

Li Time

Originate from Ampere Time

LiFeP04

12V 40A

DC-DC

PRODUCT MANUAL



Battery Charger

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IMPORTANT SAFETY INSTRUCTIONS

Please read the following safety instructions carefully and perform installation and connection operations under the guidance of professionals. This manual contains important safety, installation, and operating instructions for the DC-DC battery charger.

General

- Wear personal protective equipment including eye protection (that protects eyes from all angles) and gloves before connecting the DC-DC charger with the lead acid battery.
- Disconnect the product from the battery each time before cleaning or before making changes to the circuit.
- Inadequate ventilation may lead to overheating and inefficient charging.
- Only use the product as intended.
- Make sure all connections going into and from the product are tight.
- There are no user-serviceable parts inside this product. DO NOT disassemble or attempt to repair the charger.

Battery

- Carefully read battery manuals, and operate the battery according to the battery manufacturer's guidance.
- To prevent the battery from being short-circuited, NO metal objects shall be placed near the battery, and AVOID touching the positive (+) and negative (-) terminals with bare hands.
- Explosive battery gases may be present while charging a lead-acid battery. Make sure there is enough ventilation to release the gases.
- Keep the lead-acid battery away from fire sparks, as it may produce flammable gas.
- In very cold weather a discharged battery may freeze. NEVER charge a frozen battery. Gases may form, cracking the case, and spraying out battery acid.
- ALWAYS check the batteries and charging system periodically to ensure no faults occur.

Installation

- DO NOT install this charger near heat sources such as fire or heaters or expose it to flammable chemicals, vapors, corrosive gases, liquids, or materials.
- This product should be firmly fastened to prevent falling down or tipping over.
- Ensure the area around the battery is well-ventilated before and during the charging process.
- Connect the house battery and set the correct battery type before connecting the input power (starter battery) to avoid damage to the product.

Operation

- DO NOT operate in salty, wet, or damp environments; in the vicinity of corrosive fumes; in the vicinity of combustible material; in areas with risks of explosions.
- Please be aware that parts of this product may still produce voltage even after disconnected or activation of fuse.
- DO NOT disconnect cables while the product is operating.

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.

PRODUCT OVERVIEW

LiTime 12V 40A DC-DC Battery Charger

System Nominal Voltage	12V
Rated Charging Current	40A/20A(Optional)
Max. Alternator Input Power	680W

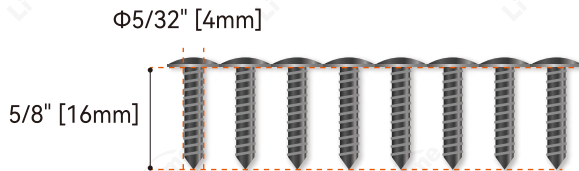


ADDITIONAL COMPONENTS

Additional components are included in the package.

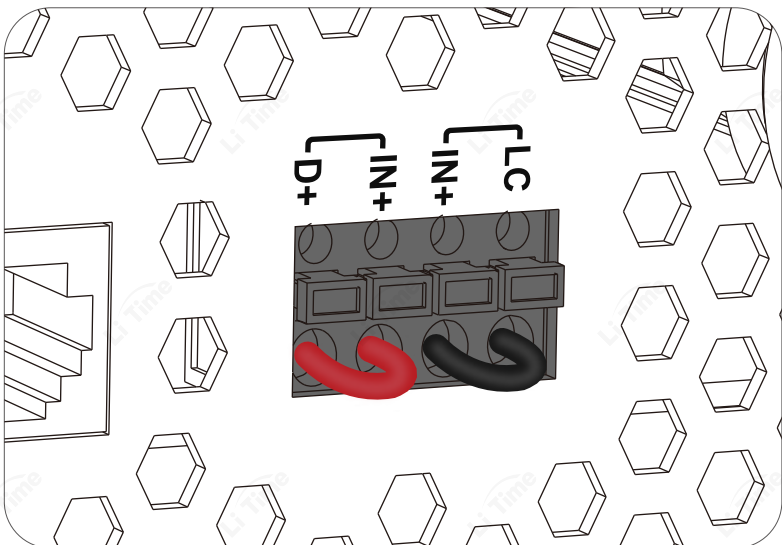
Mounting Screws*8

Mounting screws for fixed mounting on wood walls are provided.



Signal Cables*2

Cables for connecting the D+ port to the next IN+ port, or LC port to the next IN+ port are provided.





