



SBS-4815CT

BATTERY CAPACITY TESTER

USER MANUAL



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1. Introduction

1.1 Features

The advantageous features of SBS-4815CT Battery Capacity Tester:

- a) **Adopting wireless battery monitoring technology:** Available for 1.2V/2V/6V/12V battery voltage monitoring
- b) **Each wireless module can monitor 4 batteries simultaneously:** Compared with the traditional method of each module only monitoring 1 cell, the new wiring operation becomes easier because the quantity of new modules needed is only a quarter of old-fashioned modules (only 6 wireless modules for 48V battery strings)
- c) **Available for offline & online discharging tests of multiple battery strings,** the SBS-4815CT can simultaneously record the actual discharge currents of each battery strings in the test. (As far as accessories, extra current clamps are needed for multiple groups testing).
- d) **The discharge current is continuously adjustable and automatically keeps stable,** during the online discharging. The current displayed in LCD equals the discharge current of battery string equals the current created by main machine plus the current of the actual load. Because during the discharging the current of the actual load probably changes according to the decrease of the online voltage, SBS-4815CT can automatically adjust to keep the current stable in the entire test.
- e) **Selectable number of low voltage limits** - This feature allows the test to continue instead of stopping as soon as the first cell reaches the low cell voltage setting and allows for testing to continue after a weak / bad cell is jumped out of the string.
- f) **Intelligent menu design,** the simplified menu minimizes the training for users.
- g) **Applying the electric heating component made by aero-alloy for the power consumption section,** new generation material levels up the coefficient of safety and the transition rate between electricity and heat, meanwhile reducing the volume and weight. Light weight alloy heat sink elements – the new generation materials increase safety and thermal transfer of heat to air.
- h) **Automatic calculating function for the discharging current,** SBS-4815CT installs the discharge current formula for all hour rates internally, so the setting interface can tell you the suitable discharge currents without manual calculation according to the marked capacities of battery strings and the testing hour rates.
- i) **Real scan and display of the voltage data for each battery during the discharge.** Display of the histogram of all batteries to follow the battery voltage tracks in entire discharging process, using the different colors to highlight the lowest and the highest voltage, which can simplify the analysis of the battery voltages.
- j) **5.7 inch colorful touching LCD screen** can fulfill the click operation on the screen easily and directly, and show all parameters and the voltage histogram in the discharging process.
- k) **Intelligent judge program,** SBS-4815CT can identify when battery voltages reach

the threshold value or a signal missing by manual mistake. Avoiding manual interruption during the discharge, this revolutionary program makes the test stable and smooth.

- l) **The presetting function for discharge parameters**, the SBS-4815CT provides 8 locations for setting up all discharge parameters in advance. This design allows you to skip the setting procedures for the same discharging and simplifies the operation..
- m) **Connects with PC during the discharge** for downloading of the real time data. You are also able to use the USB memory device to download the integral data after the discharging process. The PC analysis software assists users to analyze the data and create test report.
- n) **With an 8M internal memory**, the SBS-4815CT can record several sets of data independently. The menu interface provides some management operations like reviewing, analyzing and deleting.

The advantageous features of SBS-4815CT analysis software:

- a) Support data downloading and analyzing through real time communication or USB memory devices
- b) The software interface includes: battery voltages curve and bar chart, battery resistances bar chart, group voltage curve, current curve, capacities histogram, data form and so on.
- c) Powerful capacity estimating function, the software can predict the capacity of each battery in the tested group.
- d) The software shows the data in different formats, including bar charts, curve, and form. You can magnify or minify any windows to read more details.
- e) Automatically created EXCEL data reports make it convenient to send or download data.

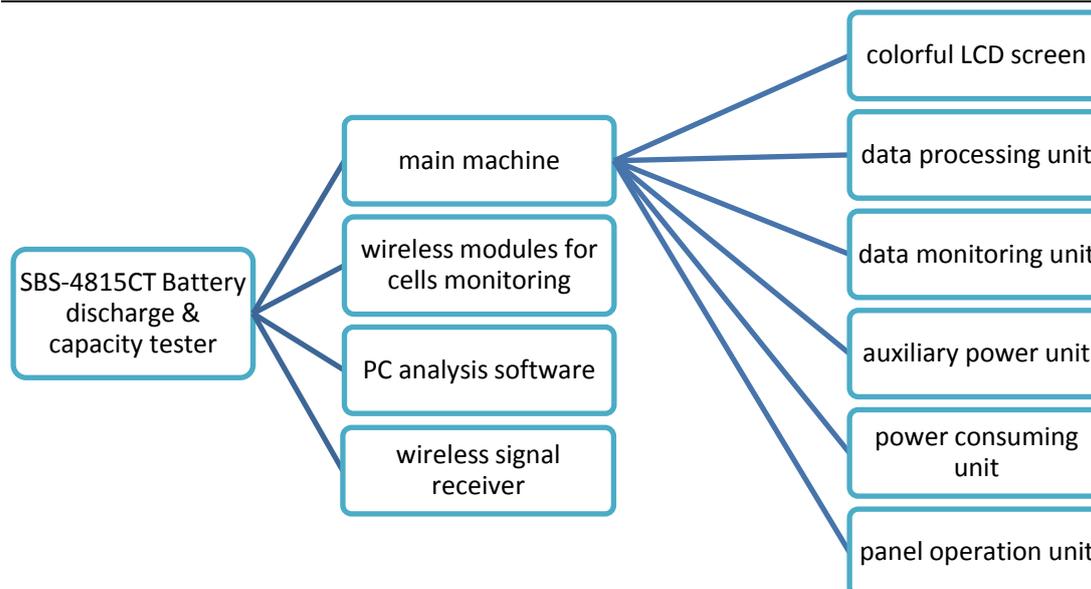
SBS-4815CT has diversified protective functions, which include the sounds alarm, lights warning, and clear interface prompts.

SBS-4815CT is small in volume, light in weight, simple to operate, and a highly accurate product. For different applications, SBS-4815CT works for discharging tests of 24V, 48V battery strings.

1.2 System Component Unit

The SBS-4815CT battery capacity tester consists of main machine, wireless modules for cells monitoring, wireless signal receiver and PC analysis software.

The main machine is organized by colorful LCD screen, data processing unit, data monitoring unit, auxiliary power unit, power consuming unit and panel operation unit.



2. Main Technical Parameter

2.1 Environment & condition for use

2.1.1 Operating temperature

-5℃ ~ +50℃, full power, forced air cooling

2.1.2 Storage temperature

-40℃ ~ +70℃

2.1.3 Relative humidity

≤90% (40℃±2℃)

2.1.4 Altitude limit

0~2000m, -5℃~+50℃, full power

2000m~4000m, -5℃~+30℃, full power;

30℃~+50℃, decrease power for use.

2.2 Structure & Weight

With its stainless steel shell, SBS-4815CT has a sturdy and stable structure.

Meanwhile, the unique material of power consumption makes the SBS-4815CT main machine portable.

The dimension (length*breadth*height):

SBS-4815CT: 400mm×220mm×200mm

Weight:

SBS-4815CT: 9.5 kg (main tester only)

2.3 Working Power Supply

SBS-4815CT: AC 220V/110V single phase 45Hz~65Hz

2.4 Input Voltage from Battery strings

SBS-4815CT: 20~60V

2.5 Discharge Current Range

Voltage range	current range
20-40V	0-75 A
40-60V	0-150 A

2.6 Parameter Display & Measure Accuracy

Parameter display: 5.7 inch LCD colorful touch screen

Displayed discharge current: resolution 0.1A
accuracy $\leq \pm 0.5\%$

Displayed battery strings voltage: resolution 0.1V
accuracy $\leq \pm 0.5\%$

Displayed cells voltage: 1.2V/2V/6V cells resolution 0.001V
accuracy $\leq \pm 0.05\%$
12V cells resolution 0.01V
accuracy $\leq \pm 0.05\%$

2.7 Protection & Warning

The protection design of SBS-4815CT:

2.7.1 the protections of DC input overvoltage, polarity reversal in battery connecting, over current in discharging, and system overheat

2.7.2 when the discharging is abnormal, the warning light and buzzer would activate, meanwhile the LCD screen shows a clear prompt.

2.8 Data Management & Communication

2.8.1 Discharge data management

- The data can be saved continuously and automatically, so the test record will not be lost even when the power is off.
- support to manual inspection
- support to read & download the data by communication port
- display the residual space of internal memory
- smart deleting selection: delete all or delete the selected record.

2.8.2 Setting Work Parameters

With the “Preset” interface, you can set the discharge current, battery capacity, cells number, the stop threshold value of battery string voltage and cell voltage, discharge capacity, discharge time. The SBS-4815CT provides 8 locations to save the presetting parameters for common usage.

2.8.3 Communication

- a) Internal wireless signal receiver allows the SBS-4815CT to record the cell monitoring & sampling data.
- b) By RS232 port in the SBS-4815CT, your PC can connect with SBS-4815CT to display real time discharge data.
- c) By USB port in the SBS-4815CT, you can download the data to PC by USB-disk.
- d) By parataxis control port, the SBS-4815CT can co-work with SBS-S series DC load bank.

3. Basic Operational Principle

3.1 Battery Testing Principle

Because of the complexity of battery electric-chemical reaction and the diversity of materials, structure, craftwork, and installation environments, battery strings from different manufacturers can have many differences. Even the same type of batteries from the same manufacturers cannot guarantee the same performance. Until now, there is no a uniform method to check the quality of batteries easily and efficiently. For lead-acid batteries—VRLA batteries, the common and effective test methods are testing the cell voltage routinely and deep cycle discharging annually. We believe:

- a) The battery voltage in floating charge status and the batteries capacities have no correlation.

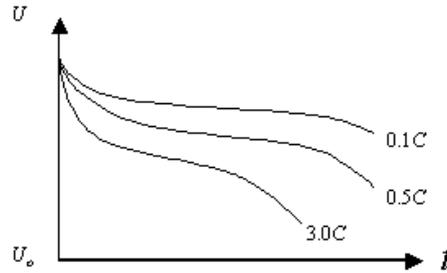
As we know, even the batteries which have a low capacity still can show a normal voltage in floating charge status. So the person maintaining those batteries can't estimate the capacity based on the batteries voltage without discharging.

- b) Deep cycle (full capacity) discharge is the most accurate method to test the performance of batteries.

For the battery strings created by several cells in series, the actual capacity of battery strings relies on the ability of the worst cell. So the goal of discharging your battery string is to find the lag cells and replace the predict/know when to replace the battery system.

Usually, battery discharge test needs to add constant current on the tested battery strings, and monitor the voltage dropping status of each cell until it drops to the stop threshold value. Based on the actual energy discharged, the discharge tester can show the accurate capacity of the tested battery strings.

The voltage dropping curve in the discharging process:



We know for different types, materials and craftwork, the voltage dropping data is the most uniform and accurate evident for estimating the battery capacity. The curve not only shows this information, but also shows that using different hour rates to discharge the same batteries would yield different results. To avoid the harm of discharging, your discharge has to apply the suitable hour rate.

3.2 Constant Current Principle

The internal circuit of the SBS-4815CT adopts PWM (pulse width modulation) control technique. Under the control of central processing unit, the power circuit can discharge the battery strings in the setting current accurately.

4. Operating Instructions

4.1 Environments Requirement

Please be certain there is NO CORROSIVE, NO EXPLOSIVE, NO ELECTRICAL BREAKDOWN AIR OR CONDUCTIVE DUST.

