Patents

The ***SBS-6800*** Universal Stationary Battery Analyzer is made in the U.S.A. by Franklin Electric and is protected by one or more of the following U.S. Patents: 6633165; 6623314; 6621272; 6597150; 6586941; 6566883; 6556019; 6544078; 6534993; 6507196; 6497209, 6495990; 6469511; 6466026; 6466025; 6465908; 6456045; 6445158; 6441585; 6437957; 6424158; 6417669; 6392414; 6377031; 6363303; 6359441; 6351102; 6332113; 6331762; 6329793; 6323650; 6316914; 6313608; 6313607; 6310481; 6304087; 6294897; 6294896; 6262563; 6259254; 6249124; 6225808; 6222369; 6172505; 6172483; 6163156; 6137269; 6104167; 6091245; 6081098; 6051976; 6037777; 6037751; 6002238; 5945829; 5914605; 5871858; 5831435; 5821756; 5757192; 5656920; 5598098; 5592093; 5589757; 5585728; 5583416;w 5574355; 5572136; 5469043; 5343380; 5140269; 4912416; 4881038; 4825170; 4816768; 4322685; 3909708; 387391; and 387391. Other U.S. and Foreign patents issued and pending. This product may utilize technology exclusively licensed to Franklin Electric by Johnson Controls, Inc. and/or Motorola, Inc.

Limited Warranty

The ***SBS-6800 is*** warranted to be free of defects in materials and workmanship for a period of one year from date of purchase. Storage Battery Systems, LLC will, at our option, repair or replace the unit with a remanufactured unit. This limited warranty applies only to the ***SBS-6800*** analyzer, and does not cover any other equipment, static damage, water damage, overvoltage damage, dropping the unit, or damage resulting from extraneous causes including owner misuse.
Franklin Electric is not liable for any incidental or consequential damages for breach of this warranty. The warranty is void if owner attempts to disassemble the unit or to modify the cable assembly.

Service

To obtain service, purchaser should contact Storage Battery Systems, LLC for an Evaluation and Repair form. Storage Battery Systems, LLC will upon receipt, evaluate the unit and determine necessary repairs and issue a quote for repair or warranty determination.

If Storage Battery Systems, LLC determines that the failure was caused by misuse, alteration, accident, or abnormal condition of operation or handling, purchaser will be billed for the repaired product and it will be returned freight prepaid with freight charges added to the invoice. Battery analyzer beyond the warranty period are subject to the repair charges in effect at that time. Optional remanufacturing service is available to return the tester to like-new condition. Out-of-warranty repairs will carry a 3-month warranty.
Remanufactured units purchased from Storage Battery Systems, LLC are covered by a 6 month warranty.

SBS®
TEST & MONITORING EQUIPMENT

SBS-6800

Conductance Tester

Instruction Manual

1-800-554-2243
www.sbsbattery.com
Test@sbsbattery.com

NOTES

NOTES

Table of Contents

Safety Guidelines

General Safety Precautions

1. IMPORTANT SAFETY INSTRUCTIONS.
IT IS OF UTMOST IMPORTANCETHAT BEFORE USINGYOURTESTER, YOU READ THIS MANUAL AND FOLLOW THE SAFETY AND OPERATING INSTRUCTIONS EXACTLY.
SAVE THESE INSTRUCTIONS.

Risk of explosive gases

Batteries generate explosive gases during normal operation, and when discharged or charged.

1.1 To reduce risk of battery explosion, follow these safety instructions and those published by the battery manufacturer and the manufacturer of any equipment you intend to use in the vicinity of a battery. Review cautionary marking on these products and on the battery cabinets, battery racks, battery rooms, and on the vehicle or equipment containing the battery.

If you are uncertain as to the type of battery you are trying to test, then contact the seller or battery manufacturer.

1.2 Do not operate the tester if it has received a sharp blow, been dropped or otherwise damaged in any way; contact Storage Battery Systems, LLC's test service group.

1.3 Do not disassemble tester; contact Storage Battery Systems, LLC test service group when a repair is required. Incorrect reassembly may result in a risk of electric shock or fire.

