

SmartGen

MAKING CONTROL SMARTER

BAC06A3

SWITCH-TYPE BATTERY CHARGER

USER MANUAL



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Table 1 Software Version

Date	Version	Note
2025-12-16	1.0	Original release.

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1 OVERVIEW

BAC06A3 switching battery charger adopts the latest switch power components, which is designed for charging lead-acid starting battery according to its property. The charger is suitable for lead-acid battery float charge. The maximum charge current for 12V charger is 6A; the maximum charge current for 24V charger is 3A.

2 PERFORMANCE AND CHARACTERISTICS

Characteristics are as below:

- Designed in switching power structure, wide range of AC voltage input, small volume, light weight and high efficiency;
- Two-stage charging method (constant current firstly and then constant voltage), fully considering charging property of the lead-acid battery, can avoid overcharging and extend the battery life to the fullest;
- With short circuit and reverse connection protection;
- Charging voltage can be adjusted via potentiometer on site;
- LED display: Power indication and charging indication;
- The internal potting process significantly enhances resistance to vibration, harsh environments (moisture, salt, mold), and improves heat dissipation performance;
- The horizontal mounting type is easy for installation.

3 CHARGING PRINCIPLE

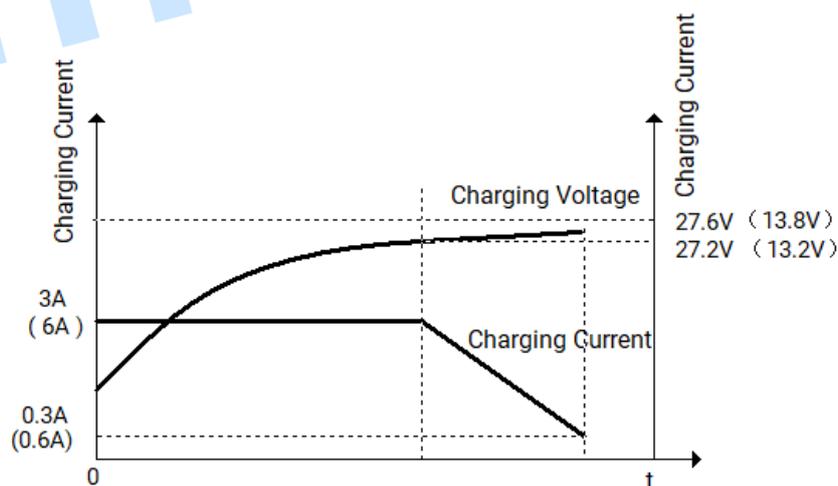


Fig.1 - Charge Principle

According to charging property of the lead-acid battery, battery charger uses 2-stage charging method and charge mode is “constant-current”, and the charging current is 3A(6A). When battery voltage is under the threshold, it is charging in constant-current mode; when the battery voltage is higher than the threshold, the charging current is decreasing as the battery voltage is rising until it reaches the set voltage, and then charge mode is turned into “floating charge”. Charge current is

gradually reducing and battery voltage is rising up to the set value. When charging current is lower than 0.3A(0.6A), the battery is basically fully charged (charging indicator eliminates). Afterwards, charging current will offset self-discharge of the battery and long time charging does no harm to the battery. Thus the charger can not only maintain a full charged condition and but also ensure the battery life.

4 SPECIFICATION

Table 2 Product Parameters

Category	Items	12V	24V
Input Characteristics	Nominal AC Voltage	AC (100~277)V	
	Max. AC Voltage	AC (90~305)V	
	AC Frequency	50Hz/60Hz	
	No-load Power Consumption	<2W	
	Max. Input Current	1.5A	
	Max. Efficiency	90%	
Output Characteristics	Rated Charging Current	6A	3A
	Max. Power	82W	
	Min. Voltage	8.6V	16.8V
	No-load Voltage	13.8V, (Error ±1%)	27.6V, (Error ±1%)
Insulation	Insulation Resistance	Between input and output, input and shell both are: DC500V 1min $R_L \geq 500M\Omega$	
	Insulation Voltage	Between input and output, input and shell both are: AC2200V 50Hz 1min Leakage current: $I_L \leq 3.5mA$.	
Working Conditions	Working Temperature	(-40~+55)°C	
	Storage Temperature	(-40~+85)°C	
	Working Humidity	20%RH~93%RH (No condensation)	
Profile	Weight	0.64kg	
	Dimension	144.2mm×96.7mm×53.5mm (Length*Width*Height)	

5 NO-LOAD VOLTAGE FINE TUNING

During on-site voltage adjustment, disconnect the battery from the charger. Adjust the voltage potentiometer (VOLTS ADJ) while measuring the output voltage of charger until reaching the appropriate value.

