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To avoid personal injury, property damage, or accidental damage to the product, please read all the information in this chapter before using the product. This equipment is for professional technicians or maintenance personnel to use.

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1. Overview

The EP865 is a professional charge/discharge system intended for maintenance and testing of complete power battery packs. It satisfies the requirements for both vehicle fast charging port testing and disassembled battery pack maintenance. A single device covers a wide range of maintenance and testing applications.

The equipment supports the following four working modes:

- Single Battery Pack Charging/Discharging Mode: Directly connects to a single power battery pack for independent, controlled charging and discharging operations. It is suitable for whole pack maintenance tasks such as battery pack detection, maintenance, and activation.
- Fast Charging Gun to Vehicle Mode: Connects to the vehicle's fast charging port via standard fast charging protocols to provide charging support for the vehicle. It is suitable for charging tests and energy replenishment applications while the battery pack remains installed in the vehicle.
- B2B (Battery to Battery) Mode: Connects two power battery packs simultaneously to achieve controlled energy transfer (one charging, one discharging), used for energy recovery and reuse during testing.
- B2V (Battery to Vehicle) Mode: Uses a power battery pack as the discharging end to supply energy to the vehicle via the standard fast charging interface, used for energy recovery and reuse during testing.

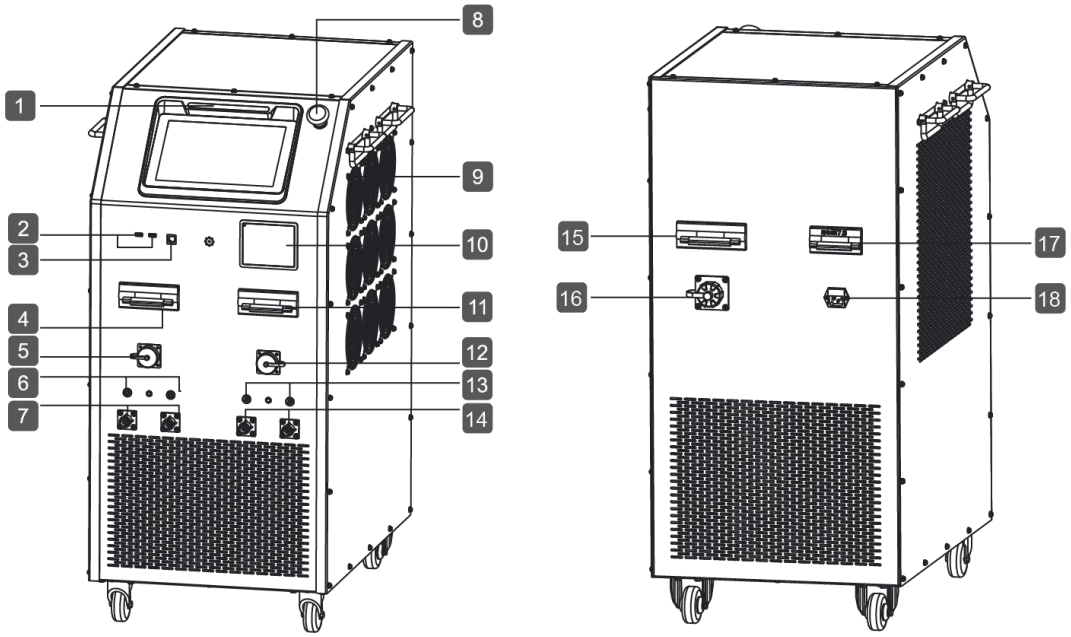
The EP865 supports the evaluation of the health status of power batteries. It can be used for State of Health (SOH) and battery pack capacity testing, providing a basis for judging battery status.

In addition to supporting standard fast charging protocols, the EP865 has built-in proprietary BMS communication protocols for various brands, making it compatible with multi-brand power battery packs. It features comprehensive cell-level protection and safety control mechanisms to ensure the entire maintenance and operation process is safe and reliable.

1.1 Product Features

- Adopts the latest discharging and charging testing technology, which does not interfere with the BMS management system, making it suitable for daily discharging and charging of battery packs.
- Adopts a wide voltage design, applicable to the testing of battery packs with different voltage levels.
- Equipped with voltage and temperature information monitoring and testing protection to prevent overcharging and over-discharging.
- Provides multiple discharge stop thresholds to avoid excessive charging and discharging.
- Supports setting alarm conditions for voltage, current, temperature, etc., to protect the safety of the battery and the equipment.
- Supports over-voltage, under-voltage, over-current, output short circuit, reverse polarity protection, and over-temperature protection functions.
- Completion Condition: The charging program can be completed based on the set target voltage, target capacity, cut-off capacity, cut-off current, or working duration.
- 10-inch touch screen for convenient operation.

1.2 Knowing EP865



Equipment Input Power Specifications:

This equipment supports AC 220 V single-phase (100–240 V) and AC 380 V three-phase wide voltage input (285–475 V). Within these voltage ranges, the equipment operates normally and delivers rated performance, making it suitable for 380 V / 400 V / 415 V industrial grid environments common in most countries.

In regions like North America where 440 V / 460 V / 480 V industrial grids are common, the actual operating voltage may exceed the equipment's allowable upper limit of 475 V. This equipment does not support direct connection to such power grids.

No.	Name	Description
1	Indicator Light	The color of the indicator light indicates the working status. ● Solid Green: Standby ● Flashing Green: Equipment Working ● Flashing Red: Fault
2	USB Port	Used for exporting data.
3	Network Port	Used for accessing other communication extensions, providing 12 V DC power supply, CAN communication, and RS485 communication interfaces.
4	DC Switch (Auxiliary Port)	Turns on/off DC output; short circuit protection.
5	BMS Communication Fast Charging Interface (Auxiliary Port)	When connecting the fast charging gun, the aviation plug of the gun is inserted into this interface to realize BMS communication.

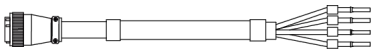
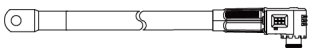
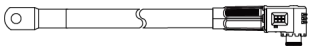
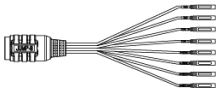
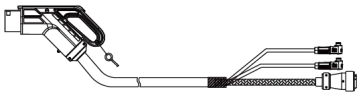
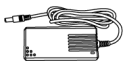
6	Voltage Acquisition Interface (Auxiliary Port)	Connects the voltage acquisition cable. ● Red voltage acquisition cable connects to the positive terminal of the equipment and the battery pack. ● Black voltage acquisition cable connects to the negative terminal of the equipment and the battery pack.
7	Battery Output Interface (Auxiliary Port)	Connects the battery DC output cable. ● Orange cable connects to the positive terminal of the equipment and the battery pack. ● Black cable connects to the negative terminal of the equipment and the battery pack.
8	Emergency Stop Switch	Used to cut off power to the equipment in an emergency and immediately stop operation. After pressing this emergency stop button, rotate the switch to the right to reset it before the AC switch can be closed again.
9	Cooling Fan	Used for heat dissipation of the load resistor box during discharging.
10	Printer	Prints test reports.
11	DC Switch (Main Test Port)	Turns on/off DC output; short circuit protection.
12	BMS Communication Fast Charging Interface (Main Test Port)	When connecting the fast charging gun, the aviation plug of the gun is inserted into this interface (Main Test Port) to realize BMS communication.
13	Voltage Acquisition Interface (Main Test Port)	Connects the voltage acquisition cable (Main Test Port). ● Red voltage acquisition cable connects to the positive terminal of the equipment and the battery pack. ● Black voltage acquisition cable connects to the negative terminal of the equipment and the battery pack.
14	Battery Output Interface (Main Test Port)	Connects the battery DC output cable (Main Test Port). ● Orange cable connects to the positive terminal of the equipment and the battery pack. ● Black cable connects to the negative terminal of the equipment and the battery pack.
15	380 V AC Switch	Turns on/off 380 V AC input; includes overload, short circuit, and leakage protection.
16	380 V AC Input Interface	Connects 380 V AC power.

17	220 V AC Switch	Turns on/off 220 V AC input; includes overload, short circuit, and leakage protection.
18	220 V AC Input Interface	Connects 220 V AC power.

Note:

- The Main Test Port is used to connect the object under test. Both charging and discharging use the output of the Main Test Port as the reference.
- The battery pack connected to the Auxiliary Port can accommodate the discharge from the battery pack at the Main Test Port to achieve energy-saving goals or be used to charge the battery pack at the Main Test Port.

1.3 Accessories Introduction

Accessory Name	Diagram
Power Cable (AC 380 V)	
Power Cable (AC 220 V)	
High Voltage Output Cable Positive - Orange	
High Voltage Output Cable Negative - Black	
Voltage Acquisition Cable	
Jumper (Jump-8)	
Adapter Cable (Example)	
Charging Connector	
BCI Communication Box	
BCI HFT Diagnostic Connector Test Main Cable	
BCI Power Adapter (12 V 5 A)	
BCI Power Cable	
Battery Pack Special Connector (Example)	

Note: This section only introduces the accessories used in the four charging/discharging application scenarios. For specific accessories, please refer to the Packing List.

1.4 System Composition

The equipment consists of the host, power cables, DC high voltage cables, voltage acquisition cables, BMS communication low voltage harness, and fast charging gun (in some configurations).

The host includes the display screen, data processing unit, data acquisition unit, load resistor box, and panel operation unit.

1.5 Technical Parameters

Parameter Name	Description
Model	EP865
Power Supply	AC 220 V, AC 380 V, 50 Hz / 60 Hz
Display Screen	10-inch touch screen, resolution 1280x800 pixels
Data Communication	RJ45, USB, Bluetooth, BMS Communication, Wi-Fi
Data Storage Method	Internal equipment storage, data transfer to USB flash drive
Internal Data Storage	32 G
Pack Voltage Accuracy	0.1% FS, Resolution: 0.001 V
Test Current Accuracy	0.5% FS, Resolution: 0.1 A
Charging Voltage Range	DC 150 V – 1000 V
Discharging Voltage Range	DC 200 V – 865 V
Charging Current Range	0 A – 100 A, Max Power 30 kW
Discharging Current Range	0 A – 100 A, Max Power 30 kW
Charging Mode	Constant Current Charging, Constant Voltage Charging
Discharging Mode	Constant Current Discharging, Constant Voltage Discharging
Protection Mechanism	● Over-charge, over-discharge protection ● Under-voltage, over-voltage, over-current, over-temperature protection ● Phase loss protection ● Battery short circuit, reverse polarity protection ● Leakage protection

Parameter Name	Description
	● Electrostatic protection ● High temperature warning ● Fan fault detection ● Tilt protection
Stop Actuator	Emergency Stop Button DC Switch AC Switch
Alarm Prompt	Screen pop-up + RGB light strip + buzzer
Cooling	Cooling Fan, Cooling Vents
Operating Temperature	-20 °C – 50 °C
Operating/Storage Humidity	5% – 90%
Dimensions	461 mm * 723 mm * 961 mm

2. Safety Precautions

2.1 Operator Requirements

	**WARNING**
	Before using the equipment, operators must undergo relevant training and thoroughly read the product user manual and related regulations.

2.2 Environmental Requirements

	**WARNING**
	1) Equipment operating temperature range: -20 °C – 50 °C. 2) Equipment operating relative humidity: 5% – 90%. Do not use outdoors in rainy weather. 3) The operating environment must be free of dust and corrosive gases. 4) Ensure the operating environment is well-ventilated.

2.3 Wiring Precautions

	**WARNING**
	1) Before connecting cables, ensure that the equipment's AC switch and DC circuit breaker are in the OFF position. 2) Connect cables according to the instructions in the manual to avoid incorrect connections.
	**DANGER**
	1) After cable connection between the equipment and the battery pack under test, the cables pose a tripping hazard. Place warning barriers in the equipment working area. 2) The equipment is equipped with universal wheels for easy movement. When connecting cables and preparing for testing, lock the universal wheels to prevent the equipment from moving easily during testing, which could cause danger.

DANGER	
	When the equipment is running, ensure that the air inlet and outlet are free of obstacles.
	

2.4 Operating Precautions

	DANGER
	1) The maximum output voltage of this equipment is 1000 V DC. Please pay attention to personal safety. 2) The power supply for this equipment is AC. Ensure the power supply is reliably grounded.
	**DANGER** During discharge testing, the equipment generates significant heat. The temperature at the air outlet is high; do not approach or touch it to avoid burns.

2.5 Common Incorrect Usage or Misoperations

1) Failure to take insulation measures for operating tools.
2) Failure to follow the user manual when operating the equipment.

2.6 Potential Consequences of Incorrect Usage

1) If operating tools are not insulated, close proximity between battery pack positive and negative terminals may cause short circuits, resulting in personal injury to the operator and damage to the equipment.
2) Failure to follow correct operating procedures will prevent the charging/discharging test from starting normally and lead to equipment damage.

2.7 Emergency Measures in Abnormal Situations

Press the emergency stop switch and disconnect the equipment's power supply.

2.8 Other Safety Warnings

Strictly abide by safety operation regulations and correct equipment operation methods.

3. Operating Instructions for Charging/Discharging Modes

The EP865 currently supports four main usage scenarios: Single Battery Pack Mode, Dual Battery Pack Mode, Fast Charging Gun to Vehicle Mode, and Battery Pack to Vehicle Charging Mode.

This section mainly introduces the four scenarios of the EP865 along with the wiring methods and operating steps for each.

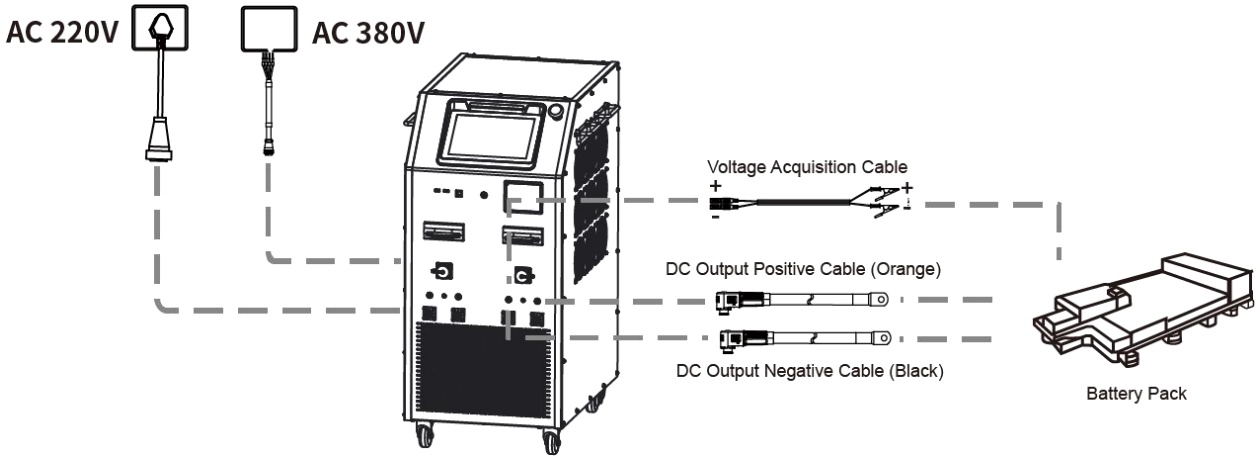
3.1 Single Battery Pack Charging/Discharging Mode

Directly connects to a single power battery pack for independent, controlled charging and discharging operations. It is suitable for whole pack maintenance tasks such as battery pack detection, maintenance, and activation.

I. Wiring Diagram

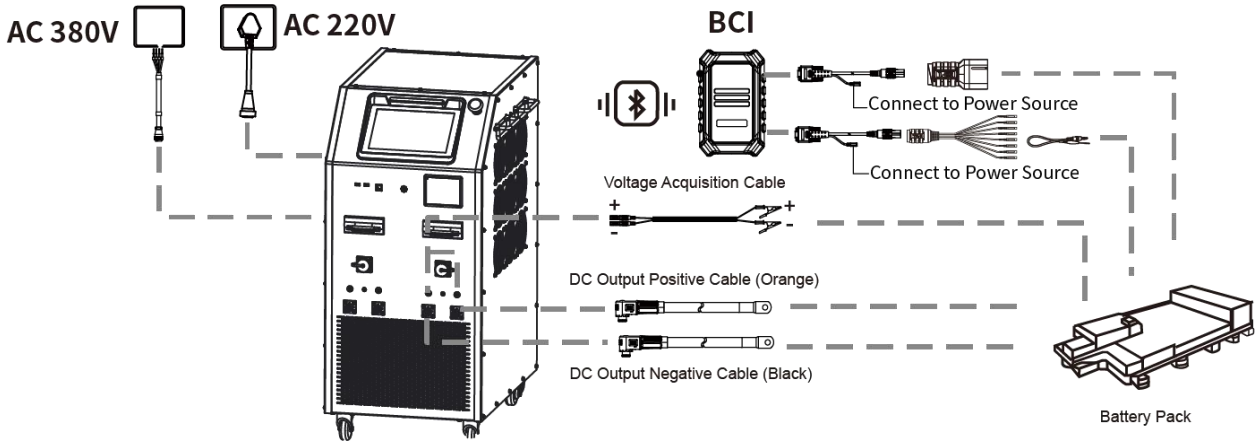
In the single battery pack scenario, the equipment and the battery pack can communicate via the BCI communication box, or you can choose not to enable BMS communication. The corresponding wiring methods are as follows:

- No BMS Communication



Note: The 'No BMS Communication' method is usually defined as blind charging/discharging (No BMS communication/cell monitoring). The operational risk is high; please proceed with caution.

- Use BCI Communication Box (Bluetooth Connection)



Note:

1. The BCI can be connected to the battery pack via a special connector or a jumper.
2. When using the BCI box, insert the wireless network card into the USB port of the equipment and connect to the wireless network.