1.4 Test batteries in a dry, well-ventilated area.

1.5 Do not expose the tester to rain or snow.

Testing Precautions

IMPORTANT:
Read this instruction manual before using the tester.

⚠ WARNING

To avoid electric shock when testing jars, follow your company's safety practices and these guidelines:

- ☐ Mandatory use of safety glasses with side shields in the vicinity of battery work per 29CFR1910.133 (OSHA)
- ☐ Wear protective rubber gloves
- ☐ Wear a protective apron or shop coat
- ☐ Perform service work only for which you have been trained
- ☐ Do not disconnect the battery cables from power systems during the test without authorization
- ☐ Do not place yourself in an electrical circuit
- ☐ Avoid simultaneous contact with the jar and with frame racks or hardware that may be grounded

Personal Precautions

2.1 Always have someone within range of your voice, or close enough to come to your aid, when working around lead acid batteries.

2.2 Have plenty of fresh water and baking soda nearby in case battery acid contacts skin, clothing or eyes.

2.3 Refer to NFPA 70E for electrical safety PPE requirements.

2.4 If battery acid contacts skin or clothing, wash immediately with baking soda and water. If acid enters the eye, immediately flush with cold running water for at least 10 minutes, and seek medical attention.

2.5 Never smoke or allow a spark or flame in vicinity of a battery or engine.

2.6 Be extra cautious to reduce risk of dropping a metal tool onto the battery. It might spark or short circuit the battery or other electrical part that may cause an explosion.

2.7 Before working with a lead-acid battery, remove personal metal items such as rings, bracelets, necklaces, watches, etc. A lead-acid battery can produce a short circuit current high enough to weld such items causing a severe burn.

- ☐ Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to cause cancer and birth defects or other reproductive harm. **Wash hands after handling.**
- ☐ Aprons (acid-resistant)
- ☐ Insulating blankets
- ☐ On-site spill kits
- ☐ Protective footwear
- ☐ Clothing (e.g., voltage levels, level of corrosive protection, the amount of arc-flash protection provided)

PRINTER STATUS LED

When a printer fault occurs, the STATUS LED flashes. You can identify the fault by the number of sequential flashes:

Solutions

- If the IR transmitter and receiver are not aligned, all the data may not print. The infrared ports on the top of the SBS-6800 and on the printer (below the MODE button) should be pointed directly at each other. The maximum distance for reliable transmission between the ports is 18 inches (45 cm).

  To realign, press the BACK key to cancel the print. Verify alignment between the analyzer and printer; then try to print the test results again.

- If the message PRINTING appears on the screen, but no data are printing, press the BACK key to cancel the print. Turn off the printer and charge the printer battery for at least 15 minutes before attempting to print again. Align the analyzer and printer IR transmitters and print again.

- Make sure the printer is on. The printer shuts off after two minutes of inactivity to conserve the battery. To turn the printer on, briefly press the MODE button. The green STATUS light should turn on. Make sure you are using the printer recommended for use with the SBS-6800. Other printers may not be compatible.

- Direct sunlight interferes with infrared data transmission/receiving. If the printer is not receiving data, remove the printer and the SBS-6800 from direct sunlight.
  If the printed characters are not clear or are partially missing, recharge the battery and reprint.

- Verify that a compatible communications protocol is selected in the printer setup. IrDA Mode is compatible with the printer ("IRDA Physical Layer" on the printer's self-test printout). Refer to the printer manual for information.

- If you are unable to print after ensuring the analyzer is functioning, the printer is on, the batteries are good, and the IR transmitter and receiver are aligned, see the printer manual for further instructions or call Storage Battery Systems, LLC. (See Patents, Limited Warranty, Service.)

Troubleshooting

The troubleshooting tips in this section will help you resolve most testing and printing problems. For problems with the printer, digital temperature gun, or the PC software application, refer to their manuals or call Storage Battery Systems, LLC for assistance. (See Patents, Limited Warranty, Service.) Screen does not power on during testing (no text/graphics)

- Check the connection to the jar.
- The jar voltage might be too low (less than 1 volt) to test.
- The analyzer's battery pack might need to be recharged or replaced.

