

## SMARTGEN BAC06A-24V

# SMARTGEN BAC06A-24V Generator Battery Charger User Manual

Model: BAC06A-24V

## 1. INTRODUCTION

The SMARTGEN BAC06 series switching battery charger is engineered with the latest switch power components, specifically designed for charging lead-acid starting batteries. This charger is ideal for float charging applications, ensuring optimal battery health and longevity. The BAC06A-24V model provides a maximum charging current of 3A for 24V systems.

Key features include:

- Designed with a switching power structure, offering a wide range of AC voltage input, compact volume, light weight, and high efficiency.
- Utilizes a two-stage charging method (constant current followed by constant voltage) to fully consider the charging properties of lead-acid batteries, preventing overcharging and extending battery life.
- Incorporates short circuit and reverse connection protection for enhanced safety.
- Charging voltage and current can be adjusted on-site via potentiometers.
- LED indicators provide clear power and charging status.
- Horizontal installation type for the BAC06A model, ensuring easy setup.

## 2. SAFETY INFORMATION

Please read all safety instructions carefully before installing or operating the charger. Failure to follow these instructions may result in electric shock, fire, or serious injury.

- Ensure the input voltage range (90-280VAC) is compatible with your power supply.
- Always disconnect power before making or breaking connections to the battery or AC input.
- Do not operate the charger in wet or damp conditions.
- Ensure proper ventilation around the charger to prevent overheating.
- Verify correct polarity when connecting to the battery (B+ to positive, B- to negative) to avoid reverse connection damage.
- The charger is designed for lead-acid batteries only. Do not use with other battery types.

- In case of smoke, unusual odors, or abnormal operation, immediately disconnect power and contact qualified personnel.

### 3. PRODUCT OVERVIEW AND COMPONENTS

The BAC06A-24V charger features a robust design with clearly labeled terminals and indicators for ease of use and installation.



Figure 3.1: Front view of the BAC06A-24V charger. This image displays the input terminals (L, N), output terminals (B-, B+), fuse, LED indicators for Power and Charging, and adjustment potentiometers for voltage and current.



Figure 3.2: Angled view of the BAC06A-24V charger, highlighting its compact black metal casing with ventilation holes and the green terminal block.



Figure 3.3: Side view of the BAC06A-24V charger, illustrating the heat sink fins designed for efficient heat dissipation.

### Component Identification:

- **L, N Terminals:** AC input connections (Live and Neutral).
- **B-, B+ Terminals:** DC output connections for battery (Negative and Positive).
- **FUSE:** 10A fuse for protection.
- **POWER LED:** Indicates when the unit is powered on.
- **CHARGING LED:** Indicates when the battery is actively being charged.
- **VOLTS ADJ. POTENTIOMETER:** Used to fine-tune the output voltage.
- **AMP ADJ. POTENTIOMETER:** Used to fine-tune the charging current.

## 4. SETUP AND INSTALLATION

The BAC06A-24V is designed for horizontal installation. Follow these steps for proper setup:

1. **Mounting:** Securely mount the charger in a well-ventilated area using the mounting holes on its base. Ensure there is adequate space around the unit for air circulation, especially near the heat sink fins.
2. **AC Input Connection:** Connect the AC power supply (90-280VAC, 50/60Hz) to the 'L' and 'N' terminals. Use appropriate gauge wiring for your installation.
3. **Battery Connection:** Connect the battery to be charged to the 'B+' and 'B-' terminals. Ensure correct polarity: connect the battery's positive terminal to 'B+' and the negative terminal to 'B-'.
4. **Initial Check:** Before applying power, double-check all connections for tightness and correct polarity.

