# **User's Guide**

# Smart Battery Tester SBTest

# **Release 3 SP2**

MCC SBS Smart Battery Tester - Release 3		
<u>File</u> Options <u>H</u> elp Registered User		
Image: Second	✓ AveTimeToEmpty - 60       min         ✓ AveTimeToFull       60         ✓ ChargingCurrent       2000         ✓ ChargingVoltage       12000         ✓ BatteryStatus       0080         ✓ DesignCapacity       #D         ✓ DesignCapacity       12000         ✓ SpecificationInfo       0010         ✓ ManufactureDate       #H         ✓ SerialNumber       #D         ✓ ManufacturerName       string         ✓ Mcc Battery Co."       Transfer	<ul> <li>○ OptionalMfgFunction1</li></ul>
Image: Solution of a generating Capacity     Solution of a generating Capacity     maH 10mwH       Image: Solution of a generating Capacity     2000     maH 10mwH       Image: Solution of a generating Capacity     2000     maH 10mwH       Image: Solution of a generating Capacity     60     min       Image: Solution of a generating Capacity     60     min       Image: Solution of a generating Capacity     For a generating Capacity     For a generating Capacity       Image: Solution of a generating Capacity     For a generating Capacity     For a generating Capacity       Image: Solution of a generating Capacity     For a generating Capacity     For a generating Capacity       Image: Solution of a generating Capacity     For a generating Capacity     For a generating Capacity       Image: Solution of a generating Capacity     For a generating Capacity     For a generating Capacity       Image: Solution of a generating Capacity     For a generating Capacity     For a generating Capacity       Image: Solution of a generating Capacity     For a generating Capacity     For a generating Capacity       Image: Solution of a generating Capacity     For a generating Capacity     For a generating Capacity       Image: Solution of a generating Capacity     For a generating Capacity     For a generating Capacity       Image: Solution of a generating Capacity     For a generating Capacity     For a generating Capacity	"Smart Battery Emulator (R3)"         Image: DeviceChemistrystring         "LION"         Image: DeviceChemistry	SMBus C
ComPort: USB RS-232 LAN Battery C i2cStick C iPort D/U C iPort/USB Refresh SN# 0000104	105,01,02,03,04,05	EC Misc Beep Retry Stop Micro Computer Control Small Area Network Specialists
Status:         [[S][x16][x2F][Sr][x17][x05,x01,x02,x03,x04,x05][P]           Read Battery Data/Write Battery Data/		

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**WARNING - Radio Frequency Emissions**: This equipment can radiate levels of radio frequency energy that may cause interference to communications equipment. Operation of this equipment may cause interference with radio, television, or other communications equipment. The user is responsible for correcting such interference at the expense of the user.

**WARNING - Electrostatic Discharge (ESD) Precautions**: Any damage caused by Electrostatic Discharge (ESD) through inadequate earth grounding is NOT covered under the warranty of this product. See the "Electrostatic (ESD) Precautions" section of this guide for more information.

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Smart Battery Test (SBTest) software is designed to test, exercise, and log Smart Battery System (SBS) Smart Battery communications. This software can write data to, and read data from, an SBS Smart Battery using a supported MCC I<sup>2</sup>C Bus Host Adapter.

This document contains information on the MCC SBS Smart Battery Tester Software Release 3 Service Pack 2, including equipment setup and usage.

# **System Requirements:**

- One of the following MCC I<sup>2</sup>C Bus Host Adapters: iPort (# MIIC-201) iPort/LAN (#MIIC-205) iPort DLL/USB (#MIIC-201D/U) i2cStick (#MIIC-207) iPort/AI (#MIIC-202) iPort/USB 2 (#MIIC-208) iPort/AFM (#MIIC-203) iPort/AI 2 (#MIIC-212) iPort/USB (#MIIC-204) iPort/AFM 2 (#MIIC-213)
- 2. SBS Smart Battery with interfacing cable.
- 3. Windows XP, Vista, 7, 8, or 10.
- 4. One USB, RS-232, or Ethernet communications port.

### **Reference Specifications:**

**System Management Bus Specification Revision 1.1** 

### **Smart Battery Data Specification Revision 1.1**

For additional information see: www.sbs-forum.org

## **Software Installation** (CD):

- 1. Administrative Privilege May Be Required.
- 2. Insert the installation CD.
- 3. If AutoRun does not start, double-click Setup.exe of CD.
- 4. Follow instructions on screen.

## **Software Installation** (Download):

- 1. Administrative Privilege May Be Required.
- 2. Follow web page instructions to download and install.

