



## LiFePO4 (LFP) Battery HS-F1

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### Product manual



#### Applicable model

HS20.48KWH204.8V2S-P65F1

HS30.72KWH307.2V3S-P65F1

HS40.96KWH409.6V4S-P65F1

HS51.2KWH512V5S-P65F1

HS61.44KWH614.4V6S-P65F1

HS71.68KWH716.8V7S-P65F1

HS81.92KWH819.2V8S-P65F1

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# 1 Important Safety Instructions

※ Thank you for choosing EPEVER Lithium Iron Phosphate (LFP) battery, please read this manual carefully before using this product.

※ It is strictly forbidden to install this product in harsh environments such as moisture, salt spray, corrosion, greasy, flammable and explosive, or a large amount of dust accumulation.

※ Please keep this product manual for future reference.



## **Precautions for work and storage**

- a) Please keep the battery in a cool, dry place. The environment should be free of corrosive, explosive and insulation-damaging gases or conductive dust, and away from fire and heat sources and high pressure; It is forbidden to immerse the battery in water; Keep out of reach of children; Pay attention to anti-static electricity (static electricity may damage the battery protection circuit, causing battery damage).
- b) The battery should be safely fixed in a reasonable use of the environment, the connector must be reliably connected to avoid contact friction caused by arc and sparks.
- c) When handling the battery, please handle it gently to avoid mechanical vibration, collision and pressure shock. Otherwise, it may cause internal short circuit of the battery, resulting in high temperature and fire.
- d) Do not short-circuit the positive and negative poles of the battery, and do not disassemble or assemble the battery to avoid danger.
- e) Please keep the battery in a semi-charged state (40%~80% SOC is appropriate). Please wrap the battery with non-conductive materials to avoid direct metal contact with the battery, which may cause battery damage.
- f) Please dispose of waste batteries safely and properly, and do not put them into fire or liquid.
- g) This battery cannot be used in series.



## **Danger warning**

- a) It is strictly forbidden to crush, drop, collide, puncture, burn and other destructive behaviors on the battery.
- b) It is forbidden to disassemble and assemble the battery. Improper disassembly and assembly may damage the protective function of the battery, resulting in deformation, heating, smoke or combustion of the battery.
- c) It is forbidden to short circuit the battery. It is prohibited to connect the positive and negative electrodes of the battery with conductive materials; Do not store or transport the battery with the conductor to avoid battery damage due to short circuit.

- d) It is forbidden to heat and incinerate batteries. It may melt battery components, lose safety features, or burn electrolyte. Overheating can deform, heat, smoke, or burn the battery.



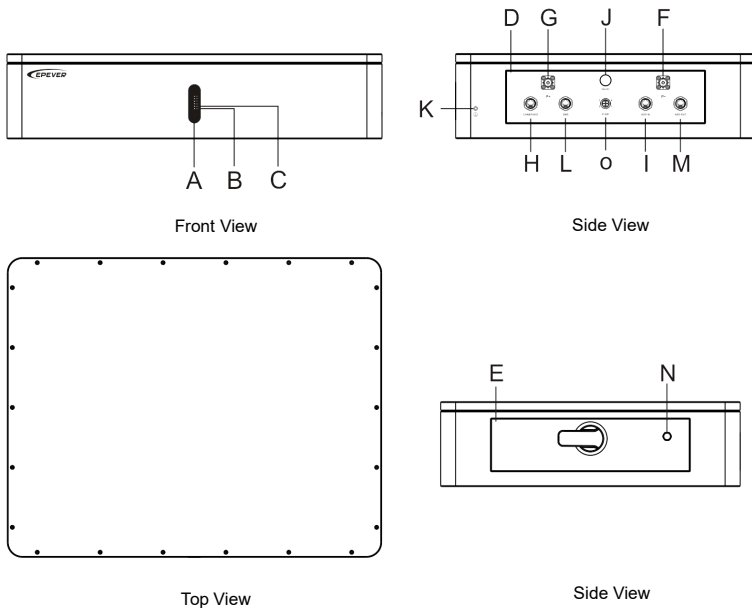
#### **Emergency treatment method**

- a) When the electrolyte leaks, avoid skin and eye contact with the electrolyte. In case of contact, wash immediately with plenty of water and seek help from a doctor. It is forbidden for any person or animal to swallow any part of the battery or the substances contained in the battery.
- b) If the battery is seriously deformed or the electrolyte leaks due to collision and extrusion, the battery should be placed in the explosion-proof box or an open place, and the personnel should be evacuated quickly if conditions permit,.
- c) If the battery catches fire during use or storage, use a high-pressure water cannon to extinguish the fire under the condition of ensuring personal safety.
- d) If the battery catches fire during charging, be sure to turn off the charger as soon as possible before executing the next fire extinguishing action.

