BAC06S

SOLAR BATTERY CHARGER

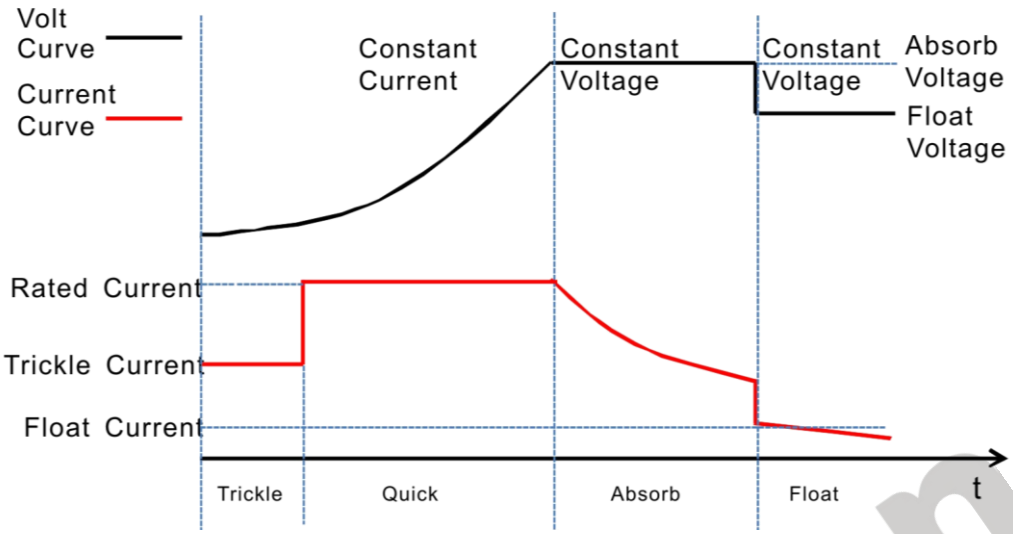
USER MANUAL

SMARTGEN (ZHENGZHOU) TECHNOLOGY CO.,LTD.

3. SPECIFICATION

Category	Items	Parameter	
System	Voltage	12V	24V
Input	Max. Input Voltage	DC48V	
	Max. Input Power	160W	320W
	Efficiency	⩽96%	⩽97%
	MPPT Efficiency	>99%	
Output	Max. Output Voltage	16V	32V
	Factory Default Float Voltage	13.8V	27.6V
	Rated Charging Current	10A	
	Max. Load Current	10A	
Working Condition	Working Temp.	(-30~+55)°C	
	Storage Temp.	(-40~+85)°C	
	Working Humidity	20%RH~93%RH (no condensation)	
Overall Structure	Weight	0.57kg	
	Dimension	143mm×96mm×55mm (L×W×H)	

4. CHARGING PRINCIPLE



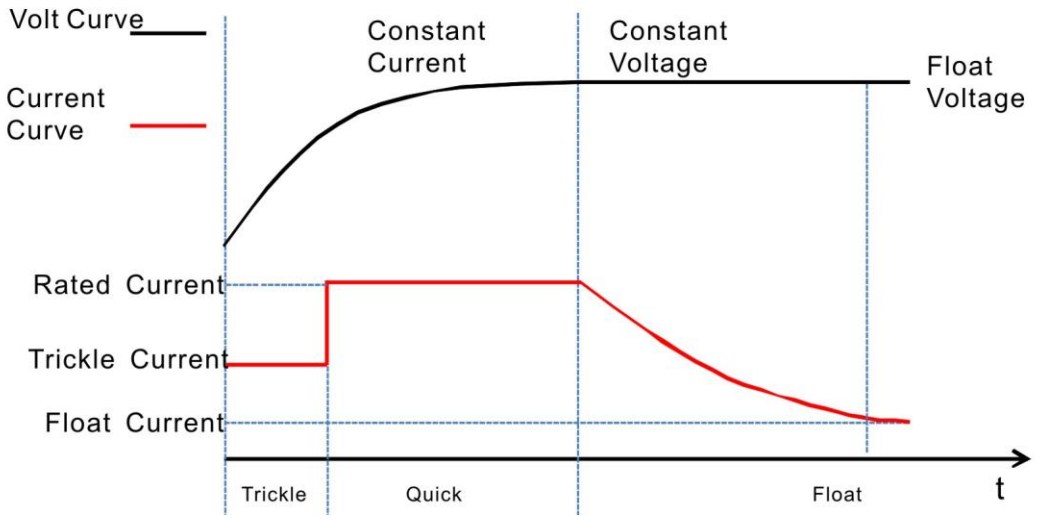
Three-stage Method

Charging is performed according to the battery charging characteristics using three-stage method.

