30A

Solar Charge Controller

PRODUCT MANUAL

Maximum Power Point Tracking (MPPT)

(12V / 24V)

www.litime.com

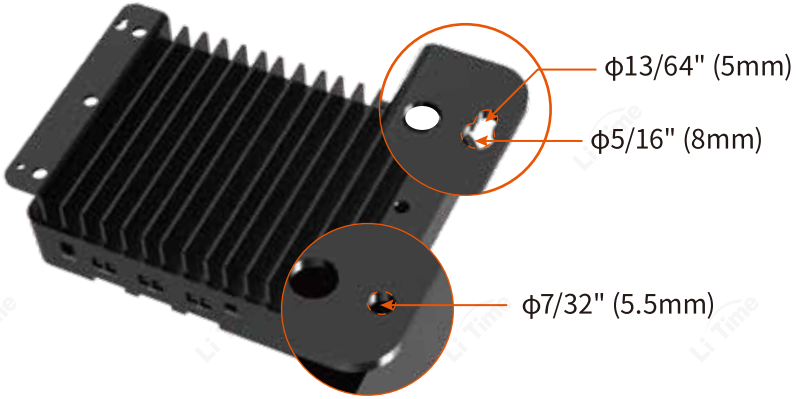
Bluetooth APP
Installation & Operation

Register
Warranty

PRODUCT OVERVIEW

12V/24V 30A MPPT SOLAR CHARGE CONTROLLER

Default Battery Setting	12V LI (Lithium Iron Phosphate) Battery
System Voltage	12V/24V
Rated Charging Current	30A
Rated Load Current	20A
Max. Solar Panel System Input Power	450W for 12V / 900W for 24V



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. The following symbols are used in this manual to indicate potentially dangerous conditions or important safety information.

⚠ Warning: Indicates that the operation in question is dangerous, and safety preparations must be made before operation.

Caution: Indicates a critical procedure for safe and proper operation of the controller.

Note: Indicates a procedure or function that is important to the safe and proper operation of the 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 battery manufacture'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 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 MPPT controller for safety reasons.
- If grounding is required, please make sure to **ground the device on the negative.**
- Please **DO NOT reverse connect** battery wires into 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.
- **DO NOT** connect any **inverter, AC load, or battery charger** to the **load ports** of the charge controller.
- We strongly recommend that **fuses or breakers be connected at** the **solar panel array** side, **load** side, and **battery** side to avoid electric shock during wiring operation or faulty operations and ensure the fuses and breakers **are in an open state before wiring.**

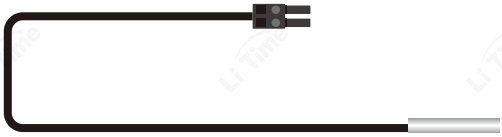
ADDITIONAL COMPONENTS

Additional components are included in the package.

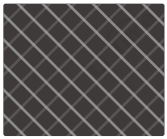
REMOTE TEMPERATURE SENSOR / MAGIC STICKER

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

For lead-acid batteries, the sensor measures the surrounding temperature for precise temperature compensation.



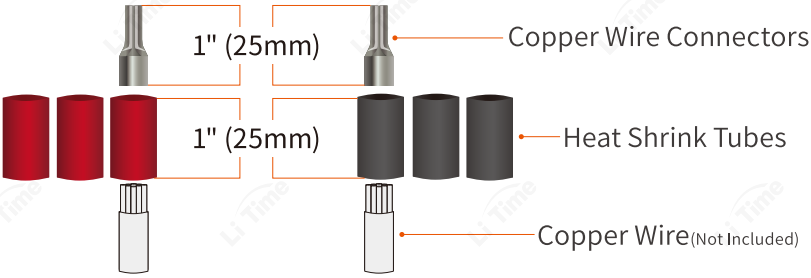
Remote Temperature Sensor



Magic Sticker

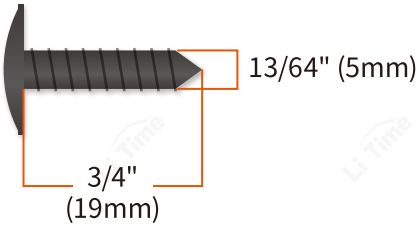
COPPER WIRE CONNECTORS * 6 / HEAT SHRINK TUBES * 6

Compatible size wire connectors and heat shrink tubes for connecting the devices to the controller. We recommend using the red heat shrink tubes on the positive terminals, and black on the negative.

