



51.2V 100Ah

Smart 
BLUETOOTH 5.0

x

ComFlex Edition

PRODUCT MANUAL

Lithium Iron Phosphate Battery (LiFePO₄)

www.litime.com





UNITED STATES

◀  Register Warranty

 www.litime.com

 service@litime.com

PRODUCT OVERVIEW

51.2V 100AH BATTERY

Operating Voltage: 51.2V

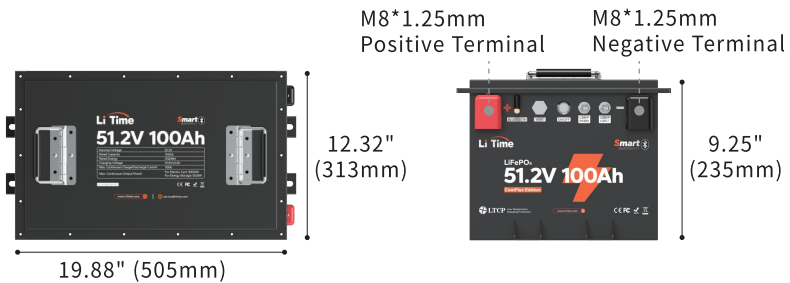
Charging Voltage: $57.6V \pm 0.8V$

Recommended Charge Current: 20A (0.2C)

Max. Continuous Discharge Current: 100A

Max. Continuous Output Power: For Electric Cart^①: 5000W
For Energy Storage: 5120W

① The product is suitable for electric carts that speed lower than 25MI/hour (40KM/hour), such as golf carts, low-speed vehicles (LSV), neighborhood electric vehicles (NEV) and so on.

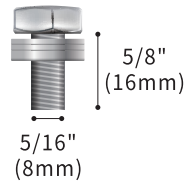


ADDITIONAL COMPONENTS

M8- 5/8" (16MM) TERMINAL BOLTS

Recommended terminal torque: 106.2 to 123.9 inch · lbs / 12 to 14 N · m.

The terminal bolts are used to secure multiple cable lugs to a single battery terminal. The bolts can be replaced with **M8** bolts of other lengths based on actual needs.



BATTERY PARALLEL COMMUNICATION CABLE

EXTERNAL COMMUNICATION CABLE (WITH RJ45 COUPLER)

For connecting batteries to Victron GX series devices

RS485 COMMUNICATION EXTENSION CABLE(USED WITH EXTERNAL COMMUNICATION CABLE:

For connecting batteries to LiTime 48V solar inverter chargers

INSULATING CAPS FOR BOLTS

Cover the battery with the insulating caps after tightening the bolts. If the cap melts, stop using the battery and reach out to service@litime.com for further analysis.

24/7 MONITORING VIA LITIME APP

This product, integrated with Bluetooth 5.0, enables accurate and effortless real-time tracking and management of the battery status.

Step
1

Download the LiTime APP and register your account.



Download on the
App Store

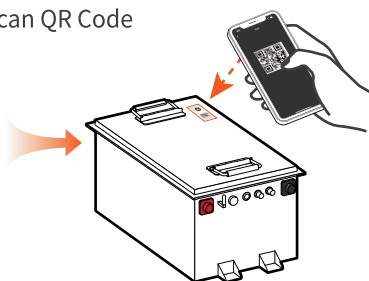
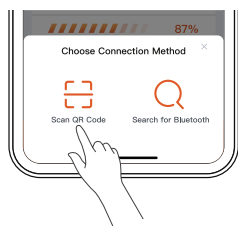
GET IT ON
Google Play



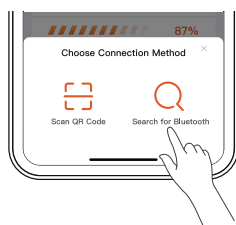
Step
2

Pair the battery with the LiTime APP and effortlessly keep track of the battery's real-time status.

 Scan QR Code



 Search Device



FCC STATEMENT (FCC ID: 2BDSV-512V100S)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

RF Exposure Information

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

ISED STATEMENT (IC: 32466-512V100)

English: This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference.
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

The digital apparatus complies with Canadian CAN ICES-3 (B)/NMB-3(B).

French: Cet appareil contient des émetteurs/récepteurs exempts de licence qui sont conformes aux RSS exemptés de licence d'Innovation, Sciences et Développement économique Canada.

L'exploitation est soumise aux deux conditions suivantes :

- (1) Cet appareil ne doit pas provoquer d'interférences.
- (2) Cet appareil doit accepter toute interférence, y compris les interférences susceptibles de provoquer un fonctionnement indésirable de l'appareil.

l'appareil numérique du ciem conforme canadien peut - 3 (b) / nmb - 3 (b).

