

Residential Series Specification

Product Model : GH-B16

Specifications: 51.2V314Ah

Product Part Number:

Cell Type : LFP

Cell Model: 3.2V314Ah (EVE_MB31)

Version: A0

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1. Battery System Specifications

Type	Item	Parameter	Remarks	
Cell	Cell Type	EVE_MB31		
	Capacity	314Ah		
	Rating Voltage	3.2V		
	Impedance	$0.18 \pm 0.05\text{m}\Omega$	IR(AC)	
Battery System	Combination Method	16S1P		
	Rating Voltage	51.2V		
	(0.5C) Rating Capacity	314Ah		
	Impedance	$\leq 23\text{m}\Omega$		
	Max. Charge Voltage	58.4V		
	Discharge Cut-off Voltage	44.8V		
	Max. charge current	200A		
	Recommended charge current	157A	Factory default	
	Max. discharge current	200A		
	Recommended discharge current	157A		
	Peak discharge current/time	250A/500 \pm 20mS		
	Battery Module Weight	$\approx 131.5\text{kg}$	N.W.	
	W×H×T Dimension	480*750*245mm ($\pm 2.5\text{mm}$)		
	Operating Temperature	Charge	0~60°C	
		Discharge	-20~60°C	
		-20~45°C (Within one month)		

	Storage Temperature	0~35°C (Within one year)	
Battery Management System BMS	Single Cell Over-charge Cut-off Voltage	3.65V	
	Single Cell Under-discharge Cut-off Voltage	2.8V	
	Over-Current Discharge Protection	250A/500mS	
	Communication Mode	CAN/RS485/RS232/Bluetooth /WIFI	
	display usage	Lamp signal	

2. Product Dimension,Printed content and Label

Product Dimensions

Outline sample drawing, dimensions. The color is subject to the actual object

The drawing shows three views of the product: a front view on the left, a top view in the center, and a side view on the right. Dimensions are indicated in pink lines and text:

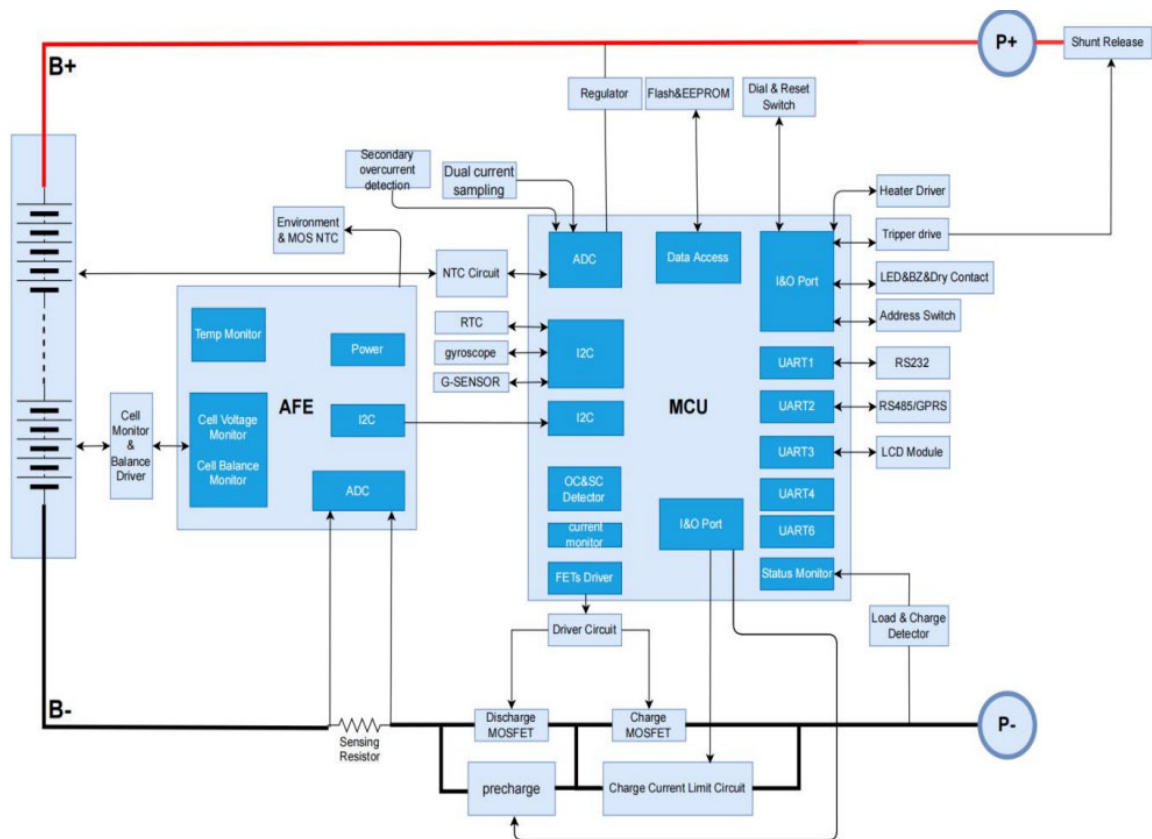
- Front View:** Width is 200 ± 1 mm, height of the top panel is 120 ± 1 mm.
- Top View:** Total width is 550 ± 2.5 mm, inner width is 480 ± 2.5 mm. Height from the bottom to the top of the main panel is 750 ± 2.5 mm, and the total height including the base is 822 ± 2.5 mm. A circular display area has a diameter of 35 ± 0.5 mm. A small rectangular feature is 11 ± 0.5 mm wide and 17 ± 0.5 mm high. A connector on the right is 60 ± 0.5 mm from the edge.
- Side View:** Total width is 245 ± 2.5 mm. The top panel is 38 ± 0.5 mm thick. The distance from the bottom to the top of the main panel is 15 ± 1 mm. A feature on the right is 167 ± 1 mm from the left edge.