4.2 Panel Description

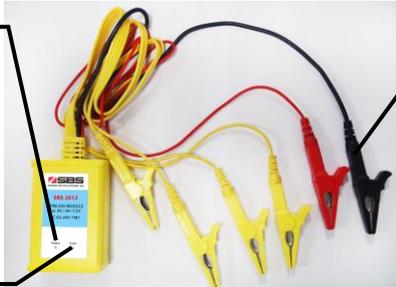




Voltage measure socket

Main machine

Power light (green)



Alligator clip (4 yellow, 1 red, 1 black)

Communicate light (red)

Wireless module for 2V/6V/12V—SBS-2612

Power light (green)



Alligator clip (4 red, 1 black)

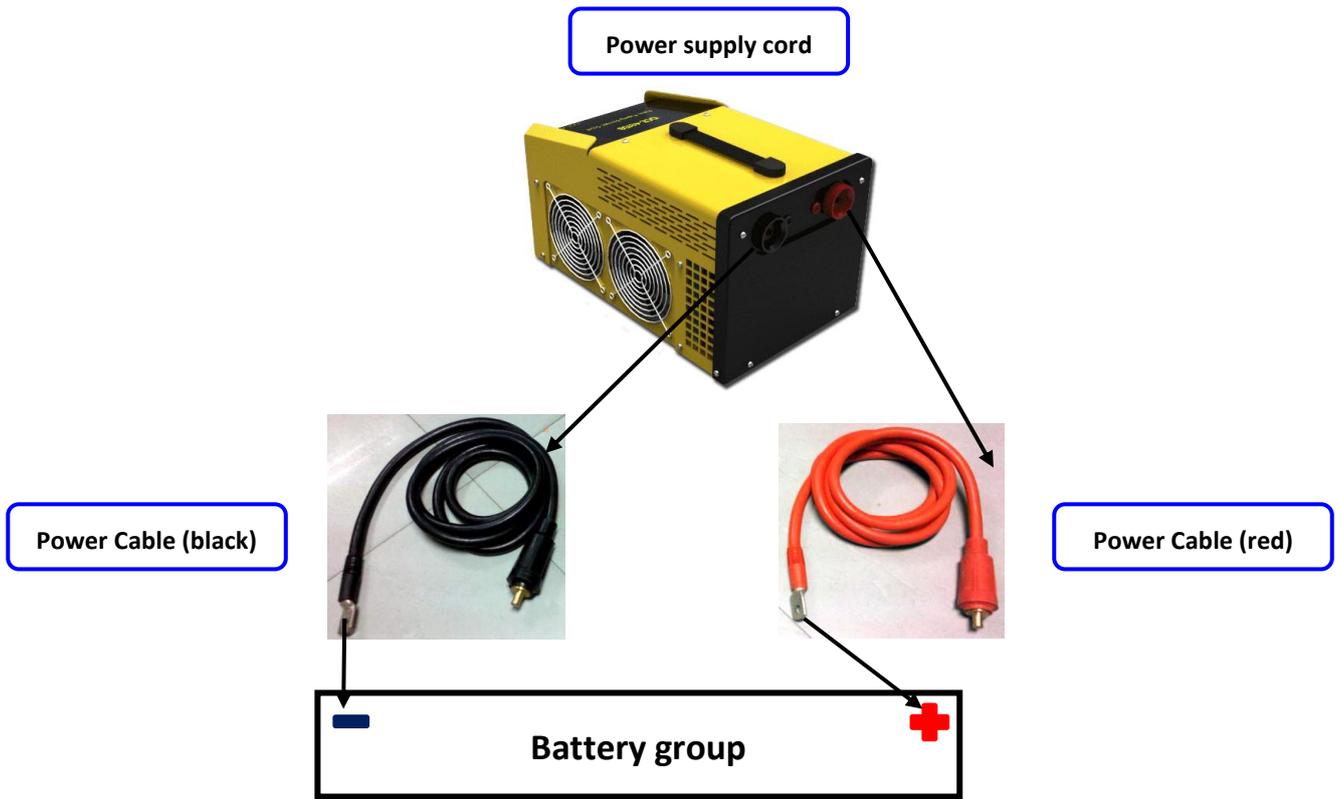
Communicate light (red)

Wireless module for 1.2V/2V-SBS-12612

4.3 Main Machine Connection

220VAC 50Hz or 110VAC 60Hz Power Source

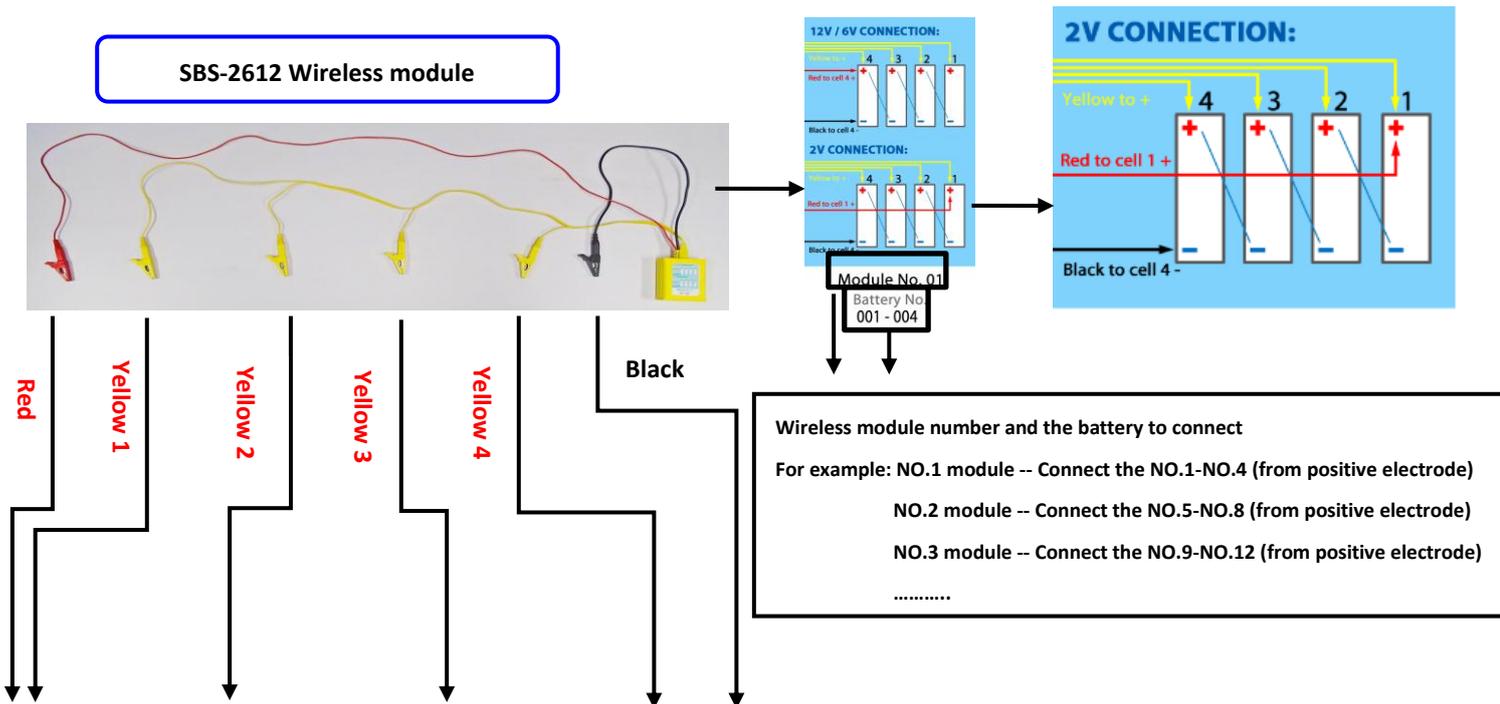


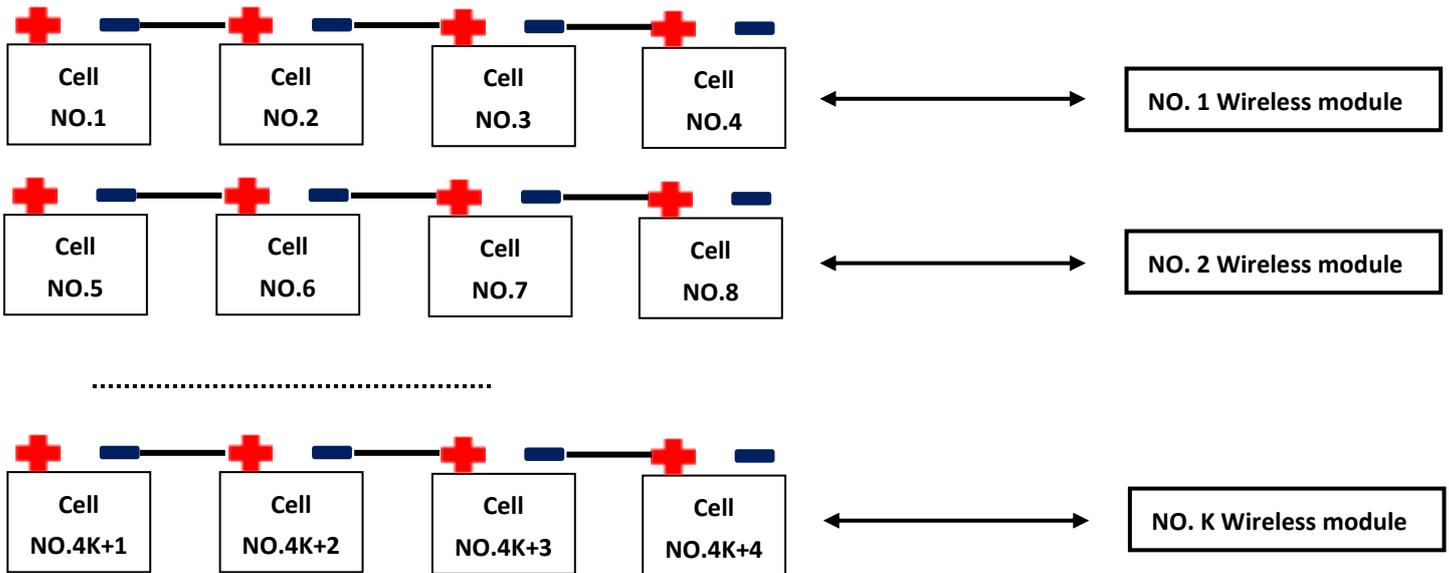


- 4.3.1 Use the power cables (1 red, 1 black) to connect the main machine with the battery string being tested.
- 4.3.2 Use the power supply cord to connect main machine with the AC power source
 - a) SBS-4815CT supports 110V AC 50Hz or 220V AC 60Hz external AC power source