Recharging the analyzer battery pack

Recharge the analyzer battery pack if:

- The display does not turn on when you press the POWER button.
- The screen displays:

Warning

Internal Battery Low! Replace Batteries Soon!

1. Insert the AC adapter plug into the connector.

   Connect the power of the AC adapter to an AC outlet.
2. Periodically turn on the analyzer and check if the charge
3. Level indicator is black. When the battery pack is fully charged, disconnect the adapter from the analyzer and the AC outlet.

NOTE The maximum charge time is 3 to 4 hours. Do not overcharge.

Replacing the analyzer battery pack

If the screen does not power on after recharging, replace the battery pack.

1. Press battery pack end tabs and pull battery pack.
2. Replace with charged battery pack.

   If the problem persists, call
   Storage Battery Systems, LLC.

   (See Patents, Limited Warranty, Service).

Probe tip is bent or stops retracting

To replace a damaged a probe tip:

1. Grasp the probe tip with pliers at the top of the sleeve.

⚠ CAUTION

Do not damage probe when removing from sleeve.

Grasping the sleeve that encases the probe tip can damage the tip.

2. Pull the tip straight out.
3. Grasp the replacement tip with the pliers and insert it into the sleeve.
4. Push the probe tip into a soft surface, such as cardboard, until it hits the bottom of the sleeve.

NOTE To obtain replacement tips, contact Storage Battery Systems, LLC.

Test Failure

If the analyzer fails to advance to the next jar count, try to retest. Ensure clamps are connected and clamp LEDs are off.

Test results do not print or print incorrectly

- Check that the printer is on
- Check that the tester IR transmitter are aligned
- Check printer batteries
- Florescent lights can affect IR transmission. Remove the tester from any florescent lights and re-transmit.

Model Number:

SBS-6800 (kit)

Applications:

Tests individual Lead-Acid or Nickel-Cadmium cells or Mono-blocs (up to 16 Volts) in any common configuration, approximately 10-6000Ah.

Voltage Range:

0.8 - 20.0 Volts DC

Conductance Range:

100 - 19,990 Siemens

Test Data Storage:

50 string locations of 240 test results stored internally

Accuracy:

+/-2% across test range, Voltage and Conductance

Voltmeter Resolution:

5mV

User Programmable Functions:

- Preset values for over 250 battery types (Not supplied)
- Low voltage alarm setting
- Low conductance warning
- Low conductance failure
- Test mode (pushbutton/auto start)

Calibration:

Storage Battery Systems, LLC certifies that all Stationary Battery testers produced and calibrated by SBS do not require recalibration, unless the tester has been physically modified or altered thereafter. Future calibration is not required of any SBS stationary battery testers, and no re-calibration schedules apply. Storage Battery Systems, LLC will work with each customer to establish a regular calibration program if it is required by their quality or other management system.

Cable Options:

- Dual contact clamps
- Dual contact probes
- Custom cables by quotation

Power Requirements:

7.2V, 2500mAh, NiMH
Internal swappable battery& charger

Display:

LCD- FST 2.97 in x 2.81 in (75.4 mm x 71.3 mm), 128 x 128 pixels, 40 degree viewing angle, contrast ratio, LED backlight

continued →

Keypad:
Alpha-numeric, Stainless-steel dome, polycarbonate overlay, 1,000,000 actuations

Data Transfer:
USB Flash Drive (Type A)
USB PC Interface (Type B)
Infra-red, half-duplex IRDA Protocol for printer

Environmental Operating Range:
0 to 104°F 0 to+40°C, 95% relative humidity, non-condensing

Storage Temperature:
-20 to 82°C

Over Voltage Protection:
Protected up to 600 VDC
Auto-reset disconnect
Reverse polarity protected

