



Solar Charge Controller



PRODUCT MANUAL

Maximum Power Point Tracking (MPPT)
(12V / 24V / 36V / 48V)

www.litime.com





Full Version
Manual



UNITED STATES



Register Warranty



www.litime.com



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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 operational instructions for the MPPT charge controller.

GENERAL SAFETY INFORMATION

- Read all **cautionary and safety instructions** in this manual before installation. If an operation needs to be done, be sure to **use insulation tools** and **keep hands dry**.
- There are no parts inside the controller that require maintenance or repair. **DO NOT disassemble and try to repair the controller by yourself.**
- Install the controller indoors to avoid potentially hazardous exposure and to **prevent water** from entering the controller.
- Install the controller at a place **with good ventilation conditions** as the radiator may reach a very high temperature during operation.
- After installation, **check whether all wiring connections are tight** and reliable to avoid the danger of heat accumulation caused by loose connections.

BATTERY SAFETY

- 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.
- Be very careful when installing lead-acid batteries. Wear eye protection and have fresh water available in case there is contact with the battery acid.
- 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.
- Please set the correct battery type for the first use.

CHARGE CONTROLLER SAFETY

- Please completely **cover/cap** the **solar panels** during installation to **avoid generating current**. It is preferable to install a DC circuit breaker between solar panels and an MPPT controller for safety reasons.
- Please **DO NOT reverse connect** battery wires to the battery ports.

WARNING

- NEVER connect the solar panel array to the controller without a battery. **The battery must be connected first.**
- Ensure input voltage **does not exceed 200V DC** to prevent permanent damage to the controller.

PRODUCT OVERVIEW

12-48V 60A MPPT SOLAR CHARGE CONTROLLER

Default Battery Setting	12V FePO ₄ (Lithium Iron Phosphate) Battery
System Voltage	LiFePO ₄ : 12V / 24V / 36V / 48V Lead-acid: 12V / 24V / 36V / 48V / Auto
Rated Charging Current	60A
Rated Load Current	30A
Max. Solar Panel System Input Power	870W/12V, 1740W/24V, 2610W/36V, 3480W/48V

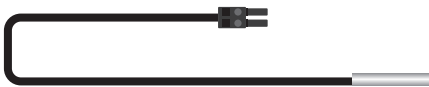


ADDITIONAL COMPONENTS

REMOTE TEMPERATURE SENSOR

For lithium battery, the sensor measures the temperature around the battery for Low Temperature Charging Protection (LTCP).

For lead-acid battery, the sensor measures the battery's temperature for precise temperature compensation.

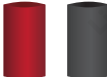


Remote Temperature Sensor*1



Magic Sticker*1
(60x30mm)

ACCESSORIES FOR MOUNTING AND INSTALLATION

	Screws	4pcs
	Plastic Anchors	4pcs
	Copper Wire Connectors	6pcs
	Heat Shrink Tubes	3pairs



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IDENTIFICATION OF PARTS



- | | |
|----------------------------------|-------------------------|
| ① Charging Indicator | ⑦ Solar Panel Terminals |
| ② Fault Indicator | ⑧ Battery Terminals |
| ③ LCD Screen | ⑨ DC Load Terminals |
| ④ Operation Keys | ⑩ Communication Port |
| ⑤ Grounding Terminal | ⑪ Mounting Holes |
| ⑥ Remote Temperature Sensor Port | |

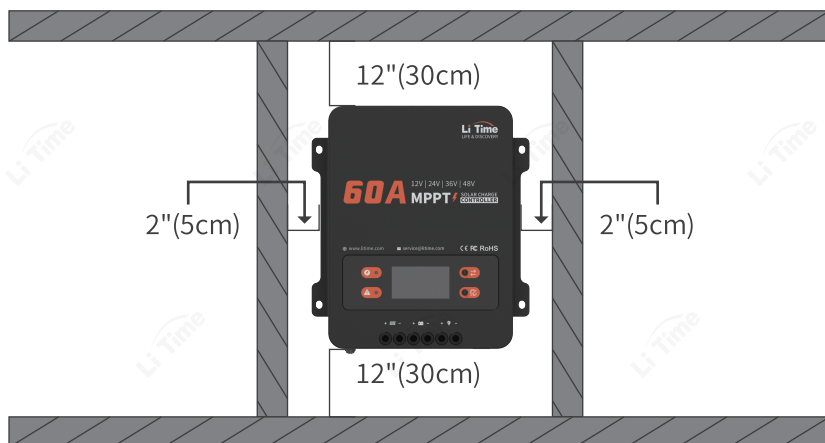
INSTALLATION

Never install the controller in a sealed enclosure with flooded batteries. Gas can accumulate and there is a risk of explosion.