II. Operating Steps

Precautions before operation:

- Ensure the power is disconnected and all circuit breakers are in the OFF position before starting wiring.
- When wiring, strictly verify the positive and negative polarities to avoid reverse connection.
- Protective gear such as insulating gloves and safety goggles must be worn.
- Check the equipment and cables to ensure there are no hazards such as damage, looseness, or aging.
- Check the battery status to ensure there is no bulging, leakage, or damage.

1. Ensure the equipment is in a powered-off state.
2. Connect DC cables. Connect one end of the DC cable to the EP865 and the other end to the battery pack. Refer to the wiring diagram above for specific wiring methods.

Note: Connect the orange cable to the positive terminal of the equipment and the battery pack, and the black cable to the negative terminal.

3. Connect voltage acquisition cables. Insert one end of the voltage acquisition cable into the EP865 and connect the other end to the battery pack.

Note: Connect the red voltage acquisition cable to the positive terminal of the equipment and the battery pack, and the black voltage acquisition cable to the negative terminal.

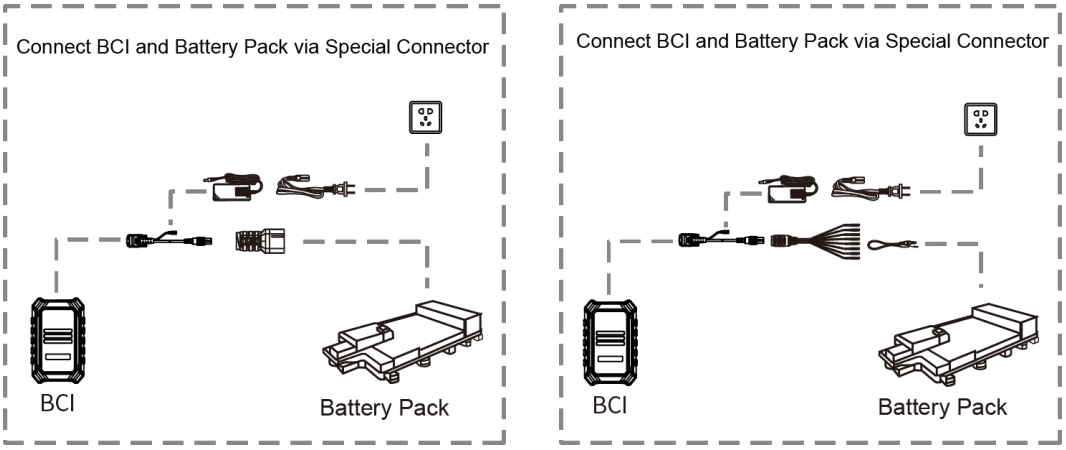
4. Connect communication cables.

- If 'No BMS Communication' is selected as the communication mode, there is no need to connect the BCI box or the fast charging gun.

Note: This method is blind charging/discharging mode. The equipment will not monitor cell data. The operational risk is high; please proceed with caution.

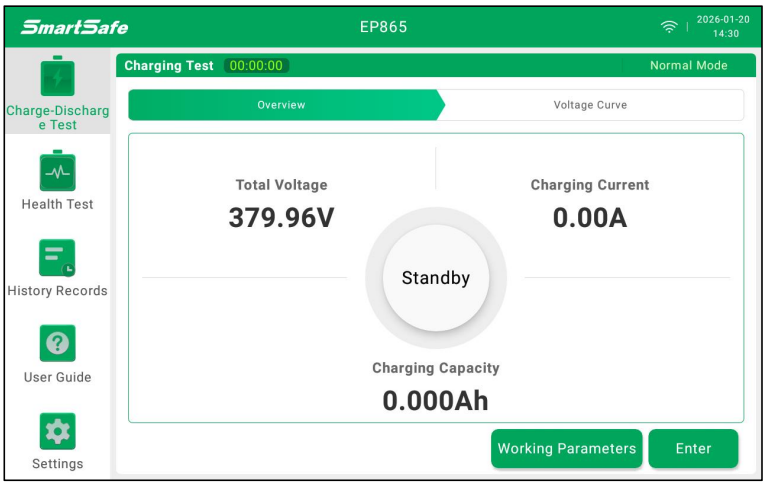
- If the BCI communication box is selected, connect the BCI box. The EP865 communicates with the BCI box via Bluetooth connection. The connection between the BCI box and the battery pack can be done in the following two ways; users can choose one according to the actual situation.
  - Connect the BCI HFT Diagnostic Connector Test Main Cable, then connect the BCI and the battery pack via the special connector, and finally turn on the power to the BCI box.
  - Connect the BCI HFT Diagnostic Connector Test Main Cable, then connect the BCI and the

battery pack via the jumper, and finally turn on the power to the BCI box.

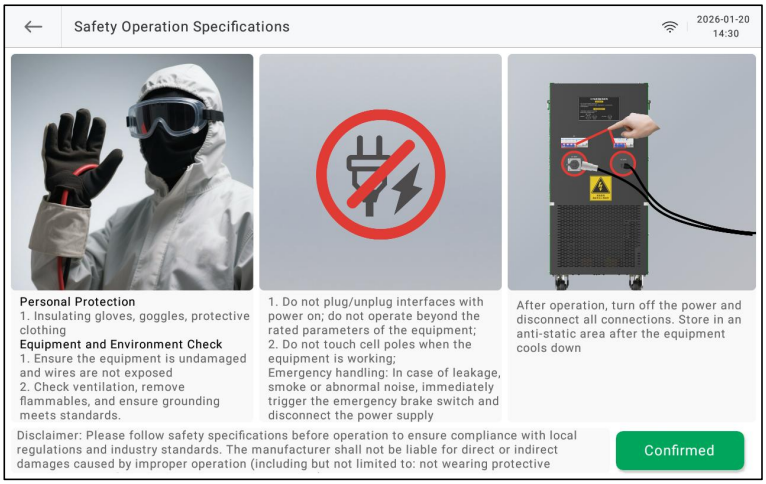


5. Be sure to power on the machine only after all wiring is completed. Connect the 380 V AC power and 220 V AC power, and close the two AC switches on the back of the equipment and the DC switch for the Main Test Port.

6. After the equipment starts up, tap 'Start' on the main interface.

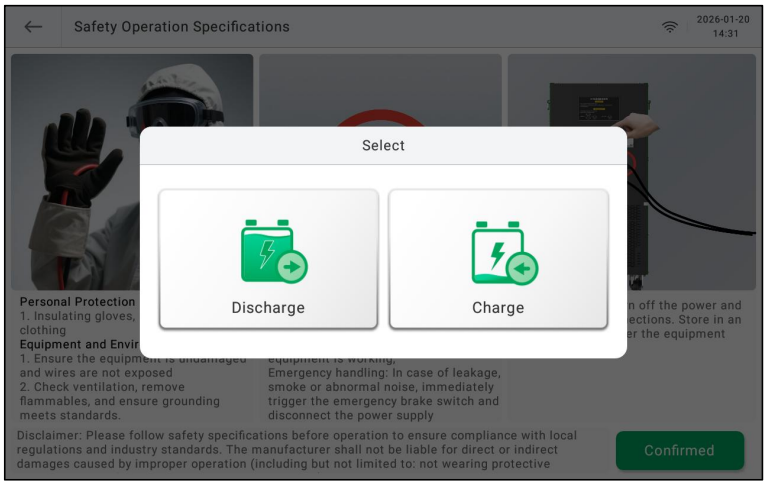


7. Read the operation safety regulations carefully, wear proper personal protective equipment, check the equipment and test environment, confirm safety measures are in place, and tap 'Confirmed'.

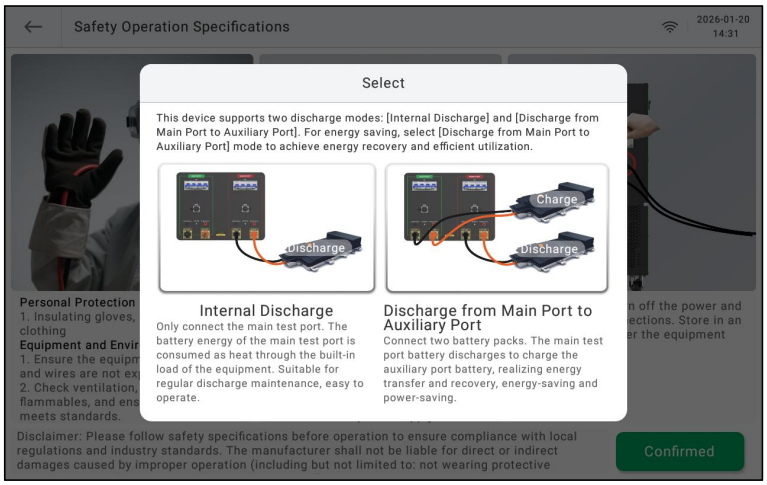


8. Select 'Charge'.

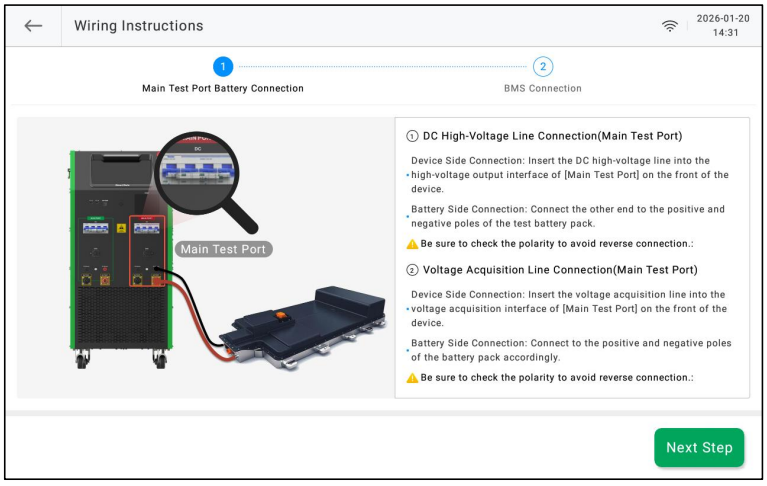
Note: 'Charge' / 'Discharge' on the equipment interface is performed by the Main Test Port on its connected battery pack by default.



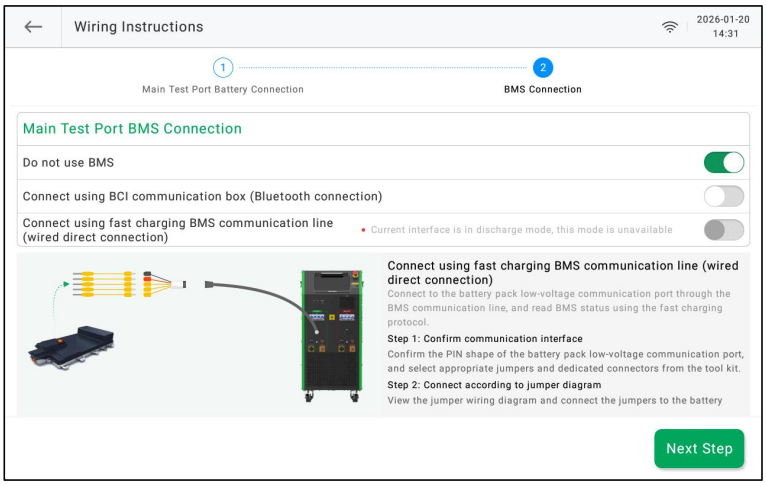
9. Select 'Mains Charging'.



10. Check and ensure correct wiring according to the instructions, turn on the DC switch (Main Test Port), and tap 'Next'.

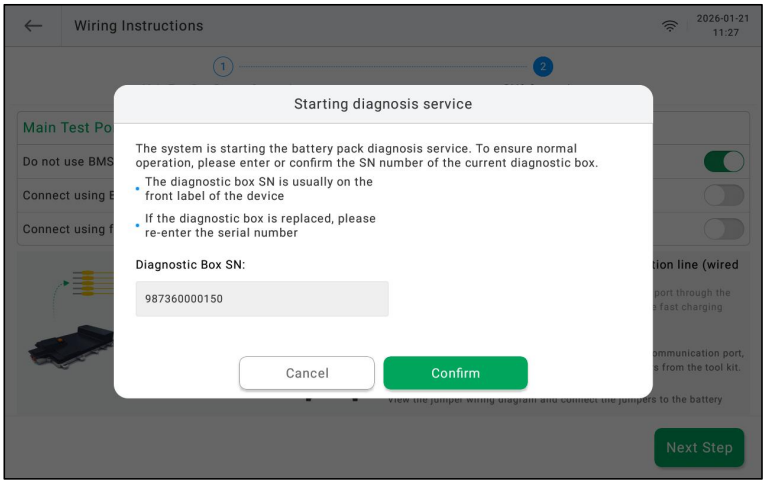


11. Select 'Use BCI Communication Box (Bluetooth Connection)'.

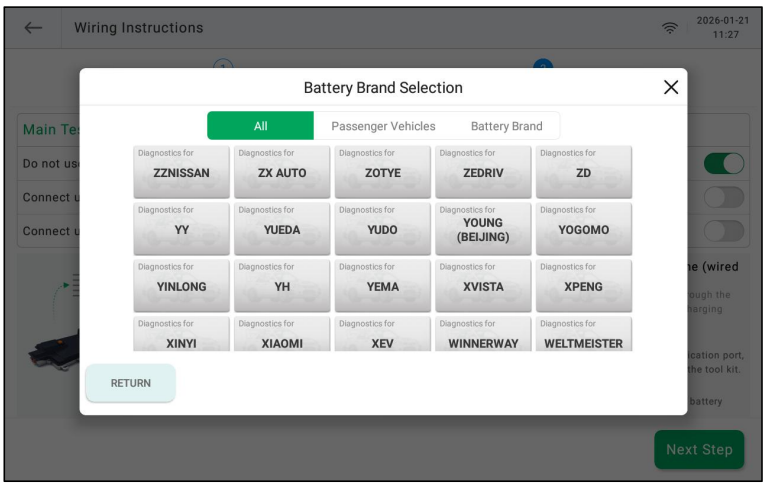


Note: Users can select 'No BMS'. After tapping 'Next', the system enters the parameter setting interface directly. 'No BMS' is blind charging/discharging mode; the equipment will not monitor cell data. The operational risk is high; please proceed with caution.

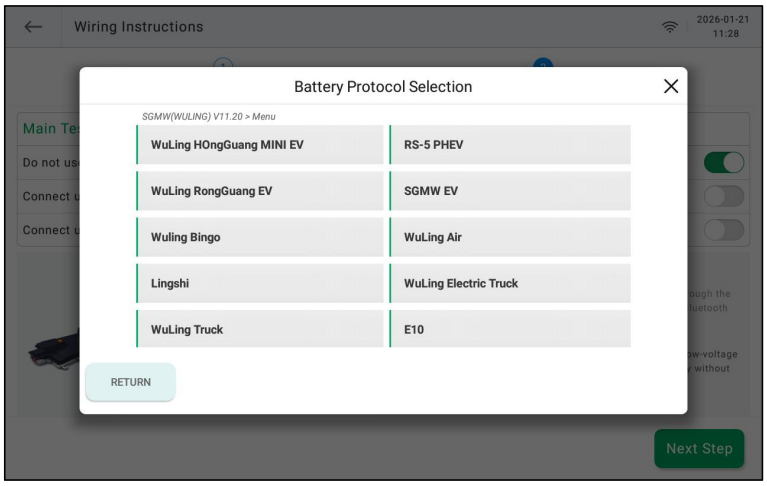
12. Enter the BCI box SN in the pop-up interface, tap 'Confirm', and then tap 'Next'.



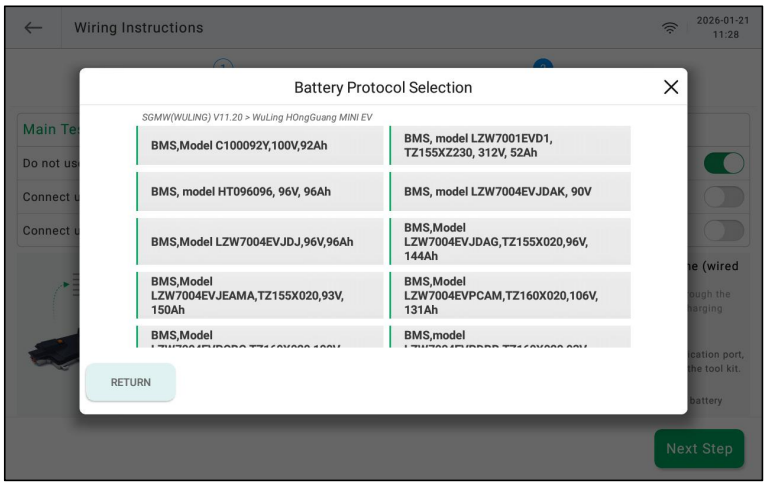
13. Select the battery brand.



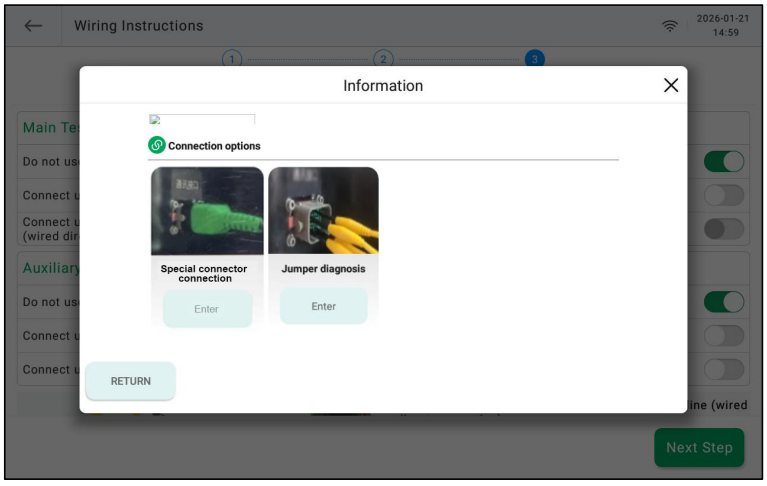
14. Select the vehicle model corresponding to the battery pack.



