PRODUCT MANUAL

SMART-BCT-V-48-100(P)

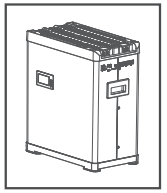
Directions for Use

CATALOGUE

Packaging Storage and Transportation

1.1 Storage and Transportation

01. During transportation, the battery packing box must be placed properly and avoid strong vibration, impact and heavy pressure.
02. During loading of battery pack, must watch out for dropping, turning over and serious stacking.
03. The battery pack is not recommended leave unused for long-term. If it not won' t been used temporarily, it should be stored in a dry, clean and ventilated place at -20°C~40°C for a short period of time (within one month). For a long time (within 6 months), it should be stored in a dry, clean and ventilated place at 10°C-35°C. A battery pack with a storage time of 6 months needs to be recharged in time to reach 50% SOC.
04. During the storage and transportation, pay attention to preventing dust and water vapor from eroding of the battery pack, and the fire source should be isolated.



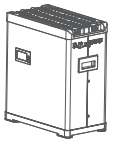
Fire source should be isolated

05. During storage and transportation, the battery pack should avoid contact with corrosive organic solvents, gases and other substances.
06. When deliver stored battery packs, the first-in-first-out principle should be followed.

Storage Environment Requirements:

Ambient temperature: -20°C～40°C, recommended storage temperature: 10°C～35°C.
Relative humidity: 5%RH～80%RH.
Dry, clean and ventilate.
Avoid direct sunlight.
The distance from the heat source must be more than two meters.

1.2 Packing List

Name	Legend	Specification	Amount	Standard/ Optional
Battery Pack		48V/100Ah	1	Standard
Peep Hole Copper Terminal		16-6	2	Standard
Blue Colour Communication Cable		1m	1	Standard
Dry Contact Terminal		KF2EDGK-3.81-4P	1	Standard
Specification		120×160mm	1	Standard

Product Description

2.1 Notes

This product is lithium iron phosphate battery, which has the characteristics of good safety, long life, low internal resistance, and high charge and discharge efficiency.

2.1.1 Identification Definition

	Danger of electric shock.
	Ignoring safety warnings or improper operation may result in minor injury or slight or moderate damage to equipment or property.
	Do not short-circuit.
	Do not place near flammable materials.
	Do not disconnect or disassemble by non-professionals.
	Do not place the battery near fire.
	Please read the product manual before installation and use.
	Keep out of reach of children, animals or insects.
	Recyclable.
	Do not dispose of this product with domestic waste.

2.1.2 Operational Safety

For safety reasons, it is the installer's responsibility to be familiar with the contents of this document and all warnings before installing.

01. When operating and maintaining this product, please follow the operation regulations of high voltage DC power supply, and take good personal protection measures.
02. Keep away from children.
03. Avoid touching exposed metal parts before touching the battery pack.
04. In order to prevent the accumulation of static electricity, the maintenance personnel should release the static electricity from the human body before operating the battery pack.
05. Do not place tools or metal parts on the top of the battery pack.
06. Do not step on or sit on the battery pack.
07. Do not short circuit the positive and negative electrodes of the battery pack directly.
08. It is for bidden to replace the battery without authorization.
09. It is forbidden to charge or discharge the battery pack module directly without BMS or other charging and discharging protection measures.

2.1.3 Responding to Emergencies

01 Electrolyte Leakage

In case of electrolyte leakage, immediately follow the following instructions.

Inhalation: Evacuate the contaminated area and seek medical advice immediately.

Eye Contact: Rinse eyes with running water for 15 minutes and seek medical advice immediately.

Skin Contact: Wash the affected area thoroughly with soap and water and seek medical advice immediately.

Ingestion: Cause vomiting and seek medical advice immediately.

02 Battery Soaking

If the battery pack is immersed in water, do not continue to use.

03 Battery Damage

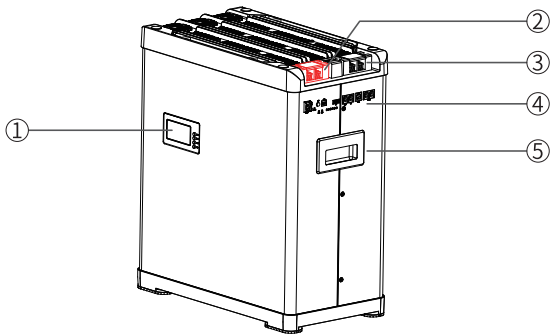
If the battery pack is damaged, please contact us directly.

