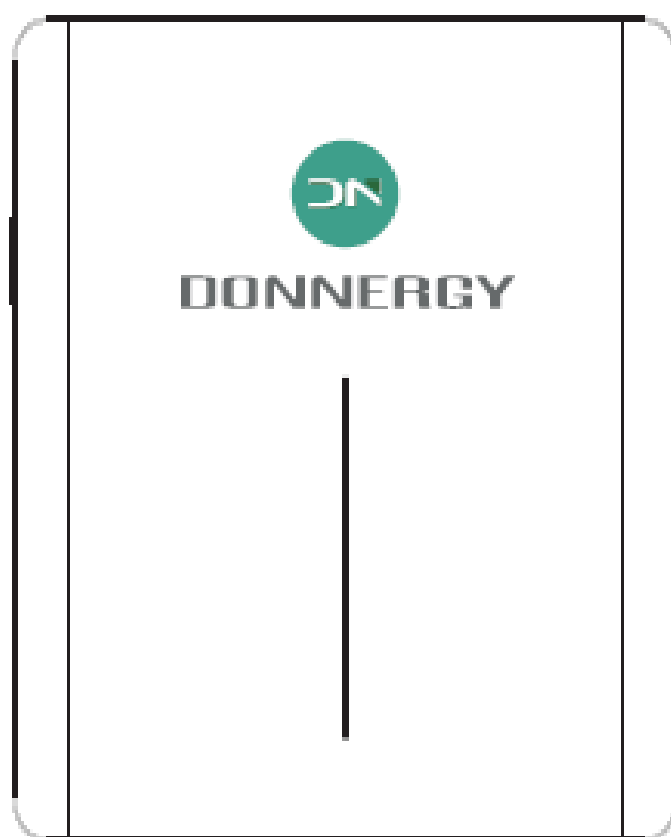


# Energy Storage System

B5K-XWLA 51.2V100Ah

User's Manual



**Respected user:**

First of all, thank you for choosing The household energy storage system power supply. We Electronic Technology Co., Ltd. is a joint-stock high-tech enterprise that develops, produces and sells lithium battery complete sets of products.

The products mainly include cylindrical lithium battery packs and square/soft lithium battery systems, which are widely used in electric two-wheelers, tricycles, electric vehicles, new energy storage fields and other lithium battery applications. The products are exported to overseas, all over Europe and America. , Asia and other dozens of countries and regions.

With the advent of the era of intelligence and information, the demand for electricity has increased greatly. In order to alleviate the pressure on environmental pollution and energy consumption, the world is looking for green power generation methods. Solar energy, wind energy, etc., as a new energy source that is clean and pollution-free, is not only rich in resources, but also has enormous energy. If fully utilized, it can not only save a lot of traditional energy use, but also protect the environment and reduce pollutant emissions. Under the advantages of policy support and photovoltaic energy storage to reduce power generation costs, household photovoltaic power storage systems are gradually entering thousands of households.

For the entire home PV energy storage system, The Electronics offers a complete system of power solutions that simplify customer design and increase system reliability. This power supply is based on a lithium iron phosphate battery and is equipped with a new energy storage system with a customized battery management system (BMS). The cycle number is high and the service life is long, which can be applied to the daily charging and discharging application scenarios. Based on the application requirements of household energy storage batteries, the products are uniquely designed and innovated in terms of compatibility, energy density, power density, security, operability and product appearance, which can provide users with the best energy storage application experience.

We focus on scientific management, technological innovation, people-oriented, and a dedicated and modern corporate philosophy.

Adhere to the principle of integrity first, quality first, customer first, and strive to achieve win-win cooperation.

Since using our products, we have become friends and are happy to provide you with a series of energy storage power products. We hope that it will provide you with reliable and safe services in the future to ensure the safe operation of your equipment.

For your safety and better use of this series of power supplies:

Please read this manual carefully before installing and using!

If you have questions or are unclear about the contents of this manual, please contact us before using the product.

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## 1. Preface

The family energy storage system series power supply reflects the world's leading power electronics technology. It is a fully functional and excellent inverter power supply with high efficiency, high reliability and high intelligence. We are very happy to provide you with this product, and hope that it will provide you with convenient and reliable services in the coming years to ensure the safe operation of your equipment.