4.4 Wireless Modules Connection

4.4.1 SBS-2/6/12 wireless modules (for 2V) connection

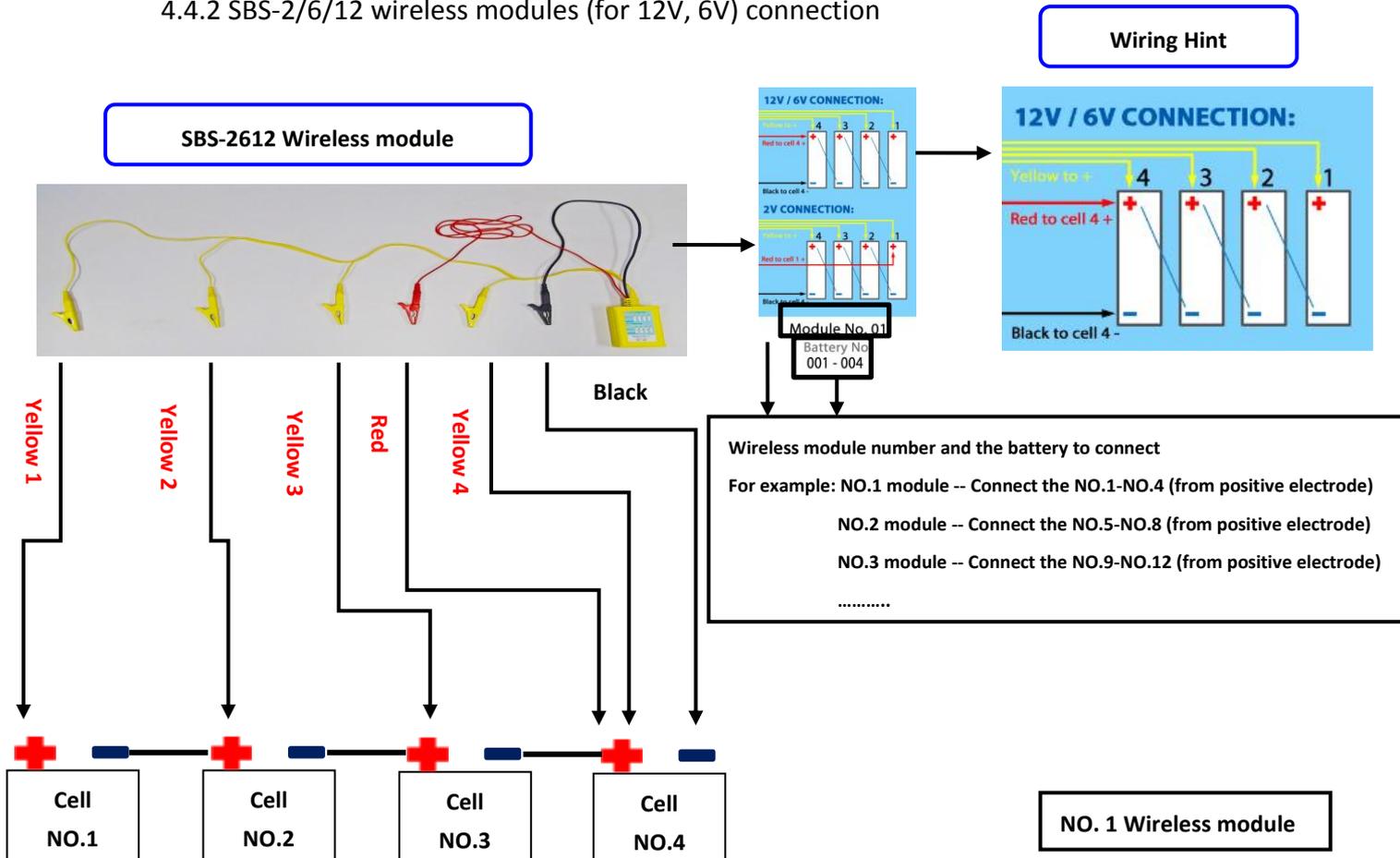


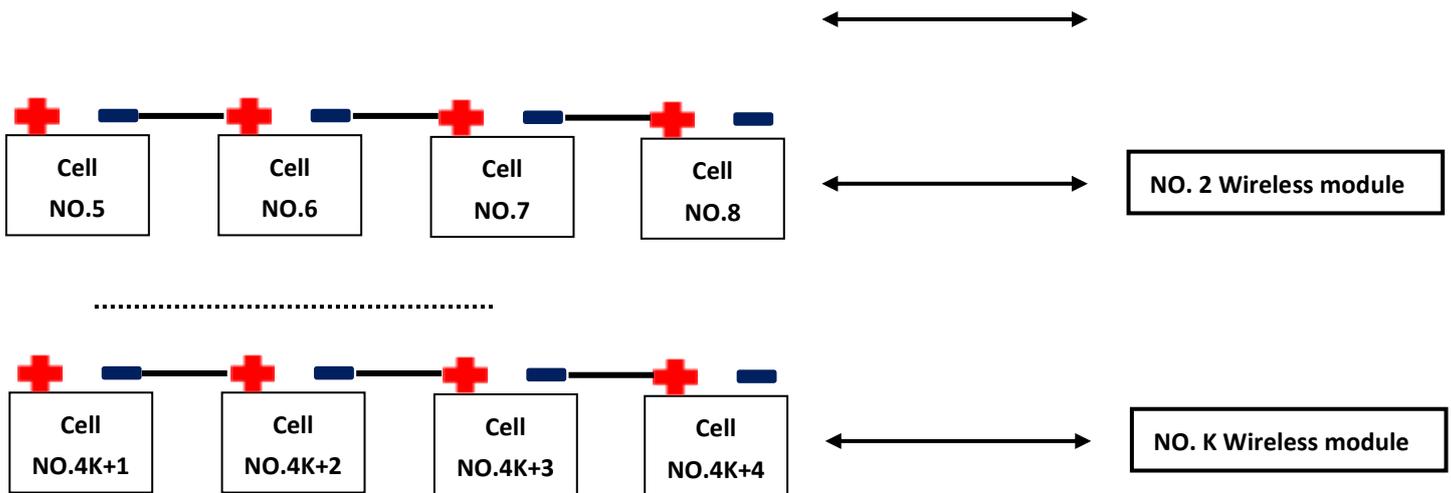


4.4.1.1 Reading the module number from the modules' labels, find the correct cells to connect the module to. **Do not connect the modules to 4 batteries which are not in series like No. 1, 5, 8, 9 - misconnection will likely damage the module immediately!**

4.4.1.2 Use the alligator clips (1 red, 1 black, 4 yellow) to connect modules to the batteries. Please follow the correct wiring rule "Yellow 1 to Yellow 4, from long to short. A wiring diagram is printed on the label of the modules for your reference.

4.4.2 SBS-2/6/12 wireless modules (for 12V, 6V) connection

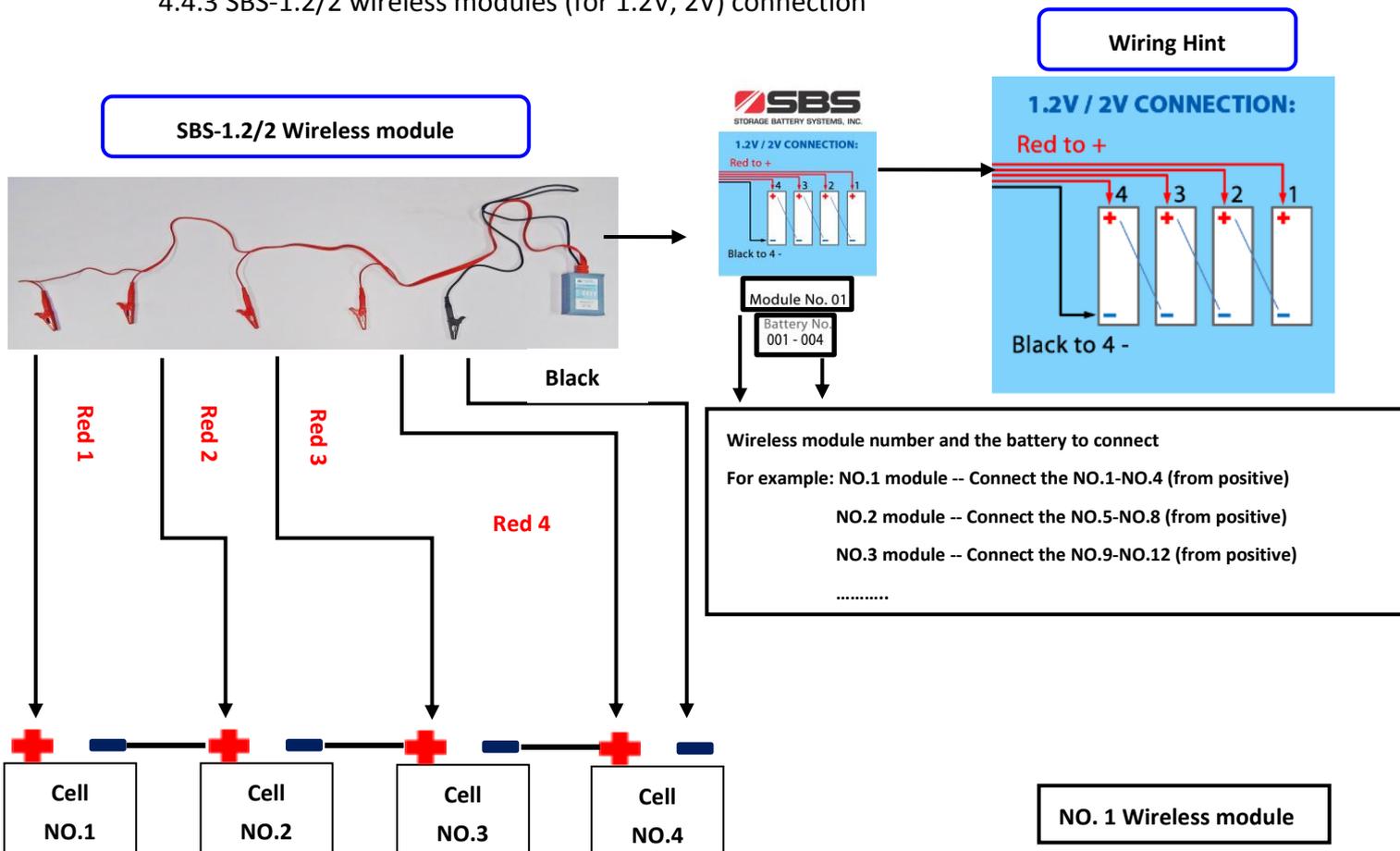


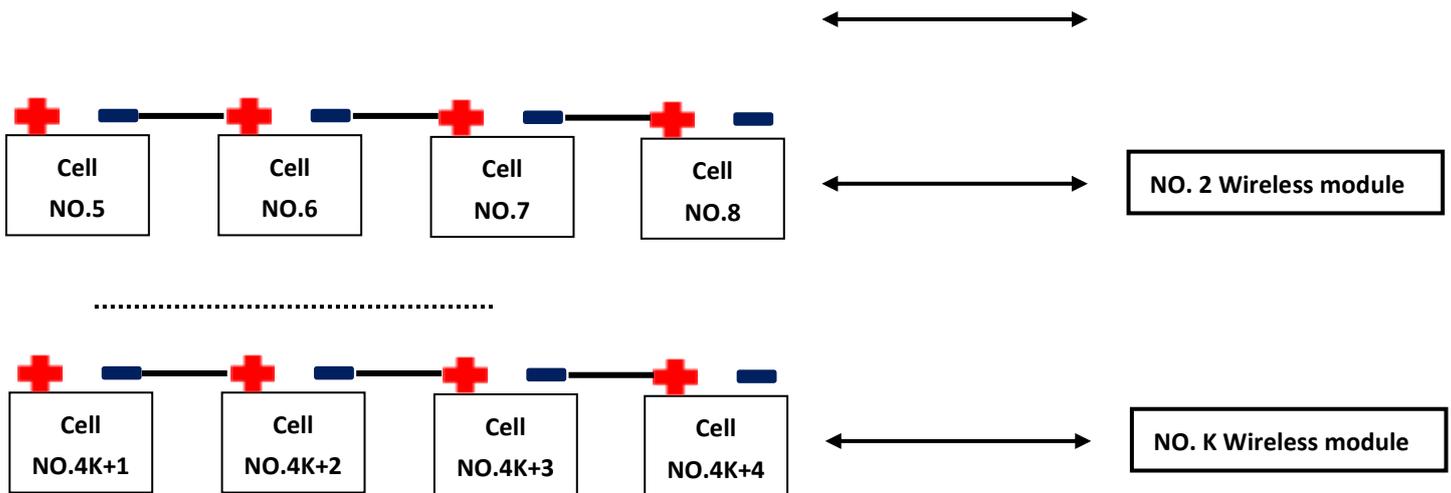


4.4.2.1 Read the module number from the label in the modules, find the right batteries to connect with. **Do not connect the modules to 4 batteries no adjacent like NO.1,3,8,9, it will probably damage the module immediately!**

4.4.2.2 use the alligator clips (1 red, 1 black, 4 yellow) to connect modules with the batteries, please follow the right wiring rule “Yellow 1 to Yellow 4, from long to short”, and the wiring hint also print on the label of modules.

4.4.3 SBS-1.2/2 wireless modules (for 1.2V, 2V) connection





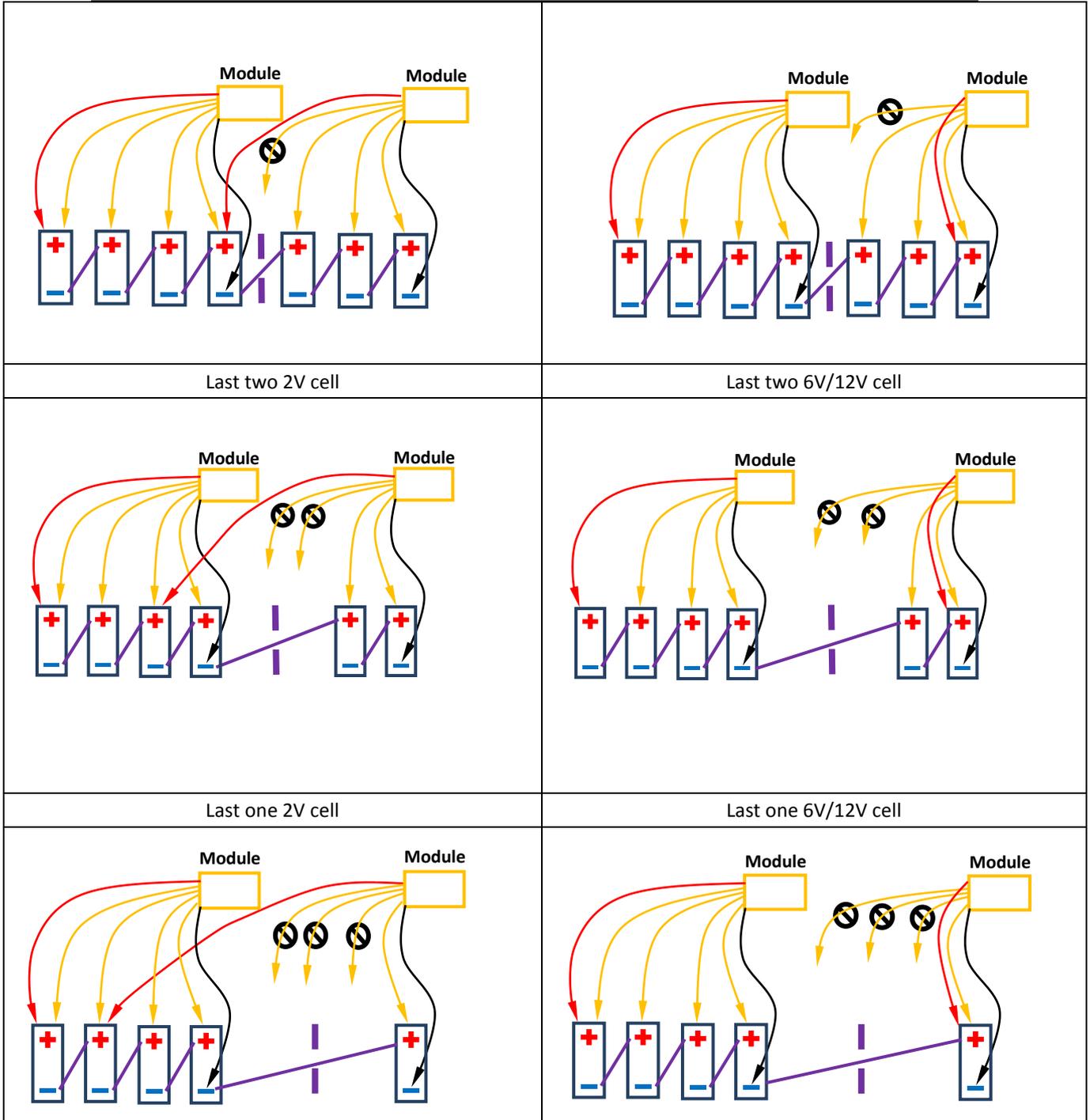
4.4.3.1 Read the module number from the label the modules, find the correct cells to connect the module to. **Do not connect the modules to 4 batteries which are not in series like NO. 1, 5, 8, 9 – the misconnection will likely damage the module immediately!**

4.4.3.2 Use the alligator clips (4 red, 1 black) to connect modules to the batteries, please follow the correct wiring rule “Red 1 to Red 4, from long to short”, and the wiring diagram printed on the label of the modules.

