



# User Manual

Skybox Series HG-SB01





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# **1 ABOUT**

## **1.1 Manual Description**

Dear users, thanks a lot for using the HG-SB01 produced by HOMEGRID. We sincerely hope that this product can meet your needs. The purpose of this manual is to provide users with detailed product information and installation, operation and maintenance instructions.

## **1.2 Copyright Notice**

The copyright of this user manual belongs to HOMEGRID. No unit or individual shall extract or copy part or all of the contents of this user manual without authorization. It shall not be transmitted in any form, including materials and publications. Infringement must be investigated. The version number of this manual is V1.0. HOMEGRID has the final right to interpret this user manual. In case of changes in product parameters, appearance and packaging, the latest information of the company shall prevail without notice.

## **1.3 Applicable Personnel**

This manual is applicable to the daily operation of professional technicians and users who install, debug and maintain the HG-SB01 device. If necessary, please refer to the corresponding user data of HOMEGRID.

## 1.4 Use Manual

Please read this manual carefully before using the HG-SB01. At the same time, please keep this manual properly for easily reach of the operation and maintenance personnel. The contents of the manual will be constantly updated and corrected, and it is inevitable that there are slight discrepancies or errors with the real object.

Users should be subject to the actual products purchased and can visit [www.homegridenergy.com](http://www.homegridenergy.com), or you can get the latest user manual through HOMEGRID sales or service channels.

## 2 PRODUCT INTRODUCTION

### 2.1 Product Appearance and Structure

#### 2.1.1 Appearance

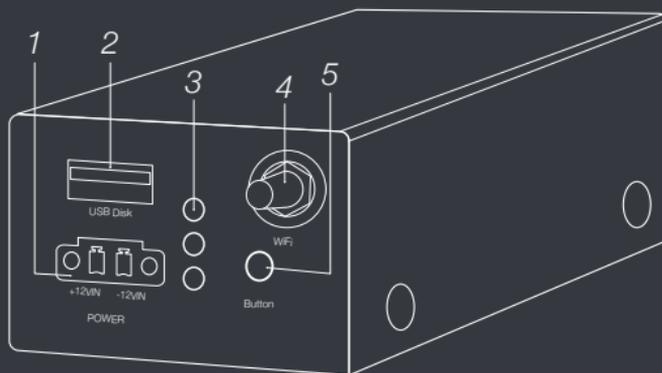


Figure 2.1.1 HG-SB01 Interface Definition

NO.	Instructions
1	$\pm 12V$ power supply interface
2	USB flash disk interface
3	State indicate lights
4	Wi-Fi interface
5	Button (reserved)

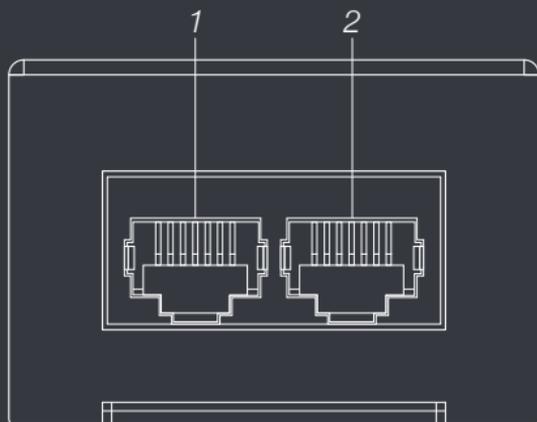


Figure 2.1.1 HG-SB01 Interface Definition

<i>NO.</i>	<i>Instructions</i>
<i>1</i>	Can/RS485 communication upgrade port
<i>2</i>	RS232 communication upgrade port

### 2.1.2 State Indicator Light

The status of the HG-SB01 can be indicated from the LED indicators according to the following table.

<i>NO.</i>	<i>Status Light</i>	<i>Description</i>
<i>1</i>	Red Light	The power indicator is always on, which means that the power supply is normal.
<i>2</i>	Green Light	2S flash: WiFi network connection successfully. Fast blink: HG-SB01 is in self-checking or self-upgrade status.
<i>3</i>	Blue Light	Slow flash: HG-SB01 is in standby state Fast blink: The latest firmware is being downloaded to the connected device. (Please DO NOT disconnect Skybox during this period)

### 2.1.3 Button

Button function description: Reserved

## 2.2 Unpack Packaging

The main accessories of the HG-SB01 are as follows:

NO.	Instructions	Quantity
1	HG-SB01	1
2	Wi-Fi antenna	1
3	HG-SB01 RS232 communication cable	1
4	HG-SB01 RS485 communication cable	1
5	HG-SB01 CAN/RS485 upgrade cable	1