CHOOSE THE MOUNTING LOCATION

Choose a vertical surface protected from direct sunlight, high temperatures, and water. **Make sure there is good ventilation.**

Check the ventilation clearance at least 12"(30cm) above and below the controller and 2"(5cm) on both sides.



INSTALLATION METHOD

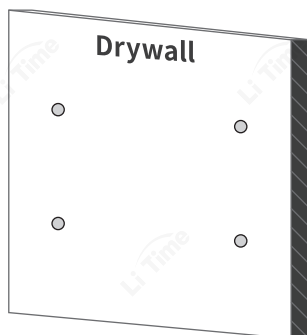
On the Wood Wall (Optional)



Align and Fix the Controller

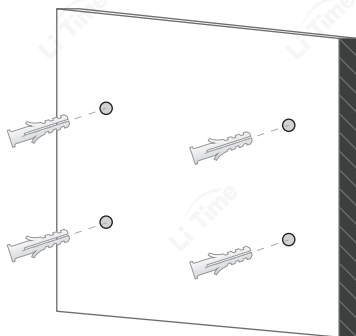
On the Drywall (Optional)

Step
1



Drill the Holes

Step
2



Fix the Plastic Anchors

Step
3



Align and Fix the Screws

WIRING

- We strongly recommend that **fuses or breakers be connected at the solar panel array side, load side, and battery side** so as to avoid electric shock during wiring operation or faulty operations, and make sure the fuses and breakers are **in an open state before wiring**.
- **Make sure the controller is connected with a reliable grounding wire.**
- **DO NOT** connect any **inverters, AC Loads, or battery chargers** to the **LOAD Ports** of the charge controller.
- Do not over-tighten the screw terminals. This could potentially break the piece that holds the wire to the charge controller.

WIRE GAUGE RECOMMENDATION

Solar Panel / Battery	6 AWG
Load	10 AWG
Max. Wire Gauge	6 AWG

FUSE RECOMMENDATION

(1.2 TO 1.5 TIMES THE MAXIMUM CONTINUOUS CURRENT)

Solar Panel / Battery	72A to 90A
Load	36A to 45A

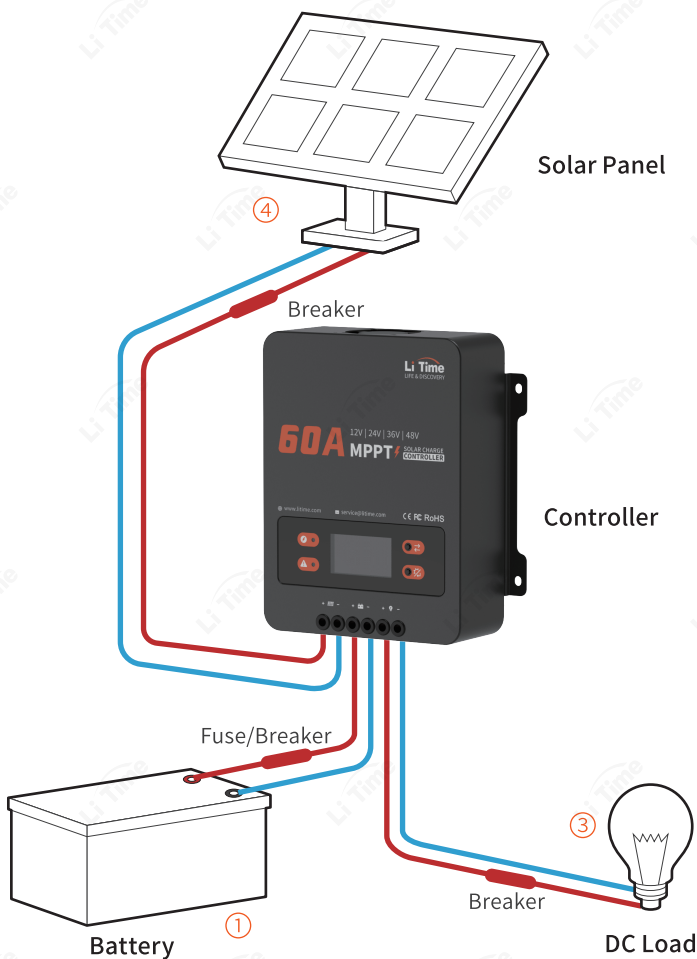
WIRING SEQUENCE AND REFERENCE CONNECTION DIAGRAM

