



SmartGen
ideas for power

BAC4812-KP
BATTERY CHARGER
USER MANUAL



SMARTGEN (ZHENGZHOU) TECHNOLOGY CO., LTD.



Chinese trademark

SmartGen English trademark

SmartGen – make your generator *smart*

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Table 1 Software Version

Date	Version	Note
2015-03-10	1.0	Original release.
2016-01-18	1.1	Modify the thickness of BAC4812-KP to 54mm.
2017-11-10	1.2	Update "CASE DIMENSIONS"
2021-12-25	1.3	Add DC voltage range.
2021-12-29	1.4	Change mask and modify case dimension diagram as line drawing.
2022-01-18	1.5	Modify insulating property.



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1. OVERVIEW

Fit with up-to-date power supply device, float charger BAC4812-KP is specially designed for meet the charging characteristics of the lead-acid engine starter batteries and can be used for long-term float charging of 12V lead-acid batteries.

2. PERFORMANCE AND CHARACTERISTICS

- 1) Switch power supply structure, wide DC input voltage range, small size, light weight, high efficiency;
- 2) Automatic two-stage charging process (first constant current, then constant voltage) carried out according to storage battery charging characteristics to prevent overcharging and significantly prolong battery lifetime;
- 3) Built-in current protective circuit for short-circuit protection and reverse connection protection;
- 4) Both charging voltage and current value can be regulated by potentiometer on the spot;
- 5) Suitable for 12V storage battery and the rated current is 3A;
- 6) LED display: Power indication (Green light) and charging indication (Red light).

3. CHARGING PRINCIPLE

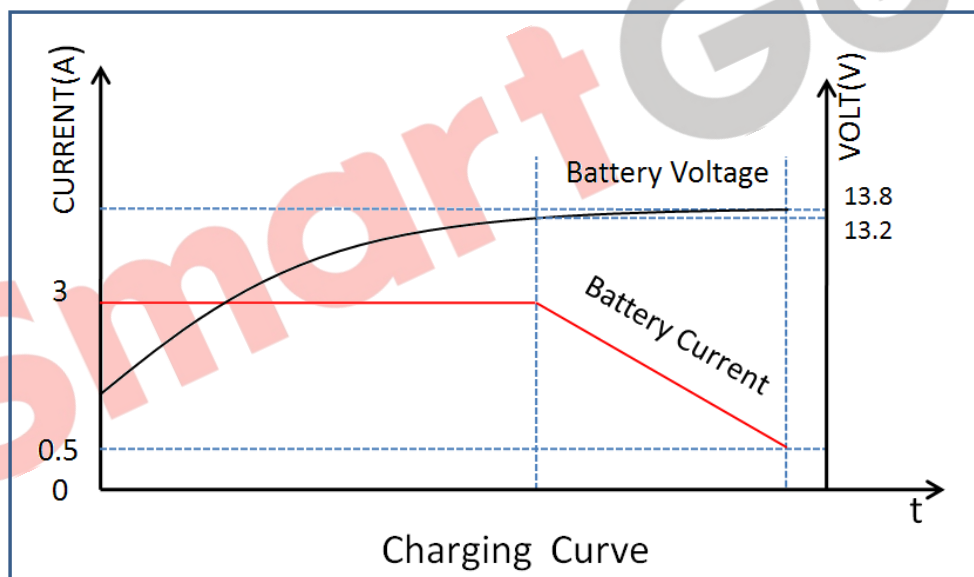


Fig.1 Charging Principle

Charging is performed according to the battery charging characteristics using two-stage method. The first-stage charging mode is “constant current” which means that when the battery terminal voltage falls below the pre-set value, charging current will be constant. The second-stage charging mode is “float charging”, when the battery terminal voltage exceeds the pre-set value, charging current will decrease with the rising of terminal voltage until the pre-set current value is reached; then chargers automatically return to float mode. As soon as charging current value falls below 0.5A and the constant voltage value is reached, the battery is basically charged (charging indicator will extinguish). After that charging current will only neutralize the battery self discharge. Even long-term charging cannot harm the battery, as charger can keep the battery fully charged and so guarantee long lifetime of the battery.

4. SPECIFICATION

Table 2 Technical Parameters

Items	Contents	Parameters
Input Characteristics	Rated Input Voltage	DC48V
	Input Voltage Range	DC36V~DC72V
	Rated Input Current	1A
	No-load Power Consumption	<3W
Output Characteristics	No-load Output Voltage	13.8V, (Error $\pm 1\%$)
	Rated Charging Current	3A, (Error $\pm 2\%$)
Insulating Property	Insulating Resistance	Between input and output, input and shell, output and shell are: DC500V 1min $R_L \geq 10M\Omega$
	Insulating Voltage	Between input and output, input and shell, output and shell are: DC500V 1min; Leakage current: $I_L \leq 3.5mA$
Working Condition	Working Temperature	$(-30 \sim +55)^\circ C$
	Working Humidity	20%RH~93%RH (No condensation)
Storage Condition	Storage Temperature	$(-40 \sim +85)^\circ C$
Shape Structure	Weight	0.66kg
	Dimension	143mm*96mm*55mm (length*width*height)

5. VOLTAGE/CURRENT REGULATION

5.1. VOLTAGE REGULATION

If adjust voltage on-site, battery needs to be disconnected with battery charger, and then adjust the voltage potentiometer (VOLT) to the appropriate value while measuring the charger output voltage.