## 3 OPERATION AND APPLICATION

### 3.1 System Principle Block Diagram

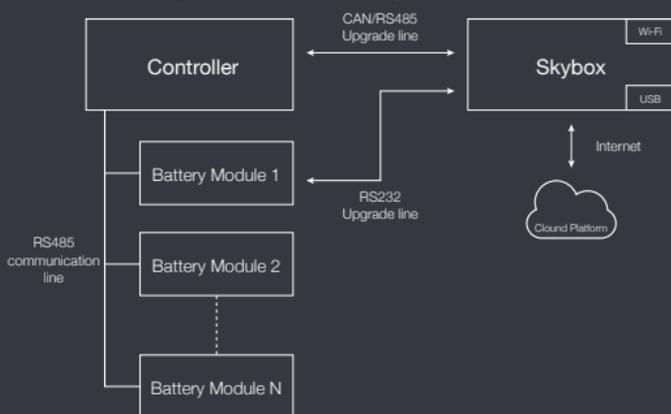


Figure 3.1 Schematic block diagram of HG-SB01 system

**Note:** Battery Modules manufactured before OCT 2021 will be different. Refer to 3.2.5 for more details.

## 3.2 HG-SB01 Operation

### 3.2.1 Connect to Wi-Fi

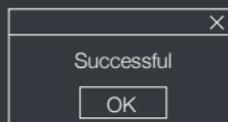
1. Open the Skybox Wi-Fi config tool folder;
2. Double click to run the Skybox application;
3. Connect the computer to the hotspot of Skybox (HG-EMS-\*\*\*). Enter the password: 12345678, and click Connect;



4. Fill in the SSID and password to the Wi-Fi to which the Skybox will be connected into the SSID and Password box in the software



5. Click “Set”, the software will prompt whether the configuration is successful.



### 3.2.2 Login to cloud interface

1. Open the browser and enter the web address:

<https://skybox.lithionbattery.com/>

enter the cloud login interface, and enter the account and password to log in to the cloud interface.

**Note:** You need to register your account and password to log into the cloud for the first time. Users need to contact the nearest office or customer service center, or directly contact the customer service center of the company to confirm the registration information.

2. Enter the main monitoring screen to monitor the voltage, current, SOC, SOH, and system temperature of the entire system.

### 3.2.3HG-SB01 remote upgrade

1. Click to go to the maintenance screen, and select Remote Update to go

to the HG-SB01 firmware upgrade screen.

The screenshot displays the 'Firmware Upgrade' interface. At the top, there are tabs for 'Monitor', 'Data', 'Configuration', 'Overview', and 'Maintain'. Below these, there are sections for 'Remote Set', 'Batch Set', 'Set Record', and 'Update Record'. The main area contains two tables. The left table lists devices with columns for 'Serial number', 'Catalog', 'FW Code', 'Connect Status', and 'Action'. The right table lists installed firmware files with columns for 'Firmware File', 'Firmware Type', 'Updated Time', and 'Action'. A 'Show File' button is highlighted in the top left of the main area.

2. Click Select File to find the file you want to update, select it, and open it.

The current firmware version is displayed in the upper right corner of the page.

This screenshot shows the same firmware upgrade interface as above, but with a file explorer window open. The file explorer is titled 'C:\Program Files\Windows Defender' and shows a list of files. The file 'vAAAB-wf0c\_20211209\_1\_3.exe' is selected. In the top right corner of the main interface, the 'Current Firmware' is displayed as 'ZS-V5-Mate-Pro-V30073-155.36'. The 'Show File' button is still highlighted.

3. Select the device that you want to update and click Update. The upgrade progress is displayed in the status bar. When the upgrade progress reaches 100%, the upgrade is complete.

	Serial number	Datalog	FW Code	Connect S	Action	
1	3444032555	DA02020500	0 - 300	Connected	Update	Standard Upd

Monitor Data Configuration Overview Maintain Cluster: Asia User Center Logout

Station Serial number Online Device Auto Reload Current Firmware: ZR-F5-48-100-15-V2.031.bin - 149

Firmware File: Please choose a file Choose file Upload File Upload BMS File

Serial number	Datalog	FW Code	Connect S	Action	Serial number	Mode	Firmware Typ	Start Time	Update Statu	Rate of Progress	Stop Time	Action	
1	3444032555	DA02020500	0 - 300	Update	Standard Upd	3444032555	Normal		2022-02-18 10:28:31	Updating	28% - 4 / 149		Cancel