Printed content

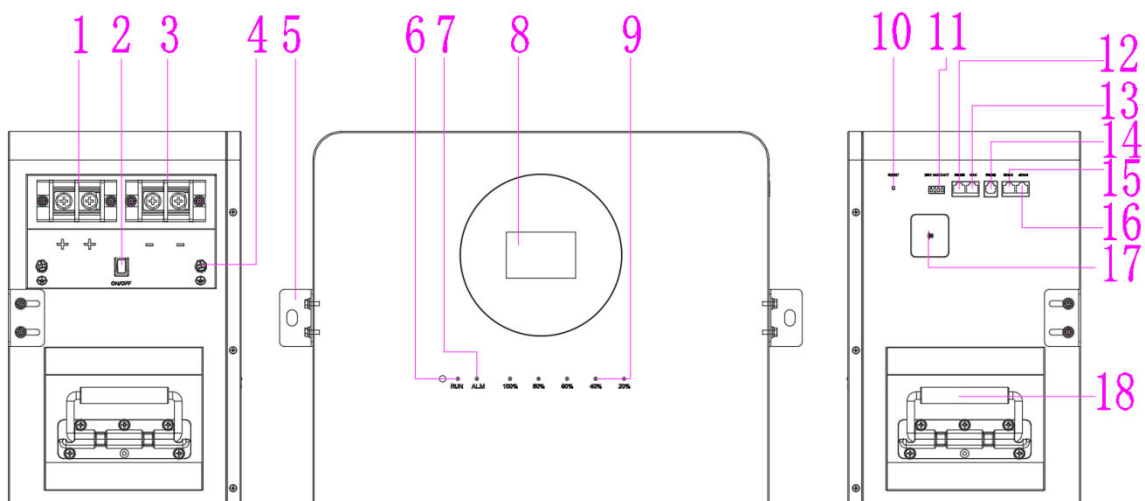
Silk-screen printing sample diagram, dimensions. The color is subject to the actual item



3. Control Diagram




4. Interface Model and Pin Definition



Front Panel Interface Illustration








4.1 Interface Description

No.	Name	Definition
1	Positive terminal	Battery output positive or parallel positive cable

2	ON/OFF Switch	OFF/ON, Must be "ON" when used
3	Negative terminal	Battery output negative or parallel negative cable
4	Grounding	
5	Ear-hanging	Fixed battery box
6	RUN Indicator	Green light, flashing during standby, flashing during charging, and always on when discharging
7	ALM Indicator	Red light, flashing when alarm. Protection is always on. Conditions that trigger protection Normally recover automatically after lifting
8	LCD	LCD color touch display
9	SOC Indicator	The number of green lights shows the remaining battery power, as shown in Table 2-3.
10	RESET (Wake on battery Sleep switch)	When the "OFF / ON" key is ON, press and hold this key for 3 seconds.Put the battery into the power-on or hibernation state.
11	Dry contact	Dry contact
12	RS485 COM	The external RS485 communication interface of the main unit is connected to the inverter for communication
13	CAN COM	The external CAN communication interface of the main unit is connected to the inverter for communication
14	RS232 COM	Test
15	COM1	Multiple battery parallel communication interfaces, input ports
16	COM0	Multiple battery parallel communication interfaces ,output ports
17	WIFI/Bluetooth	WIFI/Bluetooth
18	Handle	Install the battery pack

