Wall Mounted Battery

Pack Installation & Operation Manual

BL- EP48300-15.36KWH

BRAUN POWER

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1. Preface

This manual will provide detailed product information and installation instructions for users of the wall-mounted series products. Please read this manual carefully, and put this manual in a place where you can install, operate, and obtain it conveniently.

The safety precautions mentioned in the manual do not represent all the safety matters that should be observed, but are only supplementary to the safety precautions. When installing, operating, and maintaining equipment, local safety regulations and norms should be followed. Only trained professionals can install, operate and maintain equipment. The responsibility for losses will be not covered as the issue caused by violation of general safety operation requirements or violation of safety standards for the design, production, and use of equipment. Installation and maintenance personnel must have high-voltage and AC power operation skills. When installing, operating, and maintaining equipment, they must not wear any conductive objects, such as watches, bracelets, bracelets, and rings, and prevent moisture from entering the equipment.

Safety Instructions

High Voltage Danger
The high-voltage power supply provides power for the operation of the equipment. Direct contact or indirect contact with high-voltage power supply through wet objects will cause fatal danger.

Use Professional Tools
Always use professional tools instead of personal tools when working with high voltage and AC power

Anti-static
The static electricity generated by the human body will damage the electrostatic sensitive components on the board. Before touching the plug-in, circuit board or chip, make sure to take proper anti-static measures.

Operate Attention
The power must be cutoff first before operation, do not hot-line work.

DC short circuit Danger
The power system provides a DC-regulated power supply, and a DC short circuit will damage the equipment and cause personal injury.

2. Product Description

This product is a lithium iron phosphate battery (LFP LiFePO4) composed of 16 cells in series. Which is suitable for home energy storage systems. It can be customized according to customer needs to meet diverse application scenarios and provide stable power for various equipment of users.

3. Product Advantages

a. Built-in Battery Management System (BMS): Overcharge, overdischarge, overcurrent, temperature control, short circuit and other protection functions.

b. Passive Balance Function: There is a voltage equalization function during the charging.

c. High Cost Performance: High safety performance, long service life, stable and reliable quality.

d. Expandable: Equipped with RS232/RS485/CAN bus ports, support up to 15 units in parallel.

e. Wide Working Temperature: -20℃ to 60℃, excellent high-temperature discharge performance.f.

Convenient: Modular design, small size and lightweight, easy to install and maintain.

4. Product Technical Parameters

4.1 Specification

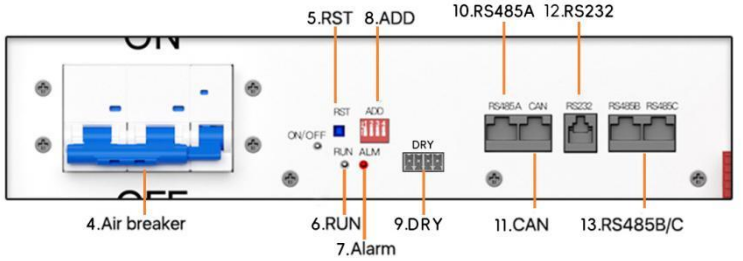
Item	Specifications
Model	BL-EP48300 15.36KWH
Nominal Voltage	51.2V
Operating Voltage	43.2V-57.6V
Nominal Capacity	300AH
Total Energy	15360Wh
Configuration	1P16S
Charging Cut-off Voltage	58.4V
Discharge Cut-off Voltage	43.2V
Operation Temperature	-20 ℃~ 60 ℃
Standard Charging Current	50A
Max Continuous Charging Current	200A
Max Continuous Discharge Current	200A
Dimension	850*500*282mm
Net weight	145KG

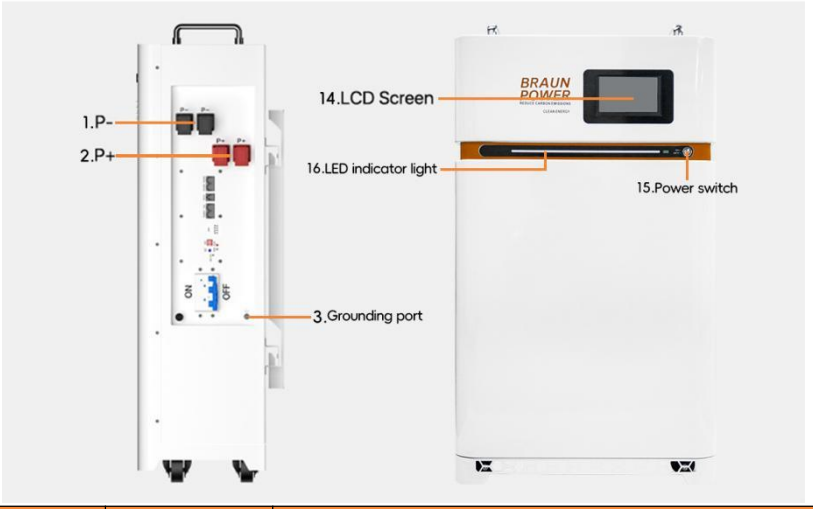
4.2 Interface Overview

P.S: There will be some differences in the appearance of the battery due to the version.

