



# **SBS-S SERIES DC LOAD BANK USER MANUAL**

Rev. 2.0 12-14

**STORAGE BATTERY SYSTEMS, LLC**

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## **PRECAUTIONS**

## **AFTER-SALE SERVICE**

## OPERATING INSTRUCTIONS

### 1. Environment Requirement

The unit should only be used in environments that are free from dust and flammable or explosive gases. The environment should be properly ventilated to dissipate heat produced.

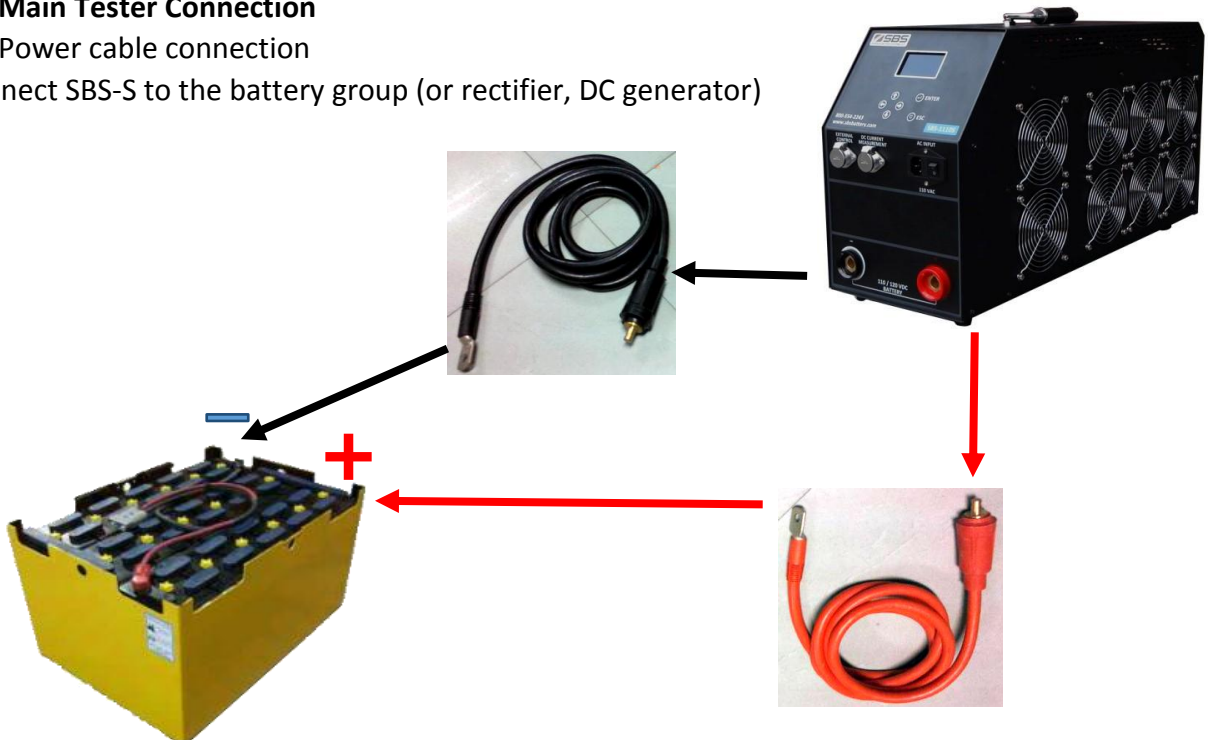
### 2. Main Tester Description



### 3. Main Tester Connection

#### 3.1 Power cable connection

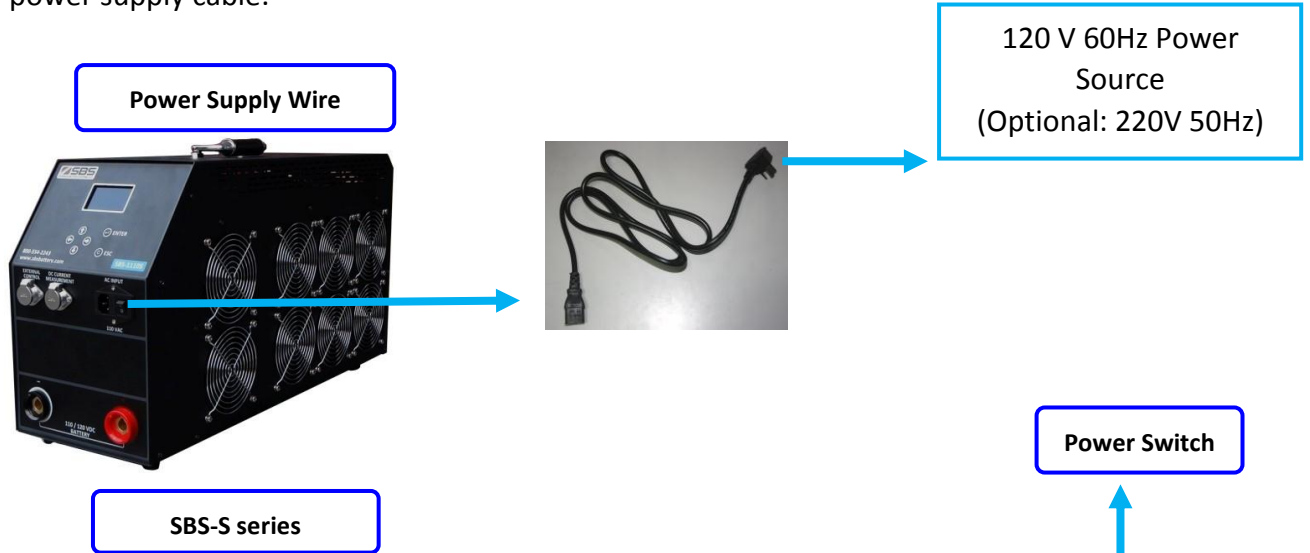
Connect SBS-S to the battery group (or rectifier, DC generator)



