Solar Lithium Battery Energy Storage System

User Manual

Version: 1.0

Model No : GSL- 5000U/10000U

For On / Off Hybrid Solar Storage System

Contents

1.Safety Precautions

- It is very important and necessary to read the user manual carefully before installing or using the battery. Failure to follow any of the instructions or warnings in this document can result in electrical shock, serious injury, death, or may damage the battery and the whole system.
- If the battery is stored for a prolonged time, it is requirement that they are charged every three to six months, and the SOC should be no less than 80%.
- The battery needs to be recharged within 12hours, after fully discharging.
- Do not expose cable outside.
- All battery terminals must be disconnected before maintenance.
- Do not use cleaning solvents to clean the battery.
- Do not expose the battery to flammable or harsh chemicals or vapors.
- Do not paint any part of the battery, include any internal or external components.
- Do not connect battery with PV solar wiring directly.
- Any foreign object is prohibited to be inserted into any part of the battery.
- Any warranty claims are excluded for direct or indirect damage due to items above.

1.1 Before Connecting

- After unpacking, please check the battery and packing list first, if the battery is damaged or spare parts are missing, please contact the dealer.
- Before installation, be sure to cut off the grid power and make sure the battery is in the turned-off mode;
- Wiring must be correct, do not mix-connect the positive and negative cables, and ensure no short circuit with the external device;
- It is prohibited to connect the battery with AC power directly;
- **The embedded BMS in the battery is designed for 51.2VDC, please DO NOT connect battery in series;**
- **It is prohibited to connect the battery with different type of battery;**
- **Please make sure battery SOC and Voltage should be the same level before paralleling two more batteries together.**
- Please ensure the electrical parameters of battery system are compatible to inverter;
- Keep the battery away from fire or water.

1.2 During operation

- If the battery system needs to be moved or repaired, the power must be cut off first and the battery is completely shutdown;
- It is prohibited to connect the battery with different type of battery;
- It is prohibited to put the batteries working with faulty or incompatible inverter;
- In case of fire, only dry powder fire extinguisher can be used, liquid fire extinguishers are prohibited;
- Please do not open, repair or disassemble the battery. We do not undertake any consequences or related responsibility due to violation of safety operation or violating of design, production and equipment safety standards.

2.SystemDetails

2.1 Production introduction

GSL-5000U system is a low voltage battery storage system based on lithium iron phosphatebattery, which is one of the new energy storage products developed and produced by. It can be used to support reliable power for various types of equipment andsystems. GSL-5000U is especially suitable for those application scenes which required highpower output, limited installation space, restricted load-bearing and long cycle life.

Key Features

- LiFePO4 composition – provides exceptional safety and longevity
- High safety and reliability
- Over 6,500cycles
- Consistent performance over wide temperature range
- Wall-mounted or Bracket-mounted,convenient installation
- Integrated state-of-the-art BMS to manage and monitor battery information including voltage, current and temperature as well as balance cell charging/discharging rates
- 10 years' warranty

2.2 Product label

GSL ENERGY

Solar Lithium Battery Energy Storage System

Battery Type	LiFePO4 Battery
Battery Model	GSL5000U
Battery Power	5.12Kwh
Battery Voltage	51.2V
Capacity of Battery	100Ah
Charge Voltage	56V
Discharge Voltage	46V
Max Charge Current	≤100A
Max Discharge Current	≤150A
Depth of Discharge	80% DOD
Display	LED
Communication	CANBUS
Degree of Protection	IP50

Manufacturing Date: YYYY/MM/DD

Battery Designation: IFpP/29/176/208/ [16S2P]E /-20+50/90

GSL ENERGY

Battery Type	LiFePO4 Battery
Battery Model	GSL10000U
Battery Power	10.24Kwh
Battery Voltage	51.2V
Capacity of Battery	200Ah
Charge Voltage	56V
Discharge Voltage	46V
Max Charge Current	≤100A
Max Discharge Current	≤150A
Depth of Discharge	80% DOD
Display	LED
Communication	CANBUS
Degree of Protection	IP50

Manufacturing Date: YYYY/MM/DD

Battery Designation: IFpP/29/176/208/ [16S2P]E /-20+50/90

	This battery product complies with International Electrotechnical Commission standards
	This battery product meets European directive requirements
	Read the user manual before using
	After the battery life is terminated, the battery can continue to be used after it recycled by the professional recycling organization and do not discard it at all
	The scrapped battery cannot be put into the garbage can and must be professionally recycled.
	No watering to put out fire
	Beware of fire

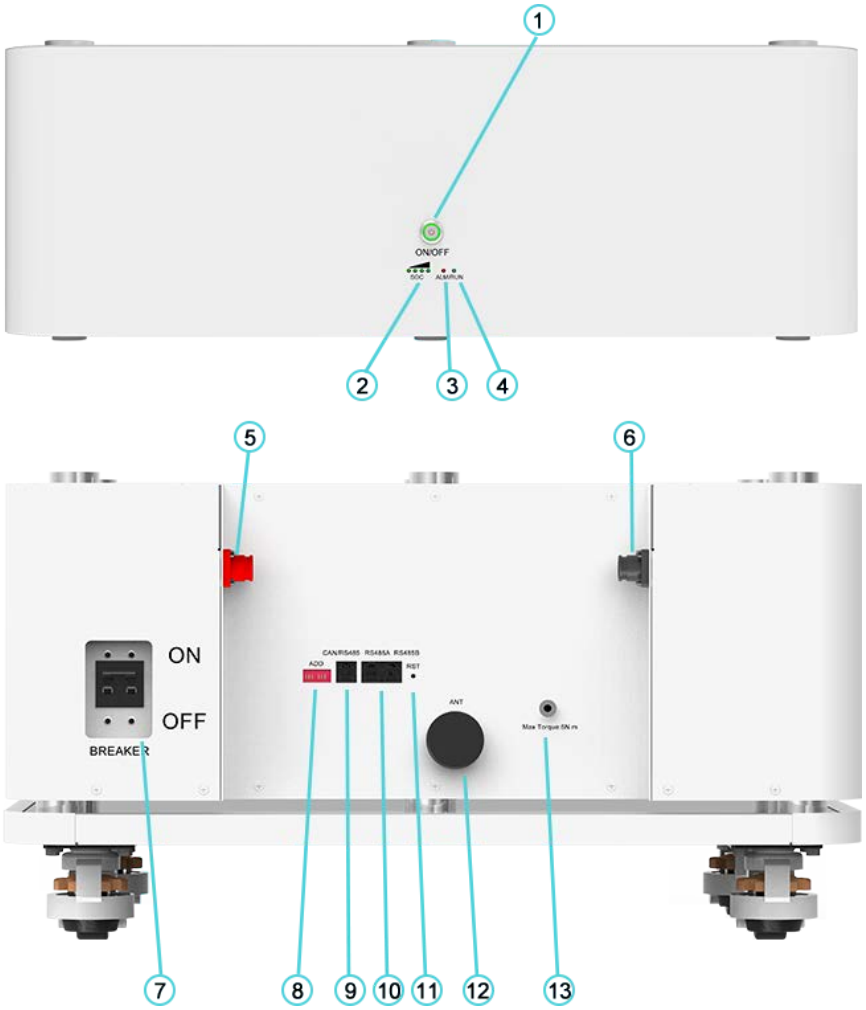
2.3 System Specifications
2.3.1 Battery module specifications

BatterySpecifications		
Model No	GSL 5000U-5KWH	GSL 10000U-10KWH
NominalParameters		
Battery Chemistry	LiFePO4	
Voltage	51.2V	
Capacity	100Ah	200Ah
Energy	5.12kwh	10.24kwh
Operating Voltage	46-56V	
Max.Charge Voltage	56Vdc	
Max.Charge Current	100A(5120W)	
Max.Discharge Current	100A(5120W)	150A(7680W)
BasicParameters		
Warranty Period [3]	10 years	
Dimension (W/H/D)	595*435*165mm	720*600*200mm
Weight Approximate	50.5kgs	100.5kgs
Master LED Indicator	4 LED (SOC:25%~100%)	
	2 LED (working,alarming,protecting)	
IP Rating of Enclosur	IP50 (Indoor use)	
Storage Time/Temperature	5months@25°C;3months@35°°C;1month@ 45℃	
Working Temperature	-20℃ to 60℃ @ 60+/-25%Relative Humidity	

Storage Temperature	0℃ to 45℃ @ 60+/-25%Relative Humidity
Humidity	5%~95%
Altitude	≤2000m
Cycle Life (25±2℃,0.5C/0.5C,80% EOL)	≥6500
Certification	IEC62619,CE-EMC,UN38.3,MSDS

3.Component Description

3.1 interface introduction



NO	Instructions	No	Instructions
1	Power switch	8	DIP ADDRESS
2	SOC status light	9	CAN/RS485
3	Running status light	10	RS485A/485B
4	Alarm status light	11	RST
5	Power Positive	12	antenna interface
6	Power Negative	13	Ground port
7	Ground port		

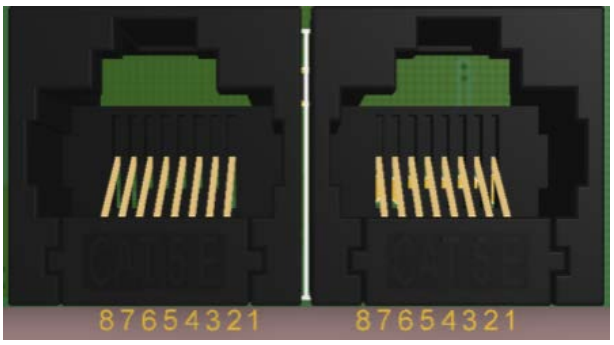
3.2 Communicationinterface

CAN&RS485

BMS and inverter communication connection

CAN - with 8P8C vertical RJ45 socket		RS485- with 8P8C vertical RJ45 socket	
RJ45Pins	Definitionnotes	RJ45Pins	Definition notes
4,	CANH	1、8,	RS485-B2
5,	CANL	2、7,	RS485-A2
		3、6,	GND