As shown in the picture

Take BL- EP48300-15.36KWH as example





Position	Item	Description
1	P+	The positive terminal of the battery, can be connected to the positive pole of the inverter through a cable for DC output.
2	P-	The negative terminal of the battery, can be connected to the negative pole of the inverter through a cable for DC output.
3	Grounding port	Ground port screw, prevent lightning strike/power
4	Air breaker	Protect the battery against overloads and short circuits
5	RST	Manual-return switch button
6	RUN	Indicating the normal operation status of the battery
7	Alam	Indicating the abnormal state of the battery, if there is an low voltage or over voltage, the alarm will sound.
8	ADD	Setting up battery parallel communication and inverter communication
9	DRY	Used to transmit parallel battery signals to achieve communication
10	RS485 A	RS485 port for the inverter or the upper system communication
11	CAN	CAN port for the inverter communication
12	RS232	Communication port for the upper system.
13	RS485 B/C	RS485 port for parallel communication
14	LCE Screen	Display battery voltage, SOC, temperature, etc.
15	LED indicator light	Charge green, alarm red
16	Power switch	The switch for turn on/turn off the battery pack.

4.3 Battery Management System (BMS)

4.3.1 Overcharge Protection

When the voltage of any single cell or whole battery pack is higher than the set value during the charging, and the duration reaches the limited time, the system enters the overcharging protection state automatically, the charging MOS is turned offat the same time, and the battery cannot be charged. After the voltage of each cell and the whole battery pack drops below the cell overcharging recovery value, the overcharging protection state is released. It can also be released by discharging to return to normal state.

4.3.2 Overdischarge Protection

When the voltage of any single cell or whole battery pack is lower than the set value during discharging, and the duration reaches the limited time, the system enters the overdischarge protection state, the discharge MOS is turned off, and the battery cannot be discharged. After the overdischarge protection of the battery pack occurs, it can be released by charging the battery pack.

4.3.3 Overcurrent Protection

During charging and discharging, when the current exceeds the set value of the protection current, and the duration reaches the limited time, the system enters the overcurrent protection state, the charging and discharging MOS will be turned off automatically, and the battery cannot be charged and discharged, charging and discharging the battery pack can release the overcurrent protection state.

4.3.4 Over Temperature Protection

When the NTC detects the temperature of the battery cell surface is higher than the setting value of over temperature protection during charging and discharging, the management system enters the over temperature protection state, the charging or discharging MOS is turned off, and the battery pack cannot be charged or discharged in this state.

4.3.5 Low Temperature Protection

When the NTC detects that the temperature of the cell surface is lower than the setting value of low temperature protection during charging and discharging, the management system enters the low temperature protection state, the charging or discharging MOS is turned off, and the battery pack cannot be charged or discharged in this state.

5. Installation and configuration

5.1 Packing

a. After receiving the battery, open the box to check the battery surface if get any broken, cracks or other bad phenomena; if get that, please do not install, and need to contact the supplier, and wait for the supplier's reply before proceeding to the nextstep.

b. Please ensure that the following items are included in the packaging:


Battery*1


Mounting Bracket*1


Expansion bolts*8


Positive and negative cable 1m 35mm*2


Inverter communication cable*1


Parallel communication cable*1


Upper system communication cable*1


Batteries parallel Parallel cable*2

5.2 Recommended Tools

Before installing the battery pack, the user needs to have the tools as following list:

Picture	Item	Description
	Level	Make sure the bracket is properly installed
	Hammer Drill	Drill holes on the wall
	Impact Wrench Set	Locking expansion bolts
	Electric Screwdriver	Wiring

	Hammer	Hanging the bracket
	Crimping Tool	Crimping tool for RJ45 terminal
	Crimping Plier	Crimping tool for insulated electric connectors
	Adjustable wrench	Loosening/tightening screws

5.3 Notice for Installation

a. The wall for installation should be a solid brick or cement wall with a strong load-bearing capacity, and the thickness of the wall should not be less than 100mm.

b. In indoor installation, it needs to leave enough space to be installed and operated easily and pay attention to ventilation. Do not place flammable materials around the battery.

c. In outdoor installation, it needs to be surrounded by protective measures, and make a rain protection.

5.4 Installation Procedure

a. Mark the drilling position using the wall mounting plate, and level using a spirit level.

