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SmartGen BAC1203VE

SmartGen BAC1203VE 12V 3A Battery Charger User Manual

Model: BAC1203VE

1. OVERVIEW

The SmartGen BAC1203VE is a 12V 3A battery charger designed for long-term float charging of lead-acid engine starter batteries. It incorporates an up-to-date power supply device and is specifically engineered to meet the charging characteristics required for optimal battery health and longevity. This manual provides detailed instructions for the installation, operation, and maintenance of the BAC1203VE Battery Charger.



Figure 1.1: Front view of the SmartGen BAC1203VE Battery Charger, showing input/output specifications, terminal labels (B+, B-, PE, N, L), and LED indicators for Power and Charging.

2. PRODUCT FEATURES AND CHARACTERISTICS

- **Switch Power Supply Structure:** Features a wide input voltage range, compact size, light weight, and high efficiency.
- **Automatic Two-Stage Charging:** Implements a two-stage charging process (constant current followed by

constant voltage) to prevent overcharging and significantly extend battery lifespan.

- **Built-in Protection:** Includes a current protective circuit for short-circuit protection.
- **Stabilized DC Power Supply:** Can also function as a stabilized DC power supply.
- **Permanent Connection Design:** Designed for permanent connection to generator starter batteries.
- **Overload and Short Circuit Protection:** Ensures protection to prevent disconnection during engine cranking.
- **Isolated Device Case:** Allows for a phase-to-phase 170-270V AC connection.
- **LED Display:** Provides clear indications for power status and charging activity.

3. SETUP AND INSTALLATION

3.1 Physical Installation

The BAC1203VE charger is designed for DIN rail mounting. Ensure the mounting location is secure, well-ventilated, and free from excessive moisture or extreme temperatures. Refer to the dimensions and mounting diagrams for proper installation.





Figure 3.1: Side view of the charger, illustrating the integrated orange DIN rail mounting clip for easy installation onto standard DIN rails.



