SmartGen

MAKING CONTROL SMARTER

BAC06T

BATTERY CHARGER

USER MANUAL

郑州众智科技股份有限公司

SMARTGEN(ZHENGZHOU)TECHNOLOGY CO.,LTD.

SmartGen众智 **Chinese trademark**

SmartGen **English trademark**

SmartGen — make your generator ***smart***

SmartGen Technology Co., Ltd.

No.28 Jinsuo Road, Zhengzhou, Henan Province, China
Tel: +86-371-67988888/67981888/67992951
+86-371-67981000(overseas)
Fax: +86-371-67992952
Email: sales@smartgen.cn
Web: www.smartgen.com.cn
www.smartgen.cn

Table 1 – Version History

Date	Version	Note
2022-05-25	1.0	Original release.

CONTENTS

1 OVERVIEW

BAC06T 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 high 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;
- 12V or 24V voltage is optional for charging by DIP switch;
- Charging voltage and current can be adjusted via potentiometer on site;
- LED display: Power indication and charging indication;
- Horizontal type for installation, easy to install;

3 CHARGING PRINCIPLE

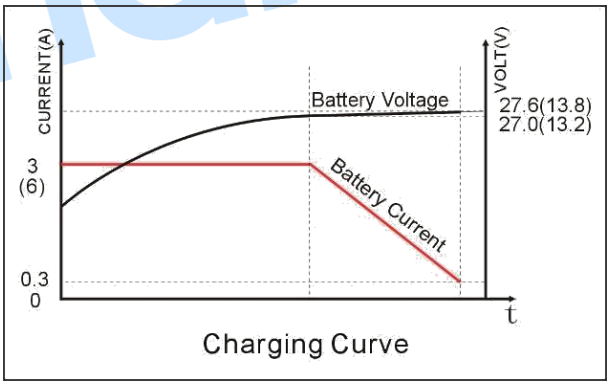

Fig.1 — Charging Principle

According to charging property of the lead-acid battery, battery charger uses 2-stage charging method and charge mode is “constant-current”. 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, 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 (95～280)V	
	Max. AC Voltage	AC (90～305)V	
	AC Frequency	50Hz/60Hz	
	Max. Input Current	2A	
	Max. Efficiency	85%	
Output Characteristics	Charging Current	4A～6A,(Error±2%)	2A～3A,(Error±2%)
	Factory Charging Current	6A	3A
	Max. Power	85W	
	Min. Voltage	7.5V	
	No-load Voltage	13.8V, (Error ±1%)	27.6V, (Error ±1%)
	No-load power consumption	<3W	
Insulation	Insulation Resistance	Between input and output, input and shell both are: DC500V 1min R_L≥500MΩ	
	Insulation Voltage	Between input and output, input and shell both are: AC1500V 50Hz 1min Leakage current: I_L≤3.5mA。	
Working Conditions	Working Temperature	(-30～+55)°C	
	Storage Temperature	(-40～+85)°C	
	Working Humidity	20%RH～93%RH (No condensation)	
Profile	Weight	0.65kg	
	Dimension	143mm×96mm×55mm (Length*Width*Height)	

5 SETTING

5.1 DIP SWITCH

To facilitate users to adjust the output voltage of the charger according to the on-site battery voltage, the charger is provided with a DIP switch for users to choose 12V or 24V output voltage.

Table 3 – DIP Switch Setting

DIP Switch	Charging Voltage/Current	Description
	12V/6A	Factory default. The two-digit dip switch is off (below).
	24V/3A	The two-digit dip switch is on (above).
Note 1: Please adjust the DIP switch position for safe after power failure. Note 2: The two-digit DIP switch should be on or off at the same time. Don't misposition the DIP switches, otherwise, the charger may fail.		

5.2 VOLTAGE ADJUSTMENT

When adjusting the voltage on-site, disconnect the battery from the charger, and then measure the output voltage of the charger while adjusting voltage potentiometer (VOLT) to a proper value.

5.3 CURRENT ADJUSTMENT

Output connects battery pack, when charging voltage is not higher than 25.0V (12.5V) measure charging current; adjust the current potentiometer (AMP) and set proper charge current. Output current can also be estimated according to the current potentiometer scales.