## 2 General Information

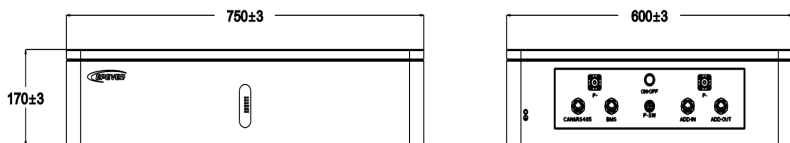
### 2.1 PDU(Power Distribution Unit) Introduction

#### 2.1.1 Appearance

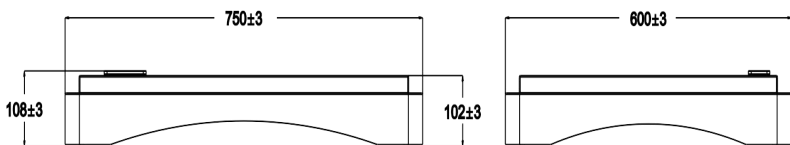


A	Battery SOC indicator	I	Parallel communication interface port
B	Malfunction indicator	J	Weak-current switch
C	Run indicator	K	Grounding screw interface
D&E	Metal handles	L	PC upper computer interface port
F	Negative connector	M	Inverter communication interface port
G	Positive connector	N	Pressure reducing value
H	Inverter communication interface port	O	Dry contact

## 2.1.2 Product size



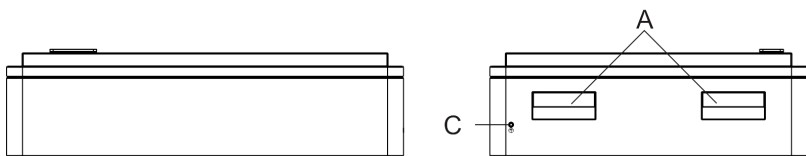
PDU size: L750\*W600\*H170mm



Lithium battery tray size: L750\*W600\*H102mm (excluding terminals)

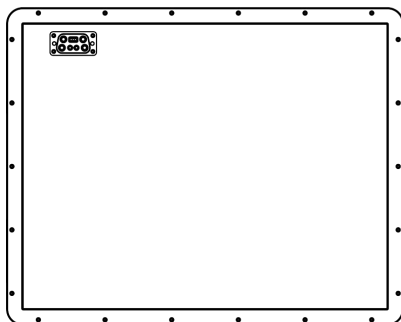
## 2.2 Battery Pack Introduction

### 2.2.1 Appearance

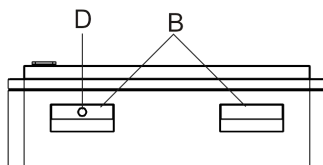


Front View

Side View



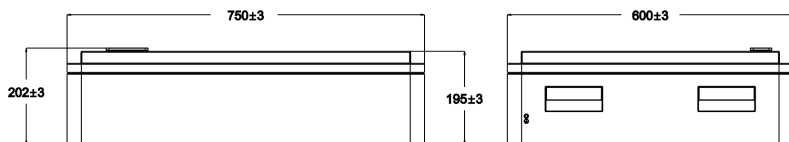
Top View



Side View

A&B	Metal handles	D	Grounding screw interface
C	Pressure reducing value		

## 2.1.2 Product Size



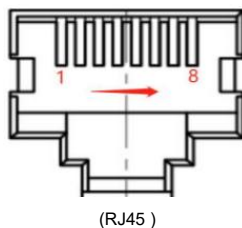
Battery pack size: L750\*W600\*H195mm (excluding terminals)

## 3 Basic Information

### 3.1 Interface definition

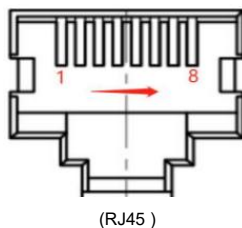
(1) The pins of the CAN/RS485 communication interface are defined as follows, and the RJ45 communication interface is used for the communication connection between the lithium battery and the inverter host.

Pin No	RJ45 Definition
1	NC
2	NC
3	GND
4	CAN-H
5	CAN-L
6	NC
7	RS485A
8	RS485B



(2) The BMS communication interface pin are defined as follows, and the RJ45 communication interface is used to connect the upper computer of the lithium battery PC.

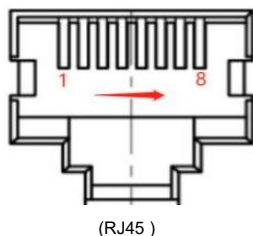
Pin No	RJ45 Definition
1	RS485-B
2	RS485-A
3	NC
4	NC
5	NC
6	NC
7	NC
8	NC





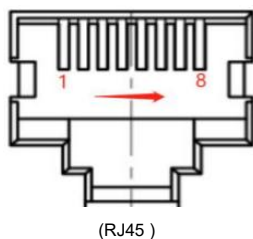
(3) The ADD-IN communication interface pin is defined as follows: RJ45 communication interface is used for parallel communication between lithium battery and lithium battery parallel machine.

Pin No	RJ45 Definition
1	CAN-H
2	CAN-L
3	NC
4	ADD-IN
5	NC
6	NC
7	NC
8	NC



(4) The ADD-OUT communication interface pin is defined as follows: RJ45 communication interface is used for parallel communication between lithium battery and lithium battery parallel machine.