Housing Material:
Acid-resistant ABS plastic
Santoprene over-mold

Analyzer Dimensions:
11in x 4in x 3in
280mm x 105mm x 80mm

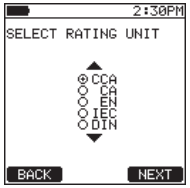
Case Dimensions:
19in x 15.5in x 7in
485mm x 395mm x 180mm

Analyzer Weight:
2.6 Lb. / 1 Kg

CAD-5500 Test Kit Shipping Weight:
Approximately 11 Lb. / 5Kg

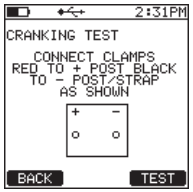
Gen Start Hot Key:
If activated, this activates the test function to determine state of health of generator starting batteries.

GENSTART

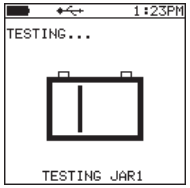


Select battery rating units.

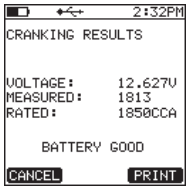
Enter battery rating.



Connect clamps/probes to battery.

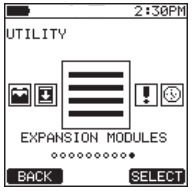


Screen shows battery test in progress.

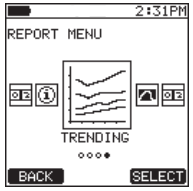


Battery test results screen. Press the F3 Key to print results. Results can be viewed, but not saved or stored.

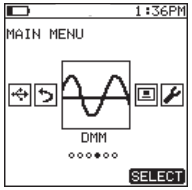
Add-Ons & The following add-ons for your SBS-6800
Expansion Modules: are all included in the firmware at no cost.



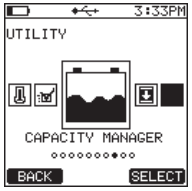
Expansion Modules Screen:
Access the available modules through this menu option.



Trending Screen:
This function provides ability to trend battery conductance from measurement to measurement.



Digital Multimeter
Provides live voltmeter functions and AC volts function.



Capacity Manager:
Track, manage, and record traditional battery discharge information during load testing. Allows for discharge time record.

SBS-6800

Product Overview

continued →

Product Map

Cable Input

Function Keys

Navigation

Alphanumeric Keys

Hot Keys Function

Power

SBS-6800

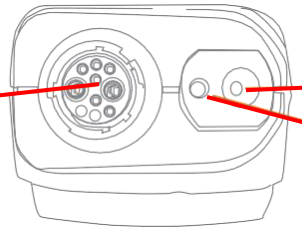
Add-Ons/Expansion Modules

Your SBS **SBS-6800 is fully configured!**

Storage Battery Systems, LLC had provided all add-ons at no additional cost.

