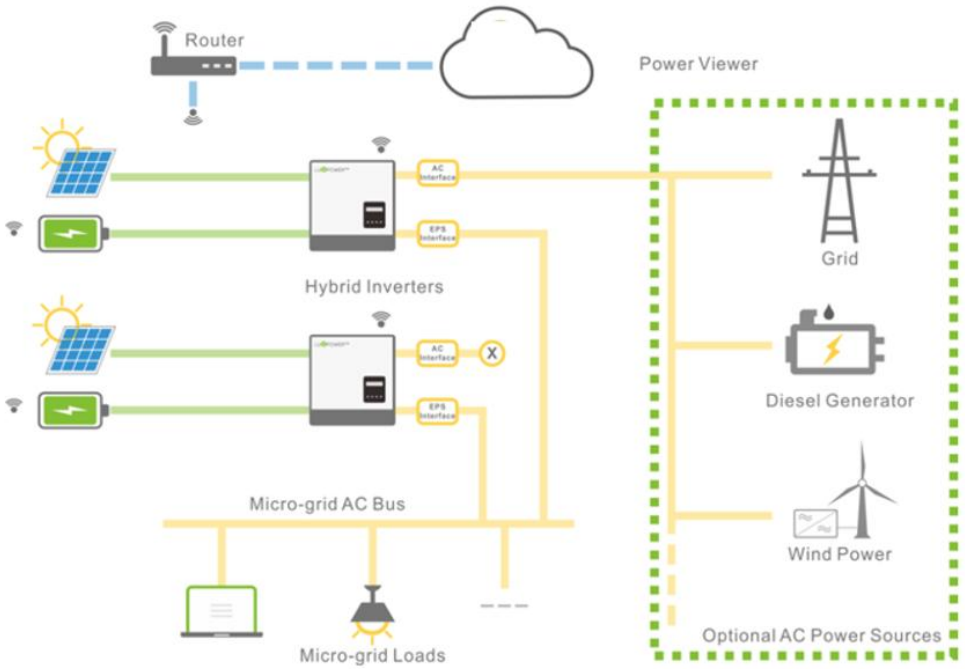
HANCHU ESS Low-voltage energy storage system use training

2022-06

Contents

Home Energy Storage Solutions



✓ Safety and Stability

10-year design life, efficient monitoring by intelligent BMS

✓ Reduce electricity costs

Using solar energy reduces electricity consumption to the grid and reduces electricity costs.

✓ System digital monitoring

Platform monitoring/Remote control/Intelligent learning /Digital management

✓ Free control of energy

Select different times and different loads to release and use the energy stored in the battery。

✓ Strong adaptability

Modular design/multi-protocol access/portable installation

✓ No fear of power outages

External power failure, the home can still operate normally, ensuring that important loads continue to work。

Product Features

Ultra Safe
Built with safety lithium ion phosphate battery cells

Smart BMS&IOT Monitoring
Buit-in intelligent BMS provides strong protection, Free & handy monitoring on mobile & PC

Flexible & Easier Installation
Optional installation design for floor standing & wall-mounted

Modular Design
3.4KWh Modular Design ,Max 8pcs paralleling connection

Long Life Span
6000 cycles , 10 years life design

Wide Compatibility
Compatible with mian brands of inverter in the market

Product Functions

Basic Safety function

Over voltage protection, under voltage protection, over current protection, short circuit protection, over temperature protection, etc.

Battery capacity calculation function

Real-time calculation of battery SOC, the full capacity and current capacity of the battery pack can be set through the host computer, and a complete charge and discharge cycle can be performed once, and the capacity after the cycle can be automatically configured

Charge balance function

The charge equalization strategy can be set flexibly, which can effectively improve the battery life and cycle life

LED light status indication function

With 6 LED indications, 4 remaining battery capacity indicators, 1 running indicator and 1 alarm protection status indicator

Smart key switch function

Intelligent one-key switch design, can be manually turned off when not in standby power state, long press the button to reset the BMS by software or hardware and clear various abnormal states

Charging current limit function

When the charging current is too large, it can be limited to 10A current charging, reducing damage to the battery and increasing the safety of electricity consumption

Historical data storage function

With historical record storage function, the storage capacity is not less than 500 records, which is convenient for system monitoring, analysis and maintenance

Parallel communication function

The parallel communication function can be realized through the RS485 interface. After the parallel connection, the host computer can cyclically monitor the battery pack data.

Hardware voltage detection function

The BMS design is equipped with a unique hardware detection protection circuit. Ensure that the BMS can run safely and reliably for a long time under abnormal conditions

Product parameters

HOME ESS LV-3.2K		
Nominal energy		3.2kWh
Cell type		Lithium Iron Phosphate(LiFePO4)
depth of discharge		100%
Operating voltage range		48～57.6V
standard voltage		51.2V
Standard charging current		40A
Standard discharge current		60A
weight		35Kg
size		480*300*160mm
range of working temperature	**charging**	From 0～50℃
	discharge	From -10～50℃
humidity		≤95%
cooling type		nature
Protection class		IP54
communication		CAN/RS485
energy（LVES-E Series)		3.4kWh/6.8kWh/10.2kWh/13.6kWh/17kWh/ 20.4kWh/23.8kWh/27.2kWh
Safety		IEC 62619
transportation		UN38.3

Competitive Analysis

Comparative analysis of main features		
Project	alphaESS	HANCHU ESS
module energy	10.1KWh	3.2kWh
depth of discharge	96%	100%
Operating Voltage	45V-54V	43.2V-57.6V
Number of expandable modules	6	8
Protection class	IP21 (Indoor)	IP54
communication method	CAN and RS-485	CAN and RS-485
Inverter can be supported	alphaESS（ODM）	Growatt, SMA, GoodWe, Deye, Victron, LuxPower, Voltronic Power, Sofar Solar and other mainstream inverters in the market