## 7 CASE DIMENSIONS

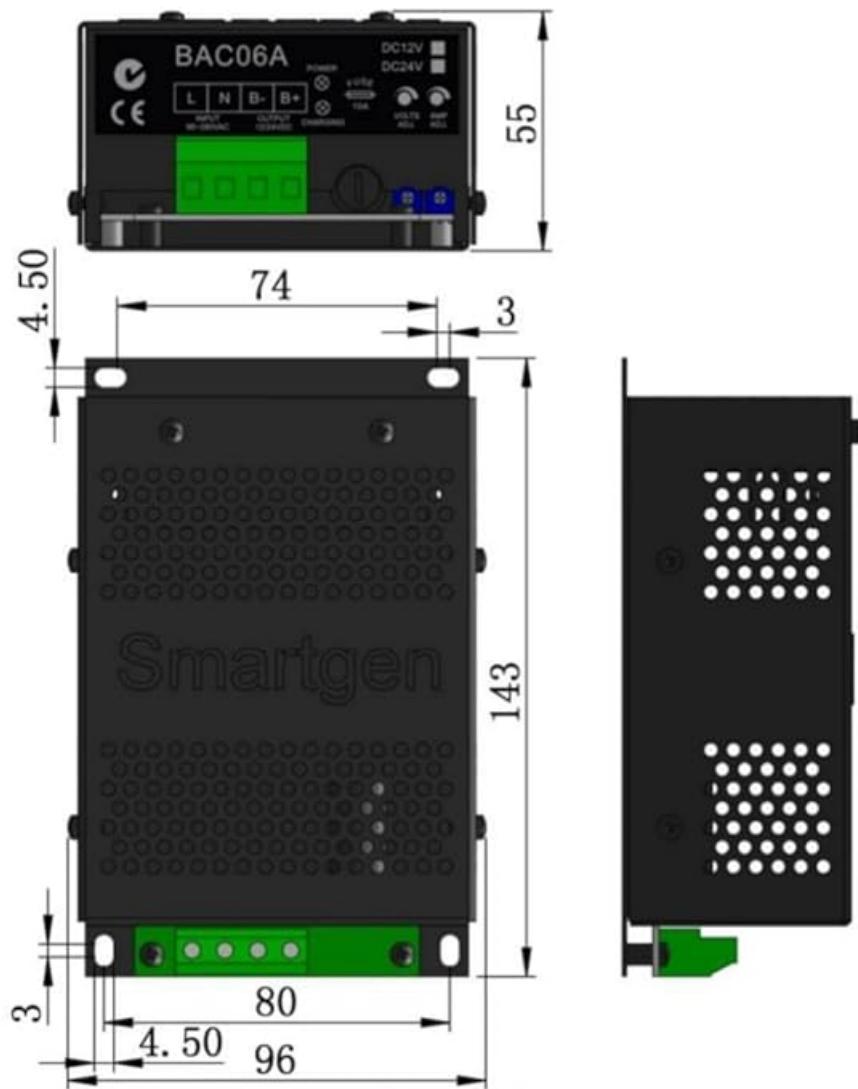
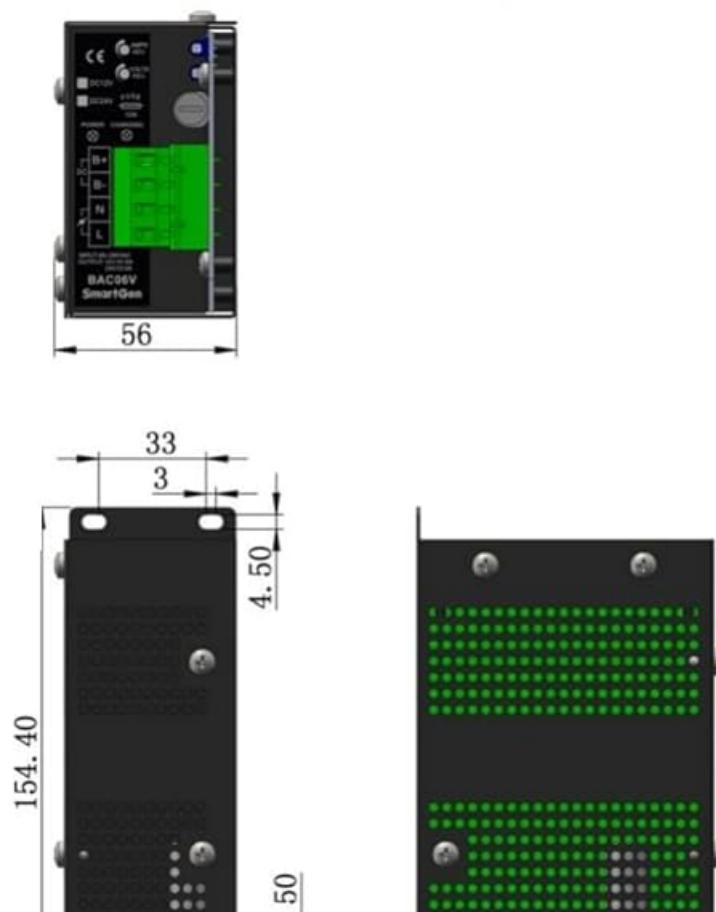


Chart 4. BAC06A Dimension



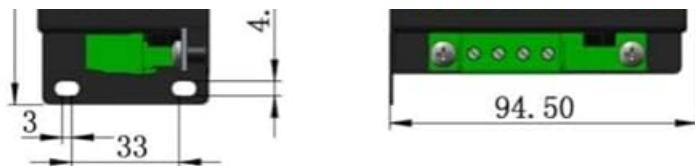


Chart 5. BAC06V Dimension

Figure 4.1: Case dimensions for BAC06A (horizontal) and BAC06V (vertical) models. The BAC06A has dimensions of 143mm (length) x 96mm (width) x 55mm (height).

