SK48V100N

Rechargeable Lithium Battery

Installation and Operation manual

Version: V-1.0

If you have any Suggestion or require assistance, please send us an email: sales@sokbattery.com .Please note, if no reply in 24 hours, it maybe went to your spam folder or please resend again. Or give us a call at: 725 765 2879 Monday-Friday 9AM - 4PM (PST).

About This Document

Purpose

This document describes the SK48V100N Rechargeable Lithium battery in terms of its features, performance, working principles, appearance as well as instructions for installation and operation.

Intended Audience

This document is intended for:

- Sales engineers
- Technical support engineers
- System engineers
- Hardware installation engineers
- Commissioning engineers
- Maintenance engineers
- Knowledge of how an energy storage system (including PV/ lithium iron phosphate batteries /hybrid inverter, MPPT, Meter etc.) works and is operated.

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
DANGER	Indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.
WARNING	Indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
CAUTION	Indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
NOTICE	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.
NOTE	Supplements the important information in the main text. NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

REVISION LOG

Version Num.	Date	Purpose of Revision
V-1.0	2025/5/12	This issue is the first official release.

Contents

1 Information

1.1 Applicability

This document applies to the: SK48V100N Rechargeable Lithium battery. When transporting, storing, installing, operating and maintaining the equipment, please read this manual first and strictly follow all safety precautions marked on the equipment and in the manual.

1.2 Safety

Statement

Before installing, operating, and maintaining the equipment, read this document and observe all the safety instructions on the equipment and in this document.

The "NOTICE", "WARNING", and "DANGER" statements in this document do not cover all the safety instructions. They are only supplements to the safety instructions. SOK will not be liable for any consequence caused by the violation of general safety requirements or design, production, and usage safety standards.

Ensure that the equipment is used in environments that meet the listed specifications. Otherwise, the equipment may become faulty, and the resulting equipment malfunction, component damage, personal injuries, or property damage are not covered under the warranty.

Follow local laws and regulations when installing, operating, or maintaining the equipment. The safety instructions in this document are only supplements to local laws and regulations.

SOK will not be liable for any consequences of the following circumstances:

- Damage caused during shipping or mishandling of the Product.
- Damage due to improper installation: loose terminal connections, under-sized cabling, incorrect series (cannot be used in series) or parallel connections, reverse polarity connections.
- Environmental damage such as inappropriate storage conditions as defined by the Manufacturer, exposure to extreme hot or cold temperatures, fire or freezing, or water damage,

impact, or collision.

- Damage due to improper operation or maintenance such as under- or over-charging the Product, cold temperature charging, lack of cleaning resulting in corroded terminal connections or build-up of dirt, debris, organic matter, fossil fuels, or chemicals on the Product casing.
- Product that has been opened, modified, tampered with or removed of manufacture date codes.
- Product that was used for applications other than which it was designed and intended for by the Manufacturer.

Emergency treatment measure

If a battery leaks, protect the skin or eyes from the leaking liquid. If the skin or eyes come in contact with the leaking liquid, wash it immediately with clean water and go to the hospital for medical treatment.

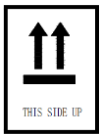
- **Gas Inhalation**: Evacuate the people in the contaminated area and immediately seek medical attention.
- **Eye Contact**: Flush your eye with clean and flowing water for 15 min, and immediately seek medical attention.
- **Skin Contact**: Thoroughly rinse the exposed area with soap and water to be sure no chemical or soap is left on them, and immediately seek medical attention.
- **Ingestion**: Induce vomiting, and immediately seek medical attention.

Support

If you have technical questions about the Product, please contact the place of purchase or SOK Battery directly at techsupport sales@sokbattery.com.

1.3 Symbol Description

Symbols on products label

Label	Definition
	Do not expose the battery to direct sunlight, rain and snow
	Maintain upward storage/transportation
	Handle with care
	Pay attention to the positive and negative battery terminals
	Grounding point
UN38.3	The certificate label for UN38.3
	Beware of electrical shock