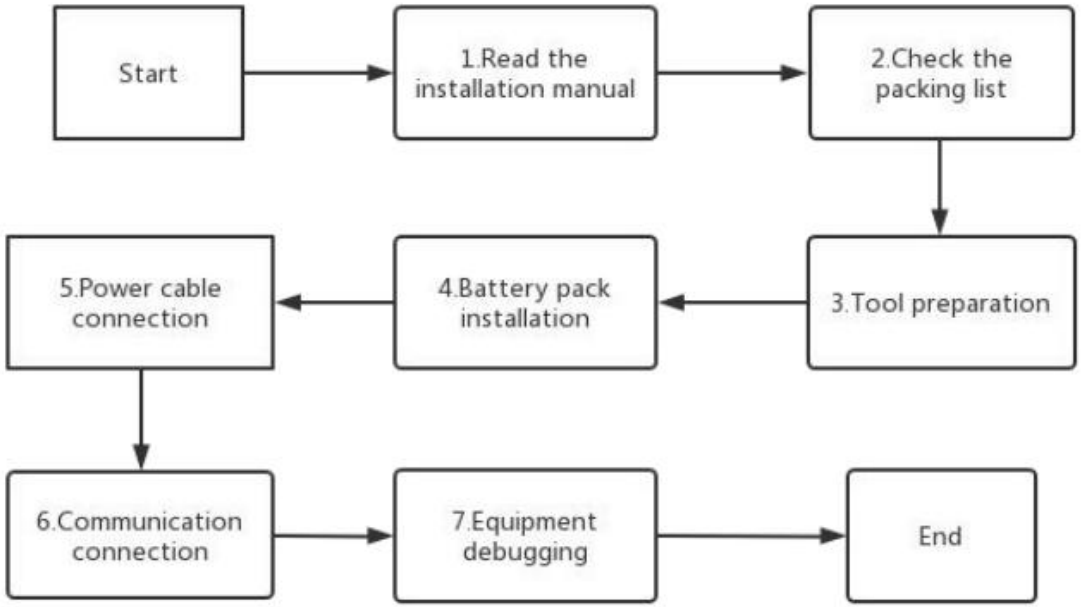
The single module is compact and can meet the energy storage needs of small households. It can support multiple expansion modules, flexible expansion, and can also meet the needs of large-capacity household energy storage.

The capacity is not false, the discharge depth is up to 100%, the working voltage range is wide, and the use is efficient.

Multi-protocol adjustment can support mainstream inverter manufacturers in the market.

Battery installation process

Flow chart of installation steps:



Notice：For detailed installation instructions, please refer to the user manual or quick installation guide

Please make sure the installation location meets the following conditions：

- ✓ The installation and usage environment need to comply with local laws and regulations of lithium battery products and relevant international national and regional standards.
- ✓ Install the battery in a dry, well-ventilated environment and secure the battery on a sturdy, level support surface.
- ✓ Avoid water accumulation in the installation position, and keep away from water sources such as faucets, sewer pipes, sprinklers to avoid water infiltration.
- ✓ The environment around the installation position is clean, and there is no large amount of infrared radiation, organic solvents and corrosive gases, etc.
- ✓ When the battery is running, the temperature of the chassis and heat sink will be relatively high, please do not install it in a place where it is easy to touch.
- ✓ When the battery is running, do not block the vents or cooling system to prevent high temperature fires.
- ✓ Please choose a sheltered installation site, or build an awning to avoid direct sunlight or rain.

Product Appearance

（-）negative electrode of battery

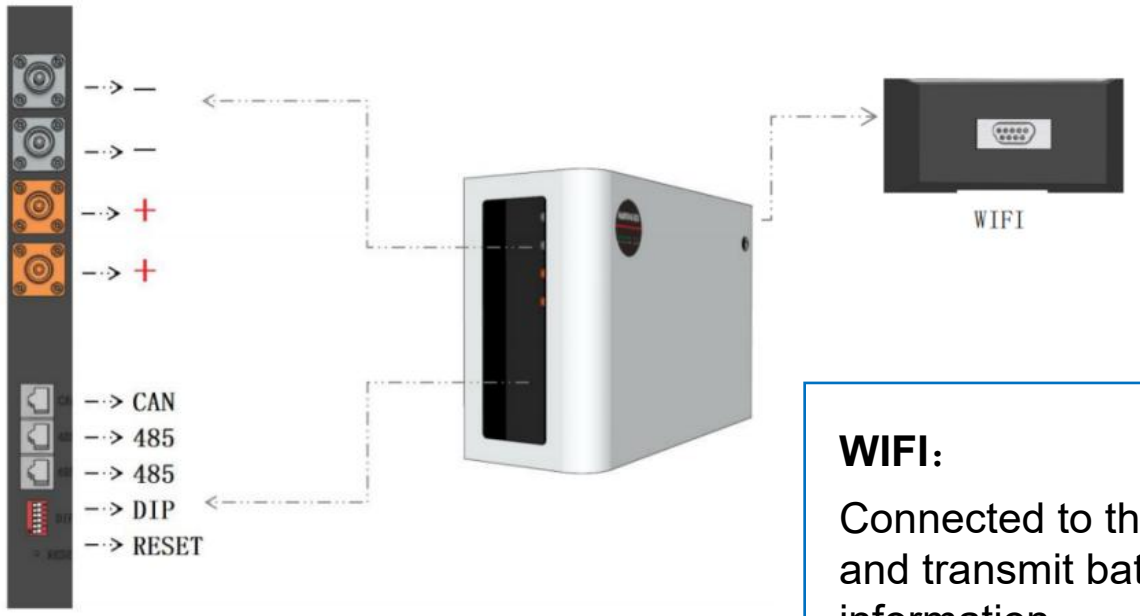
one connected to the battery

one connected to the battery or the Inverter

（+）positive electrode of battery

one connected to the battery

one connected to the battery or the Inverter



WIFI：

Connected to the logger to monitor and transmit battery status information

CAN： Communication interface with inverter

Connect the battery and the inverter with the power cable

RS485： Communication interfacet between batteries

Connect the batteries with the power cable

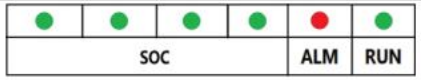
DIP

Address and Protocol Selection

Definition of battery LED indicator

Capacity indicator

State	Charge				Discharge			
capacity indicator	L1●	L2●	L3●	L4●	L1●	L2●	L3●	L4●
0～25%	FLASH 2	OFF	OFF	OFF	ON	OFF	OFF	OFF
25～50%	ON	FLASH 2	OFF	OFF	ON	ON	OFF	OFF
50～75%	ON	OFF	FLASH 2	OFF	ON	ON	ON	OFF
75～100%	ON	ON	ON	FLASH 2	ON	ON	ON	ON
Running lights	ON				FLASH 3			



