



**SmartGen**  
ideas for power

**BAC2405/2403/1205VE**

**BATTERY CHARGER**

**USER MANUAL**



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



Chinese trademark

**SmartGen** English trademark

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

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Software Version

Date	Version	Note
2016-02-20	1.0	Original Release

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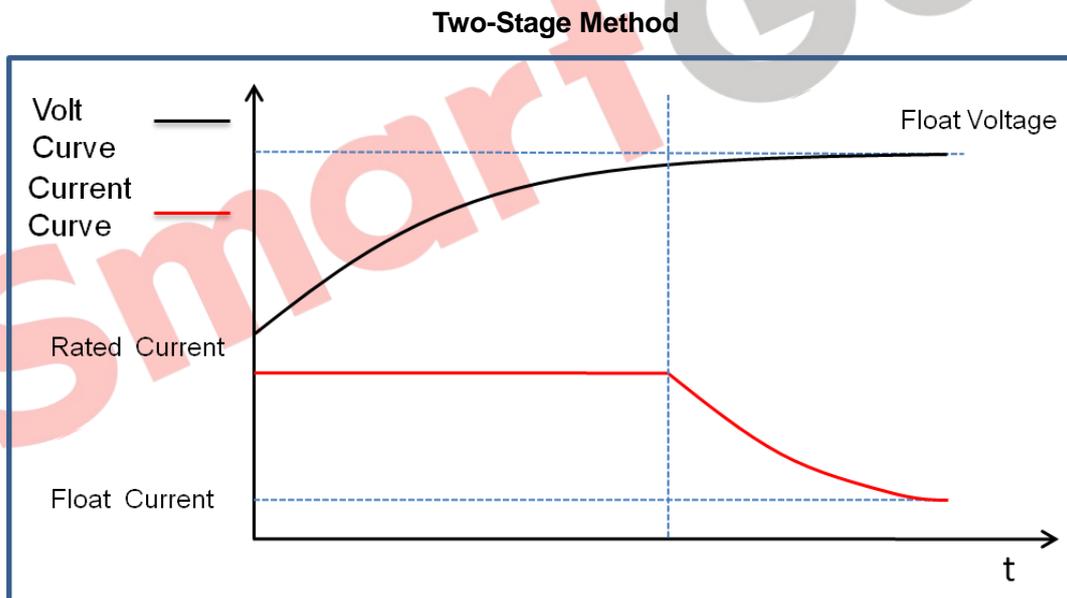
## 1. OVERVIEW

BAC2405/2403/1205VE switching 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.

## 2. PERFORMANCE AND CHARACTERISTICS

- 1) Designed in switching power structure, wide range of AC voltage input, small volume, light weight and high efficiency;
- 2) Two-stage charging method (constant current firstly and then constant voltage), fully considering charging property of the lead-acid battery, can avoid overcharging and extent extend the battery life to the fullest;
- 3) With short circuit and reverse connection protection;
- 4) Charging voltage can be adjusted via potentiometer on the spot (breaking the connection between the batteries when adjusting);
- 5) LED display: charging indication and full charged indication;
- 6) Vertical type (35mm guide-rail way and screw fixed way) for installation and furthest decreased installation dimension.

## 3. CHARGING PRINCIPLE

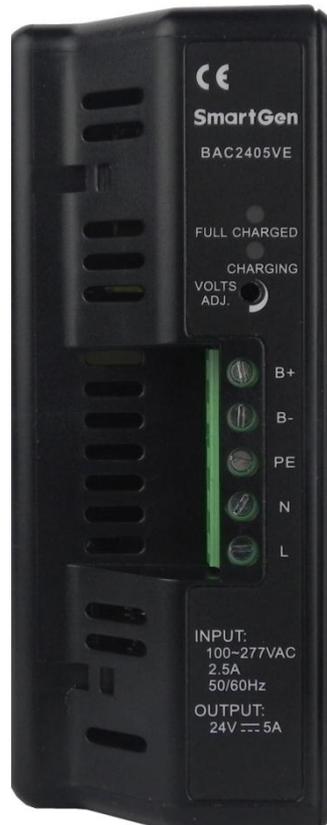


According to charging property of the lead-acid battery, BAC2405/2403/1205VE battery charger uses 2-stage charging method and charge mode is “constant-current”. When battery voltage is under the threshold, it is charging in constant-current mode; when the battery voltage is higher than the threshold, 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. Thus the charger can maintain a full charged condition and extend the battery life.

