

# POWERTECH



**12V/24V 30A  
MPPT Solar Charge Controller  
for Lithium or SLA Batteries  
MP3743  
User Manual**

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## VII. Fault Codes

E1	Battery reverse connection (please correct)
E2	Battery open circuit protection (battery not connected / or battery voltage <8V/18V)
E3	Battery overcurrent protection (circuit has constant current function; the machine may be damaged if there is an error)
E4	Load overcurrent /short circuit protection (error 105; turn on the load after eliminating the error)
E5	Battery overvoltage (battery damaged or battery voltage exceeds 15/31V)
E6	PV (solar) input overvoltage protection (PV>100V)
E7	Over-temperature protection, stop charging when heat sink temperature ≥ 90°C; resume when temperature ≤ 60°C
E8	PV reverse connection (please correct)

Battery over and under voltage protection range	
Battery Capacity:12V/24V	low-voltage protection LCD display:E2 <8/18V
Battery Capacity:12V/24V	Over voltage protection LCD display:E5 >15/31V

**Remark: Please eliminate the fault according to the error code. If the machine still does not respond after the error is eliminated, it may be damaged and need after-sales service.**

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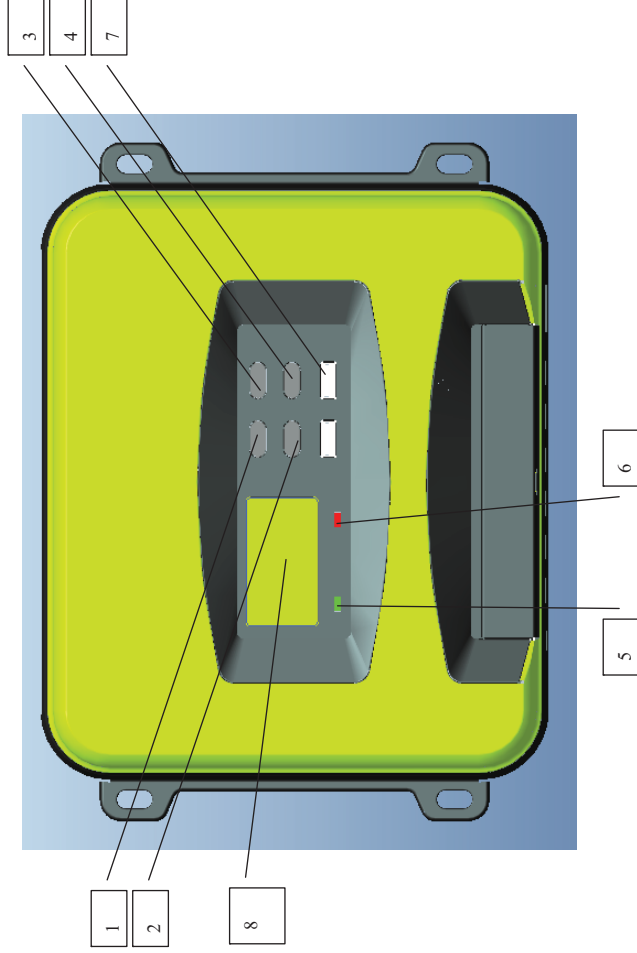
## VI. Electrical Parameters:

PV input	Parameters
PV maximum open circuit voltage (VDC)	100V
MPPT voltage (VDC)	16~80V
Maximum PV input power (W)	12V battery $\leq$ 450W; 24 V battery $\leq$ 900W;
Maximum MPPT current	$\leq$ 30A
<b>DC output</b>	
Battery voltage (VDC)	12//24V
Battery capacity (AH)	$\geq$ 30AH
Output current (A)	30A Max
Constant voltage charging voltage	STD:14.4V/28.8V Li:14.5V AGM:14.6V/29.2V
<b>Load output</b>	
Output voltage (VDC)	12/24V
Output current (A)	30A/35A
<b>USB output</b>	
Output voltage (VDC)	5
Number of USB ports	2
Maximum output current (A)	3.4A Max
<b>Standby current</b>	Battery input 12V < 60 mA < 160 mA
Separate MPPT charger	
MPPT charger + WIFI module	
<b>Protective function</b>	
PV/battery input high/low voltage protection	Yes
PV/battery reverse connection protection	Yes
Load overcurrent / short circuit protection	Yes
Temperature protection	Yes (90°C)
<b>Mechanical dimensions</b>	
Length X width X height (mm)	238*177*63
Weight	1.5 KG
<b>General data</b>	
Operating temperature (°C)	-10~ +40
Cooling method	Heat sink
Insulation class	CLASS 1
Protection level	IP30