Flash Description

Flashing method	ON	OFF
Flash 1	0.25s	3.75s
Flash 2	0.5s	0.5s
Flash 3	0.5s	1.5s

Status Indicator

State	Abnormal event	RUN	ALM	LED
		●	●	● ● ● ●
Shutdown		OFF	OFF	ALL OFF
Standby	Normal	FLASH 1	OFF	ALL OFF
	Alert	FLASH 1	FLASH 2	ALL OFF
	Protect	OFF	ON	ALL OFF
Charge	Normal	ON	OFF	According to the battery indicatorHighest indicator LED flash 2
	Overvoltage alarm	ON	OFF	According to the battery indicatorHighest indicator LED flash 2
	Overcurrent, temperature alarm	ON	FLASH 2	According to the battery indicatorHighest indicator LED flash 2
	Overvoltage protection	FLASH 1	OFF	ON
	Overcurrent Protection	ON	OFF	According to the battery indicatorHighest indicator LED flash 2
Discharge	Normal	FLASH 3	OFF	According to the battery indicator
	Alert	FLASH 3	FLASH 2	According to the battery indicatorHighest indicator LED flash 3
	Undervoltage protection	FLASH 1	FLASH 2	According to the battery indicator
	Overcurrent, short circuit, temperature, reverse connection, protection	OFF	ON	ALL OFF

Definition of DIP

DIP address reference table

Address	Address dial				Master protocol		Remark
	#1	#2	#3	#4	#5	#6	
1	ON	OFF	OFF	OFF	OFF	ON	Master
2	OFF	ON	OFF	OFF	OFF	OFF	Slave
3	ON	ON	OFF	OFF	OFF	OFF	Slave
4	OFF	OFF	ON	OFF	OFF	OFF	Slave
5	ON	OFF	ON	OFF	OFF	OFF	Slave
6	OFF	ON	ON	OFF	OFF	OFF	Slave
7	ON	ON	ON	OFF	OFF	OFF	Slave
8	OFF	OFF	OFF	ON	OFF	OFF	Slave
9	ON	OFF	OFF	ON	OFF	OFF	Slave
10	OFF	ON	OFF	ON	OFF	OFF	Slave
11	ON	ON	OFF	ON	OFF	OFF	Slave
12	OFF	OFF	ON	ON	OFF	OFF	Slave
13	ON	OFF	ON	ON	OFF	OFF	Slave
14	OFF	ON	ON	ON	OFF	OFF	Slave
15	ON	ON	ON	ON	OFF	OFF	Slave

- Address 1 is defined as 

（Black dot is OFF state at the bottom, and ON state at the top), others adopt secondary system as shown in the table on the right.

- Master dial setting: The battery factory defaults to master mode and does not need to be changed （1:ON,6:ON， 2-5:OFF）

- Slave dial setting:Dial address is 2-15 ,#5&#6 need to be dialed off.

- Master protocol address(5:OFF,6:ON)supports the HANCHU ESS /Lux Power protocol, and address (5:ON, 6:ON) supports Victron and SMA protocols.

Attachment check

Power cable/400mm
Connect the batteries

Power cable/600mm
Connect the battery to the inverter

communication line/1000mm/grey
Connect the battery to the inverter

communication line/500mm/black
Connect the batteries

User Manual and
Quick Installation Guide

Metal bracket：Fix battery

Ground screw and Terminal：
ground the battery

Expansion tube/screw ：
Fixed bracket

Logger：
System Status Monitoring

Tool preparation

Safety gloves

Safety glasses

Safety shoes

Protective battery products must be worn and maintained during the installation process.

Installation Tools: tools needed in the process of installing battery, more effective to improve installation efficiency

Ruler

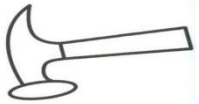
Determine the exact location of the battery installation

maker pen

mark location of Metal bracket

Electric transfer

Drill holes in the wall



Hammer

Fixed expansion bolt tube

Phillips screwdriver

locking screw

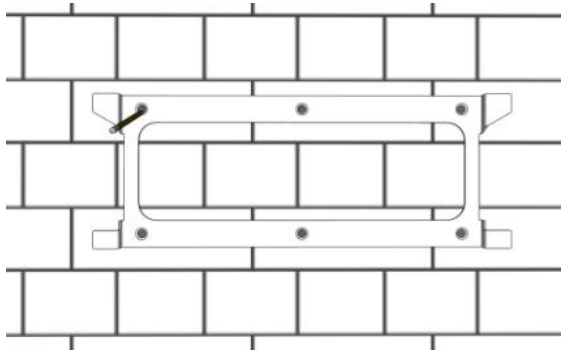
Torque screwdriver

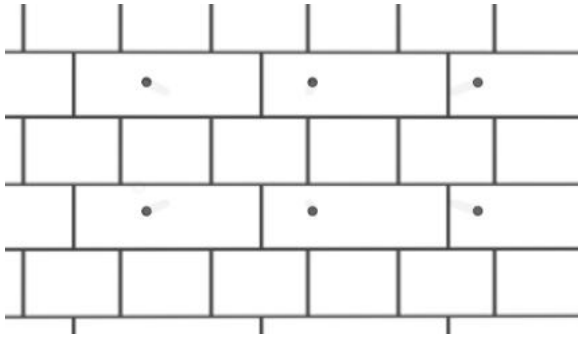
Fixed ground screw

Battery installation

Step 1: Locate drill holesinin the wall

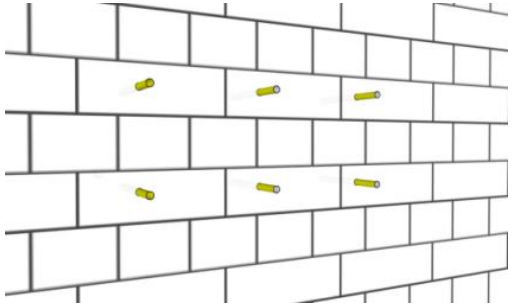
Use the bracket as a template to make positioning holes onin the wall, mark the positions of the 6 holes, and then drill 10mm holes to ensure that the depth of the holes is greater than 60mm.

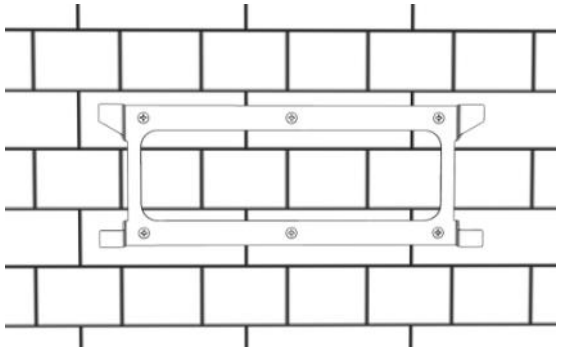




Step 2: Fix the Wall Mount Bracket

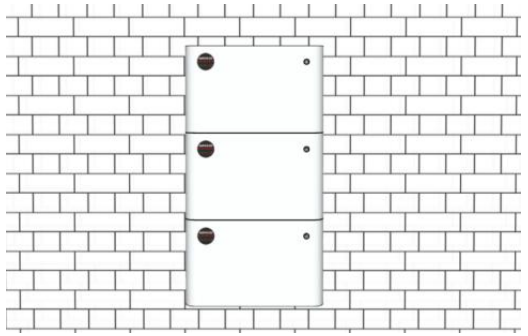
Fit the expansion tube into the hole and pull tight, then use the expansion screw to install and secure the wall mount bracket to the wall.





