

1. Introduction

Thank you for purchasing "Solar Amp B" solar charge controller. This manual contains important safety, installation and operating instructions for "Solar Amp B" solar charge controller in order to prevent the users from any damage. Make sure to read all of the instructions and cautions in the manual before beginning installation.

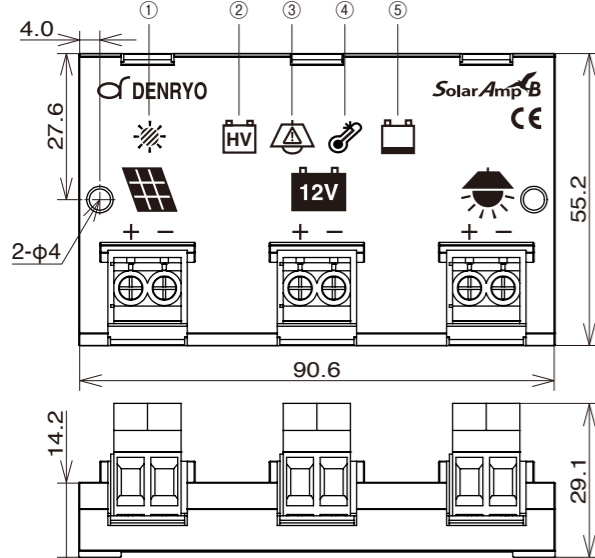
2. Product Overview

"Solar Amp B" is very compact design and very simple to use, which has full electronic protections.

<Product Line up>
 Normal model (Load Always ON): SA-BA10, SA-BA20, SA-BB10
 Nightlight model (Load Dusk to Dawn): SA-BC10, SA-BC20, SA-BD10

7. Operation

7-1 Appearance



7-2 State of Charging LED

LED/Color	Indication	Status
① Charging GRN	Flashing	Charging
	Solid	Full Battery (Charging)

① Charging LED

Charging LED is flashing while charging the battery. Flashing LED becomes solid when the battery is full charge.

3. Features

- 3-stage Charging (Bulk, Absorption, Float)
- Discharged Battery Recovery
- Full Electronic Protections
 - High Voltage Protection, Over Discharge Protection, Over Load Protection, High Temperature Protection, Reverse Polarity Protection, Load Short Circuit Protection, Surge Protection
- Current Regulation Caused High Temperature
- Positive Earth Ground
- Status LED Indications
 - State of Charging, High Voltage, Over Load, High Temperature, Low Voltage

4. Precaution

- Cover the PV panel (Photovoltaic panel: Solar panel) with cloth not to generate electricity during installation.
- It is recommended to install an external fuses (less than rated current) between controller and battery, controller and load.
- Connect battery to earth ground if necessary (positive earth ground). If you need negative earth ground, connect only one terminal (battery or PV panel or load terminal) to the earth ground.
- Do not connect device which has big input capacity such as DC-AC inverter to the load terminal.
- Do not use PV panel or Load which specification is out of the ratings. The PV panel Voc should never exceed "Max. Input Voltage" of the product. The PV panel Isc should never exceed "Max. Input Current" of the product. The peak current of Load should never exceed "Max. Load Current" of the product.
- Charging will start when PV panel voltage exceeds battery voltage.
- Reverse Polarity Protection and Over Load Protection is not effective in every possible condition, thus please take care in wiring and confirm the specifications of PV panel and Battery and Load.

7-3 Warning and Error LED

LED / Color	Indication	Charging Status	Load Status
② HV High Voltage RED	●	OFF	OFF
③ Over Load RED	●	OFF	OFF※ ¹
④ High Temp. YEL	●	ON※ ²	ON
	●	OFF	ON
⑤ Low Voltage YEL	●	ON	ON
	●	ON	OFF

② High Voltage LED

Solid: The battery voltage has exceeded the maximum regulation limit of the controller. Make sure the battery is applicable.

③ Over Load LED

Flashing: The load current exceeds the maximum load current rating. The Load is reconnected automatically by every 3 seconds in 10 minutes. If the overload remains, LED becomes solid and disconnects.※¹

Solid: There is a possibility of load wiring short circuit. The fault must be cleared by removing and reapplying power.

④ High Temperature LED

Flashing: The controller temperature has become high. The bulk charging current is limited to 80%.※²

Solid: The controller temperature had become high. The controller stop charging until the temperature becomes low.