Pin No	RJ45 Definition
1	CAN-H
2	CAN-L
3	NC
4	ADD-OUT
5	NC
6	NC
7	NC
8	NC



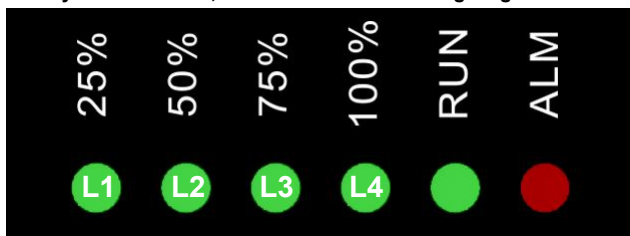
### 3.2 Product features

- It has the function of single voltage and overall voltage detection, over-voltage and under-voltage alarm and protection
- It has the functions of charge and discharge current detection, alarm and protection
- It has the function of cell, environment and PCB temperature detection, and can alarm and protect when charging and discharging at high and low temperature
- It has the function of detection and protection of output short circuit
- With the battery SOC calculation, charge and discharge cycle calculation function

- With a charge balancing function, reduce the charging current of the high-voltage cell (the reduced current is the balance current set by the BMS)
- With LED indicator function, indicating the current battery SOC, battery fault status, operating status, etc;
- BMS manual and automatic sleep function
- With charge current limiting function
- With history storage function (not less than 500 storage capacity)
- With RS485 communication function, real-time monitoring of BMS and battery status
- The two-stage over-current protection function of discharge has different response speed to different current values, which protects the battery more reliably.

### 3.3 LED indicators

① The L1 to L4 of the LED indicator corresponds to the position where the SOC of the battery is 0% to 100%, as shown in the following diagram:



② Explanation of capacity indication in case of malfunction

Protection fault status	Description					
	ALM ●	RUN ●	L4 ●	L3 ●	L2 ●	L1 ●
Cell failure	on solid	off	off	off	off	off
NTC failure	on solid	off	off	off	off	on solid
Precharge fault	on solid	off	off	off	on solid	off
Short circuit fault	on solid	off	off	off	on solid	on solid
Charging contactor fault	on solid	off	off	on solid	off	off
Discharge contactor fault	on solid	off	off	on solid	off	on solid
Precharge contactor failure	on solid	off	off	on solid	on solid	off
Total negative contactor failure	on solid	off	off	on solid	on solid	on solid
Level 3 charging unit overvoltage protection	flashing	off	on solid	off	off	off
Overall overvoltage protection for level 3 charging	flashing	off	on solid	off	off	on solid
Level 3 charging overcurrent protection	flashing	off	on solid	off	on solid	off
Level 3 discharge single unit undervoltage protection	flashing	off	on solid	off	on solid	on solid

Overall undervoltage protection for level 3 discharge	flashing	off	on solid	on solid	off	off
Level 3 discharge overcurrent protection	flashing	off	on solid	on solid	off	on solid
High temperature and low temperature protection for Level 3 charging	flashing	off	on solid	on solid	on solid	off
Level 3 discharge high temperature and low temperature protection	flashing	off	on solid	on solid	on solid	on solid

**Note: when multiple faults occur, two lights(RUN and SOC) will light up.**

③ Description of capacity indication when there is no fault

Capacity indicator		L4●	L3●	L2●	L1●
SOC(%)	0~25%	off	off	off	on solid
	25~50%	off	off	on solid	on solid
	50~75%	off	on solid	on solid	on solid
	75~100%	on solid	on solid	on solid	on solid

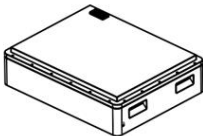




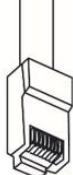

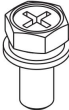
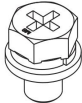
Alarm/ running lights	ALM●	RUN●
LED status	off	flashing 1



Flashing mode	on solid	off
F 1	0.5S	0.5S

## 4 Instructions

### 4.1 Packing list

Before unpacking, please check the outside of the battery for damage to the packaging and check the model of the battery. If there is any abnormality, please do not open the package and contact the after-sales service center as soon as possible. After unpacking the battery, please check whether the product is complete according to the packaging information. If you have any questions, please contact the after-sales service center as soon as possible.

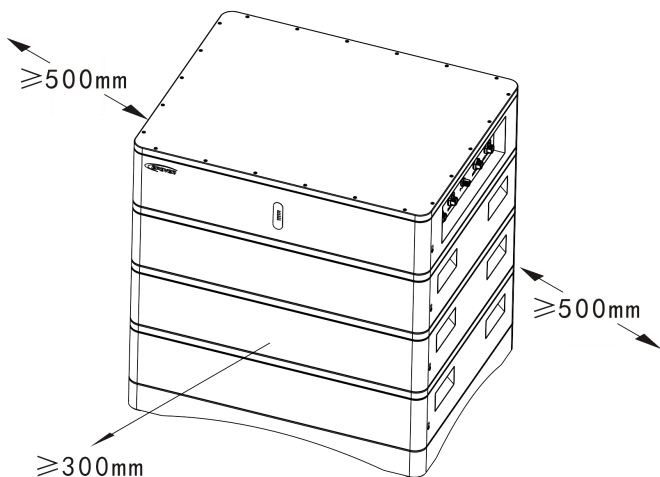
 <p>× 2 • • • 8 Lithium battery</p>	 <p>× 1 PDU</p>	 <p>× 1 Lithium battery tray</p>
 <p>× 1 Positive output power cable</p>	 <p>× 1 Negative output power cable</p>	 <p>× 1 CAN communication cable between the lithium battery and Epever's inverter</p>
 <p>× 1 Battery pack parallel communication cable</p>	 <p>× 3 • • • 9 M6 × 14 bolt group</p>	 <p>× 2 M8 × 12 bolt group</p>

 <p>× 2 RNB22-8 wiring terminal</p>	 <p>× 2 Male plug--4P</p>	
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## 4.2 Installation requirements

### a. Space installation distance

Master and check the performance of all tools and devices to ensure safety before using them. The left and right distance between battery packs is recommended. Minimize the distance as much as possible.














