

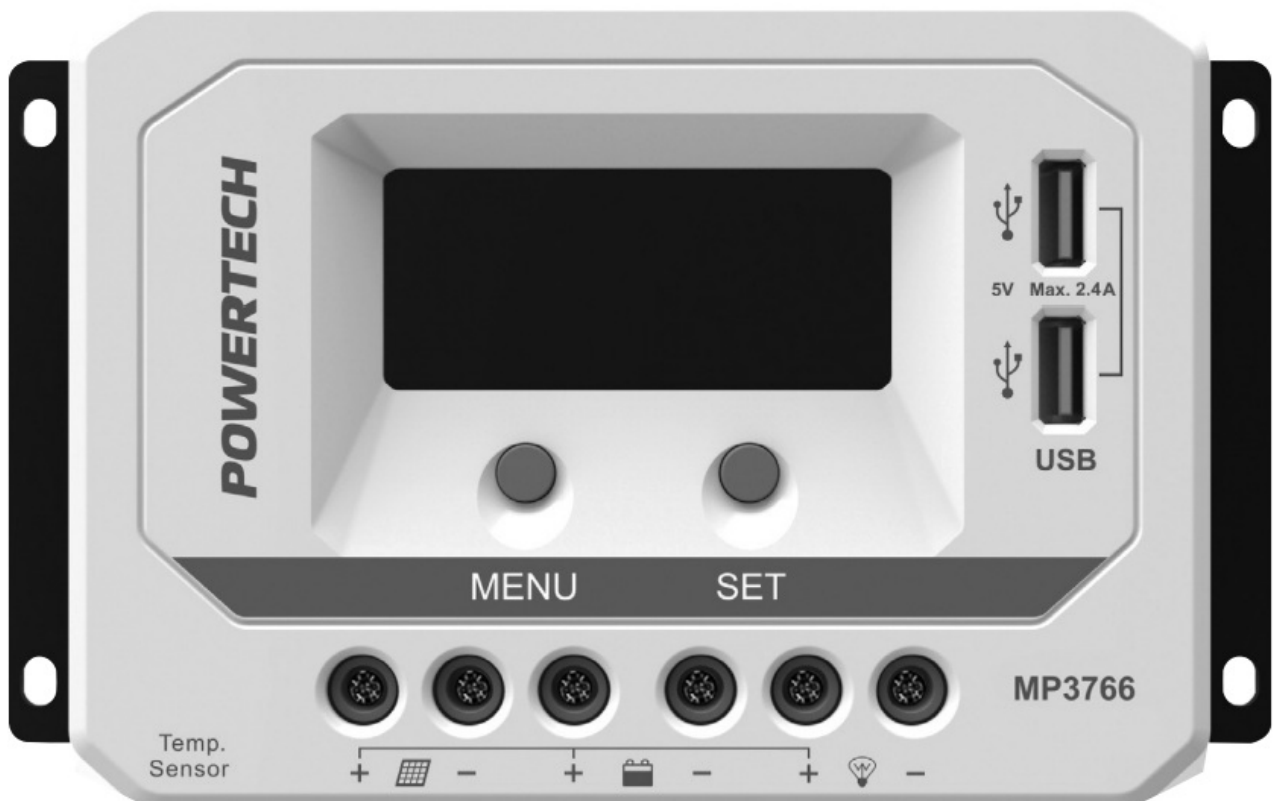


POWERTECH MP3766 PWM Solar Charge Controller with LCD Display Instruction Manual

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POWERTECH

MP3766
PWM Solar Charge
Controller with
LCD display
for Lead Acid Batteries



Instruction Manual

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OVERVIEW:

