

# SP112C Series

Solar & PoE Battery Charger

## USER'S MANUAL



## Features:

- Dual Input, from solar panel and/or PoE (Solar First) to charge 12V battery,
- Two outputs: PoE output on front and terminal block on rear
- Built-in DC/DC converter, with various passive PoE output, 24V, 48V, 56V available.
- Active PoE Output support 802.3at handshake (RP-SP112C-56DB, RP-SP112C-56DA)
- DIN Rail Mountable
- Support Gigabit Ethernet

## 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
- Externally fused with a standard replaceable fuse

## Panel Description:

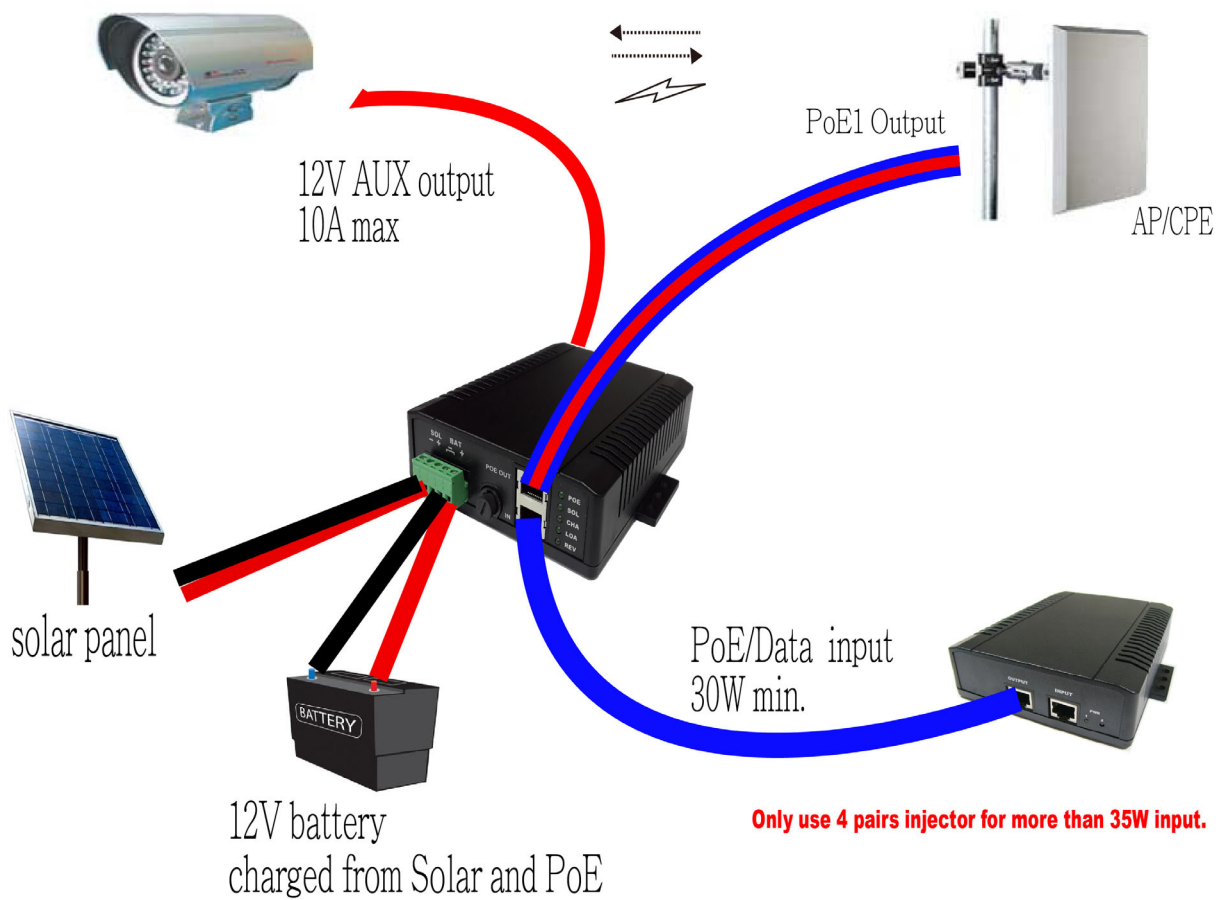


Item	Name	Descriptions
1	POE :	<u>PoE power input indicator</u> : the LED lights when the PoE input jack (the lower jack) has 36V~57V input.
2	SOL :	<u>Solar power input indicator</u> : the LED lights when SOL terminal is connecting to a solar panel and the solar panel input voltage is over 12V.
3	CHA :	<u>Charging indicator</u> : the LED lights when BAT terminal is connected to battery and charging
4	LOA :	<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	REV :	<u>Battery polarity reverse indicator</u> : the LED lights when the battery polarities are reversed. (detail description see Sec. 5.1)
6	IN :	<u>PoE Input Jack</u> : the lower RJ45 jack, used for PoE input. Allowed input voltage 36~57V
7	OUT :	<u>PoE Output Jack</u> : the upper RJ45 jack, used for PoE output; Output voltage depends on what model you selected.
8	FUSE	<u>Fuse</u> : for output over current protection, limiting the battery output current <= 10A.
9	SOL :	<u>Solar Panel Terminal</u> : used to connect the solar panel.
10	BAT :	<u>Battery terminal</u> : used to connect the battery. <b>NOTE: ALWAYS CONNECT THIS TERMINAL FIRST.</b> If solar panel or PoE source is installed before the battery, and if the polarities of battery are reversed, then the fuse will be burnt.
11	LOA :	<u>Load Terminal</u> : for wire size up to 12AWG, the output voltage is the same as battery voltage.