4.4.4 Connection guide when cell quantity is not a multiple of 4

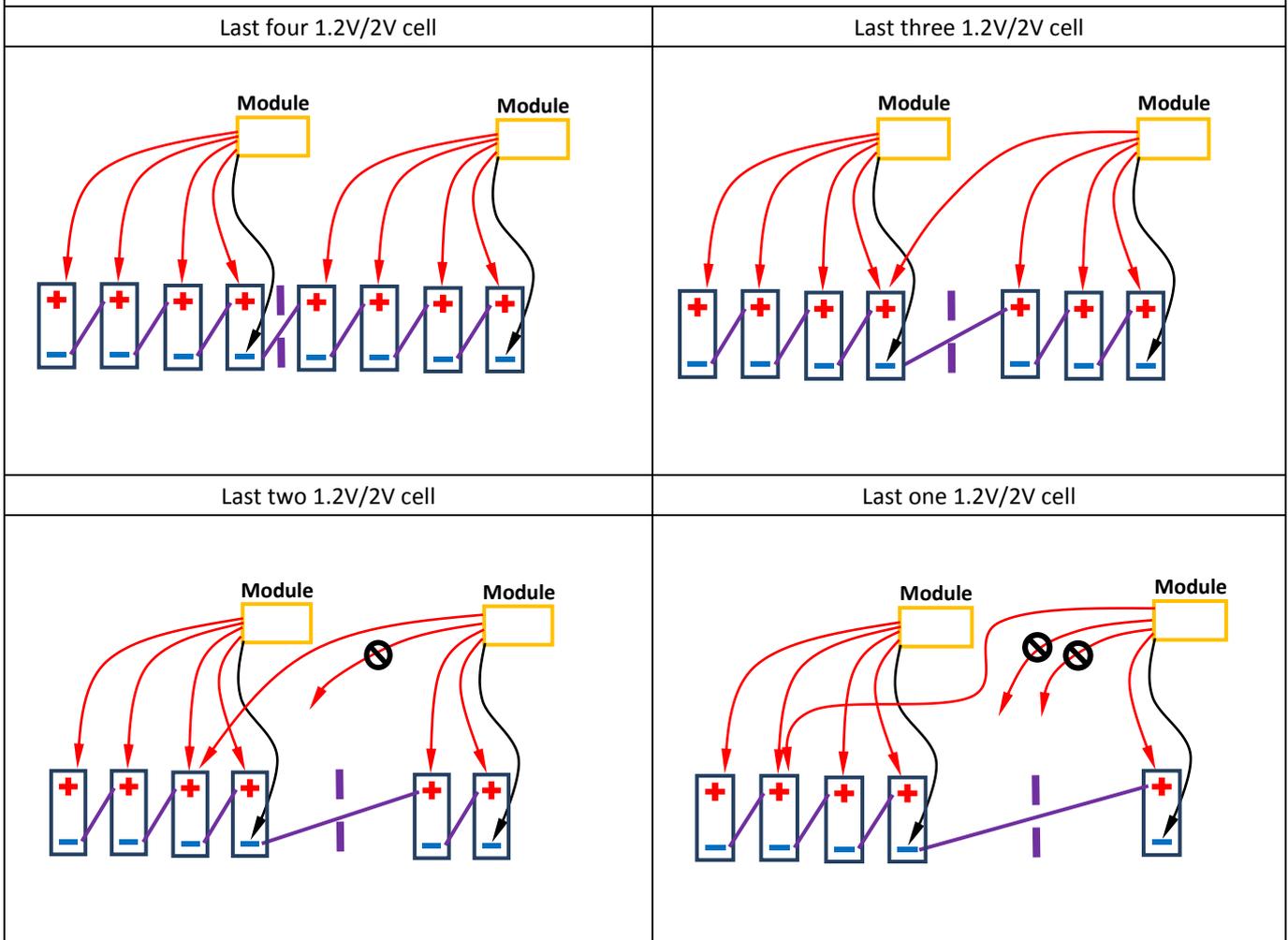
4.4.4.1 SBS-2/6/12 wiring for last 4 to 1 cells

<ul style="list-style-type: none"> • 4 yellow wires, from left to right = from long to short • means this wire no need to connect • separate the last cells with other cells 	
Last four 2V cell	Last four 6V/12V cell
Last three 2V cell	Last three 6V/12V cell



4.4.4.2 SBS-1.2/2 wiring for last 4 to 1 cells

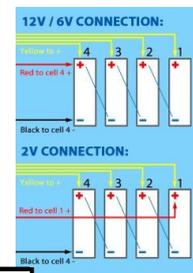
- 4 red wires, from left to right = from long to short
- means this wire no need to connect
- separate the last cells with other cells



4.4.5 Spare modules and reassigning module numbers

4.4.5.1 No. 0 spare modules

With each module set you will find No. 0 spare modules. They have the following label: No number assigned. They can be addressed to any module No., and allow testing to continue if any assigned module should fail.



No. 0 Spare module label

4.4.5.2 To Activate a No. 0 spare module:

When any assigned module fails (for example, No. 3 module), you can connect one of the

Module No. ___
Battery No. ___

Date: 2014-01-01
Time : 12:00:00
InputType : Touch
BattLowAct: Stop
BattOrder: Inc From Batt+
ConfigModuleAddr: 000#
ModuleFreq: 01FM
Clamp range: 200A

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spare modules to 4 cells, just like a normal module. **Disconnect all other modules.** Re-address the spare module to No. 3 to replace the failed one by entering the 'Config Module Addr:' of the 'Setup' menu. Set '003#' and press 'config'. The spare module will become the new No. 3 module.

4.4.5.3 How to erase and reassign the assigned module

If you run out of spare modules, and one of the assigned modules fails (for example, No. 3 module fails) you can erase No.6 and reassign to No.3 for this urgent requirement.

- a) Open the No. 6 module box; you will see a small button on the PCB. (Yellow frame in the picture.)
- b) While holding this button down continuously, connect it with 4 cells, just like you would a normal module. It will power on, and then wait 10 seconds. Release the button.
- c) Check 'BatteryView' in LCD, if Cells 20-24 (normally on No. 6 module) have no data, it means No. 6 module has been reset to a No. 0 spare one.
- d) Follow the procedure in '4.4.5.2 To Activate a No. 0 spare module', to edit it to No. 3.



4.5 Starting Up and Input Operation

4.5.1 After the SBS-4815CT has been connected to the battery system, turn on the "AC" power switch.

4.5.2 A welcome interface will appear where you can see the unit identification. Press anywhere on the screen to go to the main menu. If 10 seconds elapse, the system will jump to the main menu automatically.

4.5.3 SBS-4815CT input way: press on the screen directly



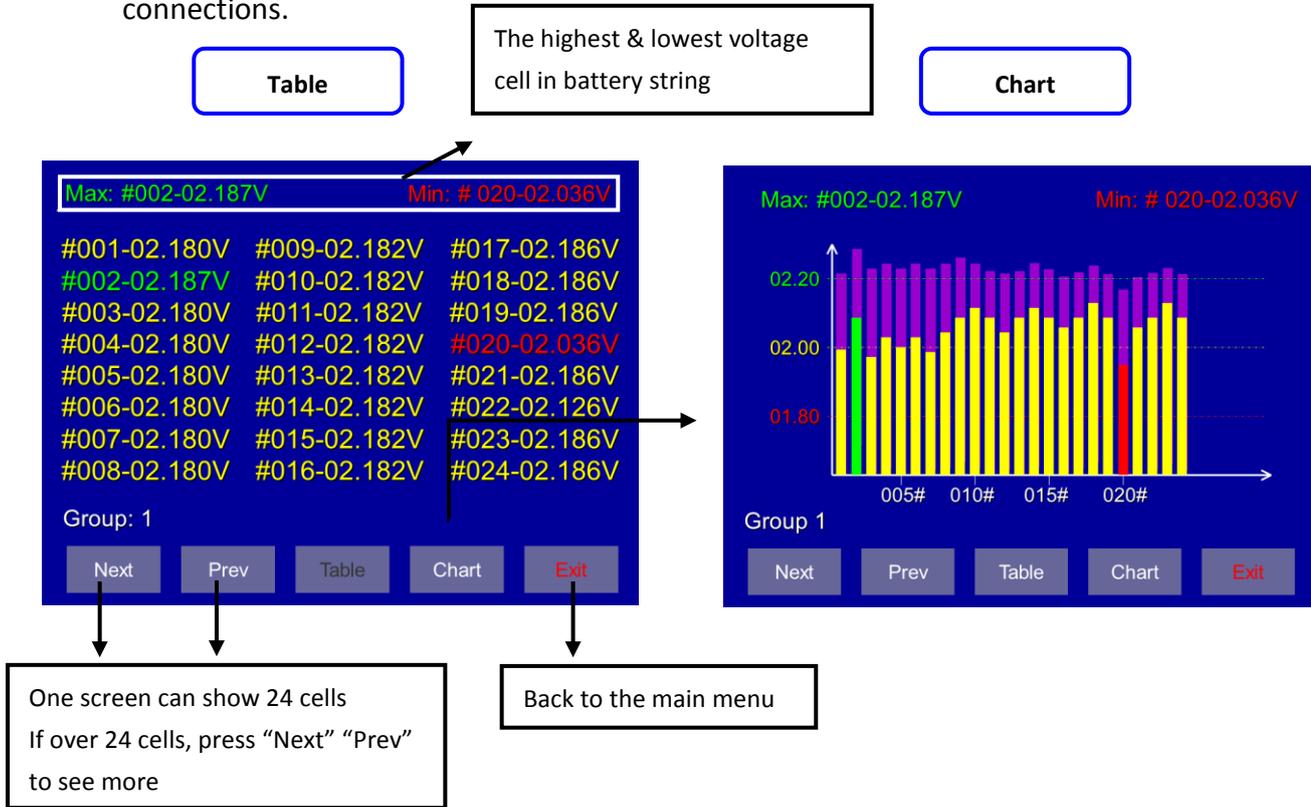
The welcome screen



The main menu

4.6 Check the Connection of the Wireless Modules

4.6.1 Press “BatteryView” on the main menu to enter the table interface, if all wireless modules are connected correctly, you will see the voltage of each cell. If the voltages of some cells are not showing, please re-check the wireless module connections.



4.6.2 Press “Chart” to see the histogram for each cell in the string.

4.6.3 Both the table and chart interfaces show 24 cells at a time. If the tested battery string has more than 24 cells, press the “Next” & “Prev” to see the other cells.