### 3.2 Power supply connection

**3.2.1** SBS-4815S, SBS-4830S will take DC power supply from the DC system being tested, so there is no power supply connection for these types.

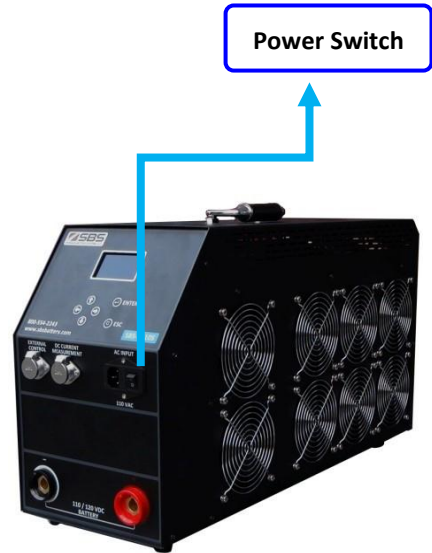
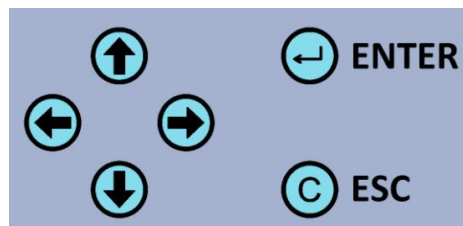
**3.2.2** For other SBS-S series types, connect SBS-S with AC 120V 60Hz power source by power supply cable.



### 4. Starting Up And Input Operation

**4.1** After the main tester connections are made, turn on the power switch to start up the SBS-S.

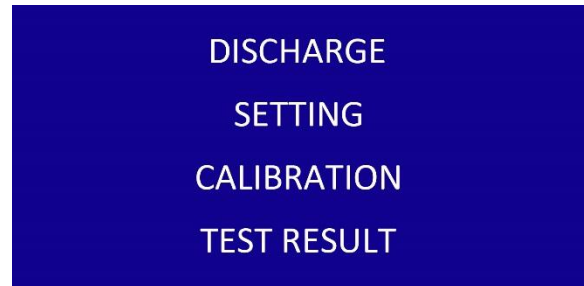
**4.2** All input operation of SBS-S is based on 6 control buttons beneath the LCD screen.