3.2.1BMS internal grid connection & monitoring

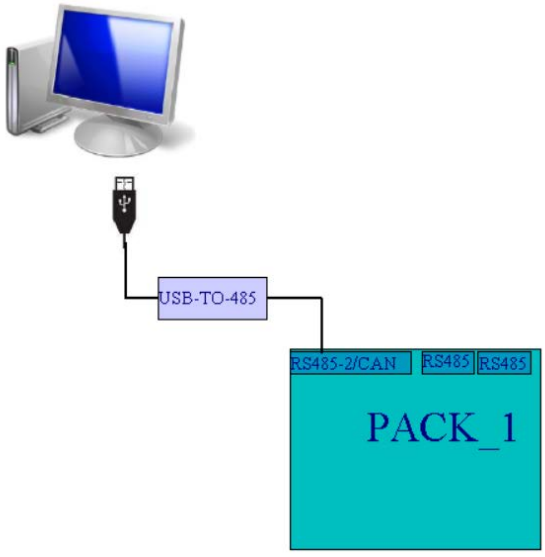


RS485-A/RS485-B

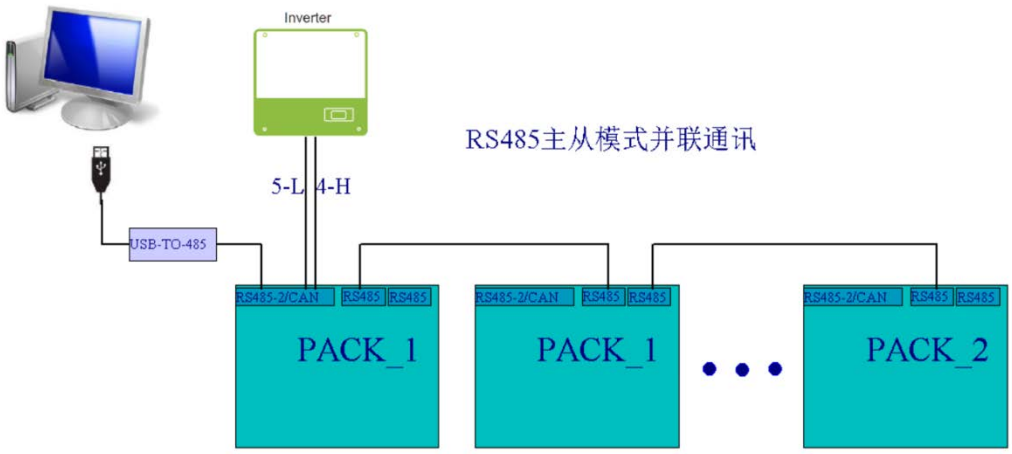
RS485_A/B - with 8P8C vertical RJ45 socket		**RS485_A/B - with 8P8C vertical RJ45 socket**	
RJ45 Pins	**Definition notes**	**RJ45 Pins**	**Definition notes**
1、8、	RS485-B1	1、8、	RS485-B1
2、7、	RS485-A1	2、7、	RS485-A1
3、6、	GND	3、6、	GND
4、5、	NC	4、5、	NC

3.2.2 Communication applications

- RS485 Stand-alone mode connection



- RS485-A/B As master, CAN with inverter, 485-A/B as slave mode parallel communication



Note : Monitoring of battery system performance is achieved via inverter monitoring portal/app

3.3 SOC Indicator & Status Indicator Guides

Chart 1 Battery Status

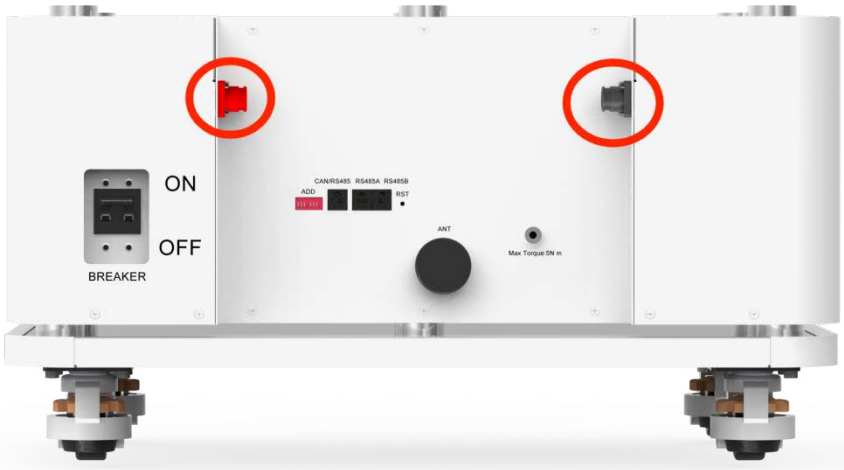
Chart 2Battery Capacity

Capacity / LED Indicator		L1	L2	L3	L4
SOC	0~25%	Flash	OFF	OFF	OFF
	25~50%	ON	Flash	OFF	OFF
	50~75%	ON	ON	Flash	OFF
	75~100%	ON	ON	ON	Flash
RUN Status		ON			

Chart 3Battery status

Status	Normal Warning Protection	RUN	ALM	Capacity LED				Description
		●	●	●	●	●	●	
Shut Down	Shut Down	OFF	OFF	OFF	OFF	OFF	OFF	All OFF
Standby	Normal	Flash	OFF	OFF	OFF	OFF	OFF	Standby
Charge	Normal	Flash	OFF	Charge				
	Warning	ON	Flash					
	Protection	OFF	ON					
Discharge	Normal	Flash	OFF	Charge				
	Warning	ON	Flash					
	Protection	OFF	ON	OFF	OFF	OFF	OFF	UVP.OCP...
Fault		OFF	ON	OFF	OFF	OFF	OFF	Stop Charging or Discharing

3.4 Connectors



Charge / Discharge connectors: to connect the positive pole (+) and negative pole (-) from the battery to the inverter via DC isolator.

Canbus/485 active communication port between battery and inverter.

USB to RS485: to get dynamic monitoring data of the battery from upper computer.

Address: Reserved Address portal for multiple parallel connections.

3.5 Wake Up button

- Battery On: When battery is shut down, press this RST button for 3 seconds. It is activated when the LED lights flicker from RUN light to the lowest capacity indicator.

- Battery off: When battery is activated, press this button for 3 seconds. It will be shut down when the LED lights flicker from lowest capacity indicator to RUN light.

4. Safe handling of lifepo4 battery guide

4.1Tools

The following tools are required to install the battery pack:

Wire cutter

Crimping Modular Plier

Screw Driver

Electronic Screw Driver

Sleeve piece

600VDC Multimeter

NOTE

- Use properly insulated tools to prevent accidental electric shock or short circuits.
- If insulated tools are not available, cover the entire exposed metal surfaces of the available tools, except their tips, with electrical tape.

4.2 Safety Gear

It is recommended to wear the following safety gear when dealing with the battery pack:

Insulated gloves

Safety goggles

Safety shoes

5.Installation

5.1 Before installation

A.Before installation and system power on, the dust and iron scurf must be removed to keep a clean environment.The system cannot be installed in desert area without an enclosure to prevent from sand.

B. HV system working temperature range: 0℃~50℃; Optimum temperature: 18℃一28℃ .There is no mandatory ventilation requirements for battery module, but please avoid of installation in confined area. The aeration shall avoid of high salinity, humidity or temperature.

C.It must be equipped with fire-extinguisher system for safety purpose.The fire system needs to be regularly checked to be in normal condition. Refer to the using and maintenance requirements please follow local fire equipment guidance.

D.Before the battery installation must make sure the grounding point of the basement is stable and reliable. If the battery system is installed in an independent equipment cabin(e.g. container), must make sure the grounding of the cabin is stable and reliable.The resistance of the grounding system must ≦100

E.Minimum clearance to heat source is more than 2 meters.
Minimum clearance to battery module(rack) is more than 0.5 meters.

F.Single battery module is 36kg. If without handling tools must have more than 2 men to handling with it.The base is light, single person can handle with it.

on:
y module has active DC power at terminal all the time, must be careful tohandle the modules.

●GSL power brick system is IP55 design. But please avoid frost or direct sunlight. Out ofthe working temperature range will cause the battery system over low temperaturealarm or protection which further lead to the cycle life reduction. According to theenvironment, the cooling system or heating system should be installed if it is necessary.

5.2 Standard package list items

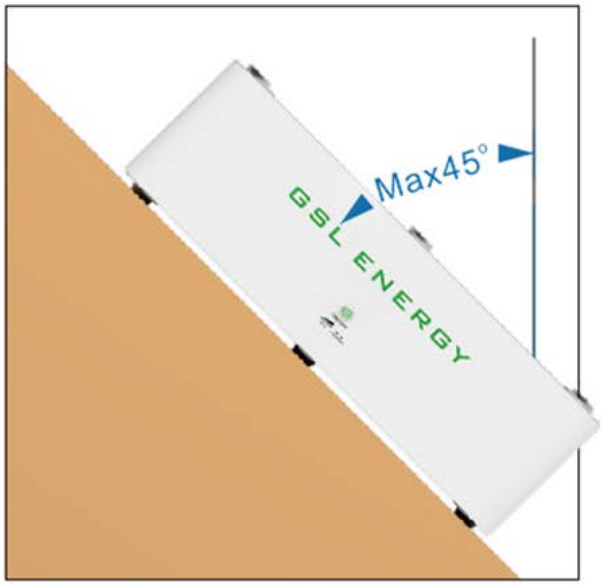
Thoroughly inspect the packaging upon receipt of goods. If there is any item missing or if there is any damage to the external packaging or to the unit itself upon unpacking, please contact us immediately.

