



**SmartGen**  
ideas for power

# BAC06AU BATTERY CHARGER USER MANUAL



**SMARTGEN (ZHENGZHOU) TECHNOLOGY CO., LTD.**

## 1 OVERVIEW

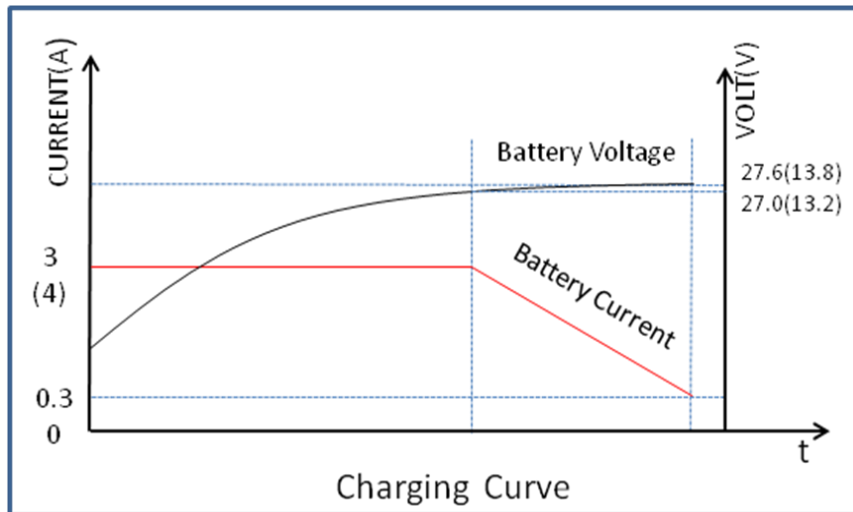
BAC06AU battery charger applies up-to-date switch-type power component, and is specially designed for lead-acid engine starter batteries based on the charging characteristics. It is suitable for long-term complement charging (float) of lead-acid batteries. Output current is 4A for battery 12V, and output current is 3A for battery 24V.

## 2 PERFORMANCE AND CHARACTERISTICS

Charger has the following characteristics:

- Applying switch-type power structure; wide input AC voltage range, small volume, light weight, and high efficiency;
- Applying two-stage charging method (first constant current, second constant voltage) to charge automatically, charging is done fully based on battery charging characteristics, which can prevent lead-acid battery over charging, and can prolong battery life in the most degree;
- Short circuit and reverse connection protection functions;
- Charging voltage, and current values can be adjusted by potentiometer on site;
- Status LED display: power indicator, charging indicator;
- UL recognition has been done with Certificate No. E362048;
- BAC06AU applies horizontally-mounted installation method, simple and easy.

### 3 CHARGING PRINCIPLE



**Fig. 1 Charging Principle Diagram**

Charging is performed according to the battery charging characteristics and uses two-stage charging method. Charging type is 'constant current type', which means when the battery terminal voltage falls below the pre-set value, charging current will be constant; when the battery terminal voltage exceeds the pre-set value, charging current will fall gradually with the rise of terminal voltage until the pre-set current value is reached and charging transfers to floating mode. At this time charging current becomes small gradually, and battery terminal voltage also rises gradually to the pre-set steady voltage value. When charging current is less than 0.3A, battery is basically fully charged (charging indicator is off). Afterwards charging current only offsets the self-discharging of battery. And long time charging does no harm to battery. That is, charger can not only maintain battery full charging status, but also ensure the usage life of battery.

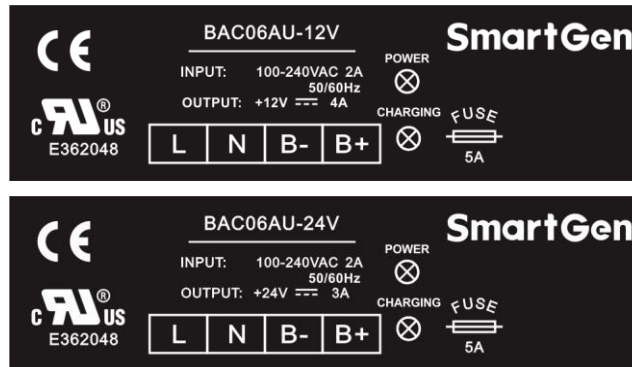
4 PARAMETERS CONFIGURATION

Table 2 Product Parameters

Items	Contents	12V	24V
Input Characteristics	Nominal AC Voltage	AC (100~240)V	
	Max. AC Voltage	AC (90~280)V	
	AC Frequency	50Hz/60Hz	
	Max. Input Current	2A	
	Max. Efficiency	82%	
Output Characteristics	Rated Charging Current	4A	3A
	Charging Current Error	±2%	
	Max. Output Power	52W	81W
	Min. Output Voltage	7.5V	
	No-load Output Voltage	13.8V, Error±1%	27.6V, Error±1%
	No-load power consumption	<3W	
Insulating Property	Insulation Resistance	If input and output, input and shell both are: DC500V 1min, insulation resistance $R_L \geq 50M\Omega$	
	Insulation Voltage	If input and output, input and shell both are: AC1500V 50Hz 1min, leak current $I_L \leq 3.5mA$ .	
Working Condition	Working Temperature	(-25~+60)°C	
	Storage Temperature	(-40~+85)°C	
	Working Humidity	20%RH~93%RH(No condensation)	
Shape Structure	Weight	0.65kg	
	Dimension	143mm×96mm×55mm (length*width*height)	

## 5 OPERATION

### 5.1 BAC06AU MASK ILLUSTRATION



**Fig. 2 BAC06AU Panel Mask**

- Connect terminals L and N to AC (100~240)V with BVR 1mm<sup>2</sup> multi-strand copper line;
- Connect terminal B+ and B- to battery + and - poles with BVR 1.5mm<sup>2</sup> multi-strand copper line;
- POWER: power supply indicator, illuminated when the charger is working normally;
- CHARGING: charging indicator, illuminated when charging current is over 0.3A;
- Output FUSE 5A: if output is connected reversely, the fuse will be burnt out and there is no output voltage at this time; Correct the output wiring and change the fuse, then it can work normally.