Step 3: Fix the battery

Fit the expansion tube into the hole and pull tight, then use the expansion screw to install and secure the wall mount bracket to the wall.



Power cable connection

Step 1 : Power connections between two batteries

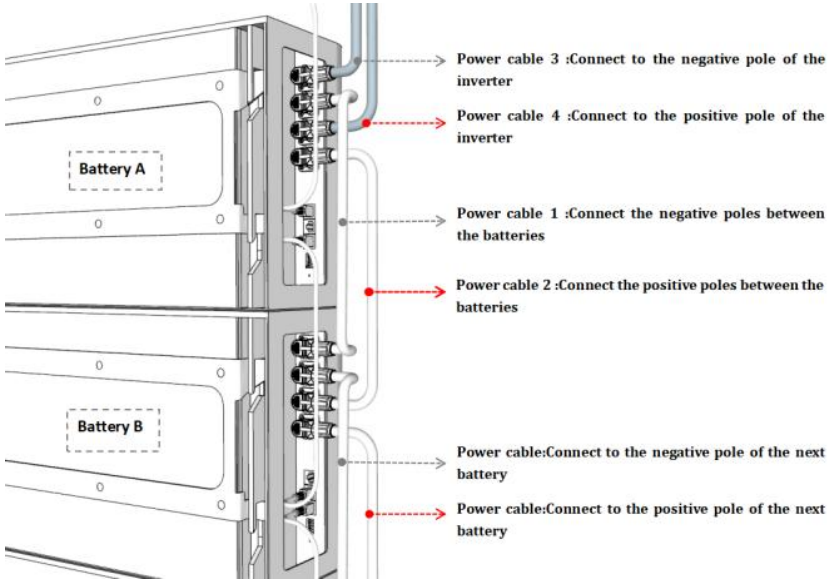
Use power cable 1 to connect the negative pole (P- terminal) of battery pack A to the negative pole (P- terminal) of battery pack B, and use power cable 2 to connect the positive pole (P+ terminal) of battery A to the positive pole (P+ terminal) of battery B.

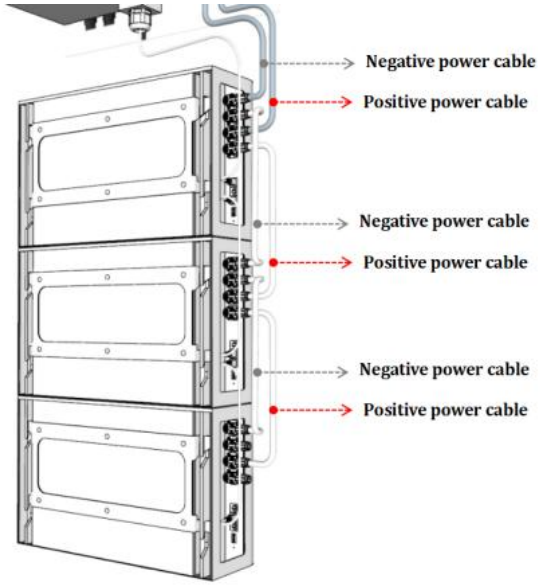
Step 2 : Power connections more than two batteries

Analogy derivation, more than two batteries connections, connect the negative poles (P-terminal) between the adjacent batteries, and connect the positive poles (P+ terminal) between the adjacent battery .

Step 3 : Connect the battery to the inverter power supply

After the batteries are connected according to Step 1-2, connect the negative pole (P- terminal) of the battery A and the BAT - terminal of the inverter with the power cable 3; connect the positive pole (P+ terminal) of the battery A and the BAT + terminal of the inverter with the power cable 4 .





Note: Ground the battery before making the power cable connection

When the inverter is electrically connected, the inverter and batteries need to be powered off. Hear a sound locking into place as the cable connects to the terminal.

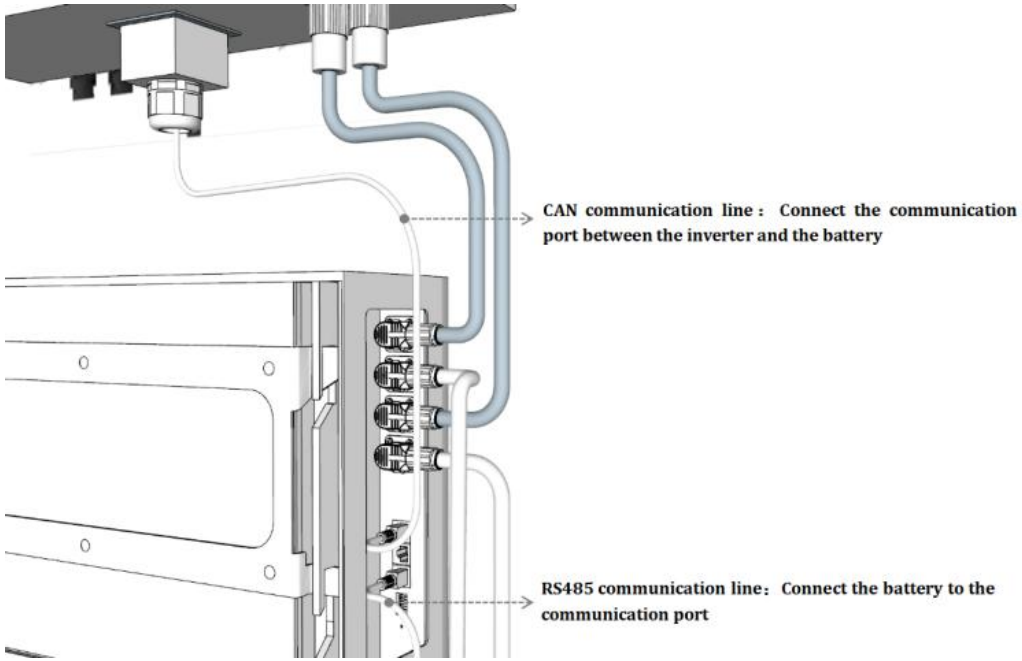
It is forbidden to mix batteries of different brands, specifications and batches, otherwise it will cause system failure.