6 OPERATION

6.1 PANEL DRAWING DESCRIPTION

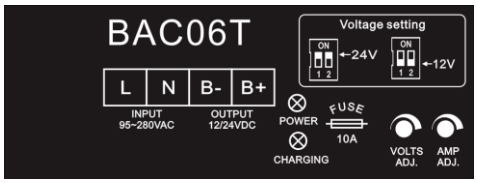

Fig.2 — BAC06T Panel Drawing

- Terminals L and N connect AC 220V, using multi-strand BVR 1mm^2 copper wires.
- Terminals B+ and B- connect battery positive and negative, using multi-strand BVR1.5mm^2 copper wires.
- POWER: Power indicator. When charger works normally, it will illuminate.
- CHARGING: Battery charging indicator. When charging current is over 0.3A, it will illuminate.
- The two-digit switch is 12V for OFF (Below) and 24V for ON (Above) at the same time;
- VOLTS: Voltage adjustment potentiometer.
- AMP: Current adjustment potentiometer.
- Output 10A fuse. Reverse connection will cause fuse blown. At this time no output voltage; After correcting the connection and changing another fuse, it can continue working.

NOTES:

1) 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.

2) 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.

3) Don't misposition the DIP switches, otherwise, the charger may fail.

6.2 TROUBLESHOOTING

6.2.1 FAULT DIAGNOSIS

Output terminal of battery charger short circuit or battery reverse connection may blow the charger output fuse. In that case, after connecting AC power supply, charger green LED lights up but output terminal is without voltage outputting, and then remove the output fuse tube to visually observe whether fuse is blown or not, if condition is permitted, multimeter can be used to measure the fuse status.

If output terminal 10A fuse is blown, users only need to change the same capacity fuse.

If output fuse isn't blown or battery is still without outputting after changing the fuse, battery needs to repair in factory.

Fuse burn emergency method: using conductive metal wire, short connected burnt fuse, and then change a proper fuse later.

6.2.2 PROCEDURES OF CHANGING FUSE

a) Press hard in on the slotted screwdriver, screw counter-clockwise and then take out the fuse.

b) Put a new fuse into the block, press the slotted screwdriver and screw clockwise.

NOTE: improper operation or over tightening may damage the block.

7 CASE DIMENSIONS

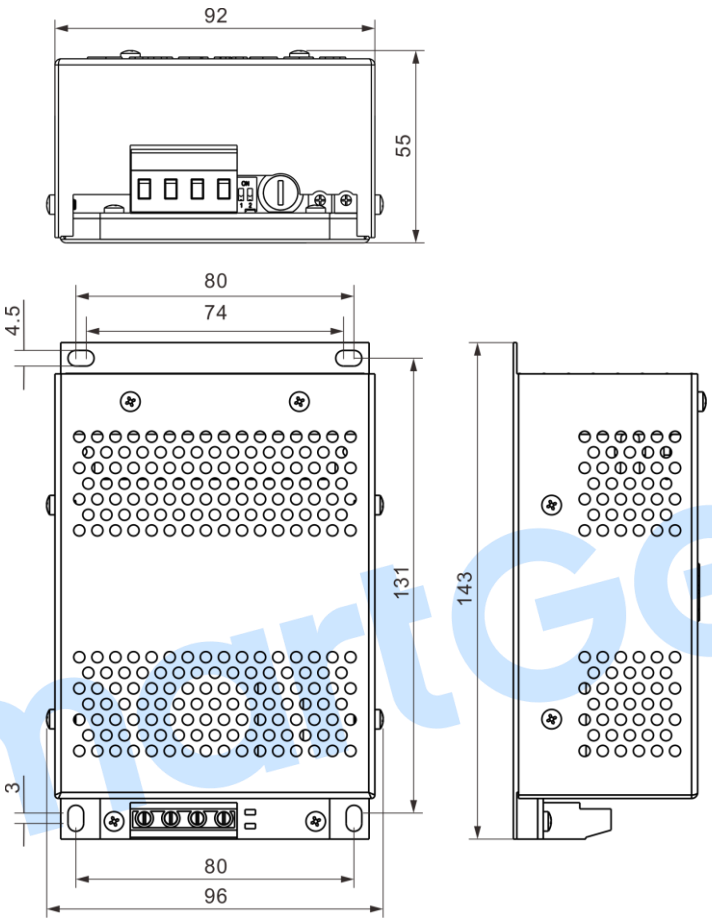

Fig.3 — BAC06T Dimension