Storage Battery Systems, LLC
Phone: 1.800.554.2243
Email: TE@sbsbattery.com

TOP

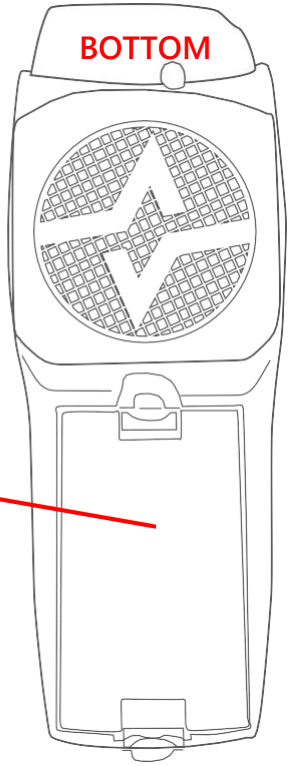


Cable Input

Temperature Sensor

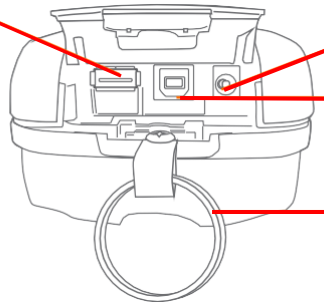
Infrared Printer

BOTTOM



Battery Pack

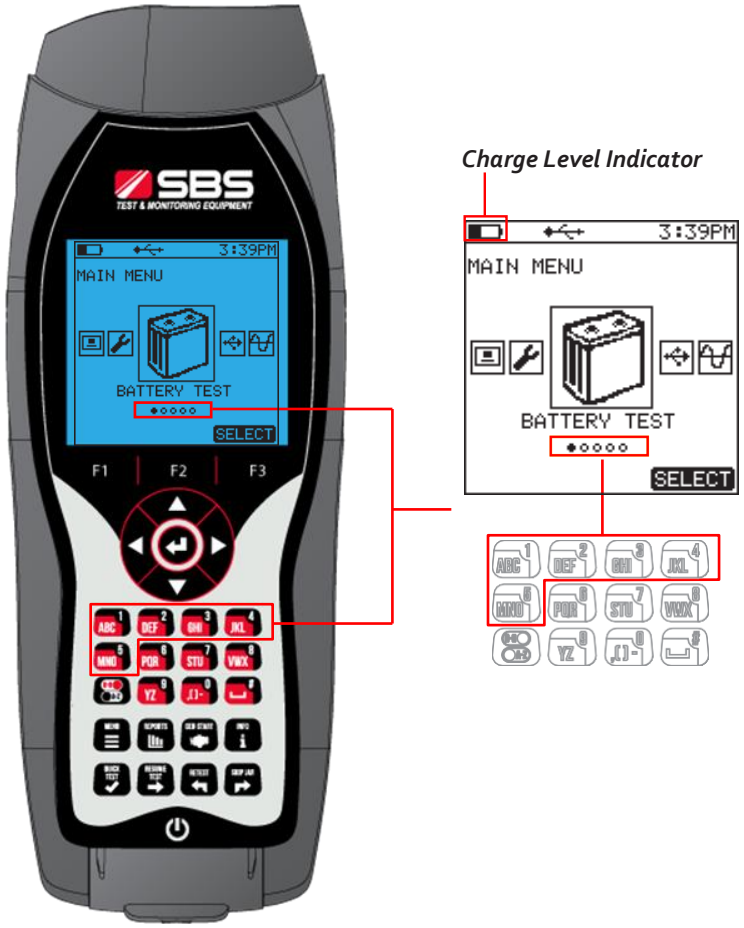
USB
Flash Drive



Charging Input

USB Cable

Belt Loop



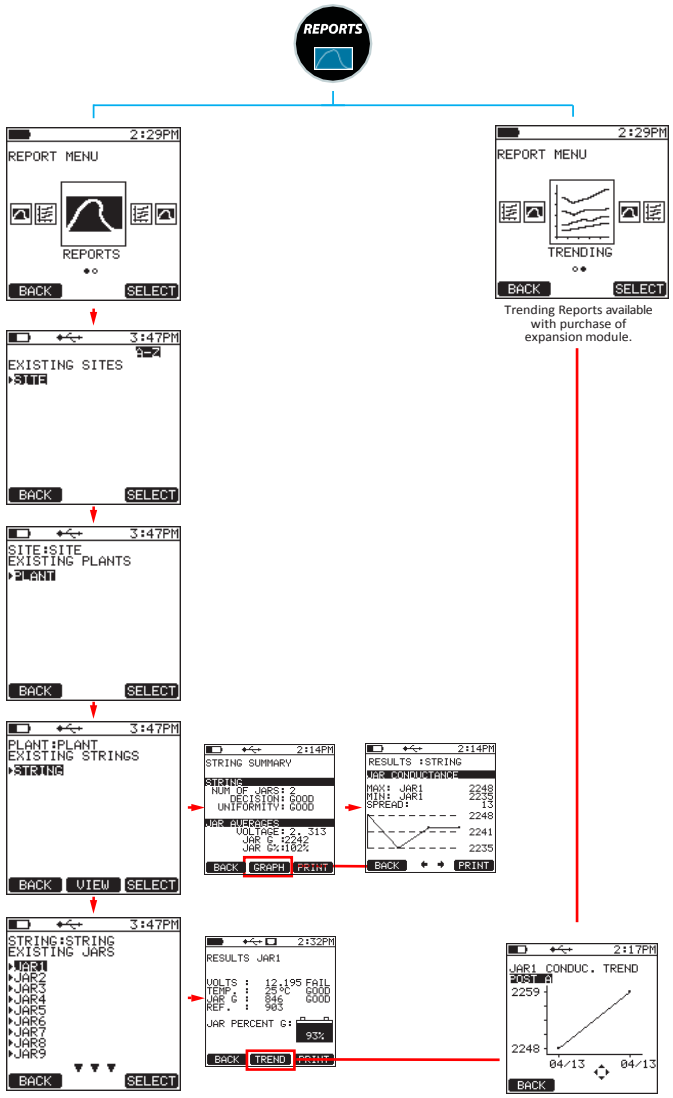
Charge Level Indicator

Quick Navigation

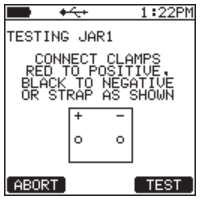
The number of dots on the menu screen (as highlighted) represent the sections of your SBS-6800. To quickly navigate thru these option, without having to continuously use the Navigation Button, you can use the number pad to get to the screen you want.

This quick navigation feature can be used anywhere in your SBS-6800.

