

**POWERTECH**

**MP3750**

# 12/24V 10A Solar Charge Controller with USB



**Instruction Manual**

## SAFETY INFORMATION

- Read all of the instructions in the manual before installation.
- DO NOT disassemble or attempt to repair the controller.
- Install external fuse or breaker as required.
- Do disconnect the solar module and fuse/ breakers near to battery before installing or moving the controller.
- Power connections must remain tight to avoid excessive heating from a loose connection.
- Only charge batteries that comply with the parameters of controller.
- Battery connection may be wired to one battery or a bank of batteries.
- Risk of electric shock, the PV and load can produce high voltages when the controller is working.

## OVERVIEW

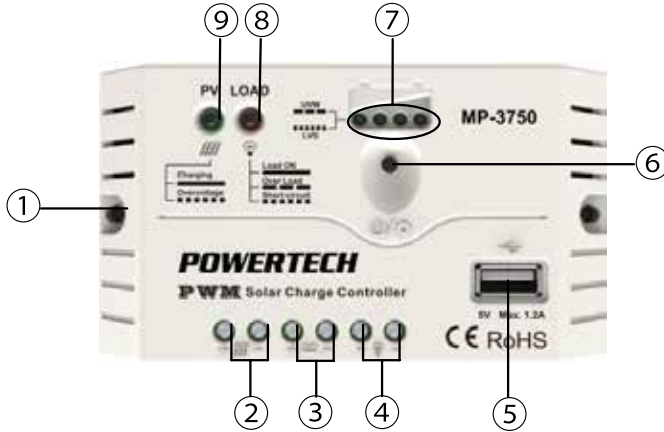
PWM charge controller with USB output that adopts the most advanced digital technique. It's an easy operation and cost efficient controller featured with:

- 3-Stage intelligent PWM charging: Bulk, Boost/Equalize, Float
- Support 3 charging options: Sealed, Gel, and Flooded
- Battery status LED indicator indicates battery situation
- Battery temperature compensation function
- USB will provide power supply that can charge relevant electronic equipment
- Battery type and load output can be set via button
- Extensive Electronic protection

## PACKAGE CONTENTS

1x Charge Controller  
1x User Manual

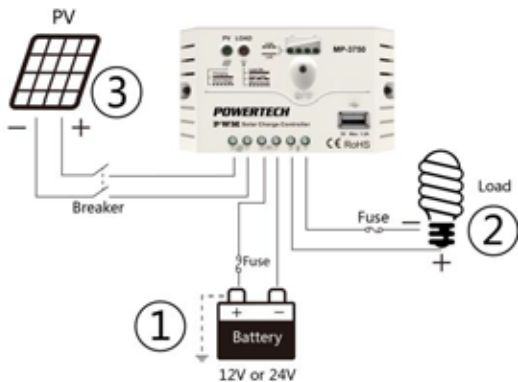
## PRODUCT FEATURES



- |                           |                                  |
|---------------------------|----------------------------------|
| 1. Mounting Hole 4.5 dia. | 6. Button                        |
| 2. PV Terminals           | 7. Battery status LED indicator  |
| 3. Battery Terminals      | 8. Load status LED indicator     |
| 4. Load Terminals         | 9. Charging status LED indicator |
| 5. USB Output Port        |                                  |

## WIRING

1. Connect components to the charge controller in the sequence as shown below and pay careful attention to the "+" and "-". Please don't insert the fuse or turn on the breaker during the installation.
2. After power on the controller, check the Battery LED indicator on the controller, it will be on solid green. Otherwise please refer to section 8. Always connect the battery first, in order to allow the controller to recognize the system voltage.
3. The battery fuse should be installed as close to battery as possible. The suggested distance is within 150mm.

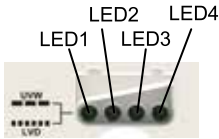


## LED INDICATORS

Charging and load status indicator

Indicator	Color	Status	Instruction
Charging status LED indicator	Green	On Solid	In Charging
	Green	OFF	No Charging
	Green	Fast Flashing	Battery Over Voltage
Load status LED indicator	Green	On Solid	Load ON
	Green	OFF	Load OFF
	Green	Slowly Flashing	Load over load
	Green	Fast Flashing	Load short circuit

Battery status indicator



LED1	LED2	LED3	LED4	Battery Status
Slowly Flashing	x	x	x	Under voltage
Fast Flashing	x	x	x	Over discharge
Battery charging stage (PV indicator is on)				
○	○	x	x	$12.8V < U_{bat} < 13.4V$
○	○	○	○	$13.4V < U_{bat} < 14.1V$
○	○	○	○	$14.1V < U_{bat}$
Battery discharging stage (LOAD indicator is on)				
○	○	○	x	$12.8V < U_{bat} < 13.4V$
○	○	x	x	$12.4V < U_{bat} < 12.8V$
○	x	x	x	$U_{bat} < 12.4V$

Note: Voltage value for 12V system at 25°C, please use 2x in 24V system; "O"LED indicator on; "x"LED indicator off.

