

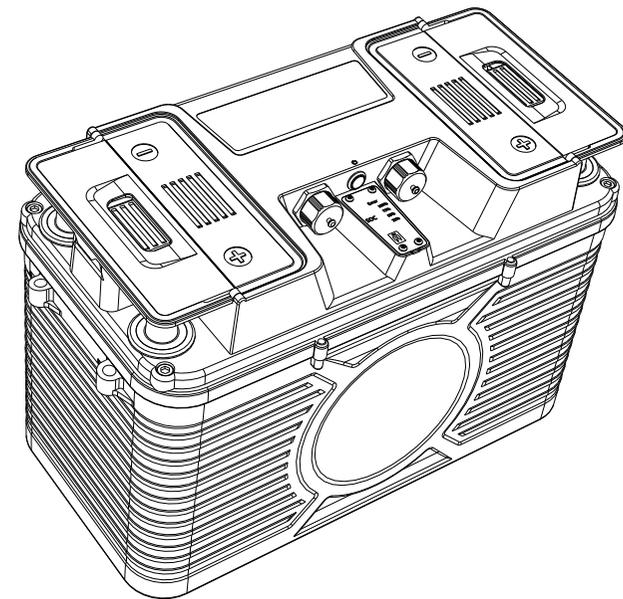
Warranty

From the date of purchase, this product comes with a two-year limited quality guarantee (one year for commercial use). During the warranty period, if the product malfunctions due to quality issues, the manufacturer will provide repair or replacement services according to the situation. The following situations are not covered by the warranty:

Warranty Exclusions

1	Damage caused by operation beyond product specifications, exposure to extreme temperatures, or use in improper environments.
2	Unauthorized disassembly, modification, or repair of the product.
3	Physical damage to the battery body, wiring, or positive/negative terminals.
4	Failure to provide valid proof of purchase or expiration of the warranty period.
5	Damage or performance degradation resulting from failure to follow the "Battery Storage Guidelines"
6	Normal capacity degradation during standard usage is not considered a quality issue.
7	Products for commercial use are covered by only 1-year warranty period.

LILEAD PRO SERIES BATTERY USER MANUAL



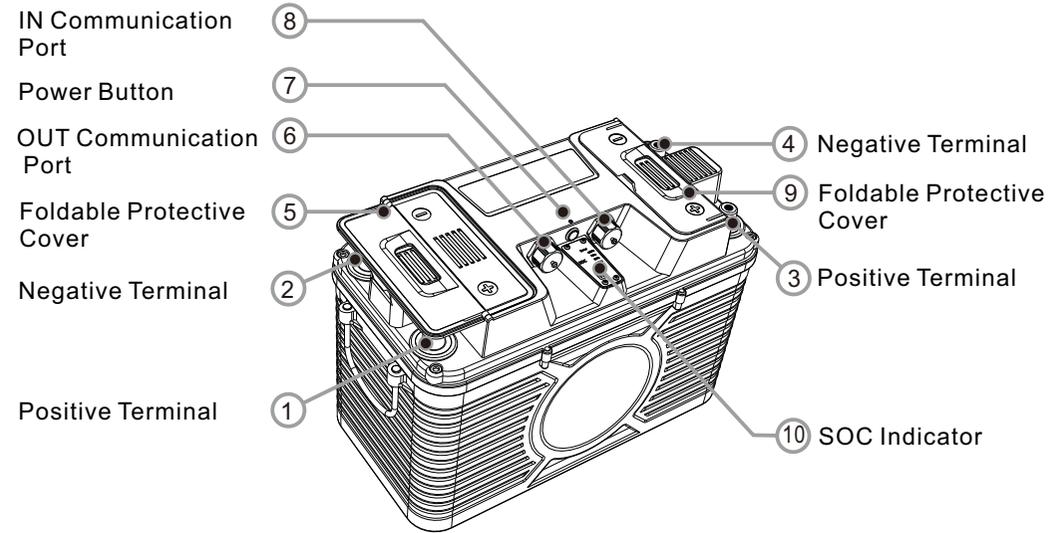
Please make sure to read this manual thoroughly before installation.

This manual is only suitable for battery model: S220PRO/S22110PRO/D3665PRO

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Product Illustration



No.	Detailed Description	Note
1,3	Positive Terminal. Physical connection points	When connecting multiple batteries in parallel, for battery connection precautions, pls refer to "Connection & Installation of LILEAD Pro Battery(NMEA2000) and MFD", and "Connection & Installation of LILEAD Pro Battery (VICTRON) with VICTRON Products"
2,4	Negative Terminal. Physical connection points	
5,9	Foldable Protective Cover. Covers the positive and negative terminals of the battery to prevent short circuits	
6	OUT Communication Port (connect to other battery's IN port). Supports CAN (NMEA2000 or VICTRON) and RS-485 communication.	
7	Power Button. Press the power button in the shutdown state to complete the startup process; Press and hold for 3 seconds while the device is turned on to complete the shutdown. The battery needs to be charged and discharged when turned on.	
8	IN Communication Port Supports CAN (NMEA2000 or VICTRON) and RS-485 communication.	
10	SOC Indicator. Indicate battery SOC It illuminates when battery is ON, and dark when battery is off.	

⚠ Auto-Shutdown Trigger Conditions

The battery will automatically shut down when ALL the 3 conditions are met simultaneously:

1. Communication Disabled: No active connection to MFD/Victron devices
2. Low-Current Discharge >24h: Continuous discharge current <1A for over 24 hours
3. Zero Charging Input: No charging source connected during this period

Note: If you don't need this Auto-shutdown feature, pls contact manufacturer to deactivate it.

Safety Guidelines & Installation Guidelines

Safety Guidelines

1. Thoroughly review this manual before use
2. Use insulated gloves and goggles during handling
3. Keep batteries far from open flames, sparks, high-temperature environment
4. It is strictly prohibited to short-circuit, overcharge, over-discharge or disassemble the battery by oneself.
5. Please maintain good ventilation during charging or use.
6. Please keep the battery out of reach of children.