1.4 Abbreviation Description

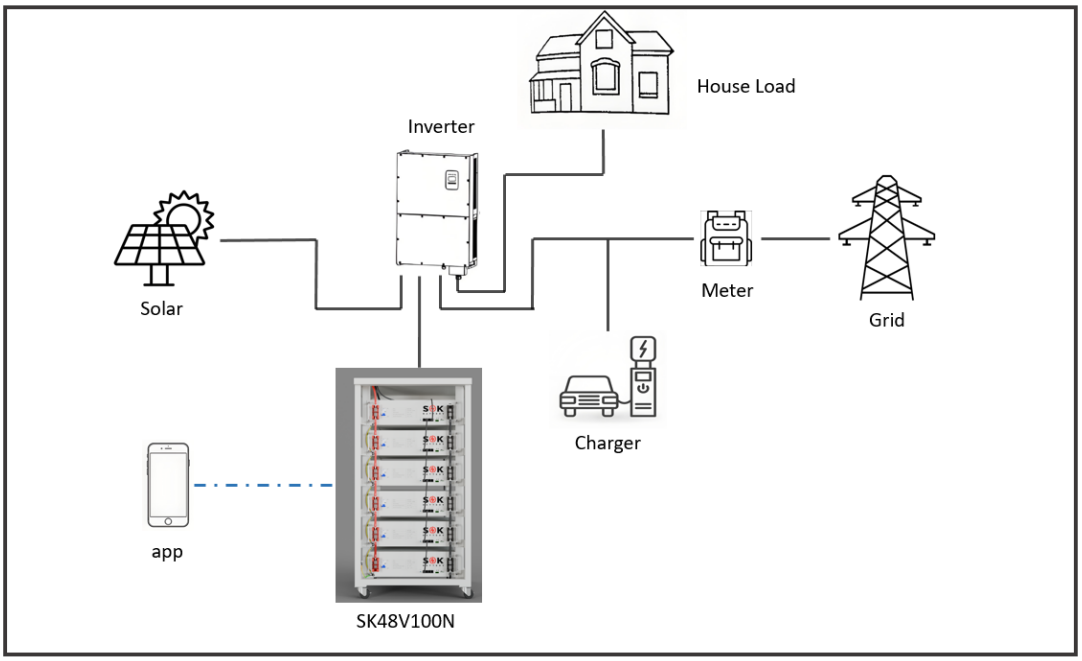
Abbreviation	Definition
Battery	Single SK48V100N rechargeable lithium iron phosphate battery pack including cells, BMS and enclosure etc.
BMS	Full name: Battery Management System Unit to ensure lithium cells' safety and display information or control the battery work mode.
SOC	Full name: State of Charge SOC is defined as the ratio of the remaining capacity to the battery capacity.
SOH	Full name: State of Health The ratio of the current battery capacity to the new battery capacity reflects the remaining life and performance of the battery.

2 Product introduction

2.1 Features Description

The SK48V100N battery is designed for household energy application. It is composed of 16 100AH prismatic LiFePO4 battery cells connected in series. It has an advanced and reliable BMS management system, Simple installation and user-friendly Bluetooth user interface. Has the following features:

- Peace of Mind, Guaranteed. Experience zero risk with our LiFePO4 batteries. Engineered for maximum safety, they are certified to meet and exceed global transportation regulations, so security travels with you.
- Modular and flexible, support up to 48 batteries connect together to expand the system energy.
- Self-Heating:Built-in self-heating functionality allows for reliable operation in low-temp erature environment, perfect for installations in colder climates.
- Built in 100000uf pre-charge circuit to avoid rush current when connecting with different inverter/chargers.
- Automatic dynamic addressing function when connected multiple batteries together.
- Built in BMS provide warning and protection functions including over-discharged, over-charged, over-current, short-circuit and high/low temperature.
- Compact size and light weight for easy installation and maintenance.
- Equipped with CAN and 485 communication, it can be compatible with a wide range of inverter protocols and supports working together with most inverters.
- Bluetooth for iOS and Android Apps: Allows real-time monitoring and OTA via Blueto oth on both iOS and Android devices .