6 CASE DIMENSIONS

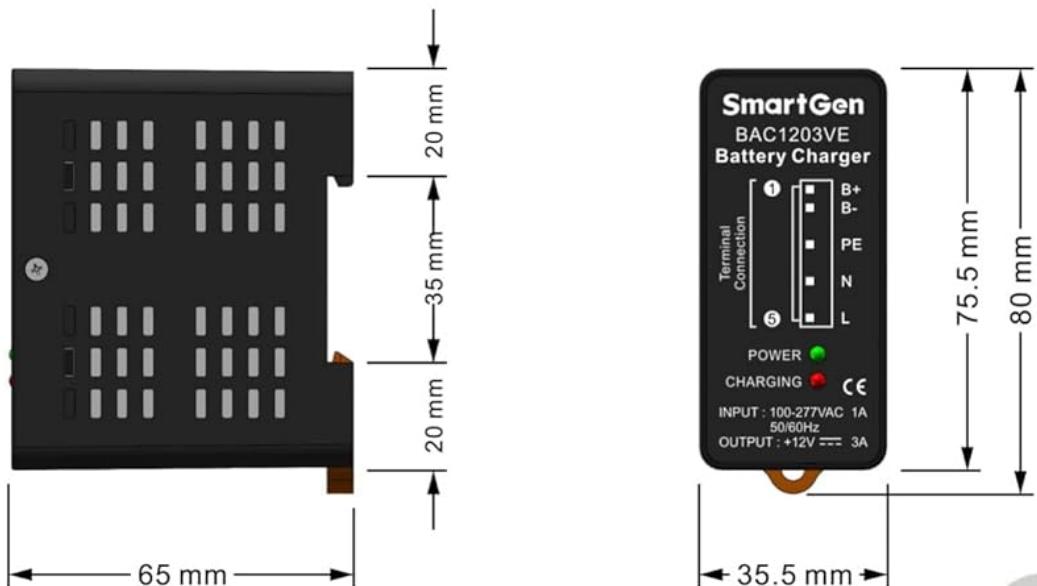


Fig.3 – BAC1203VE Guide-rail Installation

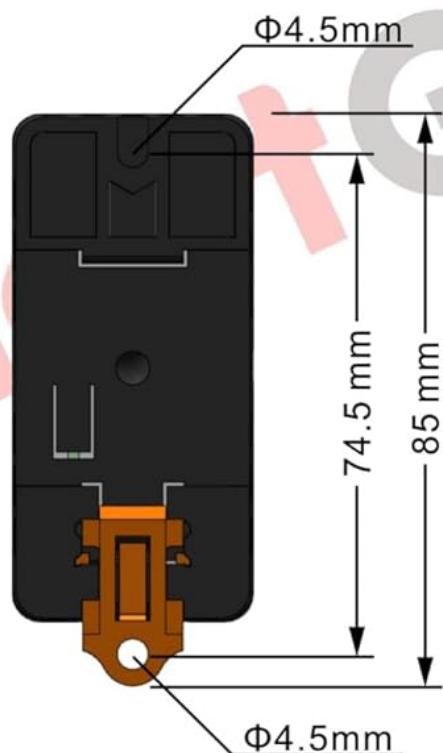
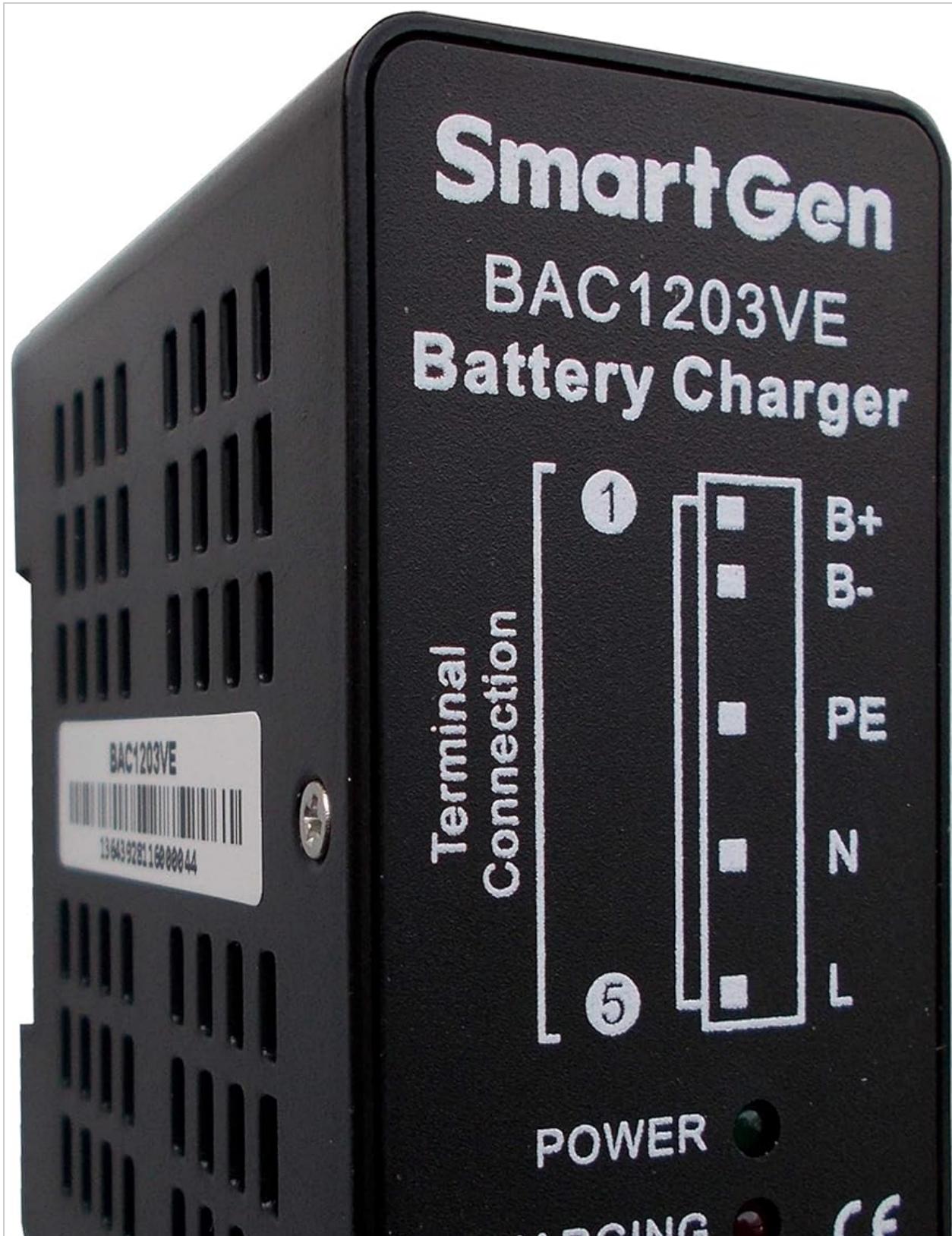


Fig.4 – BAC1203VE Screw Fixed Installation

3.2 Electrical Connections

Connect the charger according to the terminal labels provided on the unit. Ensure all connections are secure and comply with local electrical codes. The input voltage range is AC 100-277V at 50/60Hz, and the output is +12V DC at 3A.

