Manual on Wall Mounted Li-ion Battery

Product model:LFW24100

www.lvfuenergy.com

Revision history

number	Version	Amendments	Revision date
1	V1.0	First edition	2024/4/11

Contents

1. Safety instructions

<table>
<tr><td colspan="2">Danger: Non-compliance with prescribed operating procedures may lead to the occurrence of incidents such as fire, severe bodily harm, or even fatalities.
Attention: Non-compliance with prescribed operating procedures may cause moderate or minor personal injury, as well as system failure or damage. When installing, using, and repairing this system, please read this manual carefully and be sure to follow the safety precautions required in this chapter! Any injury or losses caused by non-compliance with operating instructions are not the responsibility of our company!</td></tr>
<tr><td rowspan="2">Usefulness</td><td>Danger</td></tr>
<tr><td>◆ This series of battery packs must be used together with the compatible inverter, otherwise it may cause system damage.
◆ This series of battery packs is used for energy storage and cannot be used for other purposes, as it may cause system malfunctions or fires.</td></tr>
<tr><td rowspan="2">Arrival inspection</td><td>Attention</td></tr>
<tr><td>◆ If system components are found to be damaged, do not proceed with the installation. Please communicate promptly with and confirm with the manufacturer in a timely manner,</td></tr>
</table>

	otherwise it may affect the project application. ◆ If it is found that the packing list does not match the physical name, communicate and confirm with the manufacturer in a timely manner, otherwise it may affect the project application.
Install	△ Attention
	◆ When handling and installing, please handle with care, otherwise it may cause system damage. ◆This system should be kept away from flammable and explosive materials and heat sources.
Assembly wiring	△ Danger
	◆Installation must be guided by qualified electrical engineering personnel who are familiar with the system, otherwise there is a risk of electric shock or damage to the system. ◆ Before wiring, it is necessary to ensure that the power supply is disconnected, otherwise there is a risk of electric shock or fire.
	△ Attention
	◆ Confirm if the communication wiring is correct, otherwise it may cause abnormal

	operation ◆ Confirm whether the positive and negative pole connections of the power supply are correct, otherwise it may cause system damage.
Running	 Danger
	◆ Only after proper connection can the power be turned on. It is strictly prohibited to plug and unplug the wiring harness when the power is on, otherwise there is a risk of electric shock. ◆Non system familiar professionals are not allowed to change the parameters of the upper computer settings page without authorization, otherwise it may cause system malfunctions or even accidents.
	 Attention
	◆Before running, please confirm whether this system is within the allowable range of use, otherwise it may cause damage to the system. ◆ Before operation, please confirm that the positive and negative wiring screws are tightened, otherwise it may cause system damage
	 Danger

Maintenance inspection	◆ If you want to disassemble the casing, please ensure the power is disconnected, otherwise there will be a risk of electric shock. ◆ Please designate qualified electrical engineering for maintenance, inspection, or replacement of components to prevent accidents.
Others	⚠ Danger
	◆ Do not squeeze, puncture, drop, vibrate, heat or short-circuit, and keep away from corrosive substances. ◆ Do not disassemble the battery by yourself. Incorrect disassembly can cause short circuits and other problems such as fire, gas, and even explosion; ◆ Do not place the battery in a fire. Otherwise, it may cause very dangerous situations such as fire and explosion.
	⚠ Attention
	◆If deformation, swelling, leakage or other issues are found, please do not use. ◆ Do not place the battery in substances such as water or liquids.

2. Introduction to Basic Functions of Wall mounted Battery

The product is a Wall mounted lithium battery pack that can be combined with an adaptive inverter to form a household energy storage system. AC mains supply or solar energy is converted into direct current or electric energy within appropriate voltage range through an inverter or a photovoltaic panel to charge the battery pack and store electric energy for use when needed. When the electric energy is needed, it will be converted into alternating current through an inverter (grid-connected or off-grid depending on user needs and inverter functions) to supply power to the user's electrical equipment.