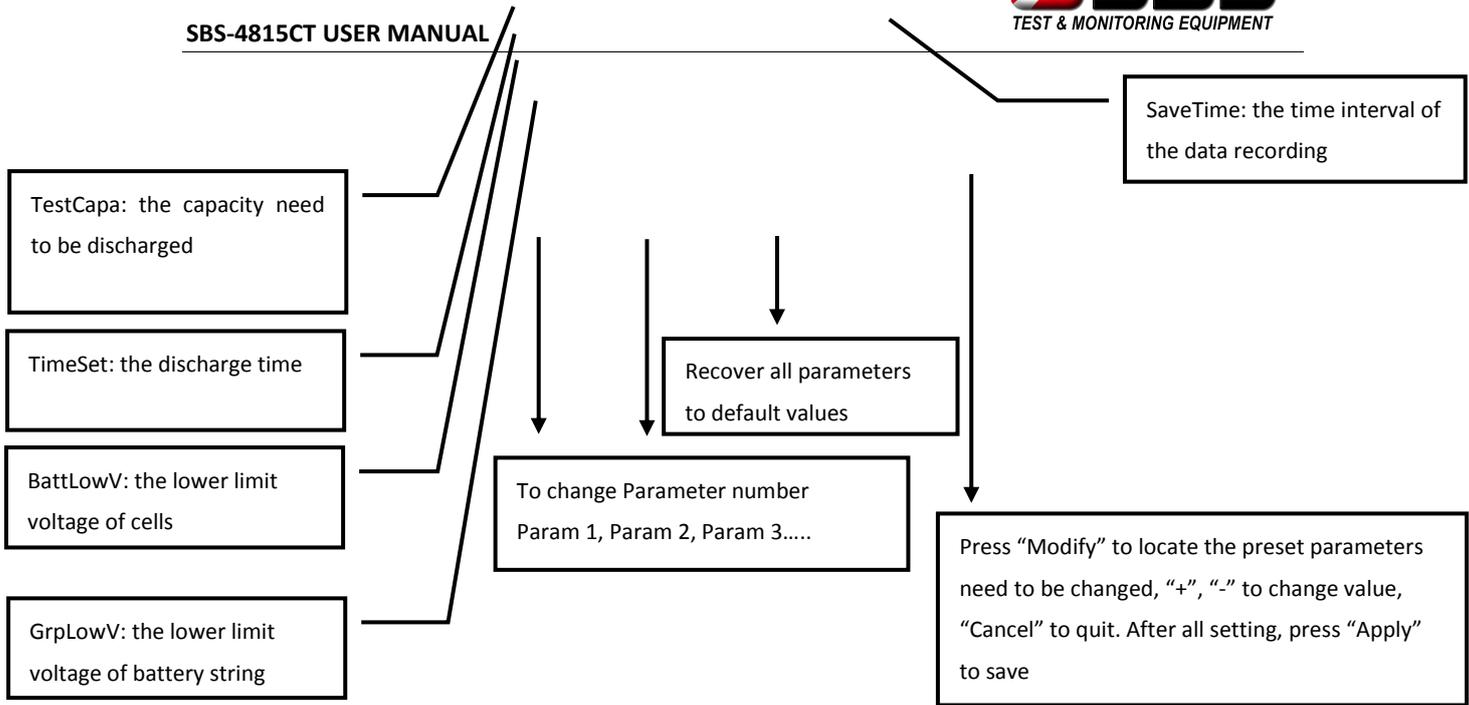
4.6.4 Press “Exit” to go back to the main menu

4.7 The Preset Function

4.7.1 The preset function allows 30 programmable locations to save discharge test setups. You can select any of the preset tests and press “Apply” to use those discharge parameters. **The SBS-4815CT supports manual setting in the discharge interface without using the preset features.**

Press “Preset” on the main menu to enter the preset interface





4.7.2 “TestCapa”, “TestTime”, “BattLowV”, “GrpLowV” are the test stop conditions, if any of these set-points is reached, the discharge will stop automatically.

4.7.3 For 1 battery string discharge, please keep “#Strings” at “001G”; if parallel discharging 2-4 strings is needed, 2-4 times the wireless modules will be needed. The discharge current will be ½ - ¼ for each string being tested.

4.7.4 If you want the discharge to stop when one bad cell reaches the “BattLowV”, please keep “#Battlow” in “001#”. If you want the discharging to stop when N bad cells reach the “BattLowV”, you can set the “#BattLow” to the number you need.

4.7.5 If you are not utilizing the wireless modules for the discharge, please set the “BattSum” to “000#”. “BattLowV” will be disabled from terminating the discharge.

4.8 Discharge

4.8.1 Press “Discharge” on the main menu to enter the discharge parameter interface.

4.8.2 In the parameter interface, you will see all the same parameters as in the “Preset”; you can re-edit the discharge parameters here and press “Apply” to save them.

4.8.3 Press “Start” into the discharge interface

4.8.4 Press “Start” again to start discharge, the internal contactor will make a move.

4.8.5 Manual stop the discharge: press “Pause” to pause the discharge, and press “Stop” to end the discharge, or press “Start” to continue the discharge.

Discharge



To load the preset you need

When the discharging starts, you can see the status in this screen, it includes:

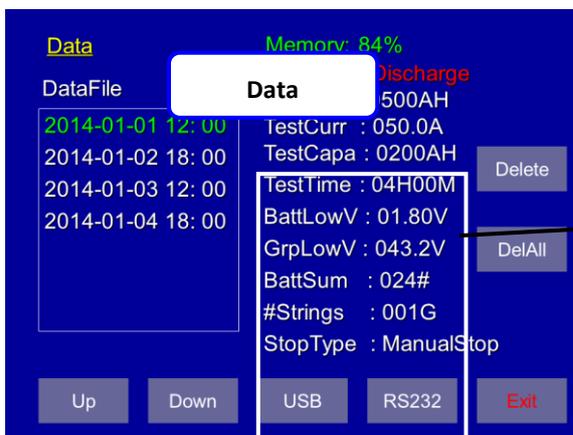
- GroupVolt: the voltage of battery group
- Current: the discharge current
- TotalPower: the discharge power
- CapaSum: the total capacity discharged
- TestTime: the time since the discharge started
- #BattLow: the quantity of the batteries in which voltage is already below the "BattLowV" you set
- MaxBatt(V): the highest voltage battery in the group
- MinBatt(V): the lowest voltage battery in the group

To browse all cells voltage, "Table" & "Chart" screens are similar with the one in "BatteryView"

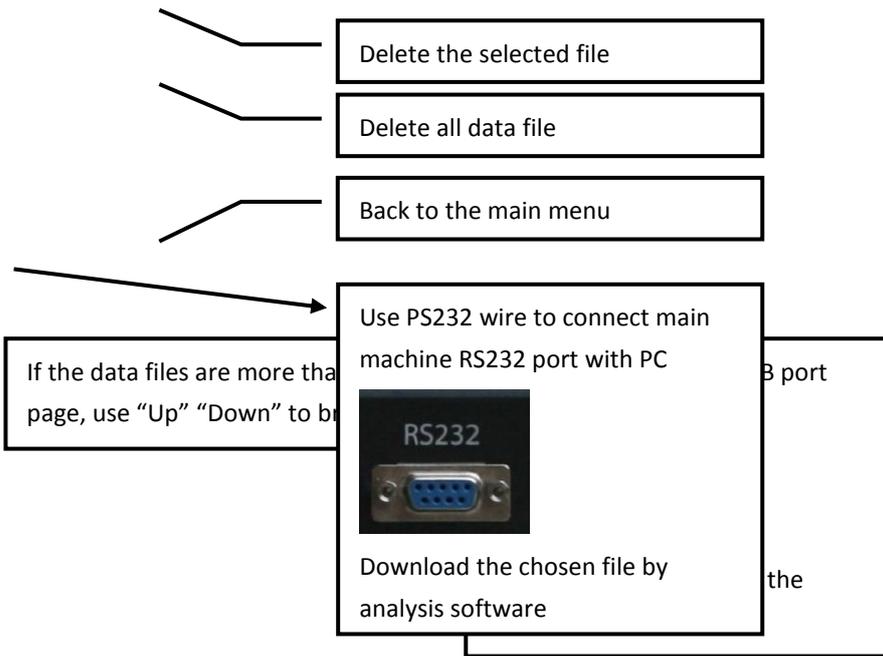
Change the parameters in the process of discharging; all changes can be activated immediately!

- 4.8.6** Press "Param" to adjust the parameters during the discharge (if necessary); all changes can be activated immediately and the discharge will not be stopped.
- 4.8.7** "SysState:" in the discharge interface will help you know the status of the discharge.

4.9 Download The Data To PC

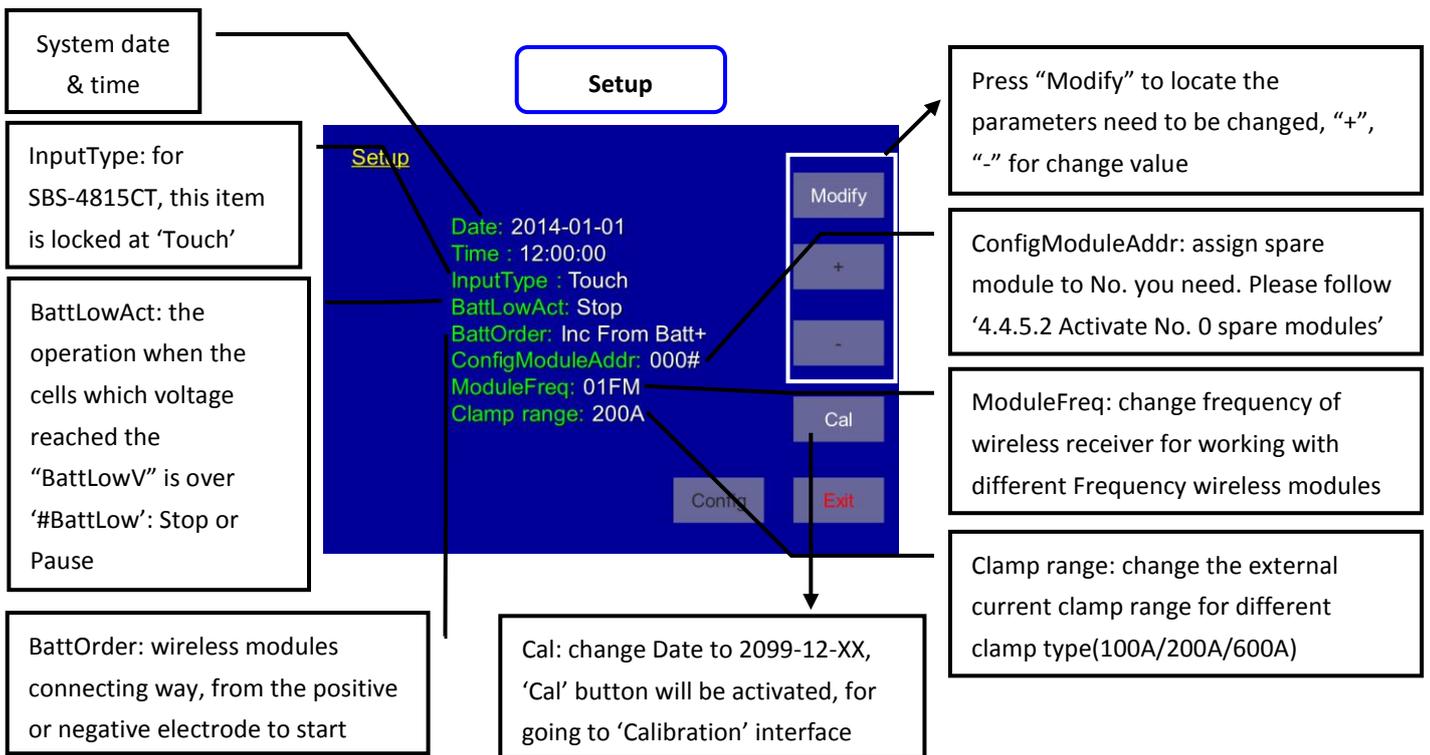


The information of the data file



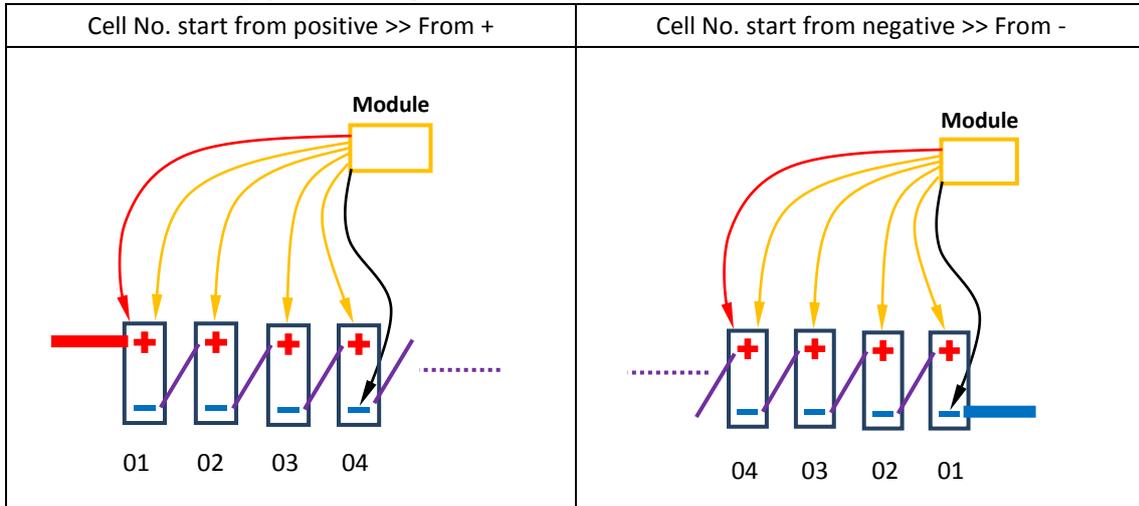
4.10 System Setup

4.10.1 Press "Setup" in the main menu into setup interface



4.10.2 'BattLowAct' give more options when you located some very bad cell in short discharge but you want to remove them and proceed discharge more to know other cells situation. Choose 'Pause', the discharge can be continued when you adjust setting and 'Start' again, the whole process will be recorded in single data file.