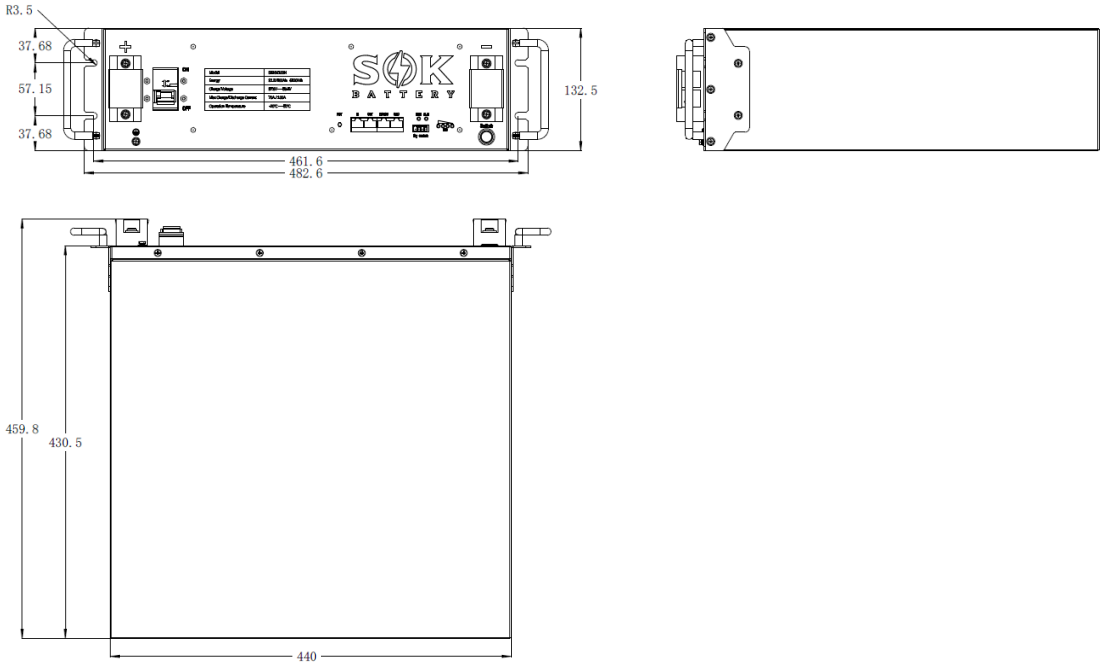
2.2 Specifications

Items	SK48V100N	
Nominal voltage	51.2V	
Charge voltage	56.0V	
Float charge voltage	54.6V	
Nominal capacity	100Ah	
Nominal energy	5.12kWh	
Max. voltage range	44.8~57.6V	
Standard charge current	≤50A	
Max. charge current	70A	
Standard discharge current	≤50A	
Max. discharge current	100A	
Standard charge Temperature	-13~ 122°F /-25~50°C(With heating function)	
Standard discharge Temperature	-4 ~ 140°F /-20~60°C	
Storage Environment	Recommend environment	59 ~ 95°F/15~35°C 5～75%RH
	≤3 months	14 ~ 113°F/-10 ~ 45°C 5～85%RH
	≤6 months	23 ~ 104°F/-5 ~ 40°C 5～80%RH
Communication	RS485 /CAN	
Max parallel number	48	
Dimension	18.9*5.2*18.1 inch(482*132.5*460mm)	
Weight	About 48 KG	

⚠ WARNING

Keep your battery happy and healthy by using it between 15°C and 35°C. To ensure long life and reliable power, avoid exposing it to extreme heat or cold, which can cause premature aging and reduced performance.

2.3 Dimensions

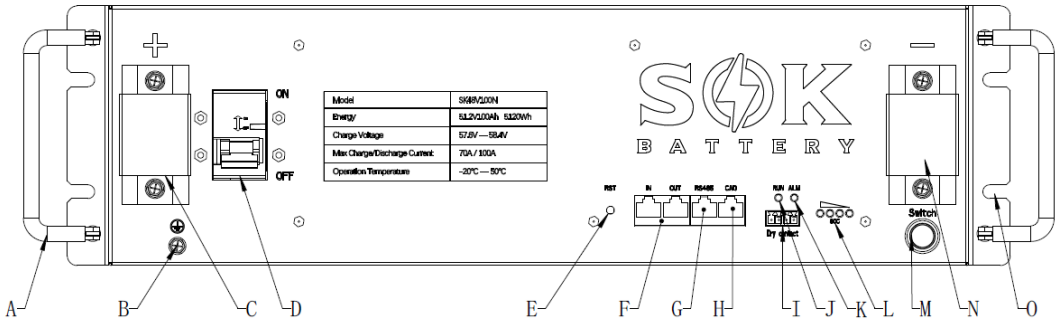


Dimension (L x W x H):