This device meets the exemption from the routine evaluation limits in section 2.5 of RSS 102 and compliance with RSS 102 RF exposure, users can obtain Canadian information on RF exposure and compliance.

cet appareil est conforme à l'exemption des limites d'évaluation courante dans la section 2.5 du cnr - 102 et conformité avec rss 102 de l'exposition aux rf, les utilisateurs peuvent obtenir des données canadiennes sur l'exposition aux champs rf et la conformité.

This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment.

Cet équipement est conforme aux limites d'exposition aux rayonnements du Canada établies pour un environnement non contrôlé.

This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Cet équipement doit être installé et utilisé à une distance minimale de 20 cm entre le radiateur et votre corps.

BATTERY REPLACEMENT STEPS FOR GOLF CARTS

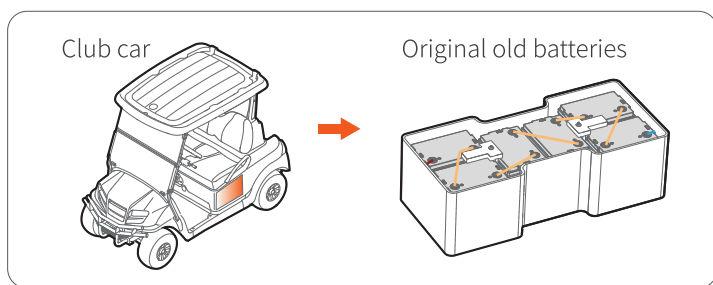
This battery has compact size, which is suitable for most types of golf carts on the market, such as Club Car, E-Z-GO, YAMAHA and other types. We take Club Car as an example and list the steps to replace the battery. Other models can refer to and replace the battery according to the actual situation.

Step
1

Ensure the golf cart is in the off position and not connected to any charger.

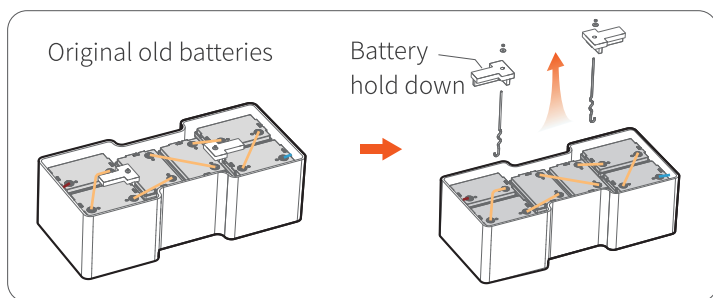
Step
2

Find the original old batteries in the golf cart compartment.



Step
3

Loosen and remove the battery hold down as the base in the compartment.

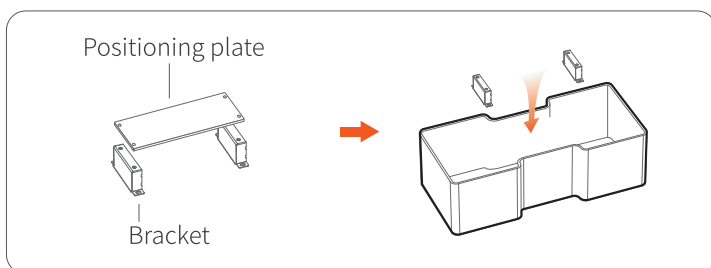


Step
4

Disconnect all the wires of old batteries safely, and remove the batteries.

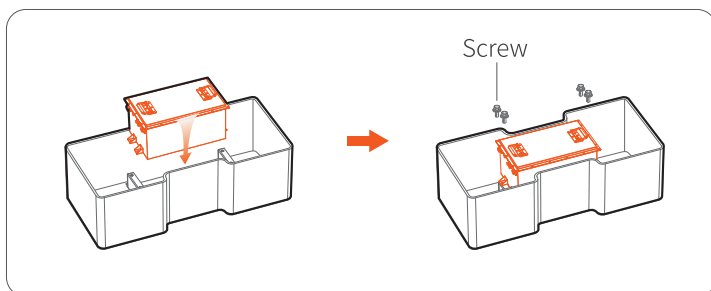
Step
5

Place and secure the golf cart brackets within the golf cart compartment following the installation guide adhered to the positioning plate.



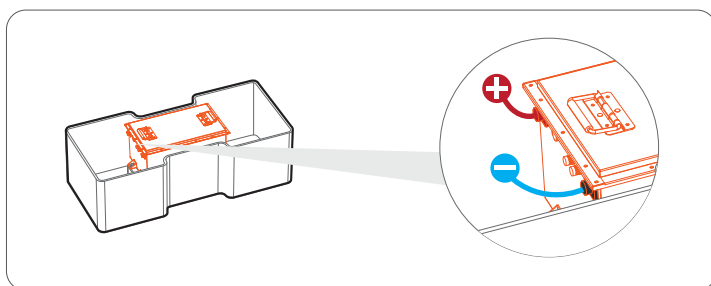
Step
6

Place the battery on two brackets and tighten the screws to secure the battery to the brackets.