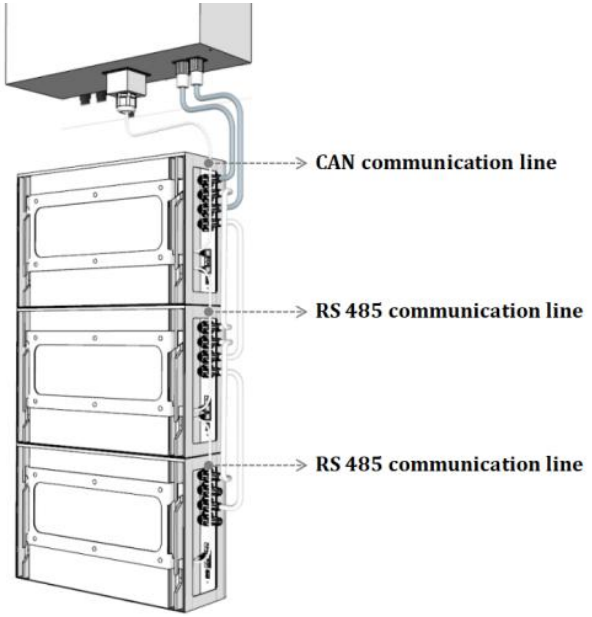
Communication connection

Step 1 : Connect the CAN communication line
Use the CAN communication cable to connect the inverter to the battery's CAN port.

Step 2 : Connecting the RS485 communication line between two batteries
Use the RS485 communication line to connect the batteries in sequence through the RS485 port.

Step 3 : Connecting the RS485 communication line more than two batteries
Use the RS485 communication line to connect the adjacent batteries in sequence through the RS485 port.





Note: The connection between the inverter and the battery must be connected to the CAN communication port of the battery, otherwise communication cannot be performed; similarly, the connection between the batteries must be connected to the RS485 port.

Debugging

1.Make sure the cables are connected properly	Step 1:Make sure the powercables and communication lines are properly connected and securely assembled
2.Battery address setting	Step 2 : Master dial setting: The battery factory defaults to master mode and does not need to be changed（1:ON,6:ON，2-5:OFF）。 Slave dial setting: Dial address is 2-15 ,#5&#6 need to be dialed off.
3.Turn on the inverter	Step 3 ： Close the circuit breaker switch on the inverter.
4.Turn on the battery	Step 4： Press the power switch and turn on the battery pack in turn. Observe whether the status of the indicator on the battery panel is normal('RUN' green light blinking, 'ALM' light off)
5.Inverter protocol selection	Step 5：On the inverter, the battery manufacturer chooses the HANCHU ESS protocol, or chooses the inverter's own protocol（protocol 6）.Then you should see the normal status information of the battery from the inverter, such as voltage, SOC, etc
6.Inverter setting forced charge and discharge	Step 6：Set the inverter to charge and discharge the battery for 5 minutes

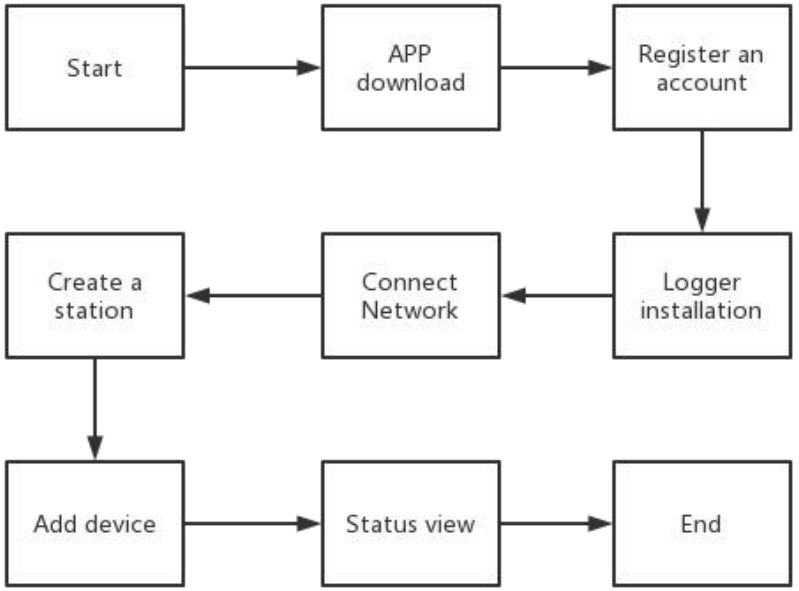
Note: The shutdown procedure is opposite to the startup process, first shut down the battery; then disconnect the circuit breaker of the inverter. When the system starts, ensure the boot sequence of each equipment, otherwise it may cause pre-charging and trigger the circuit breaker protection fault.

Inverter settings

Inverter Selection Protocol 6

Inverter settings allow charging and discharging for 5 minutes each

Logger installation



Notice：For detailed installation instructions, please refer to Monitor Usage Guide

1.APP download：
Download method ①: Directly scan the QR code of the manual to download
Download method ②: website downloadhttps://www.hanchuess.com or https://client.hanchuess.com

2.Register an account：
Go to the website(https://iess.hanchuess.com) to register.

3.Logger installation：
Assemble the Logger with the Loggerinterface on the battery