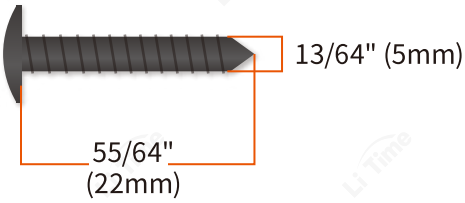


SCREWS * 8 / PLASTIC ANCHORS * 4

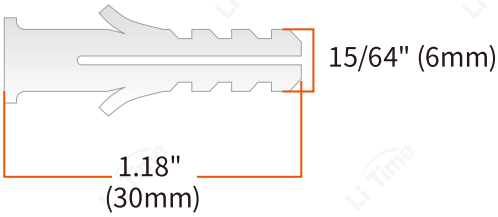
These screws can be used to mount the charge controller on any flat surface.



Screw for Mounting on Wood Wall * 4pcs



Screw for Mounting on Drywall * 4pcs



Plastic Anchor for Mounting on Drywall * 4pcs

FCC STATEMENT (FCC ID: 2BDSV-M2430N)

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-M2430N)

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.

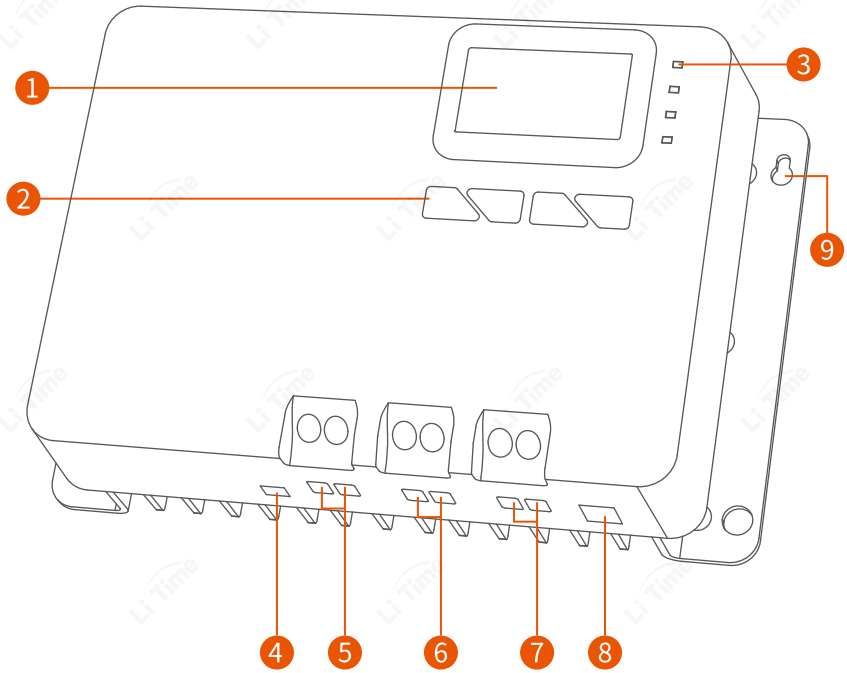
Cet équipement est conforme aux limites d'exposition aux rayonnements du Canada établies pour un environnement non contrôlé.

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.

CONTENT

IDENTIFICATION OF PARTS



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

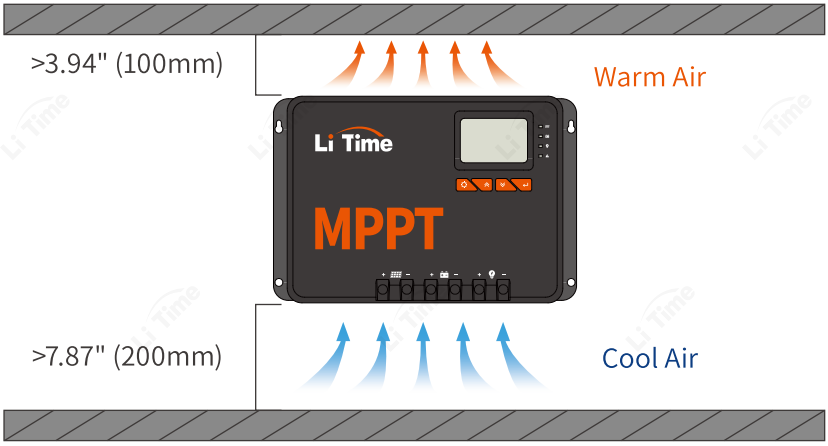
INSTALLATION

⚠ Warning: 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).