Step
7

Connect the battery to the golf cart, **+** to **+**, **-** to **-**, and then it is ready to go.



If you encounter any difficulties during the battery replacement process, it is recommended to consult the specific user manual for your golf cart or seek assistance from a professional technician.

Please remember to dispose of the old batteries properly, following local regulations and environmental guidelines.

IMPORTANT SAFETY INSTRUCTION

| Please keep the battery away from heat sources, sparks, flames, and hazardous chemicals.

| For the safety of the battery and user, please cover the communication ports with the rubber plugs when not communicating, and tighten the communication connection ports when communicating to avoid loose communication connection and water ingress.

| Maintain Adequate Ventilation and Heat Dissipation

Place the battery in a well-ventilated area with sufficient heat dissipation to prevent overheating and damage.

| Size the Battery Cables and Connectors Appropriately

Use high-stranded copper connectors and heavy gauge cables to handle possible battery loads. Make sure to keep identical cable lengths.

Avoid accidents caused by unsuitable connectors or cables that make the connection a heat source during battery operation.

| Please tighten all cable connections, as loose cable connections can cause terminal meltdown or fire.

| DO NOT puncture, drop, crush, burn, penetrate, shake, or strike the battery.

The battery should be securely fastened during handling to prevent impact or dropping.

It should be safely secured to a solid plane and the cables safely tied to a suitable location to avoid arcing and sparking due to friction.

DO NOT press it by placing heavy stuff on top of it for long periods, which may damage it due to an internal short circuit.

| DO NOT immerse the battery in water whether the battery is in use or on standby.

| DO NOT open, dismantle, or modify the battery.

| DO NOT touch the exposed electrolyte or powder if the battery casing is damaged.

| Uncovered electrolyte or powder that has contacted the skin or eyes MUST be flushed out with plenty of clean water immediately. Seek medical attention afterward.

| Avoid Short Circuit

Please use circuit breakers, fuses, or disconnects that have been properly sized by certified electricians, licensed installers, or regional code author-

ities to protect all the electrical equipment in your system. The battery has a built-in battery management system (BMS) that protects the battery cells from over-charge, over-discharge, and over-current, however this alone will not protect your system from severe electrical conditions.

Trained and certified technicians are required for safe and reliable installation. This product manual can only serve as a guideline as it cannot cover all possible scenarios.

Verify Correct Polarity

Please verify the polarity before connecting the wiring. Reverse polarity can and will destroy the battery and other electrical equipment. Use a multimeter to determine proper polarity.

Avoid Exposed Metal Terminals or Connectors

The terminals of this battery are always live. Avoid exposed metal terminals or connectors; DO NOT place tools on the terminals or touch them with bare hands; DO NOT short circuit or use outside of specified electrical ratings.

DO NOT dispose of the battery as household waste. Please use recycling channels in accordance with local, state, and federal regulations.

WARNING

Batteries are potentially dangerous and proper precautions must be taken during operation and maintenance.

Improper use of the battery can lead to battery failure or other potential damage.

Improper configuration, installation, or use of related equipment in the battery system may damage the battery and other related equipment.

Please wear proper personal protective equipment when working on the battery.

Battery installation and maintenance must be performed by trained and certified technicians.

Failure to follow the warnings above can result in potential damage.

If you have any questions or need any help, please feel free to contact us (and leave your contact phone number) at service@litime.com, we will offer phone or email support in 12hrs.



CONTENTS

IDENTIFICATION OF PARTS

page

01

ON/OFF SWITCH

02

LED INDICATOR

02

BATTERY PARAMETERS

page

03

OVER-THE-AIR (OTA)-UPDATE

page

05

THINGS TO KNOW BEFORE USING

page

05

CHARGING METHODS

page

06

SOLAR PANEL(S) & CONTROLLER

06

Method I

Solar Panel

Controller

Controller Settings

Method II	BATTERY CHARGER	07
Method III	GENERATOR	07

HOW TO ESTIMATE THE BATTERY CAPACITY	page
STATE OF CHARGE (SOC)	08

RECOMMENDED CABLE SIZING	page
	09

PARALLEL CONNECTION	page
THE PREMISE OF CONNECTION	10
LIMITATION FOR SERIES/PARALLEL CONNECTION	10
HOW TO CONNECT BATTERIES	11
Step 1 Wear Insulating Gloves	
Step 2 Voltage Balancing Before Connection	
Step 3 Complete the Communication and System Connection	
48V(51.2V) 1600Ah Battery System	

WHAT TO DO WHEN THE BATTERY STOPS WORKING?	page
	16

IDENTIFICATION OF PARTS



No.	Item	Function
1	Positive Terminal	/
2	Bluetooth	Control or check the status of the battery by mobile phone via APP
3	Vent	Help to vent internal gases
4	ON/OFF Switch	Power on/off the battery
5	CAN-P RS485 Port	• To communicate in parallel with the identical battery by provided battery parallel communication cable • To communicate with the specified LiTime LCD screen^① • To communicate with the LiTime 48V solar inverter charger by provided RS485 communication extension cable and the external communication cable
6	CAN-P CAN-I Port	• To communicate in parallel with the identical battery by provided battery parallel communication cable • To communicate with the external Victron GX series device by provided external communication cable
7	Negative Terminal	/
8	Carrying Handle	To carry or move the battery easier

① It is necessary to use the specified LiTime screen and cable, other screens and cables are not supported. If the product is damaged by connecting other cables or screens, it will not be covered by the warranty.