Installation Guidelines

1. This series of batteries are classified into NMEA2000 Version and VICTRON Version based on communication protocols.
2. NMEA2000 Version and VICTRON version are with different incompatible firmwares. Do not mix them.
3. Choose the correct connection and installation method based on selected batteries, for details please refer to "Connection & Installation of LILEAD Pro Battery(NMEA2000) and MFD", and "Connection & Installation of LILEAD Pro Battery (VICTRON) with VICTRON Products"

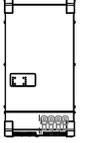
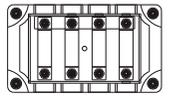
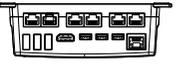
LILEAD Pro battery NMEA2000 packing List:

NO.	Description	Picture
#2 Cable *1 Communication cable between Pro battery and T-Bone communication cable	1.5m	
#5 Cable *1 Communication cable between batteries	0.5m	

LILEAD Pro battery VICTRON packing List:

NO.	Description	Picture
#3 Cable * 1 Communication cable between pro battery and VICTRON Cerbo GX	1.5m	
#5 Cable *1 Communication cable between batteries	0.5m	

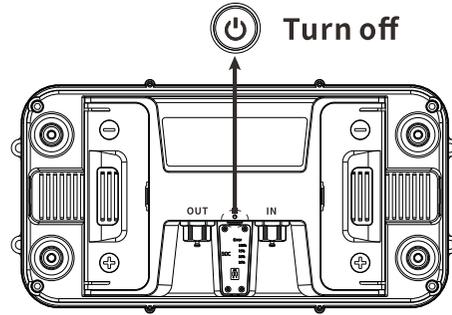
Battery Installation Accessories (Customer Optional)

#1 Cable Communication cable between Pro battery and Lilead display	
#4 Cable + -	
VICTRON inverter	
Bus-bar	
VICTRON CERBO GX	
T-Bone communication cable	
LILEAD Display	
NMEA2000 Multi Function Display	

Connection & Installation of LILEAD Pro Battery (NMEA2000) and MFD

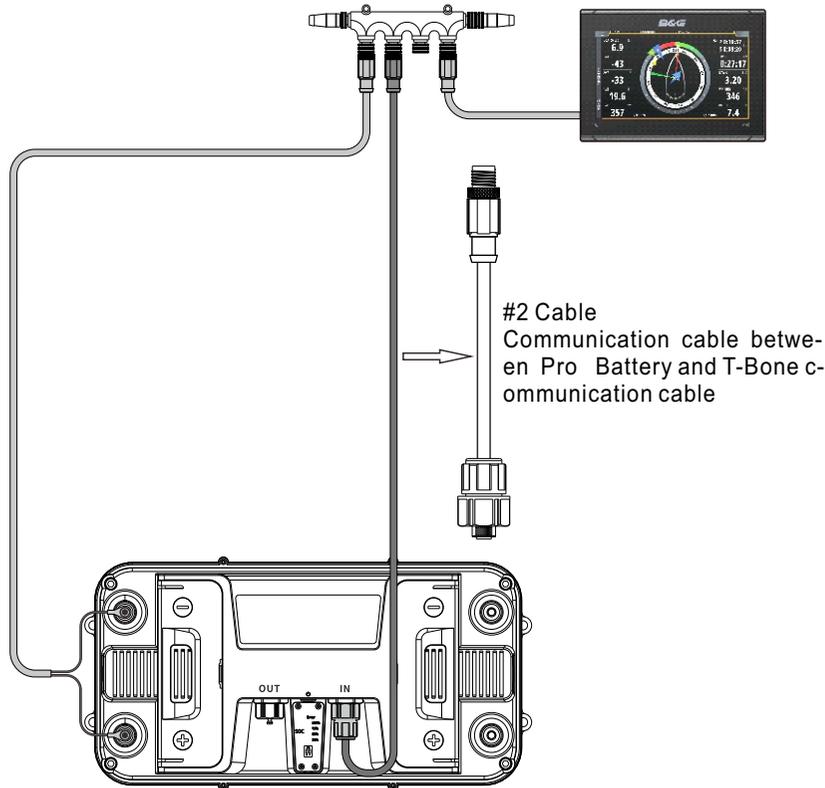
Step 1 Battery Inspection

Ensure the battery is intact, keep the battery powered off with all indicators extinguished. Suggest operating after battery is fully charged



