

Manual on LiFePO₄ Battery

Product model:LFF51280






Revision Record



NO.	Version	Context	Time
1	V1.0	First Edition	2024/10/1




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1. Security Instructions

Arrival inspection	 Attention
	<ul style="list-style-type: none">◆ 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, 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
	<ul style="list-style-type: none">◆ 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.
	 Danger

Assembly wiring	<ul style="list-style-type: none"> ◆ 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
	<ul style="list-style-type: none"> ◆ 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
	<ul style="list-style-type: none"> ◆ 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
	<ul style="list-style-type: none"> ◆ 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
Maintenance inspection	 Danger
	<ul style="list-style-type: none"> ◆ 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.
	 Danger
	<ul style="list-style-type: none"> ◆ Do not squeeze, puncture, drop, vibrate, heat or short-circuit, and keep away from corrosive substances.

Others	<ul style="list-style-type: none"> ◆ Do not disassemble the battery by yourself. <p>Incorrect disassembly can cause short circuits and other problems such as fire, gas, and even explosion;</p> <ul style="list-style-type: none"> ◆ Do not place the battery in a fire. Otherwise, it may cause very dangerous situations such as fire and explosion.
	 Attention
	<ul style="list-style-type: none"> ◆ 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. LFF-51280 Floor Standing battery basic function introduction

This is a Floor Standing lithium battery 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.

LFF-51280F Floor Standing battery battery products appearance, as Figure

1

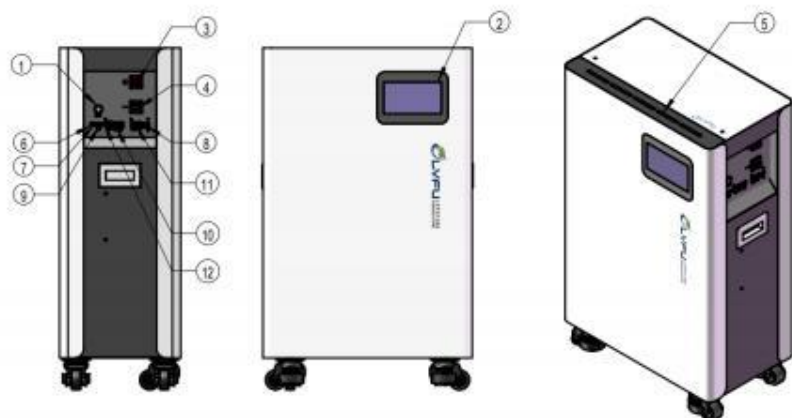


Figure 1.ST-51280F Floor Standing battery battery product profile

ST-51280F standard battery application scenario, as shown in Figure 2



Figure 2. ST-51280F standard battery application scenario

ST-51280F technical parameters:

Table 1: ST-51280F standard battery technical parameters

Type		ST-51280F
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
	Charge Temperature	0~55℃
	Discharge Temperature	-20~55℃
	Storage Temperature	-30℃~45℃ (1 month) ; -30℃~35℃ (6 months)
General Characteristics	Size(W*D*H)±3mm	541.00*316*882.00
	Battery Pack Weight (kg) ±5kg	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.		

3. LFF-51280 Description of the structure and function of the standard battery

The LFF-51280 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

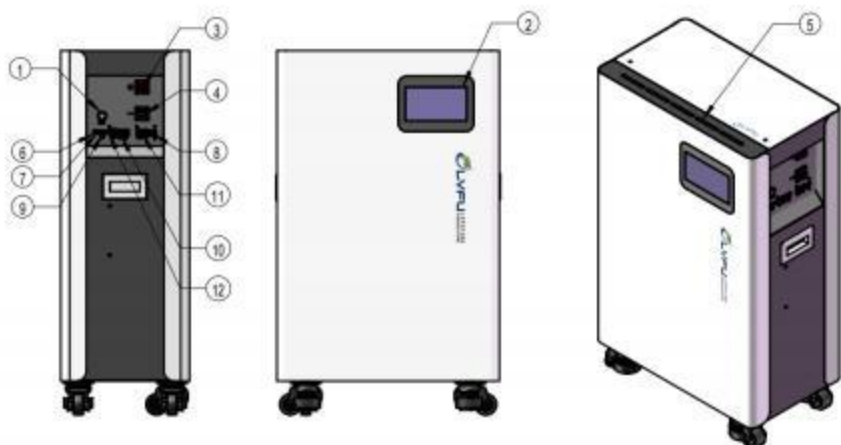


Figure 3 .floor model battery interface details

Table 2.LFF-51280 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

4. 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.