a) The first stage is named as 'constant current': a): Trickle Charge: when the battery terminal voltage is relatively low, then the charging current is low likewise which can prevent the battery temperature is too high. b): Quick Charge: When the battery terminal voltage is relatively high, the charging current will rise to rated value. Large current charging operation leads to an increase in the electricity quantity of the battery.

b) The second stage is named as Absorption Charge: after the first stage, the battery voltage is rise to absorption charge value rapidly, and the charger voltage will keep constant. The battery terminal voltage will stabilize in the absorption charge value with the decreasing of charging current.

c) The third stage is named as Float Charge: After the above two stage, the charge is basically completed and the Float Charge is started automatically. In this stage, the charger voltage reduces to float voltage and the charger current reduces to float value. 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.



Two-stage Method

Charging is performed according to the battery charging characteristics using two-stage method.

a) The first stage is named as ‘constant current’: a): Trickle Charge: when the battery terminal voltage is relatively low, then the charging current is low likewise which can prevent the battery temperature is too high. b): Quick Charge: When the battery terminal voltage is relatively high, the charging current will rise to rated value. Large current charging operation leads to an increase in the electricity quantity of the battery.

b) The second stage is named as Float Charge: The charging current will decrease with the rising of battery electricity. As soon as charging current value falls below 0.3A, 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.

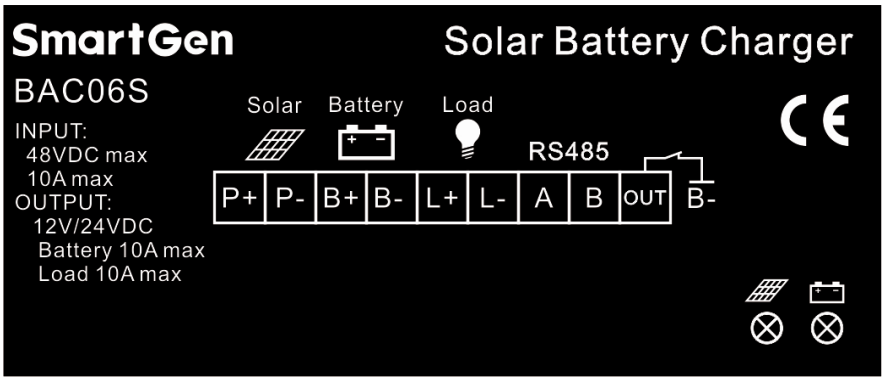
5. PARAMETER CONFIGURATION

Basic Parameter Settings,

No.	Items	Default		Adjustable Range		Description
		24V	12V	24V	12V	
1	Battery Type	2		(0~2)		0:12V ; 1:24V ; 2:Self-adaption
2	Charging Stage	2		(2~3)		2: Two Stage; 3: Three Stage
3	Max. Rated Current	10.0A		Nonadjustable		Maximum charging current
4	Rated Current	100%		(0~100)%		Maximum charging current percentage
5	Absorption Charge Voltage	28.2V	14.1V	(20.0~32.0)V	(10.0~16.0)V	The charging voltage of “Constant Voltage”
6	Absorption Charge Time	1		(0~1)		0: Disable; 1: Enable
7	Absorption Charge Time Setting	1.0h		(0.1~100)h		The charging time of “Constant Voltage”
8	Absorption Charge Complete Current	1		(0~1)		0: Disable; 1: Enable
9	Complete Current Setting	0.5A		(0.20~3.00)A		The transition current from “Absorption Charge” transfer to “Float Charge”.
10	Float Charge Voltage	27.6V	13.8V	(20.0~32.0)V	(10.0~16.0)V	The voltage of “Float Charge”
11	AUTO BOOST Voltage	25.6V	12.8V	(20.0~32.0)V	(10.0~16.0)V	When the charger is in “Float Mode”, it enters into “Quick Charge” if the battery voltage has fallen below the set value.
12	Trickle Charge	1		(0~1)		0: Disable; 1: Enable
13	Trickle Charge Voltage	22.0V	11.0V	(20.0~32.0)V	(10.0~16.0)V	The voltage of “Trickle Charge”
14	Trickle Charge Current	50%		(0~100)%		Maximum charging current percentage
15	Battery Under Voltage Warn	1		(0~1)		0: Disable; 1: Enable
16	Under Voltage Set Value	23.0V	11.5V	(16.0~32.0)V	(8.0~16.0)V	“Under voltage” alarm will be initiated if the