The outline of Wall mounted battery LFW24100 is shown in the figure below:

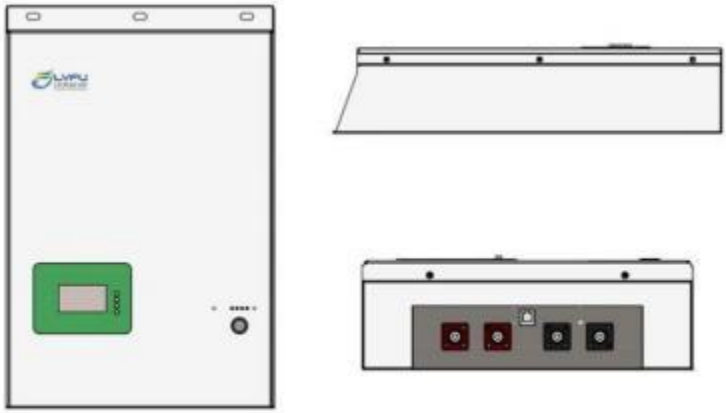


Fig. 1 LFW-24100 Outline Drawing

Its application is as follows:

Fig. 2 Application Diagram

Technical parameters of the battery are detailed in the table below:

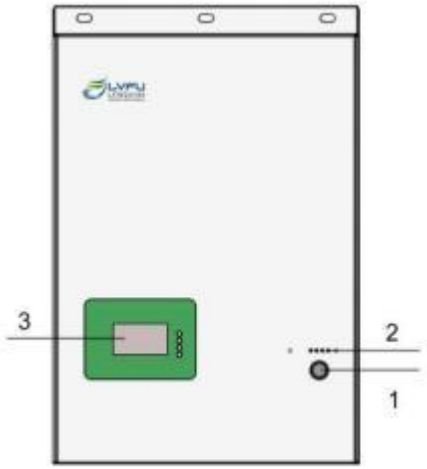
Table 1. Technical Parameters of Wall mounted Battery LFW-24100

Model		LFW-24100
Specifications		24V100Ah
Battery Parameters	Battery type	LFP(LiFePO4)
	Nominal voltage (V)	25.6
	Range of operating voltage (V)	21.6-29
	Floating charge voltage (V)	27
	Equalized charging voltage (V)	28
	Conditions for opening step-up charging (V)	Total voltage ≥ 28
	Trickle charge current	25
	Max. charge voltage (V)	29.04
		or unit ≥ 3.63
	Max. charge / discharge current (A)	50/100
	Discharge cut-off conditions	SOC ≤ 5%, or
		Total voltage ≤ 23.2
		or unit ≤ 2.9
	Rated capacity (Ah)	100AH
	Rated energy (kWh)	2.56
	Charge Temperature	0~55℃
	Discharge Temperature	-20~55℃
	Storage Temperature	-30℃~45℃（1 month）; -30℃

		~35℃（6 months）
General Characteristics	Dimensions (W*D*H)	562*372*125(±3)mm
	Weight of battery pack (Kg)	28±3
*** The rated capacity refers to the current released by charging at 0.5C to the cut-off state at 25 ± 5 ℃, and then discharging at 0.5C to the cut-off state after standing for 30min.**		

3. Structure and Functions of Wall mounted Battery

The interface and its definition of LFW-24100 Wall mounted battery is as follows:



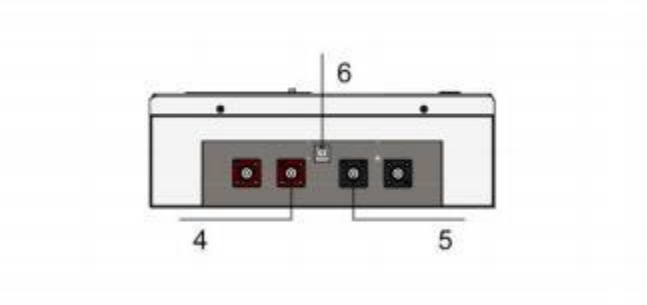


Fig. 3 Wall mounted Battery Interface and Components Diagram

No	Components of Interface	Silk Screen and Identification	Functions
1	Self-lock button switch	\	On & off
2	Indicators	SOC, ALM, RUN	Display the SOC status, running status and alarm status
3	Display screen	\	Display battery running, alarm and other information
4	Positive power terminal	+	Positive battery output terminal
5	Negative power terminal	-	Negative battery output terminal
6	Communication interface	CAN485/RS485	Used for communication and software upgrade of fender upper computer

Table 2 .Details of LFW-24100 Wall-mounted Battery Interface

4. Mounting and Usage Instructions for Wall mounted Battery

4.1. Unpacking and Inspection

After unpacking, check if the goods are complete according to the packing list in the document, and check the battery pack for appearance, the device for integrity and correctness, and the battery case for deformation and corrosion.