4.2 Indicator definition and description

Table 2-4 LED working status indication

status	Normal alarm/protection	RUN	ALM	power indicator light					explain
				L5	L4	L3	L2	L1	
									
power off	Dormant	off	off	off	off	off	off	off	All off
standby	Normal	F1	off	According to battery indicator					stand by
	Alert	F1	F3						Cell low
charge	Normal	on	off	According to battery indicator					ALM does not blink when the overcharge alarm is generated/
	Alert	on	F3	(Power indicator Maximum LED blink)					
	overcharge protection	on	off	on	on	on	on	on	If there is no mains supply, the indicator is in standby state
	Temperature/over current/fail-safe	off	on	off	off	off	off	off	stop charging
discharging	Normal	F3	off	According to battery indicator					
	Alert	F3	F3						

	low-voltage protection	off	off	off	off	off	off	off	stop charging
	Temperature/over current/short circuit/reverse/fail-safe	off	on	off	off	off	off	off	stop charging
lose efficacy		off	on	off	off	off	off	off	Stop charging/discharging

● Standing light *flashing

Table 2-5 Capacity description

status		recharge					discharging				
Capacity indicator light		L5	L4	L3	L2	L1	L5	L4	L3	L2	L1
		●	●	●	●	●	●	●	●	●	●
Capacity%	0-20%	off	off	off	off	F2	off	off	off	off	ON
	20-40%	off	off	off	F2	ON	off	off	off	ON	ON
	40-60%	off	off	F2	ON	ON	off	off	ON	ON	ON
	60-80%	off	F2	ON	ON	ON	off	ON	ON	ON	ON
	80-100%	F2	ON	ON	ON	ON	ON	ON	ON	ON	ON
Running lights ●		ON					flicker (F3)				

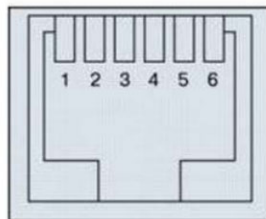
Table 2-6 Flash description

Flashing way	on	off	Remarks
Flashing 1	0.25S	3.75S	F1
Flashing 2	0.5S	0.5S	F2
Flashing 3	0.5S	1.5S	F3

Remarks:Flash 1 is short for F1;Flash 2 is short for F2;Flash 3 is short for F3.

4.3 RS232 Interface Definition:

BMS can communicate with the host computer through the RS232 interface, so that various information of the battery can be monitored through the host computer, including battery voltage, current, and temperature , Degree, status, and battery production information, the default baud rate is 9600bps.



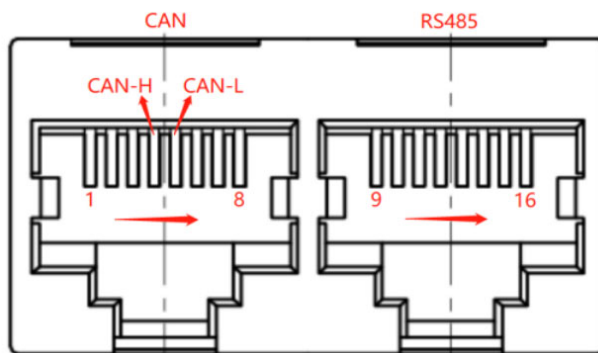
RS232- with 6P6C vertical RJ11 socket	
lead	Definition specification

1、 2、 6	NC
3	TX
4	RX
5	GND

4.4 RS485 And CAN Interface Definition:

485 Communication: The default baud rate is 9600bps. This interface is used to communicate with the inverter. When the battery is the master, it can summarize the slave data and communicate with the inverter.

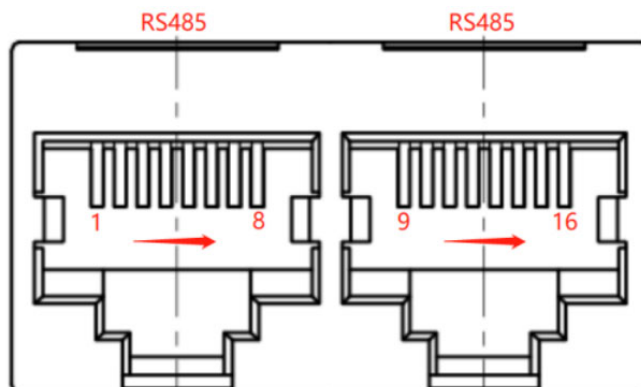
The default baud rate is 500K. This interface is used to communicate with the inverter. When the battery is the master, the slave data can be summarized to communicate with the inverter.



