

# SOL20A12LFP-56D2N

Solar/AC Charge Controller + Gigabit PoE Injector

## USER'S MANUAL



Mstronic Co., Ltd.

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## **Features:**

- Dual Inputs, from solar panel and/or PoE (Solar First) to charge 12V battery.
- Dual outputs, PoE output on front and/or terminal block on rear
- Outputs convert from battery, work as with DC UPS
- Active PoE output support 802.3at and Cisco UPOE
- DIN rail mountable PC enclosure
- desktop 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
- Output Over Voltage Protection
- POE Output Short Circuit Protection

Panel Description:

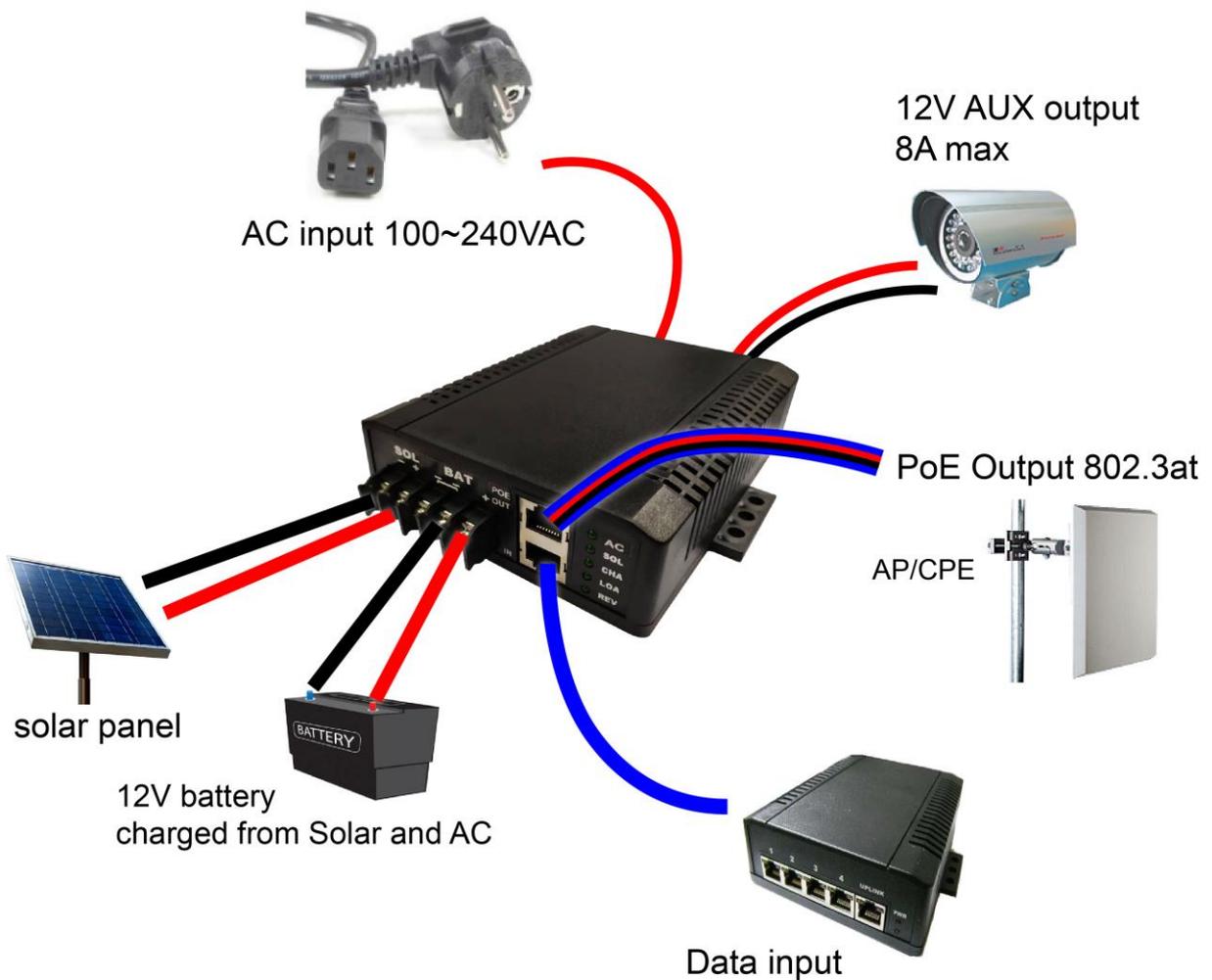
Item	Name	Descriptions
1	<b>AC</b> :	<u>AC power input indicator</u> : the LED lights when the AC inlet has 100~240VAC input.
2	<b>SOL</b> :	<u>Solar power input indicator</u> : the LED lights when <b>SOL</b> terminal is connecting to a solar panel and the solar panel input voltage is over 12V.
3	<b>CHA</b> :	<u>Charging indicator</u> : the LED lights when <b>BAT</b> terminal is connected to battery and charging
4	<b>LOA</b> :	<u>Loading indicator</u> : the LED lights when the rear panel output terminal is connecting to a device and offering power. The LED always on when power ready.
5	<b>REV</b> :	<u>Battery polarity reverse indicator</u> : the LED lights when the battery polarities are reversed.
6	<b>DATA IN</b>	<u>Data Input Jack</u> : the lower RJ45 jack, used for data input.
7	<b>PoE OUT</b>	<u>PoE Output Jack</u> : the upper RJ45 jack, used for PoE output,
8	<b>SOL</b> :	<u>Solar Panel Terminal</u> : used to connect the solar panel.
9	<b>BAT</b> :	<u>Battery terminal</u> : used to connect the battery. <b>NOTE: ALWAYS CONNECT THIS TERMINAL FIRST AND DISCONNECT LAST.</b>

10	<b>LOAD</b> :	<u>Load Terminal</u> : wire size up to 12AWG, the output voltage is the same as battery voltage.
11	<b>AC</b>	<u>AC inlet</u> : for 100~240VAC input.