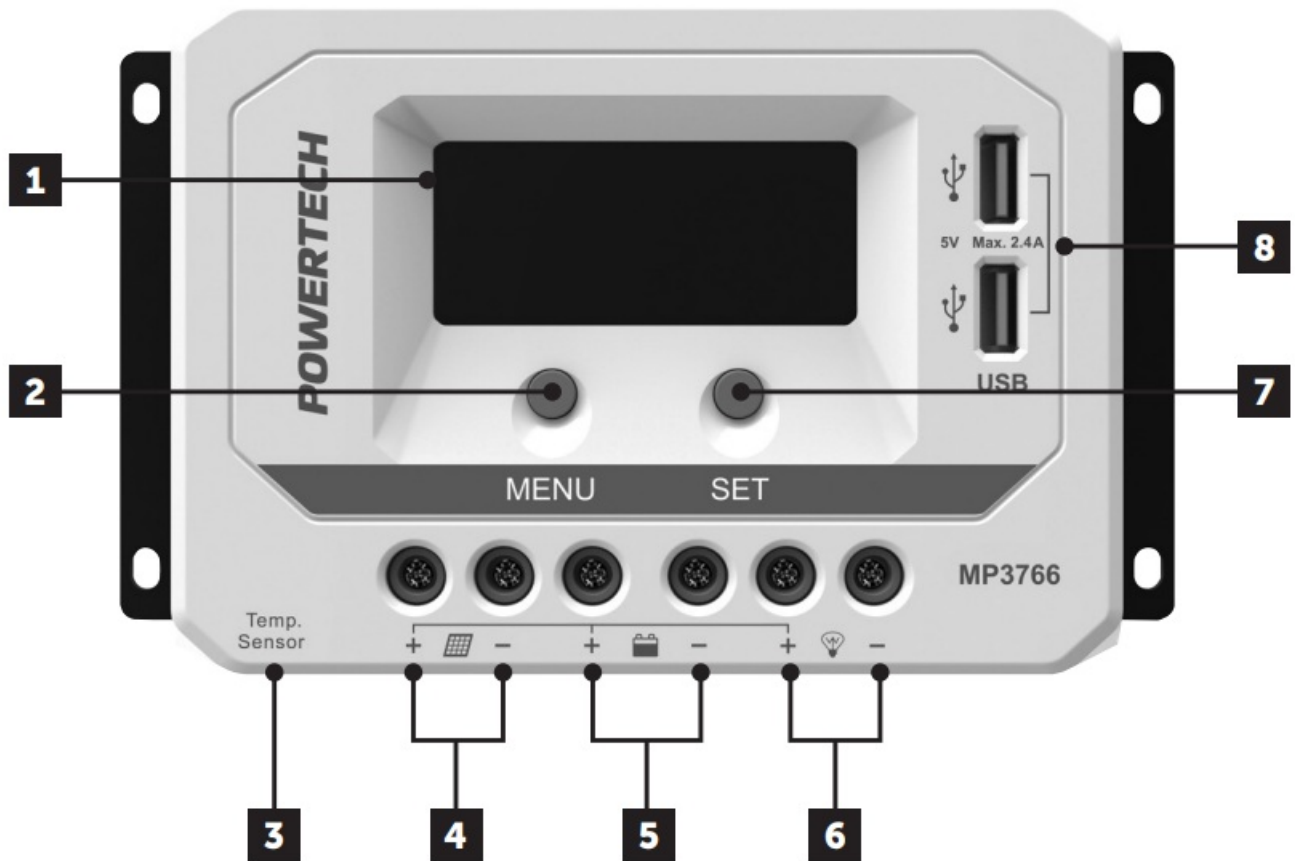
Please reserve this manual for future review.

The PWM charge controller with a built-in LCD display that adopts multiple load control modes and can be widely used on solar home systems, traffic signals, solar street lights, solar garden lamps, etc.

