



Litio 2.56 H-BT



Elios Litio 2.56 H-BT

Super Slim Heated Bluetooth LiFePO4 Battery

Installation Guide

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Installation Guide

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1 Preface

The 12.8V Li-ion battery is designed as a direct replacement for traditional 12V sealed lead-acid (SLA) batteries. This new-generation battery utilizes Lithium Iron Phosphate (LiFePO₄) cells combined with an advanced Battery Management System (BMS) to ensure superior safety, high discharge current capability, and exceptional lifespan.

This manual is intended for anyone responsible for installing, operating, or maintaining this battery. Please read it carefully to understand the product's features and identify any potential safety risks.

Important:

The owner or installer must be fully familiar with the battery's specifications and handling procedures before use. Improper installation or use may result in damage that is not covered under the limited warranty.



2 Safety

2.1 Important Safety Instructions



WARNING Risk of Explosion, Electrocutation, or Fire. Lithium-ion batteries can pose serious hazards, including electric shock, high short-circuit currents, fire, or explosion. Please follow all safety precautions below:

General Safety Guidelines:

- Always observe proper precautions when handling or installing the battery.
- Use appropriately sized cables to handle the expected current load.
- Maintain sufficient clearance around the batteries for airflow and safety.
- Ensure the battery area is well ventilated and free of dust, debris, or flammable materials.
- Always use insulated tools and avoid dropping tools onto batteries or electrical components.
- Never charge a frozen battery, unless it includes optional internal heating components.
- Before removing a battery, ensure all connected devices are powered off and disconnected.

Installation and Handling:

- Leave adequate space between batteries during installation.
- When replacing batteries, always use the same type and quantity.
- Avoid dropping, hitting, or allowing the battery to suffer any impact during handling.
- Do not disassemble or modify battery components. Maintenance should be performed only by qualified professionals.
- Do not expose the battery to temperatures exceeding 58°C during operation, or 60°C during storage.
- Do not incinerate or expose the battery to open flames.

Parallel Connection & Charging Safety:

- Do not connect batteries with different States of Charge (SOC). This can lead to improper charging/discharging and reduce usable capacity.
- Before parallel connection, ensure the voltage difference between batteries is less than 0.1V to avoid high current inrush.
- Recharge batteries promptly after use to prevent deep discharge that may disable the BMS and damage the battery.
- Ensure the charger output does not exceed 75V DC, as excessive voltage can damage the BMS.

2.2 Storage

The 12.8V Li-ion battery should be stored in an environment with temperatures between -20°C and +55°C, and 10% to 80% relative humidity (non-condensing).

Storage Guidelines:

- For long-term storage at 25°C, recharge the battery every 6 months to maintain performance.
- At temperatures above 40°C, recharge the battery every 3 months.
- The battery is shipped at approximately 50% State of Charge (SOC). Recharge every 6 months if unused.
- Do not store the battery at temperatures exceeding 60°C.
- Do not store a fully discharged battery for extended periods. This may prevent the BMS from functioning and lead to permanent battery damage.

Relationship Between Charge Limits and Temperature

Due to the chemistry of LiFePO₄ cells, charging at low temperatures can reduce capacity and damage the battery. As the temperature increases, the cells can gradually accept higher charge currents.

To ensure safe operation and maximize battery life, follow the recommended charge rate limits based on ambient temperature:

Table 1 – Charge Rate by Temperature	
Ambient Temperature (°C)	Recommended Charge Rate
-20	Charging Prohibit
-10	Charging Prohibit
0	0.1C
10	0.5C
20	1.0C
35	0.5C
45	0.2C
>55	Charging Prohibit

* Note: “C” refers to the charge rate relative to battery capacity (e.g., 1C = full charge in 1 hour).