The family energy storage system series power supply technology features:

- With emergency state overload protection, output short circuit protection; battery reverse connection protection; battery under voltage, battery over voltage and other perfect protection functions.
- LED display mode: There are 6 LED indicators, 4 of which are power indicator lights, which are used to indicate the current battery SOC, 1 red light is the fault indicator for warning and protection, and 1 green running light is used to indicate the battery. Standby, charging, and discharging status of the group.
- The parallel communication function can be realized through the RS485 communication interface, and has a dial switch for setting the address when communicating in parallel. After parallel connection, the battery data can be monitored cyclically through the parallel version of the host computer.
- Data storage function that supports approximately 500 battery status data storage functions.
- Sleep and wake function.

NO	Sleep condition	Wake condition
1	After you press the key for 5 seconds, the BMS enters the sleep state	1. After the key is pressed, the BMS wakes up 2. If the PACK port voltage is 1V higher than the battery string voltage, the BMS wakes up
2	30min If the battery voltage is lower than the error value, the battery enters the sleep state	1. When the key is pressed, the BMS wakes up 2. If the PACK port voltage is 1V higher than the battery string voltage, the BMS wakes up
3	30min Continuous If the total battery voltage is lower than the error value, the battery enters the sleep state	1. When the key is pressed, the BMS wakes up 2. If the PACK port voltage is 1V higher than the battery string voltage, the BMS wakes up
4	10s, the discharge overcurrent triggers more than 100 times, and the BMS enters the sleep state	1. When the key is pressed, the BMS wakes up 2. If the PACK port voltage is 1V higher than the battery string voltage, the BMS wakes up

- Intelligent and perfect lithium battery management system: active equalization, high-precision voltage acquisition, to ensure the consistency of the battery

- User-friendly alarm function and comprehensive online protection function ensure that the system is safe in use.
- Automatic temperature control function When the ambient temperature is too high, the built-in cooling fan starts automatically.
- Stable performance, safe and reliable, long service life

### 1.1 Precautions

This specification provides users with precautions for installation, commissioning, operation, and troubleshooting. Please keep it in a safe place and read this manual carefully before using this product.

- ◆ Do not install, operate, maintain or inspect this product until you have read and understood this specification and can use it properly.
- ◆ Follow the warnings and instructions marked on the product and accompanying printed materials.
- ◆ The power must be off before wiring.
- ◆ Keep away from water, steam and other liquid substances, and keep away from flammable and explosive substances.

### 1.2. Unpacking inspection

Sendi's household energy storage system power supply has been strictly tested before leaving the factory, but it may be damaged during transportation. Therefore, please check whether the following items are complete after unpacking, and confirm whether the model, capacity, input voltage, output voltage, etc. Matches the content specified at the time of ordering; if an exception occurs or the content does not match, please contact us as soon as possible.

- ⊗ Complete power supply body
- ⊗ Product instruction manual
- ⊗ Warranty card
- ⊗ Certificate
- ⊗ Parts of the product
- ⊗ Other accessories specified in the order

### 1.3. Storage environment

The following matters should be observed when storing this product to avoid possible adverse effects.

- ⊗ Placed in a place free of dirt and dry and ventilated
- ⊗ Ambient temperature: -10 ° C ~ 55 ° C
- ⊗ Ambient relative humidity: ≤85% RH, no condensation
- ⊗ Keep away from corrosive gases and liquids
- ⊗ Long-term unused power supply should be energized every six months

### 1.4. Handling

During the handling of this product, it should avoid strong vibration, falling, and bumping. It is strictly forbidden to invert the package. Do not lose the accessories, instruction manual, warranty card, etc. when unpacking.

In addition, this product is bulky and heavy, so be careful when handling it to avoid injury to your body.