### b. Installation environment

- The battery works best at 20~40°C.
- Avoid installation in environments with direct high temperature and rain.

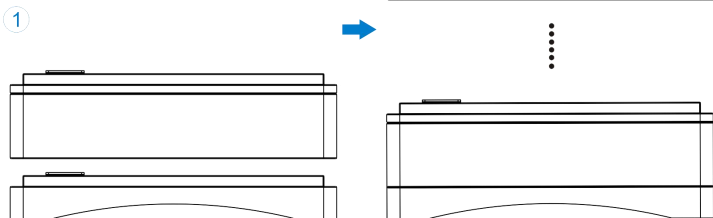
- Avoid installation close to high temperature heat source or low temperature cold source.
- Avoid installation in places where the ambient temperature changes drastically.
- Avoid installation in strong interference environments.
- Avoid installation in places where children can enter.
- Avoid installation in places where water is likely to accumulate.
- It is forbidden to place flammable and explosive materials around the equipment.

### c. Prepare tools

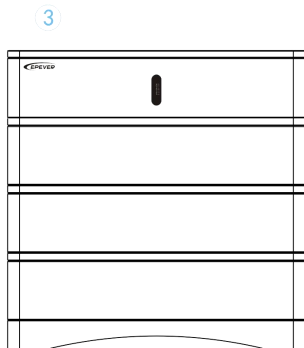
				
Spirit Level	Rubber Hammer	Utility Knife	Insulated Cross Screwdriver	Insulated Slotted Screwdriver
				
Marker Pen	Tape Ruler	Insulation Tape	Electric Screwdriver	Multimeter
				
AC/DC Clamp-On Ammeter				

#### d. Space installation requirements

1. Place the battery tray smoothly on a flat surface as shown in Figure 1, then stack the battery packs aligned with the series plugs.



2. As shown in Figure 2, after stacking the battery packs according to the desired number of strings, complete the product installation by aligning the PDU with the series plug for stacking. (Support 2-8 strings of battery packs for stacking)

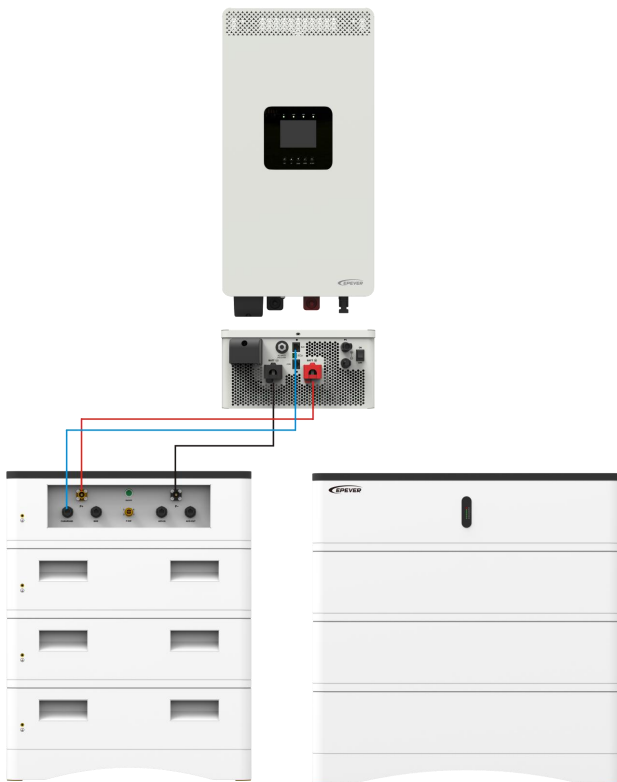


3. The effect after stacking is completed, as shown in Figure 3.



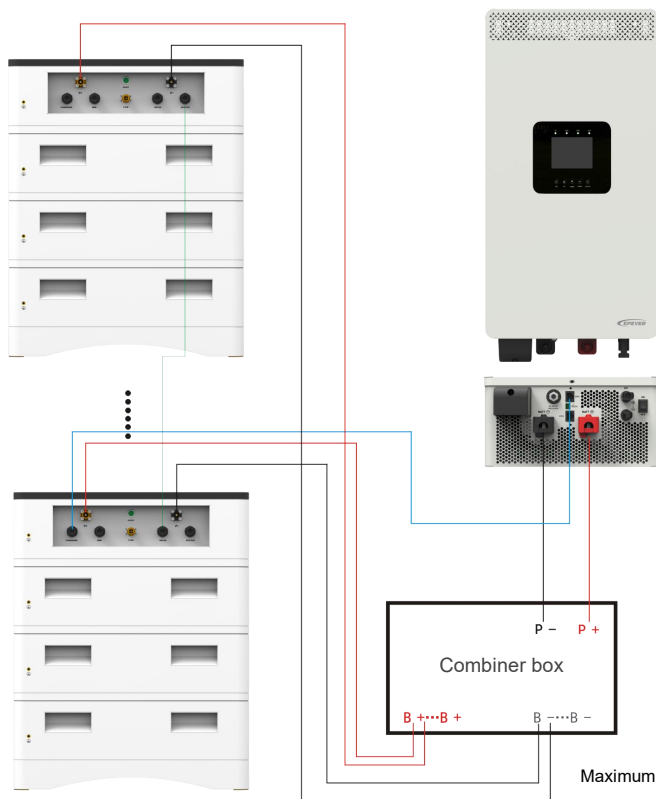
**e. Wiring diagram**

- Connect the inverter



- Positive output power cable (1500mm)
- Negative output power cable (1500mm)
- RS485 communication cable (1500mm)