- **B+:** Positive terminal for battery connection.
- **B-:** Negative terminal for battery connection.
- **PE:** Protective Earth ground connection.
- **N:** Neutral terminal for AC input.
- **L:** Live/Phase terminal for AC input.



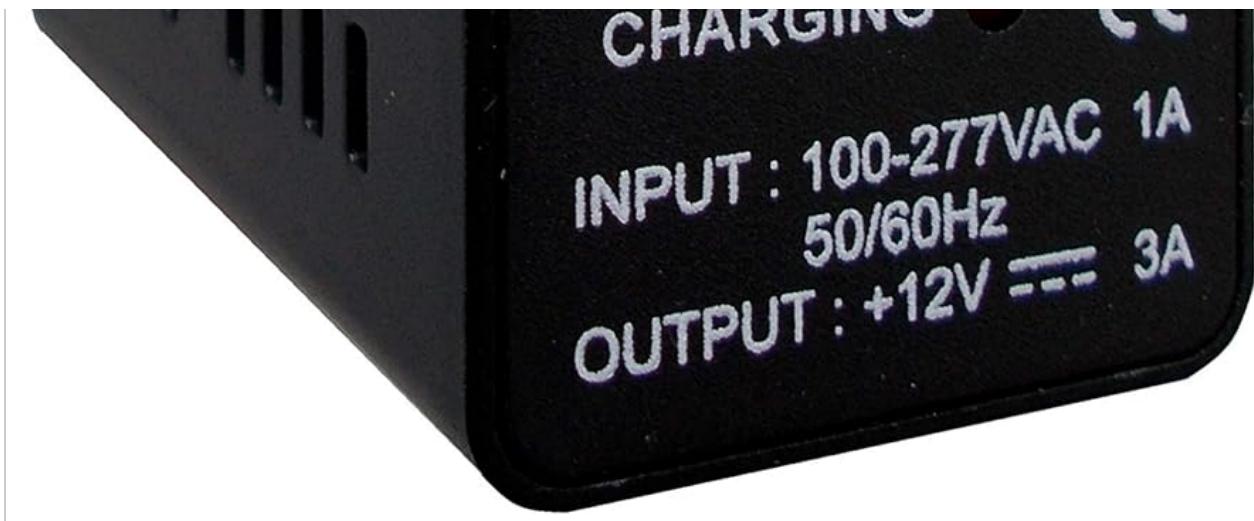


Figure 3.3: Angled view of the charger, clearly showing the terminal connection points labeled 1 through 5 for B+, B-, PE, N, and L respectively.

4. OPERATION

4.1 Charging Principle

The BAC1203VE employs an automatic two-stage charging process to optimize battery charging and extend its life. This process involves:

1. **Constant Current Stage:** Initially, the charger delivers a constant current until the battery voltage reaches a pre-set value.
2. **Constant Voltage (Float) Stage:** Once the pre-set voltage is reached, the charger switches to a constant voltage mode, reducing the current to maintain the battery at a full charge without overcharging. This float charge ensures the battery remains fully charged and ready for use.



1 OVERVIEW

Fit with up-to-date power supply device, charger BAC1203VE 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 with the maximum output current 3A.

2 PERFORMANCE AND CHARACTERISTICS

- Switch power supply structure, wide input voltage range, small size, light weight, and high efficiency rate;
- 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;
- Built-in current protective circuit for short-circuit protection;
- Suitable for 12V storage battery with the maximum charging current 3A;
- LED display: Power indication and charging indication.