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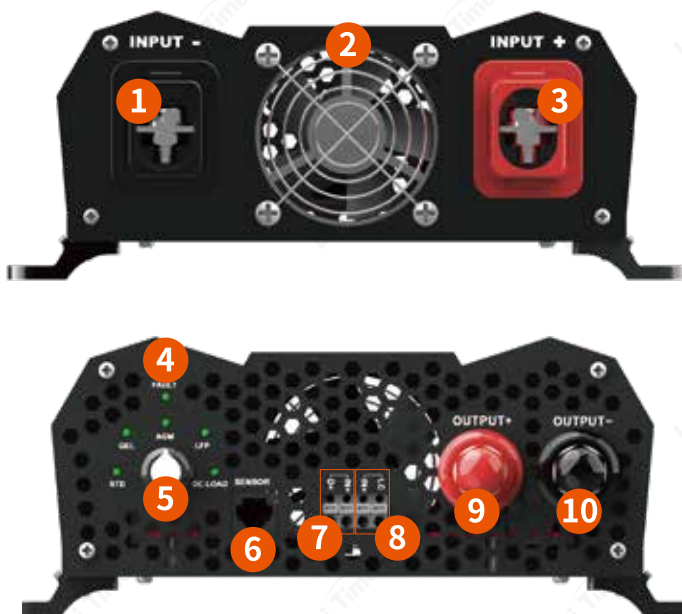
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IDENTIFICATION OF PARTS



No.	Item
1	Input Negative Terminal
2	Cooling Fan
3	Input Positive Terminal
4	Fault LED Indicator
5	Mode Selector Knob

No.	Item
6	Temperature Sensor Port (For Lead Acid Only)
7	Power On Port ^①
8	Low Current Port ^②
9	Output Positive Terminal
10	Output Negative Terminal

① To turn on the product, the D+ port must be connected to the next IN+ port by the provided signal cable.

② The charging current can be limited to 20A by connecting the LC port to the next IN+ port via the provided signal cable.

INSTALLATION

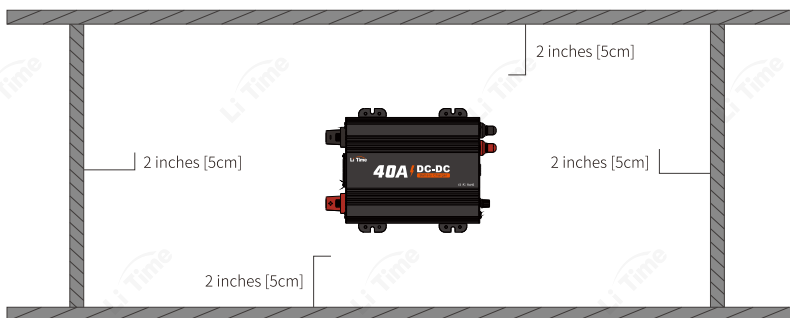
Mounting

Choosing Location

Make sure the installation complies with the following guidelines.

- In a well-ventilated, cool, and dry environment.

The product must be installed in an area protected from direct sunlight, high temperatures, and water. Make sure there is sufficient room for wiring and ventilation clearance around the charger. Clearance should be at least 2 inches [5cm].

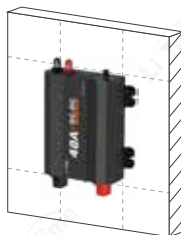


- As close to the battery as possible to the battery you will be charging (house battery).
- Securely placed or mounted.

This product could be stand-alone or wall-mounted both horizontally and vertically. Horizontal mounting is preferred for optimum cooling.



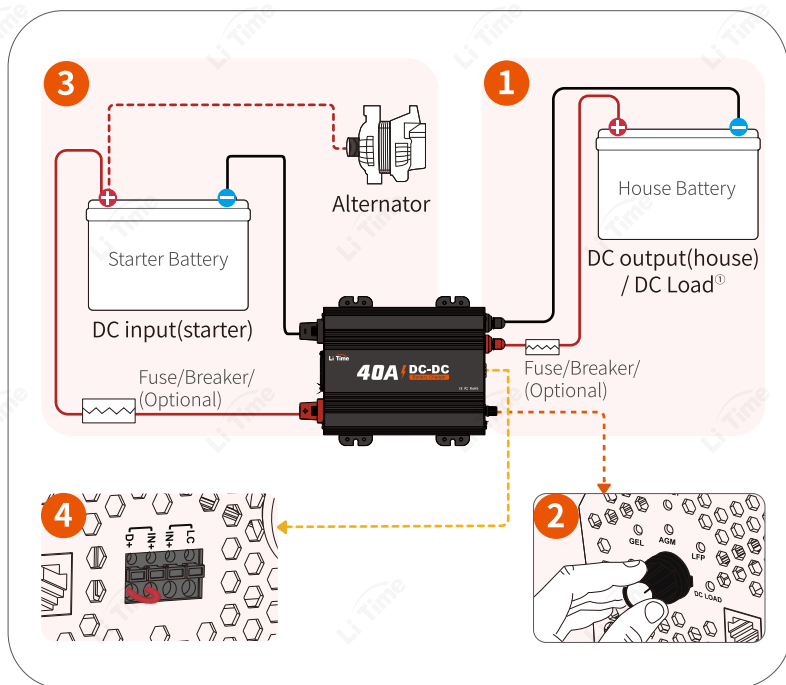
HORIZONTAL
☆ (Recommended)



VERTICAL

Wiring & Setup

Reference Wiring Diagram



⚠ To turn on the product, the D+ port must be connected to the next IN+ port by the provided signal cable.