- **Connect in parallel**



Maximum number of parallel units in the combiner box is 12.

- Positive output power cable (2500mm)
- Negative output power cable (2500mm)
- CAN communication cable between the lithium battery and Epever's inverter
- Lithium battery parallel communication cable (ADD-OUT~ADD-IN) (2000mm)



### Precautions for inverter connection and parallel connection:

According to the above parallel schematic diagram and 2.1 products appearance, select the correct wiring harness for connection.

1. **Output power cable (black and red cables):**The positive connector of the combiner box is connected to the positive terminal of the inverter (*red cable*);The negative connector of the combiner box is connected to the negative terminal of the inverter (*black cable*).
2. **RS485 communication cable (blue cable):**Communication between the host and the inverter. The interface of the host is CAN&RS485 port, and the terminal port of the inverter is BMS port.
3. **Lithium battery parallel power cable:** The positive connector of the host is connected to the positive connector of the combiner box (*red cable*); The negative connector of the host is connected to the negative connector of the combiner box (*black cable*).  
The positive connector of the slave is connected to the positive connector of the combiner box (*red cable*);  
The negative connector of the slave is connected to the negative connector of the combiner box (*black cable*).
4. **Lithium battery parallel communication cable (green cable):** Communication between the host and the slave.The interface of the host is ADD-OUT port, and the interface of the slave is ADD-IN port.



### Warning


1. For operational safety and compliance, please disconnect the communication and cable link with the inverter when storing the battery.
2. During the handling and installation of the battery, it is recommended to wear safety helmets, goggles, protective shoes and other safety equipment suitable for the work to prevent accidental injury;
3. All wiring must be carried out by professionals. With the right cables, the battery connection is essential for the safe and efficient operation of the system. In order to reduce the risk, please use the cable provided by our company, or our recommended cable specifications.

## 4.3 Charging operation

### 1. Check before charging.

- Inspect the appearance of the battery and inverter or other connected equipment to ensure that the power cord and all wiring harnesses are connected.
- Make sure the power supply meets the specification requirements for the battery.

### 2. Turn off the inverter or other equipment, connect the positive and negative terminals of the battery, and connect the communication cable normally.

 **Warning: Before connecting the battery, ensure that the positive and negative terminals are connected. Do not reverse connect.**

### 3. Connect the charger to the power supply and turn on the charger.

### 4. Start the battery, the POWER indicator is on, and the SOC indicator flashes to start charging normally.

#### ● **Standard Charging:**


First, charge the battery to 230.4(2S)~921.6(8S)V with a constant current of 20A (0.2C), and then charge to 5A (0.05C) with a constant voltage of 230.4(2S)~921.6(8S)V.

**Note: All tests stated in this document shall be performed at  $25 \pm 2^{\circ}\text{C}$ .**

## 4.4 Discharge operation

### 1. Before discharging, check whether the load and equipment are turned off.

### 2. Properly connect the positive and negative terminals of the battery to the load/inverter or other equipment.

 **Warning: Before connecting the load and equipment, please confirm the positive and negative wiring of the battery, and prohibit reverse connection.**

### 3. Turn on the load/inverter or other device.

### 4. Start the battery. Press the power button for 3-5 seconds, release and wait for 3-5 seconds, then press again for 3-5 seconds. The POWER indicator is steady on, the RUN indicator is on for 0.5 seconds, and the discharge starts for 1.5 seconds.

#### **Standard discharge:**

After the battery is standard charged, discharging the battery with a constant current of 20A (0.2C) till the battery voltage drops to 166.4(2S)~665.6(8S)V.

**Note: All tests stated in this document shall be performed at  $25 \pm 2^{\circ}\text{C}$ .**

## 4.5 Description of battery parallel capacity and voltage

Number of battery parallel units		1P	2P	3P	4P	5P	6P
Capacity		200Ah	400Ah	600Ah	800Ah	1000Ah	1200Ah
Charge Cut-off Voltage (V)	2S	230.4	230.4	230.4	230.4	230.4	230.4
	3S	345.6	345.6	345.6	345.6	345.6	345.6
	4S	460.8	460.8	460.8	460.8	460.8	460.8
	5S	576	576	576	576	576	576
	6S	691.2	691.2	691.2	691.2	691.2	691.2
	7S	806.4	806.4	806.4	806.4	806.4	806.4
	8S	921.6	921.6	921.6	921.6	921.6	921.6
Discharge Cut-off Voltage (V)	2S	166.4	166.4	166.4	166.4	166.4	166.4
	3S	249.6	249.6	249.6	249.6	249.6	249.6
	4S	332.8	332.8	332.8	332.8	332.8	332.8
	5S	416	416	416	416	416	416
	6S	499.2	499.2	499.2	499.2	499.2	499.2
	7S	582.4	582.4	582.4	582.4	582.4	582.4
	8S	665.6	665.6	665.6	665.6	665.6	665.6

