



IMPORTANT SAFETY INSTRUCTIONS

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.
- 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.

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 a PWM controller for safety reasons.
- 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 55 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.

IDENTIFICATION OF PARTS



- ① LCD Screen
- ② Panel Mounting Holes
- ③ USB Port (5V 1A)^①
- ④ Operation Buttons
- ⑤ DC Load Terminals
- ⑥ Battery Terminals
- ⑦ Solar Terminals
- ⑧ Bracket Holes
- ⑨ Wall Mounting Holes
- ⑩ Bracket Connection Posts
- ⑪ Panel Mounting Posts & Bolts
- ⑫ Wall Mounting Screws & Plastic Anchors

^①5V 1A USB output provides charging for mobile devices.

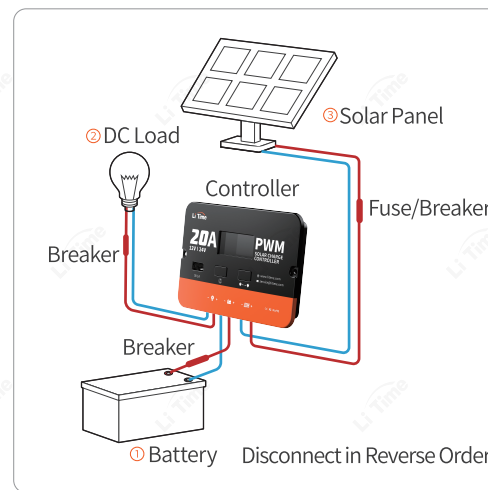
WIRING SEQUENCE AND REFERENCE CONNECTION DIAGRAM

Reference Connection Diagram

Complete the installation according to the following connection sequence,

⊖ to ⊖, ⊕ to ⊕.

- ① Battery → ② DC Load (Optional) → ③ Solar Panel



Connection Tips

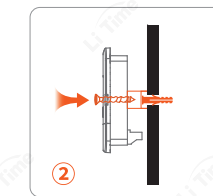
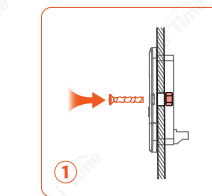
- Wear insulating gloves before the operation to prevent safety accidents.
- Loosen screws and wiring terminals counterclockwise and tighten clockwise. The wire connector needs to be placed on the wiring terminal.
- Always connect the negative terminal first and then the positive.

Installation

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

① Panel Mount (Optional)

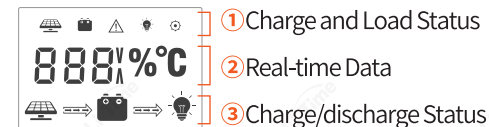
② Wall Mount (Optional)



OPERATION

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

LCD Indicators



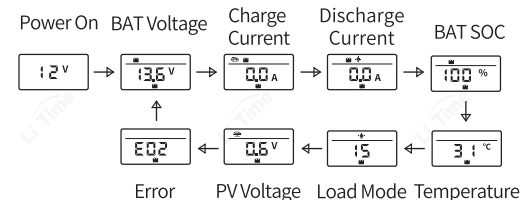
Operation Button Functions

Button	Mode	Operation	Function
	View Mode	Short Press	View Next Page
		Press and Hold	Enter Set Mode
	Set Mode	Short Press	View Next Page
		Press and Hold	Save Data & Exit Set Mode
	View Mode	Short Press	Turn Load On/Off
		Press and Hold	/
	Set Mode	Short Press	Adjust Parameter
		Press and Hold	/

LCD Screen Cycle

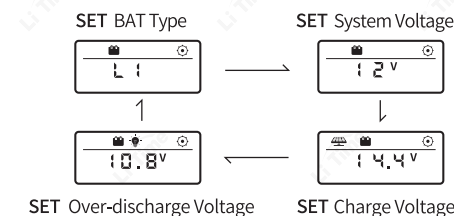
The real-time data will be automatically turned to the next data every 5 seconds. The user can press the first button to cycle through different pages.

The error code page will only be displayed when an error is detected.



Adjustable Battery Settings

Please set the correct battery type and battery voltage for the first use if it is not a 12V lithium battery as the default setting. The controller will remember the settings when it restarts.



Parameter Setting

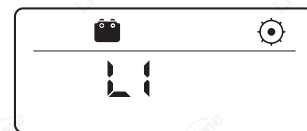
When setting any parameters, **the solar panel's breaker needs to be disconnected.**

The guide takes setting the battery type as an example. The steps for setting other parameters are the same.

Step 1

Enter The Set Mode

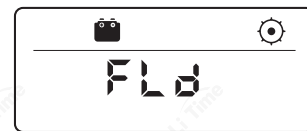
Press and Hold the first button to enter Set Mode



Step 2

Choose the Optional Parameters

Short Press the second button to select the options and save the setting by Press and Hold the first button.



Programming Load Mode

The default load mode is the “Manual Mode” of code (15), enter Load SET Mode by Press and Hold the first button in Load Mode view only.

Load Mode	Definition	Description
0	Daylight Auto-Control	DC load turns on when no daylight is detected.
1-14	Daylight On /Timer Off	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 second 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.



SPECIFICATIONS

Battery System Voltage	12V/24V
Adjustable Battery Type	LI/FLD/GEL/SEL ^①
Max Solar Input Voltage	<55V
Max Solar Input Power	340W/12V, 680W/24V
Recommended Solar Open Circuit Voltage	18V for 12V system, 36V for 24V system
Rated Solar Charge Current	20A
Max Load Output Current	20A
USB Output	5V 1A
No-load Loss	8mA(12V), 12mA (24V)
Light Control Voltage	5V for 12V system, 10V for 24V system
Light Control Delay Time	10s
Recommended Wire Gauge	14AWG
Recommended Breaker/Fuse	24A to 30A
Operating Temperature	-31°F to 113°F, -35°C to 45°C
Controller Dimension (L*W*H)	5.12*3.54*1.36 inches, 130*90*34.6 mm
Net Weight	Appr. 0.46 lbs/0.21 kg

^①Set the correct battery type and battery voltage for first use if it is not a 12V lithium battery as the default setting. Only FLD/GEL/SEL battery types support automatic recognition of 12V/24V battery system.

TROUBLESHOOTING

Error Code	Description	Solution
E00	No error	/
E01	Battery Over-discharged	Battery voltage is too low. DC load will be turned off until battery re-charges to recovery voltage.
E02	Battery Over-voltage	Battery voltage has exceeded controller limit. Check battery system voltage for compatibility with 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 Overload	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 operating temperature limit. Ensure the controller is placed in a well-ventilated, cool, dry place.
E10	Solar Over-voltage	Solar array voltage exceeds controller rated input voltage. Decrease the voltage of solar panels connected to the controller.