## **Equipment Setup:**

- 1. Follow the installation instruction for MCC Adapter.
- 2. Connect the MCC Adapter to target SBS Smart Battery. (See suggested setup below).



Suggested SBS Smart Battery Setup

#### Note:

When connected to an SBS Smart Battery, the Pull-Up switch on the iPort Host Adapter should be OFF, and external Pull-Up resistors (approximately 15K Ohm) should be applied to the I<sup>2</sup>C Bus Clock and Data lines.

## **To Start Program**:

Click Start | Programs | Smart Battery Tester 3.0 | Smart Battery Tester.

### To communicate with an SBS Smart Battery:

- 1. Select the  $I^2C$  Bus Adapter type.
- 2. Select the ComPort connected to the selected I<sup>2</sup>C Bus Adapter.
- 3. Select "Read Battery Data", or "Write Battery Data".
- 4. Select the Smart Battery parameters to be accessed.
- 5. Select the communication conditions to monitor.
- 6. If "Write Battery Data" is selected, enter or edit Smart Battery parameters to be written to battery.
- 7. Click the "Read Data" or Write Data" button to access Smart Battery Data.

C MCC SBS Smart Battery Tester - Release 3			
<u>File</u> Options <u>H</u> elp Registered User			
Image: Second	✓       AveTimeToEmpty - 60       min         ✓       AveTimeToFull 60       min         ✓       ChargingCurrent 2000       ma         ✓       ChargingVoltage 12000       mv         ✓       BatteryStatus 00       #H         ✓       CycleCount	OptionalMfgFunction10000 #H     OptionalMfgFunction20000 #H     OptionalMfgFunction30000 #H     OptionalMfgFunction40000 #H     OptionalMfgFunction5block     OptionalMfgFunction5block     OptionalMfgFunction5block     D5,01,02,03,04,05     SBS     Smart Battery     Tester	
Iv     AussitateOnTarge     50     maH 10mwH       Iv     RemainingCapacity     1000     maH 10mwH       Iv     FullChargeCapacity     2000     maH 10mwH       Iv     RunTimeToEmpty    60     min	"Smart Battery Emulator (R3)"         ✓         DeviceChemistry         "LION"		
Deselect All Read Data	ManufacturerDatablock	135/	
ComPort:       USB       RS-232       LAN       Battery       NACK         61	Image: post of tool (00,00,00,00,00,00,00,00,00,00,00,00,00,	EC Misc Beep Retry Stop	
Status: [IS][x16][x2F][Sr][x17][x05,x01,x02,x03,x04,x05][P]			
Read Battery Data/Write Battery Data/			

### **Program Controls**:

## **Configuration Controls**:

#### I<sup>2</sup>C Bus Adapter/ComPort Select

Select the adapter type and port of adapter connected to the SBS Smart Battery.

#### **SBS Smart Battery Address**

Select the Smart Battery slave address. This is usually 0x16, the default selection.

## **Communication Monitor Controls**:

## NACK

Select Mark, Beep, Retry, or Stop on Smart Battery Negative Acknowledgment of it's slave address.

## **Error Signal**

Select Mark, Beep, Status, Retry, or Stop on Smart Battery Error Signal detect (Negative Acknowledgment on data byte).

### Alarm

Select Mark, Beep, or Stop on Smart Battery Battery Status Alarm detect.

### **Error Code**

Select Mark, Beep, or Stop on Smart Battery Battery Status Error Code detect.

#### PEC

Select Mark, Beep, Retry, or Stop on Packet Error Check (PEC) Error detect. Any selection will cause SBTest to generate a PEC byte on Write operations and check the PEC byte on Read operations.

#### Misc

Select Beep on any Communication Monitor Stop condition.

## **Battery Data Read/Write Controls:**

### **Select/Deselect All Button**

Select or Deselect all SBS Smart Battery parameters. Only selected parameters will be read or written.

#### **Read/Write Data Button**

Initiates reading or writing of selected Smart Battery parameters.

#### **Auto Repeat Check Box**

Controls auto repeat reading or writing of Smart Battery parameters. When checked, Read or Write operations will repeat at the currently selected repeat rate (See Menu Controls for Optional Repeat Rates).

#### **Status Text Box**

Displays Smart Battery communications status information.

## Menu Controls:

## File|Open Log File

Opens a comma delimited ASCII text log file for recording date, time, and value of Smart Battery parameters access during read operations. This file can be read into most spreadsheet programs for display and plotting of Smart Battery Data over time.

### File|Close Log File

Close the current log file.

#### File|Exit

Exit the program.