## 5 Protection Features

No	Project			Default parameters	Set state	Note
1	Cell-over voltage protective	level 1	Alarm voltage	3600mV	Settable	Level 1and level 2 only alarms, do not cut off charging; Level 3 cut off charging.
			Alarm delay	3.0S	Settable	
			Alarm release voltage	3500mV	Settable	
			Alarm release delay	2.0S	Settable	
		level 2	Alarm voltage	3650mV	Settable	
			Alarm delay	2.0S	Settable	
			Alarm release voltage	3550mV	Settable	
			Alarm release delay	2.0S	Settable	
		level 3	Protection delay	3700mV	Settable	
			Protection voltage	3.0S	Settable	
			Protection release voltage	3380mV	Settable	
	Protection release delay		3.0S	Settable		
Cell over-voltage protective released		Discharge release	Discharge current>5.0A	Duration > 3S		
2	Cell low-voltage protective	level 1	Alarm voltage	3000mV	Settable	
			Alarm delay	3.0S	Settable	
			Alarm release voltage	3100mV	Settable	
			Alarm recovery delay	2.0S	Settable	
		level 2	Alarm voltage	2900mV	Settable	
			Alarm delay	2.0S	Settable	
			Alarm release voltage	3000mV	Settable	
			Alarm recovery delay	2.0S	Settable	
		level 3	Protection delay	2800mV	Settable	
			Protection voltage	3.0S	Settable	
			Protection release voltage	3000mV	Settable	
	Protection release delay		3.0S	Settable		
Cell low-voltage protective released		Protection release when charging	Charge current>5.0A	Duration > 3S		
	level 1	Alarm voltage	(3.6*N) V	Settable: (3.6*N)V		

3	Total over-voltage protection		Alarm delay	3.0S	Settable	
			Alarm release voltage	(3.5*N) V	Settable: (3.5*N)V	
			Alarm release delay	2.0S	Settable	
		level 2	Alarm voltage	(3.65*N) V	Settable:(3.65*N)V	
			Alarm delay	2.0S	Settable	
			Alarm release voltage	(3.55*N) V	Settable:(3.55*N)V	
			Alarm release delay	2.0S	Settable	
		level 3	Protection voltage	(3.7*N) V	Settable: (3.7*N) V	
			Protection delay	3.0S	Settable	
			Protection release voltage	(3.38*N) V	Settable: (3.38*N)V	
			Protection release delay	3.0S	Settable	
	Total over-voltage protection released		Discharge release	Discharge current >5.0A	Duration > 3S	

4	Total low-voltage protection	level 1	Alarm voltage	(3*N) V	Settable: (3*N) V	
			Alarm delay	3.0S	Settable	
			Alarm release voltage	(3.1*N) V	Settable: (3.1*N) V	
			Alarm release delay	2.0S	Settable	
		level 2	Alarm voltage	(2.9*N) V	Settable: (2.9*N)V	
			Alarm delay	2.0S	Settable	
			Alarm release voltage	(3*N) V	Settable: (3*N)V	
			Alarm release delay	2.0S	Settable	
		level 3	Protection voltage	(2.8*N) V	Settable: (2.8*N) V	
			Protection delay	3.0S	Settable	
			Protection release voltage	(3*N) V	Settable: (3*N)V	

			Protection release delay	3.0S	Settable		
	Total low-voltage protection released		Protection release when charging	charge current >5.0A	Duration > 3S		
5	Charging over-current protection	level 1	Protection current	110A	Settable	1、Protection value reference : level 1: 1.1C level 2: 1.3C level 3: 1.5C 2、10 consecutive occurrences will lock this state and will no longer automatically release it.	
			Protection delay	2.0S	Settable		
			Protection release current	105A	Settable		
			Protection release delay	2.0S	Settable		
		level 2	Protection current	130A	Settable		
			Protection delay	2.0S	Settable		
		level 3	Protection current	150A	Settable		
			Protection delay	3.0S	Settable		
	Charging over-current protection released		Automatic release	Automatically released after 1 min	Settable		
			Discharge release	Discharge current>5.0A	Duration > 3S		
6	Discharge over-current protection	level 1	Protection current	-110A	Settable	1、Protection value reference : level 1: 1.1C level 2: 1.3C level 3: 1.5C 2、10 consecutive occurrences will lock this state and will no longer automatically release it.	
			Protection delay	2.0S	Settable		
			Protection release current	-105A	Settable		
			Protection release delay	2.0S	Settable		
		level 2	Protection current	-130A	Settable Settable		
			Protection delay	2.0S	Settable		
		level 3	Protection current	-150A	Settable		
			Protection delay	3.0S	Settable		
	Discharge over-current protection released		Automatic release	Automatically released after 1 min	Settable		