## I. Matters needing attention

1. Keep the product out of reach of children to avoid using it as a toy and causing personal injury.  
Note!
2. Only use the accessories approved by the company or fully comply with the requirements of the company for the specifications of the accessories, or else it may cause danger.
3. **Operating voltage range of the charger: 12/24V battery; it will damage the internal discharge circuit if the voltage exceeds 33V, so do not use batteries over 36V, or else it may damage the charger.**
4. **The maximum open circuit voltage of PV is 100V. Do not exceed the range during use, or else the charger may be damaged.**
5. **Do not touch the heat sink in the process of product operation to avoid hot hands. It is recommended to use the product on the wall.**
6. Operating temperature: -10~+40°C.
7. It is strictly forbidden to use in an environment that may be exposed to rain, which may cause danger.

**Product picture (Fig. 1)**



**II. Functional description of each part of the panel (refer to Fig. 1 &**

**2):**

1. UP (up button)
  2. Down (down button)
  3. MENU (main menu button)
  4. Enter (OK button)
  5. Green LED light (off when no charging, flashing during charging, stay on when fully charged).
  6. Red LED light (off when no error , error alarm when the light is long on, lithium battery only has 12V gear, other gear flashing red light error)
  7. 2\*5V 3A USB output
  8. LCD screen
- Remark: (The operations of panel items 1-4 are explained below).

set to 4 hours by default); c. After clock 2 executing, the load is always on until PV>10.5V, so the loop is repeated)

(8. TO mode: Set the load timer on/off time; the setting range is 0-24 hours.

a. for example, the default setting: turn on load at 18:00, turn off load at 6:00. The program automatically turns on/off the load at set time).

**Remark: The load switch mode of items 6-8 is OFF by default. Please turn it on as needed, and set the required time**

**c. Press and hold MENU to enter the parameter setting**

**interface  :**

1. Press MENU to switch among the 8 interfaces in sequence. 2 Press MENU to cancel the data that has been modified but hasn't been saved.

**d. Restore the default settings: first press and hold the MENU button, then turn on the power of the battery, and the FFFF icon will be displayed on the screen.**

**2. UP button description**

Enter the parameter setting interface: press: UP / (time plus 1 / voltage plus 0.1V); press and hold: (time / load voltage) values can be accumulated.

Press in default interface after power-on: switch among (battery voltage/current), (load voltage/current) and (PV voltage/current).

**3. Down button description**

Enter the parameter setting interface and press: DOWN / (time minus 1 / voltage minus 0.1V); press and hold: (time / load voltage) value can be reduced cumulatively.

Press in default interface after power-on: Switch among battery current, load current, and PV current.

**4. Enter button description**

Press: a. In the parameter setting interface: enter to modify parameters / confirm the modification

b. In the battery voltage interface: load ON/OFF.

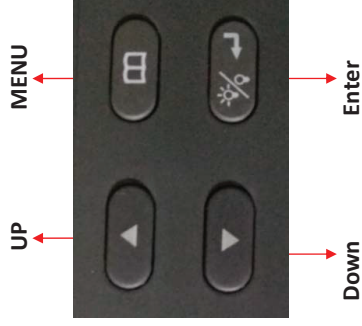
**V. Wire diameter requirements:**

Battery output line: 30A MAX) 6AWG-10AWG; at least 10AWG copper wire, less than 2m.