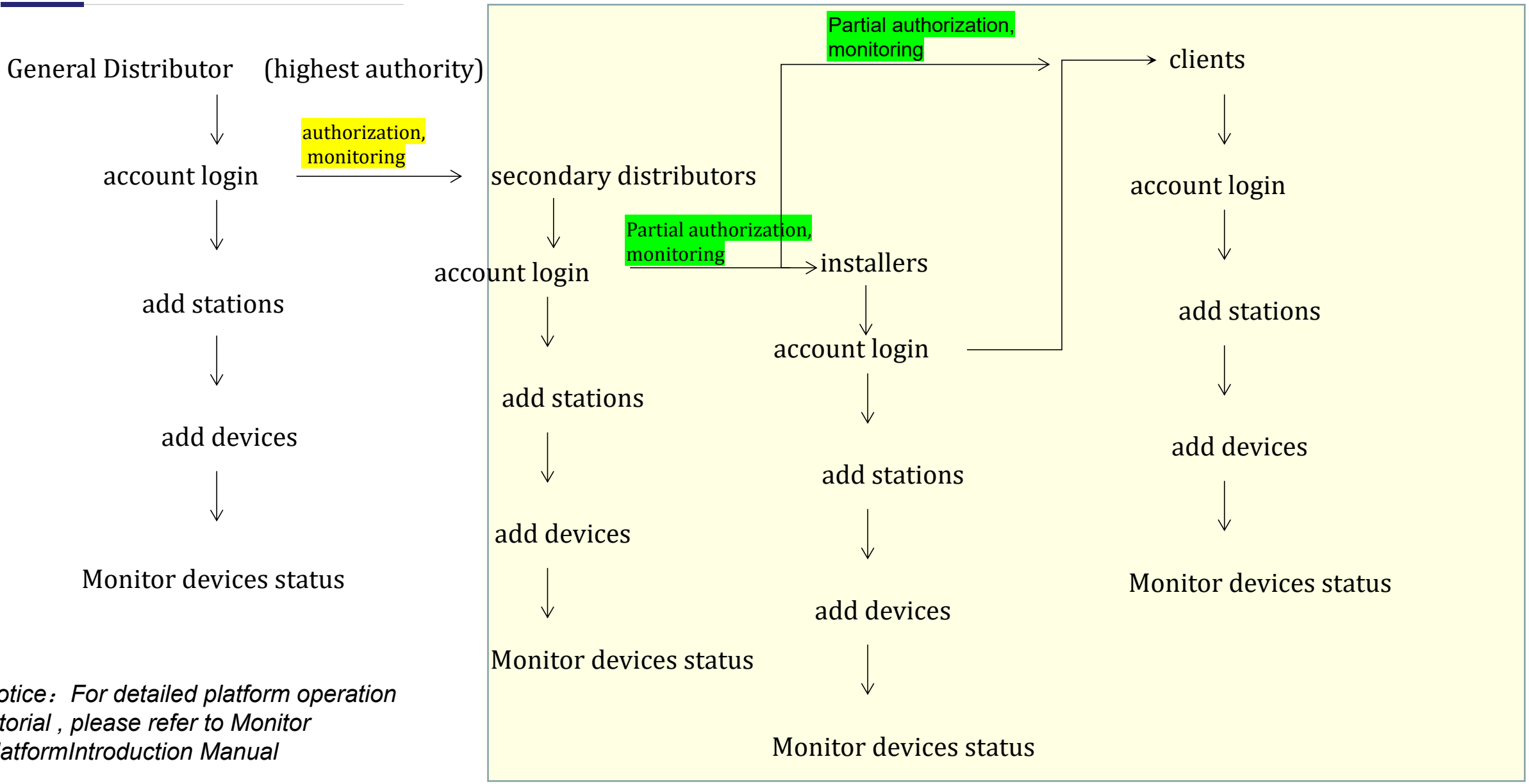
4.Connect Network：
Connect to local network via APP

5.Create a station:
Enter product information to Create a station

6.Add device:
Enter the SN and CODE code of the battery and Logger to add the device

7.Status view:
Click the device and switch page to view the system status information

Platform operation process



Notice：For detailed platform operation tutorial , please refer to Monitor PlatformIntroduction Manual

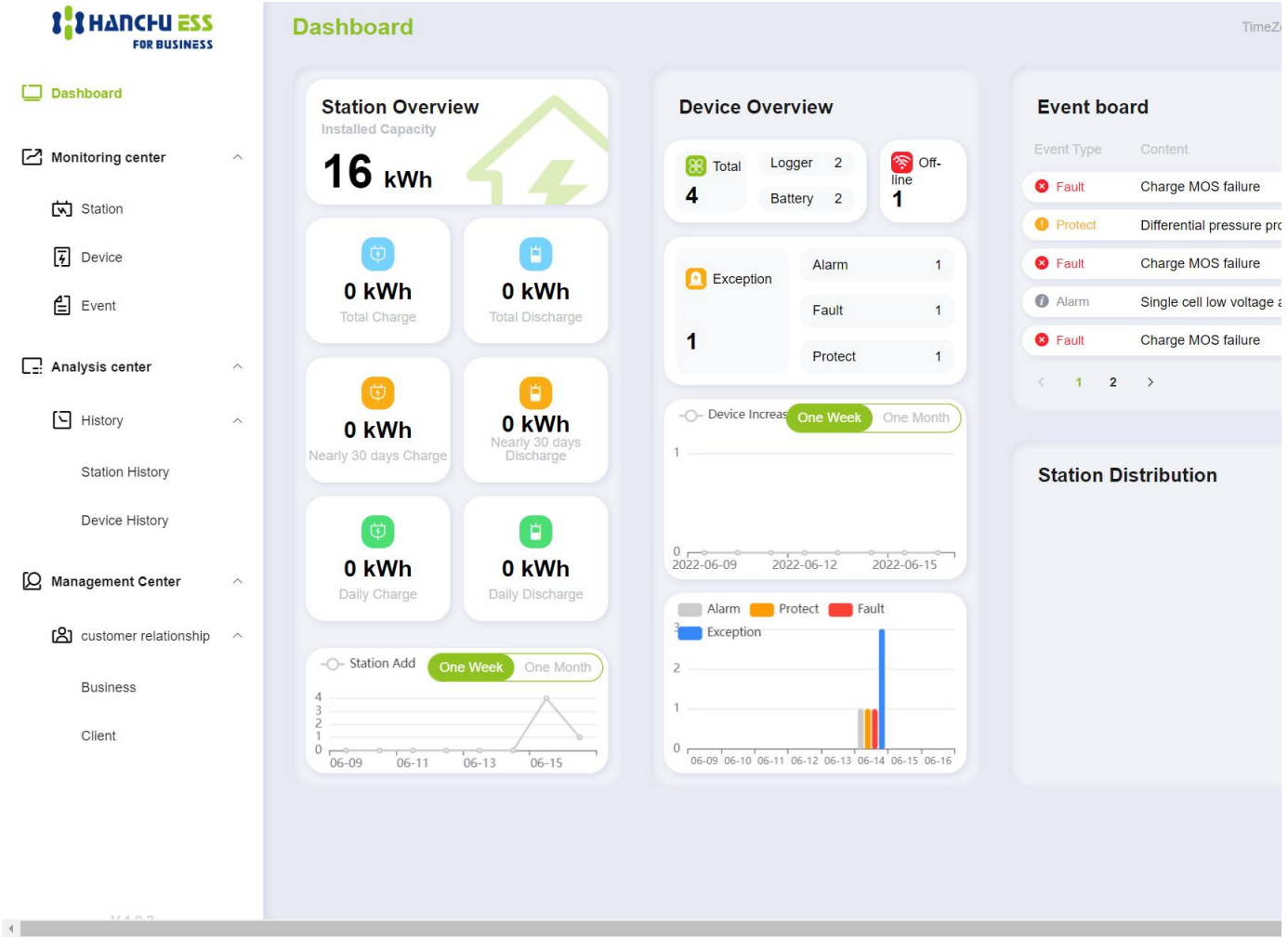
Platform page introduction

Dashboard:
shows the data statistics of relevant stations and device directly or indirectly belong to the current account,