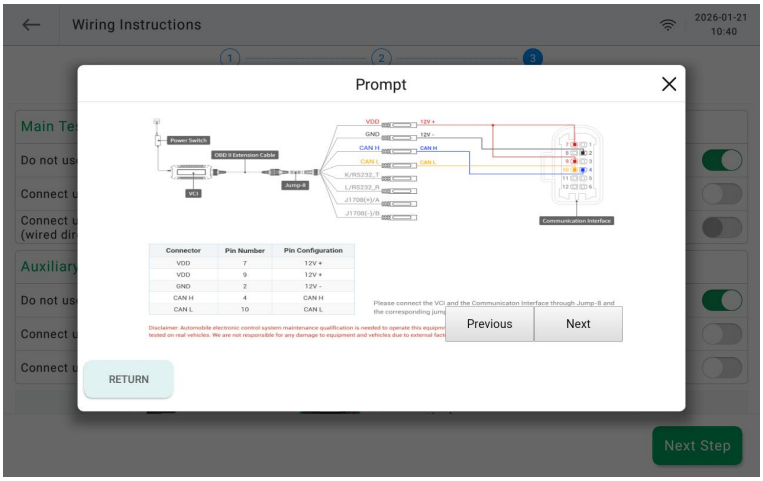
15. Select the battery pack model.



16. Select the connection method for the battery pack. Two methods are supported: special connector connection and jumper connection.



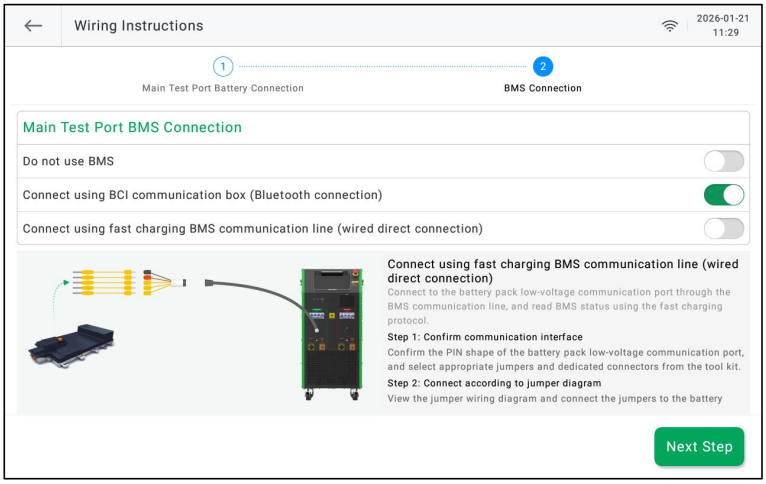
17. Connect the battery pack low-voltage communication port according to the wiring diagram, ensure the connection is correct, and tap 'Next'.



18. Select 'Pair'.

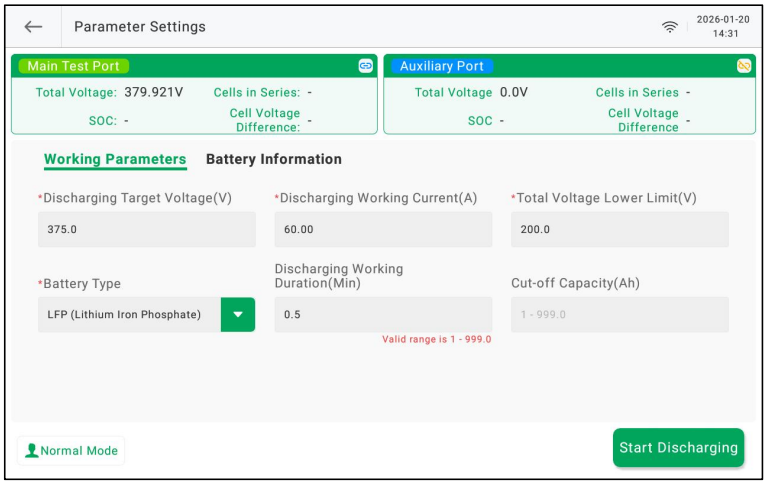
> Note: Please confirm that the equipment has successfully established a Bluetooth pairing with the BCI box.

19. BCI communication box connected successfully.



20. In the 'Parameter Setting' interface, set the working parameters and select the battery type according to the actual situation.

> Note: Tap 'Normal Mode' in the lower-left corner of the interface to switch to Expert Mode. In Expert Mode, more working parameters can be set as needed.

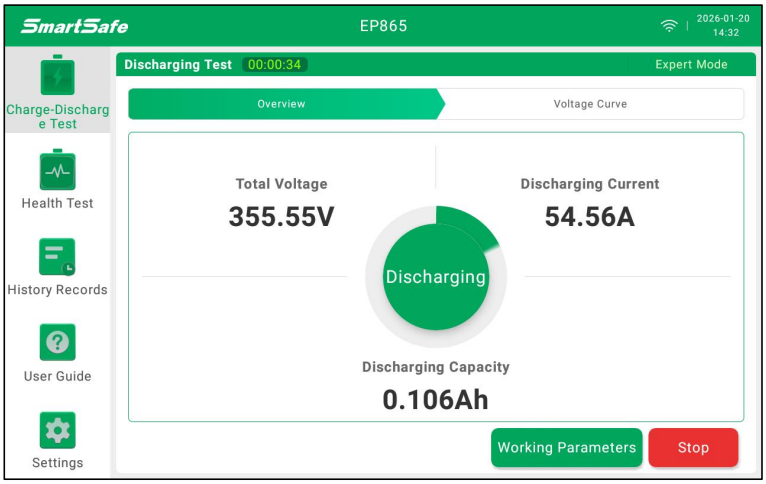


Parameter		Description
Normal Mode	Target Charging Voltage	When the battery pack reaches the set voltage, charging stops automatically.
	Charging Work Current	The operating current of the equipment during charging.
	Total Voltage Upper Limit	The upper voltage limit of the battery pack. When the battery reaches this voltage, the equipment automatically stops working.
	Battery Type	The battery type of the connected battery pack.
	Charging Duration	When charging reaches the set duration, the equipment automatically stops working.
	Cut-off Capacity	When charging reaches the set capacity, the equipment automatically stops working.
Expert Mode	Charging Cut-off Current	During charging, when the battery pack is about to reach the specified target charging voltage, the operating current decreases to the set value.
	Total Voltage Alarm Rate of Change	When the voltage change within a short time exceeds this range, the equipment will stop working.

21. After setting the parameters, tap 'Start' to enter the charging interface.

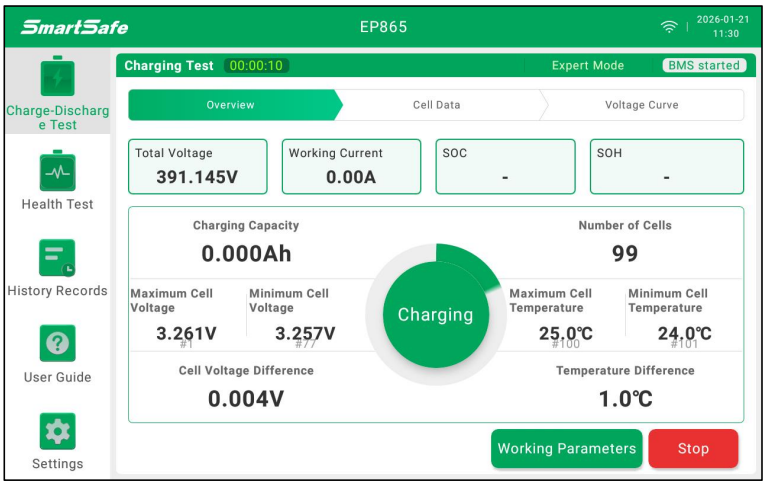
- Overview

■ No BMS Communication



Parameter	Description
Total Voltage	Real-time total voltage of the battery pack.
Charging Current	Charging current of the battery pack during charging.
Charging Capacity	The charged capacity of the battery pack.

■ Use BCI Communication Box (Bluetooth Connection)



Parameter	Description	Note
Total Voltage	Real-time total voltage of the battery pack.	This data comes from equipment acquisition or calculation.
Working Current	The operating current of the equipment during charging.	
Charging Capacity	The charged capacity of the battery pack.	

SOC	Current state of charge of the battery pack.	This data comes from BMS protocol reading.
SOH	Battery State of Health.	
Cell Count	Number of cells in the battery pack.	
Max Cell Voltage	The highest voltage among cells in the battery pack.	
Min Cell Voltage	The lowest voltage among cells in the battery pack.	
Max Cell Temperature	The highest temperature among cells in the battery pack.	
Min Cell Temperature	The lowest temperature among cells in the battery pack.	
Cell Voltage Difference	The voltage difference between the highest and lowest cell voltages.	
Temperature Difference	The temperature difference between the highest and lowest cell temperatures.	

- Cell Data

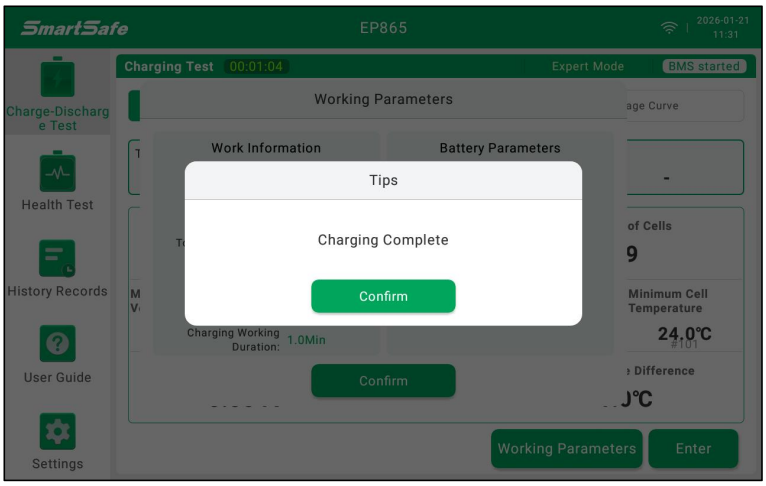
Note: Cell data can only be viewed when using the BCI communication box connection (Bluetooth connection).



- Voltage Curve



22. When the charging voltage reaches the set target charging voltage, charging is completed.

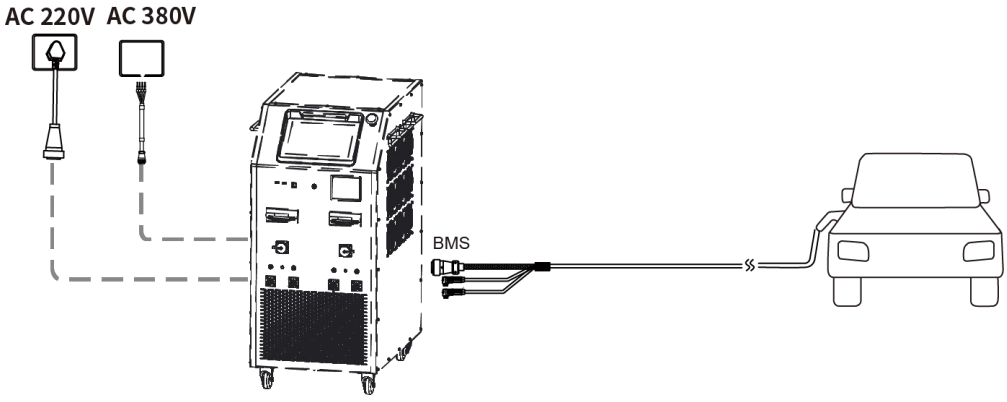


3.2 Fast Charging Gun to Vehicle Mode

Connects to the vehicle's fast charging port via standard fast charging protocols to provide charging support for the vehicle. It is suitable for charging tests and energy replenishment applications in the vehicle state.

> Note: Must be used with the fast charging gun provided with the equipment.

I. Wiring Diagram



II. Operating Steps

Precautions before operation:

- Ensure the power is disconnected and all air switches are in the OFF position before starting wiring.
- When wiring, strictly verify the positive and negative polarities to avoid reverse connection.
- Protective gear such as insulating gloves and safety goggles must be worn.
- Check the equipment and cables to ensure there are no hazards such as damage, looseness, or aging.
- Check the battery status to ensure there is no bulging, leakage, or damage.

1. Ensure the equipment is in a powered-off state.

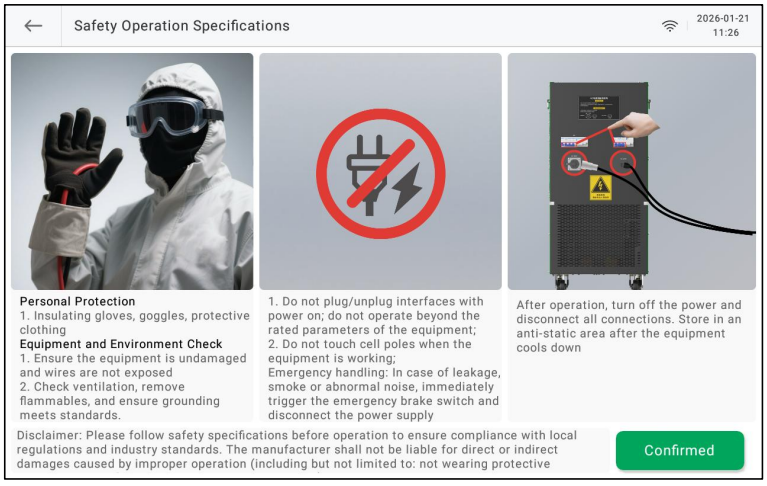
2. Connect the BMS fast charging gun. Insert one end of the fast charging gun into the Main Test Port of the EP865 equipment and connect the other end to the vehicle's fast charging port.

Note: Insert the aviation plug of the fast charging gun into the BMS interface of the Main Test Port, insert the red cable into the positive terminal of the Main Test Port, and the black cable into the negative terminal of the Main Test Port.

3. Be sure to power on the machine only after all wiring is completed. Connect the 380 V AC power and 220 V AC power, and close the two AC switches on the back of the equipment and the DC switch for the Main Test Port.

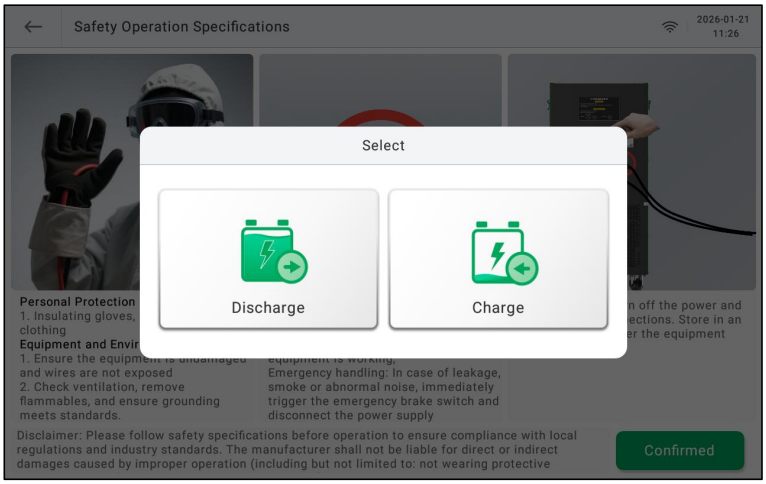
4. After the equipment starts up, tap 'Start' on the main interface.

5. Read the operation safety regulations carefully, wear proper personal protective equipment, check the equipment and test environment, confirm safety measures are in place, and tap 'Confirmed'.

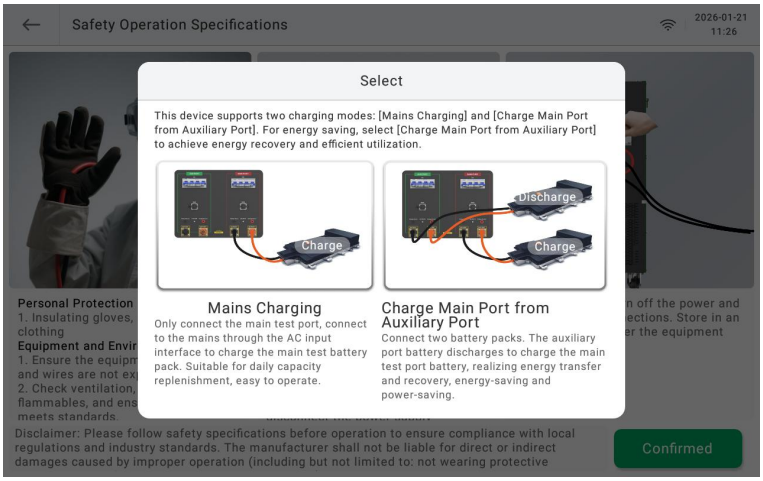


6. Select 'Charge'.

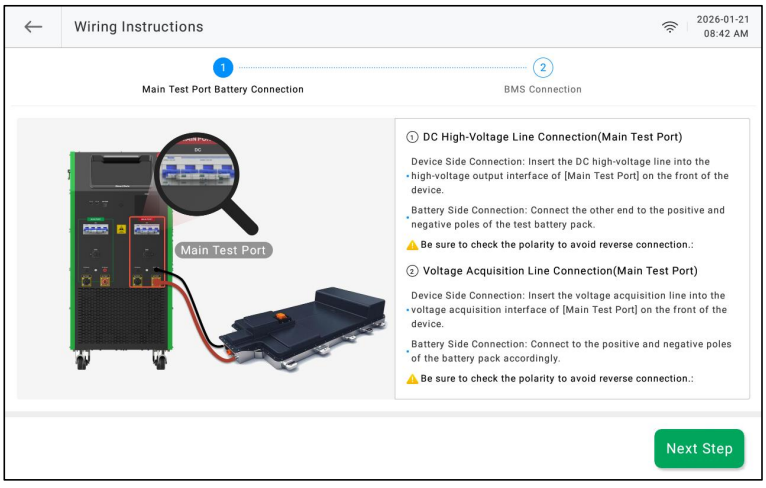
Note: 'Charge' on the equipment interface is performed by the Main Test Port on its connected vehicle by default.