18.9*5.2*18.1 inch

482*132.5*460 mm

2.4 Controls and indicators



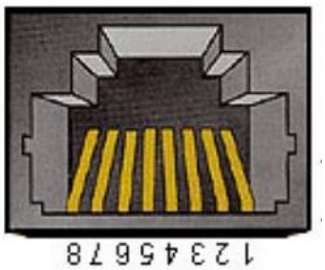
No.	Items	Usage description
A	Handles	For handling and intallation of battery
B	Grounding	For connect battery with ground
C	Positive terminal	Used to connect the inverter/charger
D	Breaker	Safety protection and circuit switches
E	Reset	For reset the BMS
F	IN/OUT	Parallel communication
G	RS485	RS485 communication with the inverter
H	CAN	CAN communication with the inverter
I	Dry contact	output signal
J	RUN	Used to show battery is in running status when lighting or flashing
K	ALM	Used to show battery Alarm/Protection status
L	SOC	Used to show battery real-time SOC
M	Switch	Used to Power on/off battery
N	Negtive terminal	Used to connect the inverter/charger
O	Mounting ear	Used to fix with rack or cabinet

Dry contact:

Output1, Charge enable/disable signal(Rated current 1A).

Output2, discharge enable/disable signal(Rated current 1A).

2.4.1 RS485 / CAN



Port	Pin No.	Definition	Remarks
RS485	1	RS485-B	Used for connecting the communication of the inverter
	2	RS485-A	
	3	GND	/
	4	/	/
	5	/	/
	6	GND	/
	7	RS485-A	Used for connecting the communication of the inverter
	8	RS485-B	
CAN	1	/	/
	2	/	/
	3	GND	/
	4	CANH	Used for connecting the communication of the inverter
	5	CANL	
	6	GND	/
	7	/	/
	8	/	/

Note: Before connecting, please read the user manual of the inverter carefully. According to the wiring port configuration of the inverter.

⚠ CAUTION

The BMS contains the CANBUS 120Ω resistance, and the BMS will automatically connect or disconnect the resistance according to the need. It is not necessary to connect the 120Ω resistance when connecting the CANBUS.

2.4.2 Battery LED indicators

Mode	Normal/Warning/Protection	RUN	ALM	LED indicator				Description
		●	●	●	●	●	●	
Shutdown	Dormancy	OFF	OFF	OFF	OFF	OFF	OFF	ALL OFF
Standby	Normal	FLASH1	OFF	According to battery SOC				Standby
	Warning	FLASH1	FLASH3					See Note
Charge	Normal	ON	OFF	According to battery state of charge (highest SOC LED: FLASH2)				
	Warning	ON	FLASH3					
	Full chanrge/OV	ON	OFF	According to battery SOC				
	Over-current	FLASH1	ON	According to battery SOC				Stop charging
Discharge	Normal	FLASH3	OFF	According to battery SOC				See Note
	Warning	FLASH3	FLASH3					
	Under voltage	OFF	FLASH3	OFF	OFF	OFF	OFF	Stop discharging
	Over current, short circuit	OFF	ON	OFF	OFF	OFF	OFF	Stop discharging
Temperature	Protection	OFF	ON	OFF	OFF	OFF	OFF	Stop charging /discharging
Failure	Cell failure NTC failure Sensor failure MOS failure	OFF	ON	OFF	OFF	OFF	OFF	Stop charging /discharging

FLASH Type	ON	OFF
FLASH1	0.25S	3.75S
FLASH2	0.5S	0.5S
FLASH3	0.5S	1.5S

3 Installation

Please strictly follow the local safety regulations along with product technical specifications. and installation requirements.

3.1 Installation environment

The operating environment shall meet the following requirements:

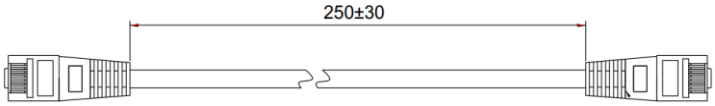
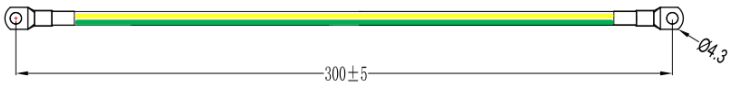
Type	Description
Temperature	-20℃-60℃(maximum operating range)
Humidity	5%RH～90%RH
Altitude	0～4000m（In the 3000m to 4000m environment, derating is required)
Safety requirement	• Do not expose the battery to direct sunlight, rain and snow. • Do not place the battery in reach of children or pets. • Do not place the battery near heat source and flammable material. • Do not drop, deform, impact, cut, drill or modify the battery enclosure. • Do not store anything on top of the battery. • Do not disassemble the battery without Manufacturer's permission. • If the battery does not function, contact your dealer or SOK Support.

3.2 Installation Inspection

3.2.1 Unpacking

- Step 1. Check if the packing boxes are intact. If the packing case is damaged or wet, note the damage prior to accepting delivery and notify your dealer.
- Step 2. Open the box.
- Step 3. Check the number of parts on the packing list. If the quantity is different from that on the packing list, please notify your dealer.

