



MP4012

MPPT Solar Charger



INSTRUCTION MANUAL

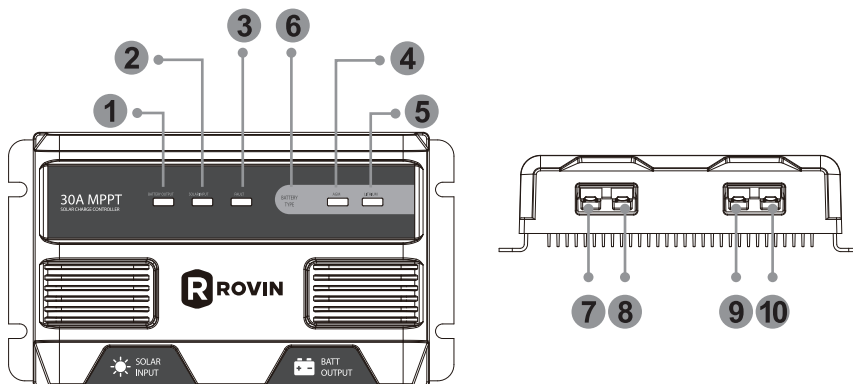
⚠ WARNING & CAUTIONS ⚠

Please read this manual carefully before using the MPPT solar charge controller. Failure to follow these instructions may result in damage to the unit and serious injury to users. For installation, repairs or spare parts services, please consult your licensed dealer or retailer.

- Do not use the controller in a wet environment, or where flammable fumes or gases are present.
- Select correct battery to be charged, considering the battery types, voltage and capacity. Please consult your battery's manufacturer if you are unsure of these information.
- When using the unit to charge a LiFePO4 battery, ensure that the battery contains an inbuilt battery management system (BMS) that features under and over voltage protection with cell balancing.
- Remove personal metal items such as rings, bracelets, necklaces and watches when working with a battery. If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eye, immediately flush eye with running cold water for at least 20 minutes and get medical attention immediately.
- Select correct solar panels (PV Arrays) to be working. The PV Open Circuit Voltage shall not be exceed 50V.
- For risk of electric shock: do not attempt to open, disassemble or repair the controller if damaged. Please keep away from children and pets to touch the unit.
- For more safety tips for when installing, please see the chapter of Installation.

OVERVIEW

Thank you for purchasing this MPPT solar charge controller. This unit features efficiency of maximum power point tracking: by fast tracking the solar panel (PV Array)'s max power point and obtaining maximum energy, the unit is able to optimally convert a higher voltage DC output from solar panels down to the voltage needed to charge batteries, which are widely applied in the motorhome, caravan or single room outdoors.



- | | |
|------------------------------|--|
| 1. LED Battery Output | 6. Switch Button |
| 2. LED Solar Input | 7. Solar Panel high-current connection port (Positive) |
| 3. Fault Indicator | 8. Solar Panel high-current connection port (Negative) |
| 4. AGM Battery Indicator | 9. Battery high-current connection port (Positive) |
| 5. Lithium Battery Indicator | 10. Battery high-current connection port (Negative) |

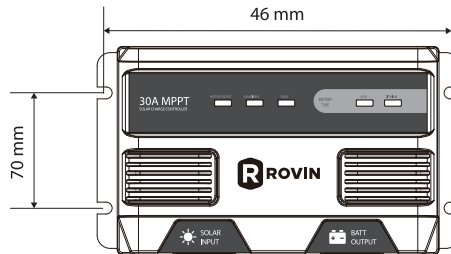
INSTALLATION

Step.1: Check the Environment

- To allow for more efficient charging, the solar charge controller should be installed as close as possible to the battery being charged.
- The solar charge controller should be installed indoors with a dry location, please ensure no liquids (such as water) can enter the solar charge controller.
- For proper air flow to cool down the controller, please install the solar charge controller in a well-ventilated place. Leave at least 15cm of space above and below the controller.