3 Installation

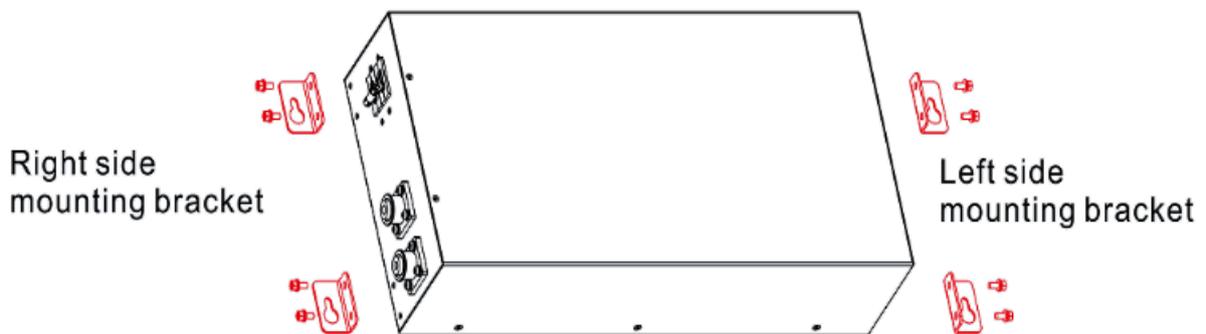
3.1 Safety First

- Ensure the breaker is turned off before beginning the installation process.

Step 1: Mounting Bracket Installation

Remove the mounting brackets and screws from the accessory kit and install them on the battery as shown.

Mounting Bracket Placement:

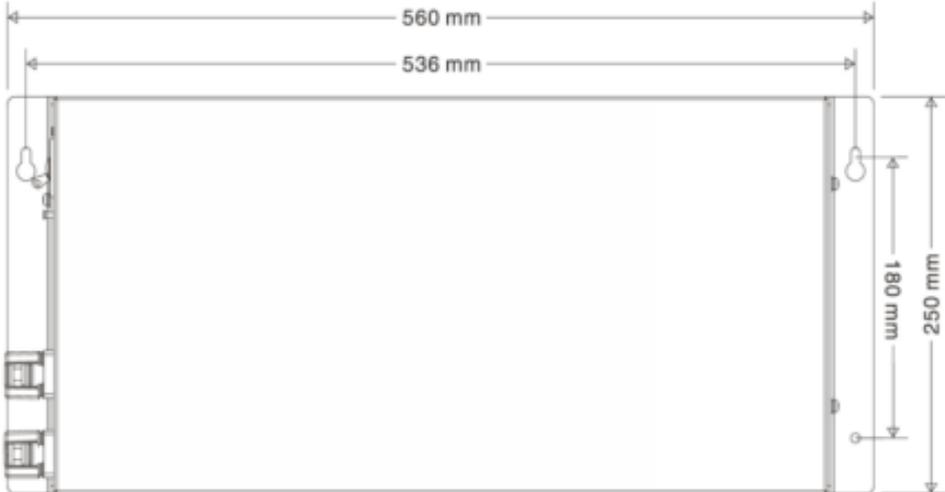


Description	Qty	Remark
Right side mounting brackets, SPCC -2.0mm 50.030.020.0mm, L-shaped, ROHS, 1.2.A.00537	2pcs	For right side
Left side mounting brackets, SPCC -2.0mm 50.030.020.0mm, L-shaped, ROHS, 1.2.A.00538	2pcs	For left side
Cross round head combination bolt M5*10 Stainless steel 304, ROHS	8pcs	For securing brackets

Step 2: Wall-mounted Installation

1. Drill holes into the wall according to the dimensions shown in the diagram.
2. Secure the wall mounting brackets using appropriate screws and washers.
3. The battery must be installed in the orientation shown in the installation diagram. Installing it in any other direction may result in performance issues or safety risks.

