

Version: 1.10.S001

SMART INDUSTRIAL BATTERY CHARGER

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1. Introduction

Smart Industrial battery chargers are having micro-controller controls for the whole charge procedure. Friendly user interface, LCD display and key input, makes it easy to use.



It supports different charge curves, makes a complete charge and long battery life and has all-around protections.

2. Technical Specifications

(1) Power supply:

To be Choose from 1 phase or 3 phase, 110VAC-600VAC; 50/60HZ. Or customer's requirement.

(2) Outputs:

Maximum output power: **10KW**. See Appendix 1.

Support LA / GEL / AGM battery. See Appendix 2.

(3) User interface:

LCD display and key input

voltage display precision: 0.1V; amps display precision: 1A

(4) Set charging parameter precision:

voltage: 0.1V; current: 1A

(5) 2 selectable Charge curve (programmable for any charge curve.):

(5-1) 3-stage charge (standard).

A: limited current / Boost, B: Constant Voltage, C: floating

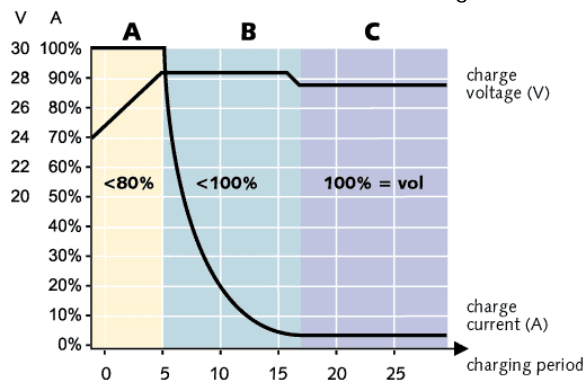


Diagram 3: 3-stage recharge voltage/current curve.

(5-2) 4-stage charge

A: Constant current 1, **B:** Constant Voltage 1, **C:** C.C. 2, **D:** C. V. 2

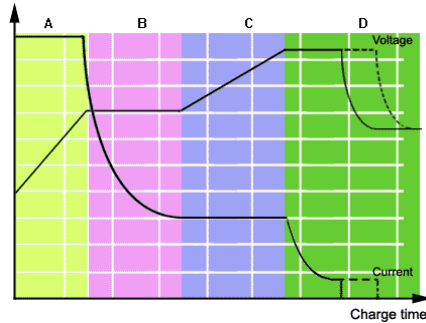


Diagram 4: 4-stage recharge voltage/current curve.

We could accept special charge curve order.

(6) Protection and Alarm:

- Over voltage protection, Over load protection,
- Input voltage low protection,
- Battery voltage low Alarm (optional),
- Battery reverse connection protection with output fuse,
- Input fuse protection.

Temperature control fan cooling (about 45°C)

Reduce output power (about 75°C -78°C), resume (about 65°C)

Over temperature protection (about 80°C -85°C) (stop and auto restart)

(7) Low ripple, 0.5% of the charge voltage

(8) Charge efficiency: Approx. 85%

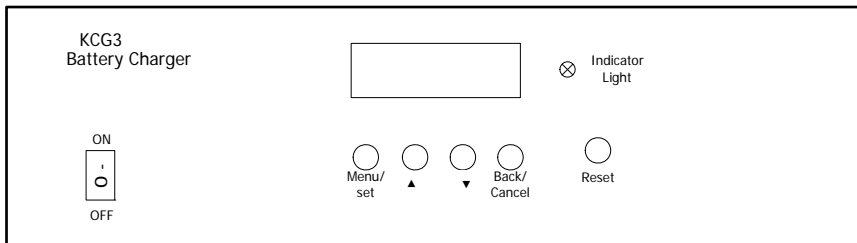
(9) Operating temperature range: 0~50°C (32~122°F)

(10) Battery temperature compensation (optional)

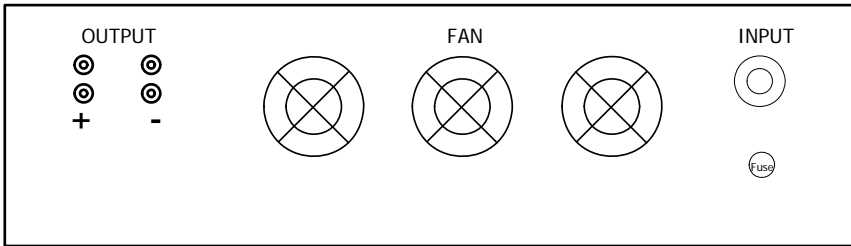
(11) Design for marine.