No.	Items	Default		Adjustable Range		Description
		24V	12V	24V	12V	
						battery voltage falls below the set value.
17	Under Voltage Delay	120s		(0~3600)s		"Under voltage" alarm will be initiated if the battery voltage falls below the set value and the delay timer has expired.
18	Under Voltage Return Value	25.0V	12.5V	(16.0~32.0)V	(8.0~16.0)V	The transition voltage from "under voltage" transfer to "normal voltage".
19	Under Voltage Return Delay	10s		(0~3600)s		"Under voltage" alarm will be removed if the battery voltage exceeds the return value and the delay timer has expired.
20	Communication Address	10		1~254		RS485 communication address
21	Baud Rate	0		(0~2)		0：9600bps； 1：19200bps； 2：38400bps； one stop-bit, no parity bit

7. TERMINAL DEFINITION



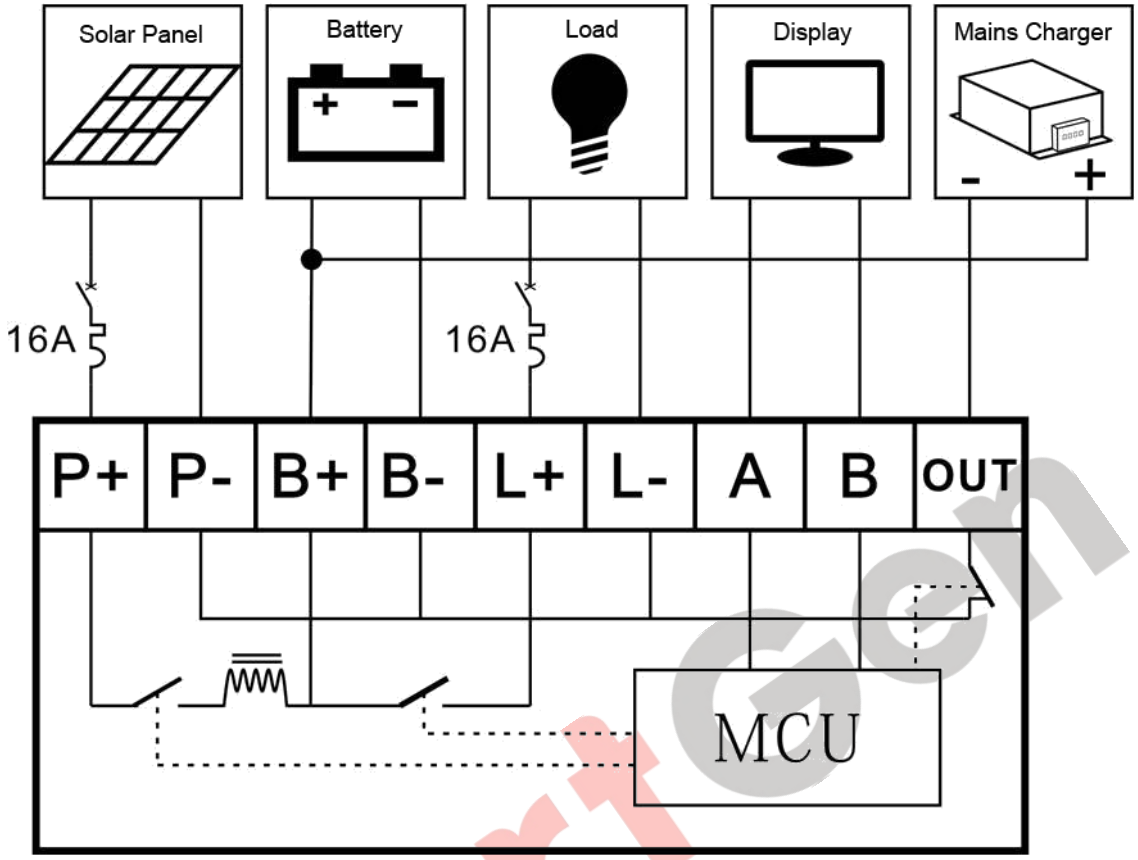
BAC06S Mask

Terminal	Function	Description
P+	Solar Power +	Connect to solar cell panel output
P-	Solar Power-	
B+	Battery +	Connect with the battery to be charged
B-	Battery -	
L+	Load +	Supply power to load
L-	Load -	
A	RS485 +	RS485 communication port
B	RS485 -	
OUT	Output Port	Normally closed, internal normally closed port connect with B-; It is output when charger cannot charge the battery after 60s delay expired (charge failure output); if battery under volt warning enabled, it is output only when detect battery under volt warning alarms.
	Solar Indicator	Indicator lights up if solar cell panel correctly connect and solar voltage exceeds 6V. If load over current, battery indicator and solar indicator flash per 0.5s.
