

Internal resistance reference value: Set after replace the batteries.

Change current direction: Set when the Haul connected in opposite direction.

Device reset: Reset to test Cell battery HS Module.

Low power consumption mode: If the battery will not be charged in a long time, can open this mode to make HS low power consumption.

Clear I: Clear current to calibrate HALL sensor. Only can be pressed with no load.

5 Data Forwarding File

Only apply for touch screen serial port acquisition mode and forward by network port.



蓄电池触摸屏转发
地址表.xlsx

Manual revision record

Data	Old version	New version	Revision
2023.3.17		V1.0	1. First writing
2023.5.24	V1.0	V1.1	2. Update images and descriptions of 4.1 and 4.15