- Wear insulating gloves before the operation to prevent safety accidents.
- Loosen screws and wiring terminals counterclockwise and tighten clockwise. The wire **connector needs to be placed on the wiring terminal**.
- Connect the devices to the controller,  to ,  to .
- Always connect the **negative terminal first** and then the positive.

Complete the installation according to the following connection sequence, $\ominus$ to $\ominus$, $\oplus$ to $\oplus$.

- ① Battery $\Rightarrow$ ② Grounding Wire $\Rightarrow$ ③ DC Load (Optional) $\Rightarrow$
④ Solar Panel $\Rightarrow$ ⑤ Remote Temperature Sensor Port (Optional)

REFERENCE CONNECTION DIAGRAM



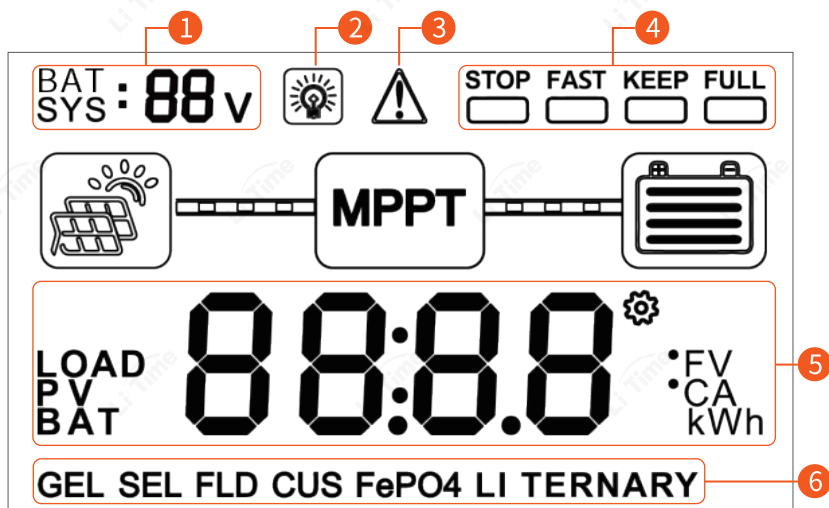
(Disconnect in Reverse Order)

OPERATION

The controller comes equipped with an LCD screen and 2 operation keys to operate the menus.

- Please **set the correct battery type for the first use** if it is not a 12V lithium battery (FePO4) as the default setting.

LCD SCREEN

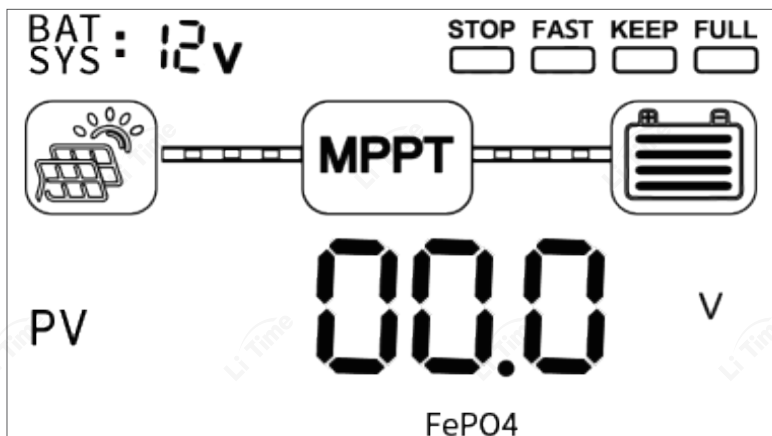


- | | |
|-------------------------|------------------------------------|
| 1 Battery System | 4 Charging Status |
| 2 Load Status | 5 Real-time Data |
| 3 Alarm Status | 6 Battery Type ^① |

① Battery types [CUS] and [LI] are intended for internal testing. DO NOT set them as the type for charging batteries.

