

LFF51280 Floor Style Battery Operating Instructions

Type : LFF51280

Version : V1.0





Revision Record





| NO. | Version | Context | Time | Editer |
|-----|---------|---------------|-----------|--------------|
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I. Security Instructions

| | |
|---|---|
| <p> DANGER: If the work is not regulated, it can lead to accidents such as fires, serious personal injury or even death.</p> <p> CAUTION: Failure to operate in a regulated manner may result in moderate or minor personal injury, as well as system malfunction or damage. When installing, using and servicing this system, please read this manual carefully and be sure to follow the safety precautions required by the contents of this chapter! Any injuries or damages that may occur as a result of non-compliance are not the responsibility of the Company!</p> | |
| Use | <p> DANGER</p> |
| | <ul style="list-style-type: none">◆ This series of battery packs must be used in conjunction with a suitable inverter, otherwise damage to the system may result.◆ This series of battery packs is used as a home energy storage system and should not be used for any other purpose, otherwise it may cause system failure or fire. |
| Arrival Inspection | <p> CAUTION</p> |
| | <ul style="list-style-type: none">◆ If the system components are damaged, they should not be installed, and communicate with the manufacturer in time to confirm, otherwise the project application may be affected.◆ If you find that the packing list does not match the physical name, communicate with the manufacturer in time to confirm, otherwise it may affect the project. |

| | |
|-------------------|--|
| | |
| Set |  CAUTION |
| | <ul style="list-style-type: none"> ◆ When handling and installing the system, please carry and place it gently, otherwise it may cause damage to the system. ◆ Keep this system away from flammable and explosive materials and away from heat sources. |
| Assembling Wiring |  DANGER |
| | <ul style="list-style-type: none"> ◆ Installation must be guided by a qualified electrical engineer familiar with the system, otherwise there is a risk of electric shock or damage to the system. ◆ You must make sure the power supply is disconnected before wiring, otherwise there is a risk of electric shock or fire. |
| |  CAUTION |
| | <ul style="list-style-type: none"> ◆ Verify that the communication wiring is correct, otherwise normal operation may not be possible. ◆ Verify that the positive and negative power supply wiring is correct, or system damage may result. |
| |  DANGER |
| | <ul style="list-style-type: none"> ◆ Connect correctly before powering up, it is strictly prohibited to unplug and plug the wire harness under powering up condition, otherwise there is a danger of electric shock. |

| | |
|------------------------|---|
| Operation | <p>◆ Non-system-familiar professionals should not change the parameters of the upper computer setup page without authorization, otherwise the system may malfunction or even have an accident.</p> |
| | <p> CAUTION</p> |
| | <p>◆ Before operation, make sure that the system is within the permissible range of use, otherwise it may cause damage to the system.</p> <p>◆ Before operation, make sure that the positive and negative wiring screws are tight, otherwise damage to the system may result.</p> |
| Maintenance Inspection | <p> DANGER</p> |
| | <p>◆ If the housing is to be disassembled, be sure to disconnect the power, otherwise there is a risk of electric shock.</p> <p>◆ Appoint a qualified electrical engineer to perform maintenance, inspection or replacement of parts, otherwise accidents may occur.</p> |

| | |
|--------|--|
| Others |  DANGER |
| | <ul style="list-style-type: none"> ◆ Do not crush, pinch, drop, shock, heat or short circuit and keep away from corrosive substances. ◆ Do not disassemble the battery by yourself. Improper disassembly may cause a short circuit and other problems such as fire, outgassing, or even explosion; ◆ Do not put the battery into fire. Otherwise, it may cause fire, explosion and other very dangerous situations. |
| |  CAUTION |
| | <ul style="list-style-type: none"> ◆ Do not use if deformation, bulging, leaking, etc. are found. ◆ Do not place the battery in substances such as water or liquids. |

II. LFF51280 Standard battery basic function introduction

This is a standard lithium battery pack that can be used with an appropriate inverter to form a home energy storage system. AC power (or solar power formed by photovoltaic panels) is converted into DC power of the appropriate voltage range through the inverter to charge the battery pack and store the power for use when needed. During the use of the product, the power from the lithium battery pack is converted into AC power through the inverter (grid-connected or off-grid, depending on the user's needs and the function of the inverter) to supply power to the user's electrical equipment.