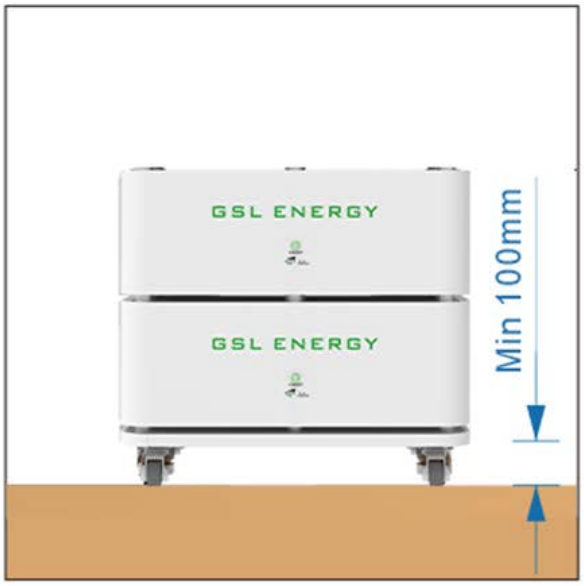
NO.	Item	Quantity	Specification
1	Battery Pack 		5.12kwh/10.24kwh
2	Battery base 	1 PC	
3	Power Cable 	1 SET	35mm2 (4AWG) Black , Red L 2.0 meter Anderson 350A Standard+ M8 Terminal
4	Communication Cable 	1 PC	Battery pcs port to Inverter Canbus port L : 1.5 meter
5	Parallel com cable 	1 PC	Battery com port to Battery com port for parallel 16pcs at max L: 0.5 meter
6	Ground cable 	1PC	Connect to the grounding point of the modules

5.3 installation location

Make sure that the installation location meets the following conditions:

- The installation site must be suitable for the size and weight of the battery.
- Must be installed on a firm surface to sustain the weight of battery.
- The area is water proof.
- There are no flammable or explosive materials in proximity
- The ambient temperature is within the range from 0°C to 45°C.
- The temperature and humidity is maintained at a constant level.
- There is minimal dust and dirt in the area.
- Installation must be vertical or tilted backwards by maximum 15° - avoid forward or sideway stilt.





5.3.1 Minimum clearances

Observe the minimum clearances to walls, other batteries or objects as shown in the diagram and picture below in order to guarantee sufficient heat dissipation

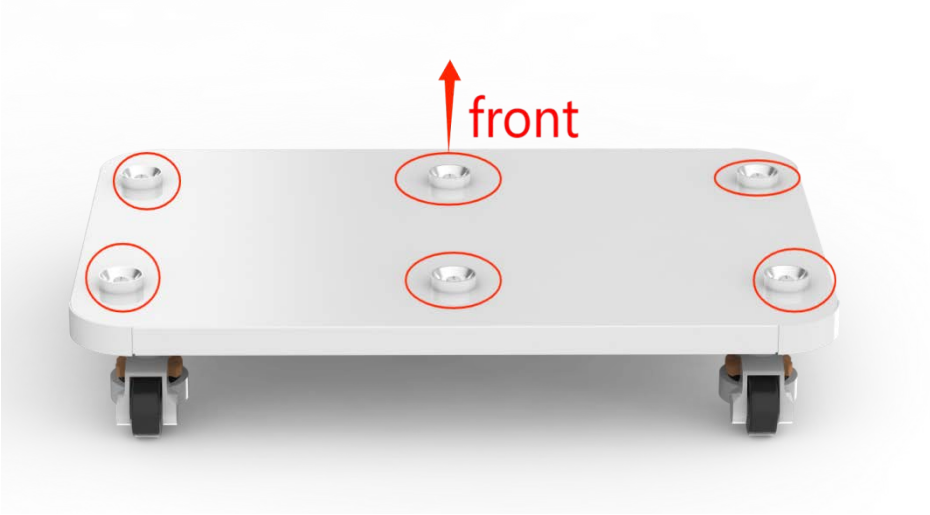
Direction	Minimum clearance (mm)
Above	500
Below	200
Sides	500
Front	200

Caution

If the ambient temperature is outside the operating range, the battery pack stops operating to protect, itself. The optimal temperature range for the battery pack to operate is 0°C to 55°C. Frequent exposure, to harsh temperatures may deteriorate the performance and life of the battery pack.

5.3.2 system installation

Step1： Installation base.To prevent accidents, you mustfix the base before installing it,and then move the battery to thebase with the help of atransportation tool and align thepositioning grooves.



Step2： Put the hands on the handle on the side of the battery module to lift the battery， two persons are required to do this. Slowly put the battery on the base, and make sure that each connector is properly connected.

Step 3:Stack the battery modules quantity you need according to the method of step2

5.3.3 Electrical Installation

1.Before connecting the power cables, using multi-meter to measure cable continuity, short circuit, confirm positive and negative, and accurately mark the cable labels.

2.Measuring method:

●Power cable check: select the buzzer mode of multi-meter and detect the both ends of the same color cable. If the buzzer calls, it means the cable is in good condition.

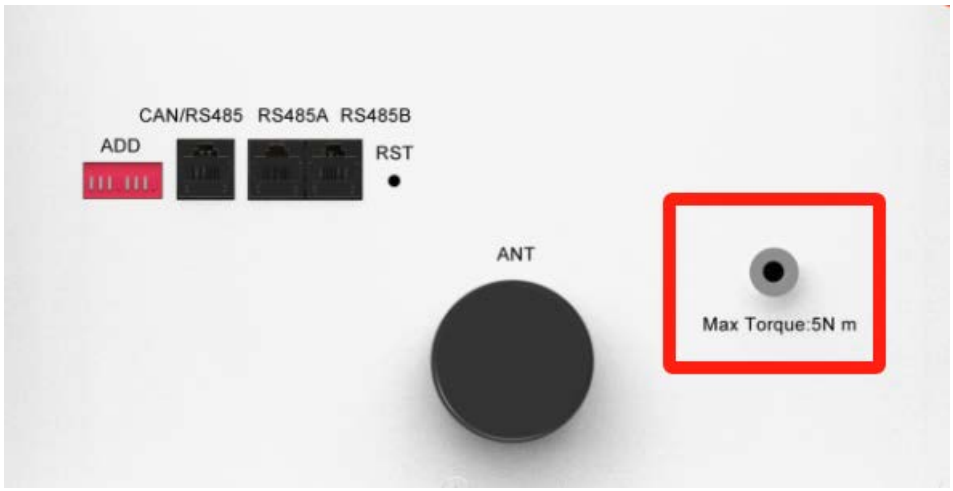
●Short circuit judgment: choose multi-meter resistor file, probe the same end of positive and negative pole, if the resistor shows infinity, means that the cable is available.

●After visual testing of power line is connection, the positive and negative poles of the battery shall be connected respectively to the positive and negative poles of the opposite terminal.

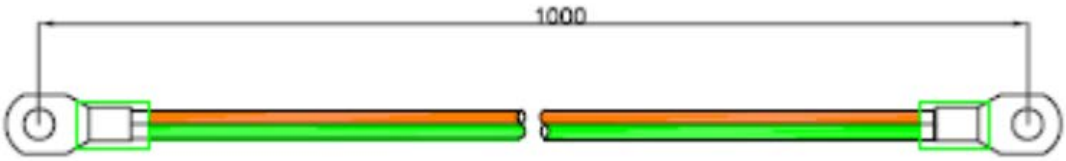
5.3.4Grounding

The Ground cable has been provided by factory manufacturer. The bolt locking torque is 6 NM.

Install a grounding cable to the grounding point of the modules.



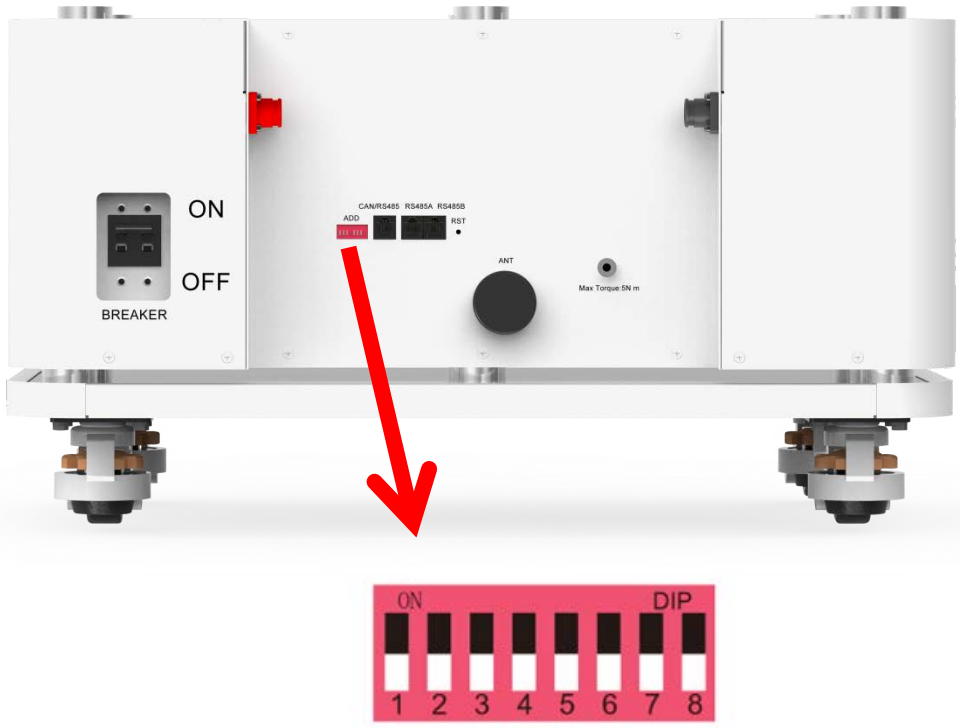
Grounding cable:



5.3.5 Inverter Connection

DIP ADDRESS SETUP (When the system is used independently):Except for the inverter specified by the customer's special requirements, the factory default DIP switch mode of master module is DIP Switch **mode 1 (ADD: 00000000).**

Note: Before installation, please confirm whether the DIP switch mode of the master module in battery is correct according to use's inverter communication specification.



