Specification

Model Number: SJ-FG01

Battery Fuel Gauge

Doc No:　　　SVE-FG-0065

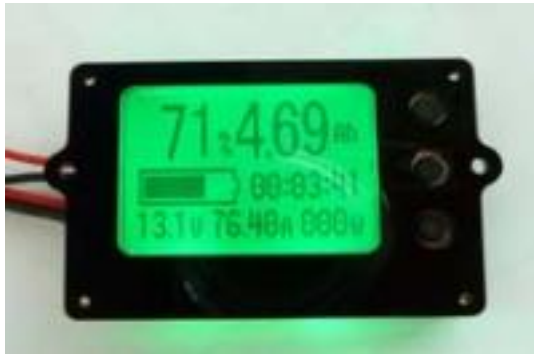Version:　　　01

Date:　　　2016-02-18

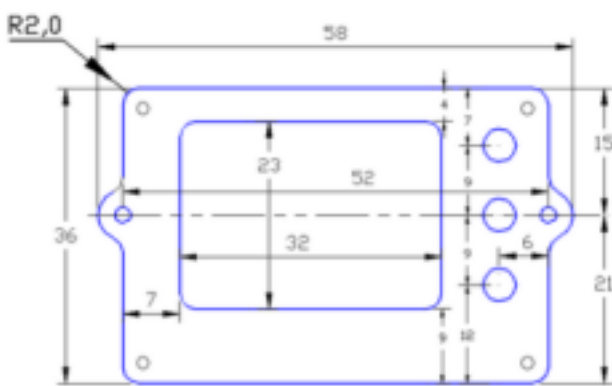| Prepared	Checked	Approved
Sara	Jess	John

Overview:

EJ-FG01 with shunt

SJ-FG01 is apply for any lithium-ion battery, lipolymer battery, lithium iron phosphate batteries, lead-acid battery, VRLA battery, gel battery, nickel metal hydride, etc. This model have two voltage range version: :8-50V(SJ-FG01A) and 35-80V(SJ-FG01B), the working capacity range is 0.1-590Ah, and suitable for the max 50A continuous discharge and 100A peak discharge.

Display:
1. Remaining battery capacity (Ah or mAh);
2. Battery SOC;
3. Battery voltage;
4. Battery current value;
5. Output power value;
6. Remaining time of charging and discharging.

Wiring:

When the maximum charging or discharging current is bigger than 10A, connect the fuel gauge and shunt with the load, charger according to the below external shunt type connection:
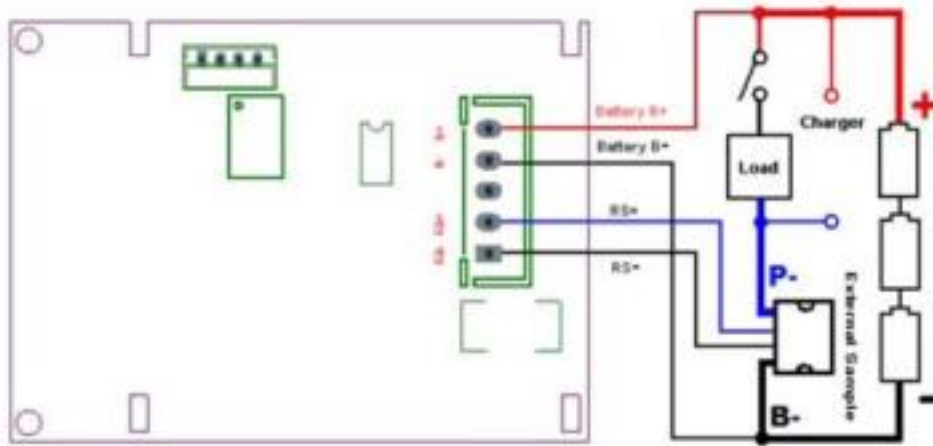
Basic electrical performance parameters:

Parameters	Min	Typ	Max	Unit
Operating Voltage Range 1 (normal)	8.0	12.0	50.0	VDC
Operating Voltage Range 2 (high voltage)	35.0	48.0	80.0	VDC
Working Current	0	50	100(burst)	A
Working power consumption		8.0	10. 0	mA
Standby Power Consumption		3.0	4.0	mA
Precision of voltage acquisition		±1.0	%	
Precision of Current acquisition		±1.0	%	
Ambient temperature range 0	20	+35	℃	
Current (backlight on)	40	50	mA	
Current (Backlight off)		30	40	mA
Battery capacity setting range	0.1	590	Ah	
Total Size(include panel)	58(length)*36(width)*15(thick)			mm
PCB Size(include LCD display)	55(length)*32(width)*10(thick)			mm
Size of the display area	32(length)*23(width)			mm
Size of the external shunt	23(length)*17(width)*5(thick)			mm

Use instructions:

1. For the external shunt connect version, pls connect the R+ and R- firstly to make sure all the charging and discharging current can flow through the shunt, and then connect the B+, B-.