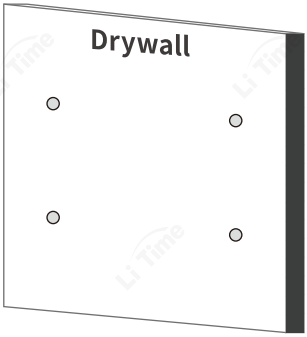
INSTALLATION METHODS

On the Wood Wall (Optional)

Align and Fix the Controller

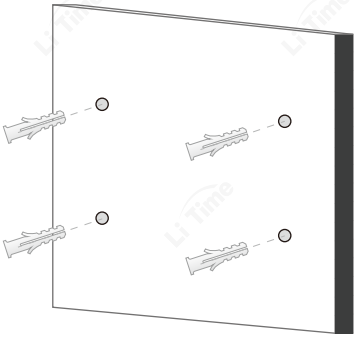
On the Drywall (Optional)

Step 1



Drill the Holes

Step 2



Fix the Plastic Anchors

Step 3

Align and Fix the Screws

WIRING

Warning: 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.**

Warning: **DO NOT** connect any **inverters, AC Loads, or battery chargers** to the **LOAD Ports** of the charge controller.

Caution: 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	8 AWG
Load	10 AWG
Max. Wire Gauge	8 AWG

FUSE RECOMMENDATION

(1.2 TO 1.5 TIMES THE MAXIMUM CONTINUOUS CURRENT)

Solar Panel / Battery	36A to 45A
Load	24A to 30A

You are now ready to complete the wiring starting with the connection of the battery to the charge controller.

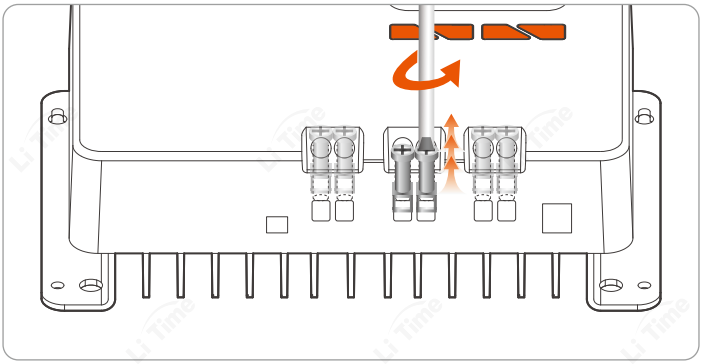
Note: **Wear insulating gloves before the operation to prevent safety accidents.**

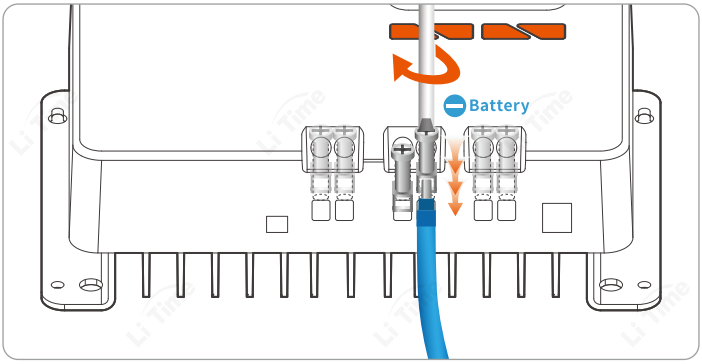
Note: Loosen screws and wiring terminals counterclockwise and tighten clockwise.