ON/OFF SWITCH

For a Single Battery

Function	Operation
Power On	Short Press (1s~2s)
Power Off ^①	Press and Hold (3s~5s)

- ① The battery/battery system will also be powered off when there is no external power supply (no charger connected to the battery) and the voltage is below 40V.

For Battery Banks in Parallel (All cables connected correctly)

In a powered-off parallel battery system, a short press on one of the batteries or connecting a suitable charging device to it turns on the power to the entire battery system.

In a powered-on parallel battery system, a press and hold on the button of one of the batteries turns off the power to the whole battery system.

LED INDICATOR

LED Status	Battery Status
Always on Green	Normal (Stand by, charging or discharging)
Flashes Green	Battery SOC<20% (Recommend charging the battery, stop flashing when SOC>25%)
Alternately Flashes Red and Green	In Protection Status (Over temperature, low temperature, short-circuit, over-current, low-voltage)
Always on Red	BMS / Cell Failure ^①

- ① BMS or cell failure of the battery, please contact us at service@litime.com for further assistance.

BATTERY PARAMETERS

Cell Type	LiFePO ₄
Nominal Voltage	51.2V
Rated Capacity	100Ah
Energy	5120Wh
Internal Resistance	≤40mΩ
Cycle Life	≥4000 times
Charge Method	CC/CV
Charge Voltage	57.6V±0.8V
Recommended Charge Current	20A (0.2C)
Max. Continuous Charge Current	100A
Max. Continuous Discharge Current	100A
Surge Discharge Current	600A@1 second
Max. Continuous Output Power	For Electric Cart ^① : 5000W For Energy Storage: 5120W

Dimension	L19.88*W12.32*H9.25 inch
	L505*W313*H235 mm
Housing Material	SPCC
Recommended Terminal Torque	106.2 to 123.9 inch·lbs / 12 to 14 N·m
Protection Class	IP65
Temperature Range	Charge: 0°C to 50°C / 32°F to 122°F
	Discharge: -20°C to 60°C / -4°F to 140°F
	Storage: -10°C to 50°C / 14°F to 122°F
Low Temperature Charging Protection (LTCP) Function ^①	Yes
Resume Charging Temperature Under LTCP	5°C/41°F (Battery Temperature)

- ① This battery is suitable for electric carts that speed lower than 25MI/hour (40KM/hour), such as golf carts, low-speed vehicles (LSV), neighborhood electric vehicles (NEV) and so on.
- ② This battery supports Low Temperature Charging Protection (LTCP), where the BMS stops battery charging when the battery temperature falls below 0°C/32°F and resumes charging when the temperature rises above 5°C/41°F.

OVER-THE-AIR (OTA)-UPDATE

WHAT IS AN OVER-THE-AIR(OTA)-UPDATE?

An Over-the-Air (OTA) update enables remote firmware upgrades for battery systems. With OTA updates, users can enjoy enhanced functionality, improved performance, and richer data insights whenever LiTime releases new battery features.

HOW TO UPGRADE FIRMWARE VIA OTA?

- When a firmware upgrade notification appears in the LiTime APP, confirm the update.
- Ensure a stable connection and start the upgrade process.
- Once the update is complete, your battery system will be successfully upgraded.

THINGS TO KNOW BEFORE USING

- When using the battery, please be careful to **avoid metal or conductive objects touching the positive and negative poles of the battery at the same time**, otherwise it may cause a short circuit.
- **DO NOT** install the battery with the top or the post bolt facing down. If you are not sure about the installation direction, please contact service@litime.com to confirm the direction.
- **Tightly screw in the post bolts.** Having loose battery terminals will cause the terminals to build up heat resulting in damage to the battery.
- **DO NOT use it as a starting battery.**
- Suggestions for **Long-term Storage**:
 - Temperature
A temperature between [10°C to 35°C / 50°F to 95°F](#) is ideal for long-term storage. Store in a fireproof container and away from children.
 - Capacity
For a longer-lasting product, it is best to store your battery [at a 50% charge level](#) and power it off, then recharge it every three months if it is not going to be used for a long time.