① Connect the suitable house battery under STD/GEL/AGM/LPF mode to charge the battery. Or connect the DC Load under DC Load mode.

★ Recommended Cable Sizing

Cable Length (ft)	Cable Length (m)	Input Cable Size	Output Cable Size
3-16	1-5	7AWG	8AWG
16-30	5-9	6AWG	6AWG

★ Recommended Fusing (Rated Charging Current: 40A)

Input (Starter Battery)	Output (House Battery or DC Load)
60A	50A

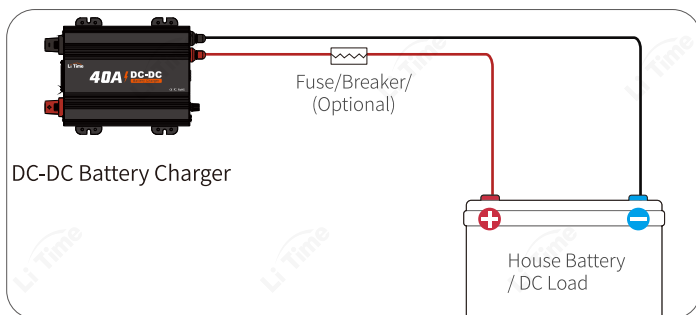
Step
1

Prepare Four Cables with M8 Ring Terminals for the Connection



Step
2

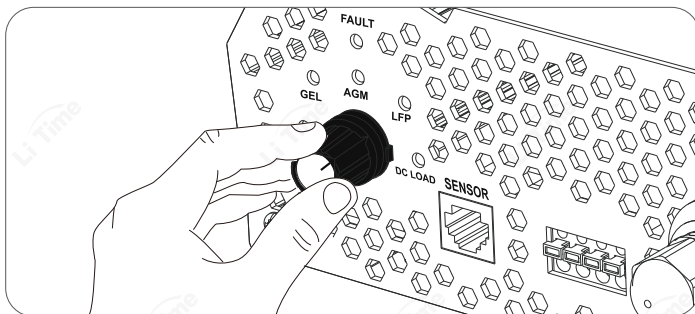
Connect the House Battery / DC Load^① to the Charger



① Connect the suitable house battery under STD/GEL/AGM/LPF mode to charge the battery. Or connect the DC Load under DC Load mode.

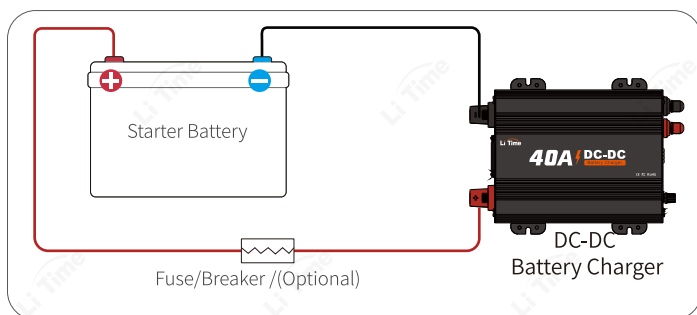
Step
3

Set the Battery Type or Select DC Load Mode with the Mode Selector Knob



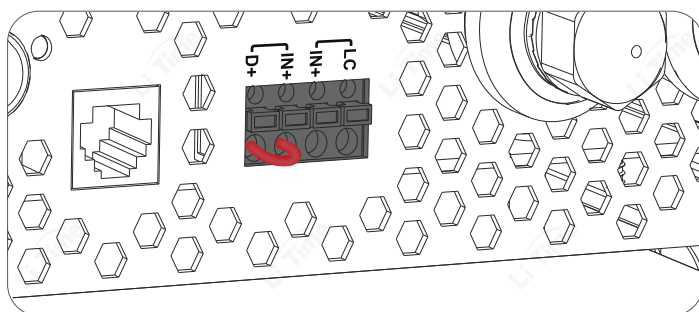
Step
4

Connect the Starter Battery to the Charger



Step
5

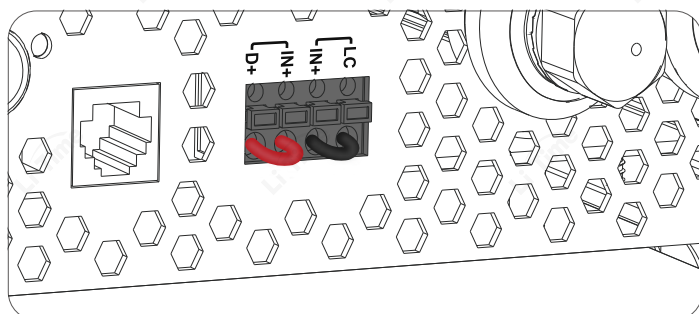
Connect the D+ Port to Next IN+ Port by One Signal Cable^①