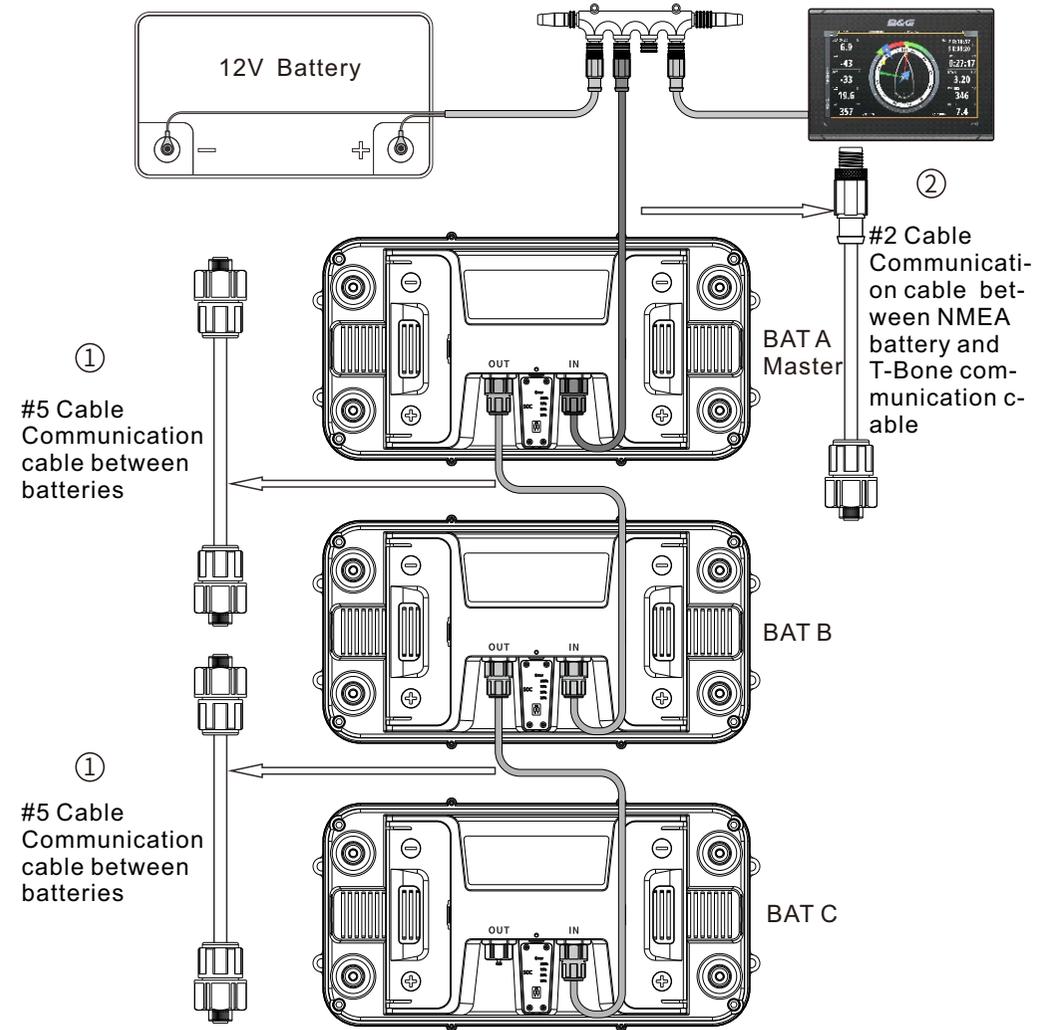
Step 2 Battery Communication Cable Installation

A, Single Battery Connection:
Connect one end of the #2 communication cable to the battery's IN port, and the other end to T-Bone, integrating the battery into the NMEA 2000 network. The T-Bone must also be connected to a 12V power source and an MFD (Multi-Function Display).



B, Multiple Batteries in Parallel:

- 1 Connect the OUT port of Battery A (Master) to the IN port of Battery B (Slave) using #5 communication cable. Connect the OUT port of Battery B (Slave) to the IN port of Battery C (Slave) using #5 communication cable.
- 2 The IN port of the Master (Battery A) must remain empty. Connect the Master's IN port to the NMEA 2000 network (T-Bone) using #2 communication cable as illustrated.



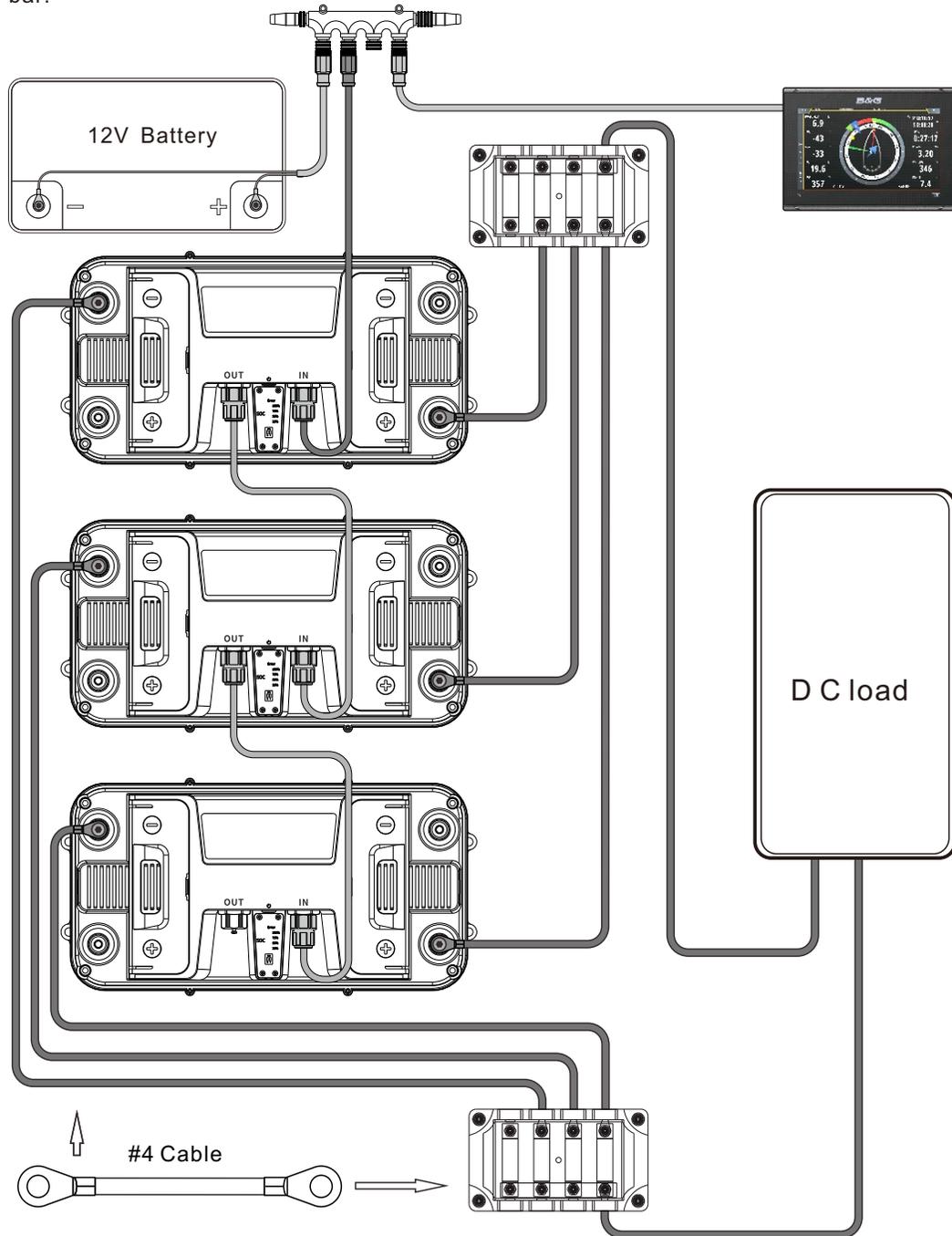
Notice: Master and slave batteries are automatically assigned via communication cable connection. The battery with an empty IN port after parallel connection serves as the master battery. The master unit handles communication with application equipment.