CHARGING METHODS

SOLAR PANEL(S) & CONTROLLER

Solar Panel

☆ Recommended Power: $\geq 1600W$

- The battery can be fully charged in one day (with effective sunshine 4.5hrs/day) by 1600W solar panels.
- It may take more than one day to fully charge the battery by $\geq 1600W$ solar panels since the duration and intensity of light would be a great factor for their charging efficiency.

Controller

☆ Recommended Charging Current:

20A (0.2C)	The battery will be fully charged in around 5hrs.
50A (0.5C)	The battery will be fully charged in around 2hrs.

☆ Recommended Charging Mode: **48V (58.4V) LI (LiFePO₄)**

Controller Settings

Refer to the below parameters if you need to manually set up your controller. As different types of batteries have different charging modes, it is recommended to set only the following parameters for LiFePO₄ batteries. The settings for other types of batteries do not apply to LiFePO₄ batteries except for the following settings.

CHARGING	Charge /Bulk /Boost Voltage	57.6 $\pm$ 0.8V
	Absorption Voltage	57.6 $\pm$ 0.8V
	Over Voltage Disconnect	60V
	Over Voltage Reconnect	56.8V
	Tail Current	2A (0.02C)
DIS-CHARGING	Under Voltage Warning	46.4V
	Under Voltage Warning Recover	49.6V
	Low Voltage Disconnect	43.2V
	Low Voltage Reconnect	48V

BATTERY CHARGER

Use 58.4V lithium iron phosphate (LiFePO₄) battery charger to maximize the capacity.

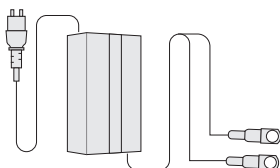
☆ Recommended Charging Voltage: Between 56.8V to 58.4V

☆ Recommended Charging Current:

20A (0.2C)	The battery will be fully charged in around 5hrs.
50A (0.5C)	The battery will be fully charged in around 2hrs.

Tips

- ① It's recommended to disconnect the charger from the battery after fully charging.
- ② It is not recommended to use alligator clips to connect the charger or load to the battery as the contact area is too small and can cause the terminals to melt and damage the battery.



GENERATOR

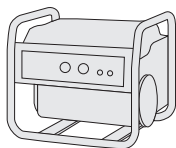
LiTime battery can be charged by a generator.

If the generator supports AC output, please refer to the recommendations in "Battery Charger" above to add a suitable battery charger between the battery and the generator.

☆ Recommended Charging Voltage: Between 56.8V to 58.4V

☆ Recommended Charging Current:

20A (0.2C)	The battery will be fully charged in around 5hrs.
50A (0.5C)	The battery will be fully charged in around 2hrs.



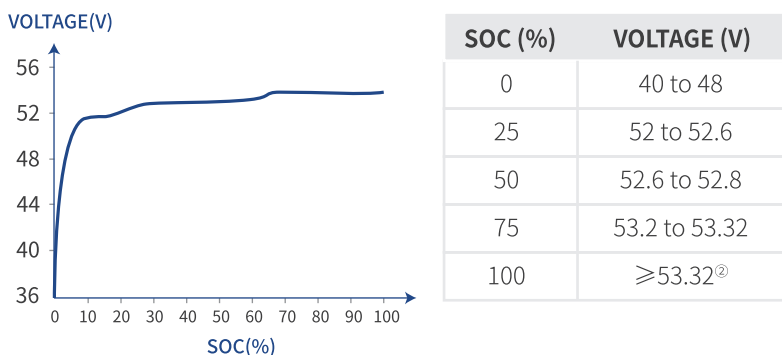
HOW TO ESTIMATE THE BATTERY CAPACITY

STATE OF CHARGE (SOC)

The battery capacity could be roughly estimated by its resting voltage (not charging/discharging voltage)^①.

Since the voltage of each battery is slightly different, and the voltage measurement is affected by the measuring instrument, ambient temperature, etc., the following parameters are for reference only. The actual SOC of the battery is based on the discharge capacity under load.

Resting Voltage: The voltage is measured after the battery has been disconnected from the charger and loads with zero current, and left alone for 3 hours.



- ① Based on the characteristics of LiFePO₄ batteries, the voltage measured by all LiFePO₄ batteries during charging/discharging is not the real voltage of the battery. Therefore, after charging/discharging and disconnecting the battery from the power source, the voltage of the battery will gradually drop/increase to its real voltage.
- ② After this battery is protected from overcharge, the tested battery voltage (not the real voltage) will be lower than the real voltage. To calculate the SOC (%), add 0.5V to 0.7V to the tested battery voltage.

RECOMMENDED CABLE SIZING

Battery cables should be properly sized to handle the expected load. Refer to the table below for amperage ratings for different sizes of copper cables.