3.2.2 Checking components

Type	Description	quantity
Battery		1PCS
Line of Parallel		1PCS
Line of Grounding		1PCS
Warrnty Card	/	1PCS
Specification	/	1PCS
factory quality assurance test report	/	1PCS

CAUTION

Please check whether the accessories are complete, if there is any problem, please contact your dealer.

3.3 Wiring

In systems where one or more batteries are connected in parallel, it is recommended to add a FUSE at the positive electrode to enhance the electrical protection of the entire system. The specification of FUSE is: the number of batteries connected in series in the system N x 100A.

3.4 Connecting with inverter

- The maximum communication cable length is required to be less than 15m between inverter/charge and battery.
- The maximum power cable length is suggested to be less than 10m between inverter/charge and battery.
- Check whether the power cable pair(s) used meets the maximum current requirement for operation.
- Connecting battery OUTPUT (+) with inverter battery INPUT (+), battery OUTPUT (-) with inverter battery INPUT (-),choose the corresponding power cable pair and wiring them correctly.
- When multiple batteries are connected in parallel, the OUT terminal of the previous battery communicates with the IN terminal of the next battery.
- The battery and the inverter communicate via CAN or RS485. When connecting, you can use either communication method to establish the connection.
- Confirm inverter AC input and PV input is disconnected before wiring connection, and the DC/ signal switch of inverter/charger is in off status.
- Please use corresponding number of power cable pairs according to the field configuration and local connection requirements, standards, and directives.
- Before installation, make sure that the battery is in the off state and the circuit breaker is in the OFF position.
- The grounding wire needs to be properly connected.

3.5 Commissioning

3.5.1 Power on

Step 1： Make sure the harness is connected correctly.

Step 2： Hold down the switch button of the battery for 3s to start the battery.

Step 3： Set the circuit breaker to the ON position.

Step 4： Then turn on the inverter/charger isolator and other charging sources.

Step 5： Program the inverter/charger and any other charging sources as listed in the battery specifications. On inverter/charger or any other control devices, if everything is correct, you are ready to use.

3.5.2 Switch off battery

Step 1： Turn off the inverter.

Step 2： Set the circuit breaker to the OFF position.

Step 3： Hold down the switch button on the battery for 3s to turn off the battery.

3.6 Mobile device APP

The user can review relevant battery data with the dedicated Bluetooth APP. The APP can be downloaded in the following two ways.

Method 1: Download directly by scanning the QR code.

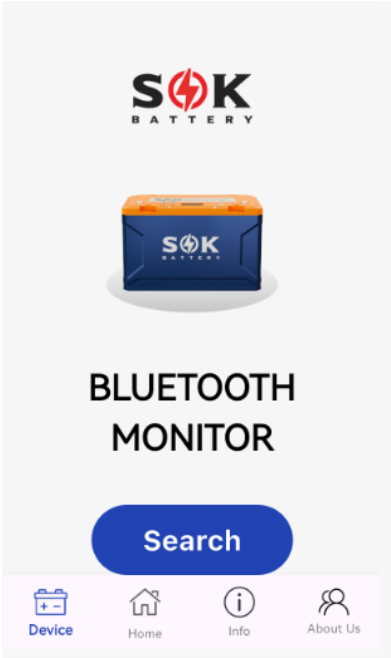
iOS system

Android system

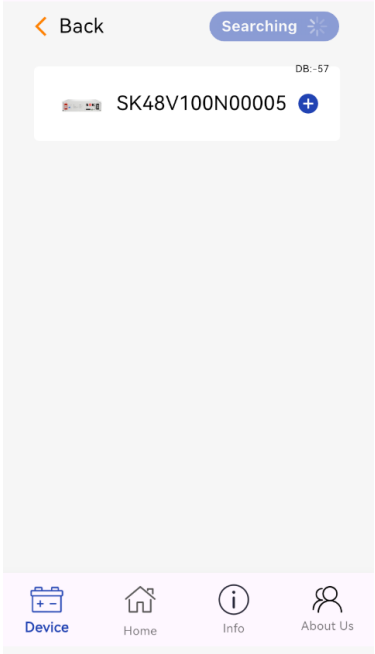
Method 2: Apple users can search for "**SOK Battery**" directly in the App Store. Android users search for "**SOK Battery**" directly in the Google Play (If the search is incorrect, you can search for "**APP: SOK Battery**").