CAN-- Adopt 8P8C vertical RJ45 socket		RS485-- Adopt 8P8C vertical RJ45 socket	
lead	Definition specification	RJ45-lead RJ45-	Definition specification
1、 3、 6、 7、 8	NC	9、 16、	RS485-B1
4	CAN-H	10、 15	RS485-A1
5	CAN-L	11、 14	GND
2	GND	12、 13	NC

4.5 Definition of two RS485 parallel communication ports:

You can view the PACK information. The default baud rate is 9600bps. If the monitoring device functions as a host and needs to communicate with the monitoring device over the RS485 port, set the address range to 2 to 15 based on the address polling data.



COM0- It adopts an 8P8C vertical RJ45 socket		COM1- Uses an 8P8C vertical RJ45 socket	
lead	Definition specification	RJ45-lead	Definition specification
1、 8	RS485-B	9、 16、	RS485-B
2、 7	RS485-A	10、 15	RS485-A
3、 6	GND	11、 14	GND
4	GND	13	UP_IN
5	DN_OP+	12	GND

4.6 DRY Interface Definition:



Pin number	Pin definition	Remarks
1	NO	Normally open, closed during fault and protection. /
2	NO	
3	NO	Normally open, low battery alarm closed. /
4	NO	

4.7 Bluetooth communication

BMS can communicate with the Bluetooth APP through Bluetooth, so as to monitor various information of the battery in the Bluetooth APP, including battery voltage, current, temperature, state, SOC, SOH and battery production information, etc. The default baud rate is 9600bps.

4.8 /WiFi communication

Press and hold the reset button for 13-16 seconds. After the water light is fully on, it will turn into the state of 1 light, and then release it. Wait 8 seconds and you can see the new device in the APP add device.

4.9 Parallel automatic coding

Weaver order output, according to the COM1 COM0 input connection communication circuit, the system host boot after for automatic coding, COM0 blank of mainly BMS, the rest for from BMS, in order to 2.3.4.5.6

5. BMS Introduction

BMS has function for real-time monitor, including battery stated state, battery pack, single voltage, current, temperature, insulation and so on.

Alarm threshold table (parameters need to be set through the man-machine interface)

5.1. Basic parameters of BMS:

No.	Item	Detail	Parameter	remarks
1	Single overcharge protection	Unit overcharge alarm voltage	3.60±0.05V	
		Single overcharge protection voltage	3.65±0.05V	
		Cell overcharge protection delay	1.0S±20mS	
	Monomer over voltage protection is removed	Cell overcharge protection release voltage	3.34±0.05V	
		Capacity deactivation	SOC<96%	
		Discharge cancellation	Discharge current > 2A	
2	Monomer over discharge protection	Single overplay alarm	2.95±0.05V	
		Single over discharge protection voltage	2.8±0.05V	
		Monomer over discharge protection delay	1.0S±20mS	
	Release of monomer over release protection	Cell over discharge protection release voltage	3.0±0.05V	If the device cannot recover after 30 seconds of overcharge protection, the device enters the low-power mode
		Discharges when there is a charge	Access charger activation	

3	Overall overcharge protection	Overall overcharge alarm voltage	57.6±0.1V	
		Overall overcharge protection voltage	58.4±0.1V	
		Overall overcharge protection delay	1.0S±20mS	
	Overall over voltage protection is removed	Overall overcharge protection release voltage	53.44±0.1V	
		Capacity deactivation	SOC<96%	
		Discharge cancellation	Discharge current > 2A	
4	Overall over release protection	Overall over discharge alarm voltage	47.2±0.1V	If the device still fails to recover after 30 seconds of over discharge protection, the device enters the low-power mode
		Overall over discharge protection voltage	44.8±0.1V	
		Overall over discharge protection delay	1.0S±20mS	
	Overall over release protection is removed	Overall over discharge protection release voltage	48±0.1V	
		Discharges when there is a charge	Access charger activation	
5	Charge over current protection	Charging over current alarm current	162±3%A	If the status is locked for 10 consecutive times, it cannot be automatically unlocked
		Charge over current 1 Protect the current	167±3%A	
		Charging over current 1 Protection delay	1.0S±20mS	

	Charge over current release	Automatic Cancellation Charter	Automatically disconnects after 1 minute	
		Discharge cancellation	Discharge current > 1A	
6	Discharge over current level 1 protection	Discharge Over current 1 Alarm current	205±3%A	If the status is locked for 10 consecutive times, it cannot be automatically unlocked
		Discharge over current Level 1 protection current	210±3%A	
		Over current level 1 protection delay	1S±20mS	
	Discharge over current 2 level protection	Discharge over current Level 2 protection current	250±3%A	
		Discharge over current 2 protection delay	500±20mS	
	Discharge over current protection is removed	Automatic Cancellation Charter	Automatically disconnects after 1 minute	
Charge release		Charging current > 1A		
7	Short-circuit protection	Short-circuit protection	Have	
		Short-circuit release	When there is charging, the short circuit protection is removed	
			After the load is removed, it is automatically removed	