LFW-24100 battery packing list:

(1)LFW-24100 battery pack ×1

(2)Wire harness ×1 set (including 25 m^2 0.8m positive wire ×1, 25 m^2 0.8m negative wire ×1, 0.4m grounding wire ×1)

(3)Instructions ×1 (this product)

(4)Expansion screw ×3

(5)Decorative protective cover of expansion screw ×3

(6)Oval foot pad ×3

4.2. Precautions Before Mounting

(1)Before mounting the battery module, please carefully check if the battery's open-circuit voltage is normal, and if there are any case damages or leakage;

(2)During the mounting process, please use insulation tools, wear insulating gloves, and remove metal containing conductors such as watches and bracelets to avoid electric shock or short circuits between the positive and negative terminals;

(3)The battery should be mounted in a place far away from heat sources or metal sparks, with a safe distance of more than 0.5m;

(4)Batteries of different models, performances and manufacturers should not be connected together;

(5)The connection wires for battery pack mounting should be as short as possible to prevent excessive line losses.

(6)The battery should be protected from direct sunlight, environments

with radioactive substances, infrared radiation, organic solvent gases, and corrosive gases, and away from doors, windows, air conditioning, exhaust fans, etc.

4.3. Mounting and Operating Steps

4.3.1. Stand-alone Use

(1)Before mounting the battery, please make sure that the system end battery switch is in the OFF status to prevent sparking.

(2)Keep the battery in a non-operating status (indicator is off).

(3)Connect the negative terminal (P-) of the battery to that of the system using a wire.

(4)Connect the positive terminal (P+) of the battery to that of the system using a wire.

(5)After mounting the battery system, pay attention to the insulation of battery posts, and cover the insulation cover

4.3.2. Parallel Connection

If parallel connection is required, please detect the voltage of each battery module before parallel connection, the difference between which should be lower than 0.5V; Exceeding the value requires adjusting the voltage through charging and discharging and waiting for at least 15 minutes before proceeding with the operation.

The parallel connection method is as follows:

Parallel power lines: Use a wire to connect the positive terminal of the battery to that of another device, and the negative terminal of the battery to that of another device. It is prohibited to connect batteries in series;

After mounting the battery system, pay attention to the insulation of battery posts, and cover the insulation cover.

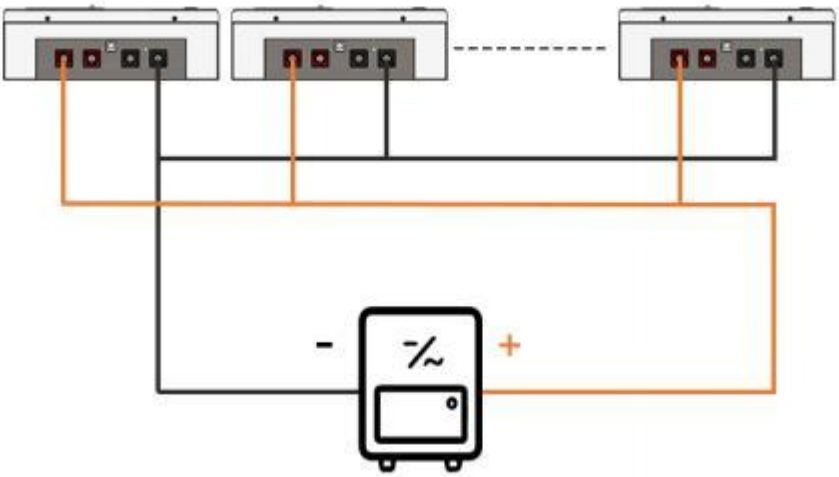


Fig. 4 Parallel Wiring Diagram

4.4. Wall Mounting

As shown in Fig. 5, mount expansion screws on the wall, stick an oval foot bad on the back of the battery pack, and hang the battery on the wall through the upper through hole. Decorative protective cover of expansion screw can be used for decoration.

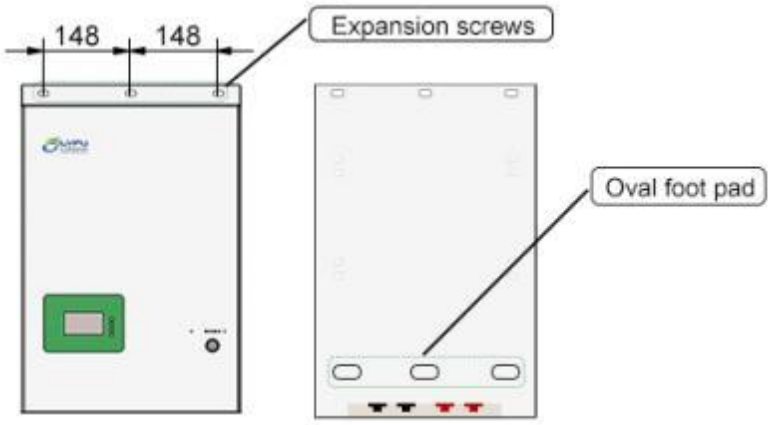


Fig. 5: Mounting Diagram of the Case

4.5. Startup, Shutdown and Running

4.5.1. Startup

If the BMS is in hibernation status, pressing ON of the button switch, BMS is started and switched to normal operating status after LED indicators light up in turn.