The features are listed below:

- High-quality components of ST and IR
- Terminals have UL and VDE certification, the product is safer and more reliable
- A controller can work continuously at full load within an environment temperature range from -25°C to 55°C 3-Stage intelligent PWM charging: Bulk, Boost/Equalize, Float
- Support 3 charging options: Sealed, Gel, and Flooded
- LCD display design dynamically displays the device's operating data and working condition
- Double USB output
- With simple button settings, the operation will be more comfortable and convenient
- Multiple load control modes
- Energy statistics function
- Battery temperature compensation function
- Extensive Electronic protection

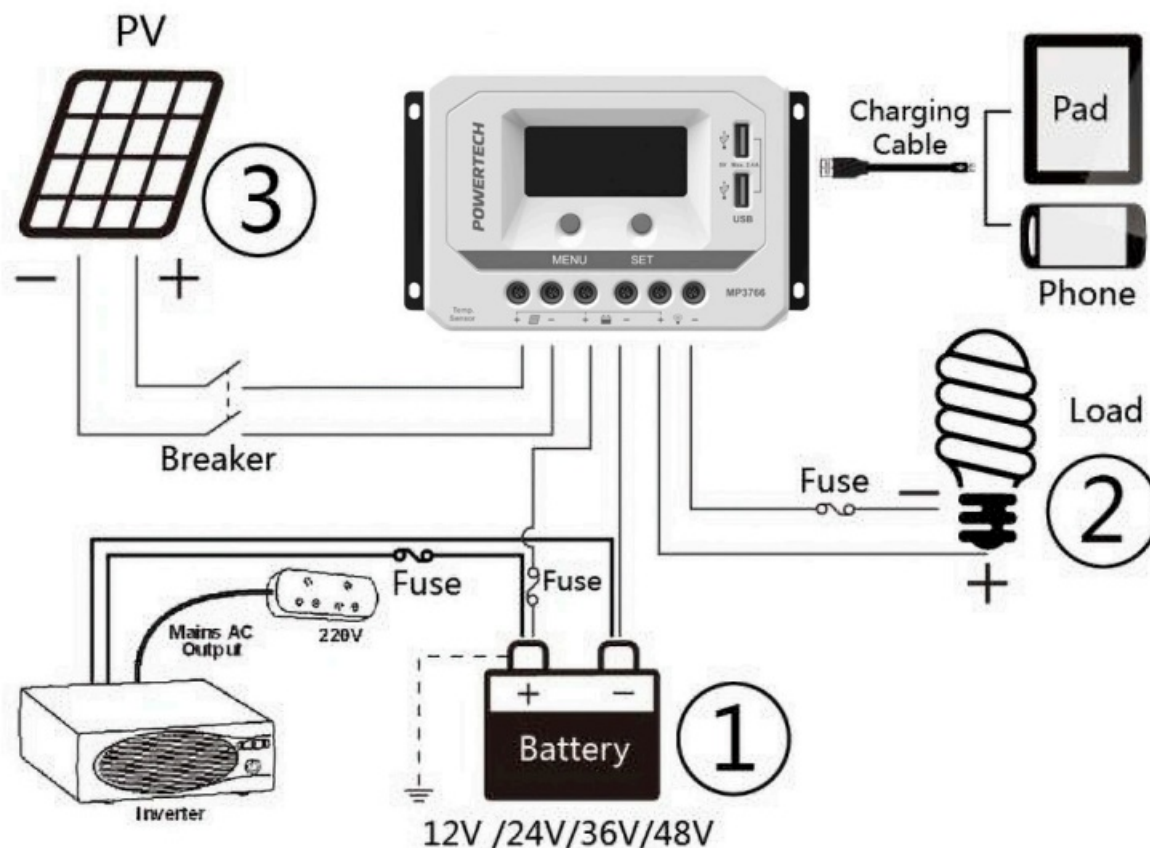
PRODUCT FEATURES:



1	LCD	5	Battery Terminals
2	MENU Button	6	Load Terminals
3	RTS Port	7	SET Button
4	PV Terminals	8	USB Output Ports*

*USB output ports provide the power supply of 5VDC/2.4A and have short circuit protection.

CONNECTION DIAGRAM:



1. Connect components to the charge controller in the sequence as shown above and pay attention to the “+” and “-”. Please don’t insert the fuse or turn on the breaker during the installation. When disconnecting the system, the order will be reserved.
2. After powering on the controller, check the LCD. 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.
4. This regulator is a positive ground controller. Any positive connection of solar, load, or battery can be earth grounded as required.