## 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 POE source to **PoE** input (lower) jack. (If solar panel or PoE source is installed before the battery, and if the polarities of the battery be reversed, then the fuse will be burnt.)
2. Make sure the battery is properly connected to the unit. If no battery is connected, then no output at **BAT** terminal.
3. The solar panel cannot be used stand alone without battery connected.
4. When a solar panel and PoE 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 and turn to floating stage, the **CHA** light will start flash.
6. When charge from PoE, as the battery full, the **CHA** light will be turn off, if the **CHA** is always flash, that means the input wattage lower than the required minimum wattage. If only charge battery, the minimum input wattage is 30W, if full load, the minimum input wattage is 80W.
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 two separate outputs on the rear panel, make sure the total draw is not over the limit.
- 9. The V- of PoE input, Solar input, and battery(-) are not the same grounding, must be properly isolated.



## Electrical specifications

### 1. INPUT

#### 1.1 Two Input Source:

A. Solar Panel : 18V~45V,

B. POE : 36 V~57V (only use 4 pairs injector for more than 35W input.)

### 2. OUTPUT

Model No.	Output 1 (at rear terminal)	Output 2 (at front/upper RJ45)
RP-SP112C-24B	12V/10A (as Bat. Volt.)	24V/1.25A (45+/78-) (regulated)
RP-SP112C-48A	12V/10A (as Bat. Volt.)	48V/0.625A (12-/36+) (regulated)
RP-SP112C-48B	12V/10A (as Bat. Volt.)	48V/0.625A (45+/78-) (regulated)
RP-SP112C-56DA	12V/10A (as Bat. Volt.)	56V/0.625A (12-/36+) (regulated)
RP-SP112C-56DB	12V/10A (as Bat. Volt.)	56V/0.625A (45+/78-) (regulated)

### 3. Battery Charge Current:

- A. Solar Panel: depends on the solar panel, 10A max,
- B. POE: fixed current, 2.0A max

### 4. Battery Types: 12V AGM Battery

### 5. Protection:

#### 5.1 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 a PoE power sources be connected, when the battery polarities reversed, the battery will be disconnected.

#### 5.2 Battery Over Discharge Protection:

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

#### 5.3 Battery Over Charge Protection:

Fuse control, over 15A, the fuse will be burnt.

#### 5.4 Solar Panel Polarity Reverse Protection:

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

#### 5.5 Solar Panel Over Charge Protection:

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

### 5.6 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.

### 5.7 Battery Output Current Limit:

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

### 5.8 Load Output Voltage Limit:

The output voltage of the rear terminal is the same as battery.

### 5.91 POE Charge Voltage :

Float =  $13.4V \pm 0.2V$  Equalize  
=  $14.2V \pm 0.2V$

### 5.92 SOLAR Charge Voltage :

Charge Voltage =  $14.4 V \pm 0.2V$

## 6. GENERAL DESCRIPTION

- |                            |  |
|----------------------------|--|
| 6.1 Operation Temperature: | -40 - +50 Degree                           |
| 6.2 Storage Temperature:   | -40 - +85 Degree                           |
| 6.3 Operation Humidity:    | 5% - 90% non-condensing                    |
| 6.4 Cooling:               | Free air cooling                           |
| 6.5 SIZE                   | 150*118*40mm (L*W*H)<br>DIN rail mountable |



## 7. Pin out: @1000M

RJ-45 Input (Data & Power) Compliant to 802.3af/at			RJ-45 Output (Data & Power) Depends on individual models	
Pin	Symbol	Description	Symbol	Description
1	(+/-)Vdc + BI_DA+	power(+/-)+Data Pair A+	(+/-)Vdc + BI_DA+	power(+/-)+Data Pair A+
2	(+/-)Vdc + BI_DA-	power(+/-)+Data pair A-	(+/-)Vdc + BI_DA-	power(+/-)+Data pair A-
3	(+/-)Vdc + BI_DB+	power(+/-)+Data Pair B+	(+/-)Vdc + BI_DB+	power(+/-)+Data Pair B+
4	(+/-)Vdc + BI_DC+	power(+/-)+Data Pair C+	+Vdc + BI_DC+	power(+)+Data Pair C+
5	(+/-)Vdc + BI_DC-	power(+/-)+Data Pair C-	+Vdc + BI_DC-	power(+)+Data Pair C-
6	(+/-)Vdc + BI_DB-	power(+/-)+Data Pair B-	(+/-)Vdc + BI_DB-	power(+/-)+Data Pair B-
7	(+/-)Vdc + BI_DD+	power(+/-)+Data Pair D+	-Vdc + BI_DD+	power(-)+Data Pair D+
8	(+/-)Vdc + BI_DD-	power(+/-)+Data Pair D-	-Vdc + BI_DD-	power(-)+Data Pair D-

**Note :**

1. the model is isolated design,
2. The PoE output can be 2 pairs or 4 pairs, depends on individual models.