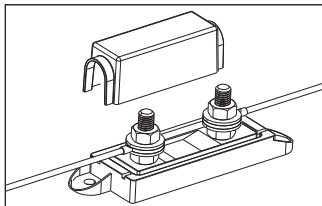
Step.2: Mounting

- The solar charge controller is best mounted parallelly with 4 screws (Not included) through the cutting points. It is recommended to use 6mm diameter screw to fix on. Please see the below reference for marking the drilling holes.



Step.3: Accessories Prepare Before Wiring

Fuses should be connected in series in circuit. Bolt down fuses are preferred because they ensure a low resistance connection. Blade type fuses are not recommended as they can result in a high resistance connection which causes excess heat and may damage the fuse holder or the wiring.

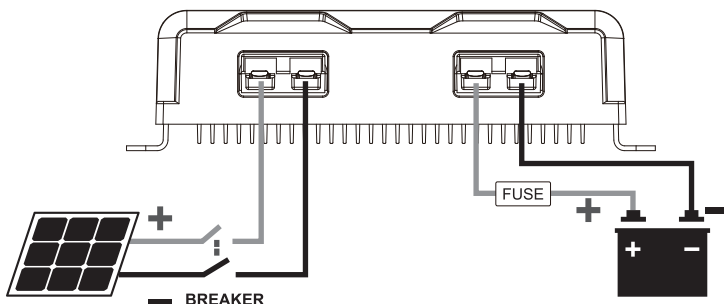


Bolt Down Fuse Holder

Connection	Fuse Rating
Battery - Controller Solar Input - Controller	40Amp

- For circuit breaker do not use self-resetting type as it may be tripped prematurely due to the heat generated by the current flowing through the wires.
- For selection of cables, it is recommend to use copper wire, with 10AWG (5.26mm²) < 5m, or 8AWG (8.37mm²) < 10m.

Step.4: Connection



CHARGING FUNCTION

The MPPT solar charge controller is compatible with Max. 50V solar panel to charge 12V battery. Please follow the steps for starting charging properly.

Charging from Solar Panels

The MPPT Solar Charging Controller supports solar panels of Max 50V. When either PV or BAT is connected, the LED lights up. After the panel and battery are both connected correctly, please choose the battery type (AGM or Lithium) by pressing the switch button, then the unit will start working automatically.

3 stage of MPPT, BOOST, and FLOAT		
Battery type	AGM	LFP (BMS)
MPPT stage	Constant 30Amp output to charge the battery	
Boost Voltage	14.7V	14.5V
Float Voltage	13.4V	13.6V
Boost to Float stage	When the charging current is less than 2A, the boost charging stage ends and the float stage starts. The unit will stop the output and let the battery stand for a moment until the voltage stabilizes. If the battery voltage is lower than the float charging voltage more than 0.3V for the corresponding battery type, it will enter the MPPT stage for recharging.	

LED Indicator

Charging indicator:

SOLAR INPUT (green)	BATTERY OUTPUT (green)	AGM/LITHIUM (green)	Fault (red)	Charging Stage
Short flash	Solid	Solid	off	Bulk or Absorption
Long flash	Solid	Solid	off	Float
Solid	Solid	Solid	off	Fully charged

Standby indicator:

SOLAR INPUT (green)	BATTERY OUTPUT (green)	AGM/LITHIUM (green)	Fault (red)	Trouble
Off	Quick flash	Solid	off	PV input voltage is too low (PV <5V, BAT>11V).
Quick flash	Quick flash	Solid	off	PV input voltage is too low (PV<VBAT+2, BAT>11V). Usually for normal charging, the PV voltage should be 2V higher than that of the BAT. But under this condition, the voltage difference between the PV and the BAT is less than 2V.