2. Plug the load when the connection is complete, then the working current data may display on the bottom of display area of the fuel gauge SJ-FG01. Pls make sure this data show on the battery fuel gauge is correct or not. If it is different from the real working current, then pls check whether the connection is correct or not. The back light of the SJ-FG01 will light on when working current is bigger than 100mA which mean the load is discharge current and the right side of the display area will show the remain working time for the load. In case the back light is flash, then it mean that the wrong connect between the RS+ and RS-, and need to change them.

3. After you connect the charger, the backlight of SJ-FG01 is intermittent flashing, it indicates the battery is under charging status , at that time the fuel gauge SJ-FG01 display can show how long time the battery can be full charged under that charging current. If the back light always light on and no flashing then it mean the wrong polarity connections between the RS+ and RS- after you connect the charger.

4. The capacity data show on the battery fuel gauge when power on it first time is not the real capacity of the battery, it is just the initial setting capacity data by SJ Technology group co ltd. You need to do one full charging and discharging on the battery to let the fuel gauge to show the real capacity of the battery.

5. Before you use the fuel gauge or in case you need to update the new capacity data for the battery , then you can clear the capacity memory data record in the fuel gauge, you can press long time on the "Kup" key to the max data, and press the "Kdn" key long time to let the capacity data come zero. After you do this, the fuel gauge won't let the former capacity data recovery to show on the fuel gauge.

6. In order to measure the capacity of the battery accurately , pls let the fuel gauge power on during the battery charging and discharging..

7. Do not power off the fuel gauge during the battery charging and discharging, the fuel gauge only can keep the capacity data record after the back light off when the current less the light on current.

8. If the payload capacity of battery is unknown, then firstly discharge the battery to be out of power, and then enter the engineering mode of the SJ-FG01 to set the capacity data to be max one, and after that you can charge the battery to be full , then the fuel gauge can display the real capacity on it when the battery is full charged. Later write down this capacity data and re-enter the engineering mode of the SJ-FG01 to set this real capacity data of the battery into the fuel gauge, after that the SJ-FG01 can display the SOC.

9. Due to the high sensitive of the fuel gauge, when it is influenced by some machines nearby it, its back light may light on shortly though it is under standby condition(no input and output current of the battery) ,this is normal.

10. RS+ and RS-must be connected on the loop of the negative side of the battery (refer the

sampler type wiring diagram), connected to the loop of the battery positive side is not allowed.

11. The shunt circuit is with filter delay, it may affect the data accuracy when the collecting is under the current dramatic changes infrequent occasions.

12. There are seven battery icon to display the battery capacity from low to high on the left of the LCD display, and the SOC display on the right.

Parameter display and setting

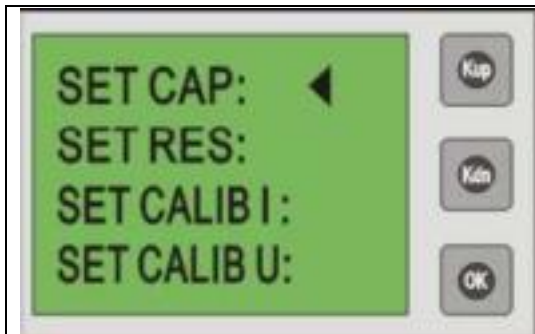|	
	The main interface description: 1 The battery capacity SOC data show on the upper left corner of the display; For example: 80% 2 the upper right corner displays the current actual remaining capacity (Ah / mAh); For example: 12.0Ah 3 The battery symbol in the middle displays the remaining capacity of the battery capacity ratio; 4 The data on right side of middle shows the remaining time of charging or discharging, the maximum display data can be 99:00:00; 5 The battery voltage, current, power watt data show on the bottom line of the fuel gauge display.
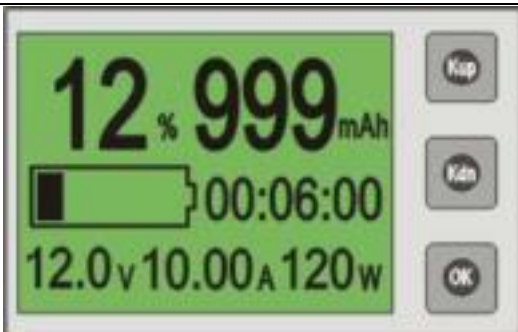
	Basic use: 1 The SJ-FG01 can enter standby mode when the charge and discharge current <80mA, the backlight off, display the remaining capacity and voltage values; (2) When the discharge current value>100mA, automatic backlight on, SJ-FG09 start to calculate the battery capacity consume value, display the remaining time data; (3) When the charging current value> 100mA, backlight starts flashing, and begin to calculate the charged battery capacity and display the time required for a full charge;