## 2. product information

### 2.1. major parameter

Battery	Battery Specifications	EVE,LF100LA
	Battery Type	LiFePO4
	Nominal Capacity	100.0Ah (Typical)
	ACR	$\leq 0.5\text{m}\Omega$
Battery system	Battery Matching Method	1P16S
	Nominal Capacity	100.0Ah (Typical)
	Nominal Voltage	51.2V
	Charge Cutoff Voltage	$58.4 \pm 0.5\text{V}$
	Charge Current	50.0A Standard
	Discharge Cutoff Voltage	$41.6 \pm 0.5\text{V}$
	Discharge Current	Standard: 50.0A Max. Continuous : 100.0A
BMS	Equilibrium current	60-100mA
	Voltage acquisition accuracy	$\pm 0.5\%$ @FSR
	Communication	CAN/RS485
Others	Protection level	IP20 ( indoor)
	Ambient temperature	Temperature : $0^{\circ}\text{C} \sim 55^{\circ}\text{C}$
	Environment humidity	Humidity: $\leq 85\%$ RH ( Non-condensing)
	Size	L620xW470xH165 (mm)
	Weight	About 52kg
	Appearance	There shall be no such defect as remarkable ,scratch leakage or deformation which may obviously affect commercial valueof the battery.

### 2.2. Working environment

Please try to meet the following requirements for the use environment of this product:

- The heat dissipation of this equipment is by natural cooling, and it is placed in a dust-free and dry ventilated place (installation of this product in a spacious room, and installation of mandatory ventilation equipment in the room).

- Appropriate temperature (The power supply can operate in an indoor environment of  $-10^{\circ}\text{C}$  to  $55^{\circ}\text{C}$ , but the temperature at the time of opening is preferably higher than  $0^{\circ}\text{C}$ , and the ideal operating temperature is  $10^{\circ}\text{C}$  to  $25^{\circ}\text{C}$ )

- Relative humidity meets the requirements (10%~85%) without condensation

- Elevation  $\leq 2000\text{m}$





- No steam or other corrosive gas, no flammable or explosive materials nearby

### 3.LED indication

indication

State	Standby	Charge	Discharg	Invalidation	Error
display	Green flashing	Green light	Green light	Yellow light	Red light

Capacity indication

capacity	LED			
				
	LED1	LED2	LED3	LED4
(0, 4%)	flashing	OFF	OFF	OFF
(4, 25%)	ON	OFF	OFF	OFF
(25, 50%)	ON	ON	OFF	OFF
(50, 75%)	ON	ON	ON	OFF
(75, 100%)	ON	ON	ON	ON

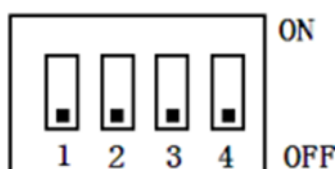
## 4. Communication description

### 4.1. Single communication

#### 4.1.1 RS485 communication

The RS485 interface is generally used for cascading scenarios, and can also be used for data communication with the host computer. When using the RS485 interface to communicate with the host, you need to pay attention to the selection of the dialing address. The address of the DIP switch on the management system must correspond to the dialing address of the host computer (usually do not use the address 0 for communication).

#### 4.1.2. DIP switch select address



Address selection method:

	SW3	SW2	SW1	Host and slave
0	0	0	0	Host
1	0	0	1	slave
2	0	1	0	slave
3	0	1	1	slave
4	1	0	0	slave
5	1	0	1	slave
6	1	1	0	slave
7	1	1	1	slave

The function of the DIP switch is to select the communication address of the management system (the DIP switch uses 3 bits by default and can expand 4 bits), and the dialing mode is binary counting. In the above picture, 1 is the lowest, and 3 is the highest (Note: 4 is not open yet). The first digit is set to the ON position to indicate 1, and the dial to the reverse position (OFF) indicates 0. The four-digit binary can represent 0, 1, 2, ..., 6, 7 for a total of 8 addresses.

Note: If you want to set the management system address to number 3, you need to turn 1 and 2 to the ON position (address bit 011) instead of dialing 3 to the ON position.