8	MOS High-Limit	MOS Over temperature Indicates the alarm temperature	90±5°C	
		MOS Over temperature protection temperature	115±2°C	
		MOS protection release temperature	85±2°C	
9	Cell temperature protection	Charging low temperature Indicates the alarm temperature	3±2°C	
		Charging low temperature protection temperature	0±2°C	
		Charge low temperature protection release temperature	5±2°C	
		Charging over temperature Indicates the alarm temperature	55±2°C	
		Charging high temperature protection temperature	60±2°C	
		Charging high temperature protection release temperature	55±2°C	
		Discharge low Indicates the alarm temperature	-15±2°C	

		Discharge low temperature protection temperature	-20±2°C	
		Discharge low temperature protection release temperature	-10±2°C	
		Discharge over temperature Indicates the alarm temperature	55±2°C	
		Discharge high temperature protection temperature	60±2°C	
		Discharge high temperature protection release temperature	50±2°C	
10	current consumption	Operating self-consuming electrical current	≤75mA(With display) ≤45mA(Without display)	
		Low power current	≤200±20uA	
11	equalizer block	Equalizing opening voltage	3400mV	
		bypass opening pressure differential	30mV	
12	Low battery alarm	The power supply is low for the alarm threshold	SOC<10%	No alarm is generated during charging
13	dormancy	Dormancy voltage	3150mV	
		delay time	30min	
14	Cell failure protection	Cell pressure difference	Pressure difference > 1V	Disallowed discharge

15	Full judgment	Full charge voltage	>56V	SOC 为 100% At the same time, stop charging and update the SOC to 100%
		cutoff current	<2A	

5.2. BMS function

Function	stockpile	<input type="checkbox"/> nothing <input type="checkbox"/> Store 400 pieces <input checked="" type="checkbox"/> Store 10000 pieces
	Charge current limiting	<input type="checkbox"/> nothing <input type="checkbox"/> 5A <input type="checkbox"/> 10A <input checked="" type="checkbox"/> 20A <input type="checkbox"/> ____A
		Definition: Charging current > 200A On
	display screen	<input type="checkbox"/> Nothing <input type="checkbox"/> Chinese Intelligent <input type="checkbox"/> English intelligence <input checked="" type="checkbox"/> 3.5 color screen CTP35H-1.3
	dry contact	<input type="checkbox"/> Nothing <input checked="" type="checkbox"/> Have
		Definition: Dry contact 1-PIN1 to PIN2: Normally open, closed during fault protection. Dry contact 2-PIN3 to PIN4: On normally. The low battery alarm is closed.
	heating film	<input checked="" type="checkbox"/> Nothing <input type="checkbox"/> Have
	reverse polarity protection	<input checked="" type="checkbox"/> Nothing <input type="checkbox"/> Have
	weak current switch	<input type="checkbox"/> Nothing <input checked="" type="checkbox"/> Have
	buzzer	<input type="checkbox"/> Nothing <input checked="" type="checkbox"/> Have
	CAN parallel operation	<input checked="" type="checkbox"/> Nothing <input type="checkbox"/> Have
		definition
trip unit	<input type="checkbox"/> 无 Nothing <input checked="" type="checkbox"/> 有 Have	
	Definition: 1. After the charging MOS is turned off, if a charging current is detected, continue to start for 8S 2. After the discharge MOS is turned off, if a discharge current is detected, continue to start for 8S	
authentication function	<input checked="" type="checkbox"/> MCU WATCH DOGS <input checked="" type="checkbox"/> Dual total voltage detection	
	<input checked="" type="checkbox"/> Reserve circuits and seats <input type="checkbox"/> Equipped with double current detection panel	

	Bluetooth	<input type="checkbox"/> Nothing <input checked="" type="checkbox"/> Have
	WIFI	<input type="checkbox"/> Nothing <input checked="" type="checkbox"/> Have
	strip lights	<input checked="" type="checkbox"/> Nothing <input type="checkbox"/> Have
	Sampling socket	<input checked="" type="checkbox"/> Upright <input type="checkbox"/> horizontal type
	dip switch	Automatic power-on coding
	LED LED Light	<input type="checkbox"/> Nothing <input checked="" type="checkbox"/> ALM <input checked="" type="checkbox"/> RUN <input type="checkbox"/> ON/OFF <input checked="" type="checkbox"/> SOC <u>5 pcs</u>
	Cell Capacity	<input type="checkbox"/> 50Ah <input type="checkbox"/> 100Ah <input type="checkbox"/> 150Ah <input type="checkbox"/> 200Ah <input checked="" type="checkbox"/> <u>314Ah</u>
	bar code	<input type="checkbox"/> One dimensional code <input checked="" type="checkbox"/> Two-dimensional code
communication	communication interface	<input checked="" type="checkbox"/> 232 <input checked="" type="checkbox"/> R485 <input checked="" type="checkbox"/> Parallel dual RS485 <input checked="" type="checkbox"/> CAN
	Program upgrade mode	<input checked="" type="checkbox"/> 232 <input type="checkbox"/> R485 <input checked="" type="checkbox"/> Bluetooth <input checked="" type="checkbox"/> WIFI

