Maximum Power Point Tracking Series

PY-ML4860 48V 60A MPPT Solar Charge Controller

MPPT Solar Charge Controller

Model	ML4860			
Battery Voltage	12V	24V	36V	48V
Max.Solar Power	800W	1600W	2400W	3200W
Solar Vmp	17V~120V	36V~120V	55V~120V	70V~120V
Max.Solar Voc	150V			
Max.Charging Current	60A			
Max.Load Power	240W	480W	720W	960W

CE RoHS

MPPT · 12V/24V/36V/48V Auto · P Pmax 0 0.5s · INPUT 150V Max. · LCD DISPLAY · 5 years · IP32

Features

● With the advanced dual-peak or multi-peak tracking technology, when the solar panel is shadowed or part of the panel fails resulting in multiple peaks on the I-V curve, the controller is still able to accurately track the maximum power point.

● A built-in maximum power point tracking algorithm can significantly improve the energy utilization efficiency of photovoltaic systems, and raise the charging efficiency by 15% to 20% compared with the conventional PWM method.

● A combination of multiple tracking algorithms enables accurate tracking of the optimum working point on the I-V curve in an extremely short time.

● The product boasts an optimum MPPT tracking efficiency of up to 99.9%.

● Advanced digital power supply technologies raise the circuit's energy conversion efficiency to as high as 98%.

● Different charging program options including those for gel batteries, sealed batteries and open batteries, customized ones, etc. are available.

● The controller features a limited current charging mode. When the solar panel power exceeds a certain level and the charging current is larger than the rated current, the controller will automatically lower the charging power and bring the charging current to the rated level.

● Instantaneous large current startup of capacitive loads is supported.

● Automatic recognition of battery voltage is supported.

● LED fault indicators and an LCD screen which can display abnormality information help users to quickly identify system faults.

● Historical data storage function is available, and data can be stored for up to a year.

● The controller is equipped with an LCD screen with which users can not only check device operating data and statuses, but also modify controller parameters.

● The controller supports standard Modbus protocol, fulfilling the communication needs of various occasions.

● All communications are electrically isolated, so users can rest assured in usage.

● The controller employs a built-in over-temperature protection mechanism. When temperature surpasses the set value, the charging current will decline in linear proportion to the temperature and discharging will be halted so as to curb the temperature rise of the controller, effectively keeping the controller from being damaged by overheat.

● With the help of an external battery voltage sampling function, battery voltage sampling is exempted from the effect of line loss, making control more precise.

● Featuring a temperature compensation function, the controller can automatically adjust charging and discharging parameters in order to extend the battery's service life.

● The controller also features a battery over-temperature protection function, and when the external battery temperature exceeds the set value, charging and discharging will be shut off so as to protect components from being damaged by overheat.

● TVS lighting protection

Appearance picture is as below
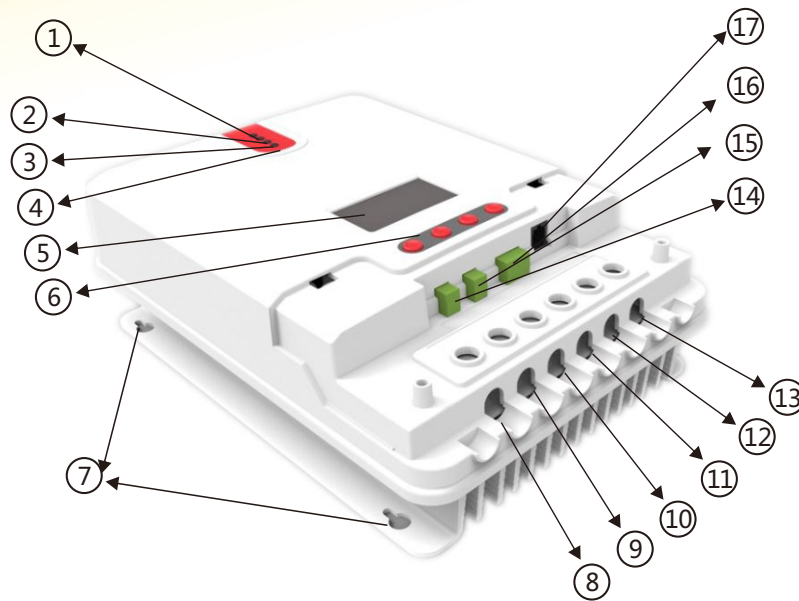
No.	Item	No.	Item
①	Charging indicator	⑩	Battery "-" interface
②	Battery indicator	⑪	Load "-" interface
③	Load indicator	⑫	Battery "+" interface
④	Abnormality indicator	⑬	Load "+" interface
⑤	LCD screen	⑭	External temperature sampling interface
⑥	Operating keys	⑮	Battery voltage compensation interface
⑦	Installation hole	⑯	RS485 communication interface
⑧	Solar panel "+" interface	⑰	RS232 communication interface
⑨	Solar panel "-" interface		

Product Detail
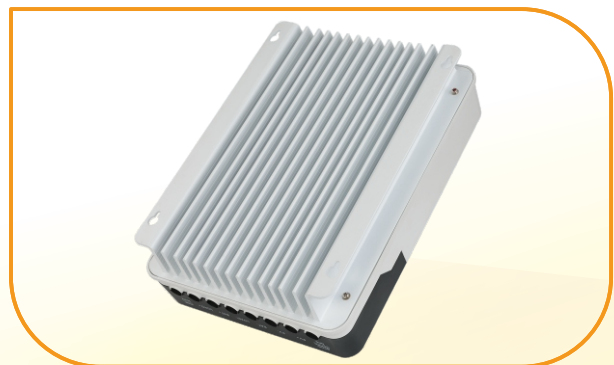
Wiring diagram is as below