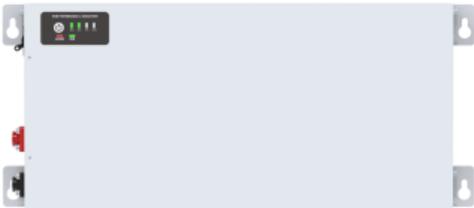
(1)Dimensions



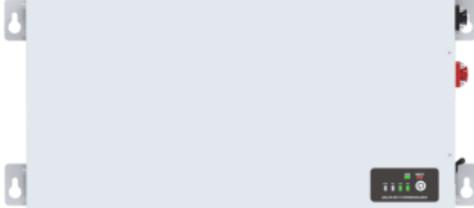
(2)Expansion bolts M6*60mm stainless steel, ROHS -4 Pcs



(3)Correct installation direction



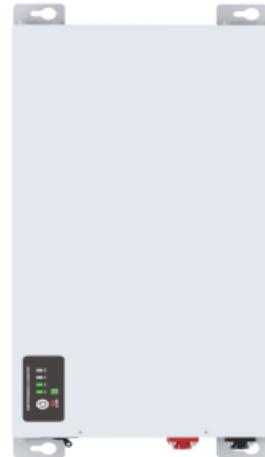
Terminal facing left



Terminal facing right



Terminal facing up



Terminal facing down



Horizontal facing up



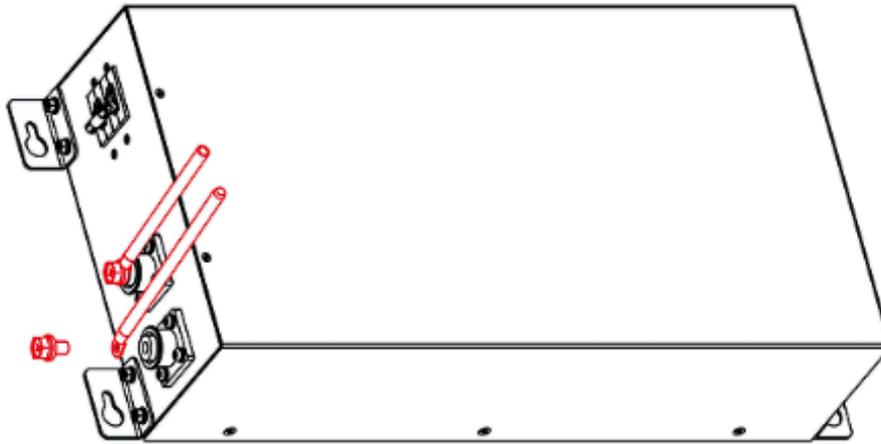
Installing facing down

⚠ Note: If installed at the bottom of the camper, the vibration will be very intense, and water may splash into the bottom. Therefore, this installation direction should be handled with caution.

3.2 Power Cable Connection

- For a 100A current, use power cables with a minimum diameter of 50 mm².
- Use M8 × 16 bolts for connecting to the 12.8V 200Ah battery terminals.

Recommended torque: 19.6~27.9Nm



Power-Up Procedure :

- Ensure all cable connections are secure and properly torqued.
- Turn ON the breaker.
- Once powered on, the battery output voltage should read approximately 13.0V to 13.5V DC.



4 Charging the Batteries

The 12.8V Li-ion battery is compatible with most standard 12V lithium battery chargers.

4.1 Important Notes:

- Some chargers that rely on detecting terminal voltage may not be able to wake the battery from under-voltage protection mode.
- Constant Voltage (CV) chargers can cause a high inrush current due to the battery's low internal impedance, which may trigger the charger to trip. If this occurs, reset the charger and resume charging.
- A Constant Current (CC) charger is strongly recommended for optimal performance and safety.

Recommended Charging Parameters for a 12.8V Battery:

Parameter	Value
Absorb Voltage	14.2V
Float Voltage	13.5V
Maximum Charging Voltage	14.6V
Maximum Charge Current	Refer to Table 1

* Note: High inrush current during initial charging may trigger overcurrent or short-circuit protection. Always use a compatible charger.