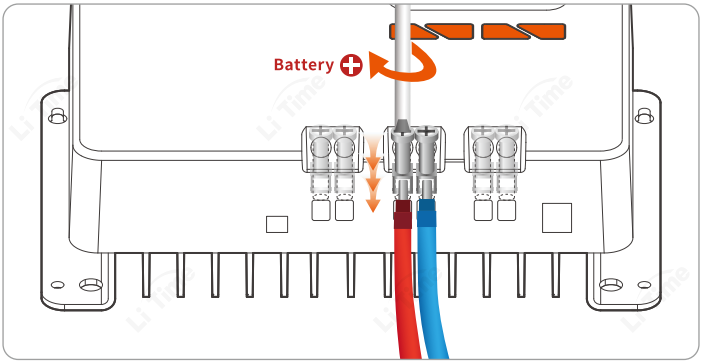
Step
1

Connect the Battery to the Controller

Note: The wire **connector needs to be placed on** the wiring **terminal.**

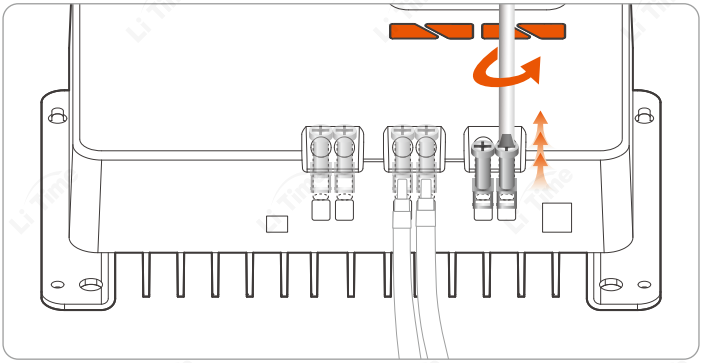


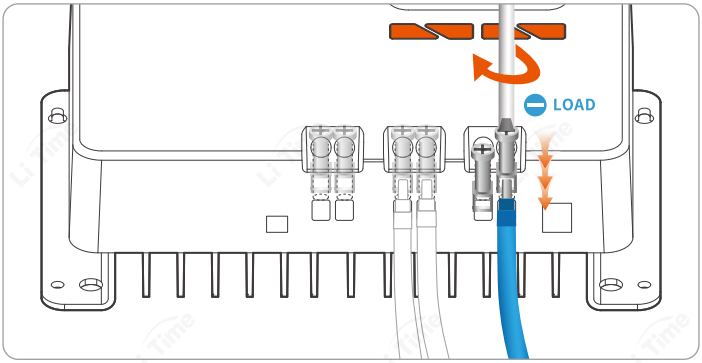


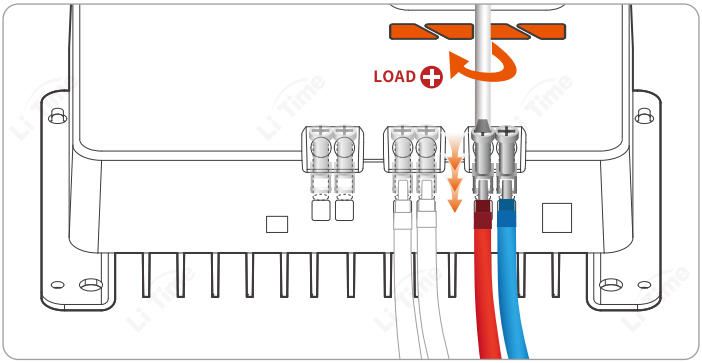


Step
2

Connect the Load to the Controller (Optional)