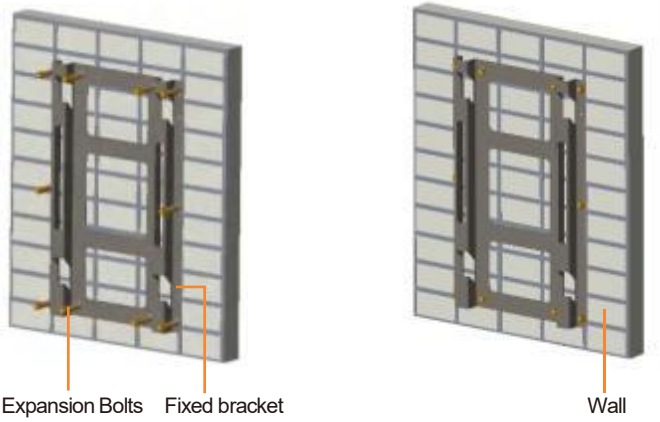
b. Place the wall mounting plate close to the wall firmly, mark the drilling position, and remove the wall mounting plate.

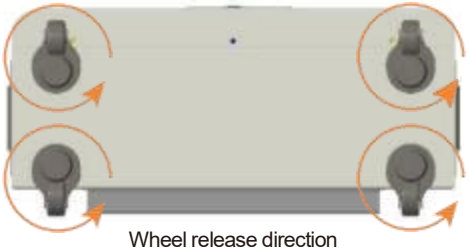
c. Drill holes in the wall using the driller. The hole diameter is 12mm and the depth is 60mm.

d. Fix the M8 Expansion bolts, tightening torque: 20N.m

e. Loosen the 4 wheels on the battery, lift the battery parallel to the ground, and hang the battery module on the bracket as shown in the following figure:

Installation Diagram





6. Connection

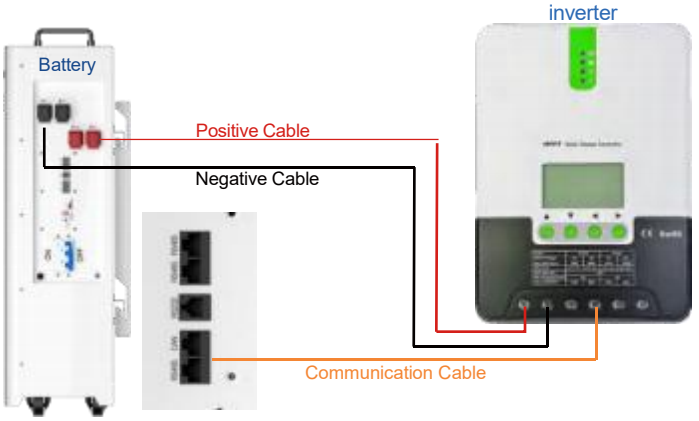
6.1 Precautions Before Connecting The Inverter

a. Use a multi-meter to measure whether connection of the positive and negative cables are conducting, and check whether that connections are loose.

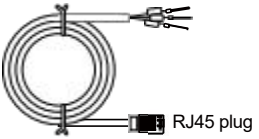
b. The battery should be switched off before wiring to ensure that there is no DC output from the battery.

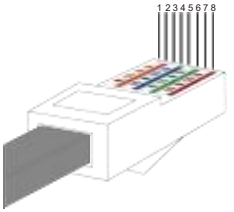
c. Connect positive terminals of the battery and the inverter with red power cable, and then connect negative terminals of both sides with black power cable.

d. Connect both communication ports of the battery(RS485A/CAN) and the inverter(BMS port) with the communication cable, BMS ports of inverter have different definitions for some brands, please check the inverter manual.



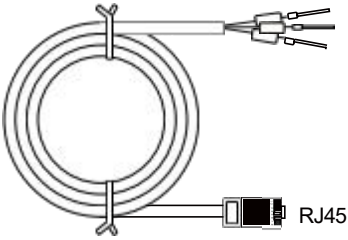
Communication cable connection Pin definition is as follows:

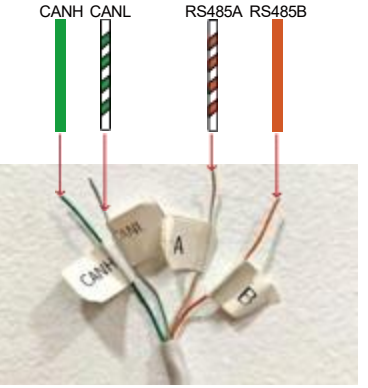


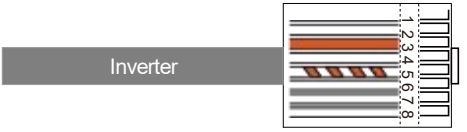


RS485A Port	PIN	1	2	3	4	5	6	7	8
	Define	RS485-B	RS485-A	GND	NC	NC	GND	RS485-A	RS485-B
CAN Port	PIN	1	2	3	4	5	6	7	8
	Define	NC	NC	NC	CAN-H	CAN-L	NC	GND	NC