LCD INTERFACE

- The main interface displays the PV's voltage after starting up, and the system is set to 12V LiFePO₄ battery mode(FePO₄ Mode) by default.



KEY OPERATIONS

In View Mode

Key	Operation	Function
 (S Key)	Short Press	View Real-time Data
	Press and Hold	/
 (OK Key)	Short Press	View Set Parameters
	Press and Hold	Enter Set Mode

In Set Mode

Key	Operation	Function
 (S Key)	Short Press	View Previous Page
	Press and Hold	Exit Set Mode without Saving
 (OK Key)	Short Press	View Next Page
	Press and Hold	Save Data & Exit Set Mode

Press the "" and "" Keys at the same time for 6 seconds to restore the factory settings.

PROGRAMMING SYSTEM VOLTAGE

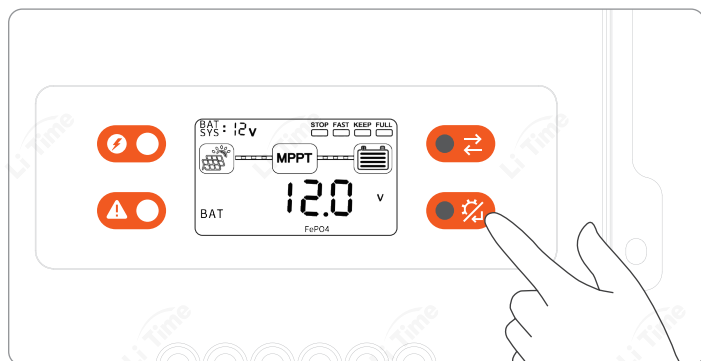
The guide takes setting the battery voltage as an example. The steps for setting other parameters are the same. Scan the QR code on the manual cover to learn more details in the full version manual.

Note: When setting any parameters, **the solar panel's breaker needs to be in the off state.**

Step
1

Enter the Battery Voltage Interface

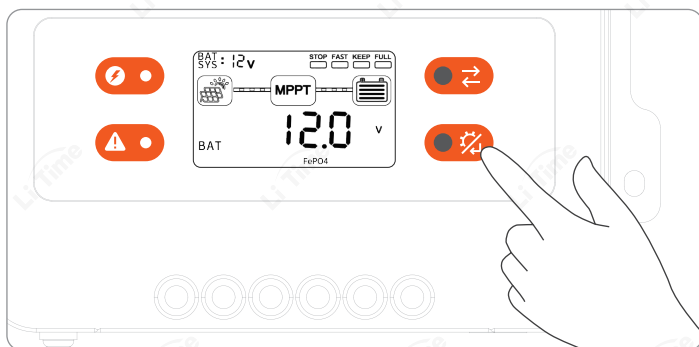
Short press the "" Key to enter the output voltage interface.



Step 2

Enter the Parameter Setting Mode

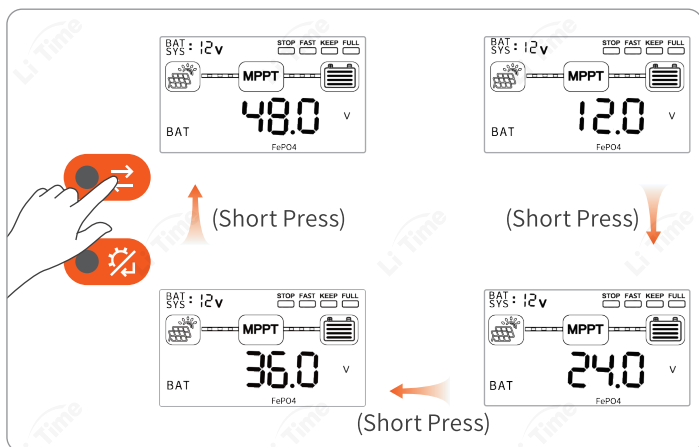
Press and hold the "⚙️" Key to enter the set mode (The parameter will flash after entering the setting mode.)



Step 3

Choose the Optional Parameters

Short press the "↔️" Key to select the options and then press and hold the "⚙️" Key to save the setting.