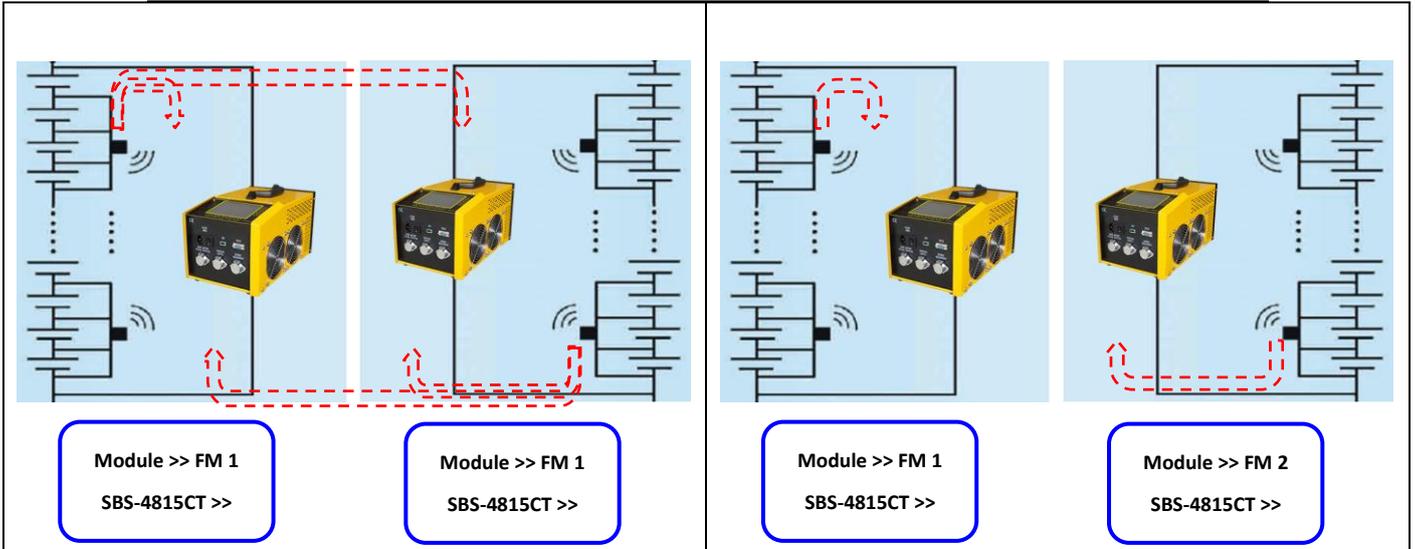
4.10.3 When cell No. of your battery string starts from negative electrode, please set 'BattOrder' to 'From Batt-'. SBS-4815CT will reserve 4 cells sequence at each wireless modules to keep your testing result correct.



4.10.4 'ConfigModuleAddr': please follow '4.4.5.2 Activate No. 0 spare modules' for assign spare module to the one you need.

4.10.5 If two SBS-4815CT with 2 sets of wireless modules are testing different battery string in same battery room, the modules will have an interference problem and will not be visible on both units. In this test application, the units will need 2 sets of wireless modules with different frequency settings. 'ModuleFreq' setting can be used to change the frequency of the SBS-4815CT wireless receiver for working with different frequency wireless modules.

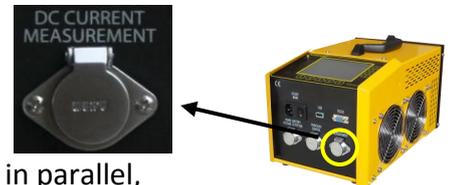
Same frequency in same room >> Interference	Different frequency in same room >> No interference
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4.10.6 SBS-4815CT can work with three different range external clamp-100A, 200A, 600A. Please select the correct clamp type when you connect external clamp with SBS-4815CT.

The external clamp is needed when:

- Two SBS-4815CT or SBS-4815CT + SBS-S load bank co-working in parallel, external clamp will measure the external unit current and add it up to one SBS-4815CT.
- SBS-4815CT run charge monitoring function, external clamp will measure current from charger to battery string, and calculate the total Ah charged.



4.10.7 SBS-4815CT provide calibration function, if you have high accuracy multi-meter and Ammeter, you can calibrate the tester by yourself. Change the date to 2099-12(year-month), the “Cal” button will be activated. Press “Cal” into calibration interface.

GroupVol: calibrate the voltage of battery string

Dischg: calibrate discharge current

Charge: calibrate charge current

Clamp: calibrate external current clamp

TEMPE: calibrate the temperature

BattVol: calibrate the battery voltage

Calibrate

Calibrate

GroupVol: 000.0V

Dischg : 000.0A

Charge : 000.0A

Clamp : 000.0A

TEMPE : 14°C

BattVol : 001#-00.000V

Dischg
Charge
Stop
Apply
Exit

Cal
+
-
Cancel

Press “Cal” to select the parameters need to be calibrated, “+”, “-” to change value, “Cancel” to quit, and “Apply” to save the changes.

Back to setup interface

4.12 Charge Monitoring Function

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4.11.1 Although SBS-4815CT can't charge the test battery string, it provides charge monitoring function to record the process of charging.

4.11.2 press "Charge" in the main menu into charge interface, and press "start" to record the charge process.

When pressing "Start" to record the charge, you can see the status in this screen, it included:

- GroupVolt: the voltage of battery string
- Current: the charge current (external clamp needed)
- CapaSum: the capacity already be charged (external clamp needed)
- TestTime: the time since the charge starts
- MaxBatt(V): the highest voltage battery in the group
- MinBatt(V): the lowest voltage battery in the group



To browse all cells voltage, "Table" & "Chart" screens are similar with the one in "BatteryView"

Back to the main menu

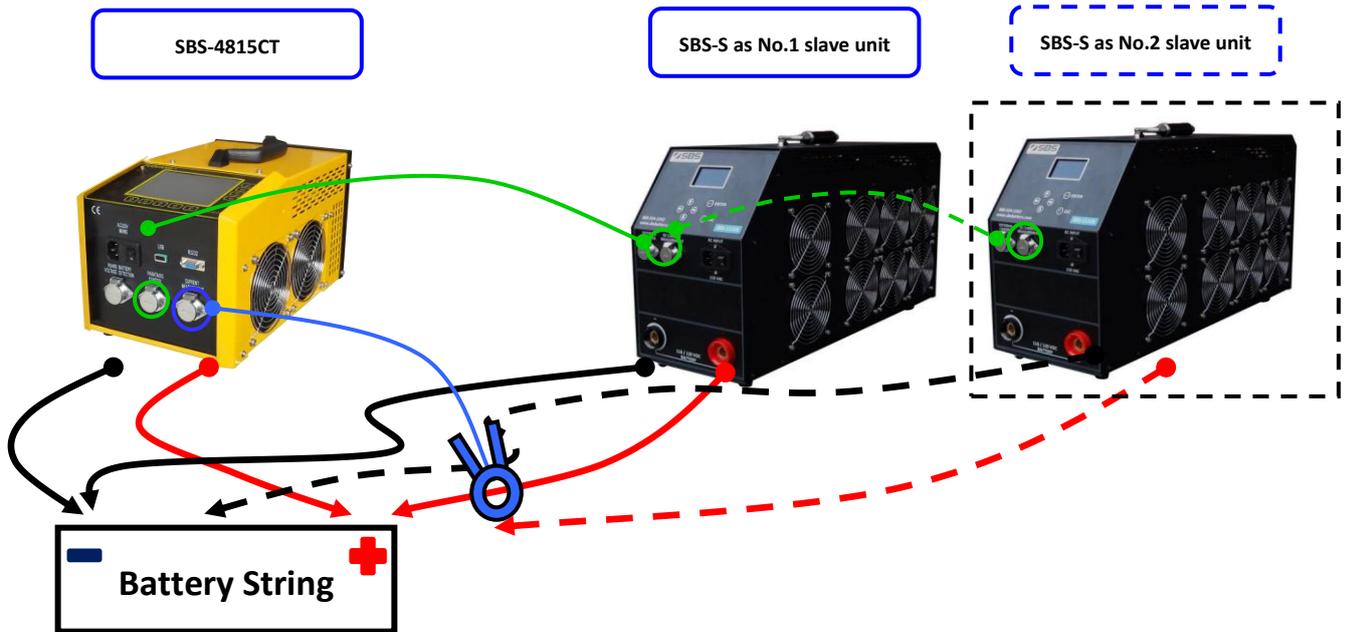
4.13 Multiple units in parallel

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4.13.1 SBS-4815CT + SBS-S unit(s) in parallel

4.13.1.1 Connecting

- a) Connect SBS-4815CT & SBS-S unit(s) with battery string by power cables
- b) Connect external current clamp with SBS-4815CT – ‘DC CURRENT MEASUREMENT’ port, and put clamp on the all cables from SBS-S unit(s) to battery string.
- c) Connect parallel control wire from SBS-4815CT – ‘PARALLEL INPUT’ port to SBS-S – ‘EXTERNAL CONTROL’ port. (if there are 2 SBS-S units, please contact us to order the special control wire)



4.13.1.2 Setting

- a) Select the correct ‘Clamp range’ in SBS-4815CT Setup interface
- b) set all 4 stop thresholds and other details in SBS-4815CT parameters interface, and set the total discharge current to ‘TestCurr’ you need (for example: 200A in total).
- c) set all stop thresholds in SBS-S unit(s), and set current to the max value which SBS-S unit(s) can offer (for example: set 100A in SBS-1110S).
- d) Save all setting in SBS-S unit(s) and let 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

4.13.1.3 Discharge

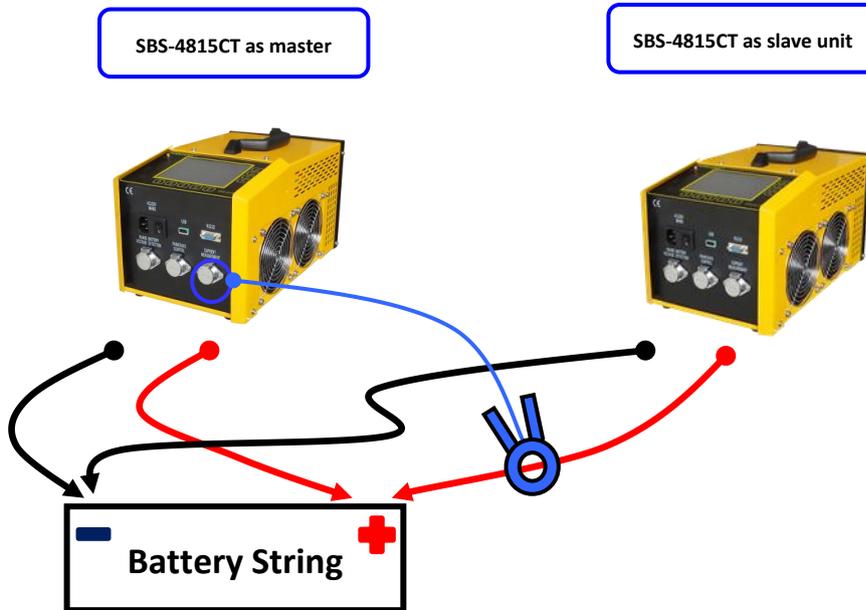
- a) Start discharge at SBS-4815CT, and when the current goes up to the max value which the SBS-4815CT can offer, it will send out control signal to SBS-S unit(s). SBS-S unit(s) start discharge up to the setting value.
- b) External clamp will add all discharge current from SBS-S unit(s) to SBS-4815CT. And SBS-4815CT will offer the proper current to keep the total current you set. (For example: 200A in total, if SBS-S offer 100A, SBS-4815CT will offer 100A, if SBS-S offers 80A, SBS-4815CT will offer 120A)
- c) If any stop threshold is reached in SBS-4815CT, all SBS-S unit(s) can accept control signal to terminate the discharge at the same time.

4.13.2 Two SBS-4815CT in parallel

SBS-4815CT USER MANUAL

4.13.2.1 Connecting

- a) Connect SBS-4815CT(s) with battery string by power cables
- b) Connect external current clamp with master SBS-4815CT – ‘DC CURRENT MEASUREMENT’ port, and put clamp on the cable from slave SBS-4815CT to battery string.