3 CHARGING PRINCIPLE

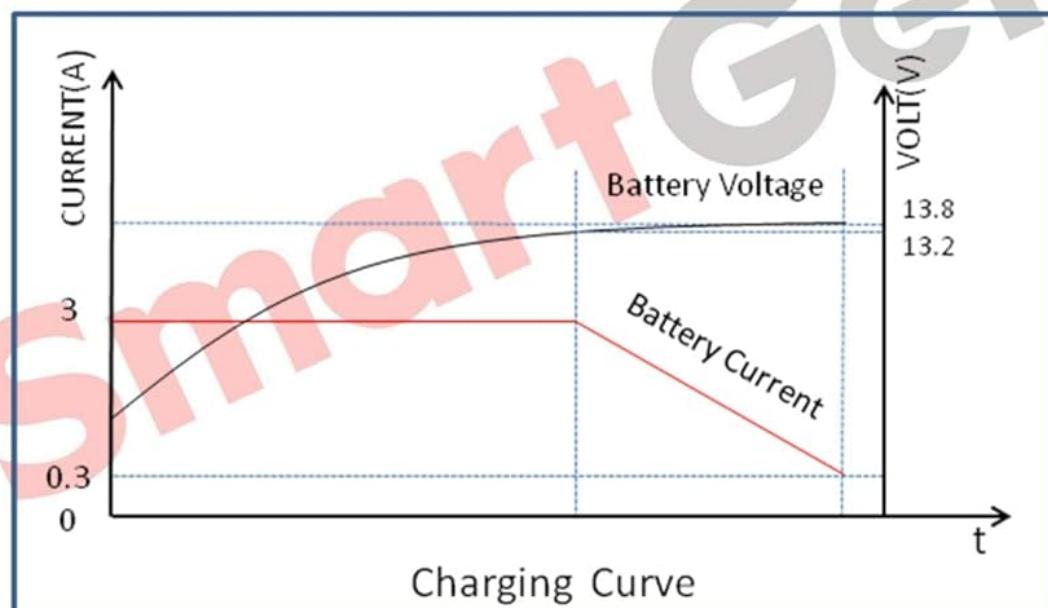


Fig.1- Charging Principle

Charging is performed according to the battery charging characteristics using two-stage method. Charging type is 'constant current type' which means that 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 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 voltage value exceeds 13.5V, the battery is basically fully charged. 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.

4.2 LED Indicators

- **Power LED (Green):** Illuminates when the charger is receiving input power.
- **Charging LED (Red):** Illuminates when the battery is actively being charged. It may turn off or change intensity during the float stage, indicating the battery is fully charged or in maintenance mode.

5. SPECIFICATIONS

The following table details the technical specifications of the SmartGen BAC1203VE Battery Charger:

4 SPECIFICATION

Table 2 – Parameters Specification

Items	Contents	Parameters
Input Characteristics	Nominal AC Voltage	AC (100~277)V
	Max. AC Voltage	AC (90~305)V
	Max. Input Current	1A
	No-load Power Used	<3W
	AC Frequency	45Hz~65Hz
	Max. Working Efficiency	87%
Output Characteristics	No-load Output Voltage	13.8V (Error±2%)
	Rated Charging Current	3A (Error±5%)
	Max. Output Power	40W
Insulating Property	Insulation Resistance	Between input and output, input and shall both are: AC3kV, and in 1min $R_L \geq 50M\Omega$
	Leakage Current	Between input and output, input and PE both are: AC3kV, and in 1min leakage current: $I_L \leq 3.5mA$
Working Conditions	Working Temperature	(-30~+55)°C
	Storage Temperature	(-40~+85)°C
Shape Structure	Working Humidity	20%RH~93%RH (No condensation)
	Weight	150g
	Dimension	80mm×35.5mm×65mm (length*width*height)

5 OPERATION

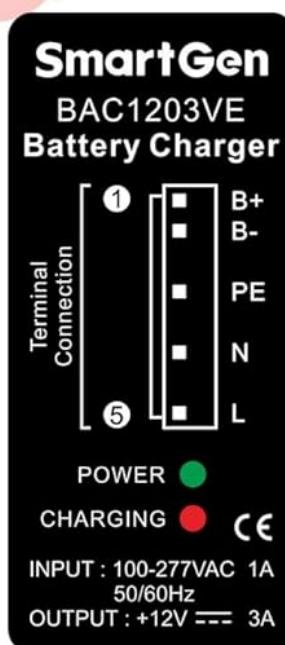


Fig.2 - BAC1203VE Mask

Category	Item	Specification
Input Characteristics	Nominal AC Voltage	AC (100-277)V
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	Max. Input Current	1A
	No-load Power Used	<3W
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Max. Working Efficiency	87%	
Output Characteristics	No-load Output Voltage	13.8V (Error±2%)
	Rated Charging Current	3A (Error±5%)
	Max. Output Power	40W
Insulating Property	Insulation Resistance	Between input and output, input and shell both are: AC3kV, and in 1min $R \geq 50M\Omega$
	Leakage Current	Between input and output, input and PE both are: AC3kV, and in 1min leakage current: $I_L \leq 3.5mA$
Working Conditions	Working Temperature	(-30°C~+55°C)
	Storage Temperature	(-40°C~+85°C)
	Working Humidity	20%RH~93%RH (No condensation)
Shape Structure	Weight	0.15kg
	Dimension	80mm×35.5mm×65mm (length×width×height)