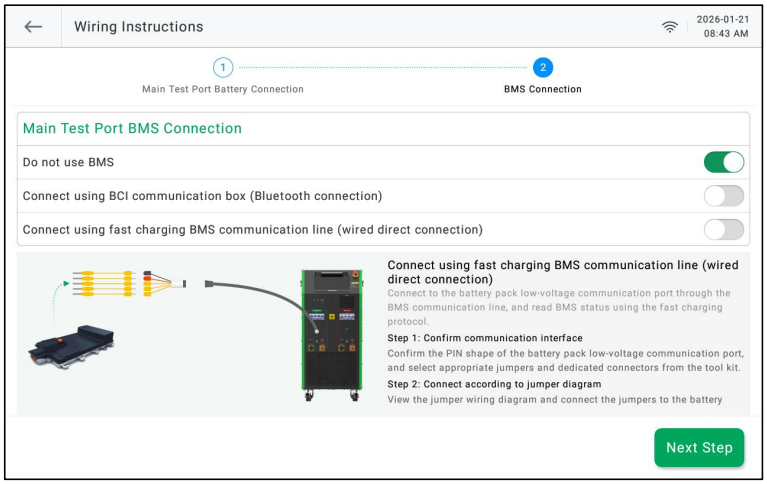
7. Select 'Mains Charging'.



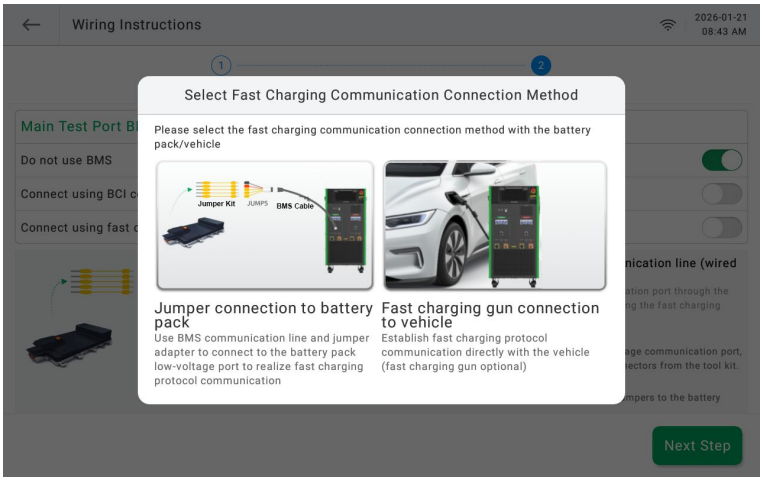
8. Check and ensure correct wiring according to the instructions, and tap 'Next'.



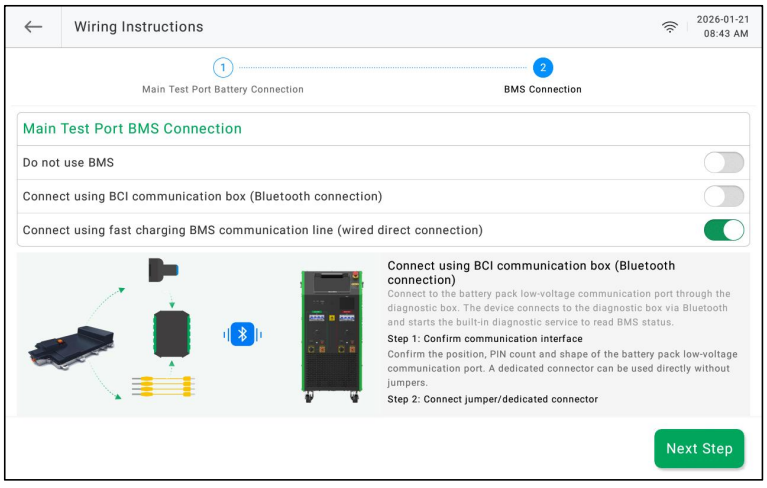
9. Select 'Use Fast Charging BMS Communication Cable Connection (Wired Direct Connection)' on the communication connection interface.



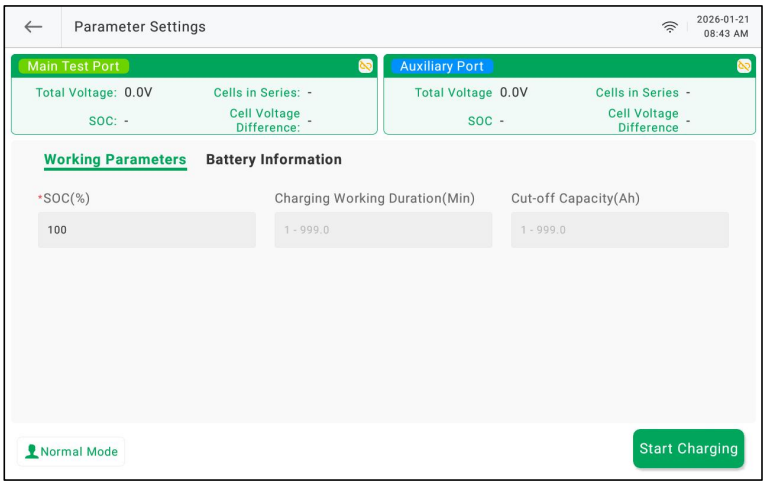
10. Select 'Fast Charging Gun Connects to Vehicle'.



11. Tap 'Next'.



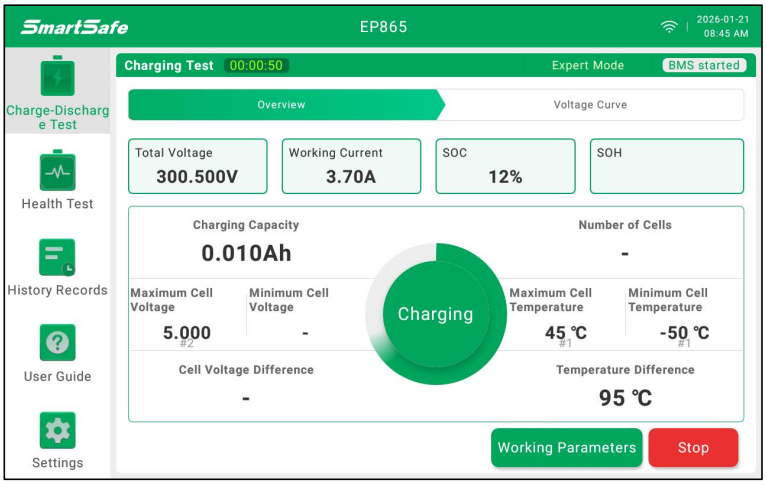
12. In the 'Parameter Setting' interface, set the SOC (Target Charging Capacity).



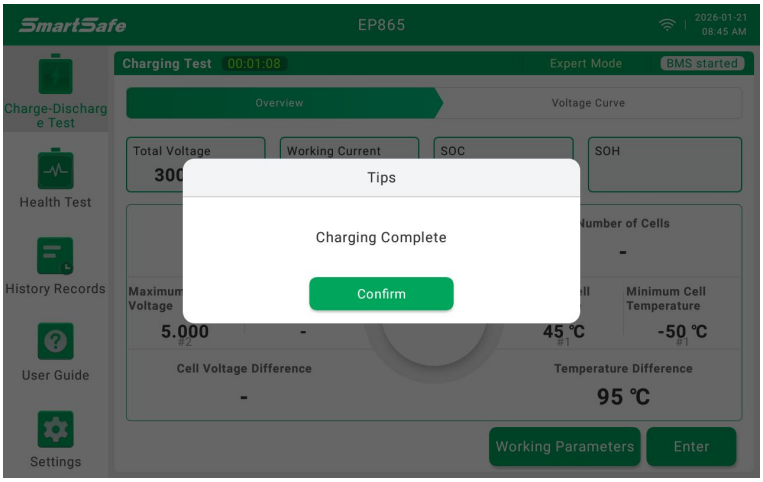
13. After setting the parameters, tap 'Start Charging' to enter the charging interface.

> Note: After starting charging, the dashboards of some vehicle models will indicate 'Connecting'. Once connected successfully, the dashboard will display charging progress, charging power, and estimated time to full charge in real-time; some models may only display a charging icon.

14. The equipment interface during the charging process is shown below.



15. Charging Completed.



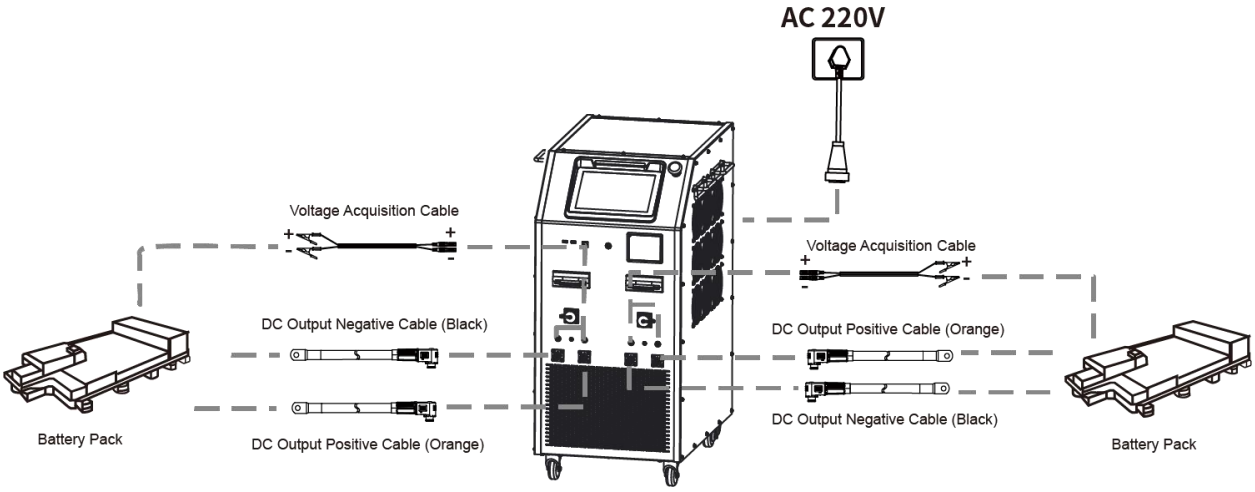
After charging is completed, users can view cell data and voltage variation curves from the charging process.

3.3 B2B Dual Battery Pack Mode

Connects two power battery packs simultaneously to achieve controlled energy transfer (one charging, one discharging), used for energy recovery and reuse during testing.

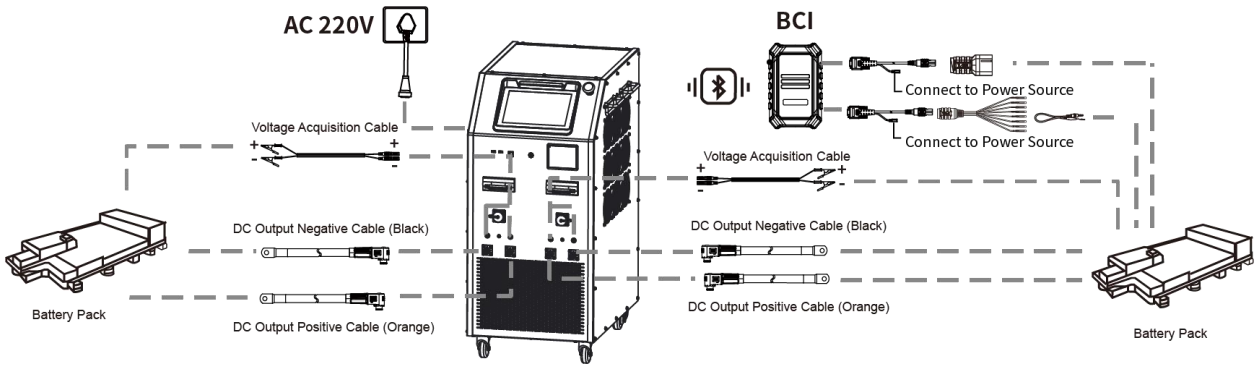
I. Wiring Diagram

- No BMS Communication



Note: This method is blind charging/discharging mode. The equipment will not monitor cell data. The operational risk is high; please proceed with caution.

- Use BCI Communication Box (Bluetooth Connection)



Note:

1. The BCI can be connected to the battery pack via a special connector or a jumper.
2. When using the BCI box, insert the wireless network card into the USB port of the equipment and connect to the wireless network.

II. Operating Steps

Precautions before operation:

- Ensure the power is disconnected and all air switches are in the OFF position before starting wiring.
- When wiring, strictly verify the positive and negative polarities to avoid reverse connection.
- Protective gear such as insulating gloves and safety goggles must be worn.
- Check the equipment and cables to ensure there are no hazards such as damage, looseness, or aging.
- Check the battery status to ensure there is no bulging, leakage, or damage.

1. Ensure the equipment is in a powered-off state.

2. Connect DC cables. Connect one end of the DC cable to the EP865 and the other end to the battery pack. Refer to the wiring diagram for specific wiring methods.

Note: Connect the orange cable to the positive terminal of the equipment and the battery pack, and the black cable to the negative terminal.

3. Connect voltage acquisition cables. Insert one end of the voltage acquisition cable into the EP865 and connect the other end to the battery pack.

Note: Connect the red voltage acquisition cable to the positive terminal of the equipment and the battery pack, and the black voltage acquisition cable to the negative terminal.

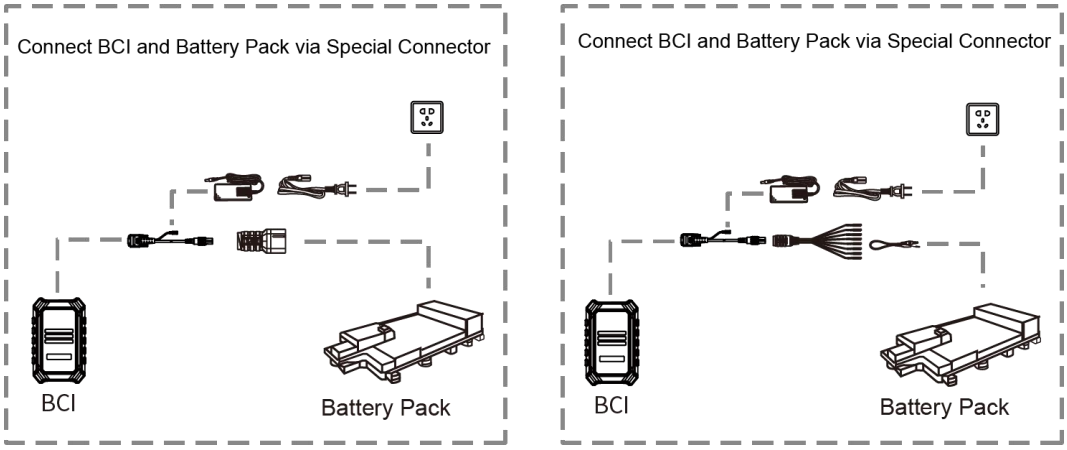
4. Connect communication cables.

- If 'No BMS Communication' is selected as the communication mode, there is no need to

connect the BCI box or the fast charging gun.

Note: This method is blind charging/discharging mode. The equipment will not monitor cell data. The operational risk is high; please proceed with caution.

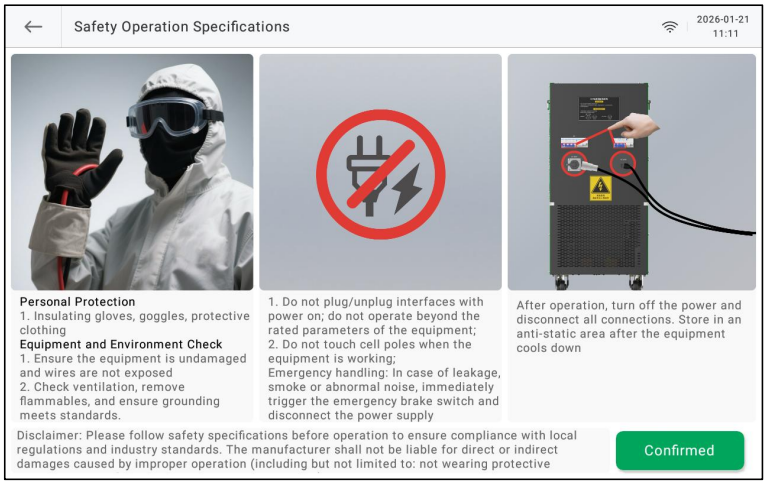
- If the BCI communication box is selected (only the battery pack connected to the Main Test Port needs to connect to the BCI box), connect the BCI box. The EP865 communicates with the BCI box via Bluetooth connection. The connection between the BCI box and the battery pack can be done in the following two ways; users can choose one according to the actual situation.
  - ■ Connect the BCI HFT Diagnostic Connector Test Main Cable, then connect the BCI and the battery pack via the special connector, and finally turn on the power to the BCI box.
  - ■ Connect the BCI HFT Diagnostic Connector Test Main Cable, then connect the BCI and the battery pack via the jumper, and finally turn on the power to the BCI box.



5. Be sure to power on the machine only after all wiring is completed. Connect the 220 V AC power, and close the 220 V AC switch on the back of the equipment, the DC switch of the Main Test Port, and the DC switch of the Auxiliary Port.