## 5. OPERATING INSTRUCTIONS

Once installed, the BAC06A-24V operates largely automatically. Follow these guidelines for optimal performance:

- Power On:** Apply AC power to the charger. The 'POWER' LED will illuminate, indicating the unit is active.
- Charging Process:** If a connected battery requires charging, the 'CHARGING' LED will illuminate. The charger will automatically enter the two-stage charging process: constant current phase followed by constant voltage phase.
- Voltage Adjustment:** The output voltage can be fine-tuned using the 'VOLTS ADJ.' potentiometer. This allows for precise matching to specific battery float charge requirements.
- Current Adjustment:** The charging current can be adjusted using the 'AMP ADJ.' potentiometer. This is useful for setting the maximum charge rate.
- Float Charge:** Once the battery reaches full charge, the charger will maintain a float voltage, preventing overcharging and ensuring the battery remains topped up. The 'CHARGING' LED may turn off or dim depending on the battery's state.

*Note:* The charger is designed for permanent connection to generator starter batteries and provides overload and short circuit protections to avoid disconnection during cranking.

## 6. MAINTENANCE

The BAC06A-24V charger is designed for low maintenance. However, regular checks can ensure its longevity and reliable operation:

- Cleanliness:** Keep the charger clean and free from dust and debris. Use a soft, dry cloth for cleaning. Do not use liquid cleaners.
- Ventilation:** Ensure that the ventilation holes and heat sink fins are not obstructed. Proper airflow is crucial for preventing overheating.
- Connections:** Periodically check all wiring connections (AC input and DC output) for tightness and signs of corrosion. Loose connections can lead to poor performance or damage.
- Fuse Check:** If the charger fails to power on or charge, check the 10A fuse. Replace it only with a fuse of the same type and rating.
- Environmental Conditions:** Ensure the operating environment remains within the specified temperature range (-30°C to +55°C) and humidity (10%RH ~ 95%RH, non-condensing).

## 7. TROUBLESHOOTING

This section provides solutions to common issues you might encounter with your BAC06A-24V charger.

Problem	Possible Cause	Solution
Charger not powering on (POWER LED off)	No AC input power; Blown fuse; Internal fault.	Check AC power source and connections. Verify the 10A fuse and replace if necessary. If problem persists, contact support.
CHARGING LED not illuminating	Battery fully charged; Incorrect battery connection (reverse polarity); Battery voltage too low; Internal fault.	Confirm battery requires charging. Check battery polarity. Ensure battery voltage is within charger's operating range.
Charger gets excessively hot	Poor ventilation; Overload condition.	Ensure adequate airflow around the unit. Reduce load if possible. If overheating continues, disconnect and contact support.
Output voltage/current cannot be adjusted	Potentiometer fault; Internal circuit issue.	Contact support for assistance.

## 8. TECHNICAL SPECIFICATIONS

Detailed technical specifications for the BAC06A-24V charger are provided below:

SPECIFICATION			
Category	Items	12V	24V
Input	Nominal AC Voltage	AC (100~250)V	
	Max. AC Voltage	AC (90~280)V	
	AC Frequency	50Hz/60Hz	
	Max. Input Current	2A	
	Efficiency	>82%	
Output	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 $R_L \geq 50M\Omega$	
	Insulation Voltage	Between input and output, input and shell both are: AC1500V 50Hz 1min Leakage current: $I_L \leq 3.5mA$ .	
Working Conditions	Working Temperature	(-30~55)°C	
	Storage Temperature	(-40~85)°C	
	Working Humidity	10%RH~95%RH(No condensation)	
Profile	BAC06A	Weight	0.65kg
		Dimension	143mm×96mm×55mm (Length*Width*Height)
	BAC06V	Weight	0.69kg
		Dimension	154.4mm×94.5mm×56mm (Length*Width*Height)

Figure 8.1: Comprehensive technical specifications for the BAC06A charger, including input, output, insulation, working conditions, and physical profile.

Category	Item	Specification (24V Model)
Input	Nominal AC Voltage	AC (100~250)V
	Max. AC Voltage	AC (90~280)V
	AC Frequency	50Hz/60Hz
	Max. Input Current	2A
	Efficiency	>85%
	No-Load Power Consumption	<3W
Output	Charging Current	2A~3A (Error±2%)
	Factory Charging Current	3A
	Max. Power	85W
	No-load Voltage	27.6V (Error±1%)
Insulation	Insulation Resistance	Between input and output, input and shell both are: DC500V 1min $R_L \geq 50M\Omega$
	Insulation Voltage	Between input and output, input and shell both are: AC1500V 50Hz 1min Leakage current: $I_L \leq 3.5mA$
Working Conditions	Operating Temperature	(-30~+55)°C
	Storage Temperature	(-40~+85)°C
	Working Humidity	10%RH ~ 95%RH (No condensation)
Profile (BAC06A)	Net Weight	0.65kg
	Dimensions (L*W*H)	143mm × 96mm × 55mm

## 9. WARRANTY AND SUPPORT

For warranty information, please refer to the documentation provided with your purchase or contact your local SMARTGEN distributor. SMARTGEN is committed to providing high-quality products and customer satisfaction.

If you encounter any issues not covered in this manual or require further assistance, please contact SMARTGEN customer support through their official website or authorized service centers. When contacting support, please have your product model number (BAC06A-24V) and purchase details ready.