Wall-mounted battery LFW series products appearance, as Figure 1



Figure 1. LFF51280 floor model battery product profile

FF513280 standard battery application scenario, as shown in Figure 2

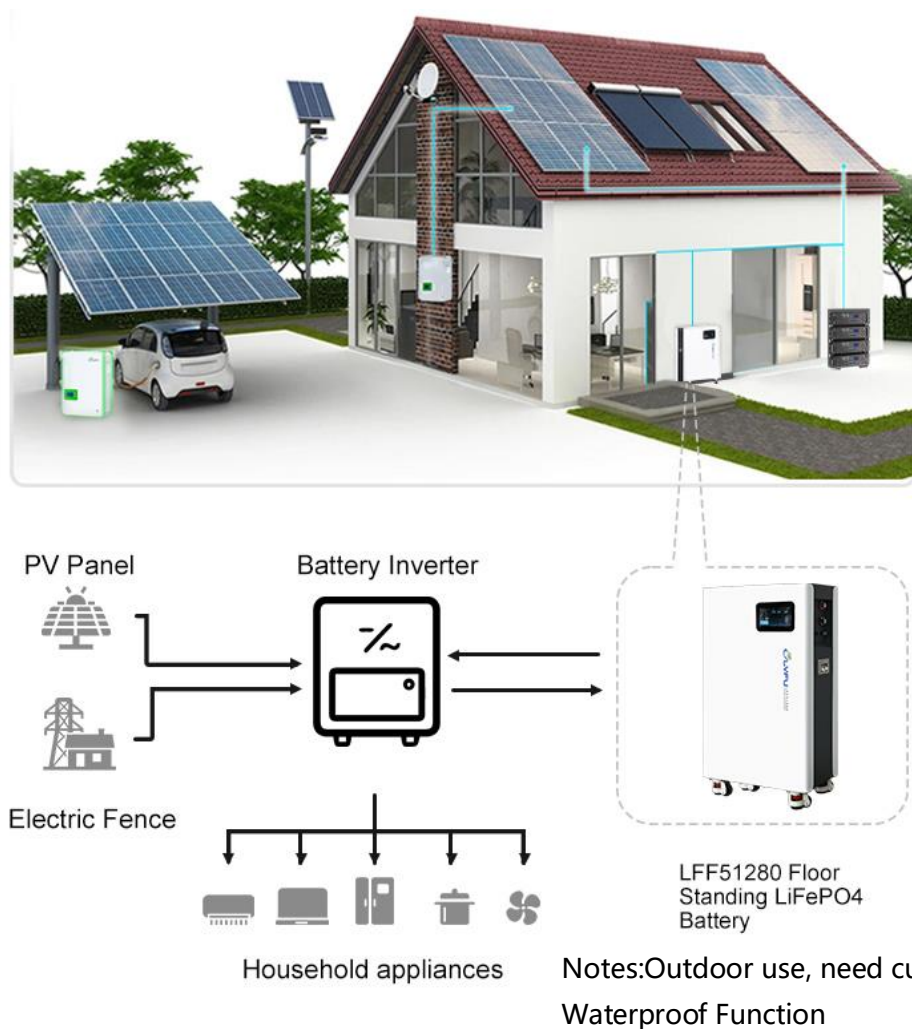


Figure 2. FF513280 standard battery application scenario

LFF51280 technical parameters :

Table 1: LFF51280 standard battery technical parameters

| | | |
|-----------------------|--|------------------------------|
| Type | | LFF51280 |
| Product Specification | | 51V280Ah |
| Battery Parameter | Battery Type | LFP(LiFePO4) |
| | Rated Voltage (V) | 51.2 |
| | voltage range (V) | 43.2-57.6 |
| | equalizing charge (V) | 57.6 |
| | Charge-Down Current Turn-On Conditions | single voltage \geq 3.55V |
| | Charge current drop value | \leq 40A |
| | Charge current cut-off voltage (V) | 57.6 |
| | | or single current \geq 3.6 |
| | Maximum charge/discharge current (A) | 200/200 |

| | | |
|--|-------------------------------|-----------------------|
| | Discharge cutoff voltage (V) | SOC≤5%, or |
| | | total voltage≤46.2 |
| | | or single voltage≤2.7 |
| | Rated Battery Capacity (Ah) | 280AH |
| | Rated Battery Energy (KWh) | 14.34 |
| General Characteristics | Size (W*D*H)±1.2m m | 541.00*316*882.00 |
| | Battery Pack Weight (kg) ±3kg | 139.5 |
| * The rated capacity indicates the current discharged by charging with 0.5C current to the cutoff under the condition of 25±5℃, and then discharging with 0.5C to the cutoff state after standing for 30min. | | |