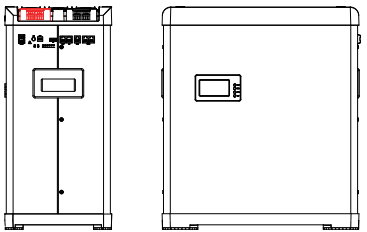
2.2 Use

It is used in areas lack of electricity, frequent power failure, expensive electricity price and peak and off-peak electricity price. It can be charged by panels during the day and used at night. It is suitable for small industrial and commercial entities, household, field operation, tourist camping, breeding farm, plantation, restaurant, farmhouse and other places.

2.3 Product Appearance

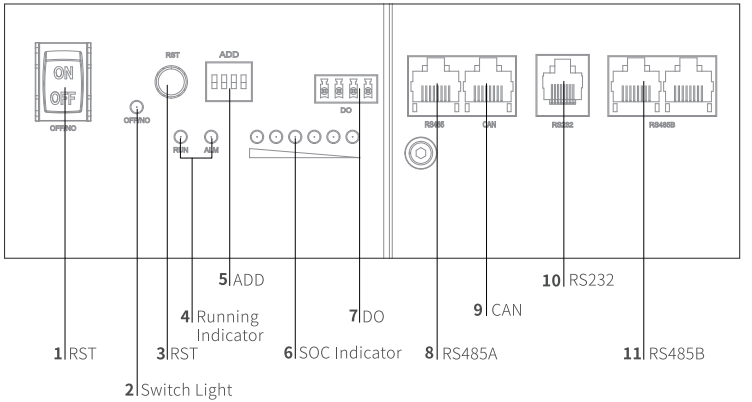
2.3.1 Product Appearance Introduction





1. Display Screen
2. Positive Terminal
3. Negative Terminal
4. Communication Interface Section
5. Clasp

2.3.2 Communication Interface Introduction



2.3.3 Description of Communication Interface Functions

NO	Label	Name	Function Description
1	Switch	Switch	Turn on or off battery pack
2	Switch Light	Switch Light	Display battery pack ON/OFF status
3	RST	Reset Switch	BMS reset parameters
4	Running Indicator	Running Indicator	Blinks during battery pack charge and discharge
5	ADD	DIP Switch	Battery pack parallel connection address setting
6	SOC Indicator	Battery Capacity Indicator	Remaining battery capacity is displayed
7	DO	Dry Contact Terminal	Output control signals
8	RS485A	Communication Port	Communication with inverter
9	CAN	Communication Port	Communication with inverter
10	RS232	RS232	Connect to the upper computer
11	RS485B	Communication Port	Battery pack cascade communication

2.3.4 RST Button Description

When the BMS is in sleep state

Press the button (3~6S) to turn on, the protection board is activated, and the LED indicators light up sequentially for 0.5 seconds from "RUN".

When the BMS is active

Press the button (3~6S) and then release it, the protection board will be dormant, and the LED indicators will light up sequentially for 0.5 seconds from the lowest battery level.

When the BMS is active

Press the button (6-10s) and release it. The protection board is reset and all LED lights are on for 1.5 seconds at the same time.

2.3.5 LED Working Status Instructions

Status	Normal/Alarm/ Protection	ON/OFF	RUN	ALM	Power Indicator LED						Description
		●	●	●	●	●	●	●	●	●	
Power Off	Sleep	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	All OFF
Standby	Normal	Always ON	Flash 1	OFF	According to the power indicator						Standby Mode
	Warning	Always ON	Flash 1	Flash 3							Module Low Voltage
Charge	Normal	Always ON	Always ON	OFF	According to the power indicator (the highest power indicator LED flashes 2)						The maximum power LED flashes (2 flashes), and the ALM does not flash when an overcharge alarm occurs
	Warning	Always ON	Always ON	Flash 3							
	Over-charge Protection	Always ON	Always ON	OFF	Always ON	Always ON	Always ON	Always ON	Always ON	Always ON	If there is no grid power, the indicator light will turn to the standby state
	Temperature, Overcurrent, Failsafe	Always ON	OFF	Always ON	OFF	OFF	OFF	OFF	OFF	OFF	Stop Charging
Discharge	Normal	Always ON	Flash 3	OFF	According to the power indicator						
	Warning	Always ON	Flash 3	Flash 3							
	Undervoltage Protection	Always ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Stop Discharging
	Temperature, Overcurrent, Short Circuit, Reverse Polarity, Failure Protection	Always ON	OFF	Always ON	OFF	OFF	OFF	OFF	OFF	OFF	Stop Discharging
Invalid		OFF	OFF	Always ON	OFF	OFF	OFF	OFF	OFF	OFF	Stop Charging And Discharging