4.5.2. Shutdown / hibernation

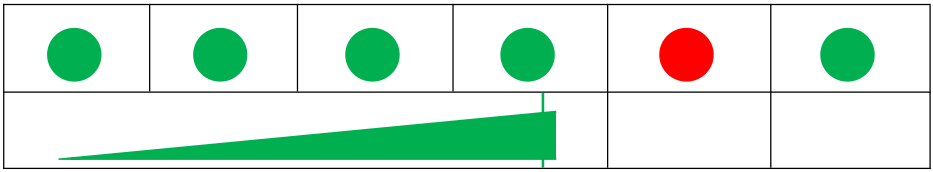
If the BMS is in standby or discharge status, pressing OFF of the button switch, BMS is switched to hibernation status after LED indicators light up in turn. No power consumption of BMS after hibernation.

4.5.3. Status Display

When the battery is in different operating modes, different indications will be sent from LED on the panel.

(1)LED: 4 green capacity indicators, 1 red warning indicator, and 1 green running indicator

SOC1	SOC2	SOC3	SOC4	ALM	RUN



(2)Capacity Indicator

Status	Charge				Discharge			
Capacity Indicator	SOC1●	SOC2●	SOC3●	SOC●	SOC●	SOC2●	SOC3●	SOC4●
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	ON	Flash 2	Off	ON	ON	ON	Off
75-100%	ON	ON	ON	Flash 2	ON	ON	ON	ON
Running Indicator●	ON				Flash 3			

(3)Status indication

Status Indicator:System Status	Abnormalities	Power LED	ALM	RUN	Description
		● ● ● ●	●	●	
Shutdown	Shutdown	All off			
tandby	Normal	Based on power indication	Off	Flash 1	The standby status only appears as normal or alarm, and
	Alarm		Flash 2	Flash 1	

					protection and fault are reported in charge /discharge status. Alarms include high dropout voltage alarm, low capacity alarm, high / low unit voltage alarm, high / low overall voltage, and all temperatur e alarms (high / low cell temperatur e, high / low ambient temperatur

					e, high MOS temperatur e)
Charge	Normal	Based on the power indication (when power indication is maximum , the LED flashes 2)	Off	ON	
	Alarm		Flas h 2	ON	Alarms include high dropout voltage alarm, low capacity alarm, low unit voltage alarm, low overall voltage, and all temperatur e alarms (high / low cell temperatur e, high / low ambient temperatur e, high MOS temperatur e,

					overcurrent alarm)
	Unit/overall overvoltage protection/full charge protection	Based on power indication	Off	ON	
	Overcurrent protection (current-limiting charge)	Based on the power indication (when there is charging current, the power indication is maximum, and the LED flashes 2)	Off	ON	After charging overcurrent protection, it enters current-limiting charge mode with charging current, displayed in normal status. After charging overcurrent protection, it enters current-limiting

					charge mode without charging current, displayed in fault status, ALM ON, and others off
	Temperatureprotection	All off	ON	Off	Cell, MOS, environment
Discharge	Normal	Based on power indication	Off	Flash 3	
	Alarm	Based on power indication	Flash 2	Flash 3	Alarms include high dropout voltage alarm, low capacity alarm, high / low unit voltage alarm, high /

					low overall voltage, and all temperatur e alarms (high / low cell temperatur e, high / low ambient temperatur e, high MOS temperatur e, overcurrent alarm)
	Unit/overall undervoltage protection	Based on power indication	Flas h 2	Off	
	Overcurrent protection, short circuit protection	All off	ON	Off	
	Temperature protection	All off	ON	Off	Cell, MOS, environmen t
Fault	NTC fault, MOS fault, reverse connection,	All off	ON	Off	

	dropout voltage protection, ultra-low voltage protection				

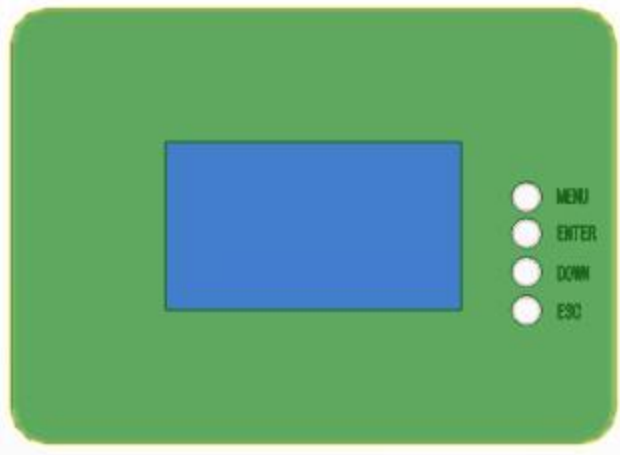
(4)Flash description:

Flash mode	On	Off
Flash 1	0.25s	3.75S
Flash 2	0.5S	0.5S

5. Screen Operation Description

5.1. Keys

This product is equipped with 4 keys, the functional order of which from top to bottom is as follows: MENU, ENTER, DOWN, ESC. "》": a SUBMENU exists, press ENTER to enter the submenu.



Button functions:

MENU: press this key to enter the administration system

ENTER: press this key to enter the submenu

DOWN: press this key to move the cursor down or page down

ESC: press this key to return to the previous menu

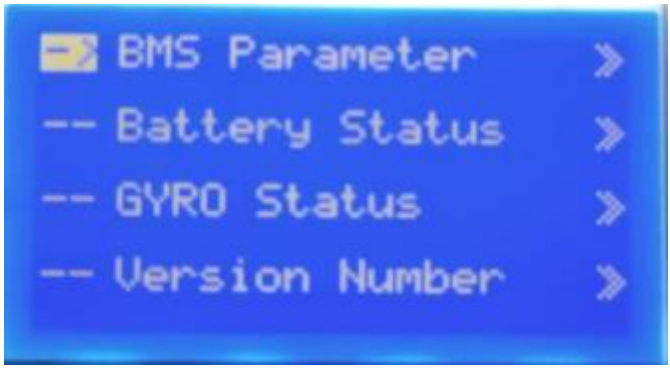
5.2. Function Introduction

(1)The startup interface displays the following information:

System Date	SOH
Charge / discharge current	Maximum cell temperature
Total voltage	Minimum cell temperature
Battery capacity	\
Maximum voltage of a single section	Minimum voltage of a single section

(2)Press MENU to enter the main menu

--BMS Parameter	》	-->	BMS parameters
**Battery Status	》	-->	Battery status
**GYRO Status	》	-->	Gyroscope status
**Version No.	》	-->	Version No.

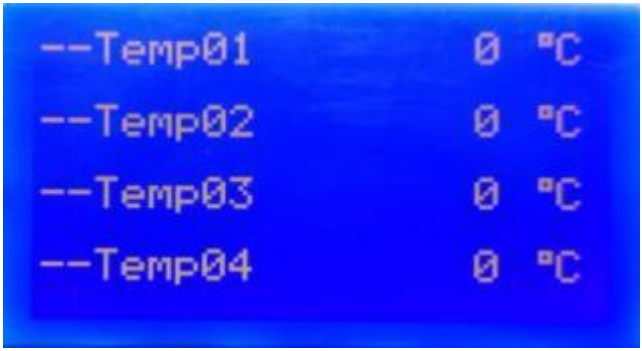


(3)Move the cursor on "BMS Parameter》" and press ENTER:

--Voltage:	--> Total voltage: XX V
**Current:	--> Current: 0.0A
**Cell Temp》	--> Battery temperature 》
**Cell Vole》	-> Battery voltage》

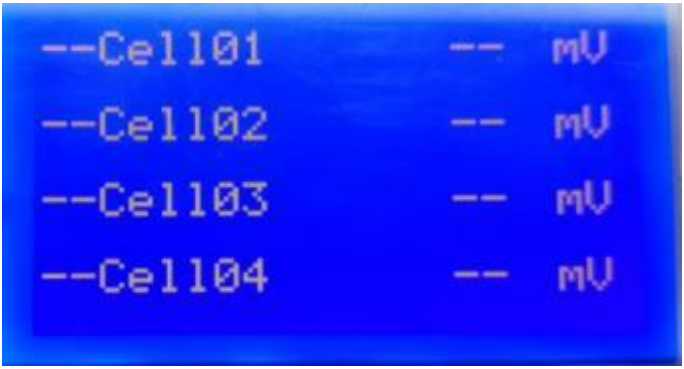
(4)Move the cursor on "Cell Temp》" and press ENTER to enter the Battery Temperature Information interface, and press "▽" to page down