#### **Options**|Show Hints

Enables/Disables display of Smart Battery parameter information.

Options|Auto Repeat Continuous Options|Auto Repeat every 10 Seconds Options|Auto Repeat every Minute Options|Auto Repeat every 5 Minutes Options|Auto Repeat every 10 Minutes Options|Auto Repeat every Hour

Controls auto repeat reading and writing of Smart Battery parameter data.

View/Enter/Edi	t Smart	<b>Battery</b>	Data
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WCC SBS Smart Battery Tester - Release 3		
<u>File</u> Options <u>H</u> elp Registered User		
✓         ManufacturerAccess		<ul> <li>✓ OptionalMfgFunction10000 #H</li> <li>✓ OptionalMfgFunction20000 #H</li> <li>✓ OptionalMfgFunction30000 #H</li> <li>✓ OptionalMfgFunction40000 #H</li> <li>✓ OptionalMfgFunction5block</li> <li>(05,01,02,03,04,05)</li> </ul>
Image: Constraint of Constraints       00         Image: Constraint of Constraints       1         Image: Constraint of Constraints       0         Image: Constraint of Constraints       0         Image: Constraint of Constraints       0         Image: Constraint of Constraints       1         Image: Constraint of Constraints       2         Image: Constraints       2         Image: Cons	Image: Specification lnfo	SBT estr SBS Smart Battery Tester SMBus
Deselect All Read Data T Auto Repeat (10 Seconds)	ManufacturerDatablock	
ComPort:       USB       RS-232       LAN       Battery       NACK         61       C i2cStick       C iPort/USB       iPort/USB       12       Mark         C iPort/USB       iPort/USB 2       16       Retry       Nack         Refresh       SN# 0000104       18       Stop	Error Signal Alarm Error Code PE Mark Mark Mark Beep Beep Beep Beep Status Stop Stop Constraints	C Misc Mark Beep Retry Stop
Status: [[S][x16][x2F][Sr][x17][x05,x01,x02,x03,x04,x05][P]		
Read Battery Data/Write Battery Data/		

Smart Battery Data parameters can be viewed, entered, and edited onscreen. The following parameters can also be viewed and edited by clicking on the pop-up button next to the parameter display:

Γ	INTERNAL_CHARGE_CONTROLLER
	PRIMARY_BATTERY_SUPPORT
Γ	CONDITION_FLAG
Γ	CHARGE_CONTROLLER_ENABLED
Г	PRIMARY_BATTERY
Г	ALARM_MODE (Rev 1.1)
	CHARGER_MODE
	CAPACITY_MODE

Battery Mode





-Scaling Information	
IPScale VScale	Version Revision
	X Cancel

Specification Info

Manufacture	Date	
Year	Month	Day
2005 2006	▲ 11 ▲ ▼ 12 ▼	8 A 9 <del>v</del>
L		

#### Manufacture Date



Manufacturer Data



**Optional Mfg Function 5** 

## **Revision Report:**

Date	Description
24-DEC-16	Release 3, Service Pack 2. Add support for additional MCC I <sup>2</sup> C Bus adapters.
25-JUL-12	Release 3, Service Pack 1. Correct display of negative numbers.
16-APR-12	<ul> <li>Release 3.</li> <li>New Features:</li> <li>PEC Error Mark, Beep, Retry, and Stop.</li> <li>BatteryStatus Error Code Mark, Beep, and Stop.</li> <li>BatteryStatus Alarm Mark, Beep, and Stop.</li> <li>Battery Error Signal Mark, Beep, and Stop.</li> <li>Battery NACK Mark, Beep, Retry, and Stops.</li> <li>Packet Error Check (PEC) Generate/Test support.</li> <li>Smart Battery System v1.1 support.</li> <li>Parameter Access Flash indicator.</li> <li>MCC ASCII Interface (AI) adapter support.</li> </ul>
10-NOV-06 10-NOV-06 10-NOV-06	Release SBTEST V2.0.0 Add ComPort discovery. Convert to Win32 to support USB-based adapters.
01-AUG-03 01-AUG-03	Release SBTEST V1.30 Correct log file processing on: a. Battery not acknowledging address. b. iPort bus arbitration loss. c. iPort bus error detection. Log 0, or "" if battery not responding.
18-FEB-99 18-FEB-99	Release SBTEST V1.30 Add 5 and 10 minute repeat rate.

29-SEP-98	Release SBTEST V1.20
29-SEP-98	Add Y2K Compliance.
	SBTEST Log File now includes a 4 digit year field.

#### **Direct Comments/Feedback to:**

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