**4.3** The welcome screen will display the unit type and name information. Press any key to enter the main menu. After 10 seconds the system will automatically change to main menu.









**Welcome Interface**









**Main Menu**




## 5. Parameter setting





5.1 In main menu, please use  &  to choose 'Setting', press  into the setting interface. There are 4 parameters which need to be set before testing.

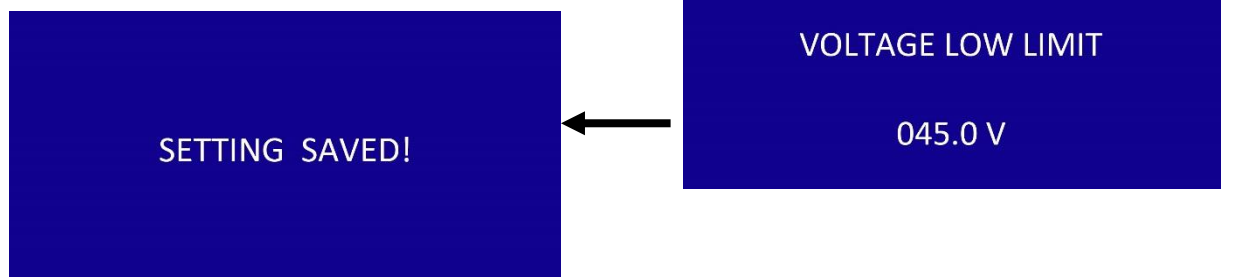
5.2 Set the discharge current by  & , and press  to go to the next parameter.

5.3 Set the capacity need to be discharged by  & , and press  to go to the next parameter. (If the capacity discharged exceeds the settings value, the SBS-S will terminate the test automatically.)




5.4 Set discharge time by  & , and press  go to next parameter. (If the discharge time exceeds the settings value, SBS-S will terminate the test automatically.)




5.5 Set voltage stop threshold by  &  and press  to go to the next parameter (If the voltage drops below the settings value, the SBS-S will terminate the test automatically).

5.6 Use  &  to locate the setting that needs to be modified. Press  to confirm the settings and the LCD will show a "setting saved!" message. Press  to go back to the main menu.





## 6. Start discharge






6.1 In main menu, please use  &  to select 'Discharge', then press  ENTER.

6.2 SBS-S displays all the setting parameters before the discharge, use  &  to check all settings again and press  ENTER to start the discharge.

6.3 The discharge interface, LCD will show:

- a) Status: 'Proceeding' or 'Stopped'
- b) Voltage
- c) Discharge current
- d) Capacity discharged
- e) Discharge time




6.4 Press  ESC back to manually stop the test, or press  ENTER to manually re-start.

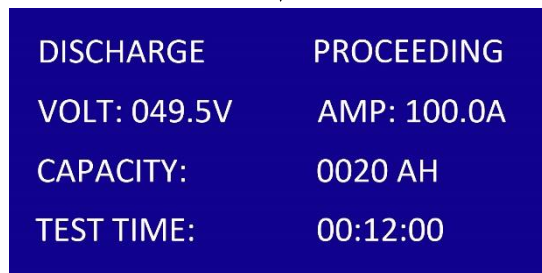
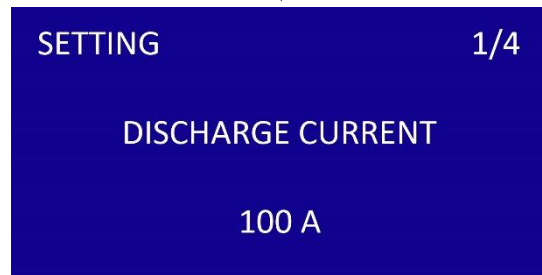
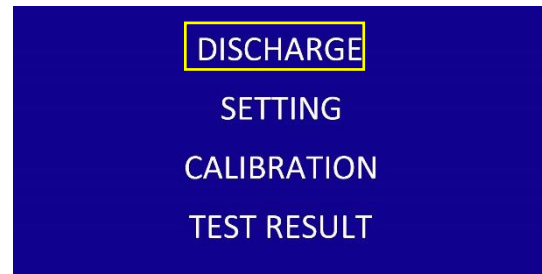
6.5 During discharge, press the  &  to go back to parameter settings, change the settings values by  & , then press  ENTER to apply the new settings and continue the discharge.