6. Cell Reliability Test

Item	Inspecting Method	Standard
Over charge	At the ambient temperature of $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$, the battery is initially charged at 0.5C, and then the test fixture is installed as required by the battery cell. Charge at a constant current of 314A to 5.475V or for 1 hour, then stop charging. Observe for 1 hour. (Refer to GB/T 36276-2018 《Lithium-ion Batteries for All Power Uses》).	No fire, no explosion.
Over discharge	At the ambient temperature of 25°C to $+2^{\circ}\text{C}$, the battery is initially charged at 0.5C, and then the test fixture is installed according to the cell fixture method. Discharge at A constant current of 314 A for 90 minutes or stop discharging when the voltage reaches 0V. Observe for 1 hour. (Refer to GB/T 36276-2018 《Lithium-ion Batteries for Power Storage》)	No fire, no explosion.
Short circuit	At the ambient temperature of $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$, the battery is initially charged at 0.5C, and then the test fixture is installed as required by the battery cell. Short-circuit the positive and negative terminals of the battery externally for 10 minutes. The resistance value of the external circuit should be less than $5\text{m}\Omega$. Observe for 1 hour. (Refer to GB/T 36276-2018 《Lithium-ion Batteries for Power Storage》).	No fire, no explosion.
Cycle Life	Before the test, prepare and install the fixtures according to the requirements of the battery cells. Before the cycle, conduct an energy test on the battery at 0.5C charge and discharge. Ambient temperature: 25°C a. Initialize and discharge the battery at 0.5C charge and discharge. b. Charge at a constant power of 0.5C to 3.65V and let it stand for 30 minutes; c. Discharge at a constant power of 0.5C to 2.5V and let it stand for 30 minutes; d. Repeat the cycle from b to c for 8,000 times.	(0.5C/0.5C) The cycle life is no less than 8,000 times, and 70% of the remaining initial capacity is cut off for testing (0.5C/0.5C).

Note: Definitions of some terms in the above standards:

- (1) Standard charging: Under an ambient temperature of $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$, charge at 0.5C5A. When the battery terminal voltage reaches 3.65V, switch to constant voltage charging until the charging current is less than or equal to 0.1C5A, then stop charging.
- (2) Remaining capacity: The initial discharge capacity of the battery after a specific detection procedure.
- (3) Standard cycle: After the battery is charged to the standard 0.5C5A, it is left to stand for 60 minutes and then discharged at 0.5C5A until the discharge cut-off voltage is reached.
- (4) Restored capacity: The discharge capacity of a battery after it has undergone a specific detection process and its state has been restored through repeated charging and discharging.
- (5) The batteries used for the above-mentioned tests must be within one month of delivery, unless otherwise specified.

7. Part List

NO.	Part No.	Product Name	SPEC.	QTY.	Remarks
1		EXT-COMM Cable	2*RJ45_CAT5E_L=1500mm_BLA CK	1	
2		EXT-COMM Cable	2*RJ45_CAT5E_L=1000mm_BLA CK	1	Parallel/optio nal
3		Positive Cable	EV50_1500VDC_2*SC50-8_L=15 00mm_RED	1	assortative mating
4		Negative Cable	EV50_1500VDC_2*SC50-8_L=15 00mm_BLACK	1	assortative mating
5		screw	GB9074.13_M5* 12mm_Stainless steel 304_8.8 grade _Outer hexagon cross combination screws	2	
6		warranty card	TR8000WX_300g_coated paper	1	
7		specification	TR8000WX_157g_coated paper	1	
8		Certificate	English Version_L40*W40mm	1	