PVC COPPER CABLE SIZE (AWG/mm ²)	AMPACITY (A)
14 (2.08)	20
12 (3.31)	25
10 (5.25)	35
8 (8.36)	50
6 (13.3)	65
4 (21.1)	85
2 (33.6)	115
1 (42.4)	130
1/0 (53.5)	150
2/0 (67.4)	175
4/0 (107)	230

The above values are from NEC Table 310.15(B)16 for copper cables rated at 167°F (75°C) operating at an ambient temperature not exceeding 86°F (30°C). Cables longer than 6 feet (1829 mm) or ambient temperature higher than 86°F (30°C) may require heavier gauges to avoid excessive voltage drops with undersized ones.

PARALLEL CONNECTION

THE PREMISE OF CONNECTION

To connect in parallel, batteries should meet the below conditions:

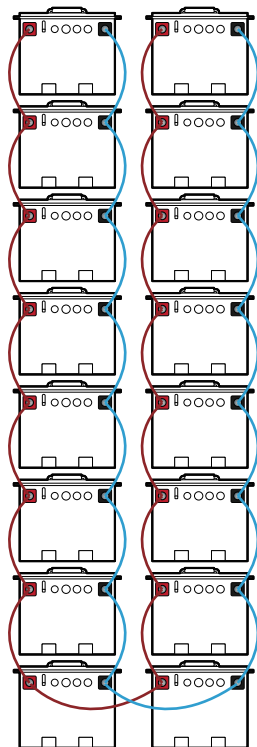
- identical batteries with the same battery capacity (Ah) and BMS (A);
- from the same brand (as lithium battery from different brands has their special BMS);
- purchased in near time (within one month).

LIMITATION FOR SERIES/PARALLEL CONNECTION

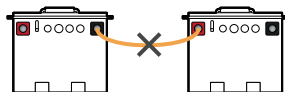
■ Situation 1: When the battery is in communication.

Support connecting up to 16 identical batteries in parallel for up to: 48V(51.2V) 1600Ah battery system.

Parallel Connection
48V(51.2V) 1600Ah

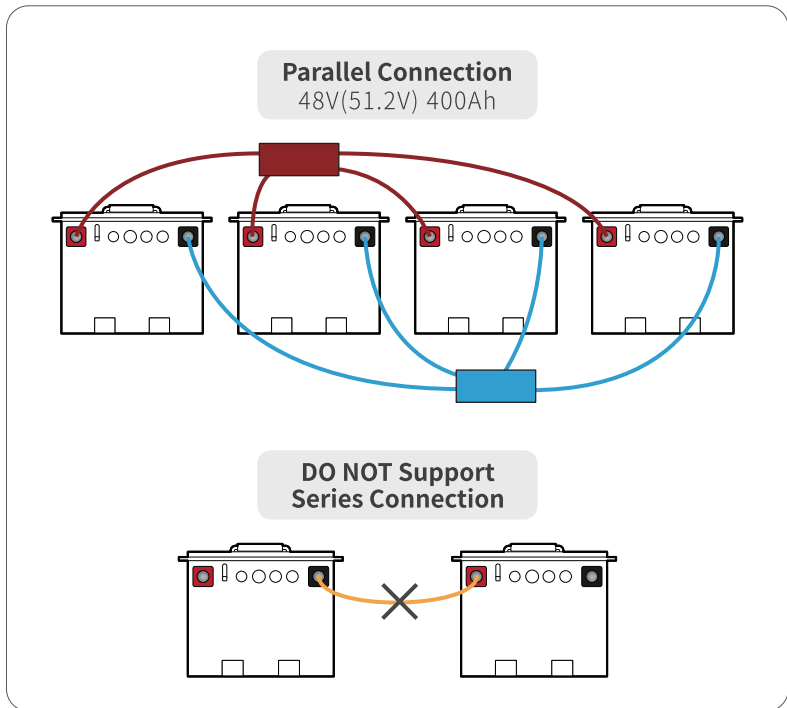


**DO NOT Support
Series Connection**



■ Situation 2: When the battery is NOT in communication.

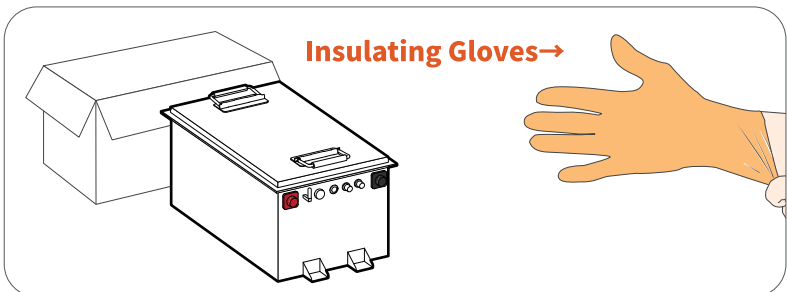
Support connecting up to 4 identical batteries in parallel for up to: 48V(51.2V) 400Ah battery system.



HOW TO CONNECT BATTERIES

■ Step1 Wear Insulating Gloves

Wear insulating gloves for protection before connecting. Please pay attention to operation safety in the process of connection.