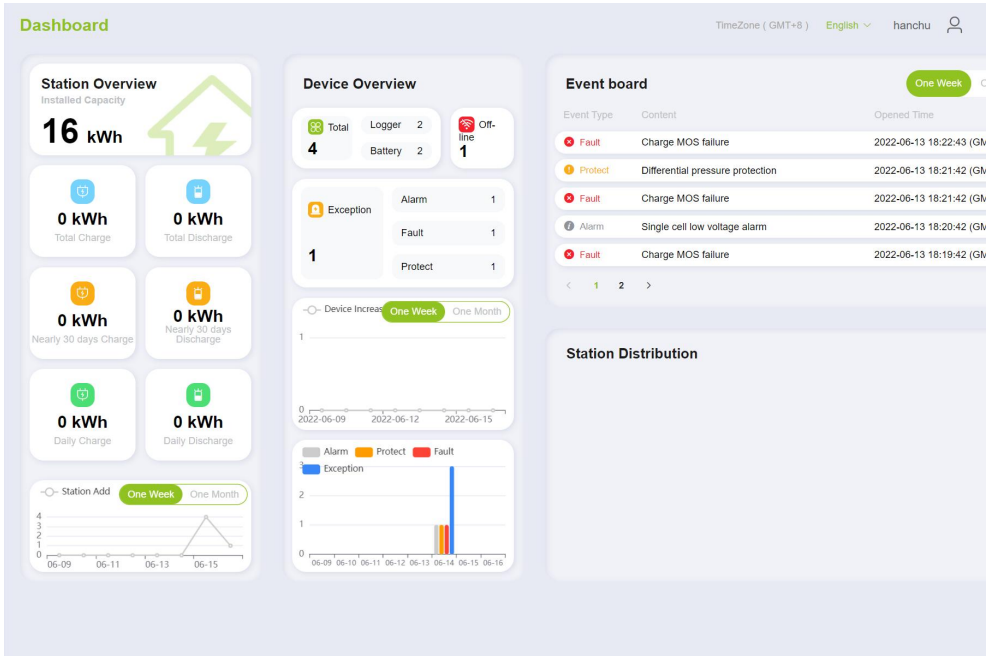
Monitoring Center:
This part shows the list to be monitored, including the list of stations belong to this account directly and indirectly, and the list of devices and events belong to these stations

Analysis Center:
This section mainly views historical information about the station and device

Management Center:
This part shows the management of its business and users. In business management



Platform function- Dashboard



- **Station Overview:**

This section displays information about all stations belong to the account directly and indirectly, including the installed capacity, charge and discharge capacity of daily, monthly, and accumulated, and the number of stations created.

- **Device Overview:**

This section shows the Overview of all devices in the stations, including
the number of devices in different states.

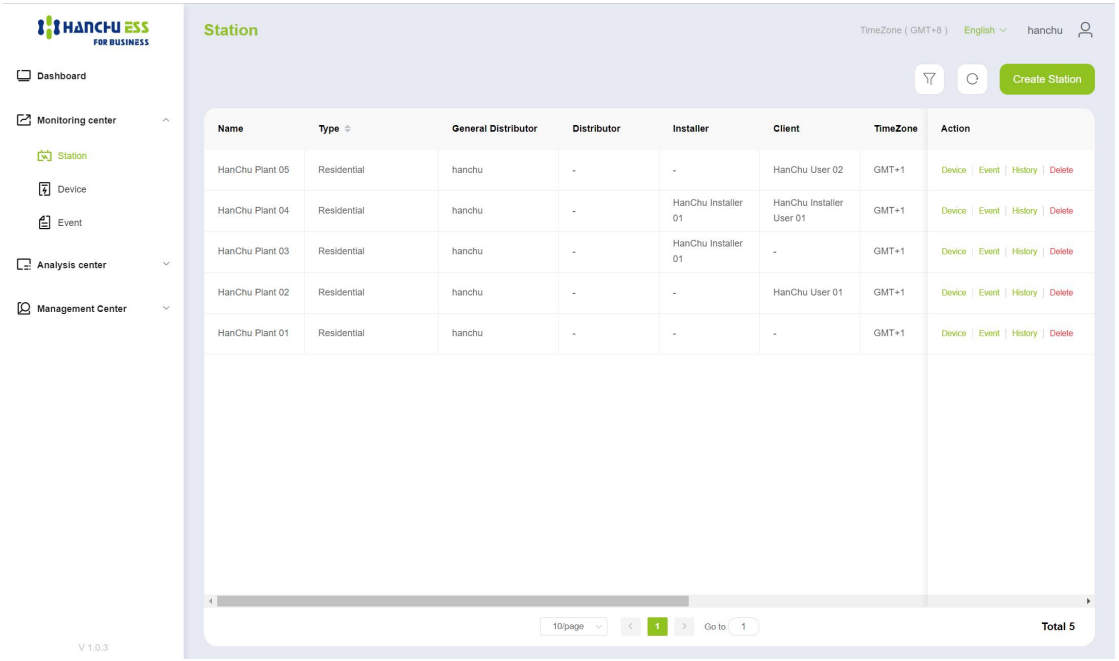
- **Event Board:**

displays recent events, including alarms, protections, and faults.

- **Station Distribution:**

This part shows the location Distribution of all stations belong to this account directly and in directly

Platform function-Monitoring Center



➢ **Station:**

You can add and delete Station, and monitor and view detailed status information of Stations

