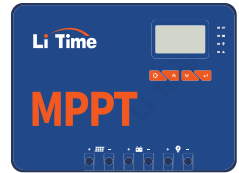




Solar Charge and
Discharge Controller



60A PRODUCT MANUAL

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

www.litime.com





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 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.
- 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**.
- If grounding is required, please make sure to **ground the device on the negative**.
- 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 100 VDC** to prevent permanent damage to the controller.

PRODUCT OVERVIEW

LITIME 12-48V 60A MPPT CONTROLLER

Default Battery Setting	12V LI (Lithium Iron Phosphate) Battery
System Voltage	12V/24V/36V/48V
Rated Charging Current	60A
Rated Load Current	20A
Max. Solar Panel System Input Power	900W for 12V / 1800W for 24V / 2600W for 36V / 3200W for 48V



8.27"
(210mm)

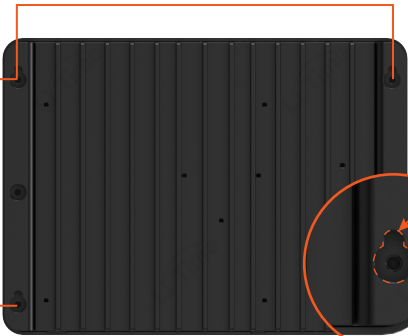
11.02" (280mm)



4.04" (102.7 mm)

10.08" (256mm)

6.08"
(154.5mm)



φ13/64" (5mm)

φ25/64" (10mm)

ADDITIONAL COMPONENTS

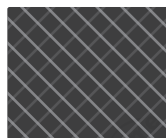
REMOTE TEMPERATURE SENSOR FOR LEAD-ACID BATTERY / MAGIC STICKER

This sensor measures the temperature of the battery and uses this data for very accurate temperature compensation. Simply connect the cable and attach the sensor with the sticker on the top or side of the battery to record the ambient temperature around the battery.

⚠ Note: DO NOT use this sensor when charging lithium battery.

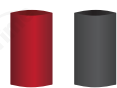


Remote Temperature Sensor for Lead-Acid Battery



Magic Sticker

ACCESSORIES FOR MOUNTING AND INSTALLATION

	Mounting Bracket	4pcs
	M8 Screws for Fixing Brackets to Controller	4pcs
	Screw for Fixing Brackets to Wood Wall	4pcs
	Screw & Plastic Anchor for Fixing Brackets to Drywall	4pcs for each
	Copper Wire Connector	6pcs
	Heat Shrink Tubing	6pcs



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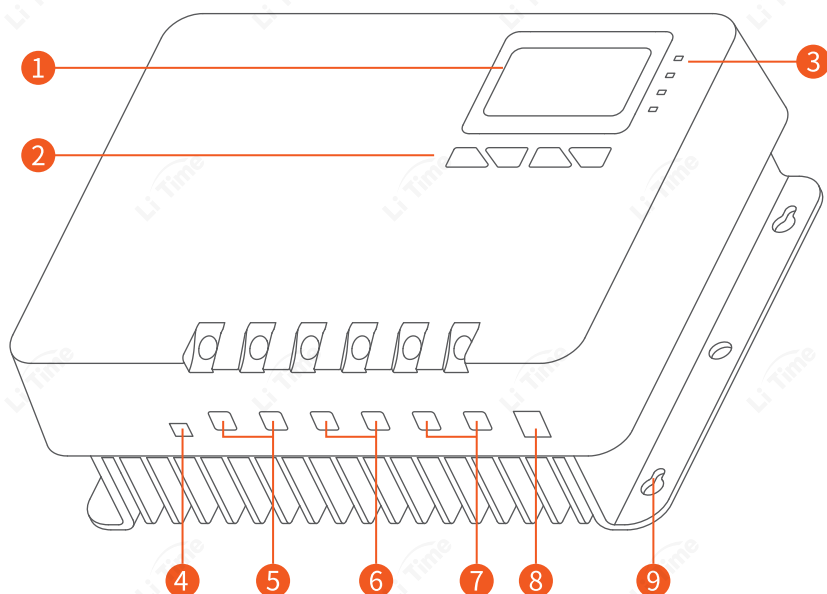
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IDENTIFICATION OF PARTS