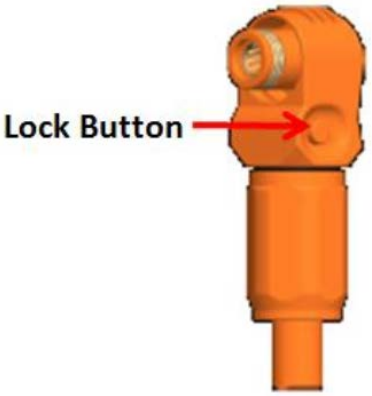
Before opening the cover to operate, you must contact GSL ENERGY and inform the ID of the product. GSL ENERGY records this battery ID and authorizes the opening operation. Except changing the DIP switch mode, no other operations can be done.

5.3.6How to connect Inverter

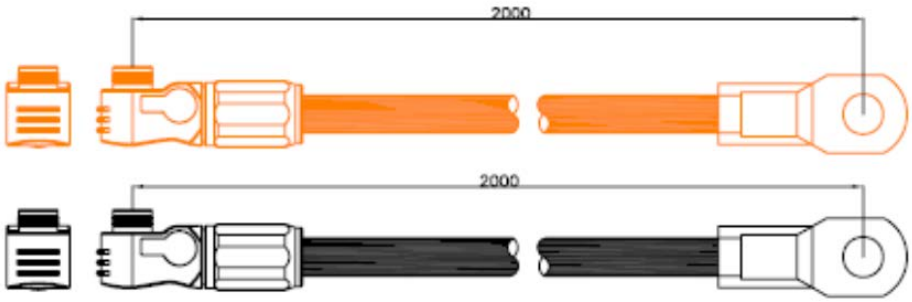
The battery is connected to the inverter, and it is required to use the dedicated power cable and communication cable (as accessories shipped with the cargo, the standard communication cable is a standard network cable. The applicable inverter is marked on the label of the network cable. If the inverter used by the customer is not covered by the standard communication cable, please contact GSL ENERGY for the correct PIN Sequence) as follows:
--Keep the battery system at power off state, connect the power cable to the interface on the input side of the inverter first, and then connect the power cable to the interface on the battery side.
--The battery output interface is a quick connector, and the power cable (positive, negative) plug can be directly inserted into the battery socket. The power cable cross section is 35 mm2*2. .

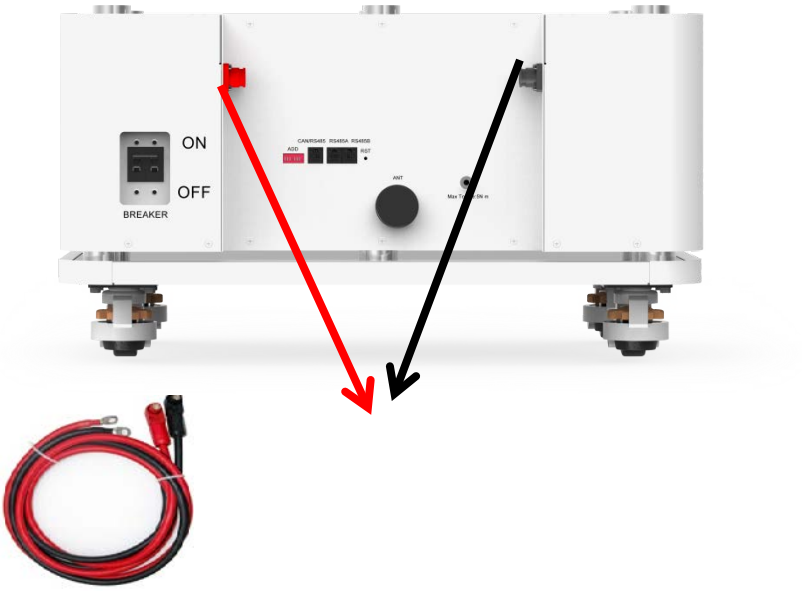
Power Terminals

●Power cable terminals: there are two pair of terminals with same function, one connects to equipment, the other one paralleling to other battery module for capacity expanding.
●For power cables uses water-proofed connectors.
●Must keep pressing this Lock Button while pulling out the power plug.



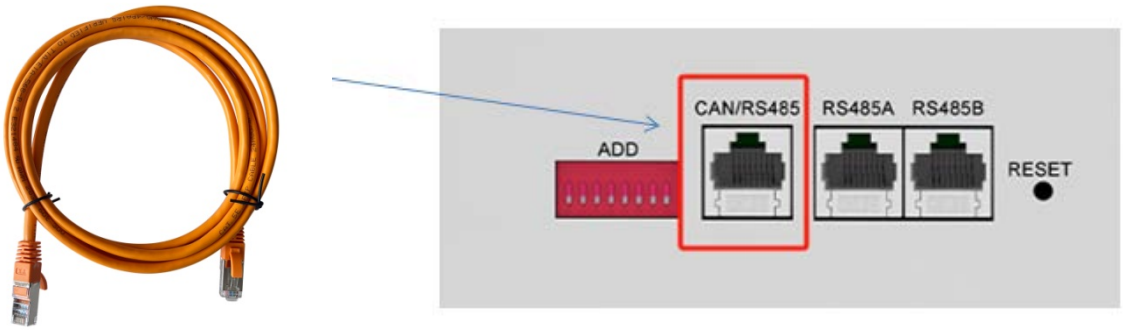
Power cables sets :

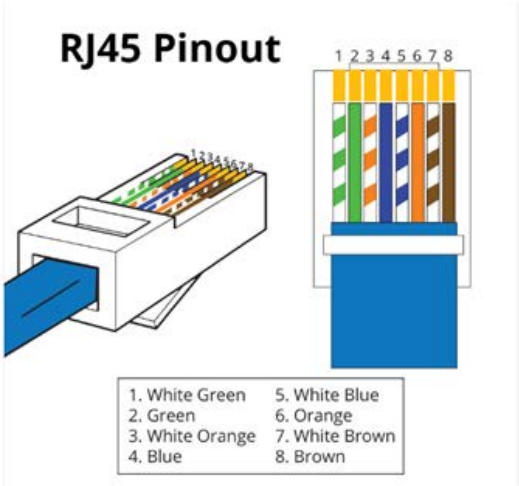


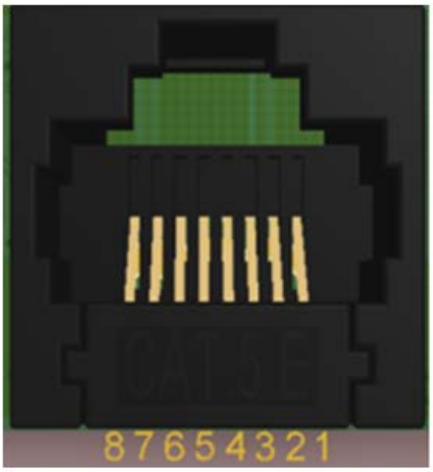


5.3.7 Connection of Communication Interface

Connect the CAN IN port of the battery to the CAN or RS485 communication interface of the inverter using the RJ45 cable.



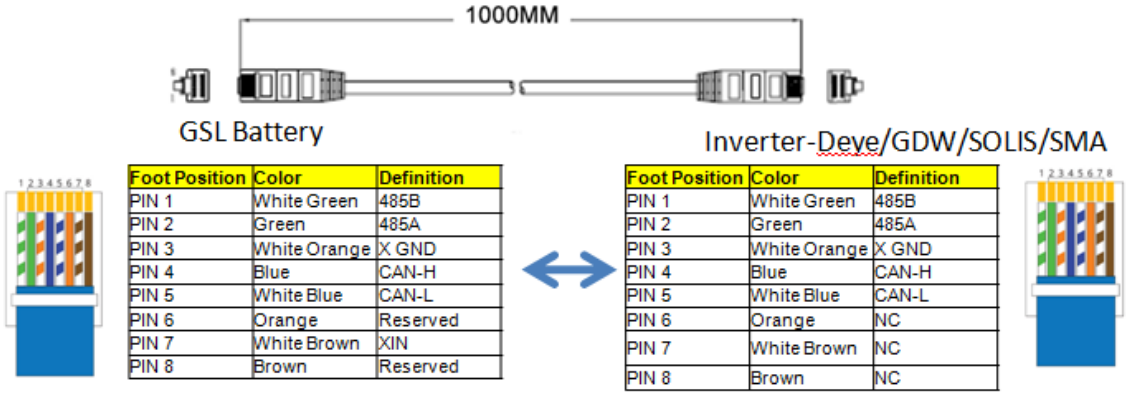




PIN Definition

Foot Position	Color	Definition
PIN 1	White Green	485B
PIN 2	Green	485A
PIN 3	White Orange	X GND
PIN 4	Blue	CAN-H
PIN 5	White Blue	CAN-L
PIN 6	Orange	Reserved
PIN 7	White Brown	XIN
PIN 8	Brown	Reserved