CAUTION

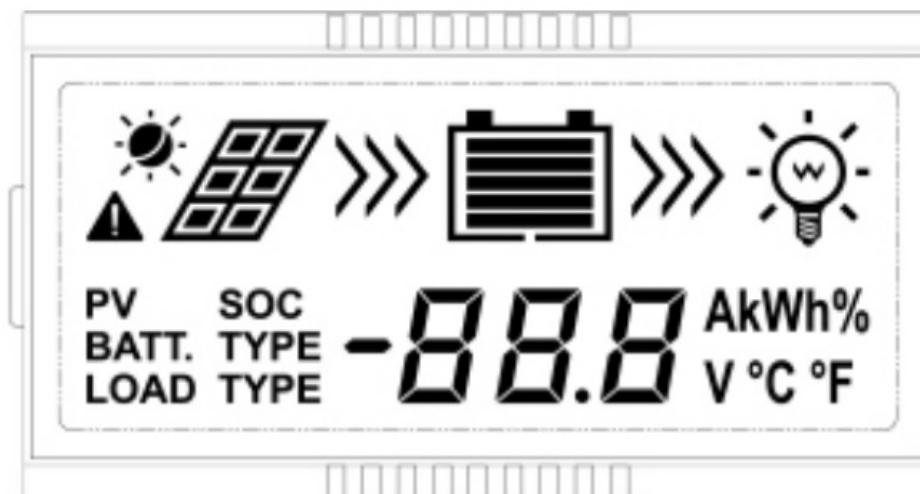
NOTE: Please connect the inverter or other load that has a large start current to the battery rather than to the controller if the inverter or other load is necessary.

OPERATION:








- Battery Function

Button	Function
MENU button	<ul style="list-style-type: none"> • Browse interface • Setting parameter
SET button	<ul style="list-style-type: none"> • Load ON/OFF • Clear error • Enter into Set Mode • Save data