			Charging release	Charge current>5.0A	Duration > 3S	
7	Temperature protection for charging high-temperature battery cells	level 1	Alarm temperature	40℃	Settable	
			Alarm delay	3.0S	Settable	
			Alarm release temperature	37℃	Settable	
			Alarm release delay	3.0S	Settable	
		level 2	Alarm temperature	45℃	Settable	
			Alarm delay	2.0S	Settable	
			Alarm release temperature	42℃	Settable	
			Alarm release delay	2.0S	Settable	
		level 3	Protection temperature	50℃	Settable	
			Protection delay	3.0S	Settable	
			Protection release temperature	47℃	Settable	
			Protection release delay	3.0S	Settable	
	Temperature protection for discharging high-temperature battery cells	level 1	Alarm temperature	45℃	Settable	
			Alarm delay	3.0S	Settable	
			Alarm release temperature	42℃	Settable	
			Alarm release delay	3.0S	Settable	
		level 2	Alarm temperature	50℃	Settable	
			Alarm delay	2.0S	Settable	
			Alarm release temperature	47℃	Settable	
			Alarm release delay	2.0S	Settable	
		level 3	Protection temperature	55℃	Settable	
			Protection delay	3.0S	Settable	
			Protection release temperature	52℃	Settable	
			Protection release delay	3.0S	Settable	
	Charging low-temperature battery cell temperature protection	level 1	Alarm temperature	5℃	Settable	
			Alarm delay	3.0S	Settable	
			Alarm release temperature	8℃	Settable	
			Alarm release delay	3.0S	Settable	
		level 2	Alarm temperature	2℃	Settable	
			Alarm delay	2.0S	Settable	
			Alarm release temperature	5℃	Settable	

			Alarm release delay	2.0S	Settable	
		level 3	Protection temperature	0℃	Settable	
			Protection delay	3.0S	Settable	
			Protection release temperature	3℃	Settable	
			Protection release delay	3.0S	Settable	
	Discharge low-temperature battery cell temperature protection	level 1	Alarm temperature	-5℃	Settable	
			Alarm delay	3.0S	Settable	
			Alarm release temperature	-2℃	Settable	
			Alarm release delay	3.0S	Settable	
		level 2	Alarm temperature	-10℃	Settable	
			Alarm delay	2.0S	Settable	
			Alarm release temperature	-7℃	Settable	
			Alarm release delay	2.0S	Settable	
		level 3	Protection temperature	-15℃	Settable	
			Protection delay	3.0S	Settable	
			Protection release temperature	-5℃	Settable	
			Protection release delay	3.0S	Settable	
8	Environmental high temperature alarm	level 1	Alarm temperature	55℃	Settable	
			Alarm delay	3.0S	Settable	
			Alarm release temperature	52℃	Settable	
			Alarm release delay	3.0S	Settable	
		level 2	Alarm temperature	60℃	Settable	
			Alarm delay	2.0S	Settable	
			Alarm release temperature	57℃	Settable	
			Alarm release delay	2.0S	Settable	
		level 3	Protection temperature	65℃	Settable	
			Protection delay	3.0S	Settable	
			Protection release temperature	55℃	Settable	
			Protection release delay	3.0S	Settable	
	Environmental low-temperature	level 1	Alarm temperature	-10℃	Settable	
			Alarm delay	3.0S	Settable	
			Alarm release temperature	-7℃	Settable	

	ure alarm	level 2	Alarm release delay	3.0S	Settable	
			Alarm temperature	-15℃	Settable	
			Alarm delay	2.0S	Settable	
			Alarm release temperature	-12℃	Settable	
			Alarm release delay	2.0S	Settable	
		level 3	Protection temperature	-20℃	Settable	
			Protection delay	3.0S	Settable	
			Protection release temperature	-10℃	Settable	
			Protection release delay	3.0S	Settable	
9	Terminal temperature protection	level 1	Alarm temperature	100℃	Settable	
			Alarm delay	3.0S	Settable	
			Alarm release temperature	95℃	Settable	
			Alarm release delay	3.0S	Settable	
		level 2	Alarm temperature	105℃	Settable	
			Alarm delay	2.0S	Settable	
			Alarm release temperature	100℃	Settable	
			Alarm release delay	2.0S	Settable	
		level 3	Protection temperature	110℃	Settable	
			Protection delay	3.0S	Settable	
			Protection release temperature	105℃	Settable	
			Protection release delay	1.0S	Settable	
21	Cell fault		voltage difference	1000mV	Settable	
			Delay	5.0S	Settable	
			release voltage difference	500mV	Settable	
			release delay	1.0S	Settable	
22	Relay failure		Relay adhesion	System fully power off	Settable	Settable
23	Balance function		Balanced opening voltage	3400mV	Settable	Settable
			Open differential voltage	30mV	Settable	
24	Full charge judgment		Full charge voltage (either single pack or actual)	Total voltage> single package summary voltage 56.1V	Settable (single unit voltage 3.51V *	Stop charging when both conditions are met and update

				number of BMU strings * number of BMU)	SOC to 100%.
		Cutoff current	< 2A	Settable	
25	Consumption current	Self consumption during operation		≤3W ( excluding relay drive current)	
		Shutdown mode current		≤0.3W	
26	Severe low-voltage protection		single < 2500mV	Static state lasts for 20 minutes,dis charge lasts for 20 seconds	Release device,system power
			single < 2000mV	4S	
27	Severe high-voltage protection		single > 3800mV	4S	

(Note: Unless otherwise specified, the above parameters are tested at 25°C ambient temperature.)