Communication cable for battery and inverter



Foot Position	Color	Definition
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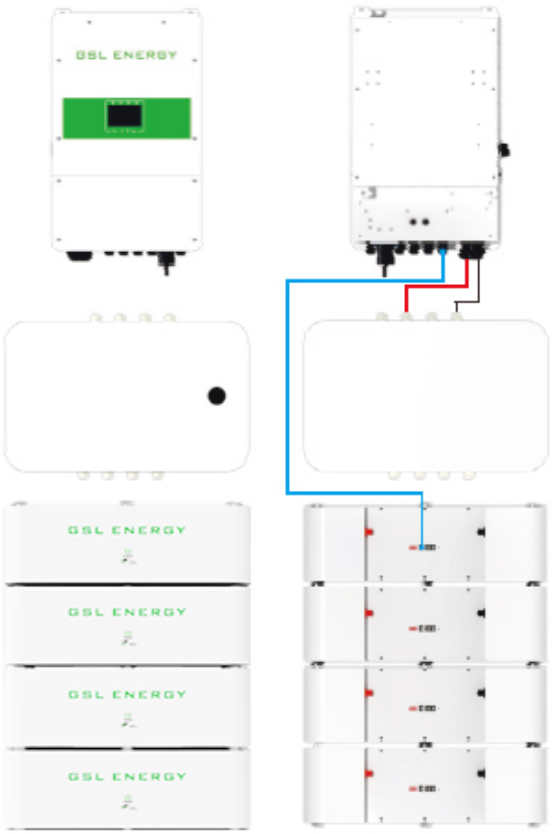
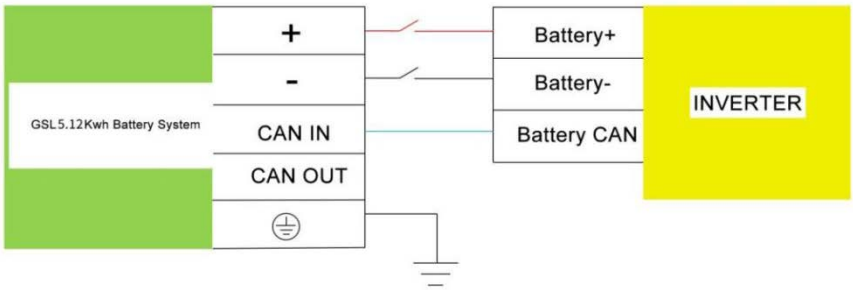
PIN 8	Brown	Reserved

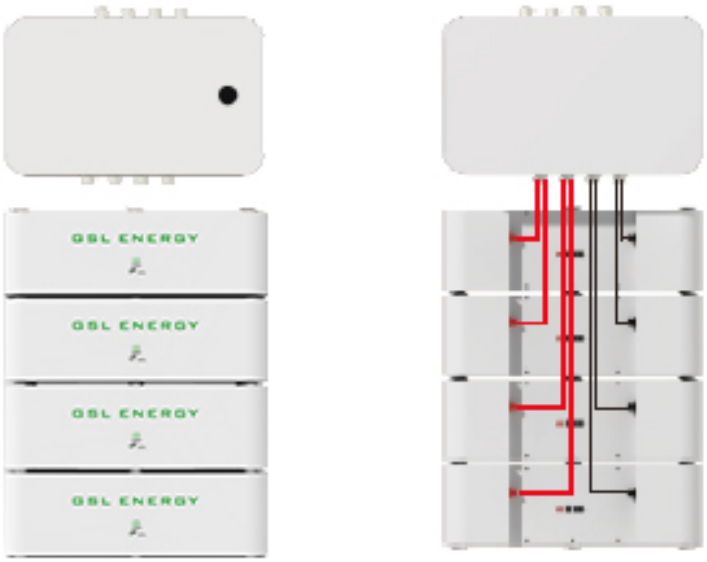
Foot Position	Color	Definition
PIN 1	White Green	485B
PIN 2	Green	485A
PIN 3	White Orange	X GND
PIN 4	Blue	CAN-H
PIN 5	White Blue	CAN-L
PIN 6	Orange	NC
PIN 7	White Brown	NC
PIN 8	Brown	NC





5.3.8Stacking in parallel

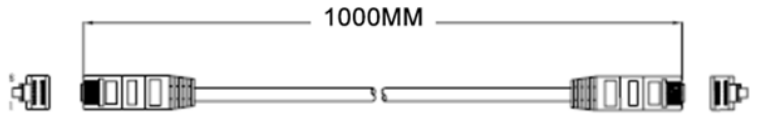
When the system is used in parallel, it supports up to 8pcs wall batteries be stacked in parallel. According to the number of parallel system **(Take 3 batteries in parallel as an example), it needs to use: Power cable × 3 pairs, Battery-Inverter communication cable × 1PCS, Battery-Battery communication cable × 2PCS, Distribution box × 1PCS)** .The over-current capacity of the distribution box should be much higher than the maximum nominal current value when the load is running



PINOUT of System Parallel communication cable

PINOUT of Battery-Battery communication cable diagram shown as below:

Communication cable for battery parallel connection

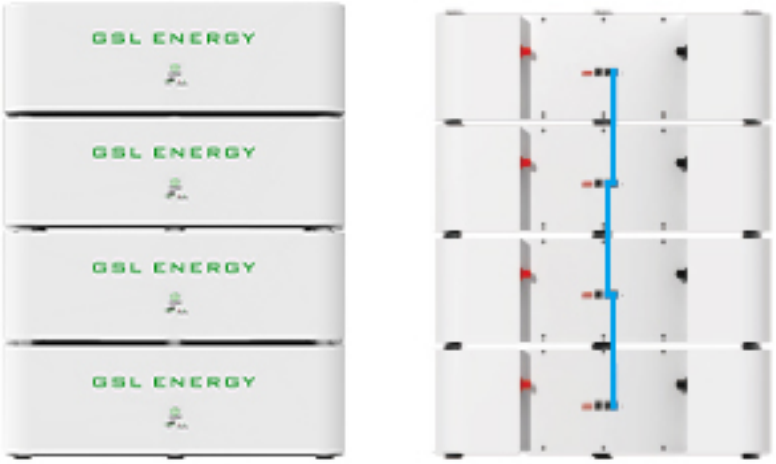


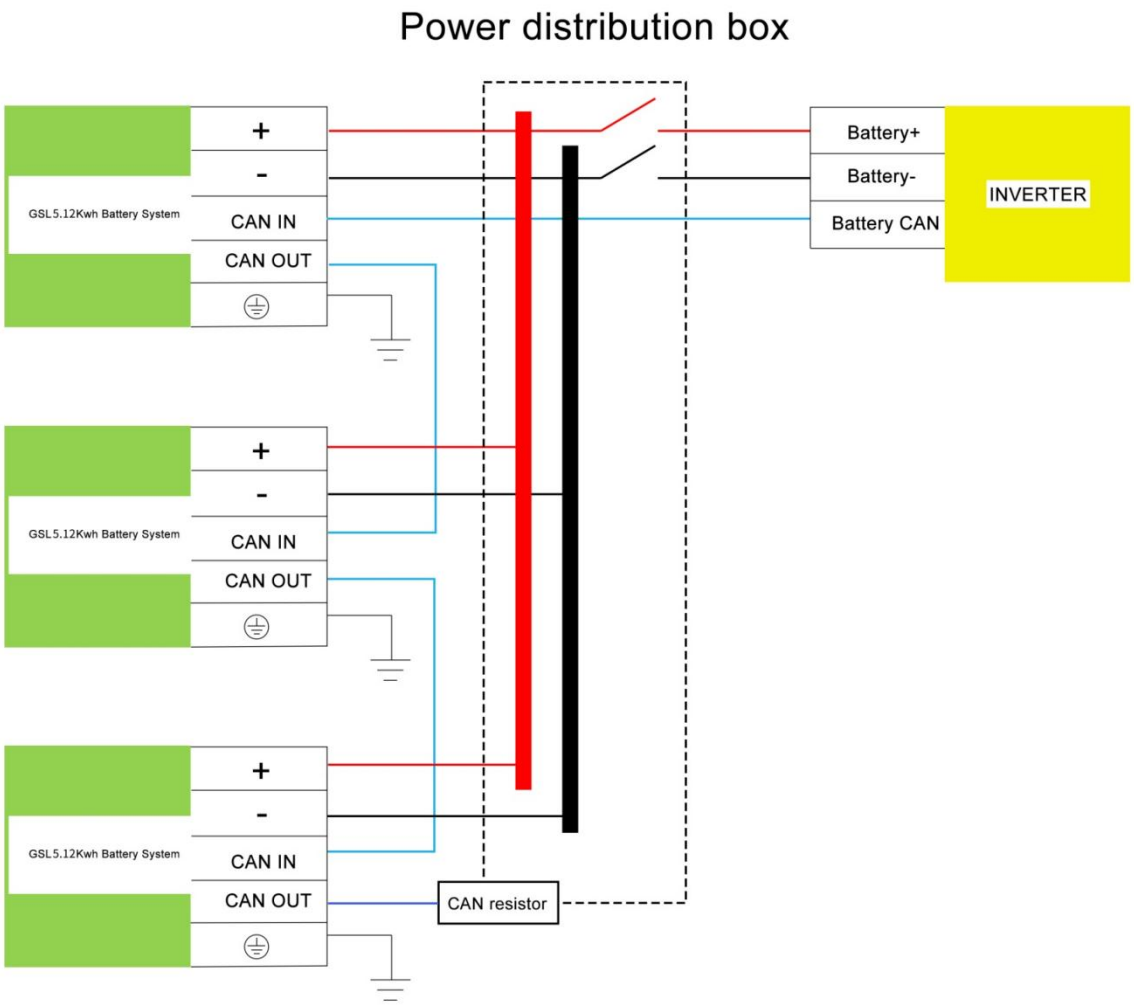
GSL Battery 1

Foot Position	Color	Definition
PIN 1	White Green	485B
PIN 2	Green	485A
PIN 3	White Orange	X GND
PIN 4	Blue	CAN-H
PIN 5	White Blue	CAN-L
PIN 6	Orange	Reserved
PIN 7	White Brown	XIN
PIN 8	Brown	Reserved

GSL Battery 2

Foot Position	Color	Definition
PIN 1	White Green	485B
PIN 2	Green	485A
PIN 3	White Orange	X GND
PIN 4	Blue	CAN-H
PIN 5	White Blue	CAN-L
PIN 6	Orange	Reserved
PIN 7	White Brown	XIN
PIN 8	Brown	Reserved





An over-current protection and isolation device that operates both positive and negative conductors simultaneously is required between parallel batteries and between the inverter and battery system.

Modifying the power cables to insert an over-current protection and isolation device between parallel batteries will not void product warranty.