PV input line: 8AWG-10AWG; professionals can select the appropriate electronic line according to the actual output PV voltage.

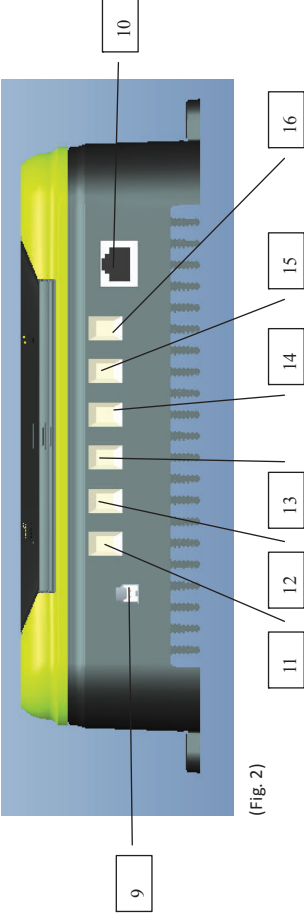
minutes. PV < 5V display night icon immediately .  
P. Numerical display (8888 characters). The current data of the machine can be switched by the MODE button, such as battery voltage / load voltage / PV voltage / time.

#### IV. The operation of machine buttons is described below



#### 1. MENU button description:

- a. Press in default interface after power-on: Switch among battery voltage, load voltage, PV voltage and time interface in turn.
- b. Press and hold MENU to enter the parameter setting interface . Then, press to switch among the 8 interfaces in turn.
  - (1. Battery type selection S (STD), default level /L (LI) / A (AGM));
  - (2. WIFI switch ON/OFF, default ON)
  - (3. Load undervoltage protection setting: setting range of 12V batteries: 10-11.5V, default 10V; setting range of 24V batteries: 20-23V, default 20V).
  - (4. Load undervoltage recovery setting: setting range of 12V batteries: 12-13V, default 12.5V; setting range of 24V batteries: 24-26V, default 25V ).
  - (5. Time setting: 24-hour system, hour/minute can be set).



(Fig. 2)

9. External temperature probe

10. RJ45 port, connected to the remote control board through the network cable and synchronized with the LCD screen (this port is reserved and the remote control board is optional)
11. PV+ (connected to the positive electrode of the solar panel)
12. PV- (connected to the negative electrode of the solar panel)
13. B+ (connected to the positive electrode of the battery)
14. B- (connected to the negative electrode of the battery)
15. L+ (connected to the positive electrode of the load)
16. L- (connected to the negative electrode of the load)

### III. Description of basic functions

#### 1. PV (solar panel input):

- a. The maximum open circuit voltage of PV is 100V.
- b. PV integrates anti-reverse (reverse connection alarm E8, no charging, please eliminate the fault).
- c. 12V battery, PV input voltage range is 16-80V;
- d. 24V battery, PV input voltage range is 32-80V;

#### 2. Battery output function

- a. Identify 12/24Vbattery automatically; the maximum charging current is :30A
- b. Anti-reverse connection (E1 alarm).

#### 3. Load output function (default OFF).

- a. Rated maximum output current30A (12/24V).
- b. Overcurrent protection >35A.
- c. Short circuit protection (E4 alarm; please eliminate the fault).
- d. Load output over/undervoltage protection, recovery voltage; refer to the set voltage.

#### 4. Over-temperature protection

- a. Reduce load in case of over-temperature: the charging current is always 16-18A when the heat sink temperature  $\geq 75^{\circ}\text{C}$ .

- b. Recover when load is reduced: resume normal charging( 30A) when the heat sink temperature is <70°C.
- c. Stop charging when the heat sink temperature is ≥90°C; resume charging when the heat sink temperature is <60°C.