## 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 AC source to **AC** inlet. (If solar panel or AC source is installed before the battery, and if the polarities of the battery be reversed, then the battery will be disconnected.)
2. Make sure the battery is properly connected to the unit. If no battery is connected, then no voltage at **BAT** terminal.
3. When a solar panel and AC 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 and AC Light turn OFF. Once AC on and not in charging, the indicator is half-light. Once AC on and in charging, the indicator is full-light.
4. If only solar panel be used as the power source, then if solar panel voltage lower than battery voltage, will stop charging. The solar panel cannot be used stand alone without battery connected.
5. If only AC be used as the power source, then the load outputs will be powered even without battery connected. Output Current is the same as AC Charger current.
6. When charge from solar panel, as the battery full and turn to floating stage, the **CHA** light will start flash.
7. When charge from AC, as the battery full, the **CHA** light will be turn off.
8. When battery connect to **BAT** terminal and with valid voltage, then the **LOA** indicator will always light on even no load connected.

- 9. There are two separate outputs on the rear panel, make sure the total draw is not over the limit 30A.
- 10. The solar input, and battery(-) are not the same grounding, must be properly isolated.
- 11. When all power sources failed, the loads will be powered from battery immediately with no interrupted, until the battery voltage lower than 10.5V +/- 0.3V.
- 12. When any power source recover, the battery will be charged if the battery voltage more than 6V. when the battery voltage back to 12V, the load will be powered again.



## **Electrical specifications**

### **1.0 INPUT**

- A. Solar Panel: 18V~25VDC 20A max (or instead by DC14.4V connect front panel terminal)  
 B. AC: 100V~240VAC ,DC Io = 3.0A~3.5A max

**Always load first, only balance wattage be used in charge**

### **2.0 OUTPUT**

Model	SOL20A12LFP-56D2N
Output 1 (upper RJ45)	56V/1.08A (regulated) (3/6,4/5+, 1/2,7/8-)
Output 2 (rear terminal)	12V/8A (as Bat. Volt.)

### **3.0 Battery Types: 12V LFP26650 LiFePO4 Battery (200Wh ~ 800Wh)**

#### **4.0 Protection:**

##### 4.1 Battery Polarity Reverse Protection:

If only battery connected to terminal, when the battery polarities were reversed, the model will stop output and **REV** indicator light on.

When the battery be removed and re-connected to terminal, the function will be disable, if there is AC power sources connected, when the battery polarities reversed, the battery will be disconnected, the load will be powered from AC directly.

##### 4.2 Battery Over Discharge Protection:

Cuts off the load when the battery voltage is lower than  $10.5V \pm 0.3V$ , and auto recover when the battery voltage returns to  $12V \pm 0.3V$

##### 4.3 Battery Over Charge Protection:

Fuse control, over 30A, the fuse will be burnt.

##### 4.4 Solar Panel Polarity Reverse Protection:

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

#### 4.5 Solar Panel Over Charge Protection:

When charge current over 30A, the fuse will be burnt.

#### 4.6 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 terminal back to normal connection.

#### 4.7 Battery Output Current Limit:

The fuse will be burnt when battery output current over 30A

#### 4.8 Load Output Voltage Limit:

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

### 5.0 General Description

5.1 Operation Temperature: -40 - +70 Degree

5.2 Storage Temperature: -40 - +85 Degree

5.3 Operation Humidity: 5% - 90%

5.4 Cooling: Free air cooling

5.5 SIZE 150\*118\*40(W\*D\*H) DIN rail mountable

### 6.0 RJ45 pinout: @1000M

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

Note : the model is isolated design.

### 7. AC Input to Battery Charger Voltage :

Float = 13.5V ± 0.1V

Equalize = 14.4V ± 0.1V

**When the charger is in charging mode and charge current is more than 1.1A. charge voltage for battery is 14.4V ± 0.1V  
when charge current is lower than 0.8A . charge voltage for battery is 13.5V ± 0.1V.**

**8. SOLAR to Battery Charger Voltage :**

charger go to Float = 14.7 V ± 0.2V

**9. BATTERY OUTPUT CONVERT TO :**

9.1 802.3at POE OUTPUT Pin : 45/36 = (+),12/78 = (-)

OUTPUT	56V
Max. Current	1.07A
Max. Watts	60W

Note : This is dual-signature model, total output 60 max.

9.2 DC = 8A Output. Same as battery voltage

**10. Series models**

Model	SOL20A12LFP-56B1N	SOL20A12LFP-56A1N	SOL20A12LFP-56A1R
Output 1 (upper RJ45)	56V/0.625A (regulated) (4/5+, 7/8-)	56V/0.625A (regulated) (1/2-, 3/6+)	56V/0.625A (regulated) (1/2+, 3/6-)
Output 2 (rear terminal)	12V/8A (as Bat. Volt.)	12V/8A (as Bat. Volt.)	12V/8A (as Bat. Volt.)