5.4 Battery Module DIP switch definition and description.

DIP Switch Definition

DIP switch position (master communication protocol and baud rate selection)

# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8
Distinguish between master and slave				Baud rate selection OFF: CAN:500K, 485: 9600 ON: CAN 250K, 485:115200	No definition	No definition	No definition

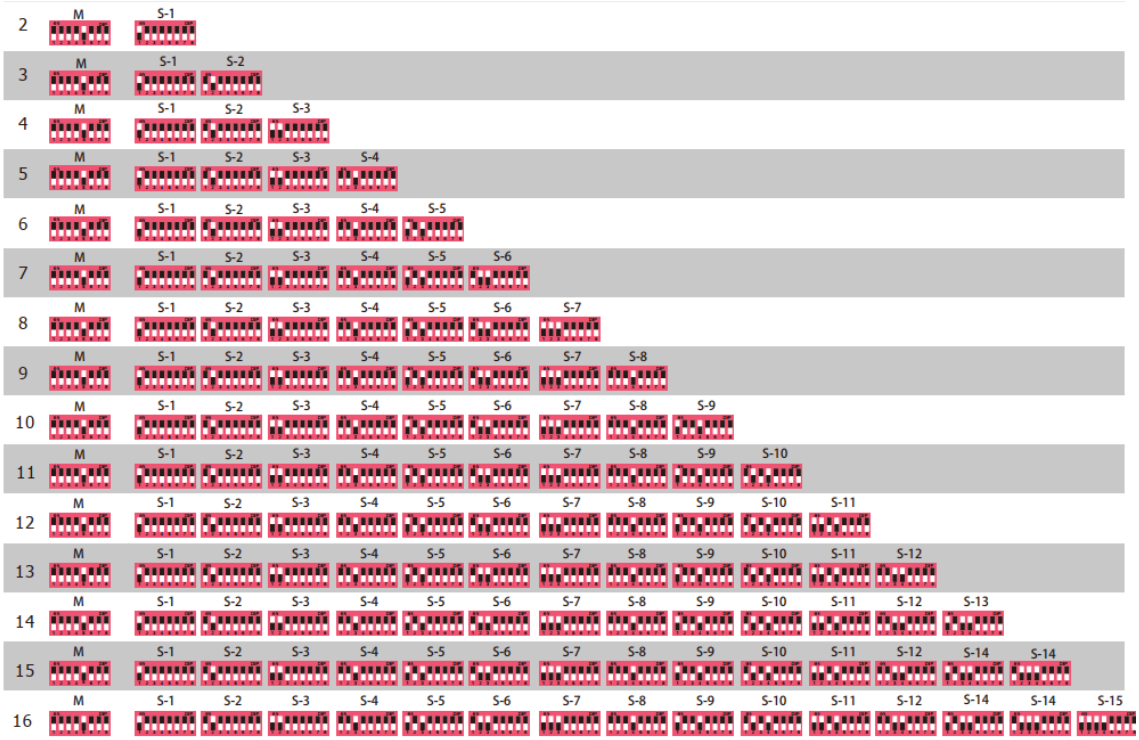
DIP switch description

For rack-mounted battery systems, the master module at the bottom of cabinet , the other modules are slaves.

For all different inverter models based on CAN or 485, you just need to set different DIP mode:

1) When battery works with GOODWE, SOLIS, LUX POWER, SOFAR, DEYE, VICTRON, ,GROWATT SPF, SCHNEIDER Conext series, before connecting you need confirm that the DIP switch mode of the master module in battery module is 000010000("# 5" to "ON")

2) Slave Battery setting from 2 pcs to 16pcs batteries as below :



Mark : M- master Battery S-Slave Battery

Caution

- Before connection, the positive and negative pole of the inverter input interface and the battery output interface should be confirmed.
- The red power line is connected to the positive pole and the black power line is connected to thenegative pole.
- Before connection, it is necessary to confirm the charge and discharge parameters of theinverter interface.
- Voltage and current should meet the requirements of Table 2-2 battery performanceparameters.

Note: For more information of matching inverter brands, please subject to the latest document

- How to judge that the communication between the product is normal:

1) If there is communication between the inverter and battery system, it can be judged by themaximum charge and discharge current value on the inverter sent by the battery.

2) If there is communication between the inverter and battery system, it can be judged bythe maximum charge and discharge current value on the inverter sent by the battery.

$$\frac{\text{(The maximum charge and discharge current value display on the inverter)}}{\text{(The maximum charge and discharge current value of one battery module)}} = \text{number of modules}$$

A.If the equation holds after calculation, it means communication between the GSL battery is normal.

B. If the GSL Battery light board shows three different colors flash alternately, it means the communication between battery is fault.

- Table3-5 Battery& Inverter power matching table

Equipment Use	Charging a) The battery's long-term continuous charging current should be ≤0.5C b) If the battery remaining capacity is empty, please charge it within 48 hours after the battery is empty.
	Discharging c) The long-term continuous discharge current of the battery should be ≤0.5C d) The recommend maximum depth of discharge (DOD)of Battery PACK is no more than 85%.

5.5 Battery parameter settings on the inverter

Max Charging(Bulk) Voltage: 57.6V

Absorption Voltage: 56.5V

Float Voltage: 56V

Shut Down(cut off) Voltage: 48V

Shut Down(cut off) SOC: 10%

Restart Voltage: 52V

Max Charge Current:150A

Max Discharge Current: 150A

Power of Hybrid Inverter/ Off-grid Inverter	**Rack mounted battery system**	
	Type	**System Energy**

5KW	1* brick battery	5.12
10KW	2* brick battery	10.24
20KW	4* brick battery	20.48

5.6 Register on the website after installation

After the battery system installation is completed and the running is normal,you need to log in to the supplier official website to register the product installation and use information to make the product warranty effective.

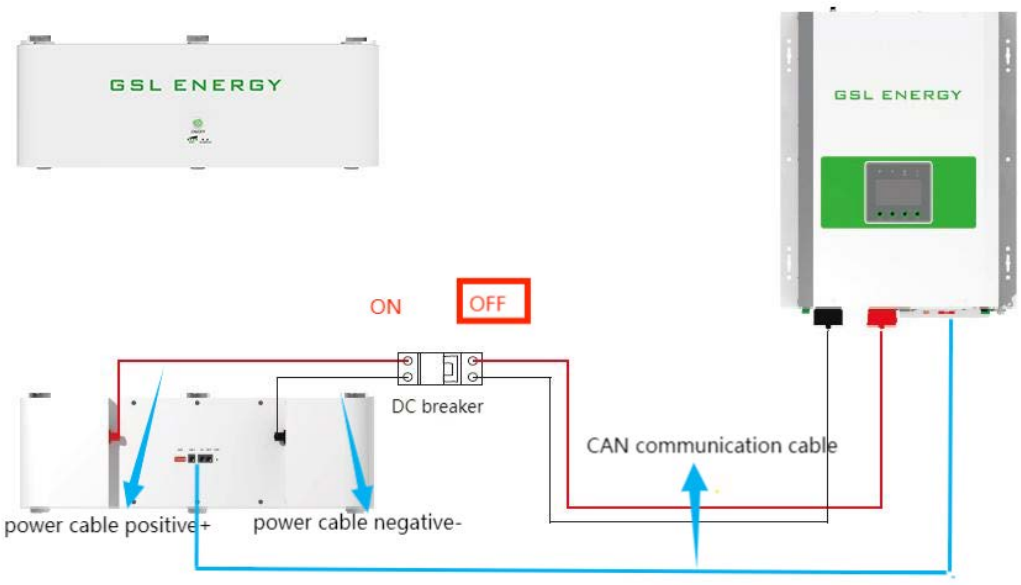
6.Use, maintenance and troubleshooting

6.1 Battery system usage and operation instructions

After completing the electrical installation, follow the instruction below to start the battery system.

1) **Power on**

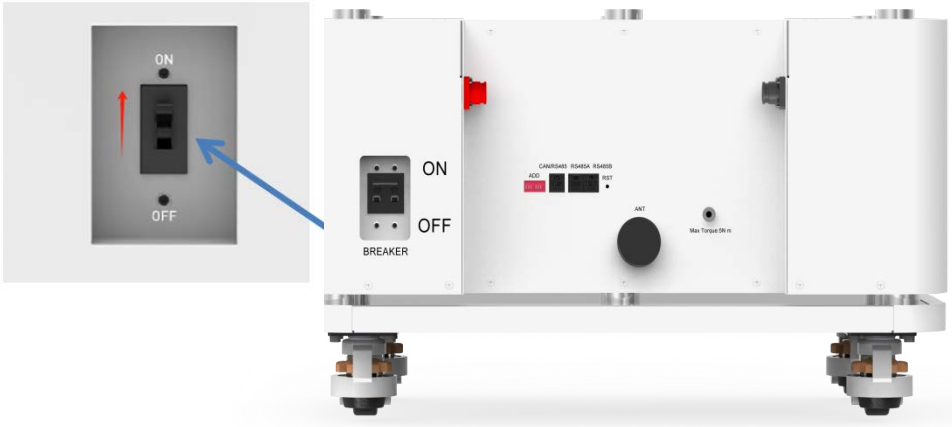
   Step 1 : Before turning on the battery, please make sure the DC breaker between battery and inverter is on ”OFF” position.



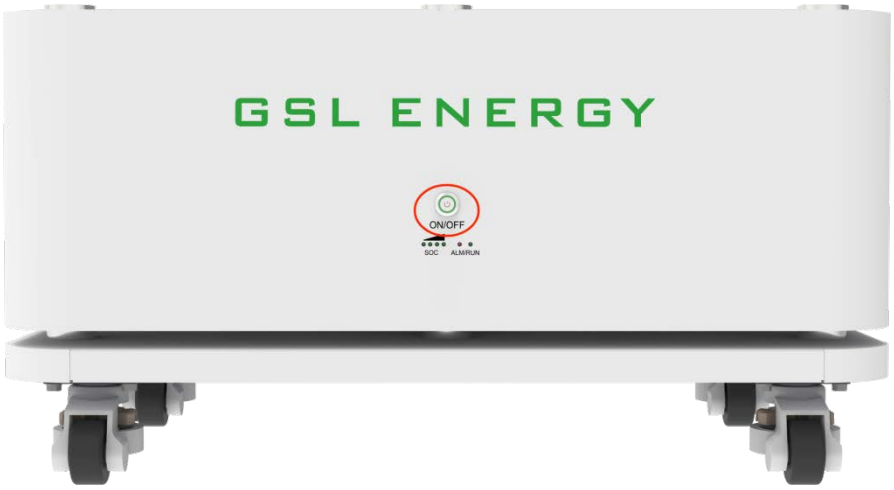
--Make sure battery positive and negative connect DC breaker +/- port .
Red cable is for positive side; Black cable is for negative side.