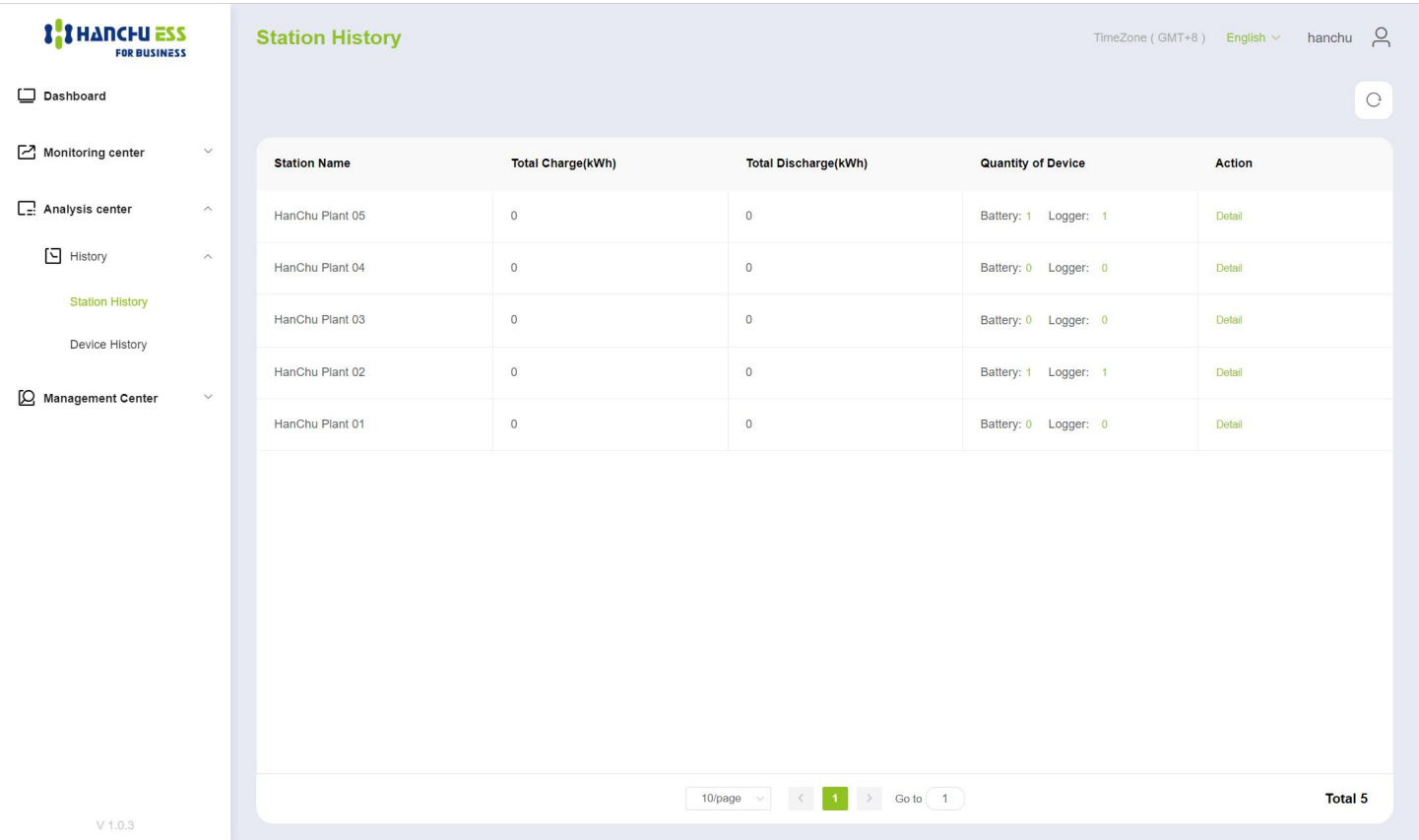
➢ **Device:**

You can add and delete devices, and monitor and view detailed battery status information

➢ **Event:**

You can view various types of information (alarm, protection, failure, and status) that occur on devices in the Station.

Platform function-Analysis Center



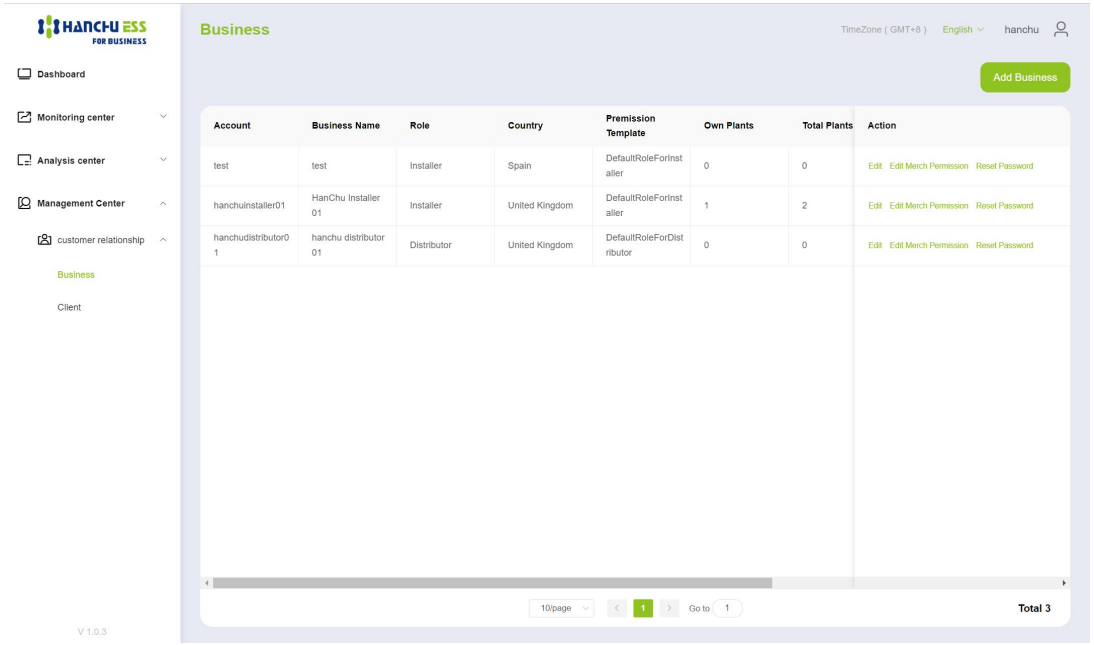
➢ **Station History：**

Showing the historical data in unit of the Station, can view the historical data of the Station every day, and display its historical data in the form of charts

➢ **Device History：**

Showing the historical data in unit of the device, can view the historical data of the device every day, and display its historical data in the form of charts

Platform function- Management Center



➢ **Business:**

Business newly added under this account are directly belongs to this account. If you want to create an installer belongs to a distributor directly, you need to first create a distributor belongs to this account, then log in with the distributor account, and then create an installer belongs to this distributor account directly

➢ **Client:**

Users can be managed, including account addition, deletion, and authority management

DefaultRoleForDistributor: default distributor permission, can do anything except view the history and real-time data item of cells

RoleForDistributorWithCellview: can view the real-time data item and cells data history.

Common Troubleshooting

No.	Fault	Fault description	solution
1	Communication fail	The inverter cannot communicate with the battery	Select 6 for the battery DIP dial protocol, and select 6 for the inverter side protocol
2	Network distribution failed	Unable to connect to WI-FI network	Long press the button for more than 6s to reset and reconnect
3	Unable to add device	The device cannot be successfully added to the platform station	Check whether the device SN code is entered correctly, and refresh the webpage again


THANK YOU