Remove the two screws on the solar charge controller panel, and then start wiring. For installation security, we recommend the following wiring sequence. However, wiring without following this order will not damage the solar charge controller.
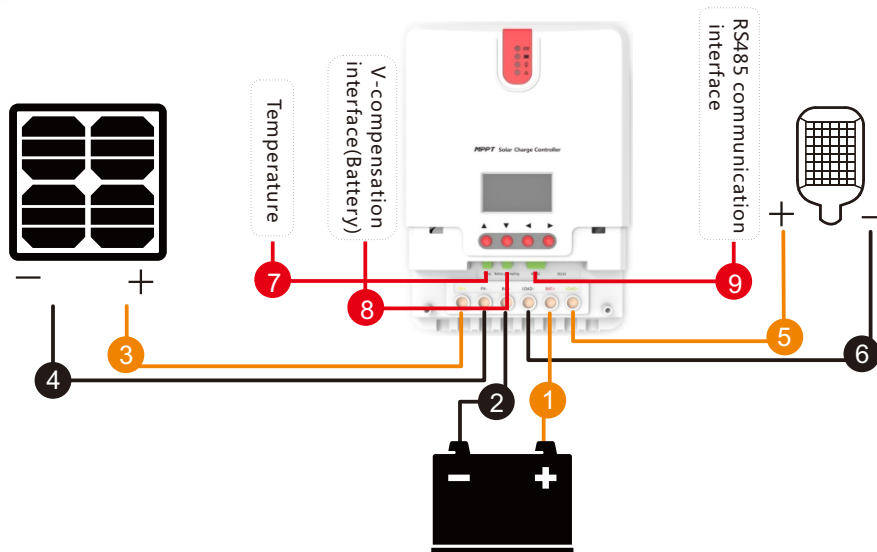
① **External temperature sampling interface connection**

② **Battery voltage sampling line connection**

③ **Communication cable connection**

④ **Connect power line**

⚡ Warning: Risk of electric shock! We strongly recommend access insurance or circuit breaker at photovoltaic array end, load end and battery end, to prevent electric shock from occurring during wiring or misoperation. Before wiring, ensure that insurance or circuit breaker is disconnected.

⚡ Warning: High pressure danger! Photovoltaic array may generate very high open circuit voltage. Before wire connection, disconnect the breaker or insurance. Be careful in the process of wiring.

⚡ Warning: Risk of explosion. Short circuit of battery positive and negative terminals and wires connected to them will cause fire or explosion. Please be careful during operation.

Please connect battery first, then connect load, and finally connect the solar panel, please follow the connection mode of "+" first and then "-".

⑤ **Power On**

Tip: ML series solar charge controller only starts the solar charge controller via wiring at the battery end, but ML - LI can start the solar charge controller via power of PV array,. This applies to starting the solar charge controller and activating lithium battery when lithium battery BMS is in the protection state and cannot export electricity externally.

When all the power line connections are firm and reliable, recheck whether the wiring is correct, and whether positive and negative ends are connected reversely. After confirmation, connect battery fuse or circuit breaker, observe whether LED indicator is lit, and whether LCD screen displays content. If there is no display, disconnect the fuse or circuit breaker immediately and recheck whether the circuit connection is correct.

If battery is powered on normally, connect the solar panel. If solar charge controller charging indicators are on normally or flashing, start battery charging.

When battery and photovoltaic is well connected, then connect load fuse or circuit breaker. At this time, you can use manual mode to test whether the load On and Off is normal. See load working mode and operation.

⚡ Warning: When the solar charge controller is under normal charging state, disconnecting battery connection will affect solar charge controller DC load. In a severe case, the load can be damaged.

⚡ Warning: Within 10 minutes after solar charge controller charging stops, battery reverse polarity operation may damage internal components of the solar charge controller.

⚠ Attention:

1) Battery insurance installation site should be as close as possible to the battery end. Recommended installation distance shall be no more than 150 mm.

2) When solar charge controller is not connected to a remote temperature sensor, battery temperature is a fixed value of 25 ℃.

3) If the inverter is connected in the system, please connect inverter directly with battery, and do not connect solar charge controller with the load end.

⑥ **Close wiring cover**

Product Specification Parameter

Parameter	Value
Model	PY-ML4860
System voltage	12V/24V/36V/48V Auto
No-load loss	0.7 W to 1.2W
Battery voltage	9V to 70V
Max. solar input voltage	150V (25°C), 145V (-25°C)
Max. power point voltage range	Battery voltage +2V to 120V
Rated charging current	60A
Rated load current	20A
Max. capacitive load capacity	10000uF
Max. photovoltaic system input power	800W/12V; 1600W/24V; 2400W/36V; 3200W/48V
Conversion efficiency	≤ 98%
MPPT tracking efficiency	> 99%
Temperature compensation factor	-3mv/°C/2V (default)
Operating temperature	-35°C to +45°C
Waterproof level	IP32
Weight	3.6kg
Communication method	RS232 RS485
Altitude	≤ 3000m
Product dimensions	285*205*93mm