Monitor Data Configuration Overview Maintain Cluster: Asia User Center Logout

Station Serial number Online Device Auto Reload Current Firmware: ZR-F5-48-100-15-V2.031.bin - 149

Firmware File: Please choose a file Choose file Upload File Upload BMS File

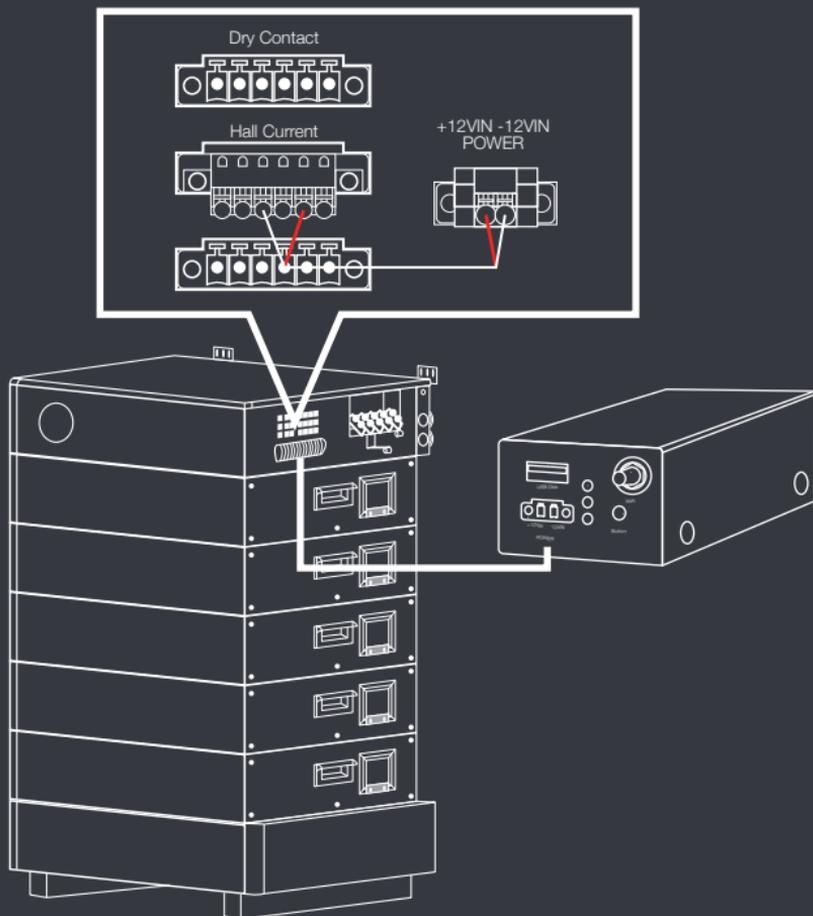
Serial number	Datalog	FW Code	Connect S	Action	Serial number	Mode	Firmware Typ	Start Time	Update Statu	Rate of Progress	Stop Time	Action	
1	3444032555	DA02020500	0 - 300	Update	Standard Upd	3444032555	Normal		2022-02-18 10:28:31	Success	100% - 149 / 149	2022-02-18 10:30:58	Cancel

This manual indicates the procedure of remote upgrade via Web Server, Mobile APP will be coming soon.

**Note:** The firmware can be updated only when the HG-SB01 device is connected to a 2.4GHz network

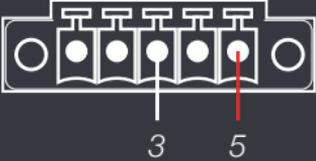
### 3.2.4 Local Upgrade

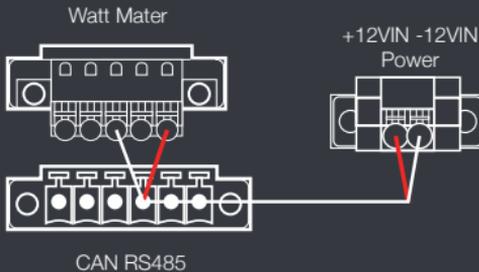
1. Take out the accessory power supply line and connect it to Hall current port on the controller to supply power to HG-SB01