Fault indicator:

SOLAR INPUT (green)	BATTERY OUTPUT (green)	AGM/LITHIUM (green)	Fault (red)	Trouble
Solid	Quick flash	Solid	Quick flash	Low BAT voltage warning (PV>14V, BAT<11V)
off	Quick flash	Solid	Quick flash	Low BAT voltage warning (PV<14V, BAT<11V)
Quick flash	off	Solid	Quick flash	PV over voltage (PV>50V)
off	Quick flash	Solid	Quick flash	BAT over voltage (AGM>16V, LFP>14.8V)
off	off	Solid	Quick flash	Over Temperature or internal faulty

TROUBLE SHOOTING

When below errors or improper use happen, the solar charge controller can stop working immediately. This protective reaction helps to prevent the controller or users from the potential damage or Injury:

Fault	Description	Automatic or Manual Solutions
PV Over-voltage	If the SOLAR INPUT voltage exceeds 50V, the product will turn off the output and the FAULT LED will flash.	Check the SOLAR INPUT condition, or choose the the PV with voltage < 50V. After that, if the unit still doesn't work, it may have internal damage. Please consult your licensed dealer or retailer.
BAT Over-voltage	If the BATTERY OUTPUT is over-voltage, the product will turn off the output and the FAULT LED will flash. AGM: Over-voltage shutdown threshold voltage - 16V Over-voltage recovery threshold voltage - 15V LFP: Over-voltage shutdown threshold voltage - 14.8V Over-voltage recovery threshold voltage - 14.6V	Disconnect the BATTERY OUTPUT and verify that a battery with the correct voltage is being used.
BAT Under-voltage	If the BATTERY OUTPUT is under-voltage, the product will charge normally and the FAULT LED will flash. AGM: Low-voltage warning threshold voltage - 11V Low-voltage recovery threshold voltage - 12.6V LFP: Low-voltage warning threshold voltage - 11V Low-voltage recovery threshold voltage - 12.8V	The product works normally under this condition, and the FAULT LED will stop when the battery voltage increases to the low-voltage recovery threshold voltage.
Short Circuit	If the charging or discharging current is too large, the product will stop input and output, and the internal fuse will blow under abnormal conditions.	Disconnect the unit, and check whether the wires and terminal connections are short-circuited.
Reverse Connection	If the SOLAR INPUT is in reverse polarity and the BATTERY OUTPUT is connected correctly, or the SOLAR INPUT and BATTERY OUTPUT are both in reverse polarity, the product will not be damaged and will not work. WARNING: If the PV is connected correctly and the BAT is in polarity, the external fuse will be burnt. If there is no external fuse connected, the product itself will be damaged.	Check the wires and re-connect the SOLAR INPUT, BATTERY OUTPUT, and external fuse if necessary.
Over-temperature	If the internal temperature of the product exceeds 85°C, the product will stop the output.	Leave the product for cooling and wait until the temperature is below 75°C, the product will return to work automatically.

SPECIFICATION

	MODEL	MP4012
PV input	Maximum PV Open Circuit Voltage	50V
	MPPT Voltage Range	(VBAT+2V)~40V
	MPPT Tracking Efficiency	≥99%
BAT output	Battery Voltage Range	8~16V
	Maximum Charge Current	30A
	Battery Type	AGM, LiFePO4
	Maximum Rated Charge Power	390W/12V
	Maximum Conversion Efficiency	96%
Others	Grounding	Common Negative
	Leakage Current	<30mA
	Working Temperature Range	-20~50°C

WARRANTY INFORMATION

Our product is guaranteed to be free from manufacturing defects for a period of 12 Months. If your product becomes defective during this period, Electus Distribution will repair, replace, or refund where a product is faulty; or not fit for intended purpose.

This warranty will not cover modified product; misuse or abuse of the product contrary to user instructions or packaging label; change of mind and normal wear and tear.

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and failure does not amount to a major failure.

To claim warranty, please contact the place of purchase. You will need to show receipt or other proof of purchase. Additional information may be required to process your claim.

Any expenses relating to the return of your product to the store will normally have to be paid by you.

The benefits to the customer given by this warranty are in addition to other rights and remedies of the Australian Consumer Law in relation to the goods or services to which this warranty relates.

This warranty is provided by:

Electus Distribution

Address 46 Eastern Creek Drive, Eastern Creek NSW 2766

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