Communication supports parallel connections only (no series connections). Maximum of 8 batteries can be connected in parallel.

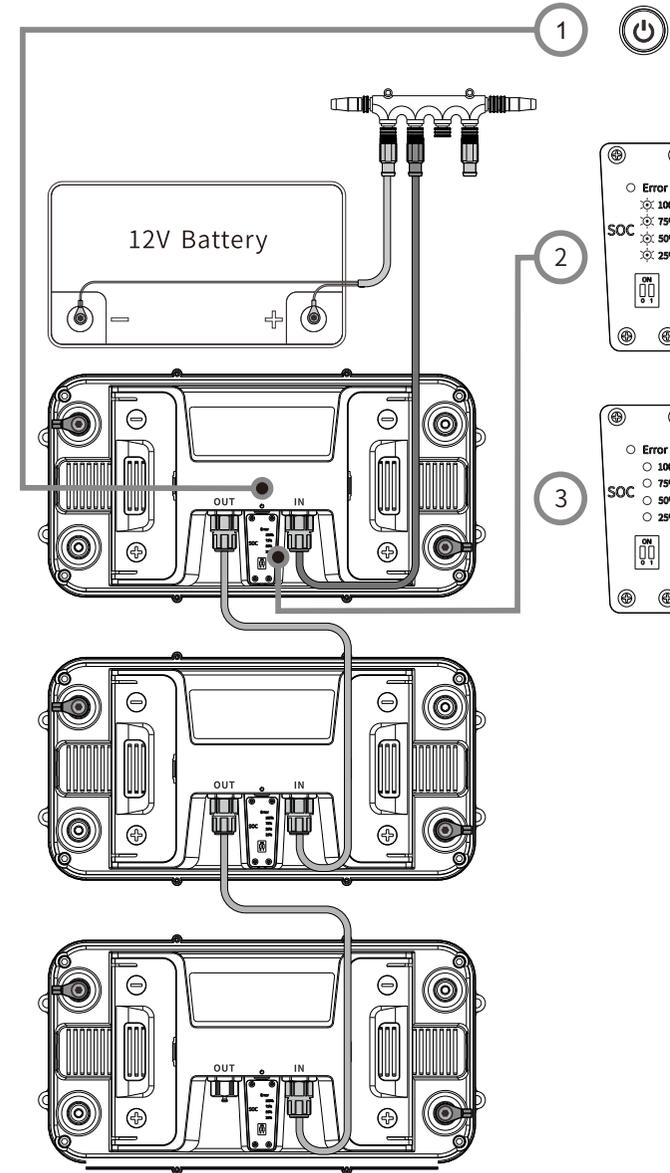
Step 3 Power Cable Connection

Use power cables of identical specifications and equal lengths to connect the batteries in parallel to the bus-bar.

Connect devices such as inverters, chargers, lighting, or water pumps directly to the bus bar.



Step 4 Batteries power on



Short press the power button on the master battery for 1 second to power on all batteries in parallel system.

The batteries will initiate self-check, SOC indicators flash.

When the self-check is complete, the indicators stop flashing, the batteries enter normal working condition.

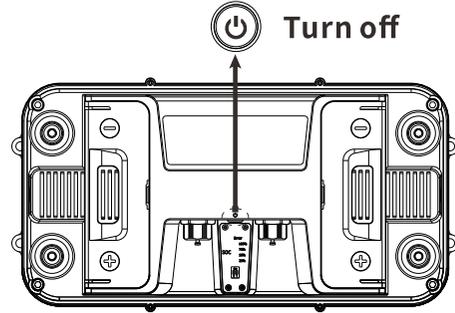
Battery Working Environment and Installation

- 1 Optimal temperature: 25°C (77°F), Please install the battery in the appropriate temperature places. (e.g., battery cabin at saloon)
- 2 Avoid direct sunlight to prevent high temperatures in the battery.
- 3 Keep batteries at dry places. Batteries are strictly prohibited from being soaked in water.
- 4 Secure batteries to prevent shaking or sliding.
- 5 Allow spacing between parallel batteries for heat dissipation.