(12) Safety class: IP20

3. General Information



Front panel outline.



Back panel outline

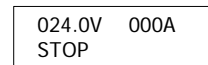
See Appendix 1 for dimensions.

4. Installation and Operations:

- (1) Ensure a clearance of at least 10 cm around the battery charger to ensure adequate ventilation.
- (2) The battery charger must not be installed in the vicinity of heat sources or exposed to water.
- (3) Ventilation slots must not be obstructed.
- (4) The storage batteries should be connected correctly. Be careful and **don't reverse the poles "+" and "-"**.

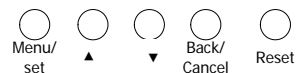


- (5) **The input wires and the GND should be connected correctly.** Then input the AC power. The LCD will show the battery voltage.



- (6) Set the charge parameters.

(6.1) There are 5 or 7 keys on the front panel. Press "Back/Cancel" key, when the LCD display abnormal. If it doesn't work, press "Reset" key



(6.2) Press "Menu/Set" key, enter the menu. Then

Press ▲ ▼ key to choose item; or
Press "Back/Cancel" key, quit the menu.

(6.3) Choose an item, press "Menu/Set" key, the value will flash. Then

Press ▲ ▼ key to increase or decrease the value. Then
Press "Menu/Set" key, save the new value and back to menu; or
Press "Back/Cancel" key back to menu without save.

(6.4) Press "Stop" key to stop charge. (Optional)

(6.5) Press "Equalize" key to make equalize charge manually. (Optional)

(7) 3-stage charge parameter set. (KCG3-40A/24V for example)

1. Floating V. 26.7V	Set floating voltage
2. Constant Curr 040A	Set the constant current. Automatic change according to the Equalize voltage
3. Equalize V. 28.2V	Set the constant/equalize voltage.
4. Curr to Float 008A	Set the current value to floating charge.
5. Delay time 01 Hours	Set the floating charge time. 0,1, 2, 3 hours or NO STOP. If set "NO STOP", floating charge until equalize day (See 7.).
6. Over Volt. 31.2V	Set the over voltage protection value
7. Equalize day 20 Days	Set the cycle of equalize charge. Set the Delay time "NO STOP" to enable.
8. Set Battery LA / GEL	Set voltage values for LA, VRLA, GEL or AGM battery. See appendix 2.
9. Charge Curve 3-stage curve	Choose charging curve 3-stage or 4-stage
10. Set default YES	Set all to default values (LA battery, 3-stage curve). See appendix 2.

(8) 4-stage charge parameter set. (KCG3-40A/24V for example)

1. C. C. 1 040A	Set current of C. C. 1
2. C. V. 1 28.2V	Set voltage of C. V. 1
3. C. C. 2 012A	Set current value to C. C. 2 stage

4. C. V. 2
31.2V

Set voltage of C. V. 2, this is the stop-charge voltage.

5. Delay time
2 Hours

Set the delay time to complete, after the voltage rise up to the stop-charge voltage (C. V. 2)

Range: 0-4 hours. Default: 4 hours

6. Over Volt.
33.6V

Set the over voltage protection value

9. Charge Curve
4-stage curve

Choose charging curve 3-stage or 4-stage

10. Set default
YES

Set all to default values (LA battery, 3-stage curve).

Set parameters when the charger is in the status: **Stop charge**.

(9) Turn on the **control switch**. The charger is preparing to work.

If this charger is “**DC Active**”, connect the battery to the charger, after 5 seconds, it will work.

If the charger is not “**DC Active**”, turn on the **control switch**, it will work.

025.3V 038A
C. C.



LCD shows output voltage, current in the first line and the status of charger in the second line.

