

PRODUCT MANUAL

20A IP68 PWM

SOLAR CHARGE CONTROLLER



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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 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.

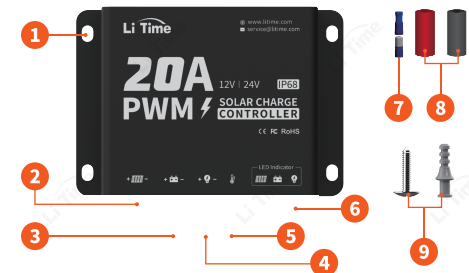
Charge Controller Safety

- 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 an 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 Wall Mounting Holes
- ② Solar Cables
- ③ Battery Cables
- ④ DC Load Cables
- ⑤ External Temperature Sensor
- ⑥ LED Indicators
- ⑦ Insulated Male/Female Bullet Connector
- ⑧ Heat Shrink Tubing
- ⑨ Wall Mounting Screws & Plastic Anchors

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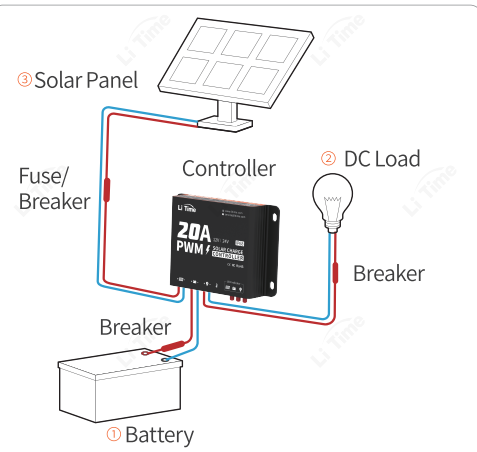
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REFERENCE CONNECTION DIAGRAM

Wear insulating gloves before the operation to prevent safety accidents.
Complete the installation according to the following connection sequence, ① to ②, ③ to ④.

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



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
Protection Class	IP68
No-load Loss	7mA(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)	3.23*2.25*0.79 inches, 82*57.2*20 mm
Net Weight	Appr. 0.35 lbs/0.16kg

① Set the correct battery type and battery voltage for first use by Bluetooth 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.

Battery Types	LI (adjustable)	FLD	SEL	GEL
Equalize Charge Voltage	/	14.8V	14.6V	/
Boost Charge Voltage	14.4V	14.6V	14.4V	14.2V
Float Charge Voltage	/	13.8V		

Boost Charge Recovery Voltage	/	13.2V
Over-discharge Recovery Voltage	12.4V	12.6V
Over-discharge Voltage	10.8V	11.1V
Temperature Compensation Factor	/	-3mv/2v/°C

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.



Bluetooth APP



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LED INDICATORS

LED	Status	Description
PV	Off	Solar panel has no voltage
	Steady On	Solar panel has voltage but not start charge
	Slow Flash	Charging in process
	Fast Flash	Solar system is over-voltage
Battery	Off	Battery is not connected
	Steady On	Battery is on
	Slow Flash	Battery is over-discharged
	Fast Flash	Battery is over-voltage
DC Load	Steady On	Load is on/off
	Slow Flash	Load Overload
	Fast Flash	Load Short Circuit

TROUBLESHOOTING

LED Status	Description	Solution
PV LED Flashes Quickly	Solar Over-voltage	Decrease the voltage of solar panels connected to the controller.
Battery LED Flashes Slowly	Battery Over-discharged	DC load will be turned off until the battery re-charges to recovery voltage.
Battery LED Flashes Quickly	Battery Over-voltage	Check battery system voltage for compatibility with controller.
DC Load LED Flashes Slowly	Load Overload	Reduce load size or upgrade to a controller with higher DC load capacity.
DC Load LED Flashes Quickly	Load Short Circuit	Disconnect the load and check if the rated current of the load is less than 20A.