① It is a necessary step to use for turning on the DC-DC charger.

Step
6

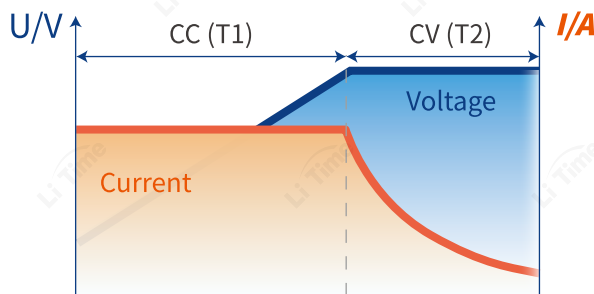
Connect the LC Port to Next IN+ Port by One Signal Cable (Optional)^②



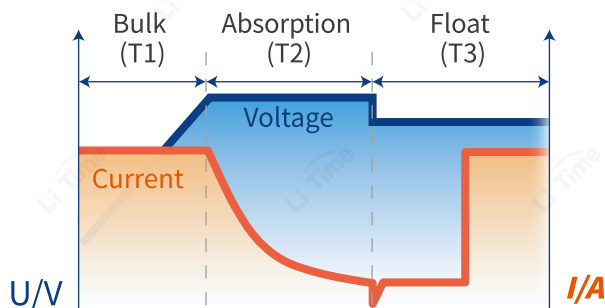
② This step is used to set the charge/discharge current to 20A.

BATTERY CHARGING LOGIC

LiFePO₄ and Lead-Acid Battery Charging Curve



LiFePO₄ Battery Charging Curve



Lead Acid Battery Charging Curve

LiFePO₄ Battery Charging Mode

○ CC (Constant Current) Phase (T1)

In the beginning, a discharged battery will be charged with a constant current and voltage will be climbing steadily until reaching the constant voltage setpoint which varies for different charging methods.

○ CV (Constant Voltage) Phase (T2)

The battery maintains a constant voltage during this phase while the current gradually decreases to the tail current. At this point, the charging is cut off and the battery is fully charged.

SPECIFICATIONS

General

System Nominal Voltage	12V
Input Voltage Range	12V to 16.0V
Charging Current	40A / 20A
Battery Type	STD, GEL, AGM, LFP
Charging Voltage Range	14.6V (Lithium) 14.4V to 14.8V (Lead Acid)
Temperature Compensation	-3mV/°C/2V (For Lead Acid Only)
Charging Efficiency	Max. 90%
Max. Alternator Input Power	680W
Standby Self-consumption	<0.6A
Operating Temperature Range	-10°C to 40°C / 14°F to 104°F
Storage Temperature Range	-20°C to 70°C / -4°F to 158°F
Humidity	≤95% Non-condensing
Dimensions	11.65 * 8.46 * 3.35 in / 296.0 * 215.0 * 85.2 mm
Weight	Appr. 4.85 lbs / 2.2 kg
Recommended Input/ Output Torque	8 N·m to 10 N·m / 70.8 lbf·inch to 88.5 lbf·inch

Charging Voltage Limits

Charging Mode	STD	GEL	AGM	LFP
Charging Voltage	14.4V	14.6V	14.8V	14.6V
Float Charge	13.5V	13.5V	13.8V	/

TROUBLESHOOTING

Failure Mode	Potential Issue	Solutions
Fault LED On	Over Voltage Protection	Keep battery voltage below 15.5V
	Low Voltage Protection	Keep battery voltage above 12.0V
	Reverse Polarity Protection	Change to correct connection method then restart this product, or return to factory to replace fuse
	High Temperature Protection	1. To cool down DC-DC charger 2. Check for adequate venting
	Short Circuit Protection	Restart the DC-DC charger by disconnecting all connections and then reconnecting it again
All LED Indicator Off	Poor Connection for Power On port	Make sure the connection of D+ port to the next IN+ port well
	Poor Connection with Battery	Make sure the connection of DC-DC charger to batteries well

If the problem cannot be resolved or you need any help, please contact us service@litime.com.

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