Charging Parameter Table:

PARAMETERS	
Model	Litio2.56H-BT
Cell and Connection	CB27173204EA 2P4S
Nominal Voltage[V]	12.8
Nominal Capacity [Ah]	200
Total Energy [Wh]	2560
Max.Charging Current [A]	100
Recommended Charging Current [A]	100
Charging Voltage [V]	14.2~14.6
Max.Discharging Current [A]	160
End of Dicharge Voltage [V]	11.2
Operating Temperature Range	Charge:0~+50°C Discharge:-20~+55°C
Protection	Over charge,Over discharge,Over temperature, Low Temperature,Over Current,Short circuit
Cycle Life	>3500 cycles at 90%DOD ,>6000 cycles at 50% DOD
Designed Calendar Life	10 Years
Communication Port	RS485;CAN
LED Indicator and Button	SOC,ALM,RUN, ON/OFF
Dimension(W*D*H,mm)	560*250*120
Weight [Kg]	24.8
Operation Humidity	0~95%RH(No condensing)
IP Class	IP30
Parallel Support(2)	Yes,Max,4Sets
Certification-Cell	UN38.3;ROHS;UL9540;UL1973
Certification-Battery	UN38.3;MSDS
Optional Parts	Internal Bluetooth RS485-USB cable Heater parts(200W)

* Note: (1) 25°C, 0.5C/0.5C, 70% EOL

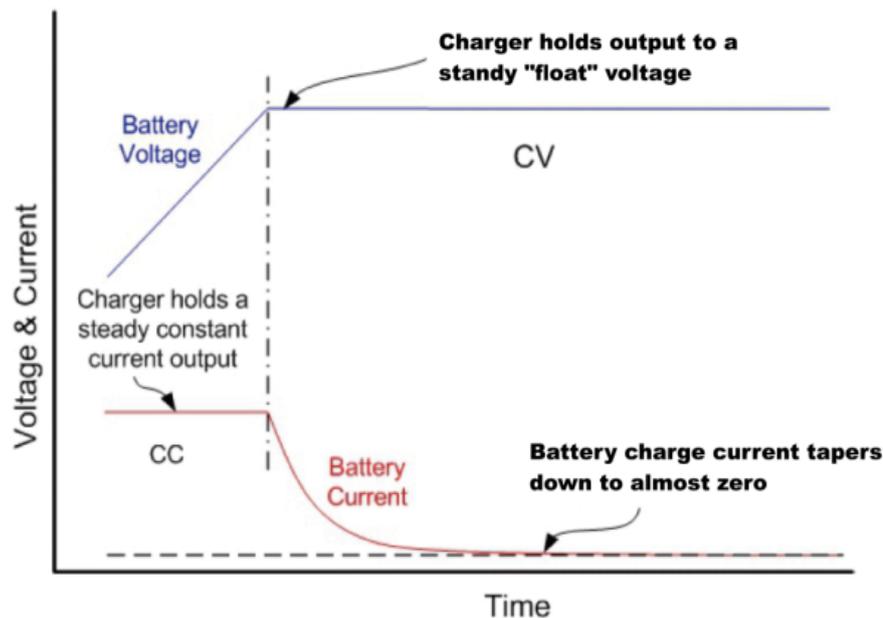
(2) For parallel connection operation, refer to user manual.

4.2 End-of-charge Process:

Once the battery reaches its maximum charging voltage (14.6V):

1. Maintain this voltage using constant voltage charging.
2. Allow the current to taper to near zero.
3. This process ensures the battery reaches 100% State of Charge (SOC).

Refer to the figure below for a visual representation of the charging profile.