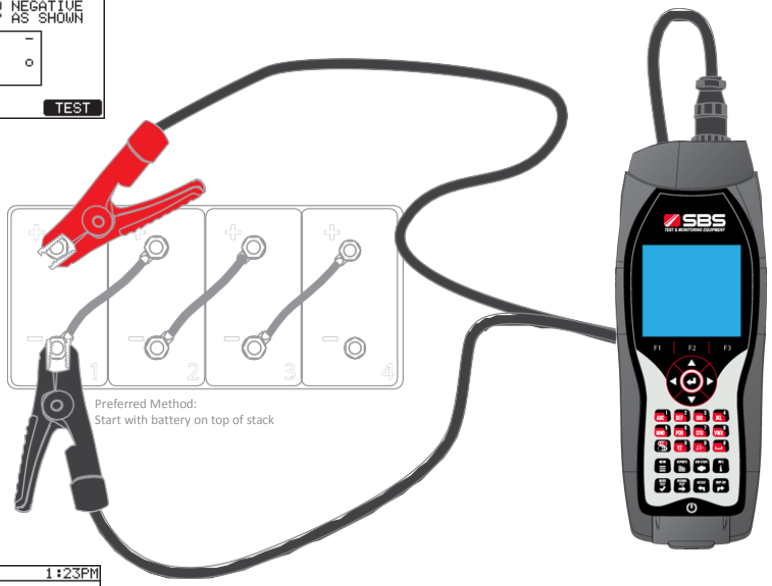
Results: The Reports menu allows for the selection of individual battery string results and other system information. Graphs and results can be generated from this menu.

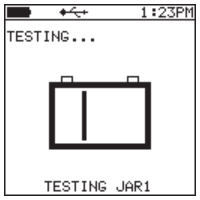


1. Use the UP/DOWN buttons to navigate from jar to jar.
2. Use RIGHT/LEFT buttons for post results.
3. Press RETEST anytime to retest any jar in review screen.



Site Setup: Next, attach clamps or probes to the battery





Progress screen is shown during the testing of your battery.

SBS-6800
will run a test on the number of jars in your battery and give you result per jars.

Result Screen:
This screen shows the results after you have tested your battery.