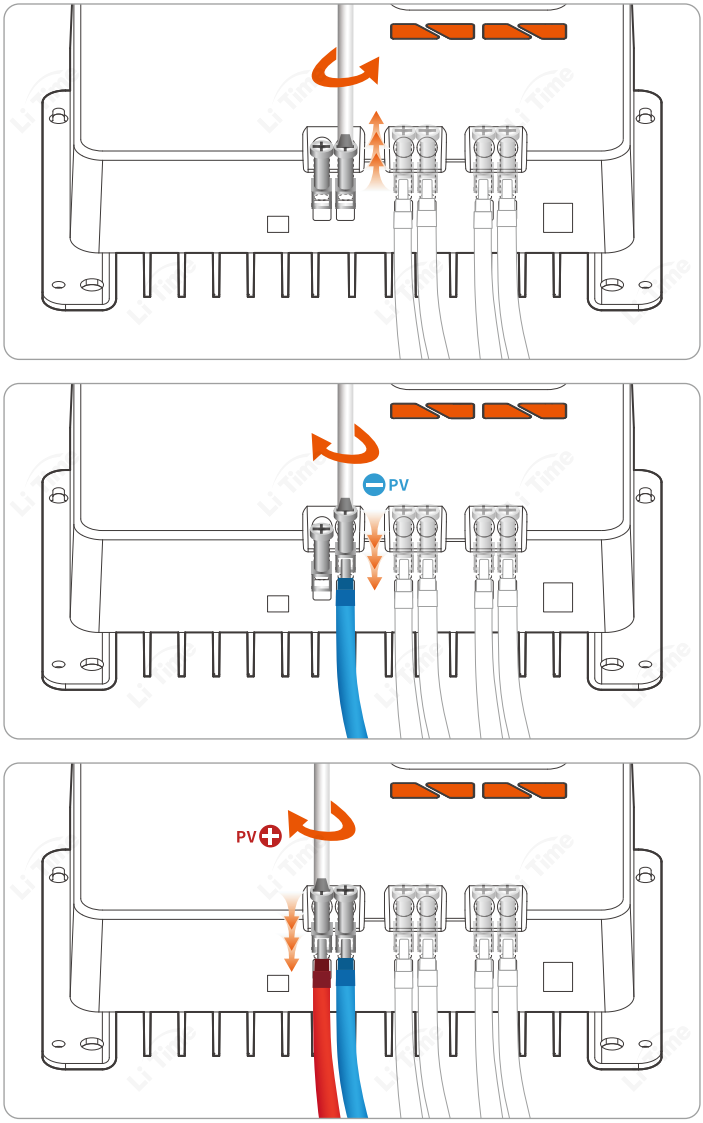




Step
3

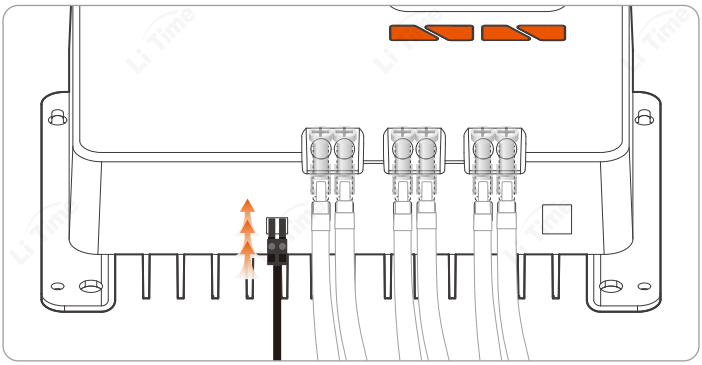
Connect the Solar Panel to the Controller

⚠ Warning: Danger of High Voltage! Be careful not to expose the solar panel array to any sunlight during installation, which can be avoided by flipping the solar panel array upside down to the ground.

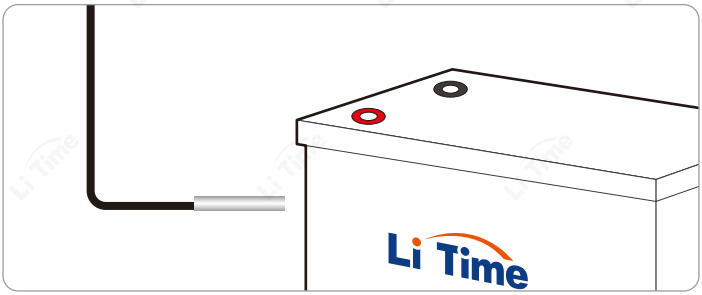


Step
4

Connect Temperature Sensor to the Controller (Optional)