--Make sure Coms cable connects inverter CAN port correctly.
--Make sure all the installation and operation must follow up local electric standard.

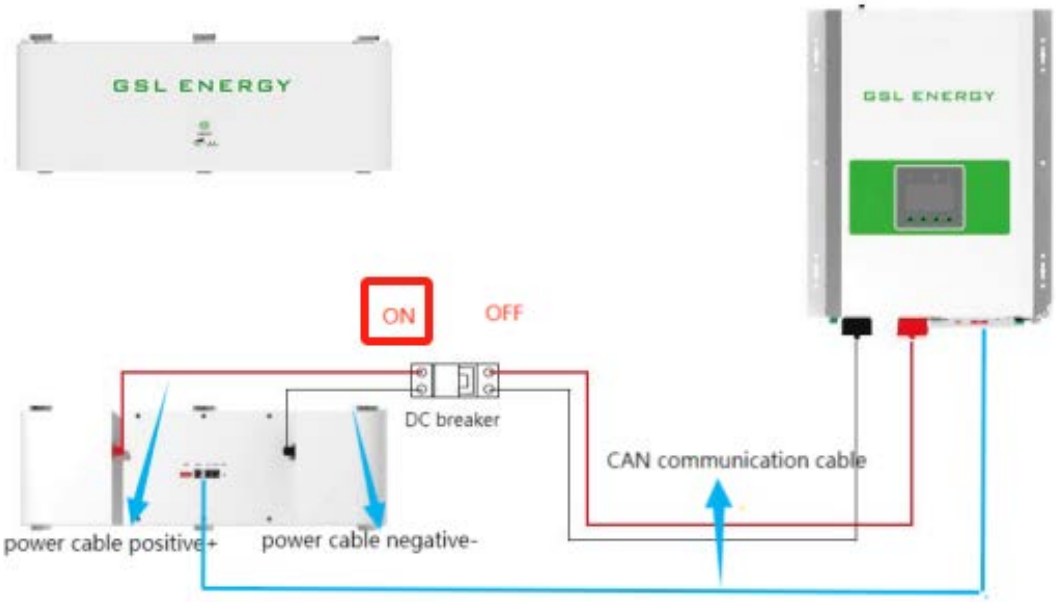
Step 2 Pull Battery DC breaker up to “ON” position. Battery positive and negative will be active then.



Step 3Turn on Battery DC Switch , then LED will be flash at once, BMS is activated. Customer can check battery SOC, Voltage state on LED.

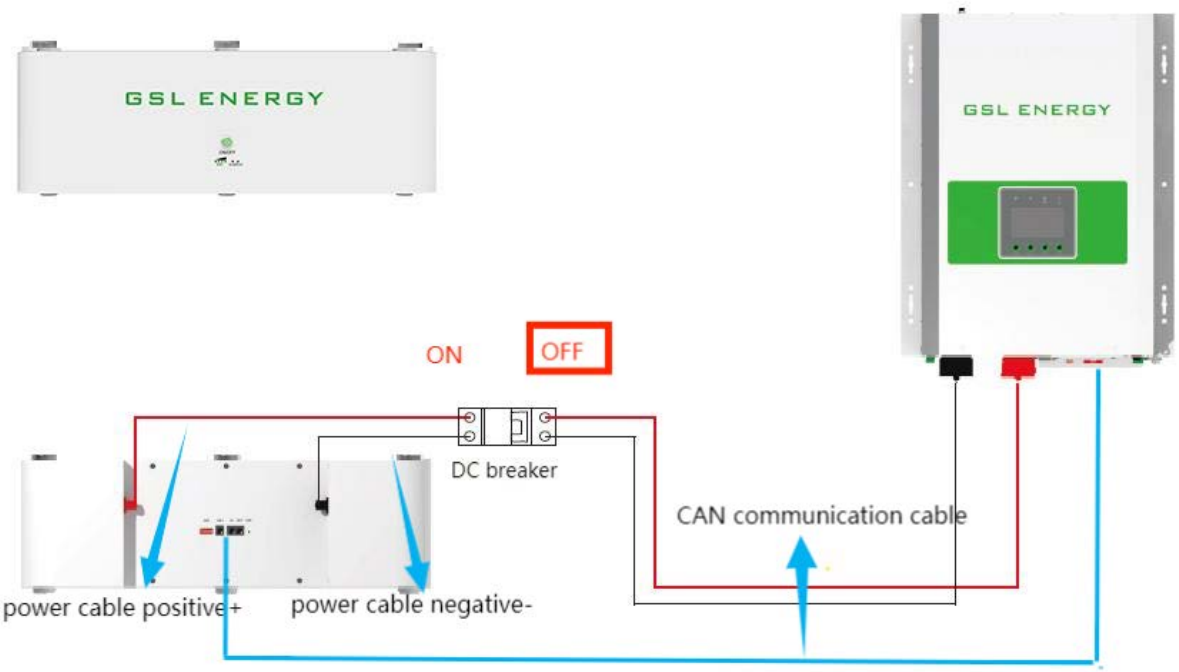


Step 4 Pull DC breaker to “ON” position on battery and outside DC breaker, then system can begin to work.

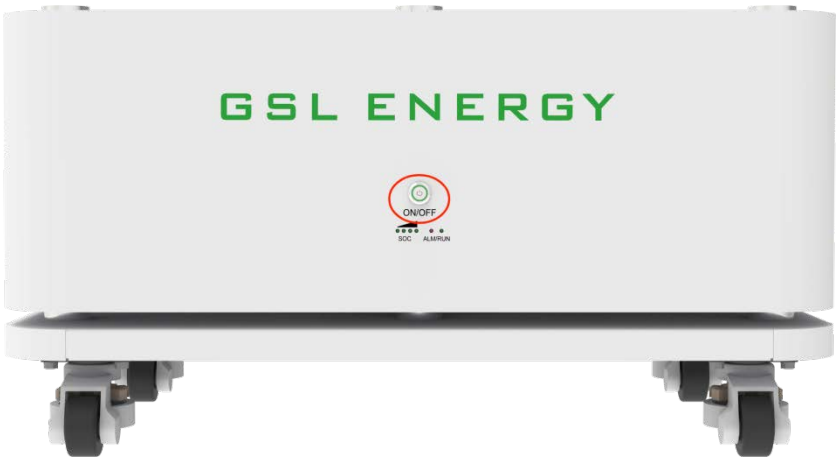


2) Power off

Step 1. Pull down DC breaker switch on “OFF” position



Step 2 : Turn off Power switch， then BMS, LED are off automatically.



Caution

- After pressing the power button, if the battery status indicator lights shows abnormally, please refer to the "6.2 Alarm description and processing". If the failure cannot be eliminated, please contact the retailer timely.
- After pressing the power button, if the battery status indicator continues to be red, please referto the "6.2 Alarm description and processing". If the failure cannot be eliminated, please contact the retailer timely.
- Use a voltmeter to measure whether the voltage across the BAT + / BAT- terminals of the inverter is higher than 44.8V, and check whether the voltage polarity is consistent with the input polarity of the inverter. If the voltage across the terminals BAT + / BAT- of the inverter is higher than 44.8V, which means the battery has begun to work normally.
- After confirm the battery output voltage and polarity are correct, turn on the inverter, then turn on the circuit breaker switch.
- Check whether the indicator light for the inverter and the battery connection (the communication indicator and the battery access status indicator) is in normal condition. If normal, the connection between the battery and the inverter is completed. If the indicator light shows abnormal, please check the inverter manual or contact the local dealer.

6.2 Alarm description and processing

When protection mode is activated or system failure occurred, the LED indicator on the front panel will alarm, through net management can query specific alarm class and take appropriate action.

6.2.1 Alarm and countermeasure for affecting system output

If there are any abnormalities affecting the output, such as battery cell in the battery module occurs over-current protection during charge/discharge, under-voltage protection, and temperature protection, in the system, please deal with them according to Table 6-1.

Table 6-1 Main alarm and Protection

State	Alarm category	Alarm indication	Processing
Charge state	Over-current when charging	RED light flashing Buzzer start	Reduce the charging current below the rated value.
	High temp protection	RED light flashing	Stop charging and find out the cause of the trouble.

Discharge State	Over-current protection when discharge	RED light flashing Buzzer start	Stop discharge and reduce discharge current below rated value.
	High temp protection when discharge	RED light Flashin	Stop discharging and find out the cause of the trouble.
	Over-discharged protection	RED light flashing Buzzer start	Start charging.
	Low voltage alarm	Yellow light on	Start charging.

6.2.2 Alarm and countermeasure for non-affecting system output

If a low SOC alarm occurs, the battery system also issues a corresponding alarm signal.

Maintainer should check the equipment according to the prompt information, determine the type and location of the fault, and take corresponding countermeasures to ensure that the system is in the best working condition to avoid affecting the system output. The phenomena and countermeasures are shown in Table 6-2.