End Result Screen

The parts listed are all accessories that are available for the **SBS-6800**:

6800-CABLE
Interchangeable Test Cable

6800-PROBE Probe Set
6800-RP Red Probe
6800-BP Black Probe

6800 CHARGER
Battery Charger

6800-TIPS
Waffle Probe Tips

Optional Accessories:

C6800-CLAMPS Clamp Set
6800-RC Red Clamp
6800-BC Black Clamp

6800-PROBE-EXT
Probe Extender Kit

6800-CHARGE CRADLE
Cradle Charger

6800-BATTERY
Battery Pack

6800-PRINTER
Printer

6800-USB
USB Flash Drive

6800-USB-CABLE
USB Cable

6800-PIN-TIPS
Long Probe Tips Kit

6800-PROBE-CABLE-LONG
Long Probe Cable
(Call for Quote)

6800-CLAMP-CABLE-LONG
Long Clamp Cable
(Call for Quote)

1. Using the Quick Keys, you will be able to easily perform a function with the **SBS-6800**.

The Main Menu key allows a quick return to the main menu and all of its functions.

The Reports key generates the report options from both past and present battery tests.

The Gen Start activates the function (optional) to test a generator or engine start battery.

The Help key lists tester information

The Quick Test bypasses the base setup information for testing a cell, unit, jar, or battery. This allows you to perform a single test; the test results can be viewed on the screen but are not saved or stored.

The Resume Test key resumes an interrupted test.

The Retest key enables you to retest a cell, unit, jar, or battery that has been previously tested. (Normally due to a suspect reading)

The Skip Jar key enables you to put a placeholder of 0.000V and 0 conductance for a cell, unit, jar, or battery that is too low for the SBS-6800 to test in the battery string.

Site Setup: To begin testing, a battery temperature must be taken. It is recommended that the measurement be taken close to the negative post.

continued

1 Performing a battery test.

Getting Started: Before you start testing your battery you have to complete a few steps to properly retrieve and save your data. Below are the screens that will get you ready to start testing.

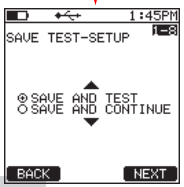
Site Setup: Enter a unique site or identifier.

Site Setup: Enter an identifier for the battery plant.

Site Setup: String name can be unique or consistent with plant configuration.

Site Setup: Enter Tech I.D.

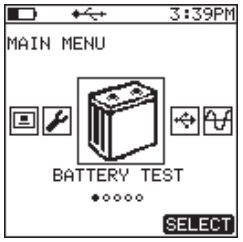
Follow prompts to input test parameters.



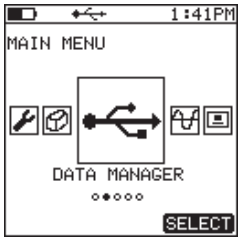
Choose save and test to begin test process or continue to additional setup.

1 Using the "**Main Menu**" Quick Key, you will be able to navigate thru the **SBS-6800** options. Select your desired screen and press the ↵ button. This will open up your options per screen/section. Choose desired function.

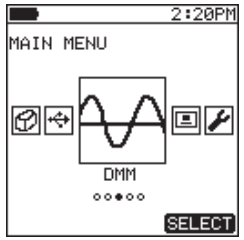
Main Menu Quick Key



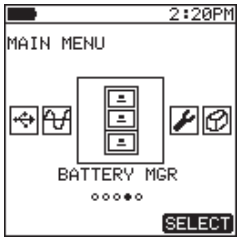
Begins the process of site, string, battery setup.



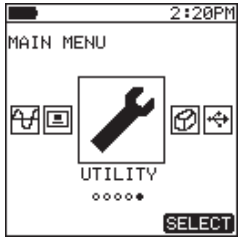
Transfer data to/from SBS-6800



Digital Multimeter is available with an upgraded package. DC / AC Voltage Measurement

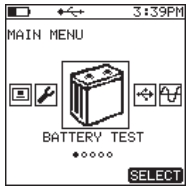


Internal battery reference base.

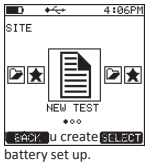


Utility setting for system including temperature, scale, clock, day/date, etc.

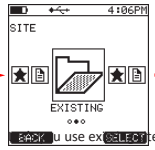
❷ Utilizing the following screens you can choose the desired function you wish to perform.



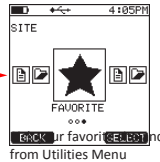
Site Setup: For a standard battery test, you will setup a site. For a breakdown of this procedure, please reference page 12, Performing a Battery Test.