6.2 RJ45 Connector Diagrams of Inverter's port





RJ45 Connector Diagrams	Communication
 Brand : DEYE, Growatt, Goodwe, Solis	CANH->pin4 CANL->pin5
 Brand: Victron	CANH->pin7 CANL->pin8
 Brand: Pylon, Growatt	RS485B->pin1 RS485A->pin2
 Brand: Voltronic	RS485B->pin3 RS485A->pin5
Please setup the RJ45 connector according to the pin definition of the inverter	

6.3 Precautions Before Connecting The Inverter with The Battery Pack in Parallel

a. Use a multi-meter to measure whether connection of the positive and negative cables are conducting, and check whether that connections are loose.

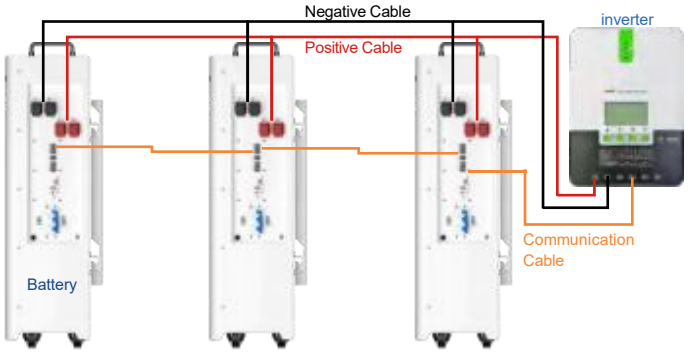
b. The battery should be switched off before wiring to ensure that there is no DC output from the battery.

c. Lock the parallel cable wires to the positive terminal of the battery pack first, then connect another end to the negative terminal.

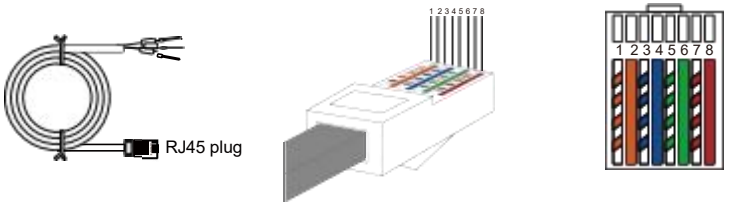
d. Parallel communication cable to the RS485 port of the battery pack.

e. Connect positive terminals of the battery and the inverter with red power cable, and then connect negative terminals of both sides with black power cable.

f. Connect both communication ports of the battery(RS485A/CAN) and the inverter(BMS port) with the communication cable, BMS ports of inverter have different definitions for some brands, please check the inverter manual.



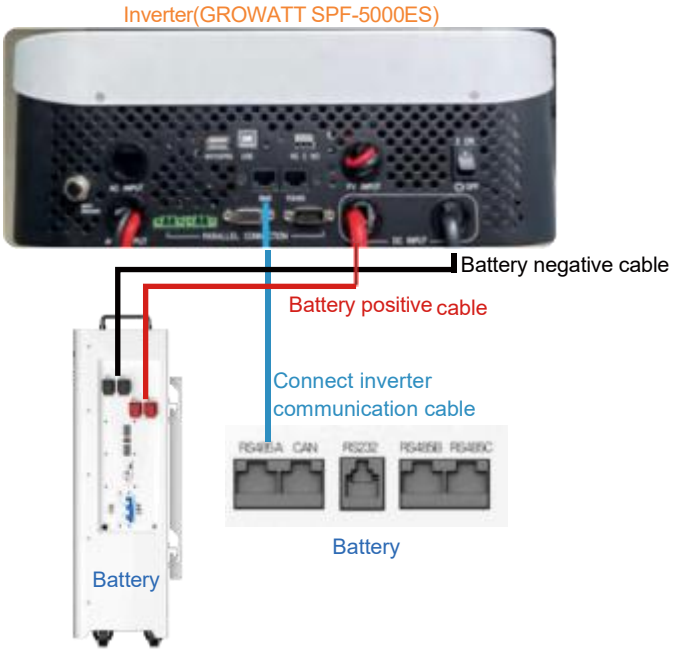
Parallel communication cable connection Pin definition is as follows:



RS485 Parallel communication interface definition	PIN	1	2	3	4	5	6	7	8
	Define	RS485 -B	RS485 -A	GND	NC	NC	GND	RS485 -A	RS485 -B

6.4 Battery & Inverter Connection

Connect the positive and negative cables of the battery to the positive and negative terminals of the DC input of the inverter, insert the RJ45 crystal plug at one end of the distributed inverter communication cable to the RS485 of the battery, and connect the other end to the BMS terminal of the inverter according to the defined line voltage, and then connect the battery to the inverter.