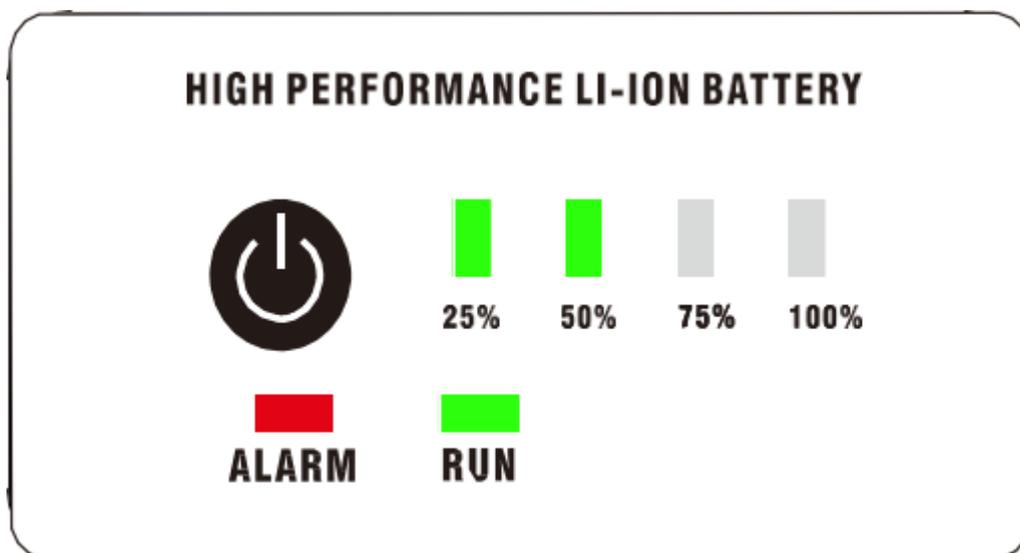
Battery Voltage and Current During Charge

5 ON/OFF Button and LED Indicators

5.1 Sleep Mode & Activation – Lilio 2.56 thin Li-ion Battery

- If the Lilio2.56 thin Li-ion battery remains idle (no charge or discharge activity) for 24 hours, it will enter sleep mode to conserve energy.
 - In this state, the open-circuit voltage (OCV) remains measurable (typically >10V).
 - Any charge or discharge activity will automatically wake the battery.

- If the battery enters over-discharge protection, the Battery Management System (BMS) will switch to sleep mode after 5 minutes.
 - In this state, no OCV will be measurable.
 - The battery can only be reactivated by initiating a charging operation.
- Alternatively, the battery can be manually activated or turned off by pressing and holding the ON/OFF button for 6 seconds.



5.2 ON/OFF Button and LED Indicators

Status	Normal Warning Protection	RUN	ALM	SOC				Description
Shut down	Dormancy	OFF	OFF	OFF	OFF	OFF	OFF	
Standby	Normal	Flash 1	OFF	Follow module capacity				Standby
	Warning	Flash 1	Flash 2					Module at low voltage
Charge	Normal	ON	OFF	Follow module capacity				
	Warning	ON	Flash 2					
	Over-charge Protection	ON	OFF	ON	ON	ON	ON	LED turn to standby if no power supply
	Temp / over- current / BMS fault protection	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging
Discharge	Normal	ON	OFF	Follow module capacity				
	Warning	ON	Flash 2					
	Under voltage protection	OFF	OFF	OFF	OFF	OFF	OFF	Stop discharging
	Temp / over- current / short circuit / BMS fault protection	OFF	ON	OFF	OFF	OFF	OFF	Stop discharging
Failure		OFF	ON	OFF	OFF	OFF	OFF	Stop charging and discharging

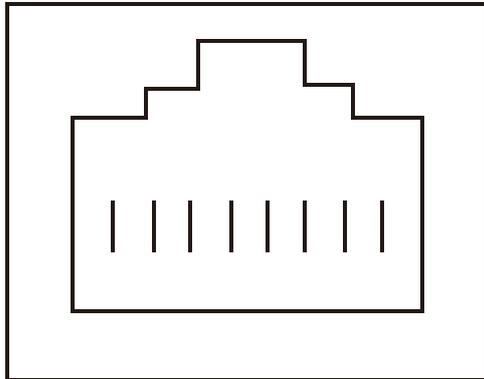
* Note:

Flash 1: light 0.25s/ off 3.75s;

Flash 2: light 0.5s / off 1.5.