III. LFF51280 Description of the structure and function of the standard battery

The LFF51280 standard battery has a 7-inch touch screen on the front. SOC indicator band on the top, positive power terminal, negative power terminal, status indicator, dry contact connector, reset switch, manual toggle key, and parallel communication on the right side face. As shown in Figure 3, Table 2

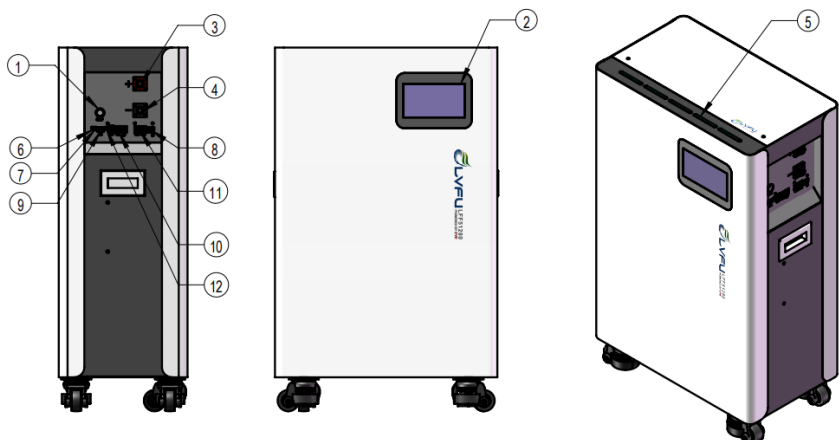


Figure 3 .

Table 2.LFF51280 Standard Battery Connection Details

| No. | Connector | mark | Functional Description |
|-----|--------------------------------|------|--|
| 1 | Self-Locking Pushbutton Switch | \ | On&Off |
| 2 | Display | \ | Display information such as battery operation and alarms |
| 3 | Positive power terminal | + | Positive battery output terminal |
| 4 | Negative power terminal | - | Battery negative output terminal |
| 5 | SOC light | SOC | battery capacity status |
| 6 | malfunction indicator | ALM | alarm status |
| 7 | Operation Indicator Light | RUN | operating status |

| | | | |
|-----------|-----------------------------|-----------------|---|
| 8 | Dry contact connector | I/O | Output electrical signal (reserved) |
| 9 | manual dialing key | ADDR | Setting the RS485 communication address |
| 10 | communications port | CAN、RS232、RS485 | CAN、RS232、RS485 For communication with the inverter |
| 11 | parallel communication port | RS485A 、RS485B | RS485A、RS485B For parallel communication |
| 12 | Reset | RST | Control of BMS startup and shutdown |

IV. Battery installation and use instructions

4.1 Unpacking and Inspection

After unpacking the box, check whether the goods are complete in accordance with the packing list of goods in this document, check the appearance of the battery pack, confirm the integrity and correctness of the equipment; check whether the battery chassis is deformed or corroded.

LFF51280 Battery packing list :

LFF51280battery pack×1

cable×1 Set (11.4mm*1m Positive Connection Cable×1, 11.4mm*1m Negative Connection Cable×1, 0.4m earth (cable)×1, 0.8m network cable×1)

Manual×1 (this product)

4.2 Pre-Installation Precautions

(1) Before the battery module is installed, the open circuit voltage of the battery should be carefully checked to see if it is normal, and whether there is any shell breakage, liquid leakage and so on.

(2) Use insulated tools and gloves during installation, should remove the wrist watch bracelet and other conductors containing metal to prevent electric shock or cause positive and negative short circuit.

(3) Battery installation location should be far away from the heat source or easy to produce metal sparks, the safety distance of more than 0.5m.