6.5 Dip Code Switch Definition and Setting

ADD switch is a 4-bit DIP switch to manually distribute the communication address of parallel batteries.

The BMS will recognize the DIP address in a few seconds. When the DIP address is 0, the battery is configured as stand-alone working mode or master working mode; When the DIP address is 1 to 15, the BMS is configured as the slave working mode.

Please refer to the table below to set the DIP switch for parallel connection of different batteries.

4-BIT					
Address	Dip Switch Position				Illustration
	#1	#2	#3	#4	
0	OFF	OFF	OFF	OFF	
1	ON	OFF	OFF	OFF	
2	OFF	ON	OFF	OFF	
3	ON	ON	OFF	OFF	
4	OFF	OFF	ON	OFF	
5	ON	OFF	ON	OFF	
6	OFF	ON	ON	OFF	
7	ON	ON	ON	OFF	
8	OFF	OFF	OFF	ON	
9	ON	OFF	OFF	ON	
10	OFF	ON	OFF	ON	
11	ON	ON	OFF	ON	
12	OFF	OFF	ON	ON	
13	ON	OFF	ON	ON	
14	OFF	ON	ON	ON	
15	ON	ON	ON	ON	

7. Operation

7.1 Check Before Power on

a. Check all positive, negative cables and communication lines are connected correctly and safely.

b. Check the battery is firmly installed, easy to operate and maintain, and check ventilation.

c. Insulate the unused ports.

7.2 Power on

a. Turn on the switch on the battery.

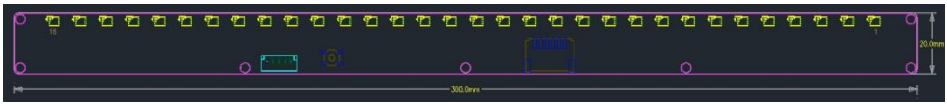
b. The green running LED is normal on(Check the status of the LED indicators)

c. If it is failed to switch on the battery system, check if all the electrical connection is correct.

d. If the electrical connection is correct, but the battery system is still unable to switch on, contact our after-sale service within 48 hours

7.3 LED Indicator Description

RGB Lamps: 16 Bi-Color Lamps, Red and Green



7.3.1 Description of indications (definition of running lights and signals)

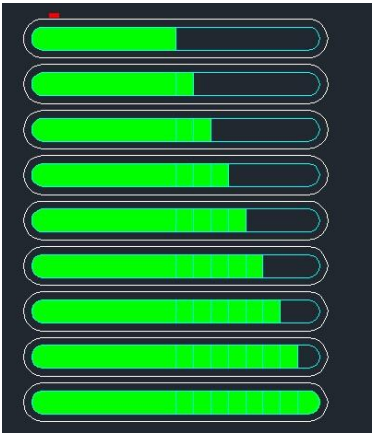
① Power-on self-test: green from low to high running horse, from light 1 has been lit to light 16, the frequency is 300mS, self-test is completed to enter the normal display state State.

② BMS and lamp board communication interruption lasts for 30S, blinking yellow lamp, on for 1S off for 1S<

③ Red light is always on during fault and protection, red light flashes during alarm (0.5S flashing), (all off during under-voltage protection, red light flashes during over-voltage alarm or over-voltage protection).

The light should not blink or stay on)

④ When charging, the green light blinks cyclically (e.g., when the SOC is 50%, Lamp 1 and Lamp 8 are always on, and the horse is running for 300mS from Lamp 6).



⑤ When discharging, decreasing according to SOC.

⑥ Over-discharge protection, the system goes into sleep, full extinction

⑦ When the battery is in standby (when not charging or discharging), the corresponding length is displayed according to the actual SOC (e.g., when it is 50%, as shown in the figure below).

7.4 Reset Key Key Description

When the BMS is in sleep state, press the button for 1S and release it, the protection board is activated and the LEDs light up sequentially for 0.5 seconds starting from "L4".

When the BMS is active, press the button for 3S and then release it, the protection board will be put to sleep and the LEDs will light up in sequence from "RUN" for 0.5 seconds.

7.5 Hibernation and Wake-Up Functions

7.5.1 Dormancy

When any of the following conditions are met, the system enters the low-power mode:

① The single unit undervoltage protection or overall undervoltage protection has not been released within 30 minutes.

②Press the button for 3 seconds and release it.

(iii) The minimum individual voltage is lower than the hibernation set voltage (default 3350mV) and the duration reaches the hibernation delay time (default 1440) minutes) (while satisfying no communication and no charging and discharging currents).

④ Forced shutdown through the upper computer software.

Before entering hibernation, make sure that no external voltage is connected to the P- terminal, otherwise you will not be able to enter the low power mode.