Connection & Installation of LILEAD Pro Battery (Victron) with VICTRON Products

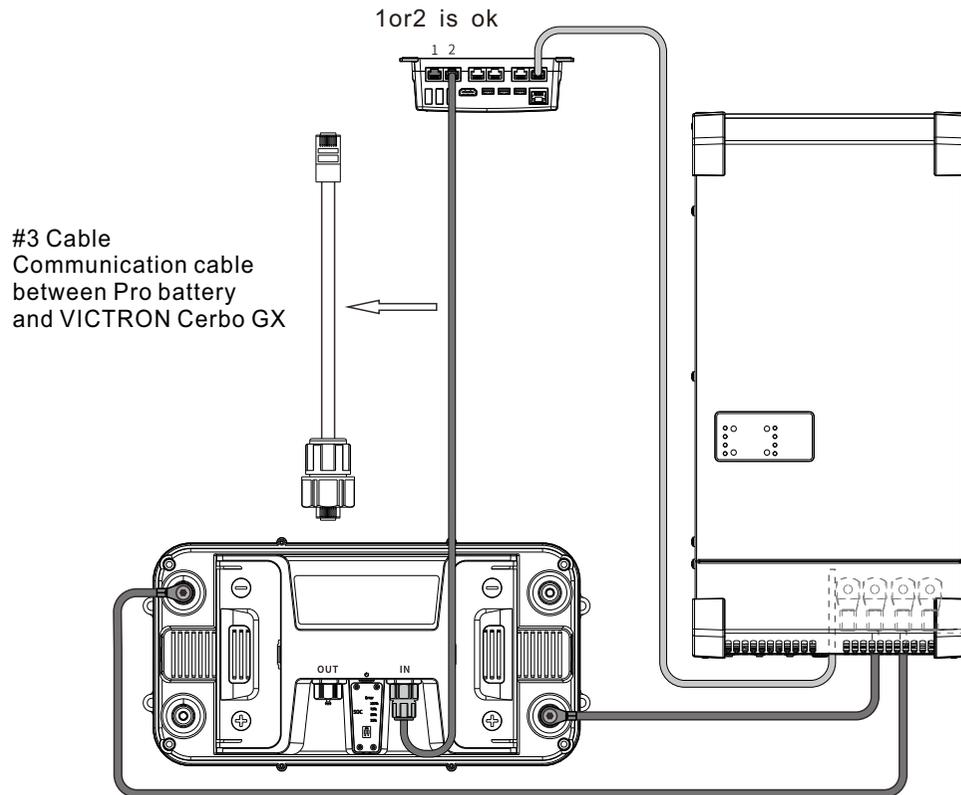
Step 1 Battery Inspection

Ensure the battery is intact, keep the battery powered off with all indicators extinguished. Suggest operating after battery is fully charged.



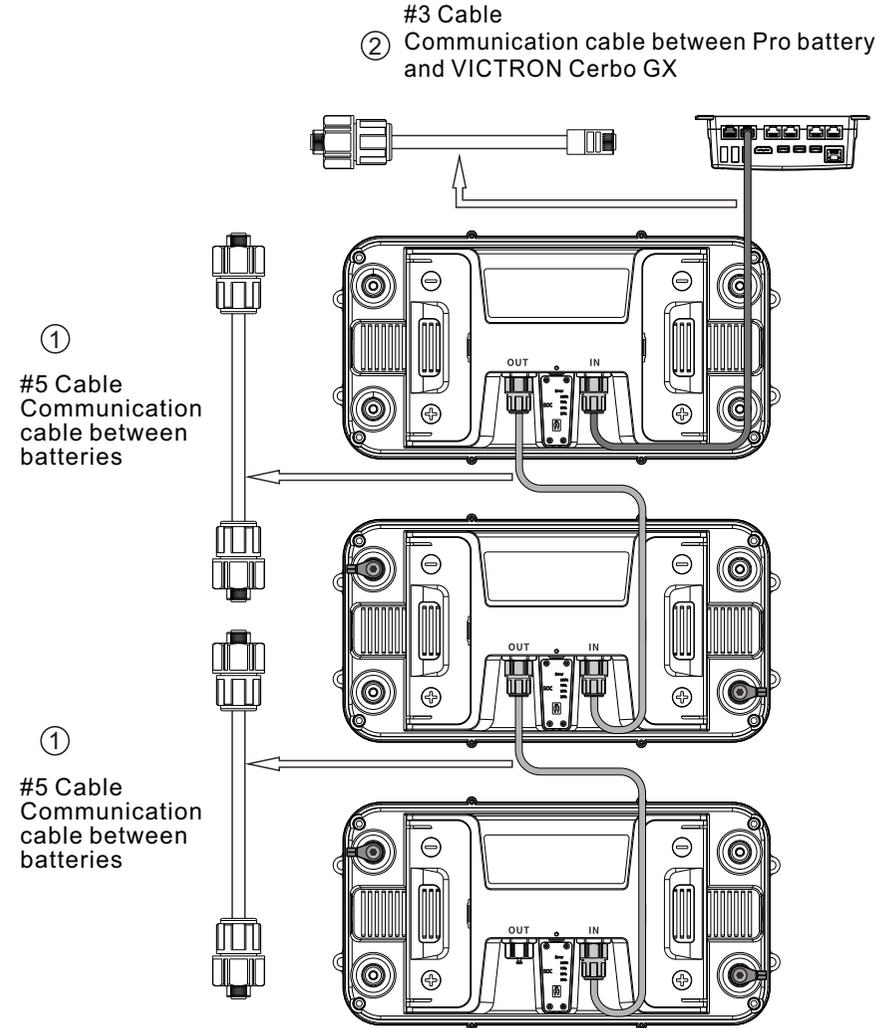
Step 2 Battery Communication Cable Installation

A Single Battery Connection:
Connect one end of the #3 communication cable to the battery's IN port, and the other end to VICTRON Cerbo GX.



B Multiple Batteries in Parallel:

- ① Connect the OUT port of Battery A (Master) to the IN port of Battery B (Slave). Connect the OUT port of Battery B (Slave) to the IN port of Battery C (Slave). The IN port of the Master (Battery A) must remain empty.
- ② Connect the Master's IN port to VICTRON Cerbo GX, integrating batteries into VICTRON N network.



Notice: Master and slave batteries are automatically assigned via communication cable connection. The battery with an empty IN port after parallel connection serves as the master battery. The master unit handles communication with application equipment.