- 1 LCD Screen
- 2 Operating Keys
- 3 LED Indicators (PV/BAT/LOAD/FAULT)
- 4 Remote Temperature Sensor Port (For Lead-Acid Battery)
- 5 Solar Panel Terminals
- 6 Battery Terminals
- 7 DC Load Terminals
- 8 RS485 Communication Port (RJ12)
- 9 Mounting Holes

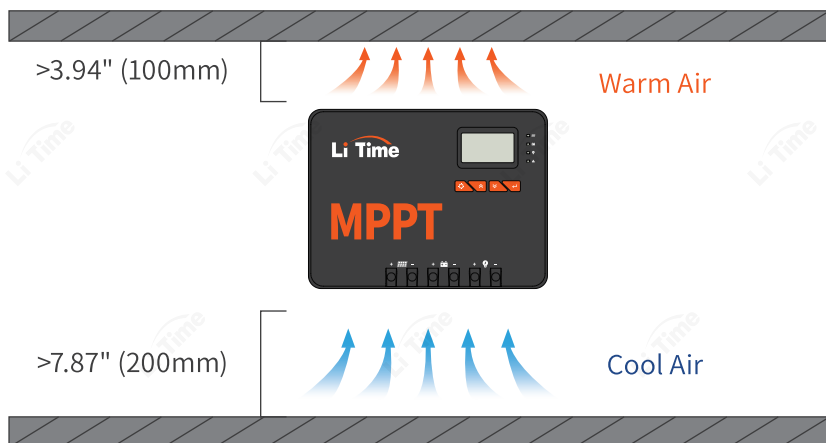
INSTALLATION

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

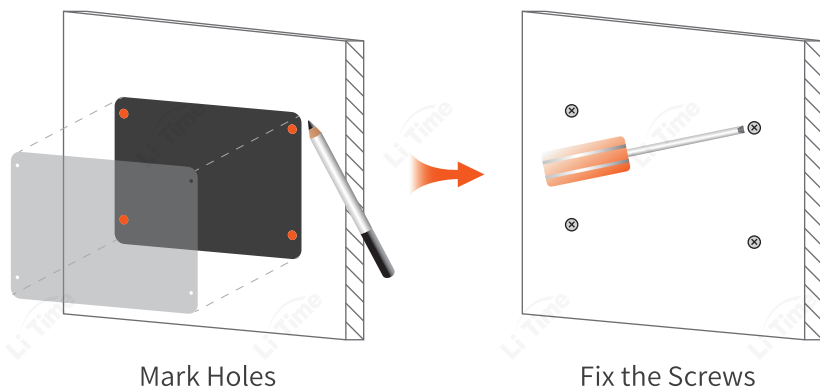
CHOOSE THE MOUNTING LOCATION

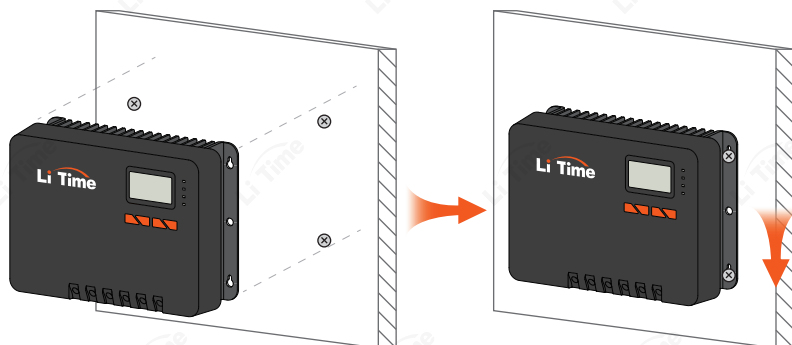
Choose a vertical surface protected from direct sunlight, high temperatures, and water. **Make sure there is good ventilation.**

Check the ventilation clearance above the controller for at least 3.94" (100mm) and below the controller for at least 7.87" (200mm).