⑤ The minimum unit voltage is lower than the undervoltage protection value of -500mV, and the delay time is 10min, forcing it to enter deep sleep.

7.5.2 Wakeup

When the system is in low-power mode and any of the following conditions are met, the system will exit low-power mode and enter normal operation mode:

① Connect to the charger, the output voltage of the charger should be more than or equal to 48V.

② Press the button for 1S and release it.

③ Connect the RS485 communication line and open the software of the upper computer.

8. Operation of Bluetooth

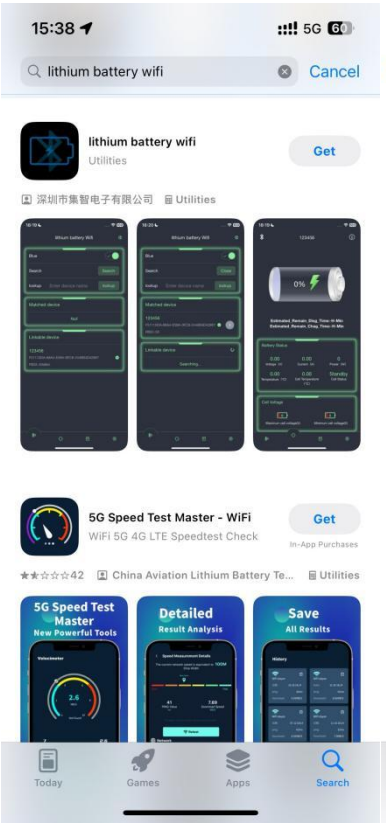
BRAUNPOWER 48V battery pack is equipped with a Bluetooth function, supports APP monitoring battery statuses. All information available in the battery, such as the state of charge, voltage, operating current, temperature, and other operating information are transmitted in real-time via the Bluetooth transmitter. The parameters can be made visible with the Lithium battery wifi App.

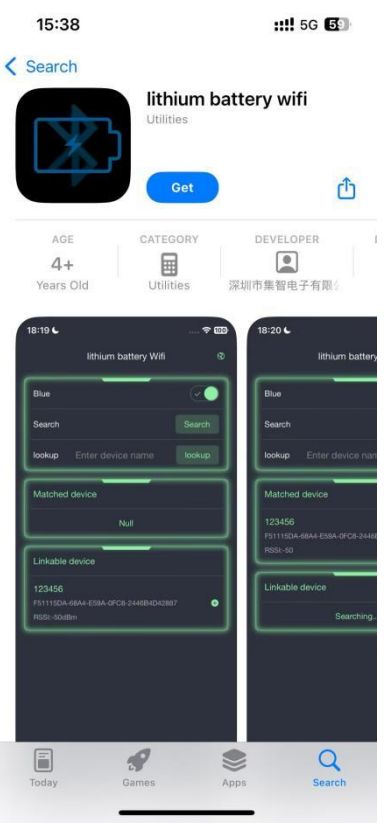
Download: Android: "Lithium battery wifi" in Play Store

iOS: "Lithium battery wifi" in Apple Store

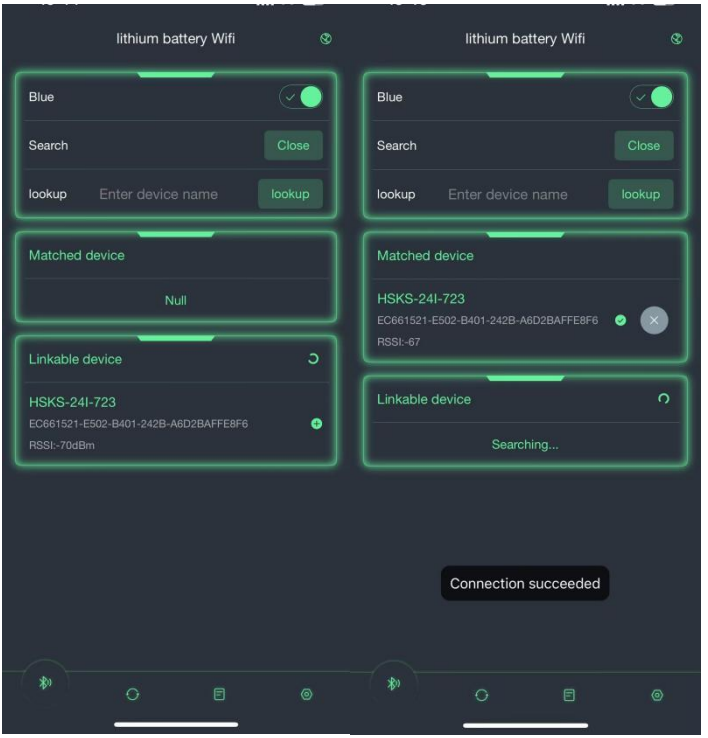
8.1 Bluetooth

a. For Android users, please visit the Google Play Store and search for 'Lithium battery wifi'. For iOS users, go to the Apple Store and lookup 'Lithium battery wifi"