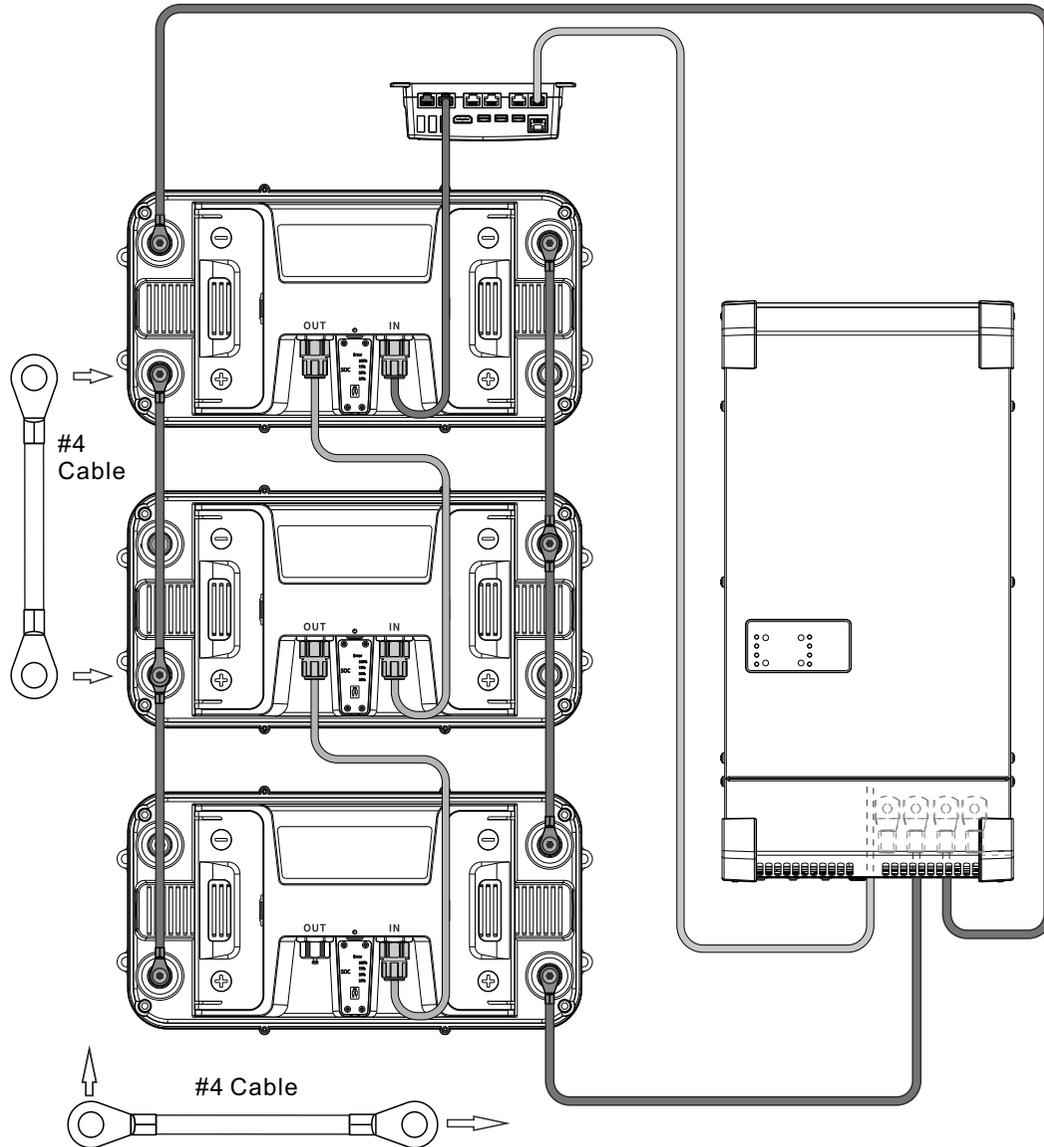
Communication supports parallel connections only (no series connections). Maximum of 8 batteries can be connected in parallel.

Step 3 Power Cable Connection

Connection method 1: Direct Parallel

Use appropriate power cables to connect all batteries' positive terminals to each other, and all negative terminals to each other. After completing the parallel connection of batteries, attach the positive terminal of the load or charging device to the positive terminal of the first battery, and the negative terminal to the negative terminal of the last battery.

Use this connection method when the battery pack current is $< 150\text{A}$. Otherwise, use Connection Method 2.