6 OPERATION

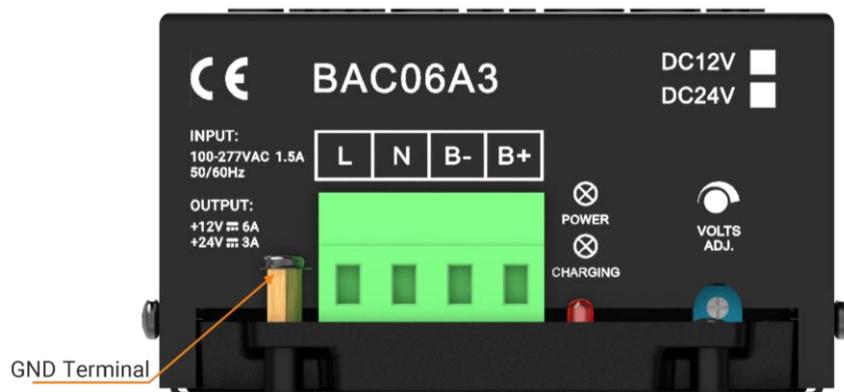


Fig.2 - BAC06A3 Panel

Table 3 Operation Instructions

Terminal	Function	Description
L	AC Input Terminal	Terminals L and N connect to AC (100~277)V. It is recommended to use BVR 1mm ² stranded copper wire.
N		
B-	Charger Output Negative	Connect to battery negative. It is recommended to use BVR 1.5mm ² stranded copper wire.
B+	Charger Output Positive	Connect to battery positive. It is recommended to use BVR 1.5mm ² stranded copper wire.
POWER	Green LED Indicator	Power status indicator
CHARGING	Red LED Indicator	Charging status indicator

NOTE1: Because there is diode and current-limiting circuit inside charger outputs, it can be used together with charging generator in parallel, and there is no need to disconnect the charger at cranking.

NOTE2: For application on genset, high current will cause voltage drop in charging line, so recommend separately connecting to battery terminal to avoid disturbance on sampling precision.

7 CASE DIMENSIONS

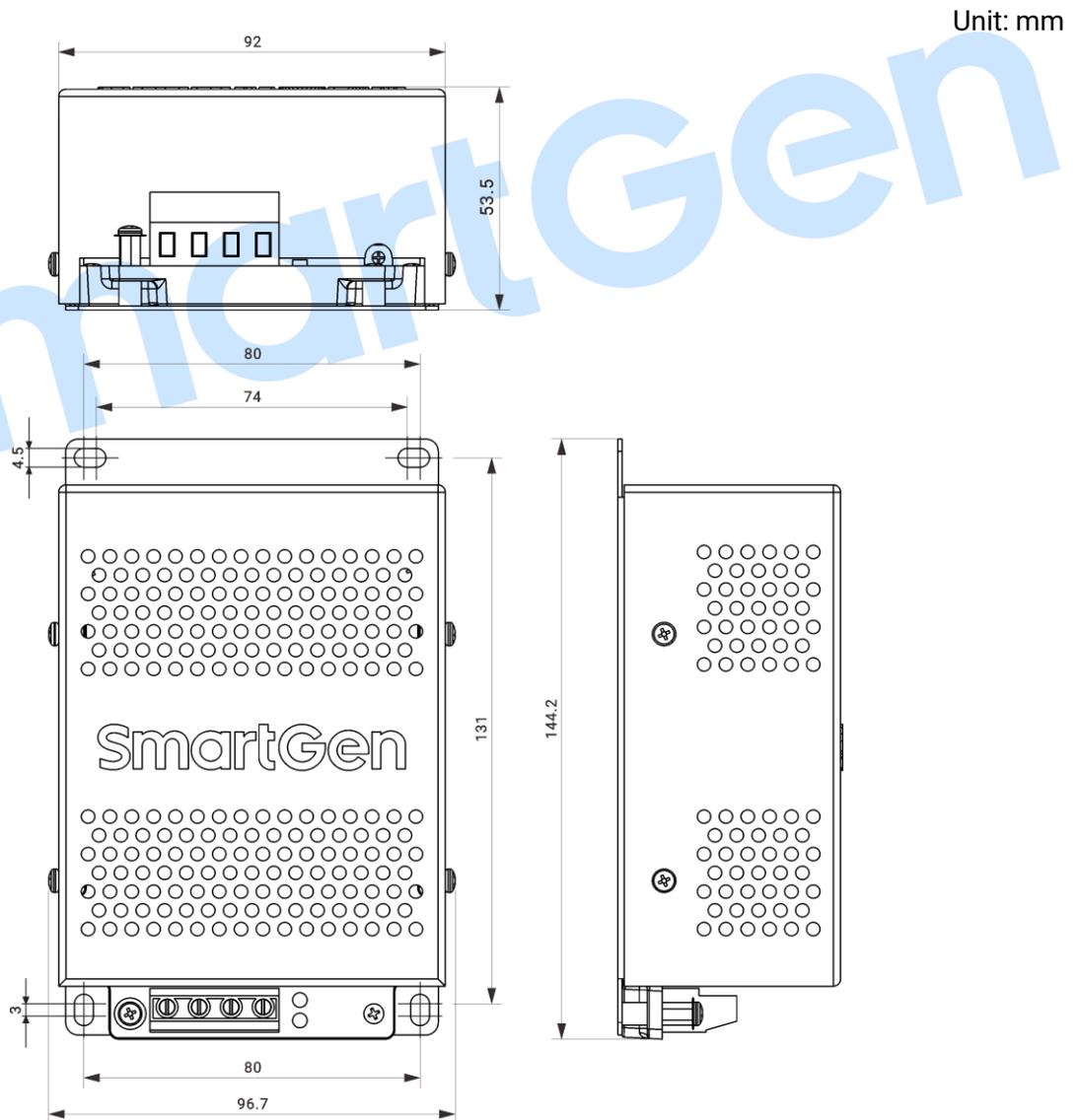


Fig.3 - BAC06A3 Dimension

8 ORDER INFORMATION

When ordering BAC06A3 chargers, please choose charger types according to installation and voltage as the chart below:

Table 4 Charger Model

Model	Battery Type	Rated Output Current
BAC06A3-12V	12V	6A
BAC06A3-24V	24V	3A

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