(4) Batteries of different models, performances and manufacturers cannot be used together.

(5) Battery packs should be installed with the shortest possible connecting wires to prevent excessive line losses.

(6) Batteries should be protected from direct sunlight, not placed in a large amount of radioactivity, infrared radiation, organic solvents and corrosive gases in the environment, away from the windows, air conditioning, exhaust fans and so on.

4.3 Installation Procedure:

4.3.1 stand-alone application

(1) Before installing the battery, please make sure that the battery switch on the system side is OFF to prevent ignition when installing and wiring.

(2) Keeps the battery in a non-operational state (indicator light does not illuminate).

(3) Connect the negative terminal (P-) of the battery to be connected to the system negative bus (no battery-to-battery series wiring is allowed)。

(4) Connect the positive terminal (P+) of the battery to be connected to the system positive bus (no battery-to-battery series wiring is allowed)。

4.3.2 Parallel Application

(1) If connecting in parallel, before connecting in parallel, please check the voltage of each battery module, the voltage difference between the battery modules should be less than 2V, if it is more than this value, please adjust the voltage by charging and discharging in the same way and set aside for at least 15 minutes before operation.

(2) The product supports up to 16 units in parallel.

(3) Parallel wiring as follows:

Power line parallel connection: use wires to connect one positive terminal of the battery to the positive terminal of the other unit, and the negative terminal to the negative terminal of the other unit, and prohibit series wiring between batteries;

Communication line cascade: connect the RS485A interface of the panel to the RS485B interface of the previous unit through the communication line.

(4) DIP switch setting (supports parallel and protocol selection)

When the battery pack is used as parallel connection, different packs are distinguished by hardware dialing address, and the hardware address of each PACK in the whole battery stack is unique, as follows, the hardware address is set by the dialing switch on the board, refer to the table below.

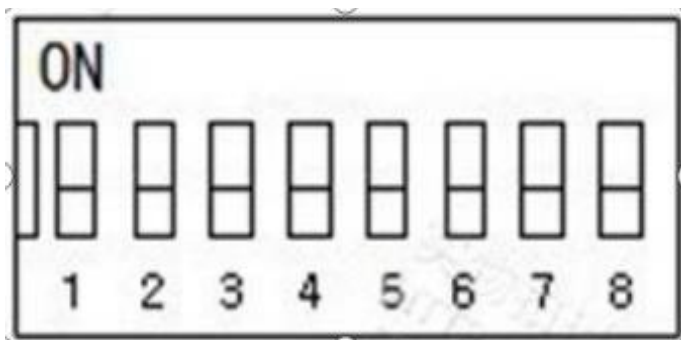


Table 3. DIP Switch Design Chart

| Add. | DIP Switch Position | | | | Select the communication protocol in host mode by dialing 5 and 6. | | Instruction |
|------|---------------------|-----|-----|-----|--|-----|-------------|
| | #1 | #2 | #3 | #4 | #5 | #6 | |
| 0 | OFF | OFF | OFF | OFF | OFF | OFF | Host Pack0 |
| 1 | ON | OFF | OFF | OFF | OFF | OFF | Pack1 |
| 2 | OFF | ON | OFF | OFF | OFF | OFF | Pack2 |
| 3 | ON | ON | OFF | OFF | OFF | OFF | Pack3 |
| 4 | OFF | OFF | ON | OFF | OFF | OFF | Pack4 |
| 5 | ON | OFF | ON | OFF | OFF | OFF | Pack5 |
| 6 | OFF | ON | ON | OFF | OFF | OFF | Pack6 |
| 7 | ON | ON | ON | OFF | OFF | OFF | Pack7 |
| 8 | OFF | OFF | OFF | ON | OFF | OFF | Pack8 |
| 9 | ON | OFF | OFF | ON | OFF | OFF | Pack9 |
| 10 | OFF | ON | OFF | ON | OFF | OFF | Pack10 |
| 11 | ON | ON | OFF | ON | OFF | OFF | Pack11 |
| 12 | OFF | OFF | ON | ON | OFF | OFF | Pack12 |
| 13 | ON | OFF | ON | ON | OFF | OFF | Pack13 |
| 14 | OFF | ON | ON | ON | OFF | OFF | Pack14 |
| 15 | ON | ON | ON | ON | OFF | OFF | Pack15 |