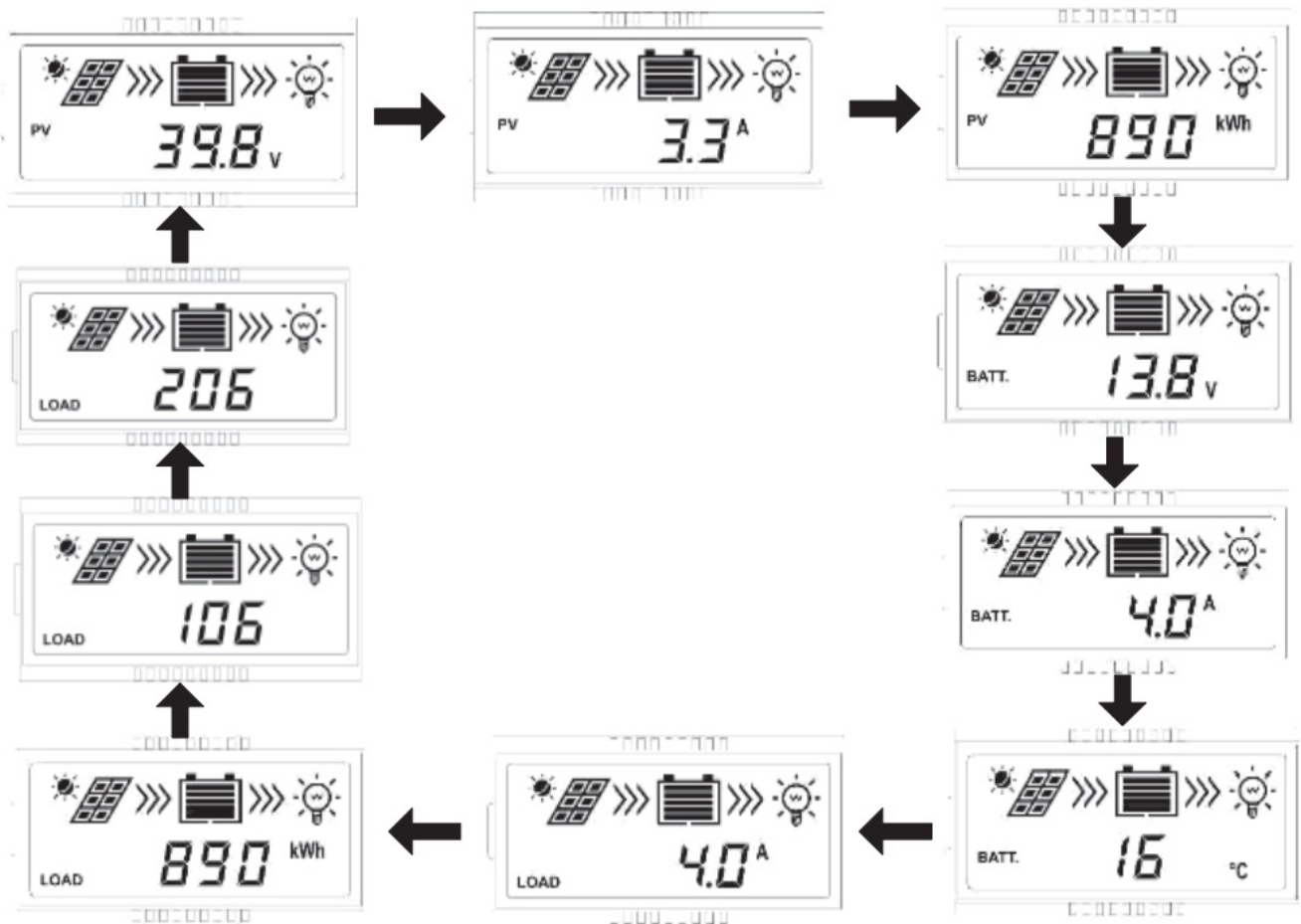
- LCD Display



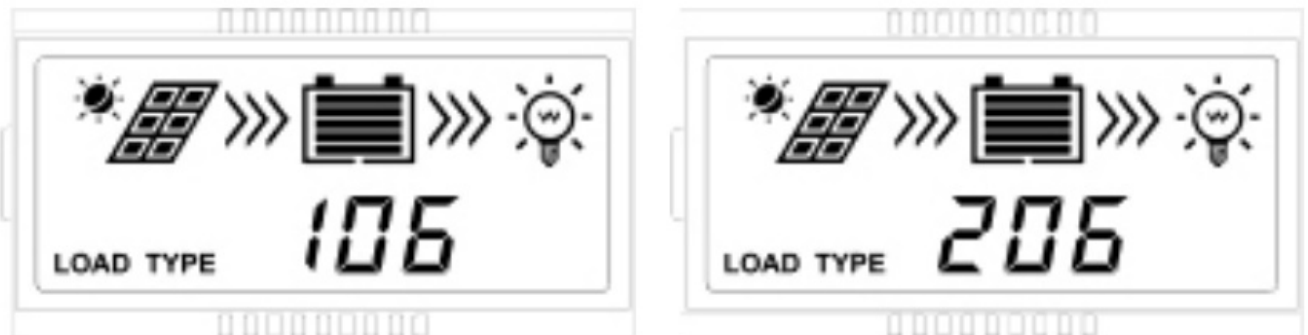
- status Description

Name	Symbol	Status
PV array		Day
		Night
		No charge
		Charging
	PV	PV array's voltage, current, and generate energy
Battery		Battery capacity, In Charging
	BATT.	Battery Voltage, Current, Temperature
	BATT. TYPE	Battery Type
Load		(Load) dry contact connected
		(Load) dry contact disconnected
	LOAD	Load Voltage, Current, Load mode

- Browse Interface











1. When no operation, the interface will be an automatic cycle, but the following two interfaces not be displayed.



- Accumulative power zero clearing: Under the PV power interface, press SET button and hold on 5s then the value blink, press SET button again to clear the value.
- Setting temperature unit: Under the battery temperature interface, press the SET button and hold on 5s to switch.