## 7. Discharge Stop

7.1 Manual stop: press  ESC during discharging.

7.2 Stop Threshold Reached:

Situation	LCD Message
a) Capacity discharged is over the set value	
b) Test time has reached the set value	
c) Voltage drops below the set value	



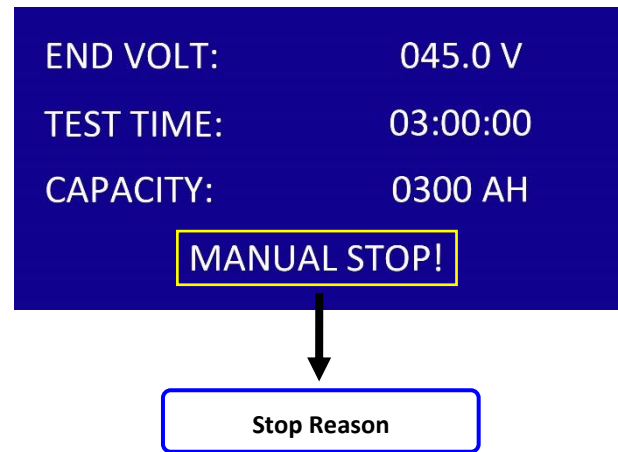
**7.3 Stop By Errors:**

Condition	LCD message
a) If the discharge current can't reach the set value.	<b>CURRENT ERROR!</b>
b) If the internal temperature of the unit exceeds the acceptable range	<b>TEMPERATURE ERROR!</b>
c) If DC power cable polarity is wrong	<b>CONNECTING ERROR!</b>

**8. Test Result**

SBS-S saves the last test result in Test result interface. It displays:






- a) Test end voltage
- b) Test time
- c) Capacity discharged
- d) Stop reason

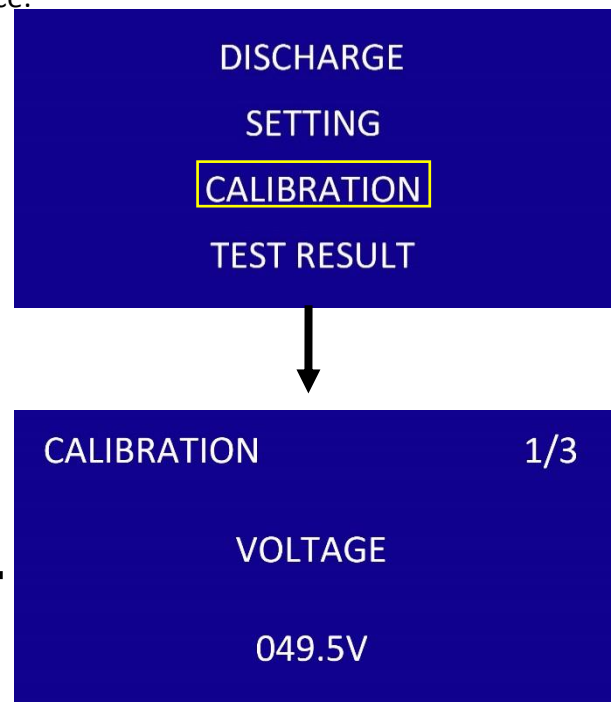


**9. Calibration Interface**



SBS-S supports calibration by user with high resolution digital meters. The user can perform adjustments in the calibration interface:

- 1) Voltage
- 2) Discharge current
- 3) External current from current clamp

press  &  to select the calibration item  
and change the settings value by  & ,  
then press  ENTER to save the calibration.