Step2 Voltage Balancing Before Connection

Below two steps are necessary to reduce the voltage difference between batteries and let the battery system perform the best of it in parallel.

Step
1

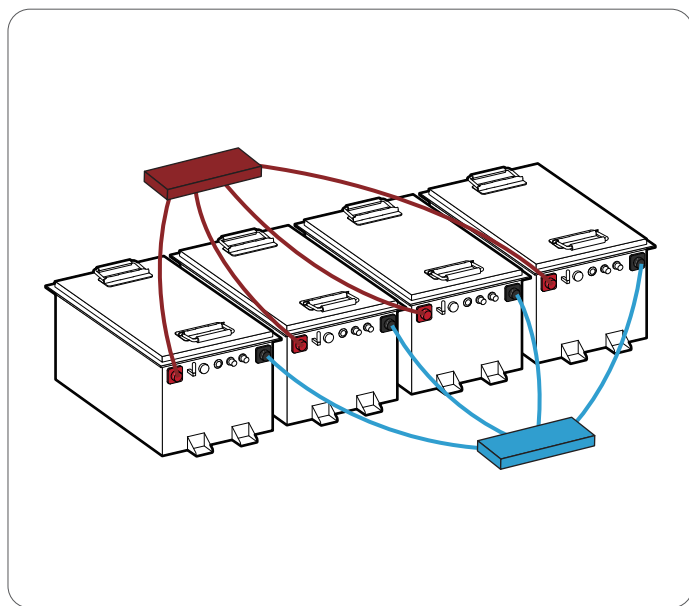
Fully charge the batteries separately, then turn off the batteries.
(voltage at rest: $\geq 53.32V$)

Step
2

Connect all the positive and negative output cables of the batteries to bus bars^① separately.

Connect Batteries in Parallel

+ to **+** **-** to **-**



Step
3

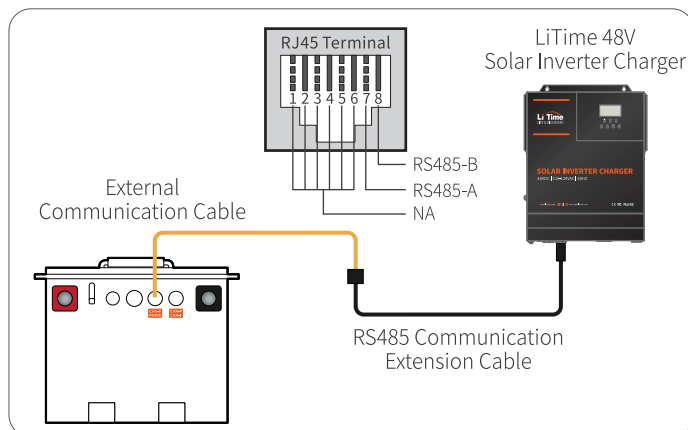
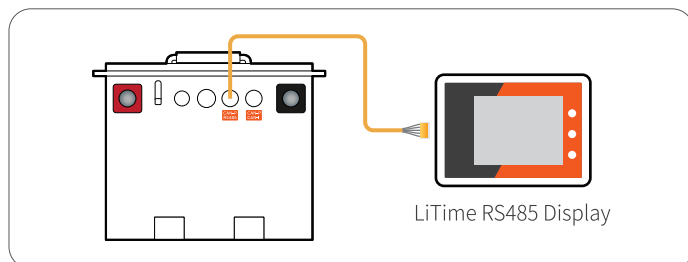
Leave them together for 12-24hrs until the battery voltages have been balanced, the paralleled battery system can be connected to the load.

- ① Bus Bar: It can help ensure the input & output currents of each battery are balanced.

Step3 Complete the Communication and System Connection

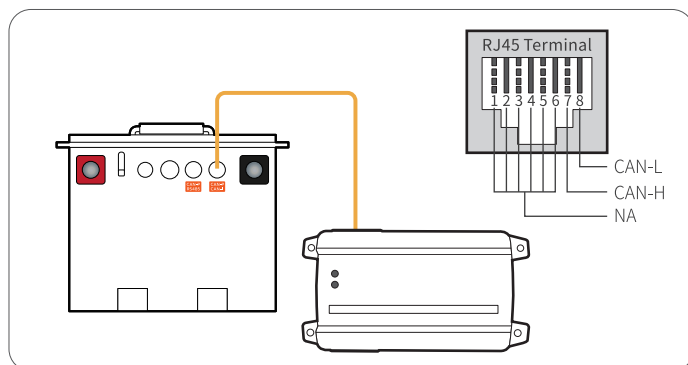
Step
1

(Optional) Connect the screen or LiTime 48V solar inverter charger of the first battery to the CAN-P | RS485 port.