b. Turn on Bluetooth and search for the corresponding product's Bluetooth code

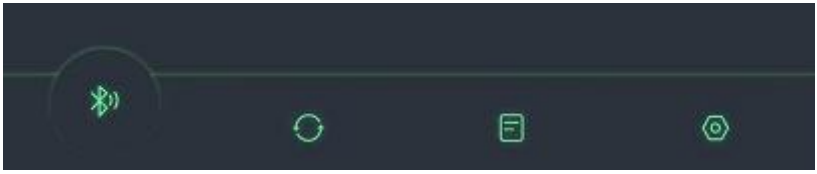


NOTE:

1.If you selected a battery to connect to and the app doesn't confirm the connection, it might be someone else is already connected to the battery. Only one device connects to the battery at the same time.

2.The Bluetooth app supports status monitoring only. It does not support any modified operation except communication protocol switching

c. Menu



Bluetooth list: Check the Device list and connect it.

Homepage: Check the status of battery-SOC, Volt, Current, Temperature, etc.

Historical Data: Not available

Setting: Base Message: Check the pack voltage, current, cycle time, etc.

Cell Voltage: Check the cells voltage.

Language: English/Chinese switching.

Fault Data: Not available

System Parameter: Not available

Setup WiFi: Setup WiFi function(Not available)

Inverter configuration: Communication protocol switching(Chapter 9.2)

9.1Communication Protocol Switching via Screen

1. Introduction

There are menu options on the right side of the screen

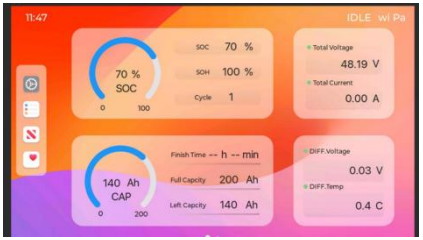
Settings: Go to the "Settings" page

Detailed data: Monitor the data of each cell

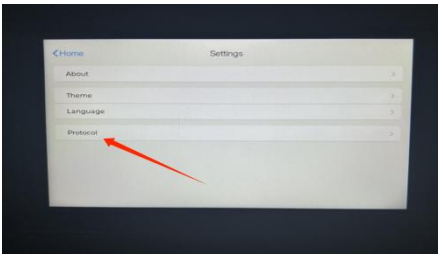
Detailed state: Cell protection alarm state

2. Switch the communication protocol

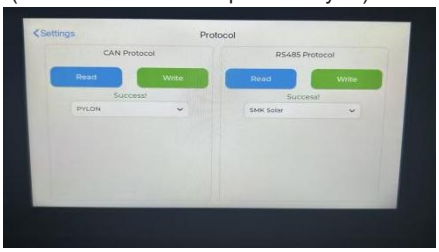
a. Turns on the battery, the screen will lights up and shows the data.



b. Click on "Settings" , enter the “Protocol” page.



c. There are CAN/RS485 options, click the correct option based on the inverter model.
(Default communication protocol: Pylon)