Status	Display	Indicator	Relay/Beeper	
Constant current	Equalize or C. C.	Yellow flash		3-stage
Constant voltage	C. V.	Yellow light		
Floating charge	FLOATING	Green flash		
Constant current 1	C. C. 1	Yellow flash		4-stage
Constant voltage 1	C. V. 1			
Constant current 2	C. C. 2			
Constant voltage 2	C. V. 2	Yellow light		
Charge complete.	COMPLETED	Green flash	Act & stop charge	
Over volt protection	OVER VOLTAGE	Red flash	Act & stop charge	Manually restart
Over Load protection	OVER LOAD			

Over temperature protection (80°C -85°C)	OVER HEATING			Auto restart (If restart 3 times in 1 minute, manually restart.)
AC input voltage low protection	INPUT LOW			
Stop charge	Stop charge	Green light		
Battery voltage low	BATTERY LOW	Red light		Optional

Charger status list

(10) If the charger is 3-stage, it will work from “constant current” to “constant voltage” then floating and equalize charge periodically or stop after hours floating charge.

If the charger is 4-stage, it will work from “C.C.1”, “C.V.1”, “C.C.2”, “C.V.2” then delay and stop.

(11) Press ▲ ▼ key to see the time of charge. The time will be clean when stop charge.

026.7V 008A 00D 06H 15M

(12) Stop and alarm

- When **over voltage** and **over load** protection occurs, the charger will stop and alarm. The indicator is red and flash.
- When **over temperature** or **AC input voltage low** protection occurs, the charger will stop and alarm. The indicator is red and flash. When resume, it will restart automatically.
- When **over load** or **AC input voltage low** protection acts, the charger will try to restart 3 times. If it still protects, it will not restart and try to auto restart once every hour. Press “Menu/Set” key to acknowledge the alarm and press “Back/Cancel” key to restart manually.
- When charge is **completed**, it will stop and alarm. The indicator is green and flash.
- Alarm relay or beeper is optional. You can choose only one of them. Alarm relay, Normally open: red and green. Normally close: red and black. Relay capacity: 0.3A, 110VDC/125VAC.

(13) Please see your battery document to get more information about how to charge it properly.

(14) **Input fuse and output fuse** should be suitable. See the card on the panel for the correct current values. The input fuse is at the back panel, the output fuse is inside the charger, near the connection of the output cables. See Appendix 3.

Note: Specifications is subject to change without notice.

Appendix 1: Standard types and dimensions

C. \ V.	12V	24V	36V	48V	60V	72V	80V	96V	108V	192V	216V
3A											A
5A										A	B
10A				A	A	A	A	A	B	B	C
15A			A			B		B	B	C	C
20A		A		A	B	B	C	C	C	D	D
25A			A			C		C	C	D	D
30A	A	A		B	C	C	C	C	D	E	E
40A	A	A	B	C	C	C	D	D	D	E	E
50A	A	B	C	C	C	D	D	D	E		
60A	A	B	C	C	D	D	D	E	E		
70A	B	C	C	D	D	D	D	E	E		
80A	B	C	C	D	D	D	E	E			
90A	B	C	D	D	D	E	E				
100A	B	C	D	D	E	E	E				
120A	C	C	D	D	E	E					
130A	C	D	D	E							
150A	C	D	D	E							
180A	C	E	E								
200A	C	E	E								

	Dimensions (mm)	Weight (KG)
A	Bench mount, 350×243×113 mm	6
B	Bench mount, 370×310×113mm	8
C	Bench mount, 460×350×128 mm	10

D	Bench mount, 520×380×150 mm	20
E	Bench mount, 550×430×160 mm	25
12KW-20KW	600(W)×300(L)×1000(H)mm.	60-90

Appendix 2: Default voltage, for 3-stage curve.

Battery Nominal Voltage		12V	24V	48V	60V	72V	80V	216V
LA/VRLA/GEL	Floating	13.5V	27.0V	54.0V	67.5V	81.0V	90.0V	243V
	Equalize	14.2V	28.4V	56.8V	71.0V	85.2V	94.7V	256V
AGM	Floating	13.8V	27.6V	55.2V	69.0V	82.8V	92.0V	248V
	Equalize	14.5V	29.0V	58.0V	72.5V	87.0V	96.7V	261V

AGM: Absorbed Glass Matt

Appendix 3:

Output Fuse information

See www.bussmann.com. British style 88 fuse

Nominal Current	50A	60A	80A	100A	120A	150A	200A
Fuse	50LET	63LET	80LET	100LET	125LET	160LET	200LMT