5.2. CURRENT REGULATION

After connecting output port to the storage battery, measuring charging current under 12.5V charging voltage, and then adjust the current potentiometer (AMP) to the appropriate value. Current also can be estimated according to the scale of the current potentiometer.

6. OPERATION

6.1. MASK DESCRIPTION

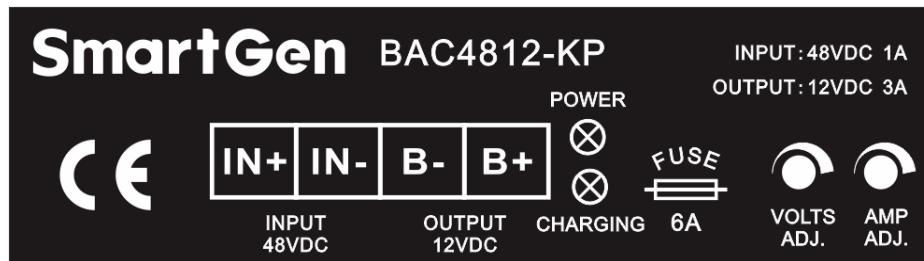


Fig.2 BAC4812-KP Mask

- Connect terminals IN+ and IN- to DC48V using BVR 1mm² multi-strand copper line.
- Connect B+ and B- to battery positive and negative using BVR 1.5mm² multi-strand copper line.
- POWER: Power supply indicator, illuminates when the charger is operating normally.
- CHARGING: Charging indicator, illuminates when charging current exceeds 0.5A while extinguishes when falls below 0.5A.
- VOLTS: charging voltage regulator potentiometer.
- AMP: charging current regulator potentiometer.
- FUSE: Output fuse; rated current: 6A; fuse will blow out when output connection is reversed (no output voltage). It will work normally once correct connection and replace the fuse.

▲NOTE:

- 1) Because there is diode and current-limiting circuit inner the charger, it can be used together with charging generator, and there is no need to disconnect the charger when cranking.
- 2) During genset is running, high current will cause voltage drop in charging line, so recommend separately connecting to battery terminal to avoid disturbance on sampling precision.

6.2. COMMON FAULTS AND 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 on but output terminal has no voltage, and then remove the output fuse tube to visually observe whether fuse is blown or not, if condition permits, multimeter can be used to measure the fuse status.

- a) If output terminal 6A fuse is blown, users only needs to change the same capacity fuse.
- b) If output fuse isn't blown or after the fuse is replaced, battery still doesn't output, battery needs to depot repair.
- c) Fuse burn emergency method: using conductive metal wire short connects burnt fuse, and then change the fuse later.

6.2.2. PROCEDURES OF CHANGING FUSE

- a) Press hard towards inside with slotted screwdriver, screw counter-clockwise and then take out the fuse. (improper operation or over tightening may damage the block).
- b) Put a new fuse into the block, press with the slotted screwdriver and screw clockwise.

7. CASE DIMENSIONS

Unit: mm

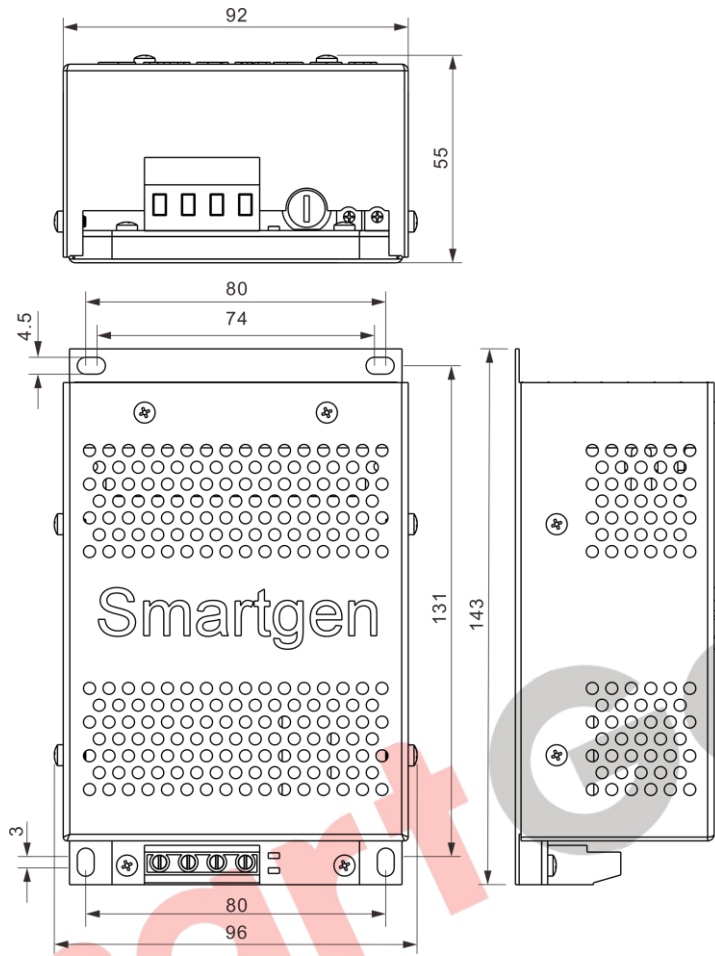


Fig.3 Case Dimensions