Place the sensor close to the battery



OPERATION

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

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

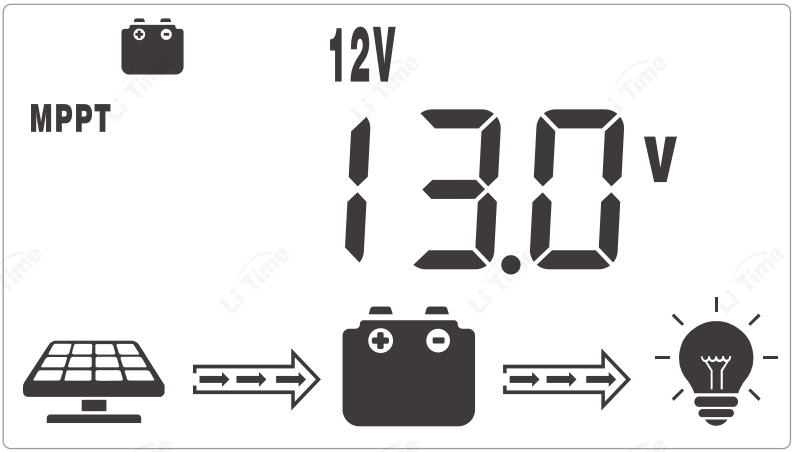
STARTUP INTERFACE

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

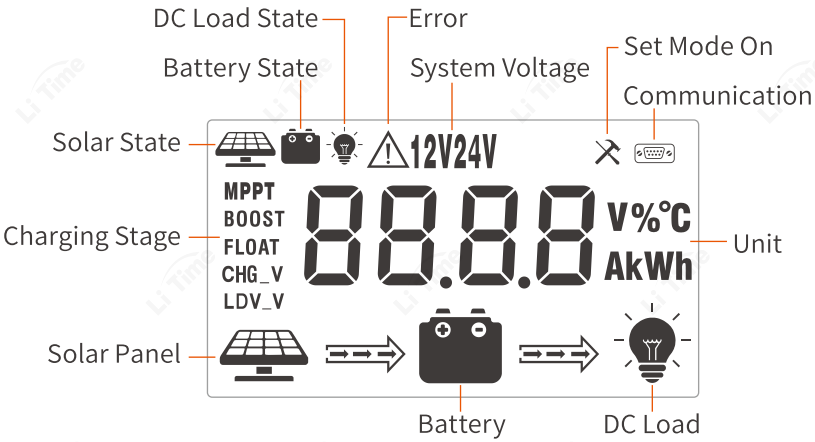
Main Interface

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



Note: If the voltage or battery type of the battery connected to the controller does not match the default system settings, the controller LCD screen will display ERROR CODE E01 or E02 after startup. The controller will work normally after being charged to the correct system settings (refer to the operations on page 12 to change the relevant settings).

LCD INDICATORS



KEY OPERATIONS

In View Mode

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

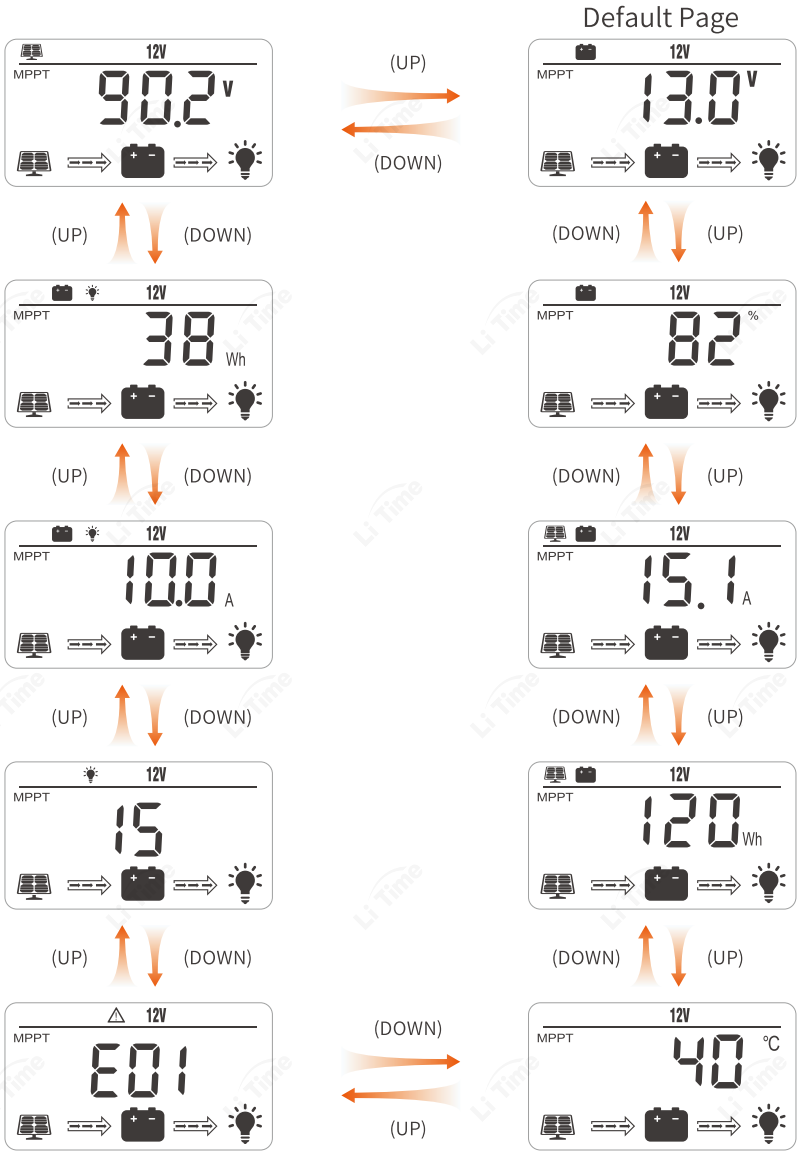
In Set Mode

Key	Operation	Function
(SET)	Press and Hold	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.

The displayed information will be changed in the following sequence.