| Inverter communication protocol selection CAN communication (selected in host mode by dialing codes 5 and 6) | | | | | | | |
|---|-----|-----|-----|-----|-----|-----|---|
| | OFF | OFF | OFF | OFF | OFF | OFF | Support of host computer /display Inverter protocol selection |
| | OFF | OFF | OFF | OFF | OFF | ON | Pylontech |
| | OFF | OFF | OFF | OFF | ON | OFF | Victron |
| | OFF | OFF | OFF | OFF | ON | ON | Rowatt |
| Inverter communication protocol selection RS485 communication (selected in host mode by dialing codes 5 and 6) | | | | | | | |
| | OFF | OFF | OFF | OFF | OFF | OFF | Support of host computer /display Inverter protocol selection |
| | OFF | OFF | OFF | OFF | OFF | ON | Genie |
| | OFF | OFF | OFF | OFF | ON | OFF | |

| | | | | | | | |
|--|-----|-----|-----|-----|----|----|--------|
| | | | | | | | SRNE |
| | OFF | OFF | OFF | OFF | ON | ON | Rowatt |
| Note: Selection of the protocol via the host computer or the display Dialing address 5 and 6 must be 0. | | | | | | | |

(5) After the battery system has been installed, pay attention to the insulation of the battery poles and put the insulation cover on it.

4.4 Switching and running

4.4.1 Power On/Start Up

When the BMS is in hibernation state, press the push button switch, the BMS is activated, and the LED indicators flash in sequence and then turn to normal working state.

4.4.2 Shutdown/Sleep

When the BMS is in standby or discharged state, press the button switch, the BMS is put to sleep, and the LEDs flash sequentially and then turn to sleep state. The BMS has no power consumption after hibernation.

4.4.3 status display

When the battery is in different operating modes, the LEDs on the panel will give different indications.

| | | | | | | |
|---------------|-----------|---------------------------|------------------|--------|-----|--|
| system status | anomaly | anomaly | SOC LED | RUN | ALM | Instruction |
| | | | SOC10 →SOC100 | • | • | |
| shut down | shut down | shut down | | | | |
| Stand-by | Normal | Based on power indication | | off | on | Standby only normal and alarm, protection and fault according to the state of charging and discharging. |
| | Alert | | | blink2 | on | Alarms: Alarms contain the following categories, alarms for high differential voltage, alarms for low capacity, alarms for high and low individual voltage, alarms for high and low overall voltage, |

| | | | | | |
|---------|--------|---------------------------|--------|----|---|
| | | | | | alarms for all temperatures. High and low voltage of single unit, high and low overall voltage, and all temperature alarms. (high or low core temperature, high or low ambient temperature, high MOS temperature) |
| Charger | Normal | Based on power indication | off | on | |
| | Alert | | blink2 | on | Alarms include the following categories, high differential pressure alarm, low capacity alarm, low voltage, low overall voltage, all temperature alarms (battery cell temperature), |

| | | | | | |
|--|------------------------|-----|----|-----|--|
| | | | | | <p>and all temperature alarms (battery cell temperature).</p> <p>low voltage, low overall voltage, all temperature alarms (high and low core temperature, high and low ambient temperature, high MOS temperature; overcurrent alarm)</p> <p>High and low core temperature, high and low ambient temperature, high MOS temperature, and overcurrent alarm.)</p> |
| | temperature protection | Off | on | off | Cell,MOS, Environment |

| | | | | | |
|--|---|---|-----|----|---|
| | Overcurrent protection (enter current limit charging) | Based on the power level indication (when charging current is available) Maximum power indication LED blinks 2) | off | on | After charging over-current protection, enter into current-limited charging and have charging current display according to normal state; After charging over-current protection, enter into current-limited charging and have no charging current display according to malfunction state, ALM lights up and all others go out. |
| | Overpressurization of single unit \ overall Protection \ Full charge protection | Based on power indication | off | on | |
| | Overpressurization of | Based on power indication | off | on | |

