



MP4010

Solar Charger



INSTRUCTION MANUAL

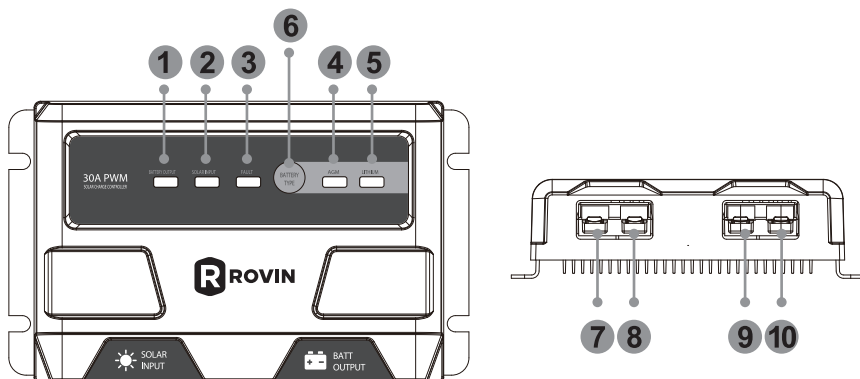
⚠ WARNING & CAUTIONS ⚠

Please read this manual carefully before using the PWM Solar Charger. 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 solar charger 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 28V.
- For risk of electric shock: do not attempt to open, disassemble or repair the charger 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

This PWM solar charger is a common anode solar charging controller based on series pulse width modulation (PWM) technology. The charger has built-in high-current connector terminals, which is easy to use and fully automatic. Suitable for small and medium-sized independent photovoltaic systems, the products are very economical and easy to use.



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

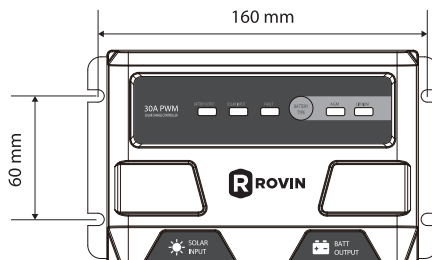
INSTALLATION

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.

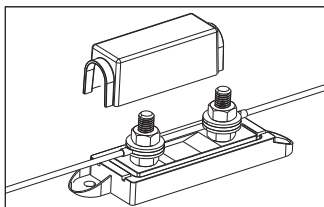
Step.2: Mounting

- 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.

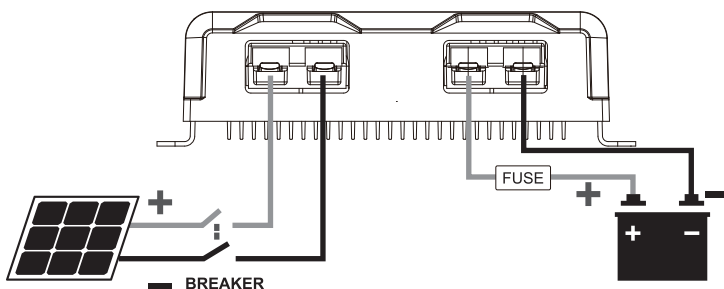


Bolt Down Fuse Holder

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 PWM solar charge controller is compatible with Max. 28V solar panel to charge 12V battery. Please follow the steps for starting charging properly.

Charging from Solar Panels

The PWM Solar Charging Controller supports solar panels of Max 28V. 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.

Charge Type	2 stage of CHARGE AND FLOAT	
Battery Type	AGM	LFP (BMS)
FULL Voltage	14.7V	14.5V
Float Voltage	13.4V	13.6V

LED Indicator

Charging indicator:

SOLAR INPUT (green)	BATTERY OUTPUT (green)	AGM/LITHIUM (green)	Fault (red)	Charging Stage
Short flash	Solid	Solid	off	Charge
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 too low to indicate PV <5V, BAT>11V
Quick flash	Quick flash	Solid	off	PV input voltage too low for charging 5V<PV<(VBAT+1V),BAT>11V

Fault indicator:

SOLAR INPUT (green)	BATTERY OUTPUT (green)	AGM/LITHIUM (green)	Fault (red)	Trouble
Solid	Quick flash	Solid	Quick flash	BAT voltage low warning PV>(VBAT+1V), BAT<11V while PV charging
off	Quick flash	Solid	Quick flash	BAT voltage low warning PV<(VBAT+1V), 8V<BAT<11V
Quick flash	off	Solid	Quick flash	PV over voltage
off	Quick flash	Solid	Quick flash	BAT over voltage
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 28 V, 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 <28V. 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.	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.	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	MP4010
PV input	Maximum PV Open Circuit Voltage	28V
	PV Voltage Range	(VBAT+1V)~28V
BAT output	Battery Voltage Range	8~16V
	Maximum Charge Current	30A
	Battery Type	AGM, LiFePO4
	Maximum Rated Charge Power	390W/12V
Others	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

Ph. 1300 738 555