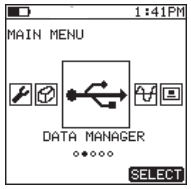
u create battery set up.



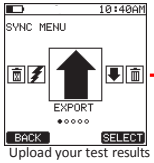
u use ex es.



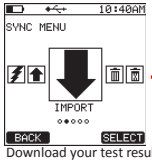
r favori nd plant from Utilities Menu



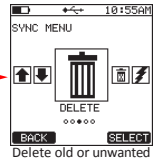
Data Manager: Allows the upload, download, and deletion of data.



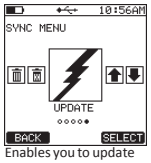
Upload your test results via USB flash drive



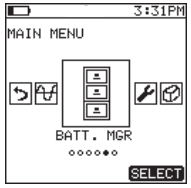
Download your test results via USB flash drive from



Delete old or unwanted results.

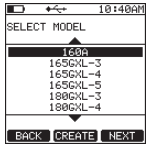


Enables you to update tester from file via USB.

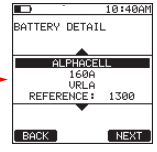


Battery Manager: Choose the manufacturer of the battery you are testing

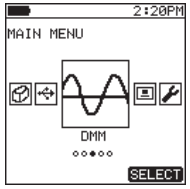
This screen allows you to choose the manufacturer of the battery you are testing.



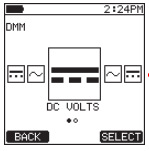
Choose model.



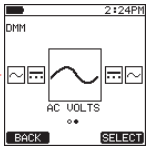
Configure detail.



DMM Multi-meter: Allows the DMM multimeter Function.



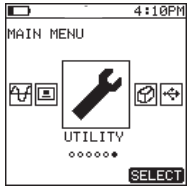
This screen allows you to choose DC Volts funtion



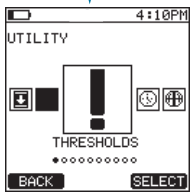
This screen allows you to choose AC Volts function

Typical DC Volts measurement.

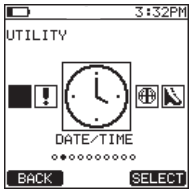
continued →



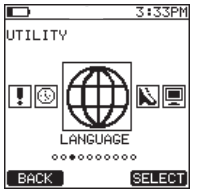
Utility: Helps you set the way you want your **SBS-6800** to function.



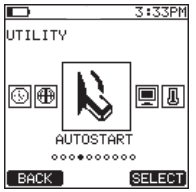
Set tester thresholds for voltage, conductance, and temperature.



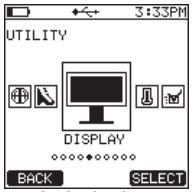
Set the date and time.



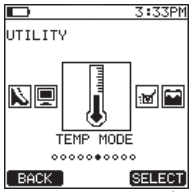
Choose preferred language.



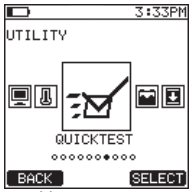
Sets tester to activate test process on contact.



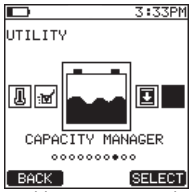
Set display brightness, contrast, etc.



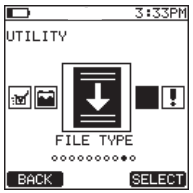
Set temperature mode: per jar or per string.



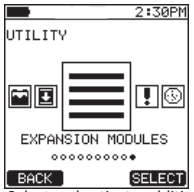
Enables you to start a test on a single cell or monoblock without first setting up a site.



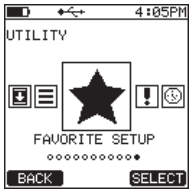
Enables you to record cell voltages on a timed interval during a capacity load test.



File type selection for exporting data



Select and activate additional capabilities of the SBS-6800.



Set up favorites for quick access.