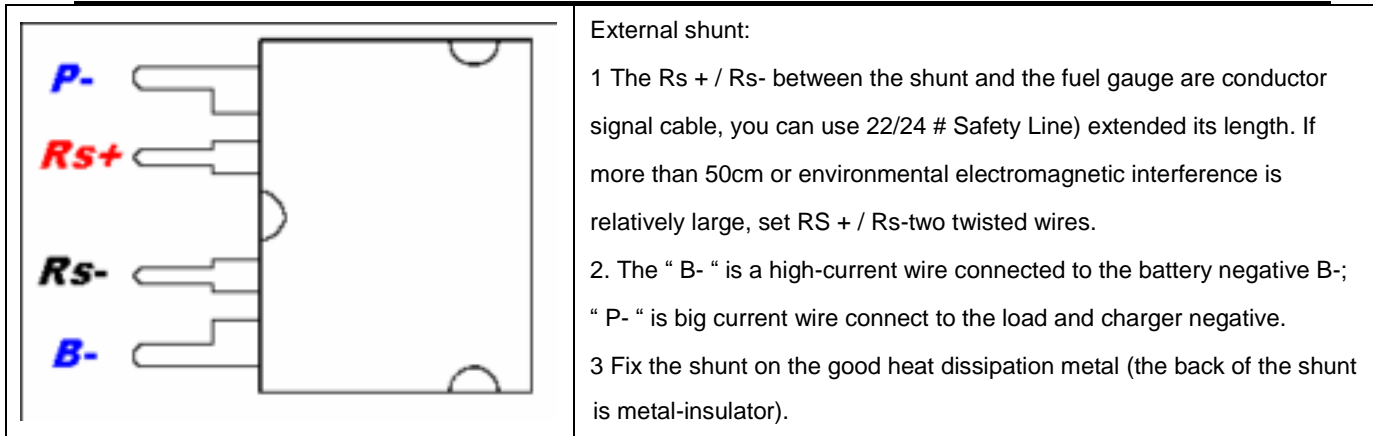|	
SET OFFVOLT: **11.00 v**	Shut down voltage value setting: 1 The shutdown voltage value setting correctly on the SJ-FG01 can ensure accurate capacity memory record in it and under low-power consume when battery is low capacity; 2 In the main screen, press the "OK" button for 2 seconds to enter "SET OFF VOLT" setup interface; 3 Press "Kup" and "Kdn" button to select the value, press "OK" button to select the current setting data; 4 Press "OK" button for 3 seconds or does not operate automatically after 20 seconds to save and exit the setting screen, return to the main interface;
SET CAP: ◄ **SET RES:** **SET CALIB I:** **SET CALIB U:**	Battery capacity (payload capacity) Set 1: 1 Note: Be sure to get an accurate battery capacity value before setting! 2 Press and hold the three buttons("Kup, Kdn, OK") on the display and then power on the SJ-FG01 to enter the engineering mode menu selection interface.; 3 Press "Kup" or "Kdn" button to select the setting item; arrow pointing to "SET CAP" project; press "OK" button to enter; 4 Do not pay attention to other settings to set their own parameters.
SET CAP: **20.00 Ah**	Battery capacity (payload capacity) Set 2: 1 Press "Kup" or "Kdn" button to select an accurate battery capacity value; 2 Press the "OK" button to select the current set position; 3 confirm the value is correct, press the "OK" button for 3 seconds to save and exit the setting screen, return to the engineering mode menu interface; 4 After the power on again to work properly.

	External shunt:
	1 The Rs + / Rs- between the shunt and the fuel gauge are conductor signal cable, you can use 22/24 # Safety Line) extended its length. If more than 50cm or environmental electromagnetic interference is relatively large, set RS + / Rs-two twisted wires. 2. The " B- " is a high-current wire connected to the battery negative B-; " P- " is big current wire connect to the load and charger negative. 3 Fix the shunt on the good heat dissipation metal (the back of the shunt is metal-insulator).

Other Remark:

1. The SJ-FG01 can enter the sleep mode when the battery voltage lower than the shut off voltage setting on the SJ-FG01. In case you need to check the battery capacity or other data on the SJ-FG01, you can press any buttons on the SJ-FG01 to check. The SJ-FG01 can enter sleep mode again after 5 seconds in case the battery voltage still not recovery to be bigger than the shut off voltage setting on the SJ-FG01. In case want to let the SJ-FG01 to work again, just need to charger or discharge the battery and then press any button on the SJ-FG01 is OK. Or cut-off the power of the SJ-FG01 and re-power on it to work is OK.
2. The SJ-FG01 can't keep any memory data of the battery charging and discharging when it enter sleep mode.
3. It is necessary to add any switch on the SJ-FG01 and can let it connect to the battery directly long-term to work.