4.13.2.2 Setting

- a) Select the correct ‘Clamp range’ in master SBS-4815CT Setup interface.
- b) Set all 4 stop thresholds and other details in both SBS-4815CT parameters interface, and set the total discharge current to ‘TestCurr’ in master SBS-4815CT.
- c) Set ‘TestCurr’ to max value that the parallel SBS-4815CT can offer.

4.13.2.3 Discharge

- a) Start discharge at both SBS-4815CT, slave SBS-4815CT offer max discharge current as you set.
- b) External clamp will add discharge current from slave SBS-4815CT to master SBS-4815CT. And master SBS-4815CT will offer the proper current to keep the total current you set.

(For example: 200A in total, if slave SBS-4815CT offer 100A, master SBS-4815CT will offer 100A, if slave SBS-4815CT offer 80A, master SBS-4815CT will offer 120A)

- c) If any stop threshold is reached in master SBS-4815CT, slave SBS-4815CT also have same setting, so it will also terminate the discharge at the same time.

5. PC software instruction

5.1 Main Functions

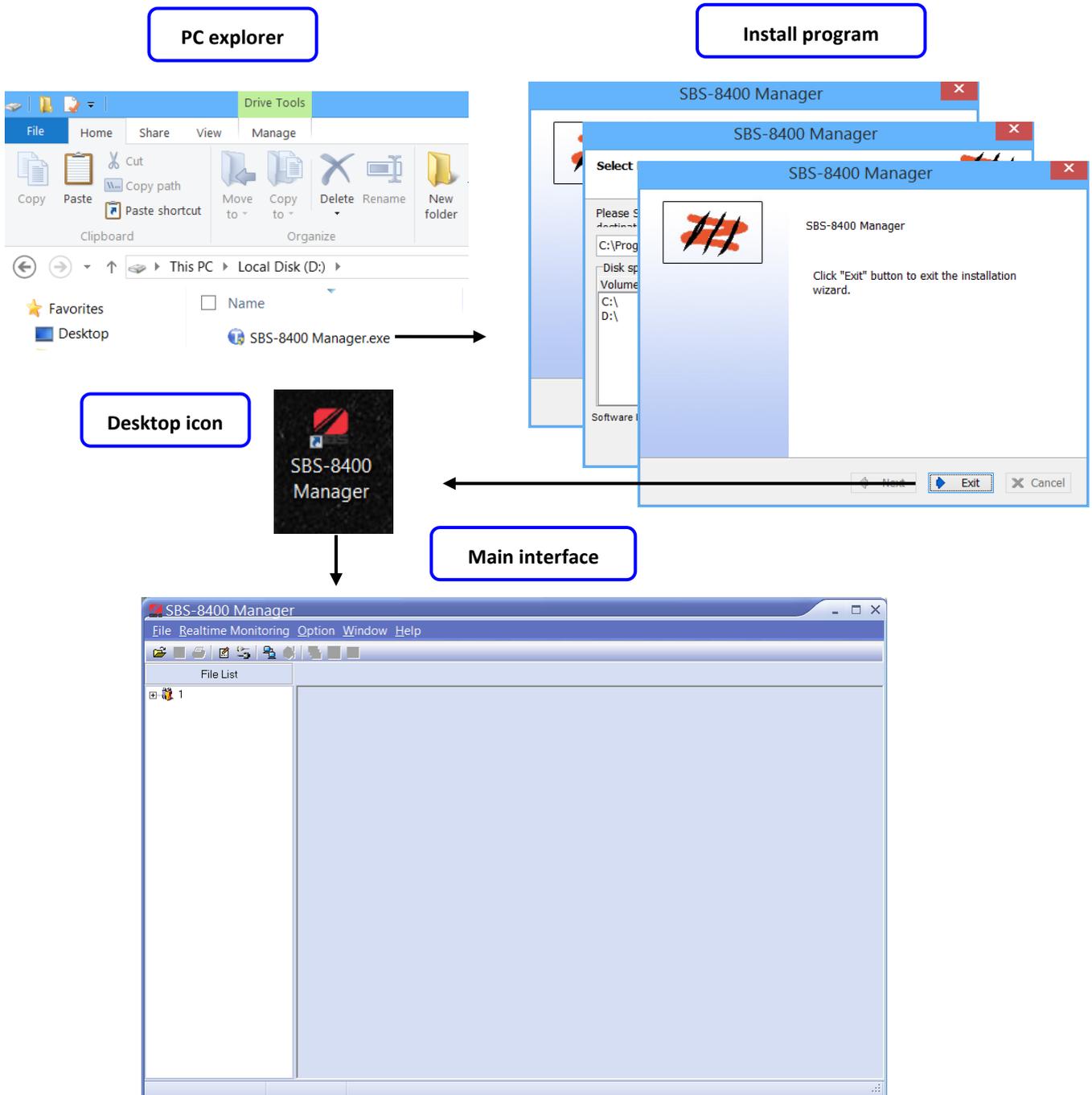
- a) recording the real time discharge data by connecting main machine with PC
- b) read, display and save the downloaded USB data.
- c) generate EXCEL test report

5.2 Install Analysis Software To PC

5.2.1 Please find the install program of analysis software in the CD-ROM or USB disk.

5.2.2 according the prompts to finish the installation.

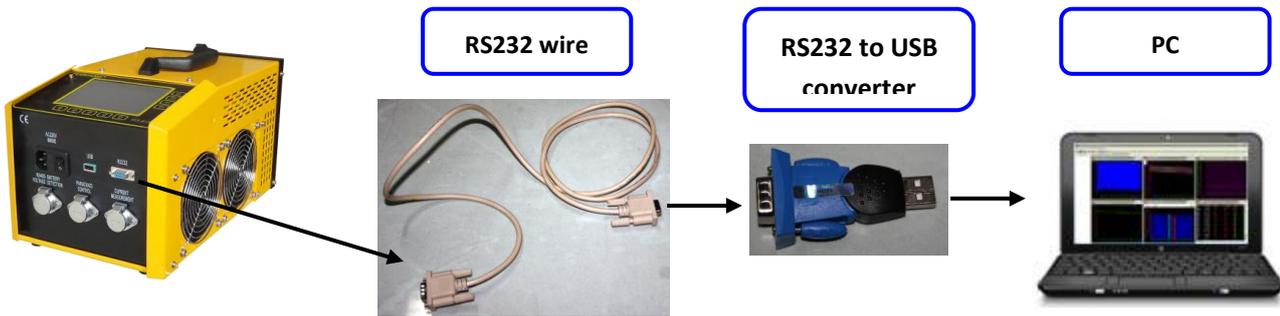
5.2.3 after the installation, you can click the desktop icon to open the software.



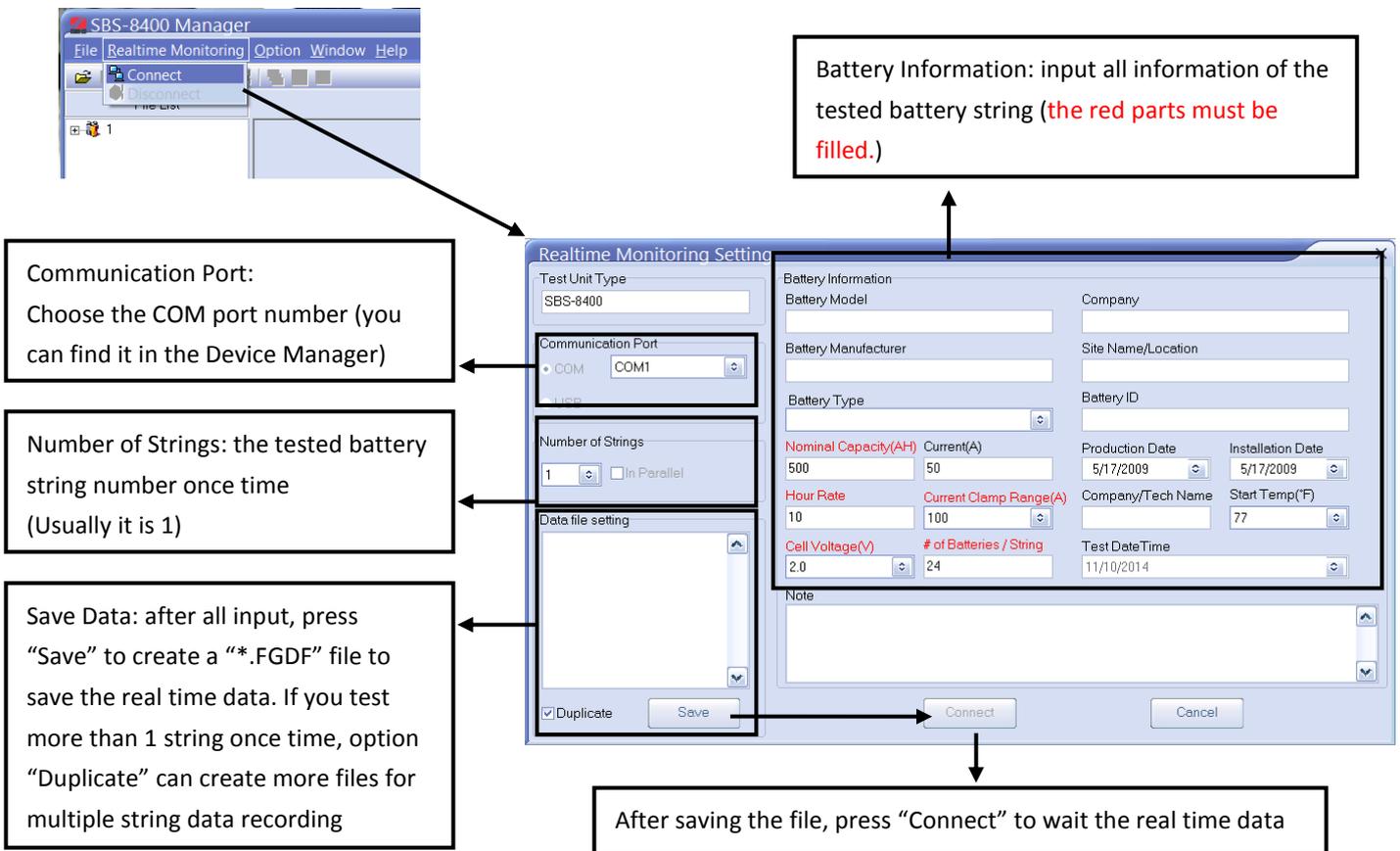
5.3 Real Time Recording During The Testing

SBS-4815CT USER MANUAL

5.3.1 Use the RS232 connector to connect the main machine with PC



5.3.2 Choose "Connect" in "Realtime monitoring" menu to open "Real-time Monitoring Links" interface.



The screenshot shows the 'SBS-8400 Manager' software with the 'Realtime Monitoring' menu open and 'Connect' selected. The 'Realtime Monitoring Setting' dialog box is displayed, containing the following fields and options:

- Test Unit Type:** SBS-8400
- Communication Port:** COM1
- Number of Strings:** 1 (with an 'In Parallel' checkbox)
- Data file setting:** (empty text area)
- Battery Information:**
 - Battery Model: (empty)
 - Battery Manufacturer: (empty)
 - Battery Type: (dropdown)
 - Nominal Capacity(AH): 500
 - Current(A): 50
 - Hour Rate: 10
 - Current Clamp Range(A): 100
 - Cell Voltage(V): 2.0
 - # of Batteries / String: 24
 - Company: (empty)
 - Site Name/Location: (empty)
 - Battery ID: (empty)
 - Production Date: 5/17/2009
 - Installation Date: 5/17/2009
 - Company/Tech Name: (empty)
 - Start Temp(°F): 77
 - Test DateTime: 11/10/2014
- Buttons:** Duplicate (checked), Save, Connect, Cancel

Annotations and instructions:

- Communication Port:** Choose the COM port number (you can find it in the Device Manager)
- Number of Strings:** the tested battery string number once time (Usually it is 1)
- Save Data:** after all input, press "Save" to create a "*.FGDF" file to save the real time data. If you test more than 1 string once time, option "Duplicate" can create more files for multiple string data recording
- Battery Information:** input all information of the tested battery string (the red parts must be filled.)
- After saving the file, press "Connect" to wait the real time data**

5.3.3 Start the discharge on the SBS-4815CT, and the real time data will keep coming and showing in the PC software interface. Please input the red parameters correctly in the battery information, it can affect the result of capacity evaluation.