6. After the equipment starts up, tap 'Start' on the main interface.

7. Read the operation safety regulations carefully, wear proper personal protective equipment, check the equipment and test environment, confirm safety measures are in place, and tap 'Confirmed'.

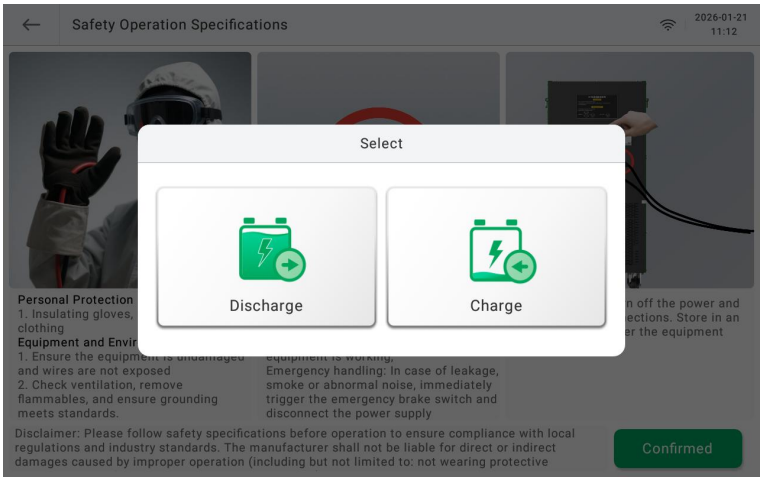


8. Select 'Charge'.

Note:

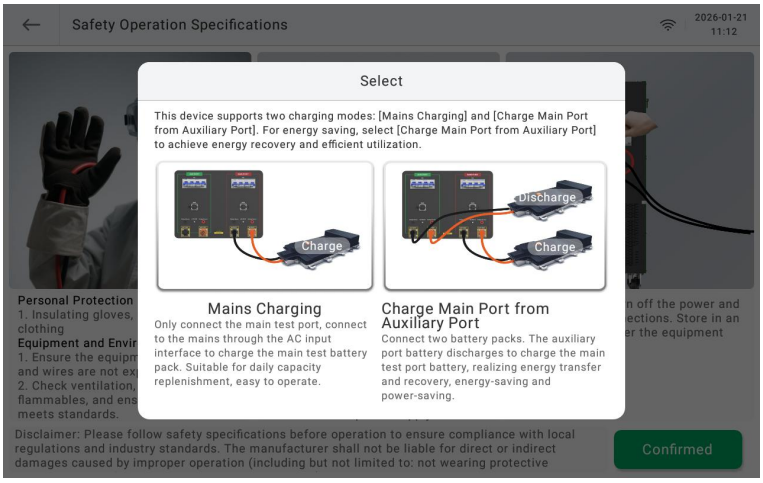
(1) If in discharging mode, please select 'Discharge'.

(2) 'Charge' / 'Discharge' on the equipment interface is performed by the Main Test Port on its connected battery pack by default.

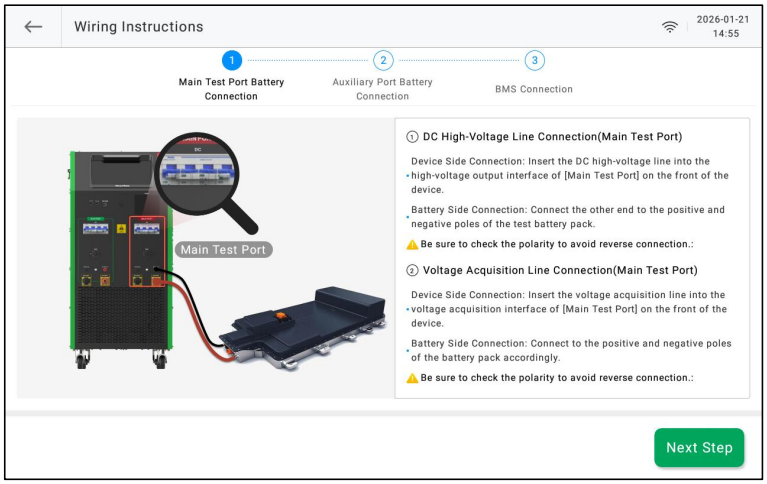


9. Select 'Auxiliary Port Charges Main Test Port'.

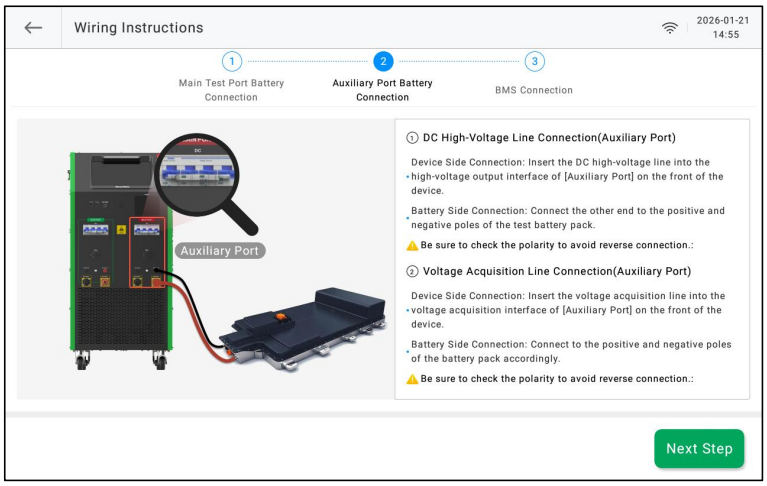
Note: If in discharging mode, please select 'Main Test Port Discharges to Auxiliary Port'.



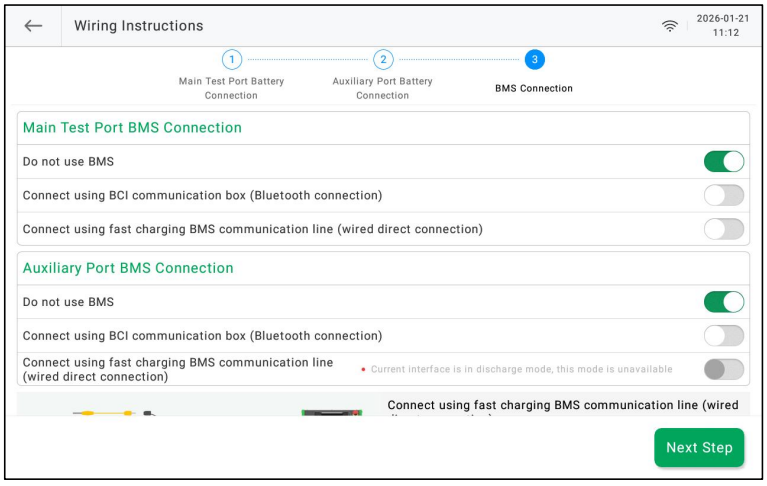
10. Main Test Port Wiring: Check and ensure correct wiring of the Main Test Port according to the instructions, and tap 'Next'.



11. Auxiliary Port Wiring: Check and ensure correct wiring of the Auxiliary Port according to the instructions, and tap 'Next'.

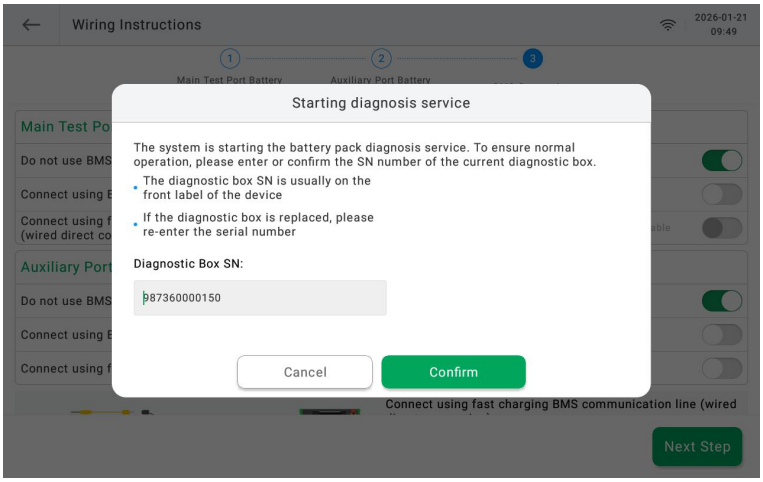


12. Select the BMS communication method on the BMS connection interface. It is recommended to select 'Use BCI Communication Box (Bluetooth Connection)' to enable cell data monitoring.

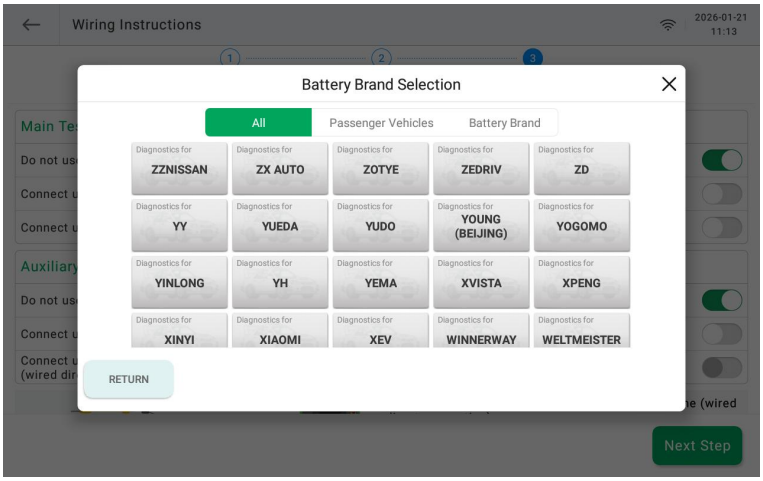


Note: Users can select 'No BMS'. After tapping 'Next', the system enters the parameter setting interface directly. 'No BMS' is blind charging/discharging mode; the equipment will not monitor cell data. The operational risk is high; please proceed with caution.

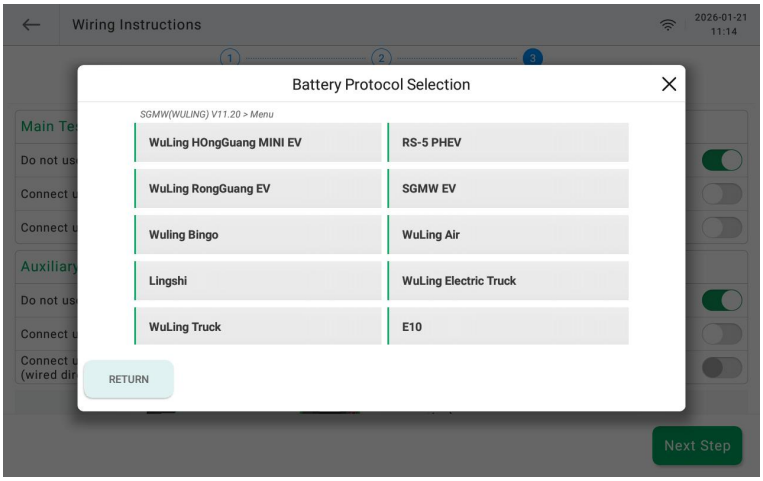
13. Enter the BCI box SN in the pop-up interface, tap 'Confirm', and then tap 'Next'.



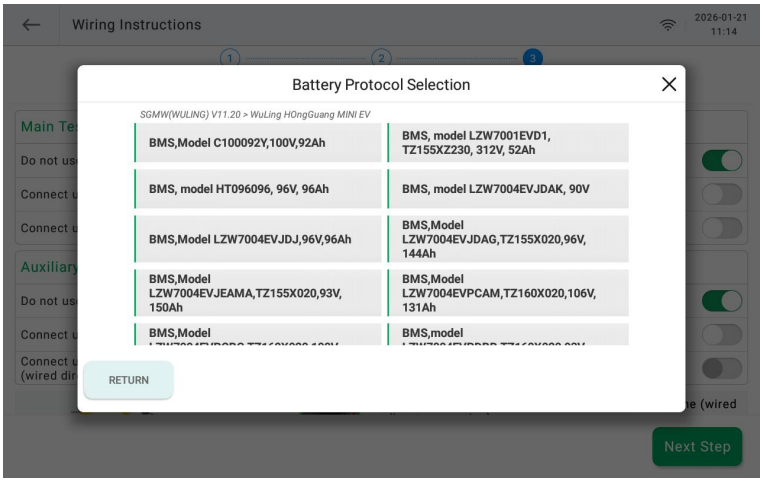
14. Select the battery brand.



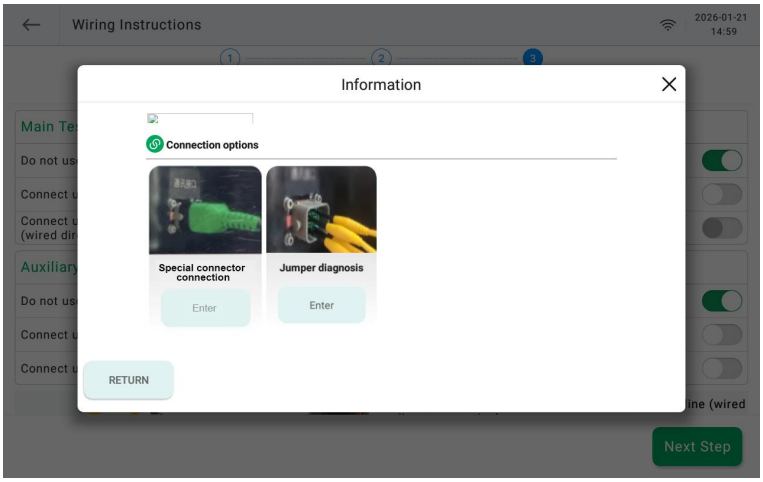
15. Select the vehicle model corresponding to the battery pack.



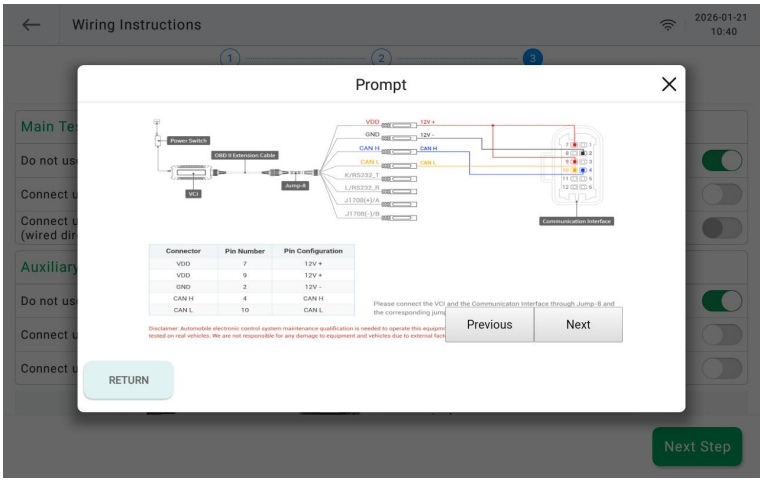
16. Select the battery pack model.



17. Select the connection method for the battery pack. Two methods are supported: special connector connection and jumper connection.



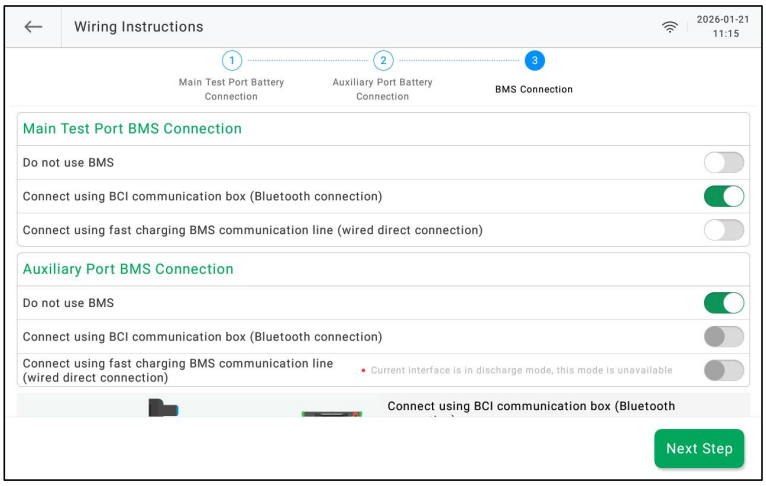
18. Connect the battery pack low-voltage communication port according to the wiring diagram, ensure the connection is correct, and tap 'Next'.



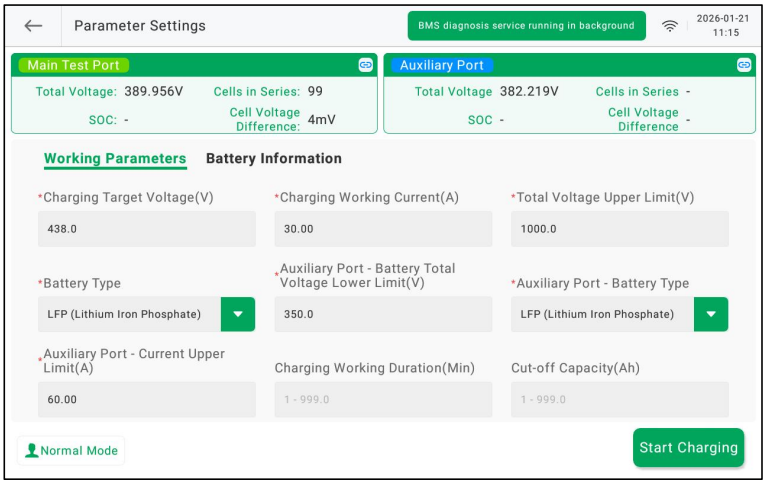
19. Select 'Pair'.

> Note: Please confirm that the equipment has successfully established a Bluetooth pairing with the BCI box.