LFF-51280 Battery packing list:

(1)LFF-51280 battery pack×1

(2)wiring × 1 set (50m² *1m Positive Connection Cable×1; 50m² *1m

Negative Connection Cable×1;0.4m earth (cable)×1 , 0.8m network cable×1)
(3)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.

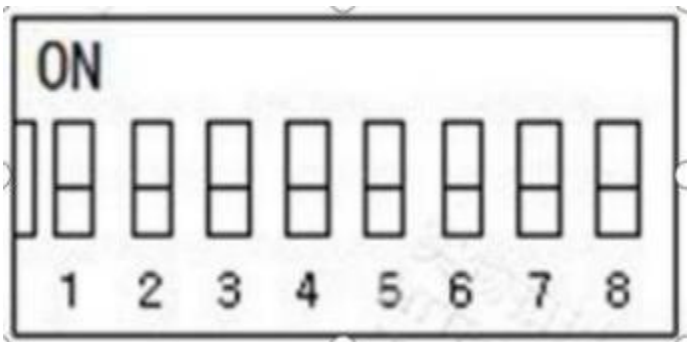


Table 3. DIP Switch Design Chart

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
<p>Note: Selection of the protocol via the host computer or the display Dialing address 5 and 6 must be 0.</p>							

(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			blink 2	on	Alarms: Alarms contain the following categories, alarms for high differential voltage, alarms for low capacity,

					<p>alarms for high and low individual voltage, alarms for high and low overall voltage, alarms for all temperatures.</p> <p>High and low voltage of single unit, high and low overall voltage, and all temperature alarms.</p> <p>(high or low core temperature, high or low ambient temperature, high MOS temperature)</p>
Charger	Normal		off	on	

	Alert	Based on power indication	blink 2	on	<p>Alarms include the following categories, high differential pressure alarm, low capacity alarm, low voltage, low overall voltage, all temperature alarms (battery cell temperature), 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</p>
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					ambient temperature, high MOS temperature; overcurrent alarm)
					High and low core temperature, high and low ambient temperature, high MOS temperature, and overcurrent alarm.)
	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 poweroff indication	poweroff	on	
	Overpressurization of single unit \ overall Protection \ Full charge protection	Based on poweroff indication	poweroff	on	

Discharger	Normal	Based on power off indication		blink 3	
	Alert	Based on power indication	blink 2	link3	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	blink 2	off	
	Over current, short circuit protection	off	on	off	
	temperature protection	off	on	off	
Malfunction	NTC Fault, MOS Failure, reverse connection, Differential pressure	off	on	off	

	protection, over Low voltage protection				
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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

5. 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

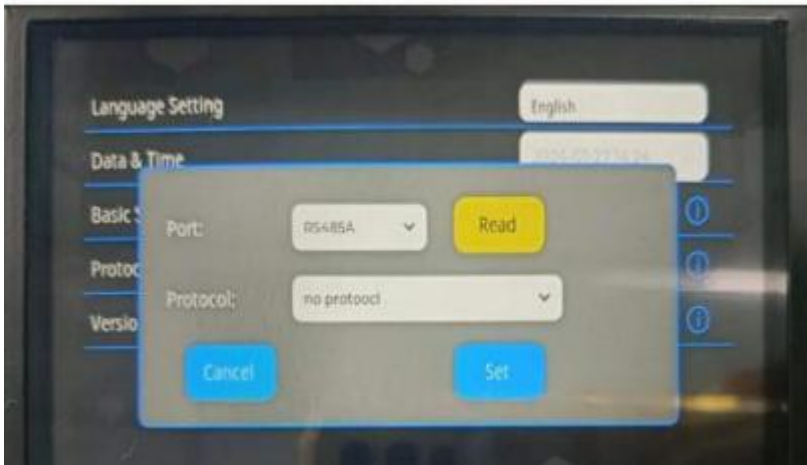


Figure 8. Protocol Setting

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.

6. 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) If the battery is to be stored for a long period of time, the battery should be recharged at least once every three months;

7. 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.



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