2.3.6 Battery Indicator Description

Status		Charge						Discharge					
Capacity Indicator		L6 ●	L5 ●	L4 ●	L3 ●	L2 ●	L1 ●	L6 ●	L5 ●	L4 ●	L3 ●	L2 ●	L1 ●
Power (%)	0~16.6%	OFF	OFF	OFF	OFF	OFF	Flash 2	OFF	OFF	OFF	OFF	OFF	Always ON
	16.6~33.2%	OFF	OFF	OFF	OFF	Flash 2	Always ON	OFF	OFF	OFF	OFF	Always ON	Always ON
	33.2~49.8%	OFF	OFF	OFF	Flash 2	Always ON	Always ON	OFF	OFF	OFF	Always ON	Always ON	Always ON
	49.8~66.4%	OFF	OFF	Flash 2	Always ON	Always ON	Always ON	OFF	OFF	Always ON	Always ON	Always ON	Always ON
	66.4~83.0%	OFF	Flash 2	Always ON	Always ON	Always ON	Always ON	OFF	Always ON	Always ON	Always ON	Always ON	Always ON
	83.0~100%	Flash 2	Always ON	Always ON	Always ON	Always ON	Always ON	Always ON	Always ON	Always ON	Always ON	Always ON	Always ON
Running Indicator ●		Always On						Flashes (Flash 3)					

2.3.7 CAN and RS485 Interface

CAN--Adopt 8P8C Vertical RJ45 Socket		RS485--Using 8P8C Vertical RJ45 Socket	
RJ45 pin	Definition	RJ45 pin	Definition
1、2、3、6、8	NC	9、16	RS485-B1
5	CANL	10、15	RS485-A1
4	CANH	11、14	GND
7	GND	12、13	NC

2.4 Communication Function

RS232 Communication Interface

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

CAN Communication

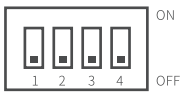
CAN communication, baud rate 500K.

RS485 Communication Port

With dual RS485 interfaces, you can view the information of PACK, and the default baud rate is 9600bps. If it is necessary to communicate with the monitoring device through RS485, the monitoring device acts as the host and polls data according to the address, and the address setting range is 1~16.

2.5 DIP Switch Setting

When the PACKs are used in parallel, different PACKs can be distinguished by setting the address through the DIP switch on the BMS. It is necessary to avoid setting the same address. For the definition of the BMS DIP switch, refer to the table below.



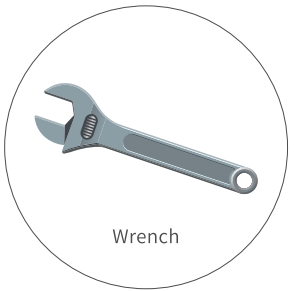
Set this parameter to 1 when a single machine is used.

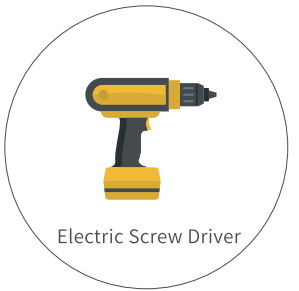
ADD	DIP Switch Position			
	#1	#2	#3	#4
1	OFF	OFF	OFF	OFF
2	ON	OFF	OFF	OFF
3	OFF	ON	OFF	OFF
4	ON	ON	OFF	OFF
5	OFF	OFF	ON	OFF
6	ON	OFF	ON	OFF
7	OFF	ON	ON	OFF
8	ON	ON	ON	OFF
9	OFF	OFF	OFF	ON
10	ON	OFF	OFF	ON
11	OFF	ON	OFF	ON
12	ON	ON	OFF	ON
13	OFF	OFF	ON	ON
14	ON	OFF	ON	ON
15	OFF	ON	ON	ON
16	ON	ON	ON	ON