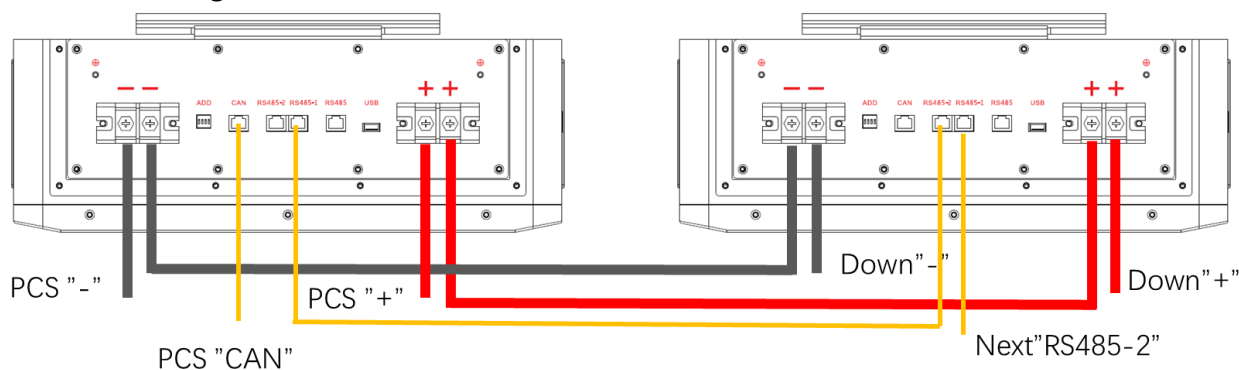


## 4.2.Parallel communication

The BMS can communicate in parallel via RS485. When wiring, RS485A and RS485B corresponding to each RS485 interface should be connected separately. The address selection for parallel communication is realized by the DIP switch on the management system. Different management systems need to use different dialing addresses. If you select four batteries, the dialing address must be 1, 2, 3, and 4; if you select eight batteries, the dialing addresses must be 1, 2, 3, 4, 5, 6, 7, and 8.

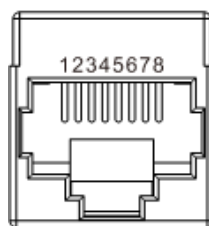
When communicating in parallel, the status of different systems can be monitored through multiple sets of display on the upper computer monitoring page.

## 4.3 Parallel wiring



## 4.4 PCS communication interface

The battery supports interaction with PCS CAN communication to view the information of the PACK, PCS-CAN, as the host interface of the battery pack, can automatically summarizes the data of all the slave batteries and actively reports to PCS.



Pin No.	Name	Function Description
1	/	/
2	/	/
3	/	/
4	CAN1_H	PCS CAN1H, connector PCS CAN communication
5	CAN1_L	PCS CAN1L, connector PCS CAN communication
6	/	/
7	/	/
8	/	/

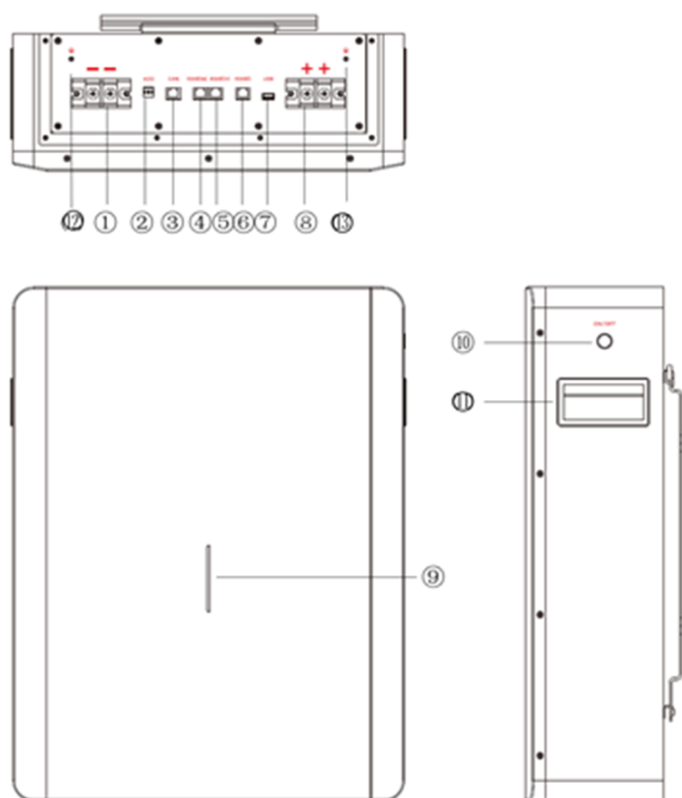
## 4.5 Parallel uplink/downlink interface

Pin No.	Name	Function Description
1	/	/
2	/	/
3	/	/
4	/	/
5	/	/
6	RS485_A	RS485 A, connector
7	RS485_B	RS485 B, connector
8	/	/