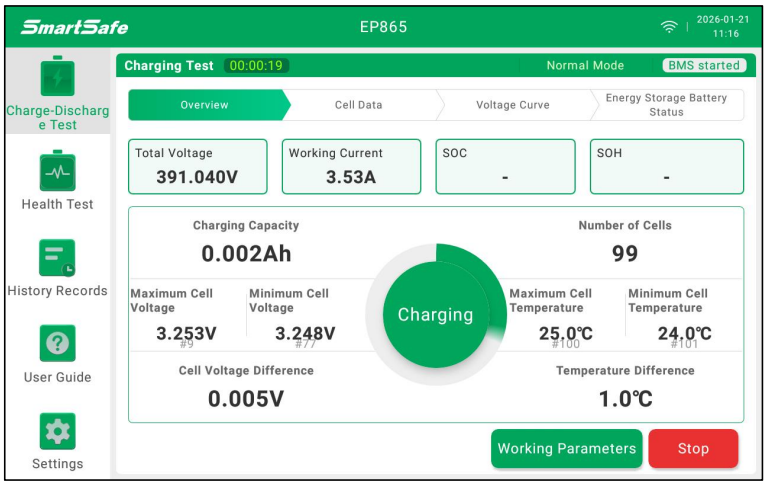
20. BCI communication box connected successfully.



21. In the 'Parameter Setting' interface, set the working parameters and select the battery type according to the actual situation.



22. After setting the parameters, tap 'Start' to enter the charging interface.

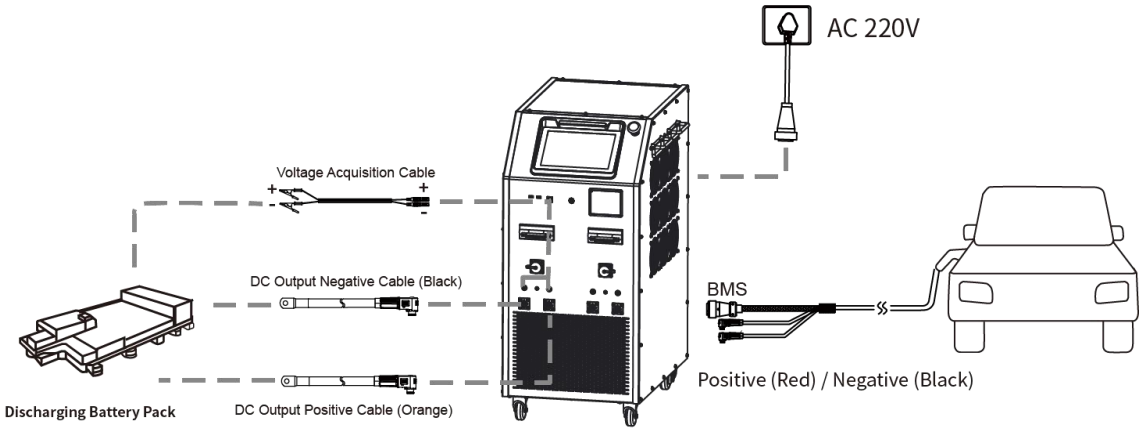


3.4 B2V Battery Pack to Vehicle Mode

Uses a power battery pack as the discharging end to supply energy to the vehicle via the standard fast charging interface, used for energy recovery and reuse during testing.

Note: Must be used with the fast charging gun provided with the equipment.

I. Wiring Diagram



II. Operating Steps

Precautions before operation:

- Ensure the power is disconnected and all air switches are in the OFF position before starting wiring.
- When wiring, strictly verify the positive and negative polarities to avoid reverse connection.
- Protective gear such as insulating gloves and safety goggles must be worn.
- Check the equipment and cables to ensure there are no hazards such as damage, looseness, or aging.
- Check the battery status to ensure there is no bulging, leakage, or damage.

1. Ensure the equipment is in a powered-off state.

2. Connect DC cables. Connect one end of the DC cable to the EP865 and the other end to the battery pack. Refer to the wiring diagram for specific wiring methods.

> Note: Connect the orange cable to the positive terminal, and the black cable to the negative terminal.

3. Connect voltage acquisition cables. Insert one end of the voltage acquisition cable into the EP865 and connect the other end to the battery pack.

> Note: Connect the red voltage acquisition cable to the positive terminal, and the black voltage acquisition cable to the negative terminal.

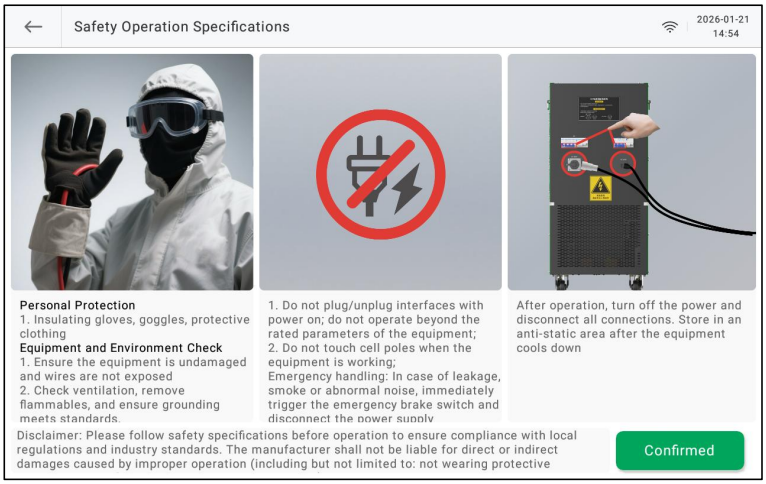
4. Connect the BMS fast charging gun. Insert one end of the fast charging gun into the Main Test Port of the EP865 equipment and connect the other end to the vehicle's fast charging port.

> Note: Insert the aviation plug of the fast charging gun into the BMS interface of the Main Test Port, insert the red cable into the positive terminal of the Main Test Port, and the black cable into the negative terminal of the Main Test Port.

5. Be sure to power on the machine only after all wiring is completed. Connect the 220 V AC power, and close the 220 V AC switch on the back of the equipment, the DC switch of the Main Test Port, and the DC switch of the Auxiliary Port.

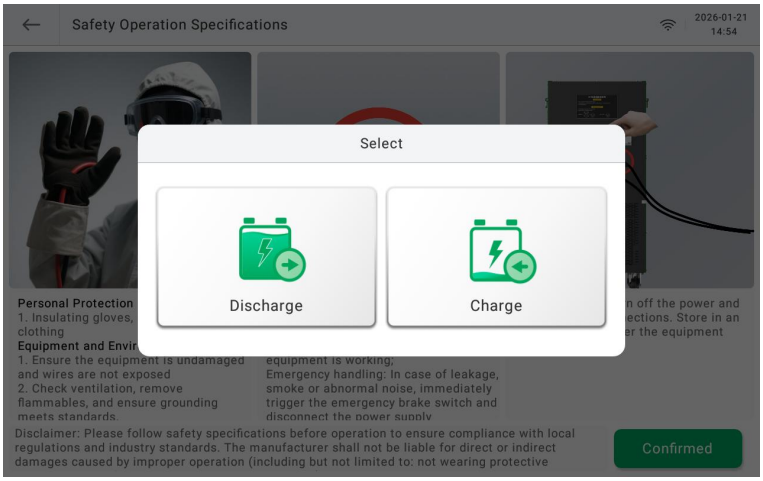
6. After the equipment starts up, tap 'Start' on the main interface.

7. Read the operation safety regulations carefully, wear proper personal protective equipment, check the equipment and test environment, confirm safety measures are in place, and tap 'Confirmed'.

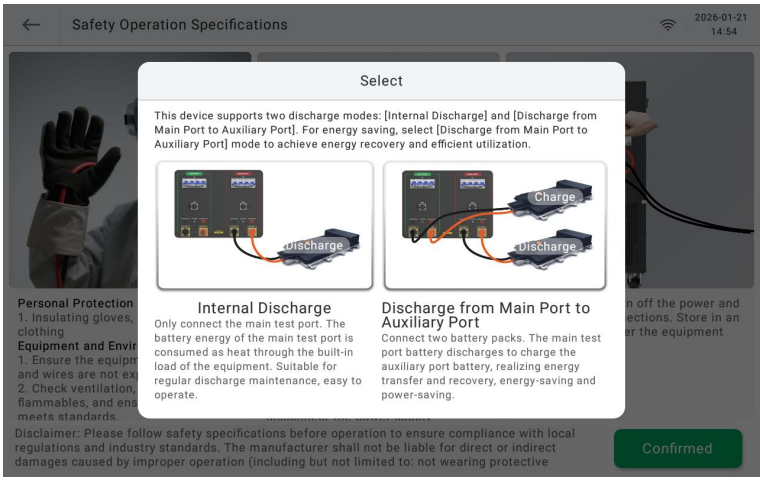


8. Select 'Charge'.

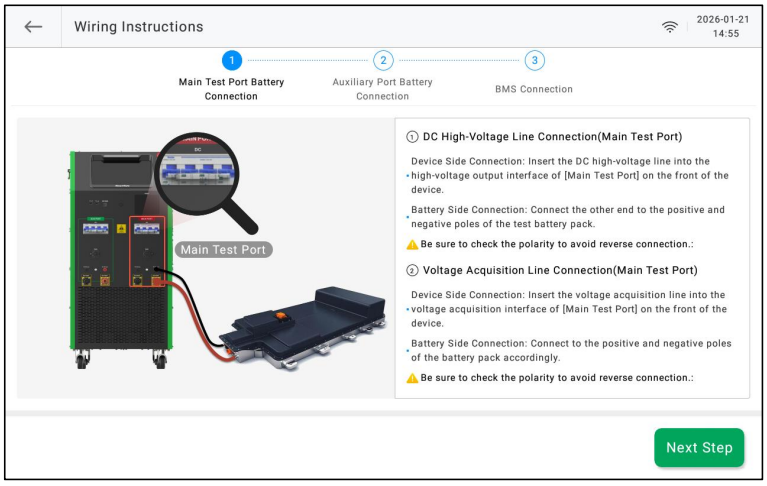
> Note: 'Charge' on the equipment interface is performed by the Main Test Port on the vehicle by default.



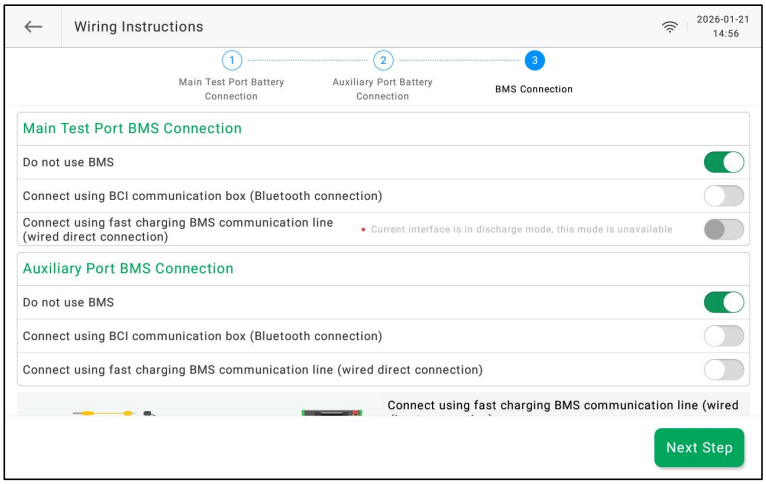
9. Select 'Auxiliary Port Charges Main Test Port'.



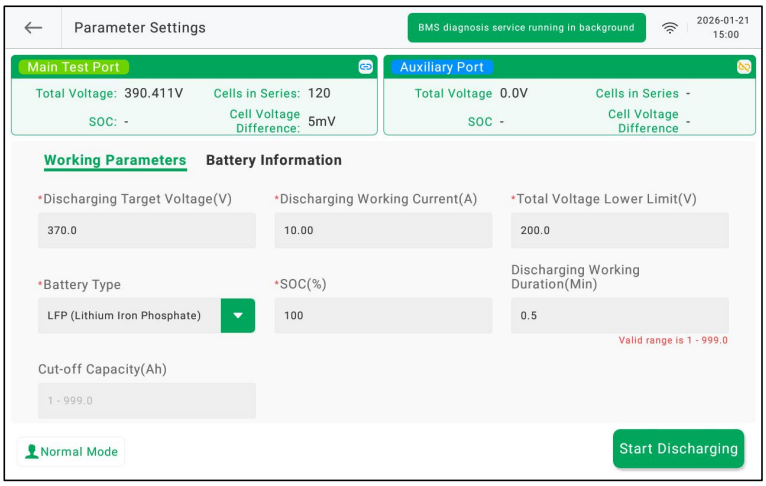
10. Check that the Main Test Port and Auxiliary Port are correctly wired according to the instructions, and tap 'Next'.



11. On the communication connection interface, select 'Use Fast Charging BMS Communication Cable Connection (Wired Direct Connection)' for the Main Test Port BMS connection. For the Auxiliary Port BMS connection, select 'No BMS' or 'Use BCI Communication Box (Bluetooth Connection)'. Then tap 'Next'.



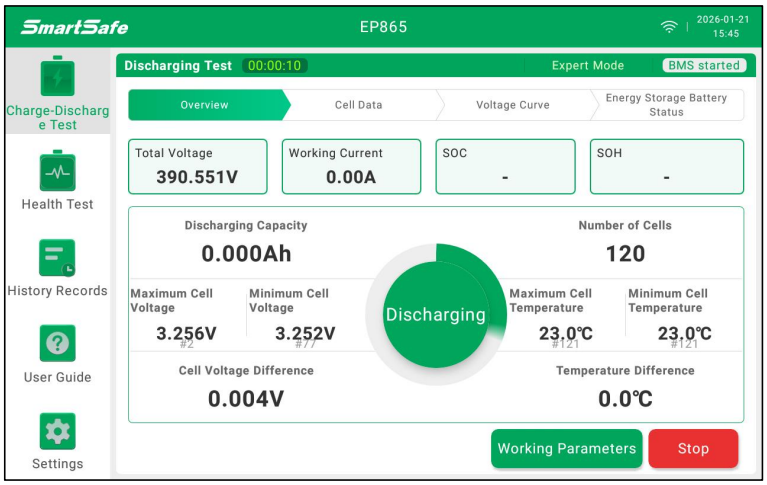
12. In the 'Parameter Setting' interface, set the SOC (Target Charging Capacity) and select the battery type for the Auxiliary Port.



13. After setting the parameters, tap 'Start Charging' to enter the charging interface.

Note: After starting charging, the dashboards of some vehicle models will indicate 'Connecting'. Once connected successfully, the dashboard will display charging progress, charging power, and estimated time to full charge in real-time; some models may only display a charging icon.

14. The equipment interface during the charging process is shown below.



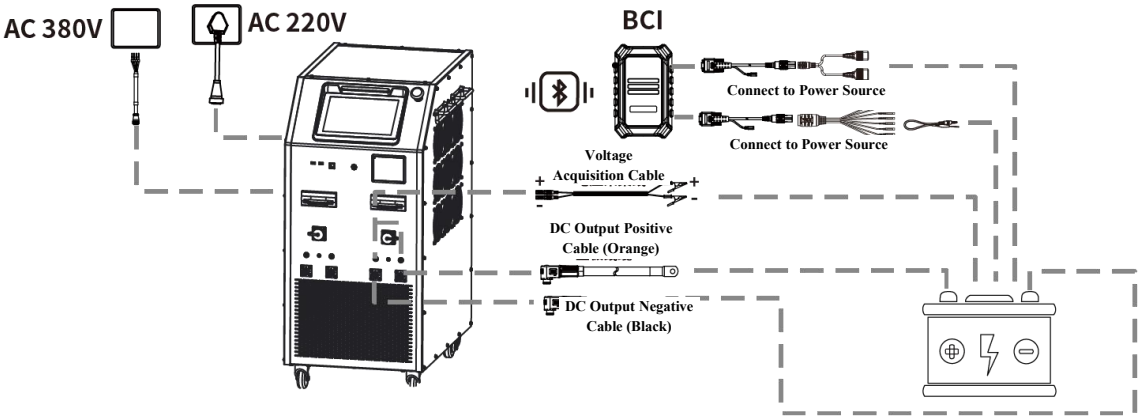
15. Charging Completed.

After charging is completed, users can view cell data and voltage variation curves from the charging process.

4. Battery Health Test

Through the health test, the battery pack's State of Health (SOH) can be tested, and key parameters can be viewed in real-time. If abnormalities are encountered, correct response measures can be taken in a timely manner.

I. Wiring Diagram



II. Operating Steps

Precautions before operation:

- Ensure the power is disconnected and all air switches are in the OFF position before starting wiring.
- When wiring, strictly verify the positive and negative polarities to avoid reverse connection.
- Protective gear such as insulating gloves and safety goggles must be worn.
- Check the equipment and cables to ensure there are no hazards such as damage, looseness, or aging.
- Check the battery status to ensure there is no bulging, leakage, or damage.

1. Ensure the equipment is in a powered-off state.
2. Connect DC cables. Connect one end of the DC cable to the EP865 and the other end to the battery pack. Refer to the wiring diagram above for specific wiring methods.

Note: Connect the orange cable to the positive terminal of the equipment and the battery pack, and the black cable to the negative terminal.

3. Connect voltage acquisition cables. Insert one end of the voltage acquisition cable into the EP865 and connect the other end to the battery pack.