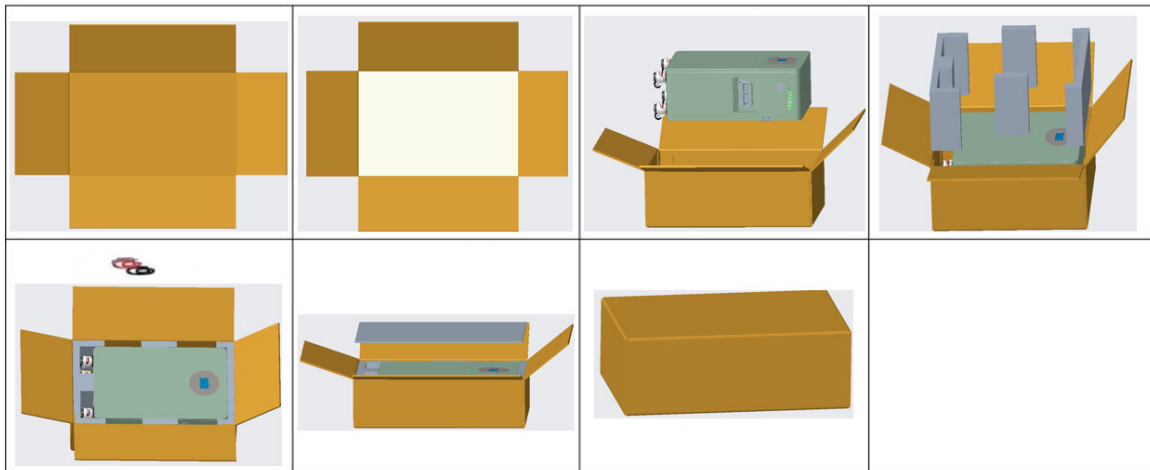
Note:

If the accessory list does not match the actual situation, please refer to the latest BOM delivery list.

8. Package, Transportation and Storage

8.1 Package

The package process is shown as follows:



Product should be packed in wood boxes and carried by van-type vehicle. Wood boxes should be equipped with corner protection and wrapped with films.

If packaging boxes cannot fill up a stack, the openings should be filled with solid paper boxes. Add air bags between stacks to prevent moving against carriage. As for inter-province carriage up to a distance of over 800 km, it is recommended to add air bags between stacks and van in order to prevent relative movement.

Packaging boxes insufficient to fill up one pallet should be packed in wood boxes and carried by van-type vehicle.

8.2 Transportation

- Product has cleared UN38.3 (Section 38.3 of the seven Revised Edition of the Recommendations on the Transport of Dangerous Goods: Manual of Tests and Criteria) and SN/T 0370.2-2009 (Part 2: Performance Test of the Rules for the Inspection of packaging for Exporting Dangerous Goods). The Product is classified as class 9 dangerous goods, and shall be transported in accordance with the following:
- Use van-type vehicle including container and metallic van-type vehicle. Platform vehicle and convertible are prohibited.
- In order to protect PACK from moving, fall or crash, bandages and bubble bags shall be adopted during transportation. Specifically, bandages apply to both long and short distance transports, and at least the last 1~2 rows at vehicle rear shall be bandaged. Short distance transport does not need bubble bags. But both bubble bags and bandages (at least the vehicle rear) should be used for long distance transport. If there isn't enough space for bubble bags, bandage application inside the whole car is an option.
- Vehicle in the middle of unloading should berth near dock. Vehicles waiting to be unloaded should keep a safe distance of 6m from warehouse. The vehicle prohibits debris stacking and should stay away from other vehicles.
- Prohibit mixing up with explosive, inflammable or toxic objects
- Prohibit piling up with other objects.

- Maintain original packaging and keep labels complete and recognizable.
- Prevent from direct exposure to sunlight, rain, condensation and mechanical damage.
- PACK. /Do not stack more than five PACKS.
- Maintain temperature between -20°C to 45°C, and keep humidity within 5%~95%RH during the storage.
- Extinguisher designed specifically for lithium battery shall be installed in carriers.
- A damaged box or rattles during transport may indicate rough handling. Make a descriptive notation on the delivery receipt before signing. If obvious damage such as package hole or serious impact is found, please feedback to greenhse Technologies.

8.3 Storage

8.3.1 Warehouse Management

- Seven meters heightened warehouse is not recommended to store Products. In case of the warehouse, Products should be placed not higher than two meters from floor.
- Batteries with safety deficiency and normal batteries should be separately stored with wall in-between or in different fire protection zones.
- Prevent electrical fire sources. Electrical tube, switch box and socket should be undamaged. 0.5 meters from floor standing air conditioner and dehumidifier should be free from inflammable materials. Use cold light source in warehouse. If spotlight is used, at least one meter therefrom should free from other inflammable materials.
- Warehouse should be labelled with smoking ban and confirmed without cigarette butts. Smoking points should be reasonably designed with a fire-retardant wall-separating warehouse. Wind at exit cannot blow cigarette butt near warehouse.
- Warehouse should have mice protective measures, like plugging up holes and caves, timer-connected mouse expeller, floor baffler against mouse, sealing door slot with less than 10mm gap.
- Warehouse canopy must use fire retardant materials, prohibit inflammable materials like plastic or canvas.
- Warehouse should be equipped with fire detector, watch-keeper, and surveillance video kept for at least one month.
- Keep a dry clean storage place with proper ventilation. Specifically, with a relative humidity of 5%~95%RH, if ambient temperature ranges between -30°C to 60°C, storage period lasts for seven days; if ambient temperature ranges between -20°C to 45°C, storage period lasts for six months.
- Battery performance is vulnerable to chemical corrosion, strong acid, strong base, electronic chemical corrosion, salt spray and radiation.