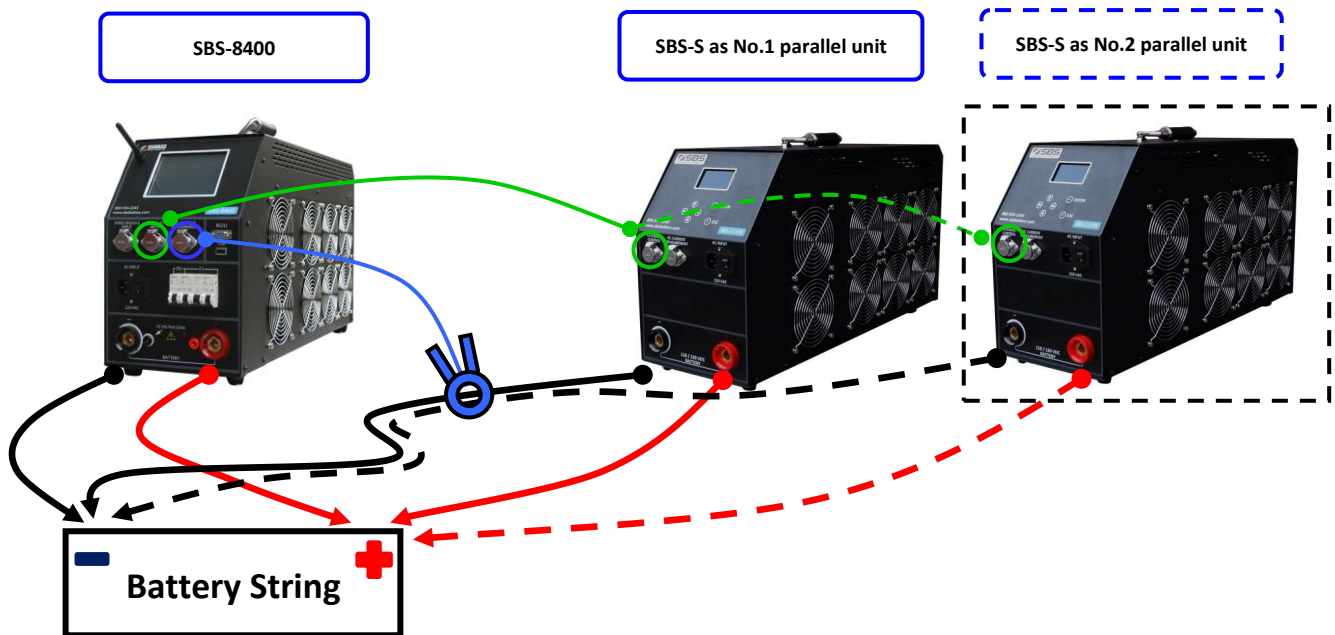
Discharge current calibration can proceed during discharge. Please press both  &  at the same time; the LCD will jump into calibration interface, then follow the above operation to finish calibration.

## 10. Multiple Units in Parallel

### SBS-8400 + SBS-S Unit(s) in Parallel

#### Connections

- Connect SBS-8400 & SBS-S unit(s) to battery string with power cables.
- Connect external current clamp to the SBS-8400 – ‘DC CURRENT MEASUREMENT’ port and put the clamp on the negative cable(s) from SBS-S unit(s) to battery string.
- Connect parallel control wire from SBS-8400 – ‘PARALLEL INPUT’ port to SBS-S – ‘EXTERNAL CONTROL’ port. (If there are 2 SBS-S units, please contact SBS to order the special control wire.)



#### Setting

- Select the correct ‘Clamp range’ in SBS-8400 Setup interface.
- Set all 4 stop thresholds and other details in SBS-8400 parameters interface, and set the total discharge current to ‘TestCurr’ you need (for example: 200A in total).
- Set all stop thresholds in SBS-S unit(s), and set current to the max value which SBS-S unit(s) is rated (example: set 100A in SBS-1110S).
- Save all setting in SBS-S unit(s) and leave LCD on the discharge screen.