### 5. External temperature compensation function (only for AGM/STD battery)

a.1.The system will automatically adjust the float voltage according to the ambient temperature. The external temperature probe is preferred. If the external temperature probe is not connected (or the external temperature is <-40°C), use (temperature ≥ 20°C± 5°C) by default. 2. The voltage may vary when the input energy is insufficient to stabilize the energy required for the float charging.

1. 12V battery charging	temperature ≤0°C -40°C (test external analog resistance430K (-20°C))	14.1	±0.3 VDC
2. 12V battery charging	temperature: 0°C-20°C±5°C (test external analog resistance 100K (10°C))	13.8	±0.3 VDC
3. 12V battery charging	temperature ≥20°C±5°C (test external analog resistance 39K (30°C))	13.5	±0.3 VDC
4. 24V battery floating charge	temperature ≤0°C -40°C (test external analog resistance 430K (-20°C))	28.2	±0.3 VDC
5. 24V battery floating charge	temperature 0°C-20°C±5°C (test external analog resistance 100K (10°C))	27.6	±0.3 VDC
6. 24V battery floating charge	temperature ≥20°C±5°C (test external analog resistance 39K (30°C))	27	±0.3 VDC

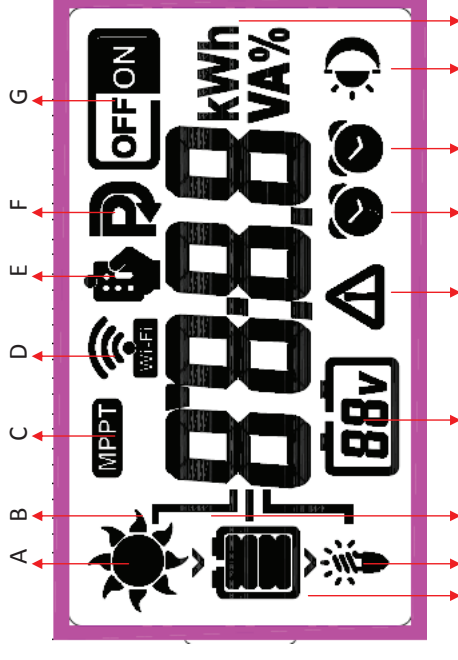
### 6. WIFI networking function

- a. The product may integrate WIFI module or not.
- b. If the product integrates a WIFI module, you can install the mobile APP; control the load switch through the APP and view the MPPT charger data in real time, such as battery voltage, charging current, etc.



**7. The LCD backlight is turned off if there is no button operation in 1 minute; any button operation will automatically activate the LCD backlight.**

- 8. **a. USB battery input undervoltage/overvoltage protection (10.5V/30.5V), battery input undervoltage/overvoltage recovery (11V/30V);**
- c. **USB output 2\*5V/3A.**

### III. Description of LCD screen:



H I J K L M N O P

- A. Sun icon, displayed when solar panel is connected.
- B. Sunlight icon, 8 in total, display a grid every 4A power according to the charging current, 8 grids in total, all turn on when the charging current is 30A.
- C. MPPT icon indicates the MPPT charger.
- D. WiFi icon; turn on WiFi through button settings, read product data and control load output through APP.
- E. Remote control icon; displayed when the remote control is connected (remote control optional).
- F. Settings icon; turn on when entering the setting parameters, and turn off when exit.
- D. WiFi icon; WiFi ON/OFF optional, default ON.
- F. Battery level icon; display the corresponding icon according to the battery voltage.
- I. Load icon; turn on when the load is turned on, synchronized with the load switch ON.
- J. Connector, three, up corresponding to PV, middle corresponding to battery, down corresponding to load.
- K. Currently identified battery type (12/24V).
- L. Protection icon. When this icon appears, it indicates that the machine has some protection, such as load overcurrent, short circuit protection, undervoltage protection, etc. (Refer to the fault code).
- M. Load timing clock 2.
- N. Load timing clock 1.
- O. Daytime and night icons; PV>12V, display daytime icon ; PV<12V, display night icon  after 5