| | | | | | |
|------------|--|---------------------------------|--------|------------|---|
| | single unit \ overall Protection \ Full charge protection | | | | |
| Discharger | Normal | Based on power indication | off | blink 3 | |
| | Alert | Based on power indication | blink2 | blink 3 | Alarms contain the following categories, high differential pressure alarms, low capacity alarms, individual voltage, overall voltage, all temperature alarms (core temperature high and low, ambient temperature high and low, MOS temperature high; overcurrent alarms, overcurrent alarms, and overcurrent alarms). core |

| | | | | | |
|-------------|--|---------------------------|--------|-----|---|
| | | | | | temperature, ambient temperature, MOS temperature, overcurrent alarm). overcurrent alarm) |
| | Single \ Integral Undervoltage protection | Based on power indication | blink2 | off | |
| | Over current, short circuit protection | off | on | off | |
| | temperature protection | off | on | off | |
| Malfunction | NTC Fault, MOS Failure, reverse connection, Differential pressure protection | off | on | off | |

| | | | | | |
|--|--|--|--|--|--|
| | , over Low voltage protection | | | | |
|--|--|--|--|--|--|

Figure 4. operational state

Flashing instructions are as follows：

| Flashing mode | On | Off |
|---------------|--------|-------|
| Blink1 | 0.25 S | 3.75 |
| Blink2 | 0.5 S | 0.5 S |
| Blink3 | 0.5 S | 1.5 S |

Table 5: Indicator light flashing description

V. On-screen operating instructions

5.1 Setup page



Figure 4. Setup page

This page shows the settings, where you can set the desired language, time, brightness, standby time, protocol selection, and view version information.

5.2 Language Setting



Figure 5. Language Setting

By clicking on the drop down box, it will expand the options downwards, click on the option to complete the setting.

5.3 Time setting

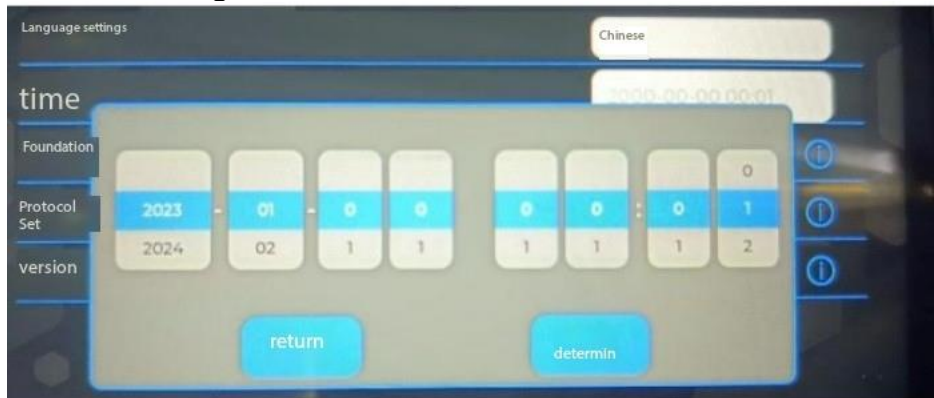


Figure 6. Time setting

Click on the white time input box, the time setting pop-up window will appear from below, select the time and date by sliding the time wheel, and then click on Set to complete the setting.