3.6.1 Adding batteries to the app

Step 1： Open the installed APP, and the page is displayed as follows:



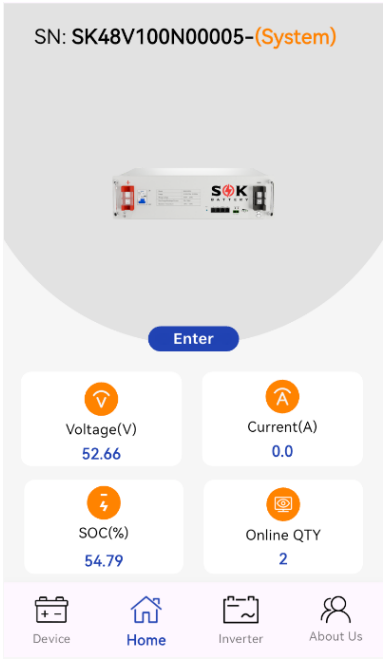
Step 2： Click the "Search" button on the main page. If the device is not detected, please check whether the Bluetooth of the mobile phone is turned on or whether the battery is power-on state, and it is within the Bluetooth search range. After the battery is found, the following page is displayed:



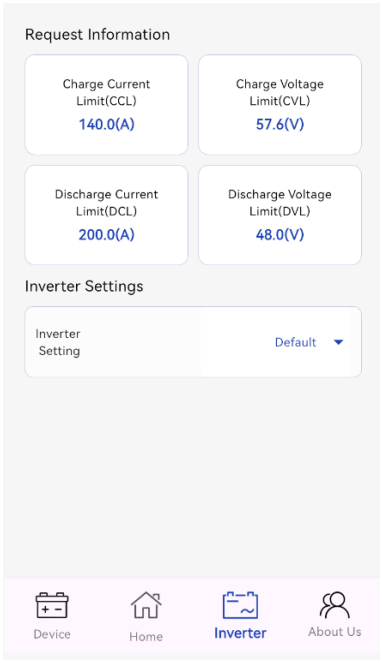
Step 3： Click the "+" button to the right of the battery information. The battery is connected successfully.

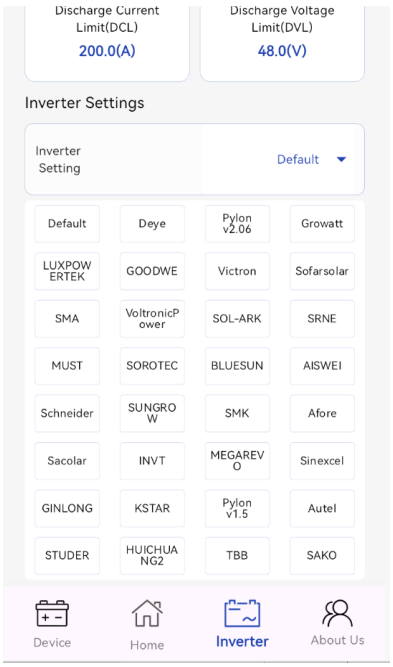
3.6.2 Battery system information display

After the battery system (One or more batteries are connected in parallel to form a battery system) is successfully connected, the home page is displayed. The home page displays the following information: Battery system voltage information, Battery system current information (the negative number is discharge current and the positive number is charge current), Battery system SOC information, The total number of batteries online in the system（Online QTY）. The page is displayed as follows:



After clicking on the "inverter" page, you can view the current requests and settings from the battery to the inverter. You can view CCL (Charging Current Limit), CVL (Charging Voltage Limit), DCL (Discharging Current Limit), and DVL (Discharging Voltage Limit). Multiple inverter protocols can also be selected. The interface is as shown in the following picture.


Request Information
Charge Current Limit(CCL)
140.0(A)
Charge Voltage Limit(CVL)
57.6(V)
Discharge Current Limit(DCL)
200.0(A)
Discharge Voltage Limit(DVL)
48.0(V)
Inverter Settings
Inverter Setting
Default
Device
Home
Inverter
About Us