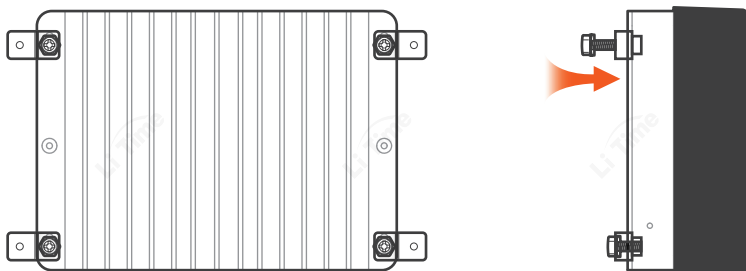
INSTALLATION METHOD ① USING MOUNTING HOLE



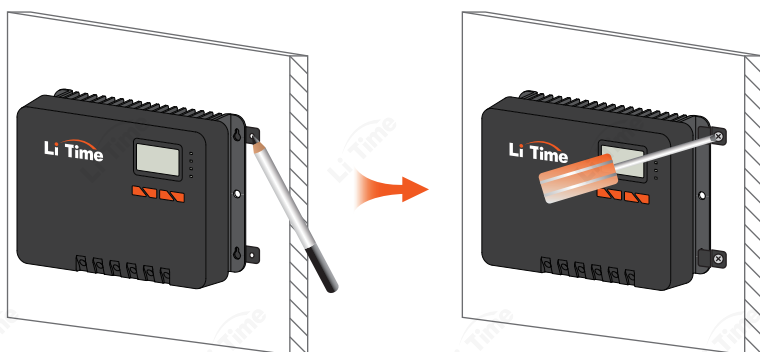


Align and Fix the Controller

INSTALLATION METHOD ② USING MOUNTING BRACKETS



Install Brackets



Mark Holes

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**.
- **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

Model	LT-MPPTCTRL4860
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)

Model	LT-MPPTCTRL4860
Solar Panel / Battery	72A to 90A
Load	24A to 30A

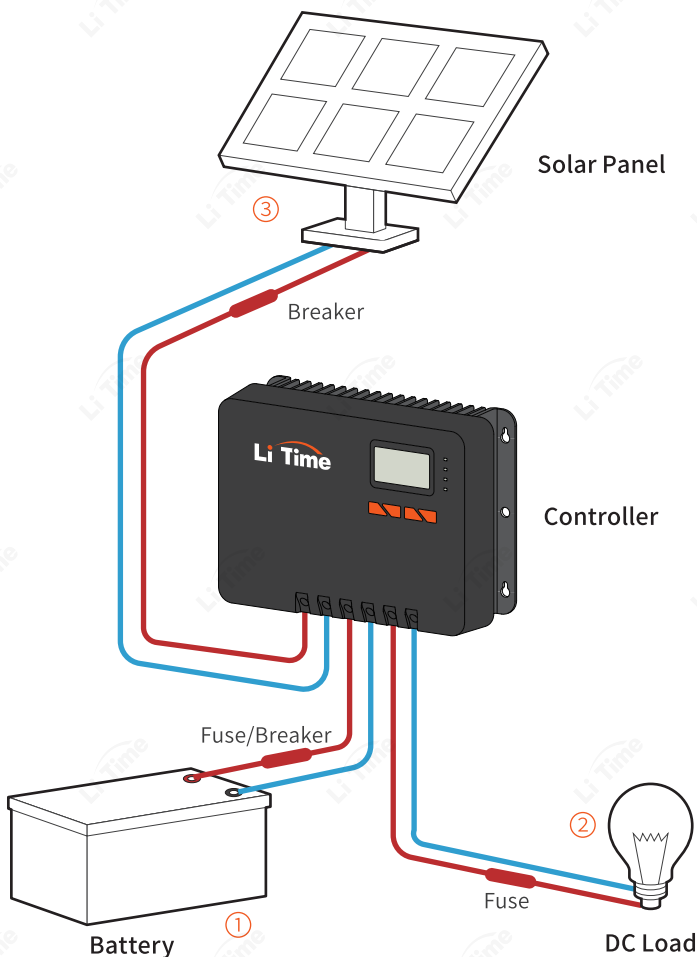
WIRING SEQUENCE AND REFERENCE CONNECTION DIAGRAM