5.4 Brightness and Sleep Settings

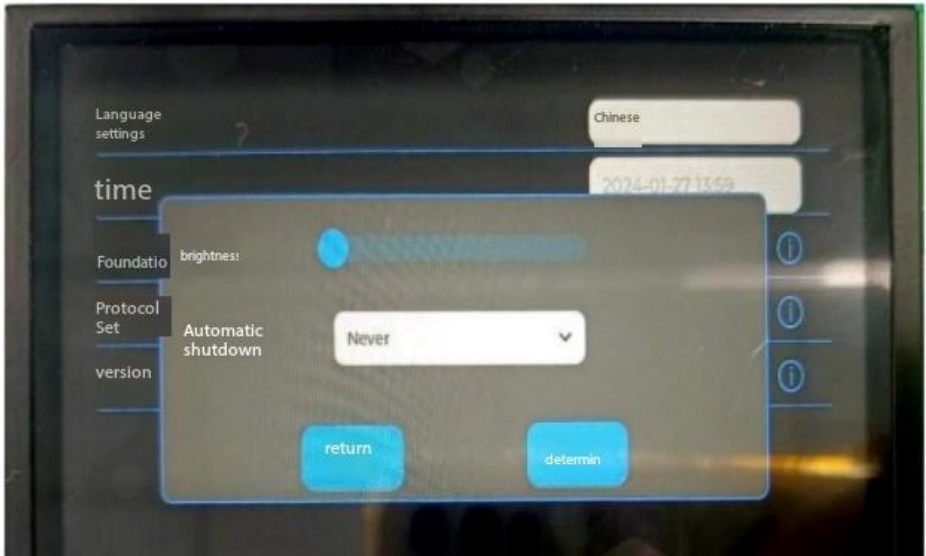


Figure 7. Brightness and Sleep Settings

Expand the settings pop-up window by clicking the expansion button on the far right of the basic settings. Brightness setting: Drag the brightness setting progress bar to set the screen brightness. Hibernation Settings: Click the Hibernation drop-down selection box to select the hibernation time you want to set, during which the screen will turn off if there is no touch, and wake up when there is a touch.

5.5 Protocol Settings

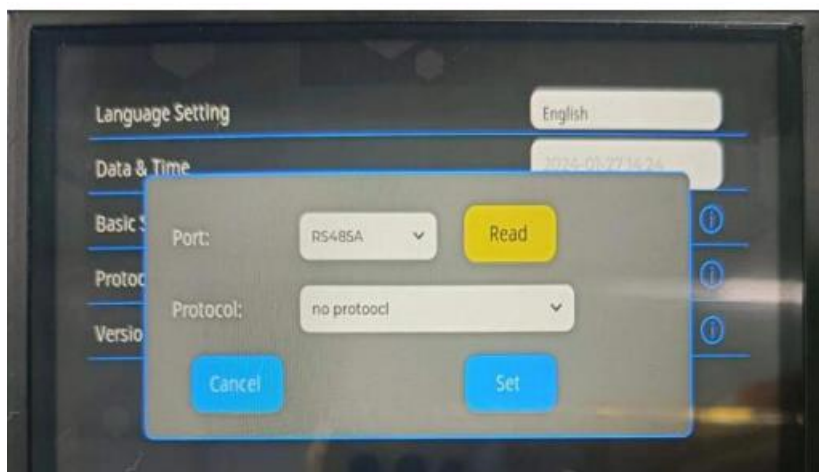


Figure 8. Protocol Setting

Expand the Settings pop-up window by clicking the Protocol Settings expansion button on the far right.

Protocol Setting: Click the port selection box, slide up and down and click to select the protocol you want to set, and click “Read” once.

Select the protocol you want to set and click “Read” once.

Protocol type setting: click the protocol selection box, slide up and down and click to select the protocol you want to set, and finally click “Read”.

Select the protocol you want to set, and then click OK to complete the protocol selection.

5.6 Get version information



Figure 9. Version Information

By clicking on the expanded button on the far right of the version and expanding the pop-up window, you can find out the display version information, as well as the BMS version information.

VI. Storage Instructions

- (1) Batteries need to be stored with SOC $\geq 50\%$;
- (2) Battery storage location needs to be dry and away from the source of goods in the environment;
- (3) Do not store the battery at high temperature ($\geq 45^{\circ}\text{C}$);
- (4) If the battery is to be stored for a long period of time, the battery should be recharged at least once every six months;

VII. Disclaimer

- (1) The contents of this document may be updated from time to time due to product version upgrades or other reasons. Unless otherwise agreed, this document is intended as a guide for use only, and all statements, information and recommendations contained herein do not constitute any warranty, express or implied.
- (2) Before installing the equipment, please read the user's manual for product

information and safety precautions.

(3) All installation and operation of the equipment must be carried out by trained and specialized electrical technicians. The operator must wear personal protective equipment.

(4) Before installing the equipment, please check whether the delivered parts are complete and free from any visible external damage according to the Packing List. If any items are missing or any damage exists, please contact your dealer.

(5) Damage to the equipment caused by failure to follow the documentation is not covered by the equipment warranty.

(6) The cable colors covered in this document are for reference only, and the cables should be selected in accordance with local cable standards.