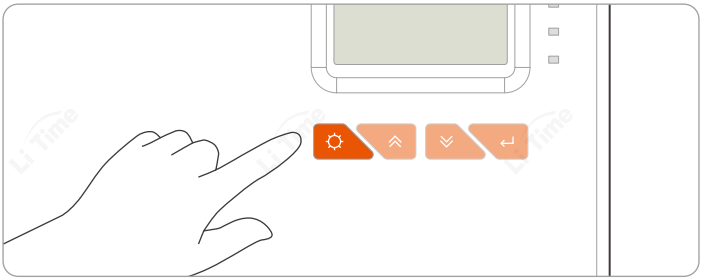


PROGRAMMING SYSTEM VOLTAGE

Step 1

Enter the Setting

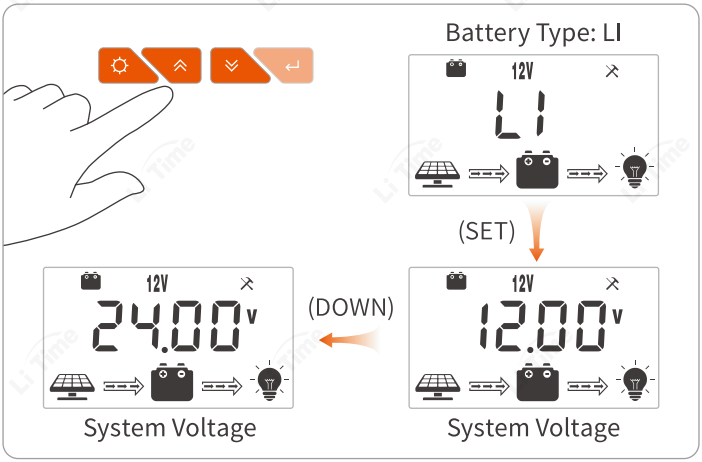
Press and hold (SET) in View Mode / any View page.



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 press and hold 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

Solar Indicator	Indicating the controller's current charging state.
BAT Indicator	Indicating the battery's current state.
DC Load Indicator	Indicating the loads' on / off and state.
Fault Indicator	Indicating whether the controller is functioning normally.

LED	Status	Description
Solar	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
DC 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.

Bluetooth APP Installation

APP OPERATION

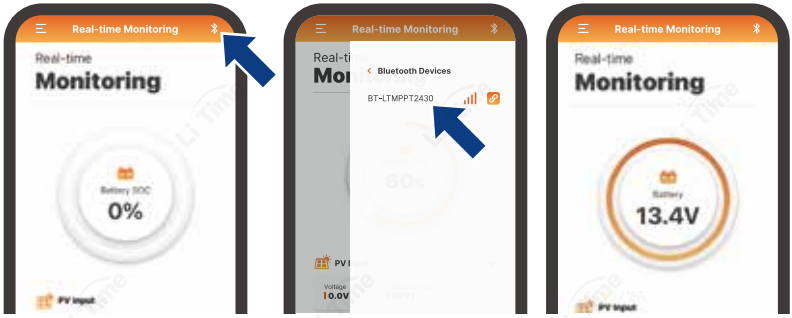
Device Connection

Step 1

Turn on your phone's Bluetooth.

Step 2

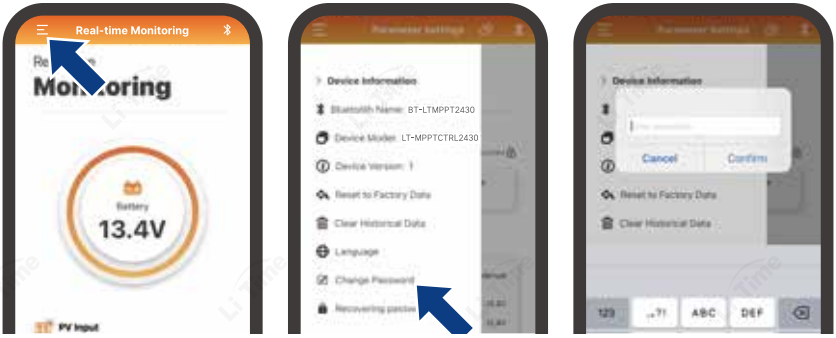
Tap the Bluetooth icon on the upper right corner of the interface and connect Bluetooth with the device named "BT-LTMPPT2430". All parameters will be displayed in the "Real-time Monitoring" interface.



Change Password (Initial Password: 0000)

Tap the icon " ☰ " in the top left corner of the interface to reset the password, which will be entered before setting the parameters.

Note: If forget the password during use, contact us at service@litime.com for further assistance.



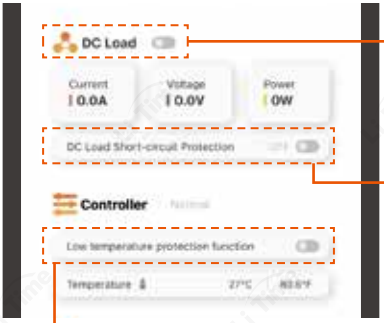
Parameter Settings

Enter the "Parameter Settings" interface and then unlock the settings by entering the password to adjust the relative parameters.