Installation

3.1 Tools and Safety Protection Appliance

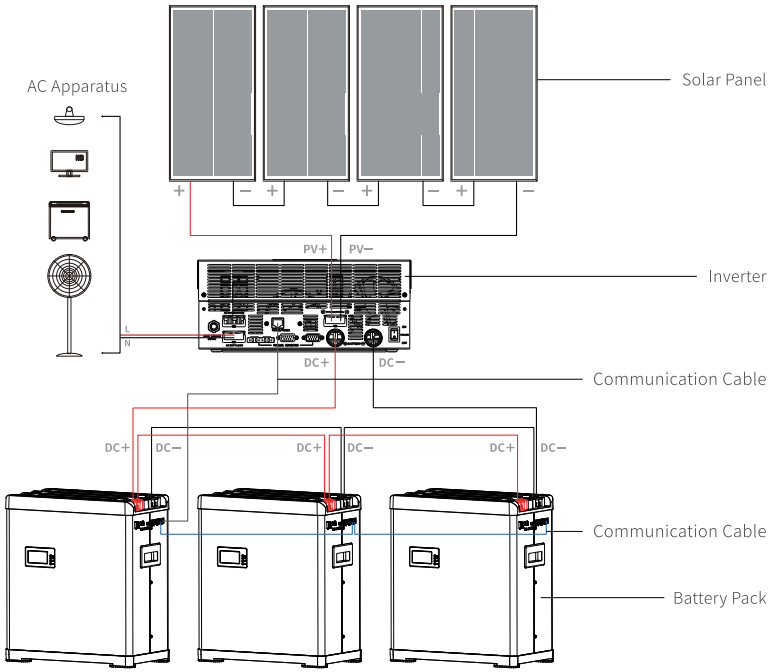
The following tools are required to install this product.

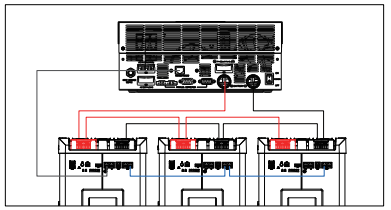




When installing, moving and placing batteries, always follow the instructions in the manual, otherwise there may be safety hazards.

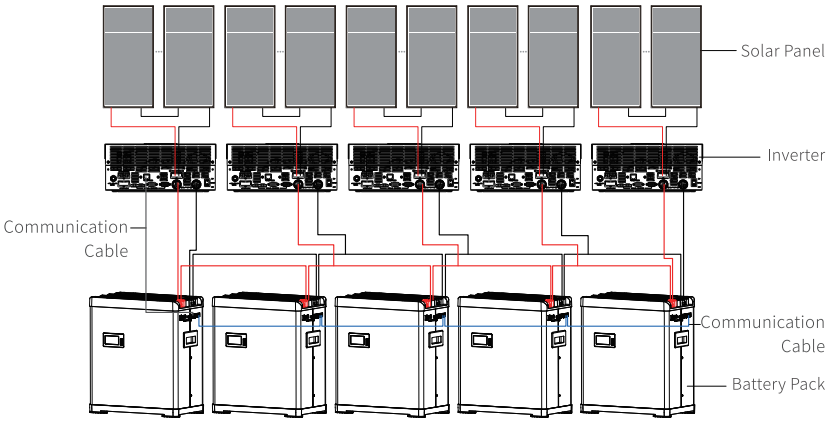
3.2 Connection Diagram Multiple batteries connect to one inverter

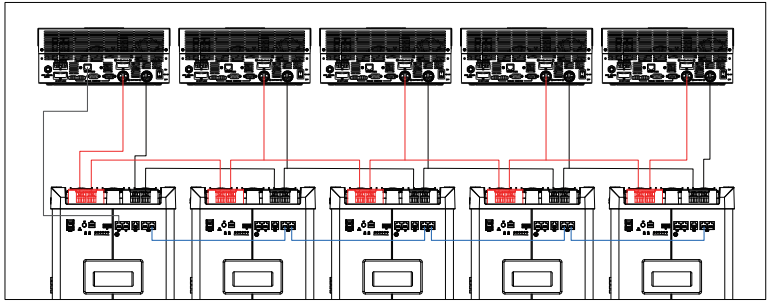




When connected in parallel, the positive poles of the cables are connected together and the negative poles are connected in sequence. The communication cable is connected from the right "RS485B" of the first battery to the left "RS485B" of the second battery, the right "RS485B" of the second battery is connected to the left "RS485B" of the third battery, etc., up to 15 batteries can be connected, the address switch on the panel needs to set the address.