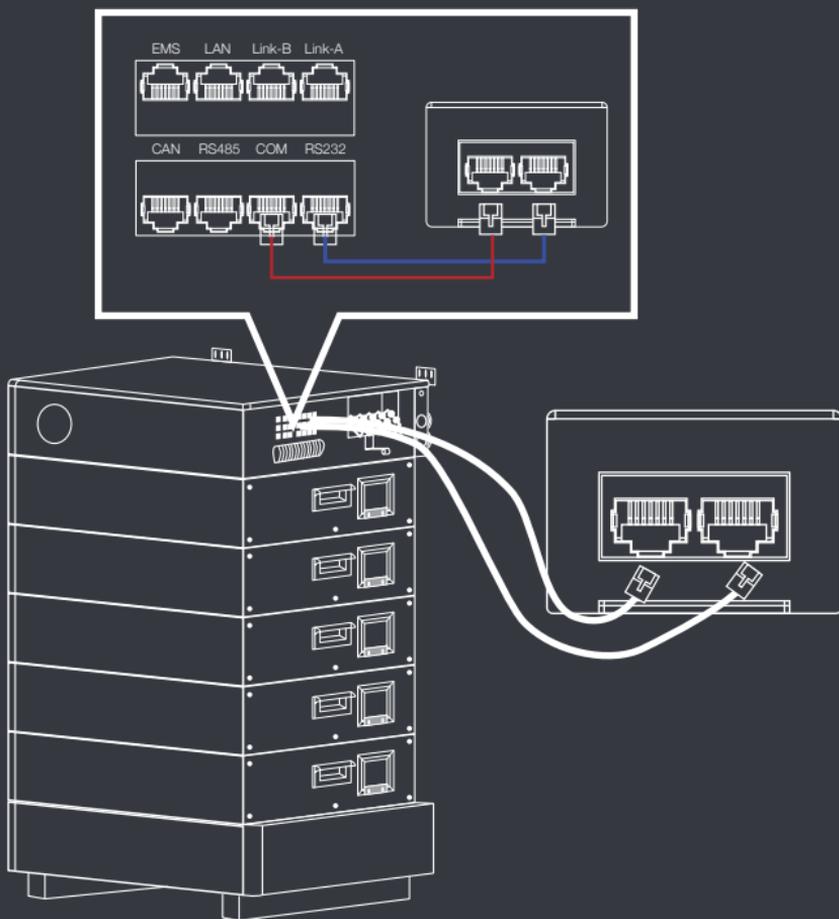
**Note:** The 5-PIN controller port of the old version does not match the current main control port. The HG-SB01 power terminal needs to be replaced as follows:

Connect the +12V power terminal to the 5-pin port and the -12V power terminal to the 3-pin port defined in the figure. Other cable positions remain uncharged.

Port Definitions	RJ45 Pin	Function
	1	NC
	2	NC
	3	-12V
	4	NC
	5	+12V



2. Using the cables that come with the HG-SB01. Connect the RS232 port on the Controller and RS232 port on the Skybox by RS232 communication cable. Connect the COM port on the Controller and the CAN/RS485 port on the Skybox by CAN/RS485 Upgrade Cable.



**Note:** During the upgrade process, HG-SB01 needs to maintain the power supply, and the communication cannot be interrupted, otherwise the upgrade will lose power and crash, which may lead to the death of the device.

3. After the connection is successful, the system will be automatically upgraded. After the connection is complete, the Skybox will compare the existing firmware version with the latest version. If the upgrade is needed, you will hear the buzzer from Skybox beeps once and the blue indicator blinks rapidly, this means that the upgrade is in progress.

When you hear two beeps, the upgrade is finished successfully.

If you hear three beeps, the upgrade is failed. Please use tools on your computer for further process. The blue indicator blinks rapidly, indicating the upgrade status. After two beeps, the upgrade is complete. If the buzzer prompts that the upgrade fails for three times, you need to upgrade the host computer again.