- Fault Indication

Status	Icon	Description
Battery over-discharged	 	Battery level shows empty, battery frame blink, fault icon blink
Battery over voltage	 	Battery level shows full, battery frame blink, and fault icon blink.
Battery overheating	 	Battery level shows current value, battery frame blink, and fault icon blink.
Load failure	 	Load overloads, Load short circuit

1When load current reaches 1.02-1.05 times, 1.05-1.25 times, 1.25-1.35 times, and 1.35-1.5 times more than the nominal value, the controller will automatically turn off loads in the 50s, 0s, 10s, and 2s respectively

• Load Mode Setting

Operating Steps:

Under the load mode setting interface, press the SET button and hold on 5s till the number begin flashing, then press the MENU button to set the parameter, and press the SET button to confirm.

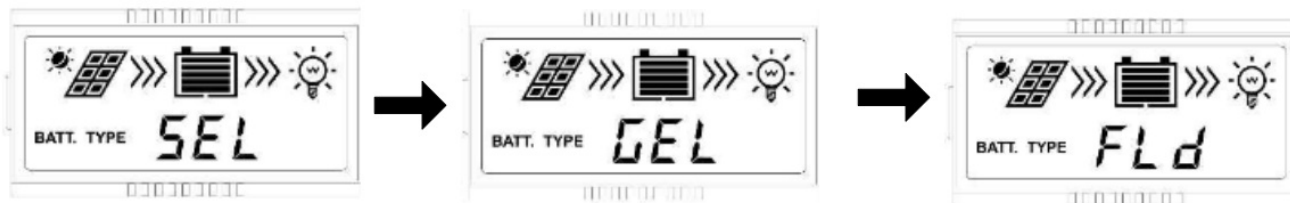
1**	Timer 1	2**	Timer 2
100	Light ON/OFF	2 n	Disabled
101	Load will be on for 1 hour since sunset	201	Load will be on for 1 hour before sunrise
102	Load will be on for 2 hours since sunset	202	Load will be on for 2 hours before sunrise
103-113	Load will be on for 3-13 hours since sunset	203-213	Load will be on for 3-13 hours before sunrise
114	Load will be on for 14 hours since sunset	214	Load will be on for 14 hours before sunrise
115	Load will be on for 15 hours since sunset	215	Load will be on for 15 hours before sunrise
116	Test mode	2 n	Disabled
117	Manual mode (Default load ON)	2 n	Disabled

NOTE: Please set Light ON/OFF, Test mode, and Manual mode via Timer1. Timer2 will be disabled and display “2 n”.

• Battery Type

Operating Steps:

Under the Battery Voltage interface, press the SET button and hold on 5s then enter into the interface of the Battery type setting. After choosing the battery type by pressing the MENU button, waiting for 5s, or pressing the SET button again to modify it successfully.



1. Sealed (Default)

2. Gel




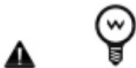
3. Flooded

NOTE: Please refer to the battery voltage parameters table for the different battery type.

PROTECTION:

Protection	Conditions	Status
PV Reverse Polarity	When the battery is correct connecting, the PV can be reversed.	The controller is not damaged
Battery Reverse Polarity	When the PV is not connecting, the battery can be reversed.	
Battery Over Voltage	The battery voltage reaches the OVD	Stop charging
Battery Over Discharge	The battery voltage reaches the LVD	Stop discharging
Battery Overheating	Temperature sensor is higher than 65°C	Output is OFF
Controller Overheating	Temperature sensor is less than 55°C	Output is ON
	Temperature sensor is higher than 85°C	Output is OFF
	Temperature sensor is less than 75°C	Output is ON
Load Short Circuit	Load current >2.5 times rated current In One short circuit, the output is OFF 5s; Two short circuits, the output is OFF 10s; in Three short circuits, the output is OFF 15s; Four short circuits, the output is OFF 20s; Five short circuits, the output is OFF 25s; Six short circuits, the output is OFF	Output is OFF Clear the fault: Restart the controller or wait for one night-day cycle (night time > 3 hours).
Load Overload	Load current >2.5 times rated current 1.02-1.05 times, the 50s; 1.05-1.25 times, 30s; 1.25-1.35 times, 10s; 1.35-1.5 times, 2s	Output is OFF Clear the fault: Restart the controller or wait for one night-day cycle (night time > 3 hours).
Damaged RTS	The RTS is short-circuited or damaged	Charging or discharging at 25°C