**4. PARAMETERS CONFIGURATION**

Items		Parameters		
		BAC2405VE	BAC2403VE	BAC1205VE
Input Characteristics	Nominal AC Voltage	AC (100~277)V	AC (100~277)V	AC (100~277)V
	Max. AC Voltage	AC (90~305)V	AC (90~305)V	AC (90~305)V
	AC Frequency	50/60Hz	50/60Hz	50/60Hz
	Max. Active Power	164W	102W	88W
	Max. Current	2.5A	2A	2A
Output Characteristics	Battery Voltage	24V	24V	12V
	No-load Output Voltage	(26~28.5)V	(26~28.5)V	(12~14.5)V
	Rated Output Current	5A	3A	5A
	Max. Output Power	135W	81W	68W
	Max. Efficiency	89%	86%	83%
	No-load Loss	<3W	<3W	<3W
Insulating Property	Insulating Resistance	Between input and output, input and shell, output and shell are: $RL \geq 500M\Omega$		
	Insulating Voltage	Between input and output, input and shell are: AC1500V 50Hz(DC2200V) 1min Leakage current: $IL \leq 3.5mA$ Between output and shell is: AC500V 50Hz (DC900V) 1min Leakage current: $IL \leq 3.5mA$		
Working Condition	Working Temperature	(-30~+55) $^{\circ}C$		
	Storage Temperature	(-40~+85) $^{\circ}C$		
	Working Humidity	20%RH~93%RH (No Condensation)		
Shape Structure	Weight	0.42kg	0.41kg	0.41kg
	Dimension	56mm×108mm×141mm (length×width×height)	56mm×108mm×141mm (length×width×height)	56mm×108mm×141mm (length×width×height)

## 5. OPERATION



1. Connect terminals L and N to alternating voltage (100~277)V using BVR 1mm<sup>2</sup> multi-strand copper line.
2. Connect terminals PE to the earth.
3. Connect B+ and B- to battery positive and negative using multi-strand BVR1.5mm<sup>2</sup> copper wires.
4. VOLTS: charging voltage regulator-potentiometer
5. CHARGING: charging indicator, illuminated when charging current exceeds 0.3A.
6. FULL CHARGED: full charged indicator, illuminated when charger is no-load or battery is full charged.

**⚠Note:** Inappropriate operation or excessive strength can damage the fuse.

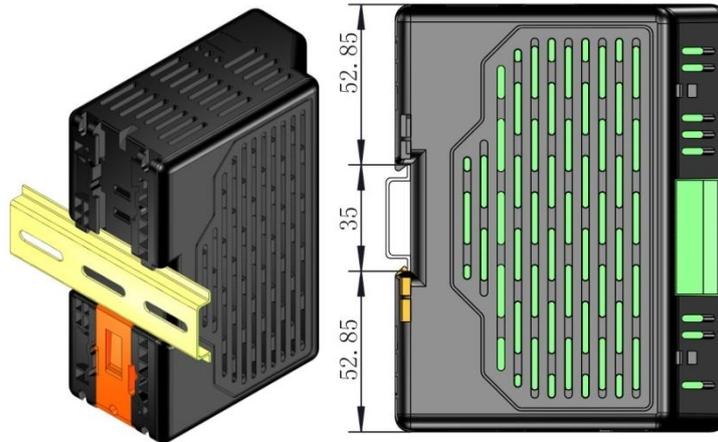
**⚠Note:**

- 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. CASE DIMENSIONS AND INSTALLATION**

Installation 1 (Vertical guide-rail type):

Unit: mm



Installation 2 (Vertical screw fixed type):

Unit: mm