Multiple batteries are connected to multiple inverters



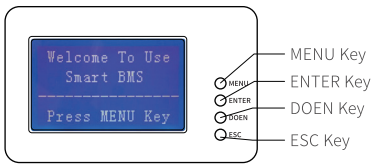


3.3 Debugging

3.3.1 Screen Display Function

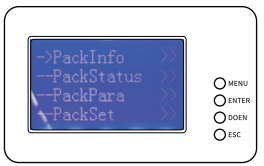
Welcome Surface

After power-on/ reactivation, the welcome screen is displayed, as shown in the below figure.



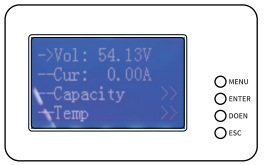
Menu Surface

Press MENU key to enter into the main menu page, as shown in the below figure:



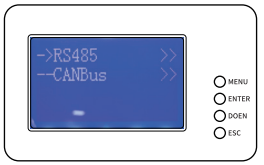
Basic Information Surface

When cursor " 》" points to"PackInfo", press ENTER. The "PackInfo" page is displayed, as shown in the following figure:



Protocol Selection Surface

When cursor " 》" points to"PackSet", press ENTER. The "PackSet" page is displayed, as shown in the following figure:



Button Description

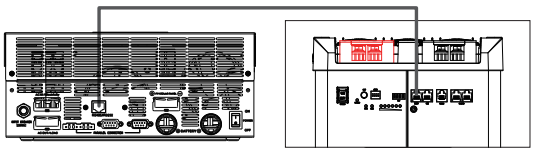
1. Each item starts with "》" or" -- ", "》" indicates the position of the current position, press DOWN to move the cursor down. If the item ends with "》", it indicates that the item has no displayed content. Press ENTER to go to the corresponding page.
2. Press the ESC button to return to the previous directory; at any position, press the MENU button to return to the main menu page.
3. In sleep mode, press any button to activate the display.

Sleep/Power Off

Under normal operating conditions, the system will enter sleep/shutdown mode after 1 minute of no button operation. In the shutdown/sleep mode, press any button, and the display will be activated.

3.3.2 Communication Protocol Debugging Method

Communication Cable



The communication cable picture is for your reference only. Actual color might be different, pls refer to the related purchased one.

Notice:

Must use the factory special design communication cable to make the connection, and If the inverter match the battery with the communication function, the LCD screen battery symbol will blink, usually the communication function need over 1 minute to build the connection.

Applicable Inverter Model

NO	Product Name	Model
1	Off Grid Inverter	BT5KPIX-INV48
2	Off Grid Inverter	DT5.5K-INV48P
3	Off Grid Inverter	XD3.6-6KTL

The inverters listed above have whole set warranty with the battery, inverter not listed will need to communication function DIY for matching.

Operating

4.1 Power On

Before powering on, make sure that the communication, positive and negative cables are correctly connected, and there are no foreign objects around the battery.

4.2 Shutdown

Before disconnecting the cable from the battery, make sure the battery is turned off.

Maintenance

Battery maintenance must be performed by qualified authorized personnel.

If the battery pack has been stored for 6 months, it must be replenished in time to reach 50% SOC.

Every three months, check whether the connections of battery communication and power cables are loose.

Troubleshooting

6.1 Common Problems

NO.	Key Items	Specifications
1	Communication Failure	Check whether the communication line is loose, and check whether the BMS communication protocol matches the load or inverter.
2	Unable to Boot	Use a charging device to charge the battery. If it still cannot be turned on please contact for maintenance.