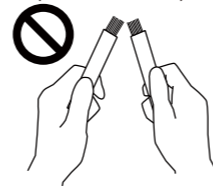
⑤ Low Voltage LED

Flashing: The battery voltage is low.

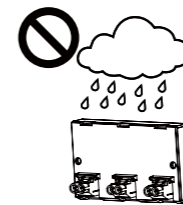
Solid: The load is disconnecting for Low Voltage Disconnection. The load will automatically switch on when the battery recharges to the Low Voltage Reconnect threshold voltage.

5. Safety Information

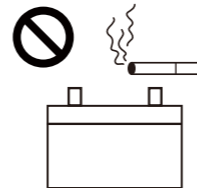
5-1 : DO NOT short circuit (For all terminals)



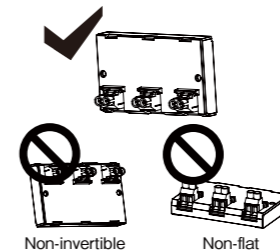
5-2 : Protect from direct rain



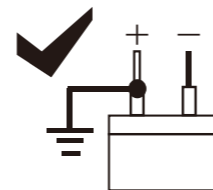
5-3 : Explosion hazard



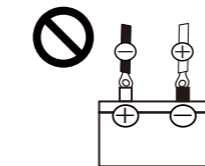
5-4 : Mounting direction



5-5 : Positive earth ground

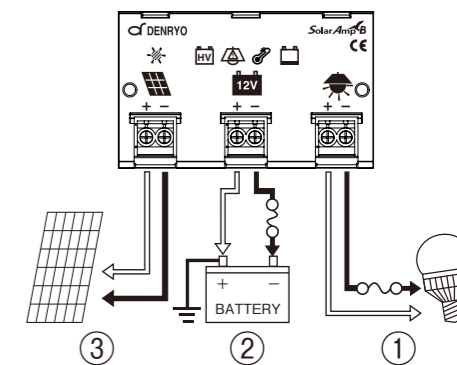


5-6 : DO NOT reverse polarity connection (For all terminals)



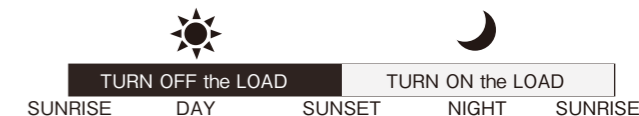
6. Connection

Connect each wire in order (1. LOAD 2. BATTERY 3. PV panel) as the below figure and screw tightly not to loosen.



<Load operation of nightlight model>

- When battery is connected, the output power is supplied to the load. If charging starts, the output power is off after 5 minutes. You can check the load operation in this timing.
- If charging stops, the load will turn on about 10 minutes after.



8. Specifications

Model No.	Normal model	SA-BA10	SA-BA20	SA-BB10
	Nightlight model	SA-BC10	SA-BC20	SA-BD10
System Voltage		12V	24V	24V
Max. Input Voltage		25V	50V	50V
Min. Input Battery Voltage		6V	8V	8V
Max. Input Current		10A	20A	10A
Max. Load Current		10A	20A	10A
Self-consumption Current		2mA (Typical)		
Charging Algorithm		3-stage (Bulk, Absorption, Float)		
Charging Voltage		14.4V	28.8V	28.8V
Float Charging Voltage		13.7V	27.4V	27.4V
High Voltage Protection		18V	36V	36V
Over Warning		11.8V	23.6V	23.6V
Discharge Error		11.5V	23V	23V
Protection Recovery		12.5V	25V	25V
High Temp. Protection		60°C (Warning) / 80°C (Error) / 60°C (Recovery)		
Battery Type		Lead Acid Battery		
Wire Size		#12AWG to #18AWG	#10AWG to #12AWG	#12AWG to #18AWG
Grounding		Positive Ground		
Temperature Coefficient		-30mV/°C	-60mV/°C	-60mV/°C
Operation Temperature		-20°C to 60°C		
Storage Temperature		-30°C to 70°C		
Humidity		5 to 95%RH (non-condensing)		
Dimensions (D x W x H)		29 x 91 x 55mm		
Weight		65g	70g	65g
Certifications		CE RoHS		

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