## SETTING OPERATION

### 1. Load ON/OFF Setting

When the controller is powered on, press the button to control the load output.

NOTE: The USB will output when the load is on.

### 2. Battery Type Setting

- Step 1: Enter setting mode by pressing button for 5s until the battery status LEDs are flashing.
- Step 2: Select the desired mode by pressing button.
- Step 3: The mode will be saved automatically without any operation for 5S and LED will stop flashing.

Battery Type Indicator

LED1	LED2	LED3	Battery type
○	×	×	AGM(Default)
○	○	×	Gel
○	○	○	Flooded

NOTE: "O" LED indicator on "x" LED indicator off

## PROTECTION

### Battery Over Voltage Protection

When the battery voltage reaches to the set point of Over Voltage Disconnect Voltage(OVD), the controller will stop charging the battery to protect the battery from being over charged to break down.

### Battery Over Discharge Protection

When the battery voltage reaches to the set point of Low Voltage Disconnect Voltage(LVD), the controller will stop discharging the battery to protect the battery from being over discharged.

### Load Overload Protection

Load will be switched off when 1.25 times rated current overload happens. User has to reduce load appliance, then press the button or repower the controller.

### Load Short Circuit Protection

Load will be switched off when load short circuit ( $\geq 3$  times rated current) happens. User has to clear short circuit, then press the button or repower the controller.

### High Voltage Transients Protection

The controller is protected against small high voltage transients. In lightning prone areas, additional external suppression is recommended.

## TROUBLESHOOTING

ISSUE	LIKELY CAUSE	SOLUTION
LED Charging indicator turn off during daytime when sunshine falls on PV modules properly	PV array disconnection	Confirm that PV and battery wire connections are correct and tight
No LED indicator	Battery voltage maybe less than 8V	Measure battery voltage with the multi-meter. Min.8V can start up the controller
Charging status LED indicator Fast flashing	Battery Over Voltage	Check if battery voltage is higher than OVD, and disconnect the PV
LED1 Fast flashing	Battery over discharged	When the battery voltage is restored to or above LVR point (low voltage reconnect voltage), the load will recover
Load status LED indicator slowly flashing	Load over load <sup>1</sup>	<ul style="list-style-type: none"><li>• Please reduce the number of electric equipments.</li><li>• Press the button or repower the controller.</li></ul>
Load status LED indicator fast flashing	Load short circuit	<ul style="list-style-type: none"><li>• Check carefully loads connection, clear the fault.</li><li>• Press the button or repower the controller.</li></ul>

<sup>1</sup> When load current reaches 1.25 times, 1.5 times and 2 times more than nominal value, the controller will automatically turn off loads in 60s, 5s and 1s respectively.

## SPECIFICATIONS

Nominal system voltage	12/24VDC Auto
Rated charge current	10A
Rated discharge current	10A
Battery input voltage range	8V~32V
Max. PV open circuit voltage	50V
Self-consumption	12V $\leq$ 5mA; 24V $\leq$ 7mA
Charge Circuit Voltage Drop	$\leq$ 0.13V
Discharge Circuit Voltage Drop	$\leq$ 0.17V
Temperature compensation coefficient	-5mV/ °C /2V
USB Output Port	5VDC/1.2A
Working environment temperature	-35 °C ~ +55 °C
Humidity	$\leq$ 95% N.C.
Enclosure	IP20
Grounding	Common Positive
Overall dimension	120.3 x 67 x 21.8mm
Mounting dimension	111.5mm
Mounting hole size	4.5 dia.
Terminals	12AWG/4mm <sup>2</sup>
Net weight	0.10kg

### Battery Voltage Control Parameters

Below parameters are in 12V system at 25 °C, please double the values in 24V system

Battery Type	AGM	Gel	Flooded
Over Voltage Disconnect Voltage	16.0V	16.0V	16.0V
Charging Limit Voltage	15.0V	15.0V	15.0V
Over Voltage Reconnect Voltage	15.0V	15.0V	15.0V
Equalize Charging Voltage	14.6V	--	14.8V
Boost Charging Voltage	14.4V	14.2V	14.6V
Float Charging Voltage	13.8V	13.8V	13.8V
Boost Reconnect Charging Voltage	13.2V	13.2V	13.2V
Low Voltage Reconnect Voltage	12.6V	12.6V	12.6V
Under Voltage Warning Reconnect Voltage	12.2V	12.2V	12.2V
Under Voltage Warning Voltage	12.0V	12.0V	12.0V
Low Voltage Disconnect Voltage	11.1V	11.1V	11.1V
Discharging Limit Voltage	10.6V	10.6V	10.6V
Equalize Duration	120 min.	-	120 min.
Boost Duration	120 min.	120 min.	120 min.





## 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