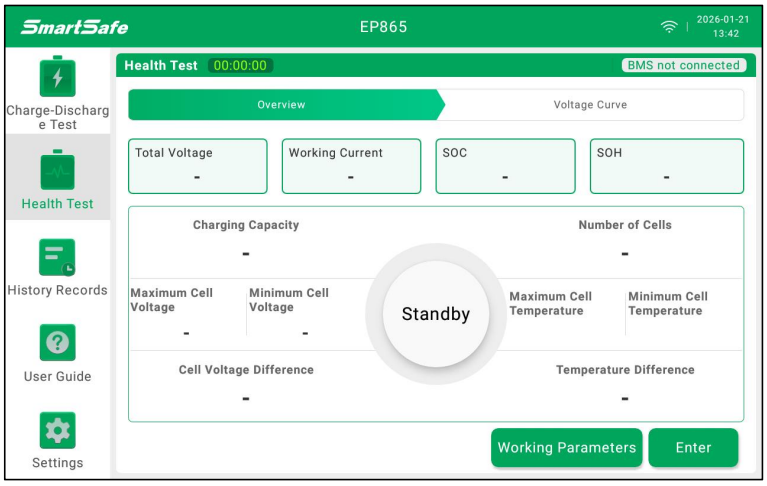
Note: Connect the red voltage acquisition cable to the positive terminal of the equipment and the battery pack, and the black voltage acquisition cable to the negative terminal.

4. Connect the BCI box. The EP865 communicates with the BCI box via Bluetooth connection. The connection between the BCI box and the battery pack can be done in the following two ways; users can choose one according to the actual situation.

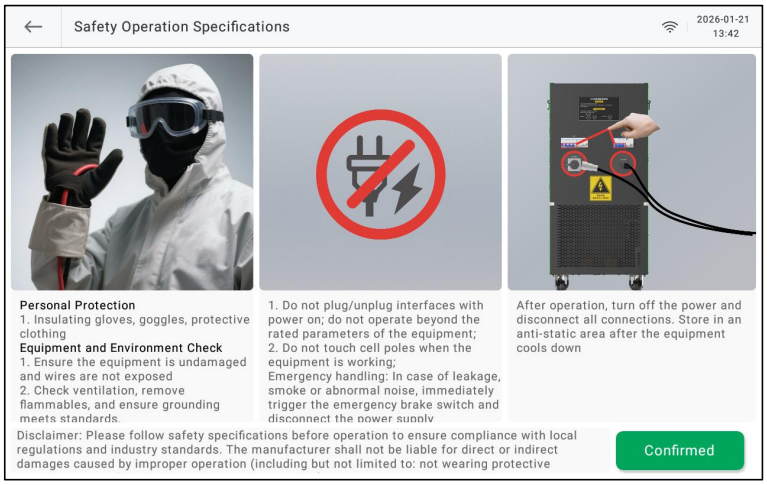
- Connect the BCI HFT Diagnostic Connector Test Main Cable, then connect the BCI and the battery pack via the special connector, and finally turn on the power to the BCI box.
- Connect the BCI HFT Diagnostic Connector Test Main Cable, then connect the BCI and the battery pack via the jumper, and finally turn on the power to the BCI box.

5. Be sure to power on the machine only after all wiring is completed. Connect the 380 V AC power and 220 V AC power, and close the two AC switches on the back of the equipment and the DC switch for the Main Test Port.

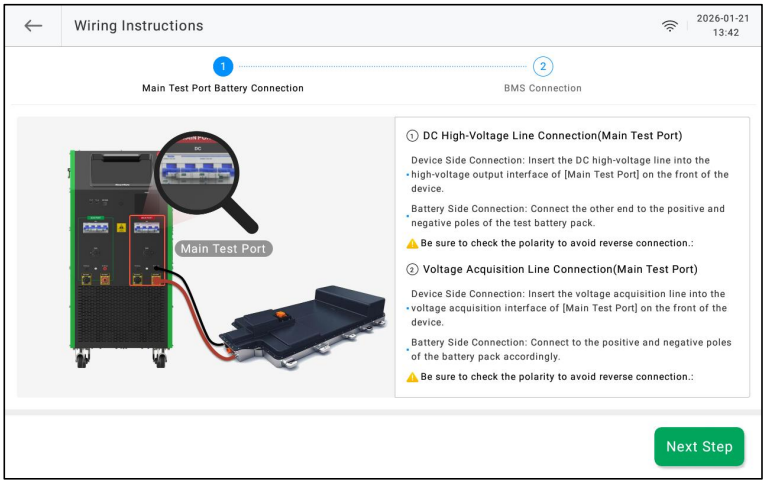
6. Tap 'Health Test' in the left function menu to enter the health test interface.



7. Read the operation safety regulations carefully, wear proper personal protective equipment, check the equipment and test environment, confirm safety measures are in place, and tap 'Confirmed'.

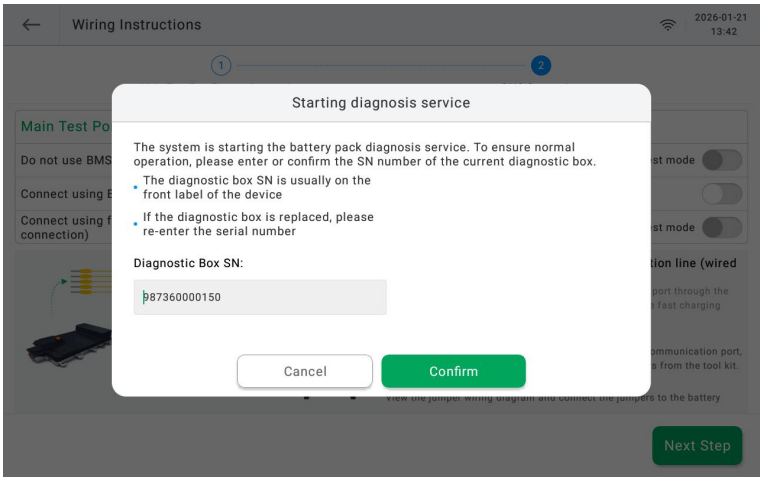


8. Check and ensure correct wiring according to the instructions, turn on the DC switch (Main Test Port), and tap 'Next'.

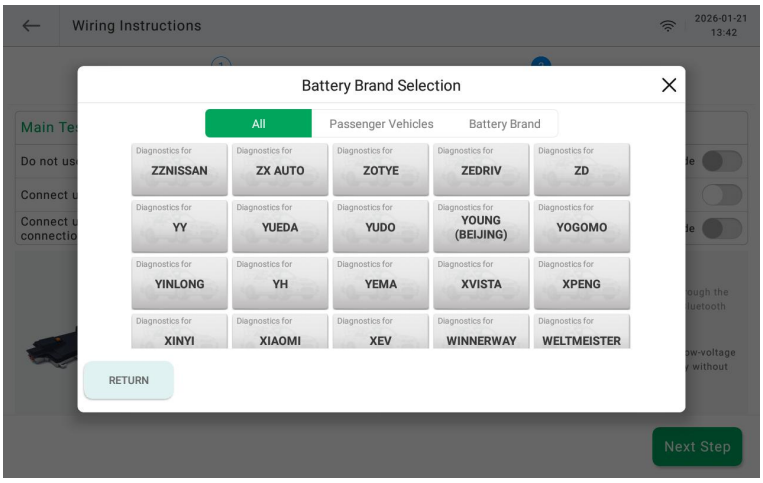


9. Select 'Use BCI Communication Box (Bluetooth Connection)' on the communication connection interface.

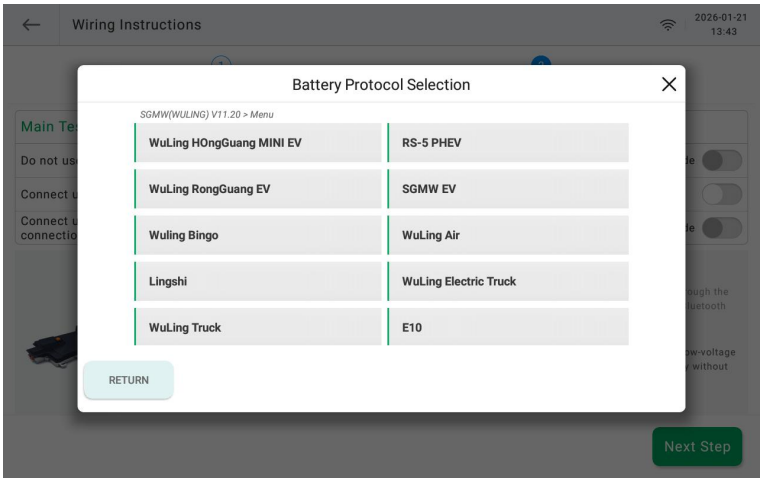
10. Enter the BCI serial number in the pop-up window and tap 'Confirm'.



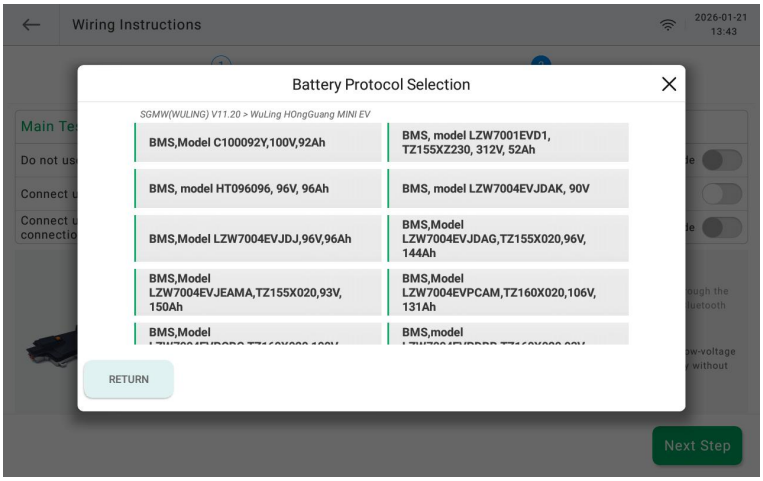
11. Select the battery brand.



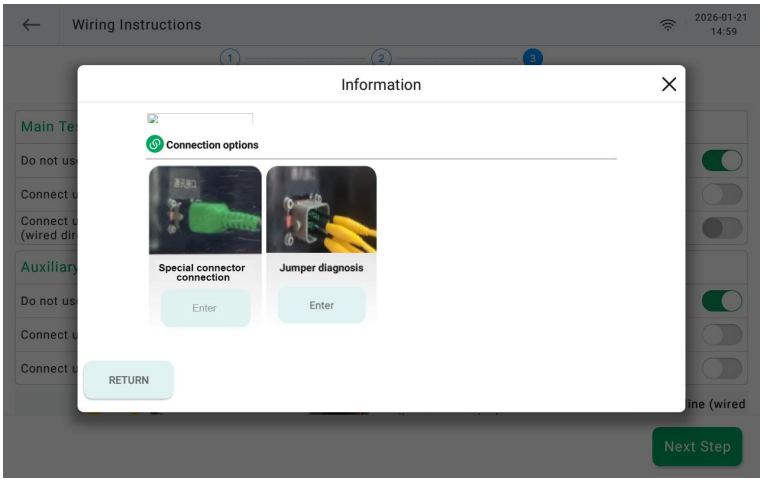
12. Select the vehicle model corresponding to the battery.



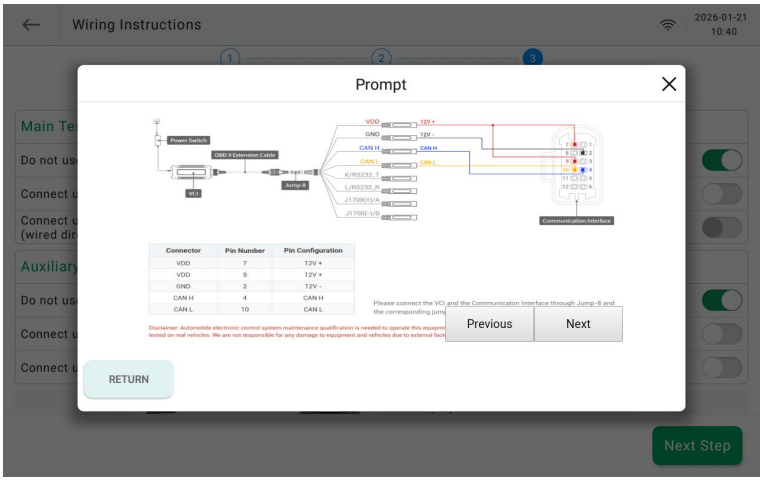
13. Select the battery protocol.



14. Select the connection method for the battery pack. Two methods are supported: special connector connection and jumper connection.



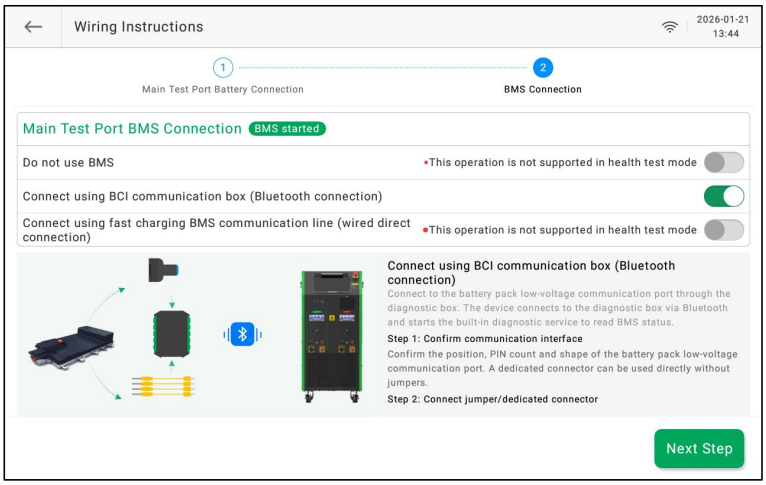
15. Connect the battery pack low-voltage communication port according to the wiring diagram, ensure the connection is correct, and tap 'Next'.



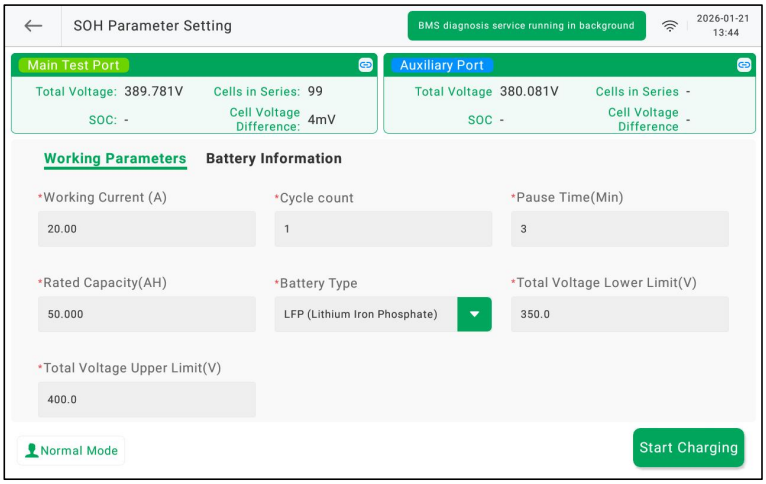
16. Check 'Allow access to your contacts and call logs' and select 'Pair'.

Note: Please confirm that the equipment has successfully established a Bluetooth pairing with the BCI box.

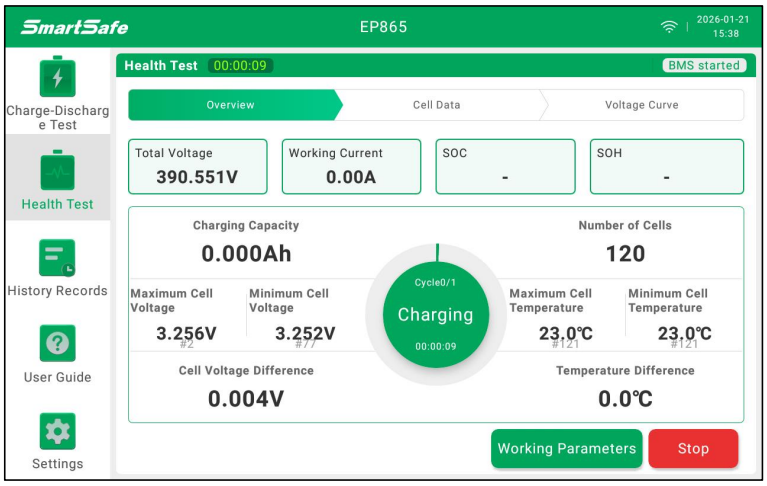
17. Tap 'Next' to enter the parameter setting interface.



18. In the 'Parameter Setting' interface, set the working parameters.

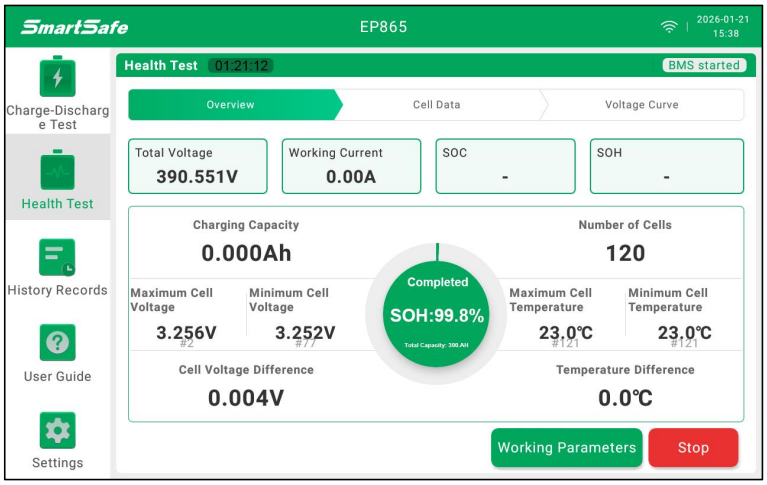


19. After setting the parameters, tap 'Start Charging' to enter the charging interface.



After charging is completed, the system automatically proceeds to discharging.