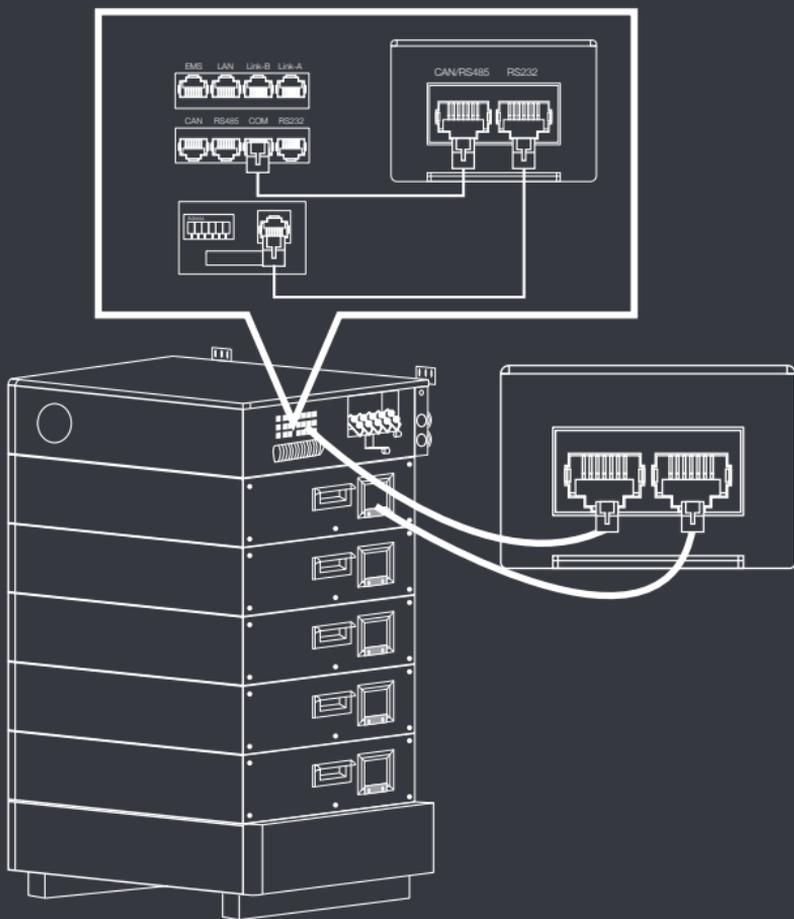
**Note:** Please remove charger/inverter from the battery before progressing the upgrade.

4. When the update on the controller is complete, the battery module will also be updated sequentially.

### 3.2.5 Connect the Battery Module to perform the upgrade

**Note:** For the Battery Module manufactured before Oct, 2021, please refer to the following instructions.

1. The connection positions of the HG-SB01 power supply cable and RS485 upgrade cable remain unchanged.
2. Connect the RS232 communication line to the RS232 port of the Battery Module to be updated.

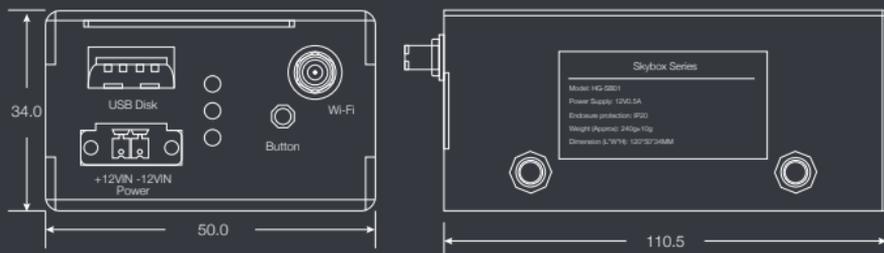


**Note:** During the upgrade process, HG-SB01 needs to maintain the power supply, and the communication cannot be interrupted, otherwise the upgrade will lose power and crash, which may lead to the death of the device.

## 4 COMMON FAULTS

<i>Fault Description</i>	<i>Sympton of Faulty Equipment</i>	<i>Solutions</i>
The WIFI connection has been offline for a long time	The green indicator is off for a long time	<ol style="list-style-type: none"><li>1. Ensure that the router network works properly</li><li>2. Ensure that the working frequency band of the network signal is 2.4GHz</li></ol>
HG-SB01 The device cannot be upgraded after being connected	The blue indicator blinks slowly and is in standby state	<ol style="list-style-type: none"><li>1. Verify that the power supply port is correctly connected and the HG-SB01 red power indicator is on.</li><li>2. Check whether the RS232 communication cable and CAN/RS485 upgrade cable are correctly connected.</li><li>3. Verify that the system is in the static state.</li></ol>
Update upgrade failed	The buzzer from HG-SB01 beeps three times in a raw	<ol style="list-style-type: none"><li>1. The CAN/485 upgrade cable is faulty.</li><li>2. HG-SB01 Power outage.</li><li>3. Computer connection upgrade upper computer to update the program.</li></ol>

## 5 SPECIFICATION PARAMETERS



NO.	Items	Parameters
1	Model	Skybox Series HG-SB01
2	Power Supply	12V0.5A
3	Enclosure Protection	IP20
4	Storage Location	Indoor
5	Communication Mode	RS232/RS485/CAN
6	Dimensions (L*W*H)	120*50*34 MM
7	Weight (Approx)	240g±10g

## 6 CONTACT US

Provide customers with all-round technical support. Users can contact the nearest office or customer service point, or directly contact the company's customer service center.

# HOMEGRID



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