PROGRAMMING LOAD MODE

Short press the "⚙️" Key to enter the load mode setting interface→ Press and hold the "⚙️" Key to enter the set mode→ Short press the "↔️" or "⚙️" Key to choose "on" / "off" options→ Press and hold the "⚙️" Key to save the setting.

LED INDICATORS

Indicator	Color	Status	Battery Type	
			Lead-acid	LiFePO4
Charge Indicator	Green	Off	No Charging	
		Fast Flash	CC Mode ^①	
		Slow Flash	CV Mode ^②	CV Mode, Current>3A
		Steady On	Float Charging State & Full Charge	CV Mode, Current<3A & Full Charge
Fault Indicator	Red	Off	No Errors	
		Steady On	System Error	

① CC Mode: Constant Current Charging State

② CV Mode: Constant Voltage Charging State

SPECIFICATIONS

Parameter	Value
System Voltage	LiFePO ₄ : 12V/24V/36V/48V ^① Lead-acid: 12V/24V/36V/48V/Auto ^②
No-Load Loss	1W to 1.5W
Battery Voltage	9V to 63V
Max. Solar Input Voltage	200V
Max. Power Point Voltage Range	Battery Voltage + 3V to 180V
Rated Charging Current	60A
Rated Load Current	30A
Max. Solar Panel System Input Power	870W/12V, 1740W/24V, 2610W/36V, 3480W/48V
Conversion Efficiency	96%
MPPT Tracking Efficiency	99%
Temperature Compensation Factor	12V: -0.1V/+10°C (+18°F) 24V: -0.2V/+10°C (+18°F) 36V: -0.3V/+10°C (+18°F) 48V: -0.4V/+10°C (+18°F)
Operating Temperature	-4°F to 122°F / -20°C to 50°C
Low Temperature Charging Protection (LTCP)Function ^③	Yes
Weight	3.75lbs / 1.7 kg
Altitude	≤ 3000m
Dimensions	With Mounting Part: L8.66*W7.76*H2.76in (220*197*70mm) Without Mounting Part: L8.66*W6.57*H2.76in (220*167*70mm)

① The 48V LiFePO₄ system voltage is for one battery module consisting of 16 cells connected in series.

② "AUTO" mode means the controller can automatically recognize the voltage of Lead-Acid battery system.

③ This product supports Low Temperature Charging Protection (LTCP) for LiFePO₄ batteries, where the MPPT stops battery charging when the environment temperature falls below 0°C/32°F and resumes charging when the temperature rises above 5°C/41°F. It is not recommended to turn on this function if the battery itself has low temperature charging protection.

This function is off by default. Turn it on by pressing the button " " on the controller. (Make sure the temperature sensor is connected to the controller.)

TROUBLESHOOTING

Error Code	Problems	Solution
E001	Battery Over-voltage	Check if the battery voltage for the controller is correctly selected. If yes, discharge the battery. If not, set the correct battery voltage.
E002	SolarOver-voltage	The open-circuit voltage of the solar panel is higher than the open-circuit voltage range of the controller. Recommended to reduce the number of solar panels.
E004	Charging Hardware Over-current	Reduce the charging current.
E008	Load Over Current	Reduce the number of loads.
E010	Environmental Over-temperature	The ambient temperature detected by the external temperature sensor is too high.
E020	Controller Over-temperature	The controller exceeds the operating temperature limit. Ensure the controller is installed in a well-ventilated, cool and dry place.

Error Code	Problems	Solution
E040	Solar Under-voltage	The open-circuit voltage of the solar panel is lower than the open-circuit voltage range of the controller. Increase the number of solar panels (total voltage cannot exceed 200V).
E080	Battery Under-voltage	Check the battery voltage for the controller is correctly selected. If yes, charge the battery. If not, set the correct battery voltage.
E100	Controller Internal Failure	Stop using the controller and contact the support team at service@litime.com for assistance.
E400	Failed To Recognize Lead-acid Battery	① Check the battery type; ② Check the battery health status; ③ Verify if the battery voltage is within the MPPT controller's operating range; ④ Check if the battery is correctly connected to this product.
E800	Under Low Temperature Charging Protection State	Increase the ambient temperature above 5°C/41°F.

 NOTE: This chart does not list all error codes, and others can be found in the full version manual. Scan the QR code on the manual cover to see more details.

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



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