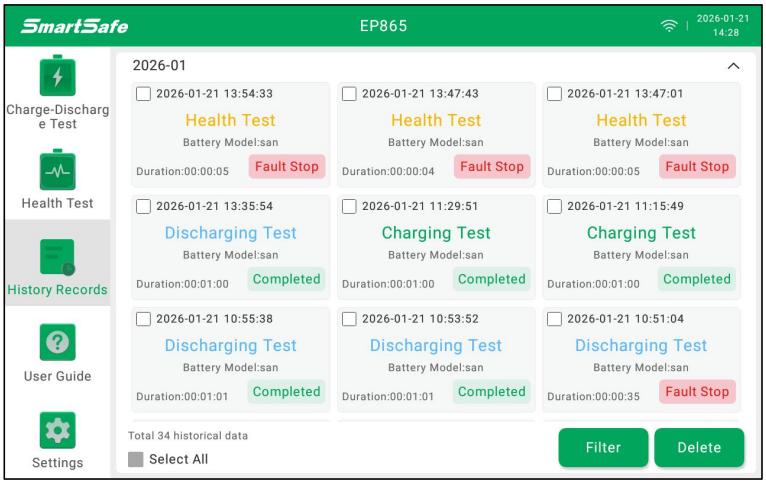
After the health test is finished, the specific SOH value, cell data, and voltage curve can be viewed on the interface.



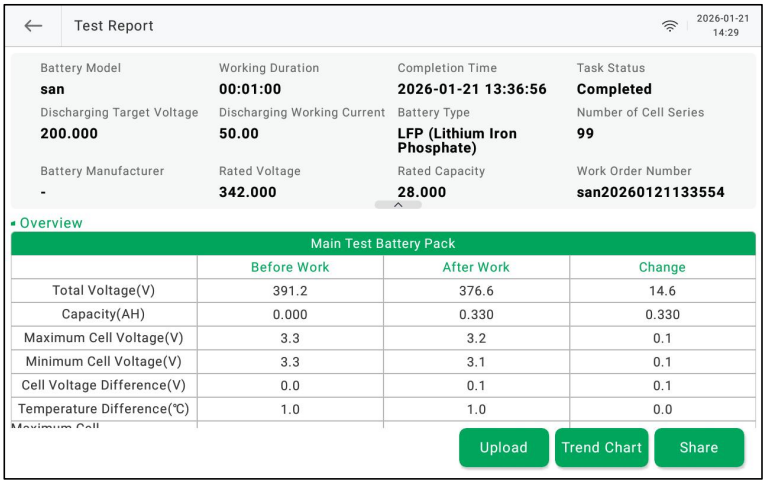
5. History

Records charging test records and discharging test records.

Tap 'History' in the left function menu to enter the history interface.



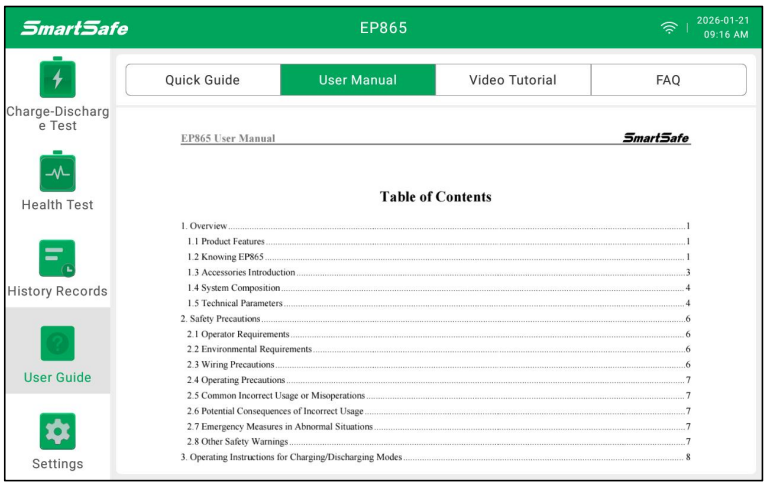
- Select one or multiple history records, then tap 'Delete' to delete the selected records.
- Tap **'Filter'** to set conditions and filter records that meet the criteria.
- Tap on a single record to view its details.



- Tap **'Share'** to share the test record.
- Tap **'Trend Chart'** to view the charging/discharging trend charts for the group or individual cells.

6. User Manual

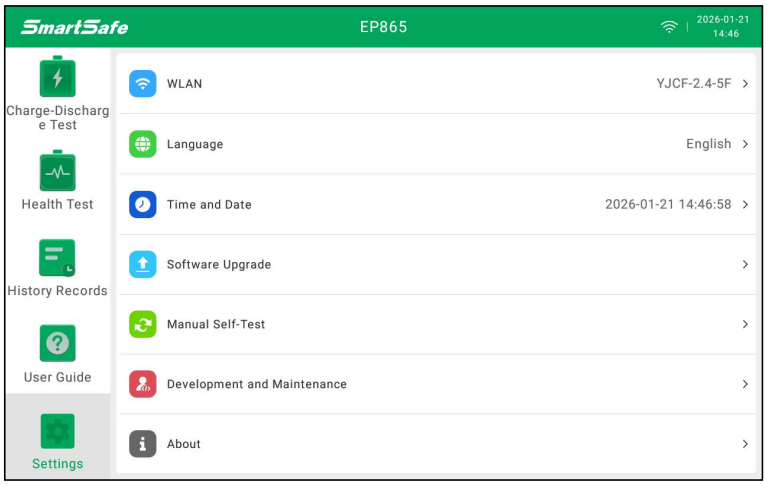
Tap 'User Manual' in the function menu on the left to view the detailed user manual.



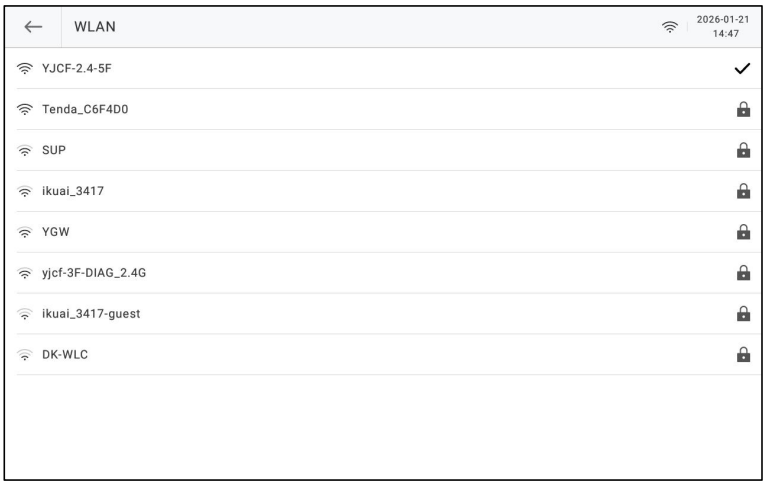
7. Settings

Settings include **Wi-Fi, Language, Date & Time, Software Update, Manual Self-check**, **Development Maintenance**, and About.

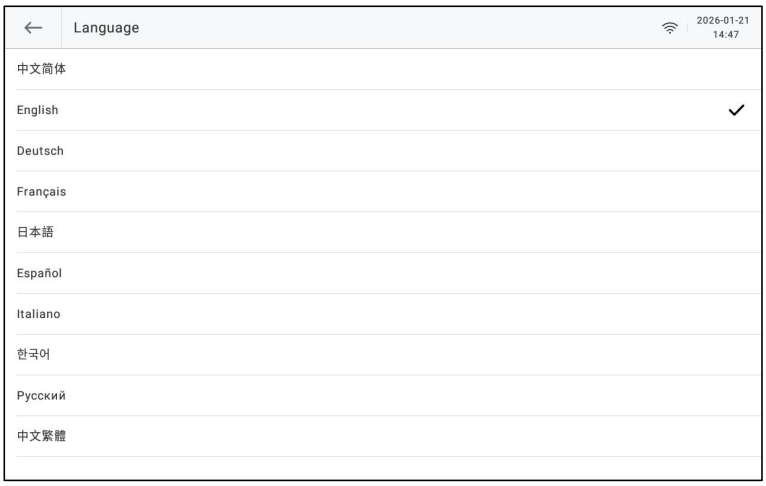
Tap 'Settings' in the function menu on the left to enter the settings interface.



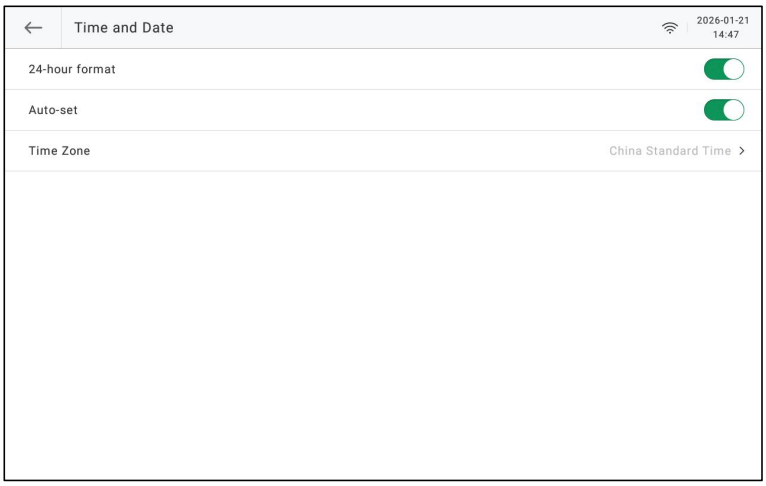
- **Wi-Fi:** Used to set the wireless network connection of the tester.



- **Language:** Used to set the system language.



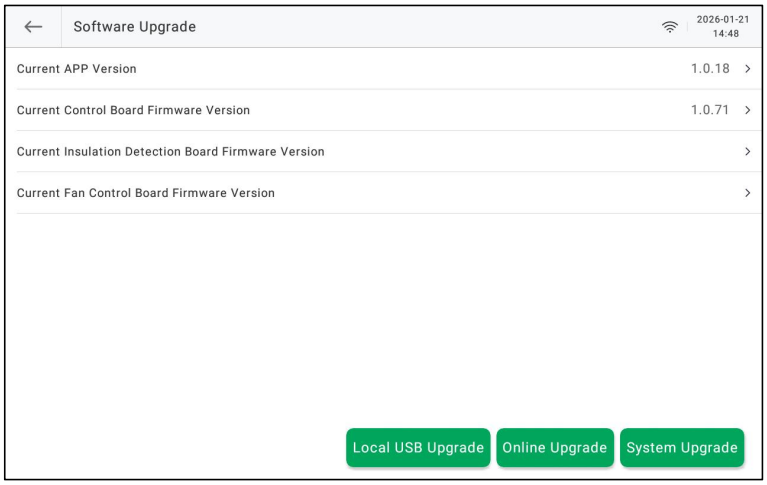
- **Date and Time:** Used to set the date, time, and time zone.



- **Software Update**

You can choose to view the current version or upgrade to the latest software version. The software includes the **APP**, **control board firmware**, **insulation detection board firmware**, **fan control board firmware**, and the system.

Note: Connect to a wireless network before performing the software update. To ensure a successful update, ensure the network remains stable during the process.



Local USB Update: The system will automatically recognize the update file to perform the upgrade. Please ensure the filename is not modified, otherwise, the system will fail to recognize it.

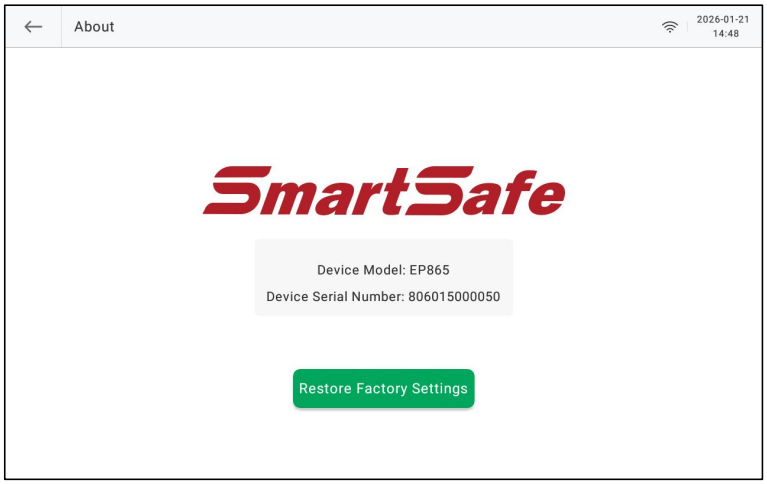
Online Update: After the equipment connects to Wi-Fi, tap 'Online Update' to update the equipment software to the latest version.

System Update: Updates the system to the latest version.

- **About**

You can view the equipment model and serial number.

Note: Data cannot be recovered after restoring factory settings. Please proceed with caution.



8. FAQ

1. Q: What is the difference between the Main Test Port and the Auxiliary Port? Where should the battery pack be connected?

   A: The Main Test Port is used to connect the battery pack or vehicle under test. If you only need to test a single battery pack, you must connect it to the interface of the Main Test Port. If there is an energy-saving requirement, you can connect another battery pack or a vehicle supporting standard fast charging protocols to the Auxiliary Port.

2. Q: The fast charging gun is incompatible?

   A: Check if the vehicle supports standard fast charging protocols. The equipment supports GB/T 27930 and ISO 15118 fast charging protocols.

3. No battery pack model selected in BCI communication mode?

   A: The software may not support this battery pack model yet.

4. BCI box cannot find the communication protocol?

   A: The software may not support this battery pack model yet.

9. Equipment Error Codes

Error Code	Error Name	Troubleshooting Suggestion
E01	Connection Abnormal	Check if the equipment power switch is turned on, and confirm that the power cable and interface cables are securely connected.
E02	Internal Communication Interruption	Turn off the equipment power, check the connections of relevant internal modules, and power on again after confirming everything is normal.
E03	Equipment Tilt Protection	Place the equipment on flat, level ground. Restart after adjustment.
E04	Power Input Phase Loss	Check the power supply and input lines to confirm that the three-phase power connection is normal.
E05	Power Input Under-voltage	Check whether the power supply voltage meets the equipment requirements and confirm that the grid or power status is normal.
E06	Power Input Over-voltage	Check the power supply environment to ensure the input voltage is within the allowable range of the equipment.
E07	Power Output Over-current	Check the load and wiring. Restart after confirming there are no short circuits or abnormal loads.
E08	AC/DC Power Module Abnormal	Restart the equipment. If the fault persists, please contact after-sales service.
E09	DC/DC Power Module Abnormal	Restart the equipment. If the fault cannot be resolved, please contact after-sales service.
E10	Internal Fault	Restart the equipment. If the problem persists, please contact after-sales service.
E11	Power Supply Over-temperature	Turn off the equipment and wait for it to cool down. Restart only after confirming good heat dissipation conditions.
E12	Fan No Speed	Check the fan connection and working status. Restart the equipment after confirming it is normal.
E13	Fan Abnormal	Check if the fan or heat dissipation channels are blocked or damaged. Retry after resolving the issue.
E14	Main Test Port No Voltage Input	Check the Main Test Port harness connection and the battery terminal status. Confirm the connection is correct.
E15	Auxiliary Port No Voltage Input	Check the Auxiliary Port harness connection and the corresponding battery terminal status.
E16	Main Test Port Voltage Out of Range	Confirm that the connected battery voltage meets the equipment specification requirements.

E17	Auxiliary Port Voltage Out of Range	Confirm that the connected battery voltage meets the equipment specification requirements.
E18	Main Test Port Reverse Polarity	Disconnect the power, check the harness polarity, connect correctly, and then restart.
E19	Auxiliary Port Reverse Polarity	Disconnect the power, check the harness polarity, connect correctly, and then restart.
E20	Abnormal Battery Voltage Change	Check the battery status and connection. If an abnormality is confirmed, stop using immediately and contact professional personnel.
E21	Battery Terminal Over-current	Check the battery and load status. Restart the equipment after confirming there are no abnormalities.

Warranty

THIS WARRANTY IS EXPRESSLY LIMITED TO PERSONS WHO PURCHASE SMARTSAFE PRODUCTS FOR PURPOSES OF RESALE OR USE IN THE ORDINARY COURSE OF THE BUYER'S BUSINESS.

SMARTSAFE electronic product is warranted against defects in materials and workmanship for one year from date of delivery to the user.

This warranty does not cover any part that has been abused, altered, used for a purpose other than for which it was intended, or used in a manner inconsistent with instructions regarding use. The exclusive remedy for any automotive meter found to be defective is repair or replacement, and SMARTSAFE shall not be liable for any consequential or incidental damages.

Final determination of defects shall be made by SMARTSAFE in accordance with procedures established by SMARTSAFE. No agent, employee, or representative of SMARTSAFE has any authority to bind SMARTSAFE to any affirmation, representation, or warranty concerning SMARTSAFE automotive meters, except as stated herein.

Disclaimer

The above warranty is in lieu of any other warranty, expressed or implied, including any warranty of merchantability or fitness for a particular purpose.

Purchase Order

Replaceable and optional parts can be ordered directly from your SMARTSAFE authorized dealer. Your order should include the following information:

• Order quantity

• Part number

• Part name

Customer Service Center

For any problem met during the operation, please call +86-0755-89589810.

If the device needs to be repaired, please send it back to SmartSafe, and attach the Warranty Card, Product Qualification Certificate, Purchase Invoice and problem description. SmartSafe will maintain and repair the device for free when it is within warranty period. If it is out of warranty, SmartSafe will charge the repair cost and return freight.

SmartSafe address:

3310, Building 11, Tian'an Cloud Park, Bantian Street, Longgang District, Shenzhen,Guangdong, China

SmartSafe Website: http: //www.newsmartsafe.com

Statement:

SMARTSAFE reserves the rights to make any change to product designs and specifications without notice. The actual object may differ a little from the descriptions in the manual in physical appearance, color and configuration. We have tried our best to make the descriptions and illustrations in the manual as accurate as possible, and defects are inevitable, if you have any question, please contact local dealer or after-sale service center of SMARTSAFE, SMARTSAFE does not bear any responsibility arising from misunderstandings.