If you have any questions or need any help with parameter settings or information reading, please contact us at **service@litime.com**.

Function Control Switch

There are three switches which can turn on/off DC load mode, DC load short-circuit protection and low temperature charging protection in the "Real-time Monitoring" interface. All three function control switches are off by default.



DC Load Mode:

Control whether the controller discharges the DC load.

DC Load Short-circuit Protection:

Control whether the DC load is protected from short circuit when the DC load mode is on.

Low Temperature Charging Protection (LTCP):

Control whether the controller stops charging the lithium battery when the temperature is below 0°C/32°F, thus preventing potential damage to the battery from charging in low-temperature conditions.

SPECIFICATIONS

Parameter	Value
System Voltage	12V / 24V / Auto①
No-Load Loss	12mA at 12V / 10mA at 24V
Battery Voltage	9V to 32V
Max. Solar Input Voltage	100V
Max. Power Point Voltage Range	Battery Voltage+3V to 76V
Rated Charging Current	30A
Rated Load Current	20A
Max. Solar Panel System Input Power	450W for 12V / 900W for 24V
Conversion Efficiency	⩽97%
MPPT Tracking Efficiency	99.9%
Temperature Compensation Factor	12V: -10mv/+1°F (-18mv/+1°C) 24V: -20mv/+1°F (-36mv/+1°C)
Operating Temperature	-31°F to 113°F / -35°C to 45°C

Parameter	Value
Low Temperature Charging Protection(LTCP) Function②	Yes
Protection Degree	IP32
Weight	Appr. 4.41lbs / 2kg
Communication Method	RS485(RJ12) / Inbuilt BT
Altitude	⩽ 3000m
Dimensions	L10.59*W7.09*H3.25 inch / L269*W180*H82.5 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).

② This product supports Low Temperature Charging Protection (LTCP) for lithium batteries, where the controller 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. **This function is off by default. Turn it on via the "LiTime Solar" APP or press the Key on the controller to set it.** (Make sure the temperature sensor is connected to the controller).

BATTERY TYPES AND DEFAULT PARAMETERS

Setting \ Battery Type	FLD	SEL
Equalize Charge Voltage	14.8V	14.6V
Boost Charge Voltage	14.6V	14.4V
Float Charge Voltage	13.8V	13.8V
Boost Charge Recovery Voltage	13.2V	13.2V
Over Discharge Recovery Voltage	12.6V	12.6V
Over Discharge Voltage	11.1V	11.1V
Equalize Duration Time	120 Min	120 Min
Equalize Charge Interval	30 Days	30 Days

The above are the specific parameters of 12V system voltage for different battery types. If the system voltage is 24V, the specific voltage parameters are the above parameters multiplied by 2, and the "Equalize Duration Time" and "Equalize Charge Interval" should remain unchanged.

GEL	Li (Default)	USE (User-Definable)
———	———	7～15V
14.2V	14.4V	7～15V
13.8V	———	7～15V
13.2V	———	7～15V
12.6V	12.4V	7～15V
11.1V	10.8V	7～15V
———	———	0～600 Min
———	———	0～200 Day (0 means turn off the equalize charging function.)

TROUBLESHOOTING

Error Code	Error	Solution
E00	No Error	System is working normally.
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.

Error Code	Error	Solution
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.
E15	Under Low Temperature Charging Protection Status	Increase the ambient temperatureabove 5°C/41°F.

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

SYSTEM MAINTENANCE

To always keep the controller's performance at its optimum level, it is recommended to check the following items twice a year.

- Make sure the airflow around the controller is not blocked and clear away any dirt or debris on the radiator.
- Check if any exposed wire gets its insulation undermined due to exposure to sunlight, friction with other surrounding objects, dry rot, damage by insects or rodents, etc. Repair or replace those affected when necessary.
- Verify that the indicator lights are consistent with the operation of the device. Please note that if any faults or errors are displayed, corrective measures should be taken if necessary.
- Check all wiring terminals for any sign of corrosion, insulation damage, overheating, or burning/discoloration, and tighten all the terminal screws.
- Check if there is any dirt, nesting insects, or corrosion, and clean as required.
- If the arrester has failed, replace it with a new one time to prevent the controller and even other devices owned by the user from being damaged by lightning.

⚠ Warning: Risk of Electric Shock! Before carrying out the above checking or operations, always make sure all power supplies of the controller have been cut off!

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