8.3.2 Fire extinguish device

- Battery sites must be equipped with multiple varieties of battery fire extinguishers, including fire sand, blanket and powder Extinguisher.
- Micro fire station is recommended to be deployed with firefighter uniform, helmet, fire protection mask, safety gloves, and at least one set of first aid kit including medical devices and drugs.

8.3.3 Smoke discharge

- Equip 24 hours fan with failure alert. Fan should coordinate with smoke detector or gas concentration detector.
- The ventilation capability should be not less than 12 times per hour and fan speed should exceed 0.5 meters per second.
- Fan portfolio includes axial flow fan on wall (effective distance less than 5 meters), fan with fixed air hose, and mobile fan with flexible aluminum foil. Wall fan combined with mobile fan is recommended.

8.3.4 Fire retardant buildings

- Warehouse and plant should use level two fire retardant buildings, like rock wool colour steel plate, plasterboard and iron rain-shed. Inflammable materials like foam and plastics are prohibited.

8.3.5 Separate storage

- Lithium batteries should not be stored with inflammable or toxic objects.
- Design various fire protection zones. Normal batteries and batteries with safety deficiencies should be stored desparately.
- Store in a clean environment with a temperature of 23 ± 2 °C and a humidity of 45% -75%. Recharge the battery every 3 months and cycle it every 6 months. Ensure that the battery voltage is within the above range.

9. Hazard Warning and Cautions

9.1 Hazard Warning

9.1.1 Forbid Disassemble Batteries

The battery has protective component and circuit internally to avoid danger. Mishandling such as improper disassembly will destroy its protective function and make it heat, smoke, distort or burning.

9.1.2 Forbid Short-circuit Batteries

Do not touch the plus and minus contacts with metals. Do not put the battery with metal element together in either storage or movement. If the battery is short-circuit, it carries magnified current, which will cause damage and make the battery heat, smoke, distort or burning.

9.1.3 Forbid heat and burn the batteries

If heating or burning the battery, it will caused the isolated element in the battery dissolved, protection function stopped or the electrode burning, over heated, which will make the battery heat, smoke, distort or burning.

9.1.4 Avoid charging near fire or in the sunlight

Otherwise, it will cause internal protection circuit and its function lost or abnormal chemical reactions, which will lead to heating, smoking, distortion or burning.

9.1.5 Danger in using non-indicated chargers in

Charging in abnormal condition, the battery will cause internal protection circuit and its function lost or abnormal chemical reactions, which will lead to heating, smoking, distortion or burning.

9.1.6 Forbid Damage Batteries

Do not allow damage the batteries with the metals gouged, forged or dropped etc., otherwise, it will cause over-heated, distort, smoke or burning, even in danger.

9.1.7 Do not touch the leak-out batteries

The leak-out electrolyte will cause the skin uncomfortable. If it drops into eyes, do not rob the eyes but wash in time, and go to hospital for treatment.

9.2 Cautions

9.2.1 Notice

The battery shall be prevented to be exposed in effulgence so as not to cause over-heated, distort, smoke and weaken its performance and cycle life.

9.2.2 Electronic Static-free

There is a protective circuit inside the battery to prevent contingency. Do not use the battery in the Electronic static circumstances (above 1000V), for it is easily destroyed the circuit board so that the battery doses not work and causes over-heated, distort, smoke or burning.

9.2.3 Discharging Temperature Range

Recommended discharging temperature range is 0~40°C, beyond which it will result in decadence of the battery performance and shortness of its life.

9.2.4 Read carefully the manual before use or whenever in need

9.2.5 Charging Method

Use the special chargers in the recommended charging method to charge the batteries.

9.2.6 Guarantee period

Guarantee is three year since it is out of the factory. Any damage by incorrect use and not quality problem, even in its guarantee period, free service won't be provided by the manufacture.

10. Disclaimer

In the event of any conflict, ambiguity or discrepancy between the Chinese version and English version of this Document, both parties agree that the Chinese version of this Document shall prevail.

11. Attachment

None