- 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 DC Load (Optional) $\Rightarrow$ ③ Solar Panel $\Rightarrow$
- ④ Communication Port (Optional) $\Rightarrow$
- ⑤ Remote Temp. Sensor (Optional for Lead Acid Battery)

REFERENCE CONNECTION DIAGRAM



OPERATION

The controller comes equipped with an LCD screen and 4 buttons to operate the menus.

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

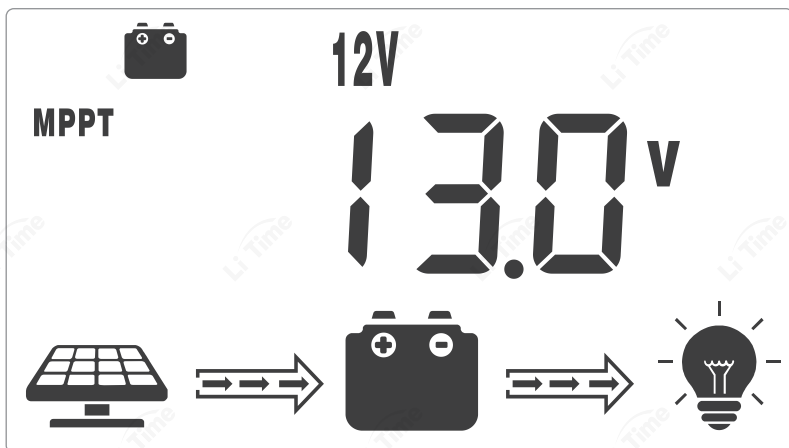
STARTUP INTERFACE

During startup, the 4 LED indicators will first flash successively, and after self-inspection, the LCD screen starts and displays the main interface.

LCD DISPLAY

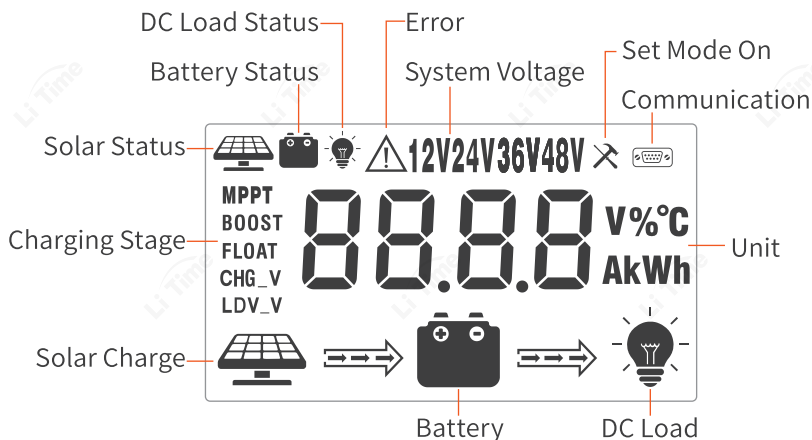
Main Interface

The main interface displays the battery's voltage after starting up, and the system is set to **12V LiFePO4 battery mode by default**.