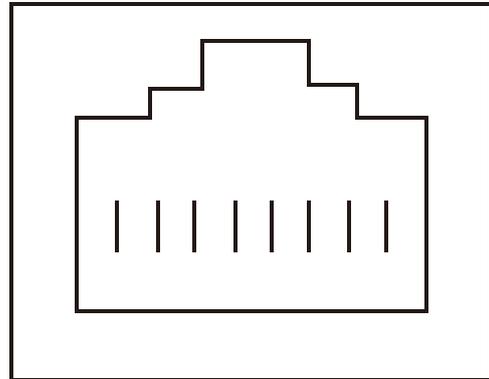
6 Communication Port

UP



87654321

DOWN



87654321

UP	
PIN	Description
1	LED -
2	O/F/LED+
3	O/F
4	CAN H
5	CAN L
6	COMG
7	RS485-A
8	RS485-B

DOWN	
PIN	Description
1	/
2	SWB
3	SWA
4	CAN H
5	CAN L
6	COMG
7	RS485-A
8	RS485-B

* Note: For parallel connection, it supports communication between batteries.

7 Communication Connection

7.1 BMS Address Setting for Communication

By default, the battery BMS address (ADD) is set to 0.

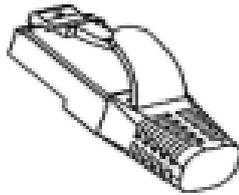
If the battery needs to communicate with an inverter or if multiple batteries are connected in parallel, each battery must be assigned a unique address (ADD) to enable proper communication.

This setting ensures that each battery can be individually recognized and managed by the system.

* **Note:** The following accessories are only required for communication setup and connection– they are not necessary for regular battery operation:



Communication cable
586B, CAT5e, 1m



CAN terminal resistor for parallel communication
(Blue color, PIN4-PIN5 120 Ohm resistor)



Automatic coding parts for parallel batteries ADD automatic coding
(Gray color, PIN2-PIN3 short together)

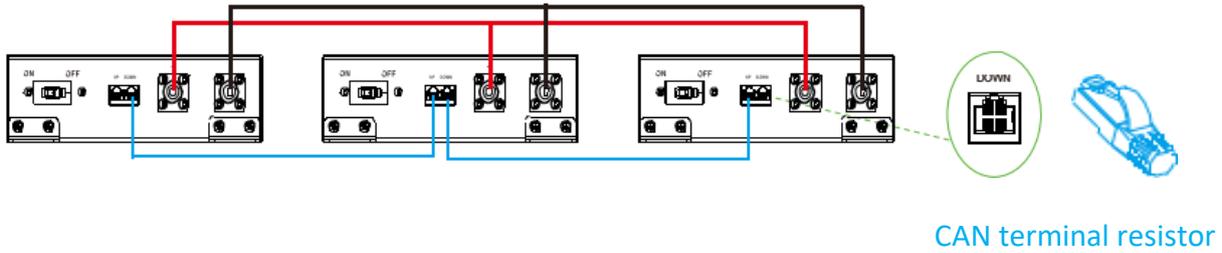


Optional Part RS485-USB device
Only for install engineer and after-sale engineer

Steps to Set Up Battery Communication and Address (ADD) Coding

Step 1. Connect the power cables between the batteries. Ensure all terminals are properly aligned and the screws are securely tightened.

Step 2. Connect the communication cables between the batteries and install the CAN terminal resistor at the end of the chain (DOWN port).



Step 3. Turn on the breakers of all batteries.