Discharge Current Limit(DCL)
200.0(A)
Discharge Voltage Limit(DVL)
48.0(V)
Inverter Settings
Inverter Setting
Default
Default
Deye
Pylon v2.06
Growatt
LUXPOWERTEK
GOODWE
Victron
Sofarsolar
SMA
VoltronicPower
SOL-ARK
SRNE
MUST
SOROTEC
BLUESUN
AISWEI
Schneider
SUNGROW
SMK
Afore
Sacolar
INVT
MEGAREVO
Sinexcel
GINLONG
KSTAR
Pylon v1.5
Autel
STUDER
HUICHUANG2
TBB
SAKO
Device
Home
Inverter
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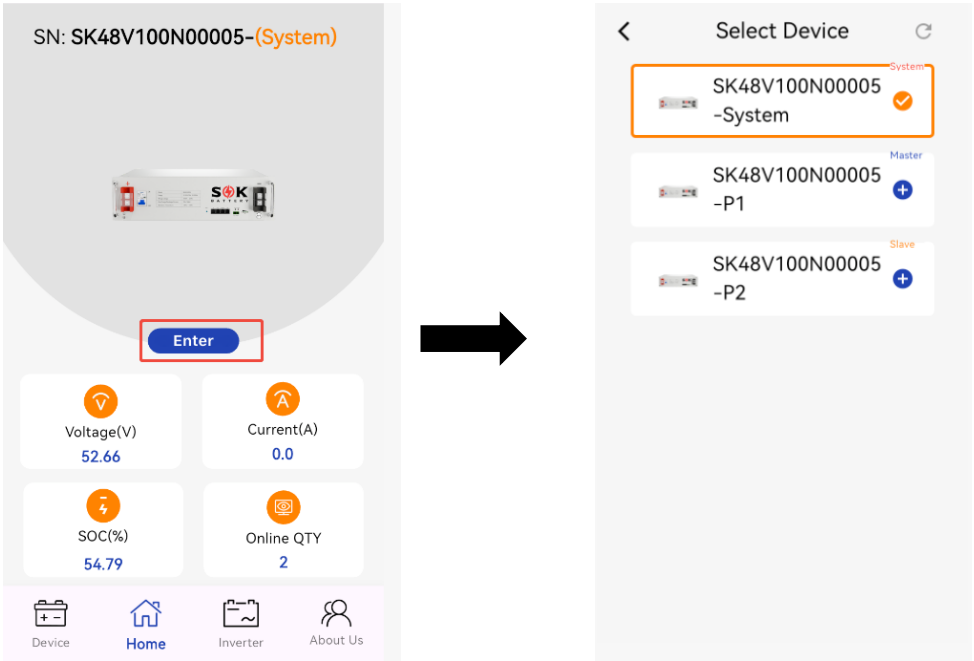
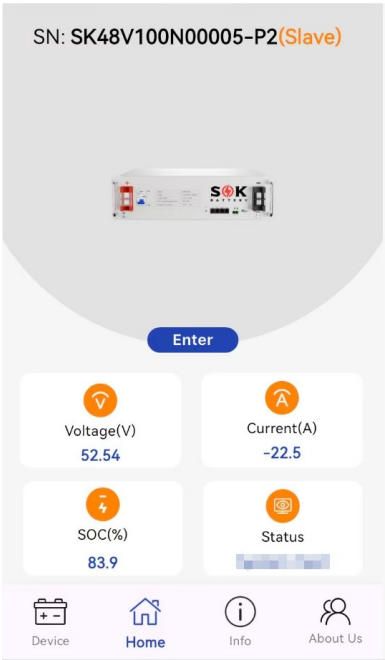
3.6.3 Battery information display

On the HOME page of the battery system, click "ENTER" to view the information of a single battery.

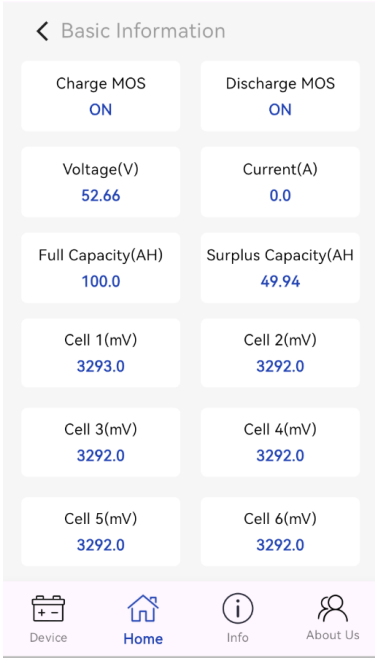
Master refers to the battery address of the host in the system (P1), while Slave refers to the battery addresses of the slave devices in the system (P2, P3, ...) .The communication port (OUT) of the host (P1) is connected to the communication port (IN) of the slave (P2). The communication port (OUT) of the slave (P2) is connected to the communication port (IN) of the slave (P3).