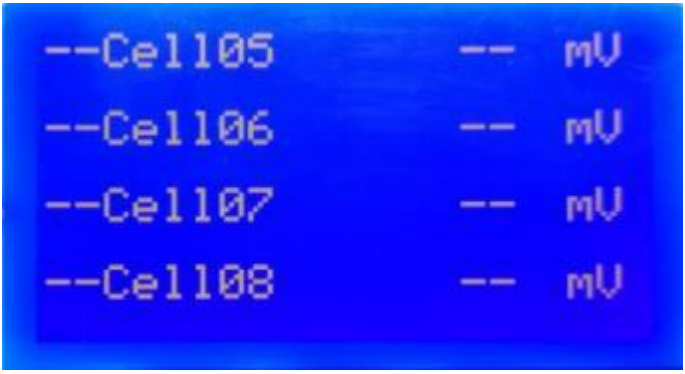
--Temp01:xx℃	-->	Temperature 01
-Temp02:xx℃	-->	Temperature 02
-Temp03:xx℃	-->	Temperature 03
--Temp04:xx℃	-->	Temperature 04
--MOS Temp:xx℃	-->	MOS temperature
--Env Temp:xx℃	-->	Ambient temperature

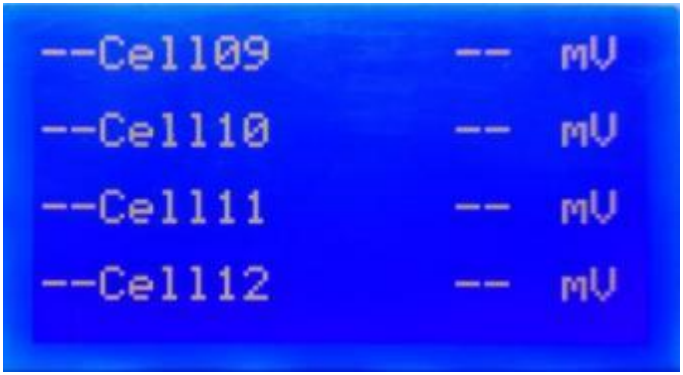


(5)Move the cursor on "Cell Volt》" and press ENTER to enter the Battery Voltage Information interface, and press "▽" to page down

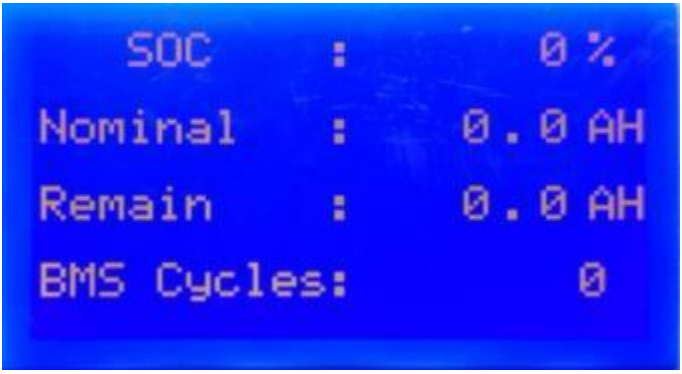
--Cell01:	xxxxmV	-->	Voltage	01:
--Cell02:	xxxxmV	-->	Voltage	02:
--Cell03:	xxxxmV	-->	Voltage	03:
--Cell04:	xxxxmV	-->	Voltage	04:
--Cell05:	xxxxmV	-->	Voltage	05:
--Cell06:	xxxxmV	-->	Voltage	06:
--Cell07:	xxxxmV	-->	Voltage	07:
--Cell08:	xxxxmV	-->	Voltage	08:


--Cell01 -- mV
--Cell02 -- mV
--Cell03 -- mV
--Cell04 -- mV


--Cell05 -- mV
--Cell06 -- mV
--Cell07 -- mV
--Cell08 -- mV


--Cell09 -- mV
--Cell10 -- mV
--Cell11 -- mV
--Cell12 -- mV

--SOC:	-> SOC capacity
--Nominal:	--> Nominal capacity
--Remain:	-> Set residual capacity
--BMS Cycles:	--> BMS number of cycles

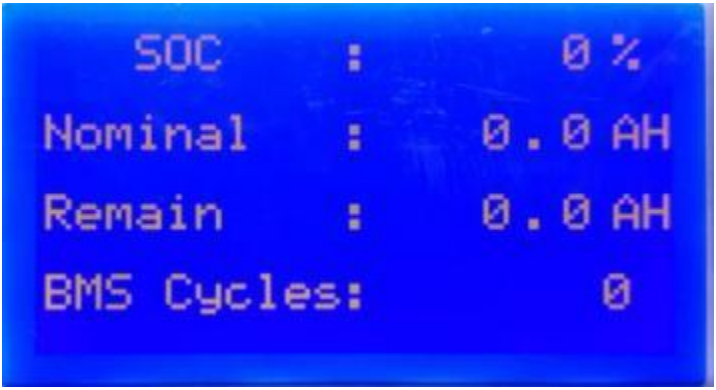


(6)Move the cursor on "Battery Status》 " and press ENTER to enter the Battery Status Information interface, and press "▽" to page down