DISCHARGE	STOPPED
VOLT: 123.5V	AMP: 000.0A
CAPACITY:	0000 AH
TEST TIME:	00:00:00

SBS-S unit discharge screen



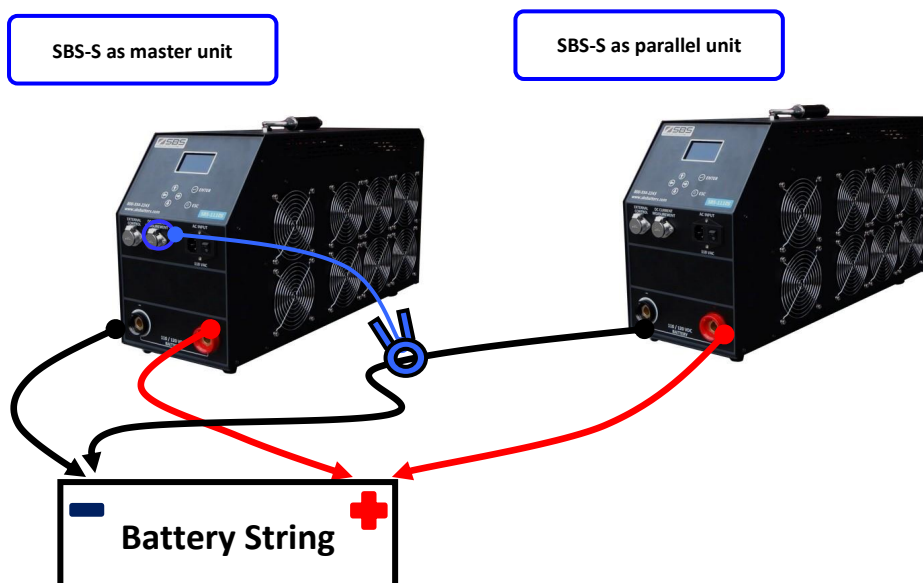
## Discharge

- Start discharge on the SBS-8400, and when the current increases to the max value the SBS-8400 can offer, it will send out control signal to SBS-S unit(s). SBS-S unit(s) will start discharging up to the settings value for total current.
- External clamp will add all discharge currents from SBS-S unit(s) to SBS-8400. The SBS-8400 will regulate the proper current to keep the total current set. (For example: 200A in total, if SBS-S offers 100A, SBS-8400 will offer 100A, if SBS-S offers 80A, SBS-8400 will offer 120A.)
- If any stop threshold is reached on the SBS-8400, all SBS-S unit(s) will receive a control signal to terminate the discharge at the same time.

## Two SBS-S Series in Parallel

### Connections

- Connect SBS-S(s) with battery string by power cables.
- Connect external current clamp with master SBS-S – ‘DC CURRENT MEASUREMENT’ port, and put clamp on the negative cable from the parallel SBS-8400 to battery string.



### Setting

- Program both SBS-S series load banks to the test you want to run.
- Set all 4 parameters on both SBS-S parameter interfaces, and set the total discharge current to the actual total current on the master SBS-S unit.

### Discharge

- a) Start discharge on both SBS-S units, parallel SBS-S offers max discharge current set.
- b) External clamp will add discharge current from parallel SBS-S to master SBS-S. And master SBS-S unit will regulate the proper current to keep the total current set.  
(For example: 200A in total, if parallel SBS-S offers 100A, master SBS-S will offer 100A, if parallel SBS-S offers 80A, master SBS-S will offer 120A.)
- c) If any stop threshold is reached in master SBS-S, the parallel SBS-S also has the same settings, so it will also terminate the discharge at the same time.

### Precautions

- a) For safety and ease of use, please read the entire manual before operation.
- b) During testing, we suggest the operator stay in the vicinity of the testing unit.
- c) If an over temperature, over current, or an equipment failure occurs during the discharge, the warning alarm will activate automatically. Please turn off the DC breaker & AC input, to avoid a further possible damage to the equipment.

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