# SOL10D12LFP-SW4-56B1N

## Solar Charge Controller + PoE Switch

# USER'S MANUAL


MSTRONIC CO., LTD.

## Features:

- Dual Input, from solar panel and/or DC (Solar First) to charge 12V battery,
- Up to four outputs: two 56VDC PoE outputs on front and two 12VDC outputs at terminal block on rear
- Active PoE Output support 802.3at handshake.
- DIN Rail Mountable

## Applications:

- Remote Power Systems; Surveillance, Sensors
- Wireless Station; AP/Client/Repeaters
- UPS Systems; Lighting, Fences, Gates

## Protection:

- Battery Polarity Reverse Protection
- Battery Over Charge Protection
- Battery Over Discharge Protection
- Solar Panel Polarity Reverse Protection
- Solar Panel Over Charge Protection
- Output Short Circuit Protection
- POE Output Short Circuit Protection
- External fuse with a standard replaceable fuse

## Panel Description:


| Item | Name | Descriptions |
|---|---|---|
| 1 | SOL | Solar Panel Terminal: used to connect the solar panel. |
| 2 | BAT- | used to connect the Battery negative. |
| 3 | BAT | Battery terminal: used to connect the battery. |
| 4 | Fuse | Fuse Holder: for output over current protection, limiting the battery output current <= 15A. (If solar panel or PoE source is installed before the battery, and if the polarities of battery are reversed, then the fuse will may be burnt.) |
| 5 | POE | PoE Output Connectors: the two RJ45s are used for PoE output, each port 56V, total 35W. work as Gigabit PoE switch (Endspan). |
| 6 | DATA : | Data uplink Connectors: the two RJ45s are used for data uplink, work as Gigabit Ethernet switch. |
| 7 | DC : | DC power input indicator: the LED lights when the DC input (the DIN 4P jack at rear panel) has 18V~57V input. |
| 8 | SOL : | Solar power input indicator: the LED lights when SOL terminal is connecting to a solar panel and the voltage **>12V.** |
| 9 | CHA : | Charging indicator: the LED lights when BAT terminal is connected to battery and charging, the charger power may from solar or DC. When full charged, then the LED flash. (charge from solar) or LED off (charge from DC input). |
| 10 | LOA : | Loading indicator: the LED lights when the DC output terminal or PoE output is connecting to a device and offering power. The LED always on when power ready. |
| 11 | REV: | Battery polarity reverse indicator: the LED lights when the battery polarities are reversed. |


| | | |
|---|---|---|
| 12 | DC : | DC Input Connector: DIN 4P connector for 18V~57VDC input. |
| 13 | LOAD : | Load Terminal: for wire size up to 10AWG, the output voltage is the same as battery voltage. |

## RJ45 Indicators Description:

*SWITCH LED (the right indicator on RJ45)

| LED | STATUS | Description |
|---|---|---|
| P1~P4<br>POE OUT/DATA | Green | A network device is detected (1000Mbps), but no communication activity is detected. |
| | Green<br>Blinking | This port is transmitting to, or receiving package from another device at 1000Mbps. |
| | Yellow | A network device is detected (10Mbps or 100Mbps), but no communication activity is detected. |
| | Yellow<br>Blinking | This port is transmitting to, or receiving package from another device at 10Mbps or 100Mbps. |
| | Off | No device is detected. |

*PoE LED (the left indicator on RJ45)

| | | |
|---|---|---|
| P1~P2<br>POE OUTPUT | Yellow | A valid Powered Device (PD) is detected and delivering power on this port. |
| | Off | No PD is detected on this port. |
| P3~P4<br>DATA | Off | The LED unused. |

# Operation Guide

1. Connect the battery to the BAT terminal. Make sure the polarities are correctly connected. Sequentially connect the solar panel to SOL terminal and connect DC source to DC input jack. (If solar panel or DC source is installed before the battery, and if the polarities of the battery be reversed, then the unit hold, not damaged)

2. Make sure the battery is properly connected to the unit. If no battery is connected, then no voltage at BAT terminal

3. The solar panel cannot be used stand alone without battery connected.

4. When a solar panel and DC input are connected to the charger, if the voltage of solar panel is higher than 15V, then solar panel is always the main power source of the charger.

5. When charge from solar panel, as the battery full charged stage, the CHA light will start flash.

6. When charge from DC, as the battery full, the CHA light will off, if the CHA is always light, that means the input wattage lower than the required minimum wattage. The minimum input is 3 Amps at input voltage is 18V.