--Status:	--> Status (idle / charging / discharging / full charge)
--Alarm Status: 》	--> Alarm status
--Protect Status: 》	--> Protection status
--Failure Alarm: 》	--> Fault alarm

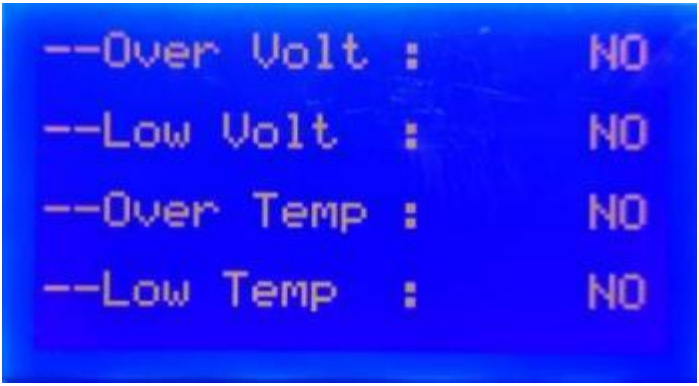
(7)Move the cursor on "Alarm Status》 " and press ENTER to enter the Battery Alarm Information interface, and press "▽" to page down

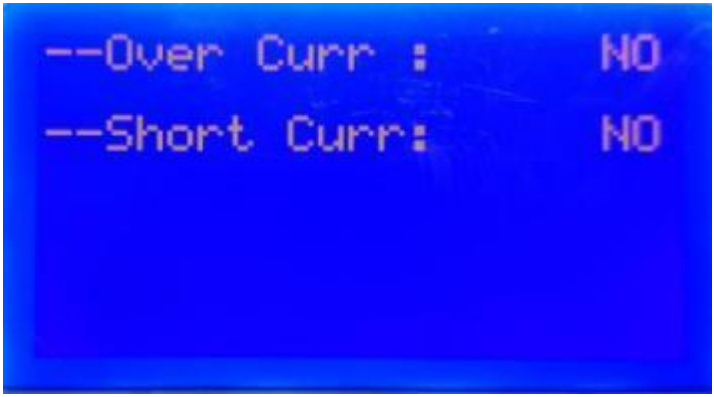
--	Over Volt YES/NO	-->	Over-voltage alarm	Yes / No
--	Low Volt YES/NO	-->	Under-voltage alarm	Yes / No
--	Over Temp YES/NO	-->	Over-temperature alarm	Yes / No
--	Low Temp YES/NO	-->	Under-temperature alarm	Yes / No
--	Low SOC YES/NO	-->	Capacity alarm	Yes / No
--	Diff Volt YES/NO	-->	Dropout voltage alarm	Yes / No
--	Over Curr YES/NO	-->	Over-current alarm	Yes / No
--	Reverse YES/NO	-->	Reverse connection alarm	Yes / No



(8)Move the cursor on "Protect Status》" and press ENTER to enter the Battery Protection Information interface, and press "▽" to page down

-- Over Volt YES/NO	-> Over-voltage protection Yes / No
-- Low Volt YES/NO	-> Under-voltage protection Yes / No
-- Over Temp YES/NO	--> Over-temperature protection Yes / No
-- Low Temp YES/NO	--> Under-temperature protection Yes / No
-- Over Cur YES/NO	--> Over-current protection Yes / No
-- Short Cur YES/NO	--> Short-circuit protection Yes / No



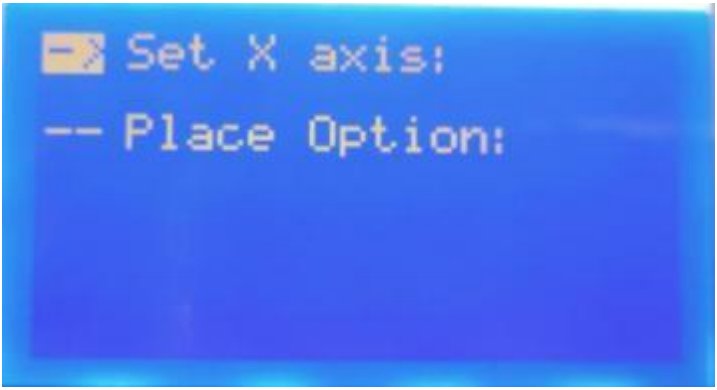


(9)Move the cursor on "Failure Alarm》 " and press ENTER to enter the Battery Fault Information interface, and press "▽" to page down