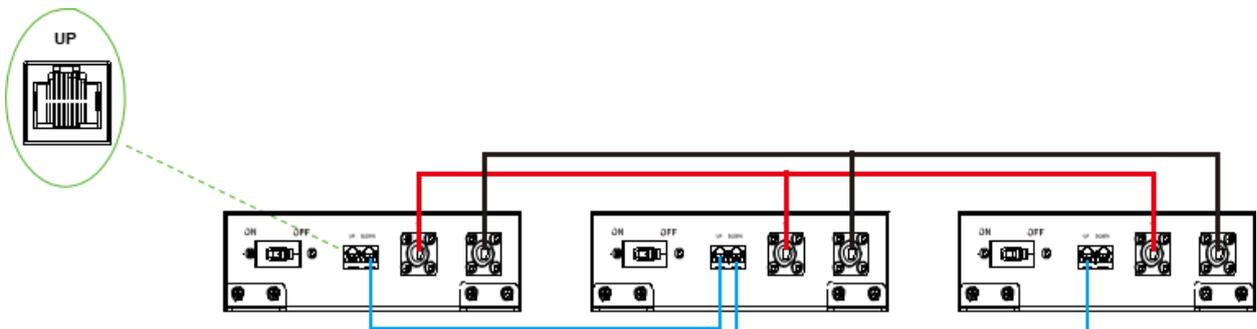
Then, press and hold the ON/OFF button for 6 seconds on each battery to activate them.

The SOC indicators will light up, confirming activation.

Step 4. Insert the automatic coding device into the BAT-1 UP port.

The RUN and ALARM LEDs on BAT-1 will begin to flash simultaneously, indicating that the BMS is automatically assigning addresses (ADD).

Once the coding process is complete, all LED indicators will return to normal status.

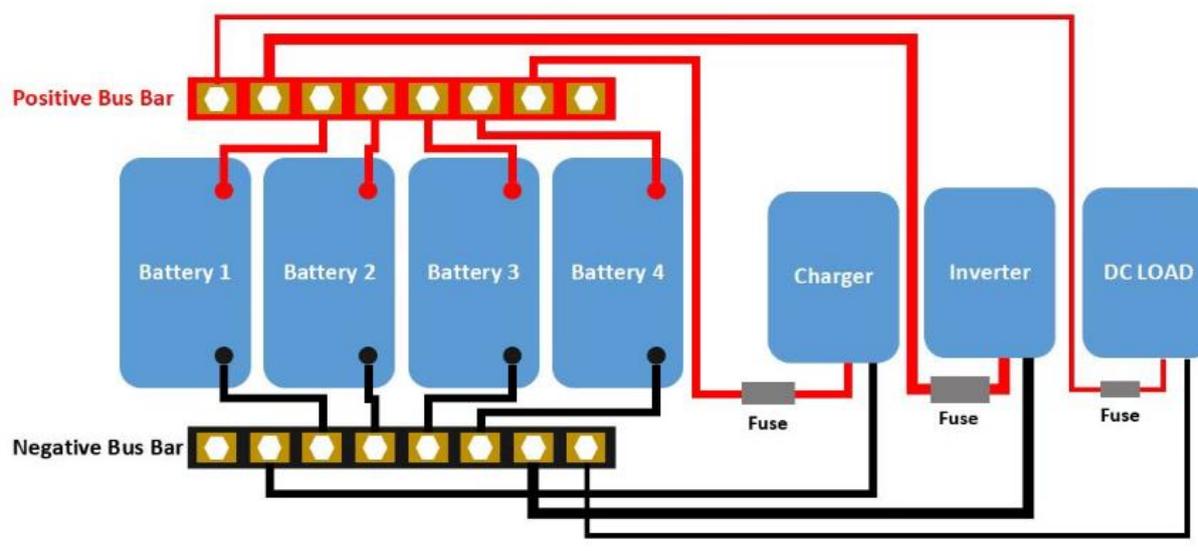


8 Busbars Connection

Connecting Batteries in Parallel

To connect batteries in parallel, link all same-polarity terminals (positive to positive, negative to negative) using appropriately sized cables and a terminal block suitable for your application.