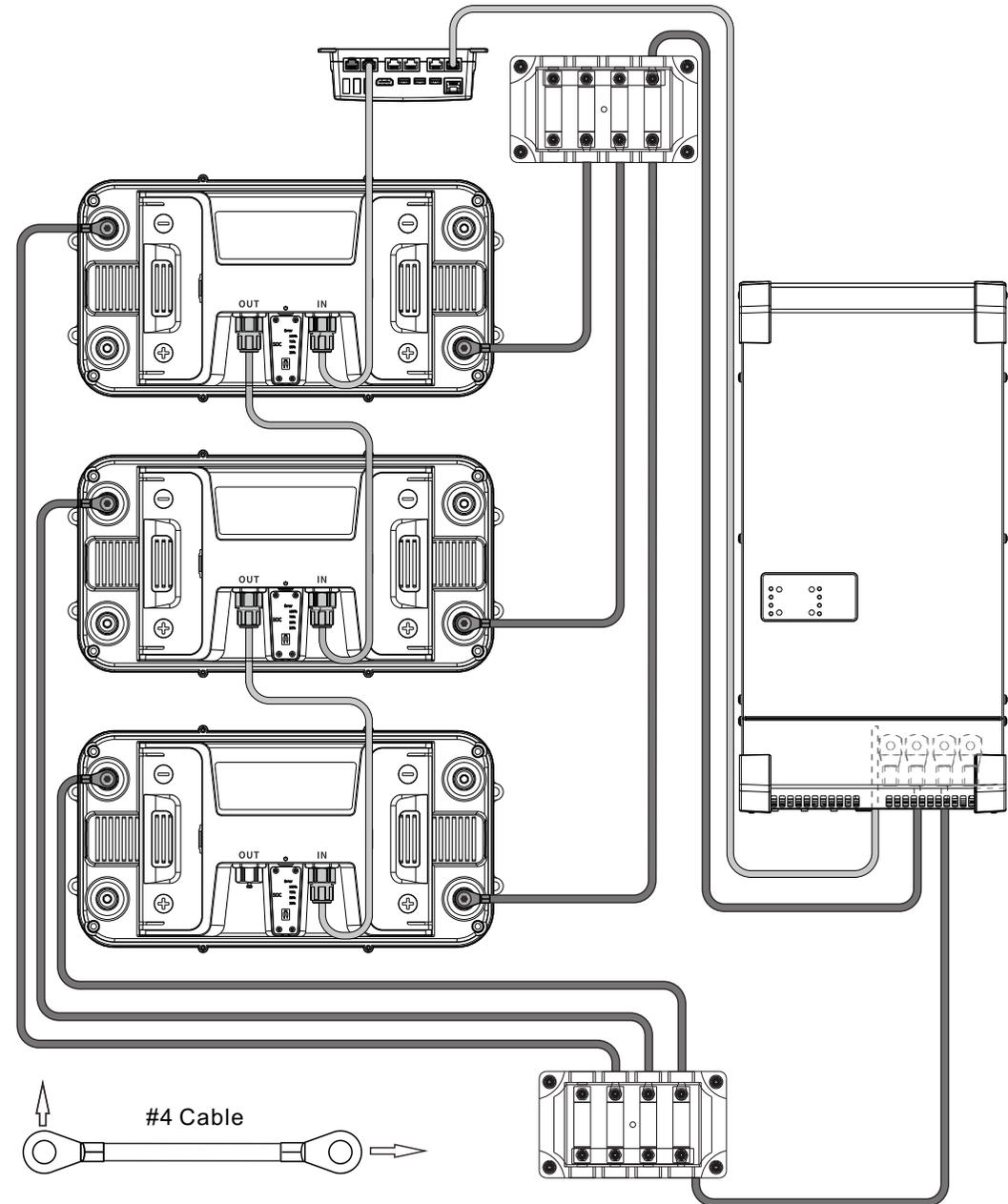


Connection method 2: connecting to bus-bar

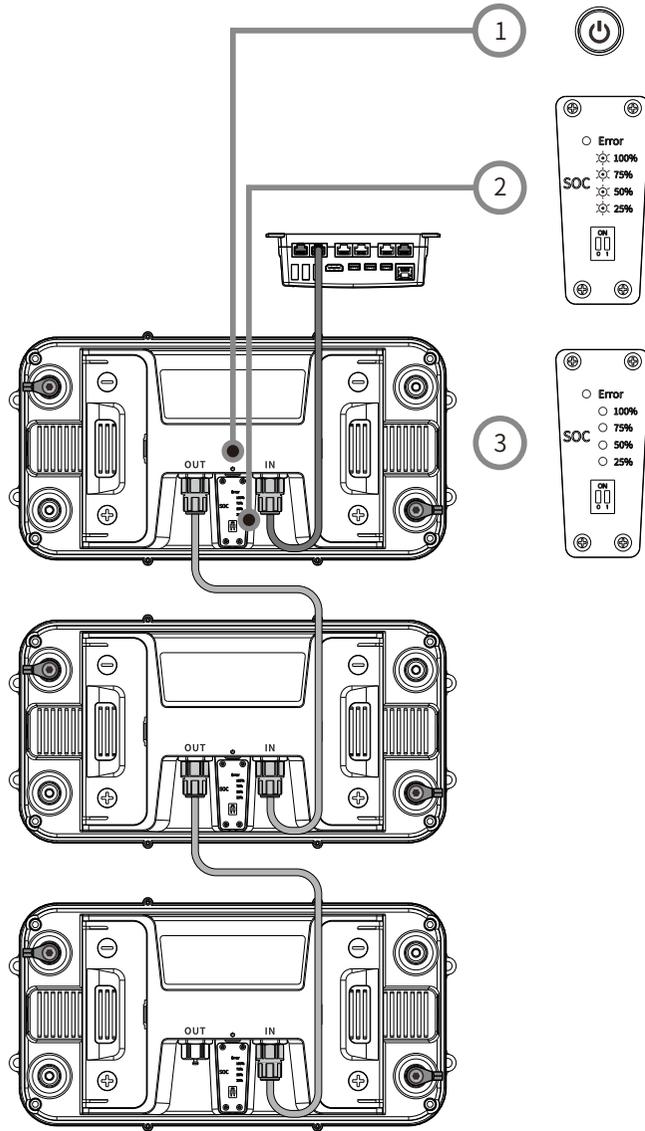
For currents $> 150\text{A}$, connection method 2 is recommended.

Use power cables of identical specifications and equal lengths to connect the batteries in parallel to the bus-bar.

Connect devices such as inverters, chargers, lighting, or water pumps directly to the bus-bar.



Step 4 Batteries power on



Short press the power button on the master battery for 1 second to power on all batteries in parallel system.

The batteries will initiate self-check, SOC indicators flash.

When the self-check is complete, the indicators stop flashing, the batteries enter normal working condition.

Battery Working Environment and Installation

- Optimal temperature: 25°C(77°F), Please install the battery in the appropriate temperature places. (e.g., battery cabin at saloon)
- Avoid direct sunlight to prevent high temperatures in the battery.
- Keep batteries at dry places. Batteries are strictly prohibited from being soaked in water
- Secure batteries to prevent shaking or sliding.
- Allow spacing between parallel batteries for heat dissipation.

Recommended Power Cables Specifications

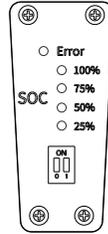
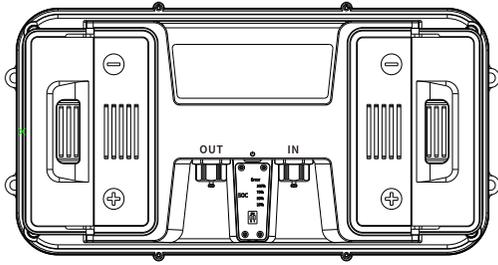
Users need to select cables of appropriate length according to reality, and connect cables by themselves with professional tools.

When multiple batteries are connected in parallel, to ensure battery consistency, it is recommended to use cables of the same specifications and length to connect the batteries to the bus-bar first, and then connect them to other electrical devices from the bus-bar.

The recommended battery cables is shown in the table below.