--Sample Line	--> Sampling line disconnected fault
--Charge MOS	--> Charging MOS fault
--Dis CHG MOS	--> Discharging MOS fault
--Sample Chip	--> AFE front end sample cell fault (ultra-high / low unit voltage)
--SCP Times	--> Short circuit protection frequency
--Over Temp CNT	--> Temperature protection frequency
--Over Cur CNT	--> Over-current protection frequency
--OVER Chg CNT	--> Over-voltage protection frequency
--Over Dchg CNT	--> Under-voltage protection frequency

(10)Move the cursor on "GYRO Status》 " and press ENTER to enter the Gyroscope Information interface, and press "▽" to flip over

--Set X axis	--> Set X and Y axes
--Place Option	-->Set horizontal and vertical



Note: Gyroscope setting is optional

(11)Move the cursor on "More》" and press ENTER to enter the More interface, and press "▽" to flip over

--Protocol:	》	--> Protocol selection(This item cannot be used)
--BMS Version:	》	-->BMS version information
--LCD Version:	》	-->LCD version information

(12)Move the cursor on "Protocol》" and press ENTER to enter the Serial Port interface, and press "▽" to flip over

--RS485A	》	--> Select serial port RS485A
--RS485B	》	--> Select serial port RS485B
--RS485C	》	--> Select serial port RS485C

--CAN1	》	--> Select serial port CAN1
--CAN2	》	--> Select serial port CAN2

(Take the serial port RS485A as an example) Move the cursor on "RS485A》 " and press ENTER to enter the Serial Port Selection interface, and press "▽" to flip over

Current Potocol:	--> The second line is the current protocol
9600 DR1363	--> 9600 refers to the baud rate, and OtherDR1363 is the protocol name
agreements》	--> Select other protocols

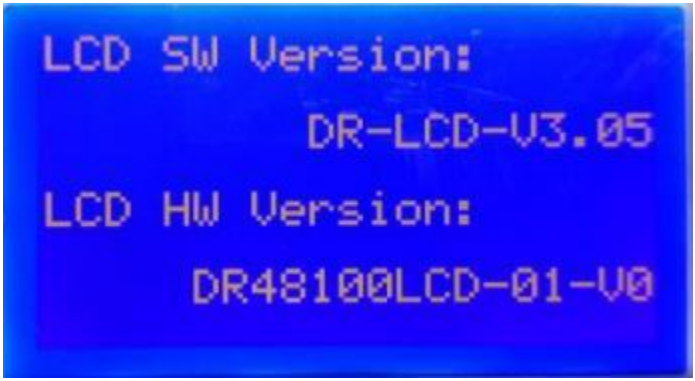
Press ENTER to enter Other Protocols (which includes all the protocols supported by the current serial port), then press "▽" to flip over, move the cursor to the corresponding protocol, and press ENTER to complete the selection.

(13)Move the cursor on "BMS Version》 " and press ENTER to enter the BMS Version Information interface

--BMS SW Version:	-->BMS software version
--BMS HW Version:	-->BMS hardware version

(14)Move the cursor on "LCD Version》" and press ENTER to enter the LCD Version Information interface

--LCD SW Version:	-->LCD software version
--LCD HW Version:	-->LCD hardware version



5.3. Hibernation and Activation

In normal operation status, after 1 minute of no key operation, the display system will be in an off screen status (only the backlight will be off). In an off screen status, pressing any keys can return the display screen to normal running.

6. Storage instructions

(1)When storing batteries, it is necessary to ensure that the SOC is ≥ 50%;

(2)The battery storage location should be dry and away from the source of goods;

(3)If the battery needs to be stored for a long time, it should be recharged at least once every three months.

7. Declaration

(1)Due to product version upgrades or other reasons, the content of this document will be updated from time to time. Unless otherwise agreed, this document is for instructional purposes only. All statements, information, and advice in this document do not constitute any express or implied warranties.

(2)Before installing the equipment, please read the user manual carefully to understand product information and safety precautions.

(3)All installation operations of the equipment must be performed by trained and qualified electrical technicians. Operators must wear personal protective equipment.

(4)Before installing the equipment, please check the delivery items according to the "Packing List" to ensure that all the items are complete and intact, without any obvious external damage. If anything is missing or damaged, please contact your dealer.

(5)Equipment damage caused by failure to operate according to the document is not covered under the equipment warranty.

(6)The cable colors mentioned in this document are for reference only, and the selection of cables should comply with local cable standards.

Chengdu Greenfaith New Energy Technology Co., Ltd.

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Web:www.lvfuenergy.com