Table 6-2 Minor alarm

Alert category	Alarm indication	Countermeasure
0<SOC<10%	System working status: RED light is always on	Stop discharge, and charge the battery system in time

6.2.3 Analysis and treatment of common faults

Table 6-3

Item	Fault phenomenon	Reason analysis	Solution
1	The indicator does not respond after power on the system	Make sure press and hold the power switch (Reset switch) for 3s.	Check the power switch
2	No DC output after power on the system	Check if the DC breaker is turned on	Check the status of the DC circuit breaker on the side of cabinet
3	No DC output and red light is ON,buzzer beeping	Battery voltage is too low	Charging the battery system
4	The battery cannot be fully charged	Charging voltage is too low	Adjust charging voltage within 57.1V~57.6V range

5	The power cable sparks once power on and ALM indicated Red light on	Power connection short-circuit	Turn off the battery, check the cause of the short circuit
6	The master powerbox Pro LED1 is yellow flashing	Communication fault between product and product, or between internal modules in battery.	Check the external communication cable firstly, Check the internal communication cable secondly
7	The led 1,2 don’t stop changing alternately	Modules comms address distribution is fault	Check the external comms cable connection firstly. Check the slave module DIP setting.

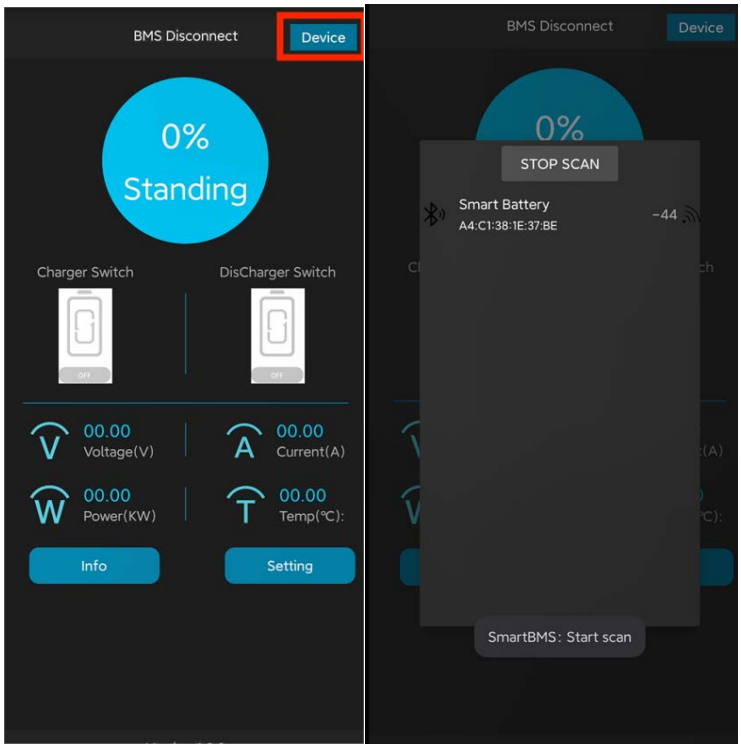
If you need any technical help or have any question, please contact the dealer in time.

7. SmartBMS APP Instructions

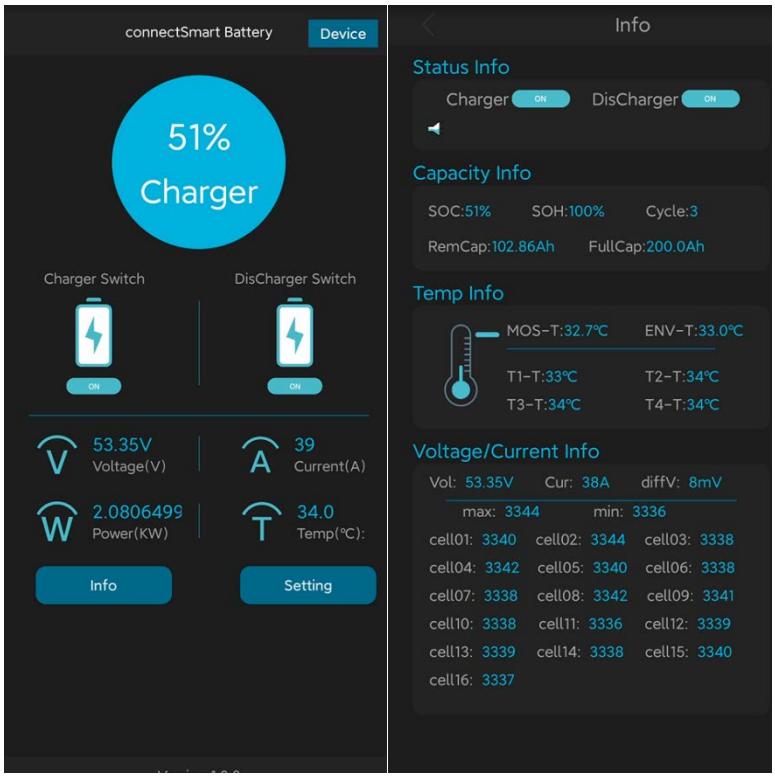
Download APP
iPhone:Search "GSL BMS" in Apple Store.
Android:Scan the QR code below to download the “SmartBMS”

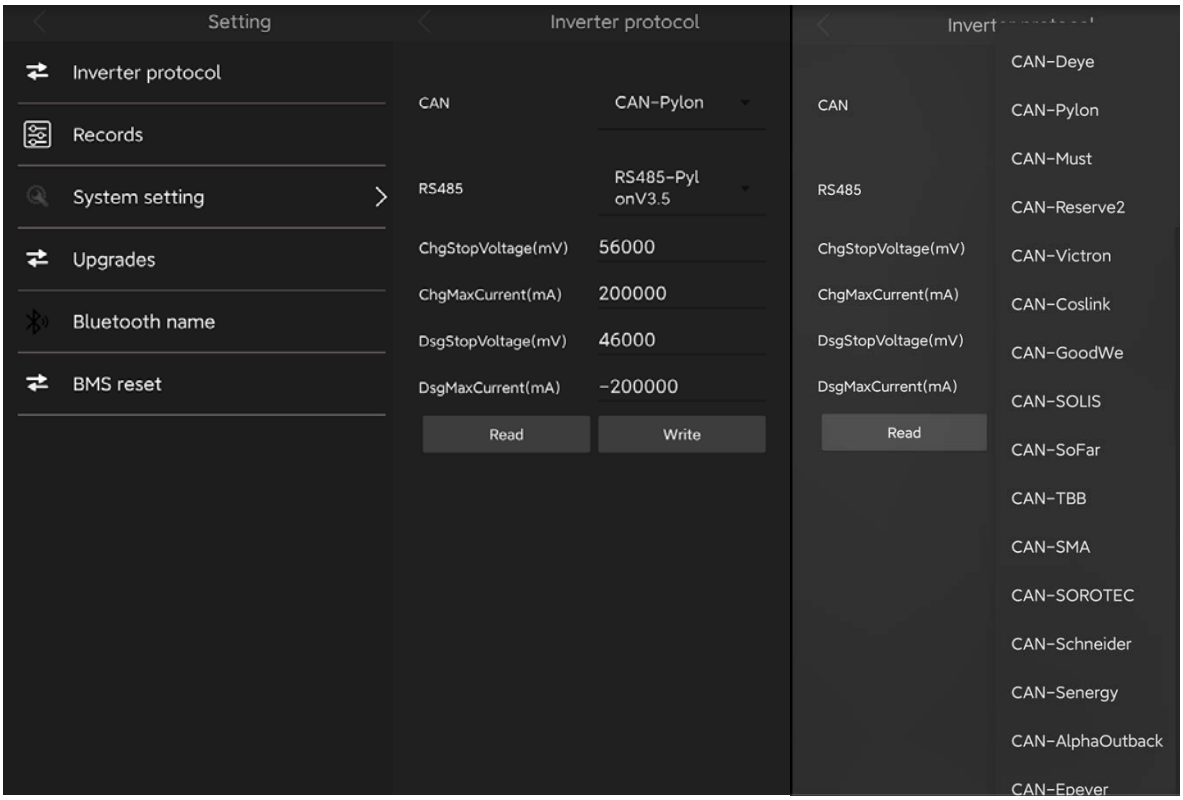
7.1 Connecting Battery Bluetooth

7.1.1 Enter the APP, click on the Device list, click START SCAN, select the device you want to connect to



7.1.2 After successful connection, you can view the battery data and modify the battery parameters in real time on the APP


connectSmart Battery
Device
51%
Charger
Charger Switch
DisCharger Switch
ON
ON
53.35V
Voltage(V)
39
Current(A)
2.0806499
Power(KW)
34.0
Temp(℃):
Info
Setting
Info
Status Info
Charger ON
DisCharger ON
Capacity Info
SOC:51%
SOH:100%
Cycle:3
RemCap:102.86Ah
FullCap:200.0Ah
Temp Info
MOS-T:32.7℃
ENV-T:33.0℃
T1-T:33℃
T2-T:34℃
T3-T:34℃
T4-T:34℃
Voltage/Current Info
Vol: 53.35V
Cur: 38A
diffV: 8mV
max: 3344
min: 3336
cell01: 3340
cell02: 3344
cell03: 3338
cell04: 3342
cell05: 3340
cell06: 3338
cell07: 3338
cell08: 3342
cell09: 3341
cell10: 3338
cell11: 3336
cell12: 3339
cell13: 3339
cell14: 3338
cell15: 3340
cell16: 3337


Setting
Inverter protocol
Records
System setting
Upgrades
Bluetooth name
BMS reset
Inverter protocol
CAN
CAN-Pylon
RS485
RS485-PylonV3.5
ChgStopVoltage(mV)
56000
ChgMaxCurrent(mA)
200000
DsgStopVoltage(mV)
46000
DsgMaxCurrent(mA)
-200000
Read
Write
CAN
RS485
ChgStopVoltage(mV)
ChgMaxCurrent(mA)
DsgStopVoltage(mV)
DsgMaxCurrent(mA)
Read
CAN-Deye
CAN-Pylon
CAN-Must
CAN-Reserve2
CAN-Victron
CAN-Coslink
CAN-GoodWe
CAN-SOLIS
CAN-SoFar
CAN-TBB
CAN-SMA
CAN-SOROTEC
CAN-Schneider
CAN-Senergy
CAN-AlphaOutback
CAN-Epever