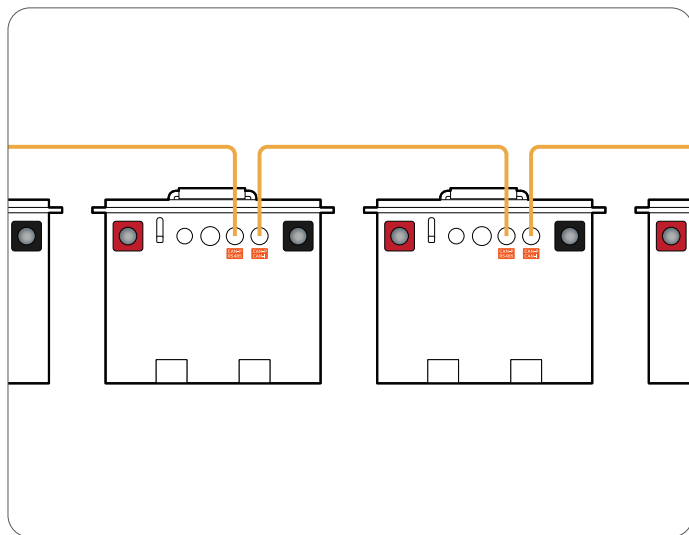
Step
2

(Optional) Connect the Victron GX series device to the last battery of the CAN-P | CAN-I port by provided external communication cable.



Step
3

(Optional) Connect the first battery's CAN-P | CAN-I port to the second battery's CAN-P | RS485 port, then the second battery's CAN-P | CAN-I port to the third battery's CAN-P | RS485 port, and so on in sequence.



Step
4

Connect the $\oplus$ and $\ominus$ of the load to the bus bars. The cable gauge used in this step should be able to support the total input & output current of the entire battery system.

Step
5

Turn on one of the batteries in the system and the whole system will be switched on.

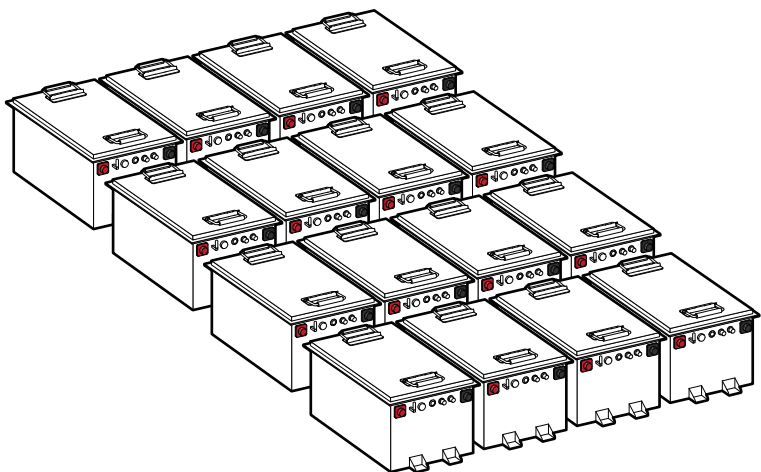
Step
6

(Optional) Turn on the screen to check whole system information.

Note: In a parallel battery system, the battery connected to the monitoring screen will complete the communication between the batteries within 5 seconds of switching on the battery. After that, the monitoring screen can not only control the whole battery system but also view the information of the individual batteries and the whole battery system.

If the port connection is incorrect or missing connections, the information can not be read correctly.

■ 48V(51.2V) 1600Ah Battery System

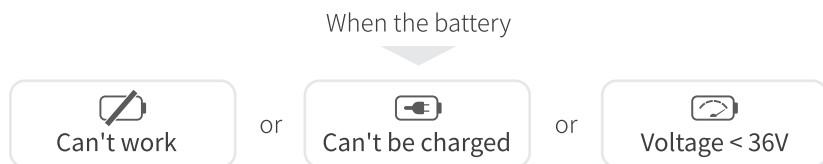


81.92kWh Usable Energy

Max. 1600A Continuous Discharging Current

Max. 81.92kW Load Power

WHAT TO DO WHEN THE BATTERY STOPS WORKING?



It has 85% chances that BMS has shut it off for protection, and you could try **one of below ways** to activate the battery.

GENERAL STEPS

If the BMS has cut off the battery for protection, follow the below steps to activate it.

Step
1

Cut off all the connections from the battery.

Step
2

Leave the battery aside for 30mins.

Then the battery will automatically recover itself to normal voltage ($>40V$) and can be used after fully charged.

If the battery is unable to recover itself after the above steps, please try activating by **ONE OF BELOW TWO METHODS.**

After activated (voltage $> 40V$) and fully charged by the normal charging method, it can be used normally.

Method ①

Use a charger with lithium battery activation function to fully charge the battery.

Method ②

Connect a controller that supports 48V LiFePO₄ battery charging to charge the battery for 3~10s in sunny daytime.

Li Time

www.litime.com



Shenzhen Litime Technology Co., Ltd