- ⊖ If the connected battery is not a 12V LiFePO4 battery, the controller will display error code E01 or E02. Changing to the correct system settings will allow the controller to function normally.

LCD INDICATORS



KEY OPERATIONS

In View Mode

Key	Operation	Function
 (SET)	Long Press	Enter Set Mode
 (UP)	Short Press	View Previous Page
 (DOWN)		View Next Page
 (RETURN)		DC Load On/OFF (Load Mode 15 Only)

In Set Mode

Key	Operation	Function
 (SET)	Long Press	Save Data & Exit Set Mode
	Short Press	Next
 (UP)	Short Press	Increase Value
 (DOWN)		Decrease Value
 (RETURN)		Exit Set Mode without Saving

SWITCHING OF DISPLAYED INFORMATION

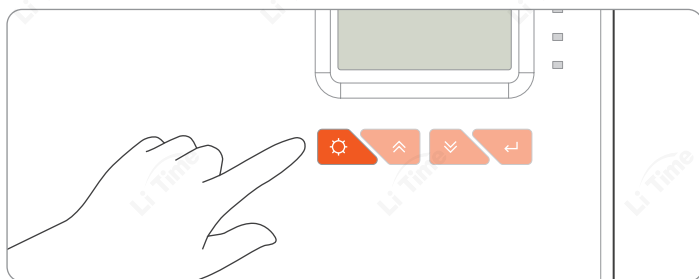
The information displayed on the LCD interface in View Mode can be changed by short pressing the **(UP)** or **(DOWN)** key.

PROGRAMMING SYSTEM VOLTAGE

Step
1

Enter the Setting

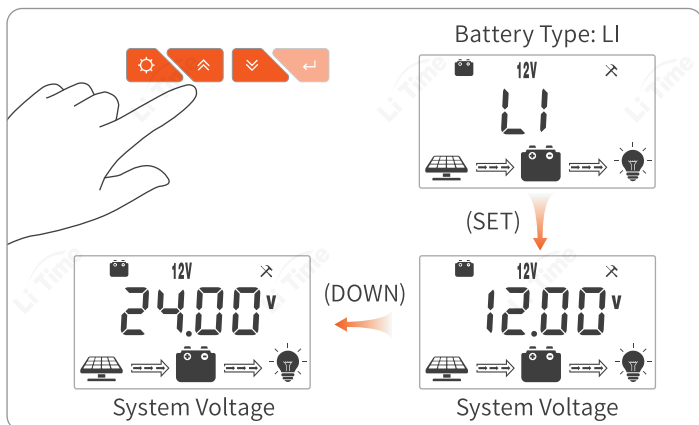
Long press (SET) in View Mode / any View page.



Step
2

Set the Battery Voltage

Short press (SET) again to enter the system voltage setting, short press the **(UP)** or **(DOWN)** to cycle through the battery voltage, then long press the (SET) key to complete the selection.



- Note: Selecting LI (LiFePO4) battery type requires locking the battery system voltage and cannot be selected for “AUTO” mode (automatic recognition of system voltage).

PROGRAMMING LOAD MODE

The default load mode is the “Manual Mode” of code (15) (see “Load Modes Introduction” for details). The load mode adjustment method is as follows.

“Manual Mode” Operation

Only when the load mode is the “Manual Mode” of code (15), the manual operation to turn on or off the load is valid.

Operation Method: Short press the (RETURN) button in any main interface to turn on or off the load.

Load Modes Introduction

Code	Definition	Description
0	Daylight Auto-Control	DC load turns on when no daylight is detected.
1~14	Daylight On/ Timer Off	DC load turns on when no daylight is detected. DC load turns off according to timer. 1-14 indicates Timer setting hours.
15	Manual Mode	DC load can be turned on/off by pressing the [RETURN] button.
16	Testing Mode	DC load turns on and off in a quick succession.
17	Always On	DC load will be on for 24 hours a day.