	Battery Indicator	Indicator lights up if battery correctly connect to the battery and battery voltage exceeds 3V; If fail to charge, battery indicator flashes per 0.5s; If load over current, battery indicator and solar indicator flash per 0.5s.

NOTE 1: During gen-set is running, high charging current will cause voltage drop in charging line, so recommend separately connecting to battery terminal to avoid disturbance on sampling precision.

NOTE 2: Power connection order: connecting battery firstly and then solar panel; Power disconnection order: disconnecting solar panel firstly, and then battery. Please follow the correct sequence to connect/disconnect power and inhibit to operate energized connection cable in case of damaging the battery.

8. APPLICATION



APPLICATION INSTRUCTION:

Solar Choose 18V or 36V solar panel, please reference solar type as below.

Battery Choose 12V or 24V battery (24V battery cannot be charged while using 18V solar panel).

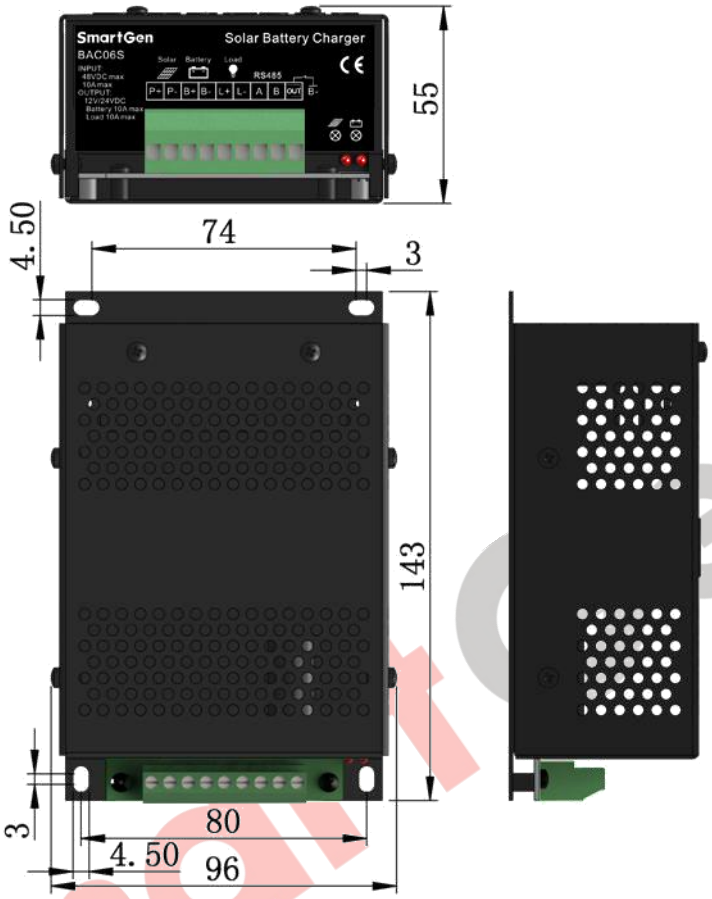
Load Used for controlling lighting lamps to provide lighting in the dark, and also available for other functional load.

Display Connecting monitoring device to portA and portB of RS485 to display the charging status data.

Mains Charger Mains charger can be backup power supply for the battery, if battery volt is too low caused by the solar cells fault, heavy load, and long-term un-sufficient energy. It is avoiding the battery to over discharge. Internal of output port is normally closed point of relay, and another end of normally closed point is connecting with B-, which connect when low battery volt occurs.

10. CASE DIMENSIONS

Unit: mm



BAC06S Mounting Dimensions