6. MAINTENANCE

To ensure optimal performance and longevity of your SmartGen BAC1203VE Battery Charger, follow these general maintenance guidelines:

- **Keep Clean:** Periodically clean the exterior of the charger with a dry, soft cloth. Avoid using harsh chemicals or abrasive materials.
- **Check Connections:** Regularly inspect all electrical connections (input and output) to ensure they are tight and free from corrosion. Loose connections can lead to poor performance or damage.
- **Ensure Ventilation:** Verify that the charger's ventilation grilles are not obstructed to allow for proper heat

dissipation. Adequate airflow is crucial for preventing overheating.

- **Environmental Conditions:** Operate the charger within the specified working temperature and humidity ranges to prevent damage.

7. TROUBLESHOOTING

If you encounter issues with your BAC1203VE charger, consider the following basic troubleshooting steps:

- **No Power Indicator:** Check the AC input power supply. Ensure the power cord is securely connected and the power source is active.
- **No Charging Indicator:** Verify that the battery is properly connected to the charger's output terminals (B+ and B-). Ensure the battery voltage is within the acceptable range for charging.
- **Slow Charging:** Confirm that the battery type and capacity are suitable for a 3A charger. Extremely discharged batteries may take longer to charge.
- **Overload/Short Circuit:** If the charger stops functioning, check for any short circuits in the wiring or an overloaded condition. The built-in protection should prevent damage, but the issue needs to be resolved before resuming operation.

If problems persist after performing these checks, contact SmartGen customer support for further assistance.

8. WARRANTY AND SUPPORT

For information regarding product warranty, technical support, or service, please contact SmartGen directly through their official channels. Keep your purchase receipt and product model number (BAC1203VE) available when seeking support.

Related Documents - BAC1203VE

	<p><u>SmartGen ACC7100 Series Diesel Air Compressor Controller User Manual</u></p> <p>User manual for SmartGen ACC7100 and ACC7100A Diesel Air Compressor Controllers, detailing features, operation, specifications, installation, and troubleshooting for industrial applications.</p>
	<p><u>SmartGen HMC6 Power Management Controller User Manual</u></p> <p>This user manual provides comprehensive details on the SmartGen HMC6 Power Management Controller, designed for marine applications. It covers generator control, supervision, protection, automatic synchronization, load sharing, and advanced power management functions for multi-generator systems. Learn about specifications, operation, parameters, connections, and troubleshooting.</p>

 <p>SmartGen HAT310 ATS CONTROLLER USER MANUAL</p>	<p>SmartGen HAT310 ATS Controller: User Manual & Technical Specifications</p> <p>User manual for the SmartGen HAT310 Automatic Transfer Switch (ATS) Controller. Details specifications, panel functions, operation, wiring diagrams, installation, and troubleshooting for reliable power management.</p>
 <p>SmartGen SGUE485 COMMUNICATION INTERFACE CONVERSION MODULE USER MANUAL</p>	<p>SmartGen SGUE485 Communication Interface Conversion Module User Manual</p> <p>User manual for the SmartGen SGUE485, a communication interface conversion module that converts USB to isolated RS485. Details features, technical parameters, terminal descriptions, applications, and installation for generator control systems.</p>
 <p>SmartGen SG485-3 INTERFACE EXPANSION MODULE USER MANUAL</p>	<p>SmartGen SG485-3 Interface Expansion Module User Manual</p> <p>User manual for the SmartGen SG485-3 Interface Expansion Module. This document provides detailed specifications, wiring diagrams, connection examples, and installation guidelines for the RS485 communication module.</p>
 <p>SmartGen HMC4000RM REMOTE MONITORING CONTROLLER USER MANUAL</p>	<p>SmartGen HMC4000RM Remote Monitoring Controller User Manual</p> <p>User manual for the SmartGen HMC4000RM remote monitoring controller, providing detailed information on its operation, specifications, installation, and troubleshooting for generator set applications.</p>

Documents - SmartGen – BAC1203VE

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MANUAL DE INSTALAÇÃO E OPERAÇÃO

CARREGADOR RETIFICADOR DE BATERIA

BAC1203VE

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