Attention

01. It is forbidden to use any high-voltage to charge it. Otherwise the BMS components of the battery will be burned out due to the high-voltage, resulting in the failure of overcharge protection. It could lead, the battery overcharged, and causing the battery heat out of control and fire hazards. The open circuit voltage of 12V battery pack can not exceed 14.6V, 24V battery pack can not exceed 29.2V and 48V battery pack can not exceed 58.4V.
02. Please use a MPPT controller with lithium iron phosphate battery mode. It is strictly prohibited to use any inverter and controller integrated equipment or charge controller which match the lead acid battery to connect the lithium battery, to avoid overcharging of lithium battery and potential fire hazards due to high voltage of solar panel. Or after the battery is fully charged, the lead-acid battery controller continues to charge, which make the BMS of lithium battery cannot work as normal.
03. The output must have high-voltage isolation function when using high-voltage inverter and MPPT controller integrated equipment with lithium battery mode. Ensure that the battery is still in a safe state in case of MPPT failure.
04. It is forbidden to connect the positive and negative poles reversely and short circuit the positive and negative poles of the battery pack; The overload is strictly prohibited.
05. The battery pack should not be used in severe vibration scenarios.
06. It is strictly prohibited to put in water or use water to clean the battery pack, and do not place the product in the outdoor exposed place for a long time to prevent rain or moisture.
07. It is forbidden to use or place the battery at high temperature, otherwise it may cause battery overheating, fire or failure of function and shorter life. If battery is used for a long time, the recommended optimal ambient temperature is 10°C-35°C.
08. The battery should not be placed in the room where any combustible gas or flammable items are stored, and should be used in a clean, dry and ventilated environment.
09. It is strictly prohibited to knock, throw, reverse or trample on the battery pack. It is strictly prohibited to use the battery pack when the appearance is seriously damage (artificial knocking, scraping, falling from height, unauthorized disassembly of the products, etc.).
10. It is strictly forbidden to dump or invert the product.
11. During installation and electrical applicances installation, the DC voltage of the solar system may be twice more than the voltage of system (e.g. 12V system with 24V, 24V system with 48V), so it is important to use well-insulated tools.
12. Do not use any measuring tools that are damaged or defective.
13. When you install the system, make sure the fire protection measures do not fail. Do no store the product indoors where any combustible gas or gas mixture is stored.
14. The symbols, logos and labels on the outer surface of the product cannot be modified or removed without notice.
15. All installation work must be carried out under international electrical specifications and related local configurations.
16. Smoking, naked flame and connecting to unprotected lamps are prohibited while operating batteries; Keep away from fire when using.
17. Never cut through the product with nail or other edge tool.
18. Never ship or store the product together with metal.
19. Never throw the product into fire or heating machine to avoid fire, explosion and environment pollution; Scrap product should be returned to the supplier and handled by the recycle station.
20. Never use the product under strong static and strong magnetic field, otherwise it will destroy the protecting device.
21. In principle, it is not recommended to store the battery pack for a long time. Long-term deep discharge will cause damage to the battery pack, so it should be used in time. A battery pack with a storage time of 6 months needs to be recharged in time to reach 50% SOC.
22. Prior to charging, fully check the insulativity, physical condition and ageing status, since breakage and ageing are never allowed.
23. The restricted use current marked on the product is not applicable to the inductive load. Under normal conditions, the instantaneous start current of the inductive load is three times that of the normal operation.

The illustrations of products, accessories, user interface, etc. In the manual are schematic diagrams and are for reference only. Due to the update and upgrade of the product, the actual product may be slightly different from the schematic diagram, please refer to the actual product.

Service and Promise

01. Pre-sales, we supply professional production knowledge, details technology information and inspection.
02. Sales: we supply product training.
03. After sales: we supply technical service for all customers. Problems will be replied in 24h.

Statement

01. Our company shall not be responsible for fires caused by force majeure factors including but not limited to earthquakes, typhoons, floods, etc., which are not our company's responsibility, third-party operations, theft, damage, accidents or losses caused by use under abnormal conditions.
02. The manufacturer will not undertake any loss by customers connecting the product with other unmatched devices or installing in inadequate conditions.
03. The battery pack should not be used under overvoltage. The open circuit voltage of the 12V battery pack cannot exceed 14.6V; the open circuit voltage of the 24V battery pack cannot exceed 29.2V; the open circuit voltage of the 48V battery pack cannot exceed 58.4V. Our company is not responsible for any loss caused by fire or other faults caused by over-voltage use.

* The below damage is not within warranty:

01. Wrong connection between positive and negative.
02. Overload of electrical appliances.
03. The outlook is badly broken (because of human damage、scrape、fall down、assemble the products).
04. Water in (because of put under rain or any other way result in products wet).
05. If use any other not belong to standard accessories add to the products result in goes bad (led or other equipment not match the products).
06. Damage caused by not following the instructions.
07. Transport damage.
08. Incorrect installation or commissioning.
09. Insufficient ventilation of the device.
10. Failure to observe the applicable safety regulations.