 Note: For load modes 1-14, the number means the load lasting time, e.g., “1” means the load would turn off in 1 hour after turning on, and “8” means off in 8 hours. Please notice that the detection of sunlight would turn off the load for all load modes 1-14, even if the timer hasn’t run out yet.

LED INDICATORS



PV Indicator

Indicating the controller's current charging mode.



BAT Indicator

Indicating the battery's current state.



LOAD Indicator

Indicating the loads' on / off and state.



Fault Indicator

Indicating whether the controller is functioning normally.

LED	Status	Description
PV	Off	No Solar Input *PV LED is generally off during nighttime.
	Double Flash	Solar Input Detected
	Single Flash	Reverse Polarities Detected
	Steady On	Solar Input Steady
	Slow Flash	In Equalize/Boost/Float Charge
BAT	Single Flash	Reverse Polarities Detected
	Fast Flash	Battery Over Voltage
	Slow Flash	Battery Over Discharged
	Steady On	Battery On
LOAD	Off	Load Off
	Fast Flash	DC Load Short Circuit / Overloading
	Steady On	DC Load On
FAULT	Off	No Errors
	Steady On	System Error Detected

BLUETOOTH INSTALLATION AND OPERATION

APP DOWNLOAD

The MPPT controller is equipped with a built-in Bluetooth module that can be monitored and controlled via the app available on the Apple App Store and Google Play.



APP OPERATION

Scan for Bluetooth APP operating instructions.



SPECIFICATIONS

Parameter	Value
Model	LT-MPPTCTRL4860
System Voltage	12V / 24V / 36V / 48V / Auto ^①
No-Load Loss	12mA at 12V/10mA at 24V/ 6mA at 36V/6mA at 48V
Battery Voltage	9V to 64V
Max. Solar Input Voltage	150V
Max. Power Point Voltage Range	Battery Voltage+3V to 120V
Rated Charging Current	60A
Rated Load Current	20A
Max. Solar Panel System Input Power	900W for 12V/1800W for 24V/ 2600W for 36V/3200W for 48V
Conversion Efficiency	≤97%
MPPT Tracking Efficiency	99.9%
Temperature Compensation Factor	-3mv/°F or °C/2V (Default)
Operating Temperature	-31°Fto 113°F / -35°C to 45°C
Protection Degree	IP32
Weight	10.03lb / 4.55 kg
Communication Method	RS485(RJ12) / Inbuilt BT
Altitude	≤ 3000m
Dimensions	L11.02*W8.27*H4.04 inch / L280*W210*H102.7 mm

① Selecting LI (LiFePO4) battery type requires locking the battery system voltage and cannot be selected for “AUTO” mode (automatic recognition of system voltage).

TROUBLESHOOTING

Error Code	Error	Solution
E00	No Error	System Functioning
E01	Battery Over-discharged	The battery voltage is too low. DC load will be turned off until the battery re-charges to recovery voltage.
E02	Battery Over-voltage	The battery voltage has exceeded the controller limit. Check battery bank voltage for compatibility with the controller.
E04	Load Short Circuit	DC load short circuit. Disconnect the load and check if the rated current of the load is less than 20A.
E05	Load Overloading	DC load power draw exceeds controller capability. Reduce load size or upgrade to a controller with higher DC load capacity.
E06	Overheating	The controller exceeds the operating temperature limit. Ensure the controller is placed in a well-ventilated, cool, dry place.
E07	Environmental Over-temperature	The environment temperature detected by the external temperature probe is too high.
E10	Solar Over-voltage	Solar array voltage exceeds controller-rated input voltage. Decrease the voltage of solar panels connected to the controller.
E13	Solar Reverse Polarity	Solar array input wires connected with reverse polarities. Disconnect and re-connect in the correct polarities.
E14	Battery Reverse Polarity	Battery wires connected with reverse polarities. Disconnect and re-connect in correct polarities.

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

Li Time

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