9.2 Communication Compatible List

Braun BMS inverter Communication Protocol Matching Table					
Inverter Brand		Protocol Name	Communication method	Communication Potter rate	Protocal Version
古瑞瓦特 Growatt	Growatt	Growatt BMS CAN Bus protocol lov voltage V1.05	CAN	500K	V1.05
肖科 Shanko	SOFAR 首航新能源	Growatt BMS CAN Eus protocol lov voltage v1.05	CAN	500K	V1.05
固德威 Goodwe	固德威 GOODWE	Goodwe 固德威 CAN V1.7 220228 SolariverterFamily-EN	CAN	500K	V1.7
日月元 Voltronic Power	Voltronic Power	Voltronic 日月元 485 V1.0.3 200325	485	9600	V1.0.3
首航 SOFAR	SOFAR 首航新能源	Sofar 首航 CAN V1.00 211117 Rev6	CAN	500K	V1.00
索瑞德 SOROTEC	SOROTEC Power Solutions Expert	CAN协议10(索瑞德CAN协议)	CAN	500K	V1.00
索瑞德 SOROTEC	SOROTEC Power Solutions Expert	Protocal between Sorotec Iverter andLithium Battery(RS485)	485	9600	V1.05
德业 Deye	Deye 德业	Deye LV CAN communication protocol	CAN	500K	V1.0
德业 Deye	Deye 德业	485 Modbus Protocol4 deye	485	9600	V1.0
锦浪 Ginlong	solis	Solis 锦浪 CAN V10 191228 lovVoltage	CAN	500K	V1.0
里诺 Luxpower	LUXPOWER	Luxpowertek Battery CAN Protocol 2021	CAN	500K	v1.0
派能 Pylontech	PYLONTECH	Pylon 派能 485 V35 161216 lova voltage protocol	485	115200	V35
派能 Pylontech	PYLONTECH	Pylon 派能 485 V3.5 161216 low voltage protocol	485	9600	V3.5
派能 Pylontech	PYLONTECH	Pylon 派能 CAN V1.2 180408 lovVoltage	CAN	500K	V1.2
Sol-Ark	Sol-Ark	Sol Ark CANBus Protocol 1.2.pdf 4 25 22	CAN	500K	V1.2
硕日 Srne	srne	shuori BMS Modbus Protocol forRS485V1.3(2020 11 24)	485	9600	V1.3
美世乐 Must	MUST	PV1800F CAN commmunication Protocol1.04.04	CAN	100K	V1.04
SMA	SMA	SMA 艾思玛 CAN V1.0.0 210630 FSS ConnectingBat-TI-en 20w	CAN	500K	V1.0
迈格瑞能 MERGA	MEGAREVO	深圳迈格瑞能技术集合型变器 SKEMS协议 V1.01	CAN	500K	V1.01
MPP Sola	MPP Solar	BMS 485communication protocol(20200325(2)	485	9600	V2.01	
拓宝 TBB	TBB POWER	CAN BUS Protocol of TBB Lthium BatteryBMS Platform V11	CAN	500K	V11
赛能杰 SenergyINV	Senergy	SenergyINV&BMS CAN Protocols	CAN	500K	V1.0
维克托 Victrion	victron energy	Victron 维克托 CAN V1.00 211135	CAN	500K	V1.00
施耐德 Schneider	Life Is On Schneider Electric	Version 2 SE BMS Communication Protoco	CAN	500K	V1.0
爱士惟 Aiswei	爱士惟 AISWEI	Aiswei电池协议V1.0	CAN	500K	V1.0
SMK	SMK	锂电协议GT版20220510	485	9600	V1.2
Foxess 泰坦	FOX	Pylon 派能 CAN V1.2 180408 lovVoltage	CAN	500K	V1.2
SunGrow 阳光	SUNGROW	Pylon 派能 CAN V1.2 180408 lovVoltage	CAN	500K	V1.2

10. Storage

a. External terminals of the battery pack are insulated and protected.

b. If the battery pack is stored for a long period of time without use, it is recommended that it be charged 30%-60%, and it is prohibited to store it completely uncharged.

c. Batteries that have been in storage for more than 3 months should be recharged for 2-3 hours at 0.2C~0.3C.

d. Batteries should be stored in a dry, clean, ventilated, non-corrosive gas environment, away from sources of ignition, to avoid exposure to the sun.

e. Do not store or put in high temperatures over 60°C for a long period of time, otherwise, it will cause function deterioration and life span reduction.

11. Warning

To prevent possible battery leakage, heat generation, and explosion, please observe the following warning:

Warning!

a. It is strictly forbidden to immerse the battery in seawater or water. When not in use, it should be placed in a cool and dry environment;

b. It is strictly forbidden to reverse the positive and negative poles to use the battery;

c. It is forbidden to use metal to directly connect the positive and negative electrodes of the battery to a short circuit;

d. It is forbidden to transport or store batteries together with metals, such as hairpins, necklaces, etc;

e. It is forbidden to knock or throw, step on the battery, etc.;

f. It is forbidden to directly weld the battery and pierce the battery with nails or other sharp objects.

Attention!

a. It is forbidden to use or place the battery under high temperatures (in the hot sun or in a very hot car), otherwise, it may cause the battery to overheat, catch fire or fail to function, and shorten its life; the recommended temperature for long-term battery storage is 10-45°C;

b. It is forbidden to throw batteries into fires or heaters to prevent fire, explosion, and environmental pollution. Scrapped batteries should be returned to the supplier or battery recycling point for disposal;

c. Do not use it in places with strong static electricity and strong magnetic fields, otherwise it will easily damage the battery safety protection device and bring unsafe hidden dangers;

d. If the battery leaks and the electrolyte enters the eyes, do not rub it. Immediately rinse the eyes with clean water and send them to the hospital for treatment, otherwise, the eyes will be hurt. If the battery emits and odor, heats up, discolors, deforms, or has any abnormality during use, storage, or charging, immediately remove the battery from the device or charger and stop using it;

e. It is forbidden to insert the positive and negative poles of the battery directly into the power socket, and a special charger for lithium-ion batteries must be used;

f. Check the battery voltage and connectors before installation, and use it only after everything is normal;

g. The battery is stored in half power. If the battery has not been used for three months, it needs to be recharged once;

h. If the electrode is dirty, it should be wiped with a dry cloth before use. Otherwise, it may cause poor contact and function failure;

Need additional information?

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