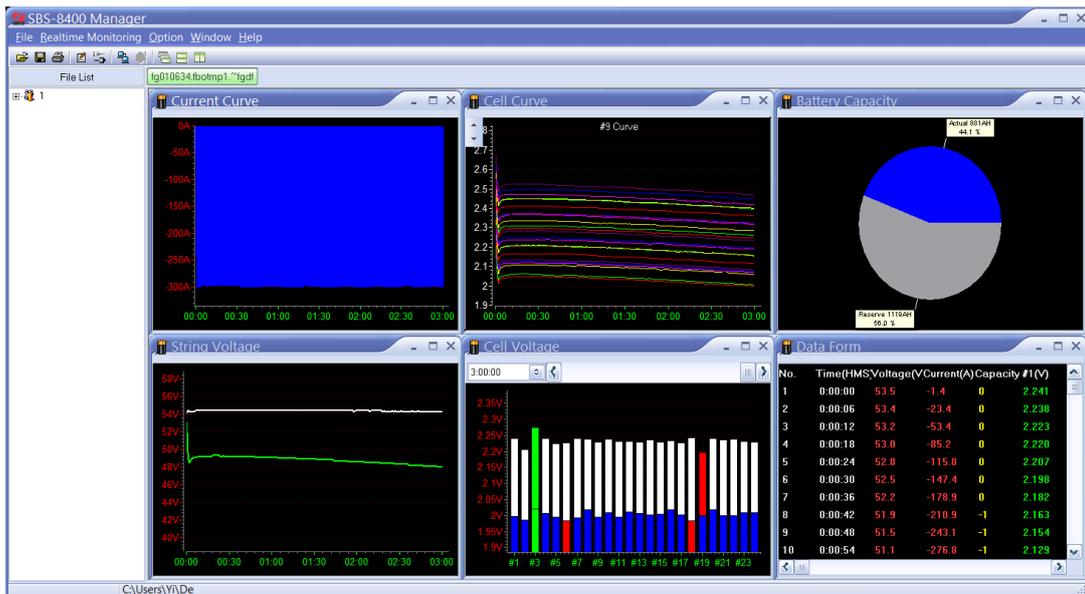
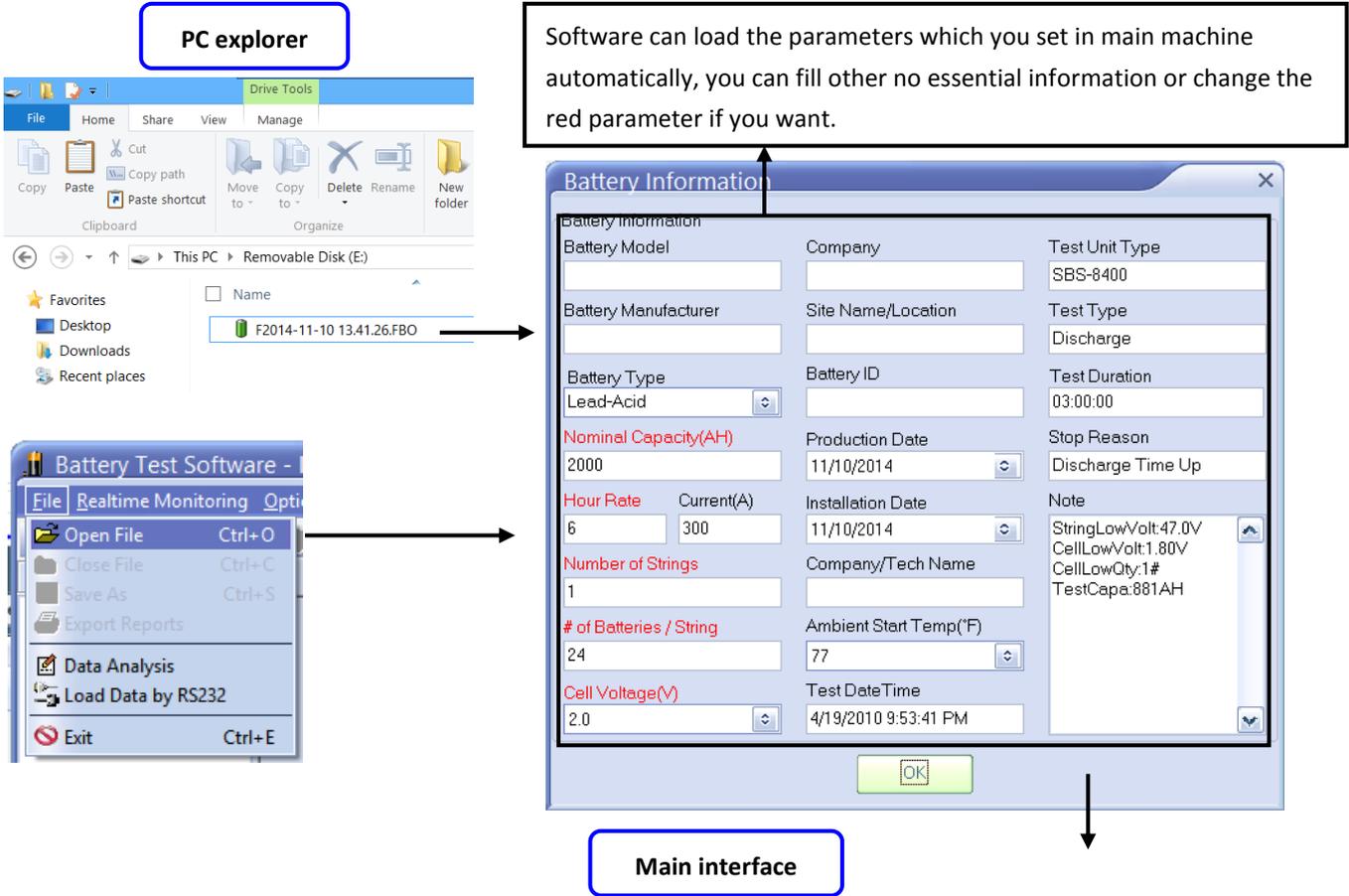
5.3.4 The real time data can be saved simultaneously, even though you minimize the software in the process of discharging, the data file still is being recorded in the background as long as the software is running.

5.4 Download Data File From USB Disk

SBS-4815CT USER MANUAL

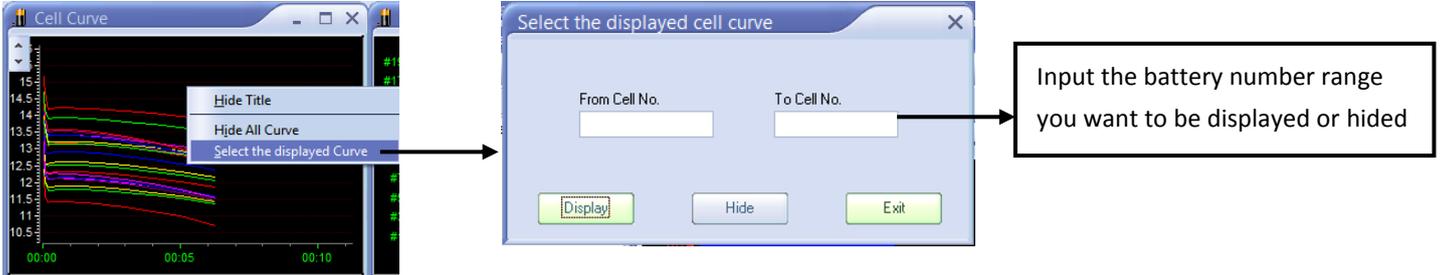
5.4.1 Download the data file from the main machine, you can find the data file named "Fxxxxxxx.FBO". ("xxxxxx" is the time & date of data downloading.)

5.4.2 Double click the file to activate "Battery information" interface. Or you can open the software first and choose "Open file" in "file" menu.



5.4.3 In the main interface, you can see 6 windows to show all necessary testing information:

- a) Total current curve: the current during the discharging (the value is negative during discharging and positive in charge monitoring mode).
- b) Cell curve: the voltage curve of each battery, it can be added and deleted by right click menu.



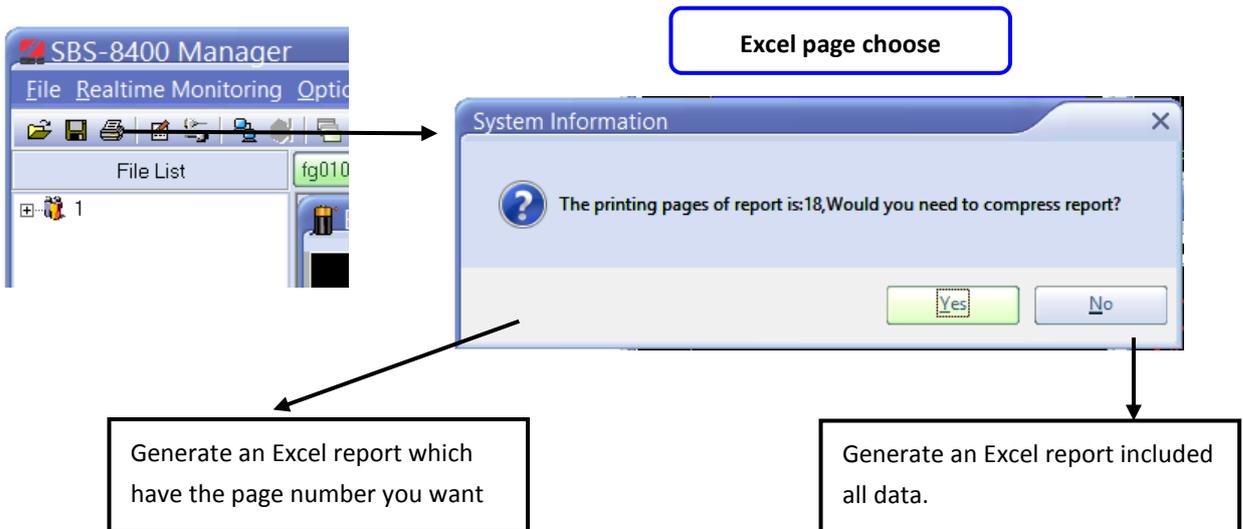
- c) Battery capacity: show the actual capacity, reserve capacity and percentage of battery string
- d) Data form: show the each discharge data by time-interval during the discharge
- e) Cell voltage: each battery voltage can be displayed by bar chart, the bar chart can show you the initial and end voltages. Using the scroll bar on the top of this window, you can locate to any time in the testing to see the relevant result.



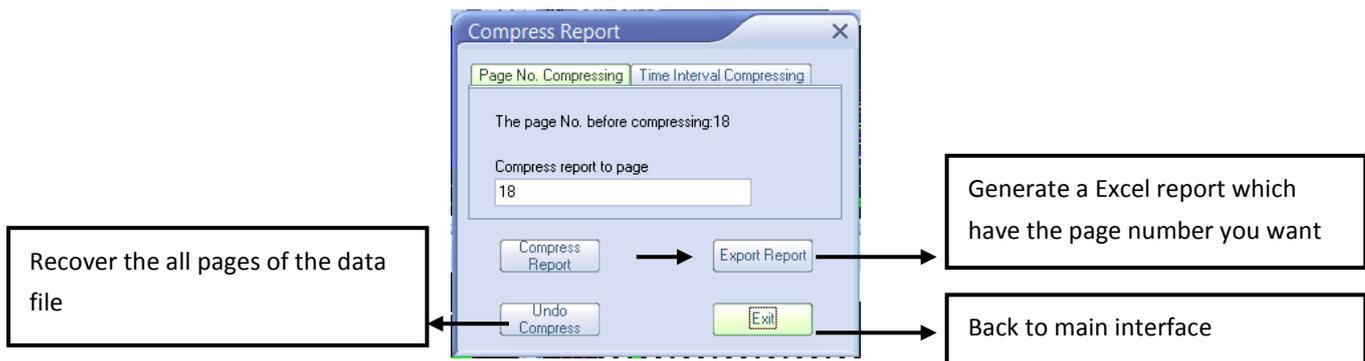
- f) total voltage: the voltage curve of battery string in the discharging process

5.5 Generate Excel Test Report

5.5.1 press icon to generate a report, and in the “system information” window, it can show you the page number of report, choose “No” to generate Excel report which includes all information. If you don’t need a report with so many pages, press “Yes” to generate an Excel report which has the page number you want.



5.5.2 in the “compress report” interface, input the page number you want, and press “compress report” to decrease the page number and press “Export Report” to save the Excel report.



6. Attentions

6.1 For the testing safety and efficiency, please read the manual before operation.

6.2 During testing, we suggest the operator stay in the vicinity of the testing unit.

6.3 Please check the datasheet of SBS-4815CT to ensure the tested battery string is in the voltage range, if battery string voltage is out of SBS-4815CT test range, it would cause damage to main unit.

6.4 If you need to record the performance of each cell in the battery strings, wireless modules are required accessories. Without them, the PC analysis software can't collect the cell data to produce the voltage drop curves to analyze.

6.5 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.

7. After-Sale Service

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Menomonee Falls WI 53051

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Fax: (262) 703-3073

Website: www.sbsbattery.com