## 4.6 External communication interface

Pin No.	Name	Function Description
1	/	/
2	/	/
3	/	/
4	/	/
5	/	/
6	RS485_A	RS485 A, connector
7	RS485_B	RS485 B, connector
8	/	/

## 5. Product structure



No.	Description	Silk-screen	Remark
1	Battery negative terminal "-" interface	-	Charge discharge negative electrode "-" interface
2	Dial Switch	ADD	Parallel dial switch
3	Inverter communication port inverter connection port	CAN	CANbus Port
4	Downlink port for battery communication	RS485-2	485 bus Port
5	Uplink port for battery	RS485-1	485 bus Port
6	Upper computer communication port	RS485	485 bus Port
7	USB upgrade port	USB	USB upgrade port
8	Battery positive "+" interface	+	Charge discharge positive electrode "+" interface
9	LED strip		SOC power, alarm warning
10	Power Switch		Short press the switch and long press to restart
11	handle		
12&13	Grounding		Grounding

## 6. Installation and operation

The installation of the Xx family energy storage system series power supply first requires reasonableness, including the selection of the installation location, the correct configuration of the load, the selection of the appropriate cable and the correct connection, so as to ensure the safe and normal operation of the power supply.

### 6.1. Installation preparation

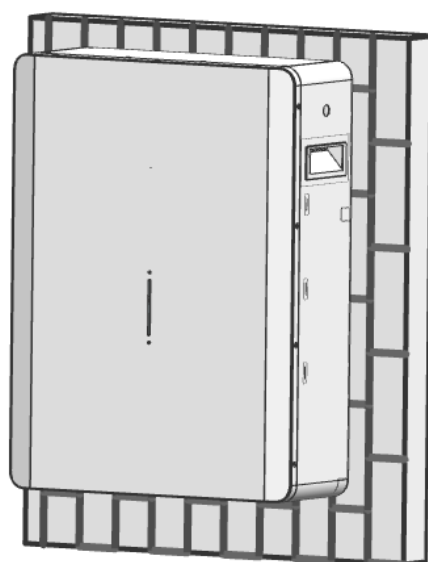
#### Load configuration

The load device's signage generally has data such as rated voltage and current, and some devices are marked in watts (W). Users must carefully check the load power when using it to avoid overload.

In the normal operating state, especially in the standby state, the actual power of the load device is lower than the marked power. The user should use the nominal power of the device when using it, and consider the inrush current of the device at startup. It is good to have a 30% power margin to ensure reliable power supply.

### 6.2. Installation location

The installation location of the power supply is selected to facilitate heat dissipation and easy wiring, and is required to comply with the requirements of the working environment in Section 2.2 of this manual. In addition, the inlet and outlet of the chassis must be kept clear and kept at a sufficient distance from the wall or other objects; do not place anything on the top of the chassis.



## 7. Maintenance

### 7.1. Maintenance

In order to ensure the continuous operation of the Xx household energy storage system series power supply, frequent maintenance and maintenance are required.

1) The installation and storage of the power supply should avoid high corrosive, high dust, high temperature and high humidity environment. In particular, metal materials should be prevented from falling into the cabinet.

2) Regularly check if the cable is aging and the cable connection point is tight and safe.

3) Clean the cooling fan regularly and check if the fan is normal.

Specific maintenance requirements:

- ⊗ Clean dust and debris in the box
- ⊗ Check if the terminals and screws in the box are tight
- ⊗ Check the cabinet for any signs of damage and damage after overheating
- ⊗ Check if the wires in the box are aging

### 7.2. After-sales service

In order to make users feel satisfied, the company is dedicated to organizing a well-trained high-level technical team to engage in after-sales service. Please carefully feedback the user information to us so that we can master it in time and serve you better.

The company solemnly promises: all product quality problems, from the date of delivery, within one year warranty, lifetime maintenance

Welcome to browse our website, we will post the company's latest product information and new product news on the website in time. If you have application solutions for other power products, we are willing to cooperate with you!

## 8. Revision and statement of product description

We have the right to revise this specification. We' ll inform our customers after revision.

If any matters with this specification arise, it shall be revised by mutual agreements.