## 6 Specifications

- Single Battery Pack Parameters

Parameter	HS10.24KWH102.4V-P65F1
Battery Type	LiFePO <sub>4</sub>
Nominal Voltage	102.4V
Nominal Capacity	100
Energy	10240
Continuous Discharge Current	50
Charge Cut-off Voltage	115.2
Discharge Cut-off Voltage	83.2
Maximum Charge Current	50
Maximum Discharge Current	100
Peak Discharge Current	120@10S
Recommend Discharge Current	50
Open-circuit Voltage	101.76~107.2V
Communication	RS485 CAN
Cycle Life	>5000 times (0.5C charge&discharge 80%DOD @25℃)
Number of series/parallel	Max 8 battery packs in parallel
Certification	UN38.3 MSDS IEC62619
Charge&Discharge Temperature	Charge: 0℃~+55℃ Discharge: -20℃~+55℃
Storage Temperature Range	-5℃~+0℃/35℃~+45℃ (≤2month); 5℃~+35℃ (≤3 months, Optimum storage temperature); 15℃~+35℃ (≤6 months)
Relative Humidity	60%±20% RH
Connect Terminal	Quick-plug
Dimension (L x W x H)	750*600*195
Net Weight	94.1±1
IP Class	IP65
Warranty	3 years (See warranty agreement for details)

① Repeat the operation method of standard charging and standard discharge 3 times, and take the third result as the initial capacity of the battery.

② When the battery is stored for more than 3 months, the storage voltage should be maintained at 104~107.2V.

③ For long-term storage, charge at least once every 3 months (no less than 30 minutes@0.2C).

● **PDU Parameter**

PDU Parameter	HS100A800VS-P65F1PDU
Working voltage (V)	150-1000
System operating voltage (V)	150-1000
Maximum Charge Current(A)	100
Maximum Discharge Current(A)	100
Peak Discharge Current (A)	120@10S
Charge and discharge temperature(°C)	Charge: 0°C~+55°C / Discharge: -20°C~+60°C
Storage Temperature Range(°C)	5°C~+35°C
Storage humidity Range(%)	20%~80%
Service life(year)	15+
Dimension (L x W x H)	750*600*170
Net Weight	26.7±0.5
Certification	UN38.3, MSDS,IEC62619
IP Class	IP65

● **Battery model**

Model	HS20.48KWH204.8V2S-P65F1	HS30.72KWH307.2V3S-P65F1	HS40.96KWH409.6V4S-P65F1	HS51.2KWH512V5S-P65F1
Combination	2s	3s	4s	5s
Nominal voltage (V)	204.8	307.2	409.6	512
Nominal capacity	100	100	100	100
Nominal energy(Wh)	20480	30720	40960	51200
Dimension (L x W x H) (MM)	750*600*587	750*600*757	750*600*927	750*600*1097
Weight (kg)	171.3±1	242.4±1	313.5±1	384.6±1

Model	HS61.44KWH614.4V6S-P65F1	HS71.68KWH716.8V7S-P65F1	HS81.92KWH819.2V8S-P65F1
Combination	6s	7s	8s
Nominal voltage (V)	614.4	716.8	819.2
Nominal capacity	100	100	100
Nominal energy(Wh)	61440	71680	81920
Dimension (L x W x H) (MM)	750*600*1267	750*600*1437	750*600*1607
Weight (kg)	455.7±1	526.8±1	597.9±1

## 7 Precautions

### 7.1 Maintenance precautions

Item	Cycle
If the battery is not in use, it needs to be fully charged and discharged to 50%.	3 months
Check whether the wall bracket installation is loose. Please tighten the appropriate position if available.	6 months
Check the casing for damage. If damaged, please repaint or contact after-sales service center.	6 months
Check exposed wires for wear and tear. If the cable is worn, replace the appropriate cable or contact the service center.	6 months
Check for debris buildup around the battery. Clean it to prevent heat dissipation of the battery.	6 months
Check water or pests to avoid long-term intrusion and damage to the battery.	6 months



#### Warning

1. If you find any problems that may affect the battery or the battery and energy storage system, please contact the after-sales service department, disassembly is strictly prohibited.
2. If you find that the copper wire inside the conductive wire is exposed, please strictly prohibit touching it due to the danger of high voltage. Please contact the after-sales personnel, disassembly is strictly prohibited.
3. If there are other emergencies, please contact the after-sales personnel first, operate under the guidance of the after-sales personnel, or wait for the after-sales personnel to operate on site.

## 8 Disclaimers

**The warranty does not apply to the following conditions:**

- Damage caused by improper use or inappropriate environments (It is strictly forbidden to install the Energy Storage System in the humid, salt spray, corrosive, greasy, flammable, explosive, dust accumulative or other harsh environments).
- The actual current/voltage/power exceeds the limit value of the Energy Storage System.
- Damage caused by working temperature exceeding the rated temperature range.
- Electric arc, fire, explosion and other accidents caused by failure to follow the Energy Storage System labels or manual instructions.
- Unauthorized disassembly and maintenance of the Energy Storage System.
- Damage caused by force majeure such as lightning strikes, rainstorms, mountain torrents and Utility failures.
- Damage occurred during transportation or loading/unloading the Energy Storage System.

**Any changes without prior notice! Version number: V1.0**



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