TROUBLESHOOTING:

Faults	Possible Reasons	Troubleshooting
The LCD is off during the daytime when sunshine falls on PV modules properly	PV array disconnection	Confirm that PV wire connections are correct and tight.
The wire connection is correct, LCD does not display	1) the Battery voltage is lower than 9V 2)PV voltage is less than battery voltage	1)Please check the voltage of the battery. At least 9V voltage to activate the controller. 2)Check the PV input voltage which should be higher than the batteries.
 Interface blink	overvoltage	Check if the battery voltage is higher than the OVD point (over-voltage disconnect voltage), and disconnect the PV.
 Interface blink	Battery over-discharged	When the battery voltage is restored to or above LVR point (low voltage reconnect voltage), the load will recover
 Interface blink	Battery overheating	The controller will automatically turn the system off. But while the temperature declines to be below 50°C, the controller will resume.
 Interface blink	Overload or Short circuit	Please reduce the number of electric equipment or check carefully the loads connection.

SPECIFICATIONS:

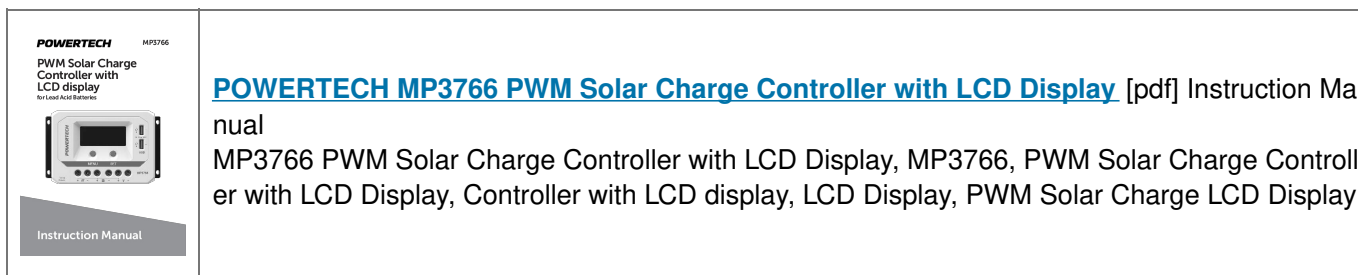
Model:	MP3766
Nominal system voltage	12/24VDC, Auto
Battery input voltage range	9V-32V
Rated charge/discharge current	30A@55°C
Max. PV open circuit voltage	50V
Battery type	Sealed(Default) / Gel / Flooded
Equalize Charging Voltage^	Sealed:14.6V / Gel: No / Flooded:14.8V
Boost Charging Voltage^	Sealed:14.4V / Gel:14.2V / Flooded:14.6V
Float Charging Voltage^	Sealed / Gel / Flooded:13.8V
Low Voltage Reconnect Voltage^	Sealed / Gel / Flooded:12.6V
	Sealed / Gel / Flooded:12.6V
Low Voltage Disconnect Voltage^	Sealed / Gel / Flooded:11.1V
Self-consumption	<9.2mA/12V;<11.7mA/24V; <14.5mA/36V;<17mA/48V
Temperature compensation coefficient	-3mV/°C/2V (25°C)
Charge circuit voltage drop	<0.2W
Discharge circuit voltage drop	<0.16V
LCD temperature range	-20°C-+70°C
Working environment temperature	-25°C-i-55°C(Product can work continuously at full load)
Relative humidity	95%, N.C.
Enclosure	IP30
Grounding	Common Positive
USB output	5VDC/2.4A(Totan
Dimension(mm)	181×100.9×59.8
Mounting size(mm)	172×80
Mounting hole size(mm)	5
Terminals	16mm ² /6AWG
Net weight	0.55kg

^Above the parameters are in the 12V system at 25°C, twice in the 24V system.

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Documents / Resources



References

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