Current (Ampere)	Recommended power cables specification						
	4AWG	2AWG	2AWG	1/0AWG	1/0AWG	1/0AWG	2/0AWG
250-300	4AWG	2AWG	2AWG	1/0AWG	1/0AWG	1/0AWG	2/0AWG
200-250	4AWG	4AWG	2AWG	2AWG	1/0AWG	1/0AWG	1/0AWG
150-200	6AWG	4AWG	4AWG	2AWG	2AWG	1/0AWG	1/0AWG
125-150	8AWG	6AWG	4AWG	4AWG	2AWG	2AWG	2AWG
105-125	8AWG	8AWG	6AWG	4AWG	4AWG	4AWG	2AWG
85-105	8AWG	8AWG	6AWG	4AWG	4AWG	4AWG	4AWG
65-85	10AWG	8AWG	8AWG	6AWG	4AWG	4AWG	4AWG
50-65	10AWG	10AWG	8AWG	8AWG	6AWG	6AWG	4AWG
35-50	10AWG	10AWG	10AWG	8AWG	8AWG	8AWG	6AWG
20-35	12AWG	10AWG	10AWG	10AWG	10AWG	8AWG	8AWG
0-20	12AWG	12AWG	12AWG	12AWG	10AWG	10AWG	10AWG
	0-1.2m	1.2-2.1m	2.1-3m	3-4m	4-4.9m	4.9-5.8m	5.8-6.7m
	0-4ft	4-7ft	7-10ft	10-13ft	13-16ft	16-19ft	19-22ft
	cable length						

Battery Alarm



During use, if there is an abnormality in the battery, the Error indicator light will display different states. Please refer to the following table:

Error Light Status	Battery Status	Action Required
Error Light OFF	Battery OFF No error	No action required
	Battery ON, all is well No error	No action required
Error Light ON	Charging status: Battery is in protection status like over-temperature/over-current	If the battery cannot be charged, stop charging immediately. Allow the battery to rest for a period, then retry. If the issue persists, contact your distributor directly. You may also check the battery's fault status via the LILEAD display (if equipped).
	Discharging status: Battery is in protection status like over-temperature, over-current, short circuit.	If the battery cannot discharge, stop discharging immediately. Allow the battery to rest for a period, then retry. If the issue persists, contact your distributor directly. You may also check the battery's fault status via the LILEAD display (if equipped).
	Resting status: Battery failure	Discontinue use of the battery. Allow it to rest for a period, then retry. If the fault remains, contact your distributor directly

Attention: Non professional person is not recommended to perform other operations to avoid warranty issues

Applicable Matters for S220PRO/S24110PRO (VICRON) Inverters

LILEAD Pro Battery (VICRON), specially designed for yachts and RVs, are highly favored by the yacht and RV energy storage market due to their excellent performance. Therefore, we have partnered with VICRON to launch the S220PRO (VICRON) and S24110PRO (VICRON), providing more optimized energy storage solutions.

Important Note:

The firmware of S220PRO/S24110PRO(NMEA2000) differs from S220PRO/S24110PRO (VICRON), not compatible. Do not mix them.

For installation of the Pro Battery(VICRON), please refer to "Connection & Installation of LILEAD Pro Battery(VICRON) with VICRON Products".

Key Advantages of Pro Batteries(VICRON)

1. Enhanced Safety- "Active Balancing" Charging
Through communication with VICRON inverters, these pro batteries can intelligently adjust the charging strategy.

Adopting a stepped charging method (similar to electric vehicles), the charging current (C-CL/CVL) is dynamically adjusted according to the SOC.

As the battery nears full charge, the inverter automatically and gradually reduces charging current to 0, preventing over-charge. Charging resumes only when SOC drops to 95%, preventing damage from repeated charging.

The Active Balancing Charging not only enhances safety, but also prevents surge voltage caused by overcharging, protecting the overall electrical system

2. Superior User Experience – Fewer Fault Alarms
Intelligent charging control effectively avoids false alarms, ensures stable operation, and enhances user experience.

3. Plug-and-Play
After installation, it can be used immediately upon powering-on. No complex setup required, saving time and effort

Lithium Battery Charging Guidelines

I. Charging Procedure

- 1.Ensure the battery is powered on with no visible damage or deformation.
- 2.Use a compatible lithium battery charger. Insert the charger into an AC power outlet.
- 3.Connect the charger’s output plug to the battery’s charging port securely.
- 4.During charging, the battery’s SOC indicators will blink, indicating normal charging progress.
- 5.After charging completes,firstly disconnect the charger from the battery,then unplug the charger from the power outlet.

II. Charging Precautions

Charging Environment: Charge between 0°C/32°F and 45°C/113°F. Please avoid charging in extreme temperatures.

Electrical Safety: Ensure the charger and power outlet are dry, undamaged, and firmly connected.

Prohibited Practices:Never use incompatible chargers – incorrect voltage/current may cause overheating, swelling, or fire.

Abnormal Response:Immediately stop charging if the battery emits odor, overheats, deforms, or leaks. Contact your distributor.

III. How to Choose a Suitable Charger

Voltage Match: Charger output voltage must match the battery’s rated voltage.

Current Match: Select a charger with 0.2C–0.5C output current.

Safety Certifications: Prioritize chargers with CE, UL, or FCC certifications.

Protection Features: Choose smart chargers with overcharge/over-current/over-temperature protection.

Manufacturer Recommendation: Use manufacturer-specified chargers for optimal compatibility and safety.

Battery Storage Guidelines

To ensure the safety and performance of the battery, please follow the following guidelines:

1	Store the battery in a dry, clean, and well-ventilated environment.
2	As batteries are classified as hazardous materials, storage conditions must comply with local regulations and safety requirements.
3	Recommended storage temperature range: 10°C to 35°C (50°F to 95°F) . Avoid extreme high or low temperatures.
4	Maintain the battery’s State of Charge (SOC) between 50% and 75% during storage.
5	Do not disassemble, modify, or attempt to repair the battery. Unauthorized actions may cause malfunctions, fires, or safety incidents.
6	For long-term storage, perform a charge-discharge cycle at least every 6 months to preserve battery performance.
7	To prevent over-discharge: If the battery remains idle for over 24 hours (no communication, no charger connected, and current draw <1A), it will automatically enter sleep mode.Press the power button to wake the battery before use.
8	If the auto-sleep function is disabled, you must manually power off the battery during storage. Otherwise, over-discharge may cause performance degradation or failure.
9	Replace the battery if: Its capacity drops below 70% of the initial capacity, or Its State of Health (SOH) ≤ 70%.