You can connect up to four (4) parallel strings of 12V batteries.



9 Troubleshooting

9.1 Charger or Terminal Voltage Absent or Low

The 12.8V Lito2.56 Li-ion battery is a highly reliable energy storage solution offering a longer lifespan than traditional 12V lead-acid batteries. However, in rare cases, issues may arise due to improper use, environmental conditions, or extended idle periods. This section outlines common issues and their recommended trouble shooting steps.

Issue: Charger Trips When Using Constant Voltage (CV) Mode

Problem: The CV charger shuts off or trips during charging. This is typically caused by a high inrush current due to the battery's low internal impedance.

Solution: Simply reset the charger and try charging again. If the issue persists, consider using a Constant Current (CC) charger, which is strongly recommended for Li-ion batteries.

Issue: Terminal Voltage is Absent or Low

Problem: A multimeter shows little or no voltage at the battery terminals.

Possible causes include:

1. A cell voltage dropped below 2V, triggering under-voltage protection.
2. The battery State of Charge (SOC) dropped below 5%, either due to extended inactivity or heavy discharge.
3. The battery experienced overheating, triggering over-temperature protection.

Solution, to recover the battery:

1. Let the battery cool if it was overheated, then recheck the terminal voltage.
2. Connect the battery to a charger to reactivate it and restore terminal voltage.

* **Note:** Full charging and balancing may take up to 48 hours, depending on the battery's voltage and cell balance status.

9.2 Charging Current Drops or Disappears

Problem: The battery charging current drops significantly or disappears entirely during the charging process.

Possible causes include:

1. Over-temperature protection triggered due to overheating.
2. Cell imbalance within the battery pack.
3. Charger voltage is too high, exceeding recommended limits.

Solution, to resolve this issue:

1. Allow the battery to cool down if overheating is suspected.
2. Apply a constant voltage of 14.0V for up to 48 hours to allow the battery cells to balance.
3. Ensure the charger voltage is set to 14.4V or lower to prevent over-voltage condition

10 Bluetooth Battery App Overview

This section provides an overview of the Bluetooth Battery App.

End users can download the app by searching "Bluetooth Li" in their mobile app store.

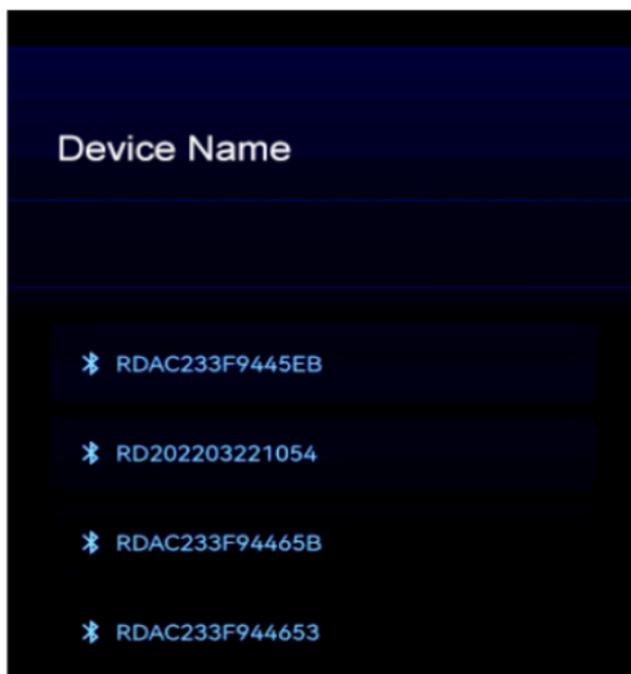
Alternatively, use the download link below:



IOS App Store Link



Google Play Link



Bluetooth ID

10.1 Display Introduction