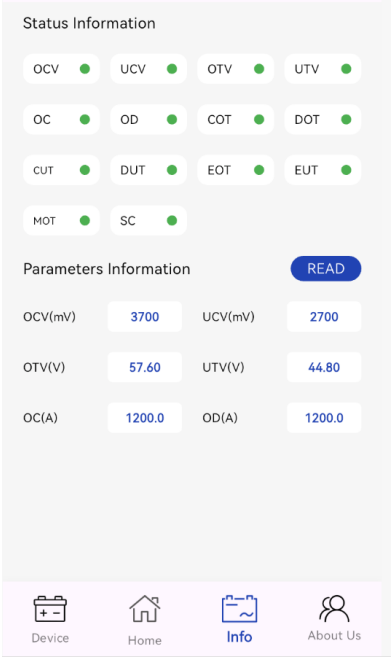
After selecting a single battery, you can view the information of that single battery. The information displayed on the HOME page of a single battery is as follows: voltage, current, SOC (State of Charge) and battery status.



After clicking the "Enter" button in the home page, you can view more detailed battery data, including detailed cell voltage, temperature information and MOS state. The page is displayed as follows:



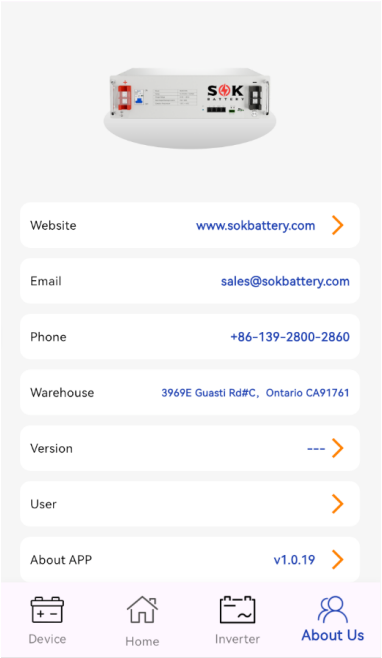
The "info" page displays **Status Information、Parameter information.**



Status Information shows the alarm information of the battery, and the corresponding contents are as follows:

Abbreviation	**Full name**		**Abbreviation**	**Full name**
OCV	Over cell voltage		DOT	Discharging over temperature
UCV	Under cell voltage		CUT	Charging under temperature
OTV	Over total voltage		DUT	Discharging under temperature
UTV	Under total voltage		EOT	Environment over temperature
OC	Over Charge current		EUT	Environment under temperature
OD	Over Charge current		MOT	MOS over temperature
COT	Charging over temperature		SC	short-circuit

The "About Us" page contains the contact information of the manufacturer and the version information of the product, you can contact us if you have any questions.



4 Troubleshooting

Items	Solution
Unable to start	1：Press and hold the Start button and release it after 5 seconds. 2：Use a charger or inverter to provide 53-57.6V voltage.
Unable to charge	1：Check if the break is properly opened. 2: Check whether the battery has a charging fault, which can be observed through the Bluetooth APP. After the charging fault is eliminated, try charging again. 3：Check that the power lines and communication lines of the battery and the inverter/charger are correctly connected. 4：Check whether the inverter or charger is faulty.
Unable to discharge	1：Check if the break is properly opened.

	2: Check whether the battery has a discharging fault, which can be observed through the Bluetooth APP. After the discharging fault is eliminated, try discharging again. 3：Check that the power lines and communication lines of the battery and the inverter/charger are correctly connected. 4：Check whether the inverter or charger is faulty.
High/Low temperature	1. Let the battery stand for a period of time and observe whether the temperature returns to normal. 2. Avoid continuous full charging and discharging. 3. Reduce battery power.
High current	1: Use more batteries for parallel use. 2: Set the correct inverter parameters.
Communication fail	1. Check the communication cable type is correct and is contacted well. 2. Check the inverter protocol related setting is correct. 3. Check both battery and inverter are working properly.
Long time charge	After the SOC is 100%, the battery can be charged for a long time (> 30min). This is normal because the product itself may have a capacity of > 100AH.
The inverter displays an incorrect number of batteries	Check whether the communication cable of the battery is connected properly, and the OUT of the previous battery is connected to the IN of the next battery.
ALM always on	Turn off all the batteries, and remove the fault battery from the system.
After the above actions, the battery still cannot be used. Please contact the supplier	

5 Disposal of battery

Disposal of battery must comply with the local applicable disposal regulations for electronic waste and used batteries, please review your local Battery recycling or management regulations.