**NOTE 1:** Because inner output of the charger is connected to diode and current foldback circuit, this charger can be connected in parallel to the charging generator on the engine and it is not necessary to disconnect the charger during cranking.

**NOTE 2:** When it is used on genset, as charging current is very big, voltage drop will be caused on the charging wire. Therefore it is suggested to connect charging wire separately to the battery terminal, in case of affecting sensor sampling accuracy.

### 5.2 BAC06AU COMMON FAULT HANDLE

#### 5.2.1 FAULT DIAGNOSIS

If abnormal occasions, such as short circuit, battery reverse connection etc. occur, output fuse may be burned out; Under this occasion after AC input power is connected, charger green LED indicator will be illuminated, but output terminal has no output voltage. Take off output fuse, and watch whether fuse has been burned out in the fuse tube by our eyes; If condition allowed, fuse tube can be tested by multimeter.

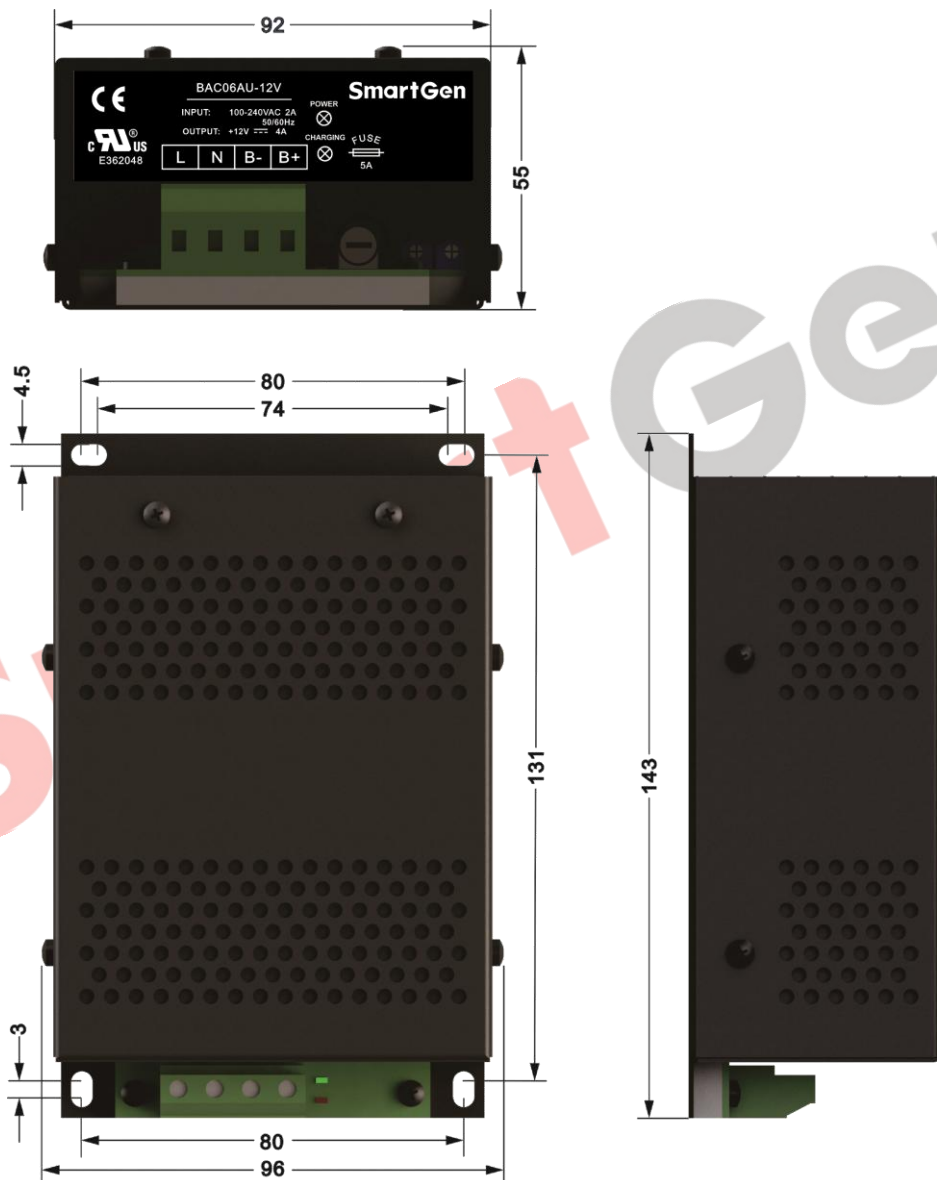
- a) If output 5A fuse is burned out, it only needs to change same capacity fuse.
- b) If output fuse isn't burned out, or after changing the fuse, charger still has no output, it needs to take back to factory to fix.
- c) Emergency handle method for fuse burn-out: use conductive metal wire and short connect the burned out fuse; afterwards change a proper fuse.

### 5.2.2 FUSE CHANGE OPERATION STEPS

- a) Use straight screwdriver to press towards inside and backward wing once anticlockwise, take the fuse out;
- b) Change a new fuse after taking out, insert it into the fuse chassis; then use straight screwdriver to press inside by force, and at the same time clockwise giving it a wing is Ok.

**NOTE:** Improper operation or too much force may damage the fuse chassis.

### 6 CASE DIMENSIONS



**Fig. 3 BAC06AU Installation Size (Unit:mm)**