7. When battery connect to BAT terminal and with valid voltage, then the LOA indicator will always light on even no load connected.

8. It can be connected to two separate DC outputs on the rear panel, make sure the total draw is not over the limit, continue 3.5A, maximum 8A, off @10 ~ 11A .

9. The V- of DC input, Solar input, and battery(-) are not on the same grounding.

# Specification

**1.0** INPUT

1.1

A. Solar Panel

B. DC (DIN 4P)

1.2 Input Voltage:

A. Solar Panel: 18V~25V (or instead by DC14.4V connect front panel terminal)

B. DC (DIN 4P): 18V~57V, 3A minimum at @18V in.

2.0 OUTPUT

| Model | SOL10D12LFP-SW4-56B1N |
|---|---|
| DC Output (rear terminal) | 12V/3.5A*[1] (as Bat. Volt.)*[2] |
| PoE Output 1 (front RJ45 left) | 56V/0.625A (regulated)*[3] |
| PoE Output 2 (front RJ45 right) | 56V/0.625A (regulated)*[3] |

*1 continue 3.5A, maximum 8A, off @10~11A

*2 the same voltage as battery

*3 802.3at x1,or 802.3af x2 (Output1+ Output2= 35W max)

3.0 Battery Charge Types:

A. Solar Panel: charge current 10A maximum, depends on the solar panel.

B. DC: constant 2.6A current. at @18V/3A in or 56V/0.9A in

4.0 Battery Types: 12V LFP26650 LiFePO4 Battery (200Wh ~ 800Wh)

## 5.0 Protection:

### 5.1 Battery Polarity Reverse Protection:

If only battery connected to terminal, when the battery polarities were reversed, the model will stop output.

When the battery be removed and re-connected to terminal, the function will be disable, if there is DC power sources connected, when the battery polarities reversed, the unit will be hold.

### 5.2 Battery Over Discharge Protection:

Cuts off the load when the battery voltage is lower than 11V + 0.3V, and auto recover when the battery voltage returns to 12 V + 0.3V

### 5.3 Input Polarity Reverse Protection:

When solar panel or DC input polarities be reversed, the charger stop output, it won't damage the charger or end device

### 5.4 Solar Panel Charge Limit:

When charge current over 15A, the fuse will be burnt.

### 5.5 Output Short Circuit Protection:

When the rear output terminal or PoE output be short circuit, protection be active, the product stop output and auto-recover when the connector back to normal connection.

### 5.6 Battery Output Current Limit:

The fuse will be burnt when battery output current over 15A

### 5.7 Load Output Voltage Point:

The output voltage on the rear terminal normally is the same as battery.

## 6. GENERAL DESCRIPTION

| | |
|---|---|
| 6.1 Operation Temperature: | -40 - +60 Degree |
| 6.2 Storage Temperature: | -40 - +85 Degree |
| 6.3 Operation Humidity: | 5% - 90% with conformal coating |
| 6.4 Cooling: | Free air cooling |
| 6.5 SIZE | 180*150*40mm (W*D*H) |

7. PoE ports pin out: SOL10D12-SW4-56B1N

| | RJ-45 Output (Data & Power) | |
|---|---|---|
| Pin | Symbol | Description |
| 1 | BI_DA+ | Data Pair A+ |
| 2 | BI_DA- | Data Pair A- |
| 3 | BI_DB+ | Data Pair B+ |
| 4 | +Vdc + BI_DC+ | power(+)+Data Pair C+ |
| 5 | +Vdc + BI_DC- | power(+)+Data Pair C- |
| 6 | BI_DB- | Data Pair B- |
| 7 | -Vdc + BI_DD+ | power(-)+Data Pair D+ |
| 8 | -Vdc + BI_DD- | power(-)+Data Pair D- |

option model: 12/36 Output
SOL10D12-SW4-56A1R, 12= + , 36= -
SOL10D12-SW4-56A1N, 12= - , 36= +

8. Battery Charge Voltage : (DC Input)

E/Q = 14.5V ± 0.1V

F/L = 13.5V ± 0.2V

When the charger is in charging mode and charge current is more than 1.8A. charge voltage for battery is 14.5V ± 0.1V

when charge current is lower than 1.67A . charge voltage for battery is 13.5V ± 0.2V.