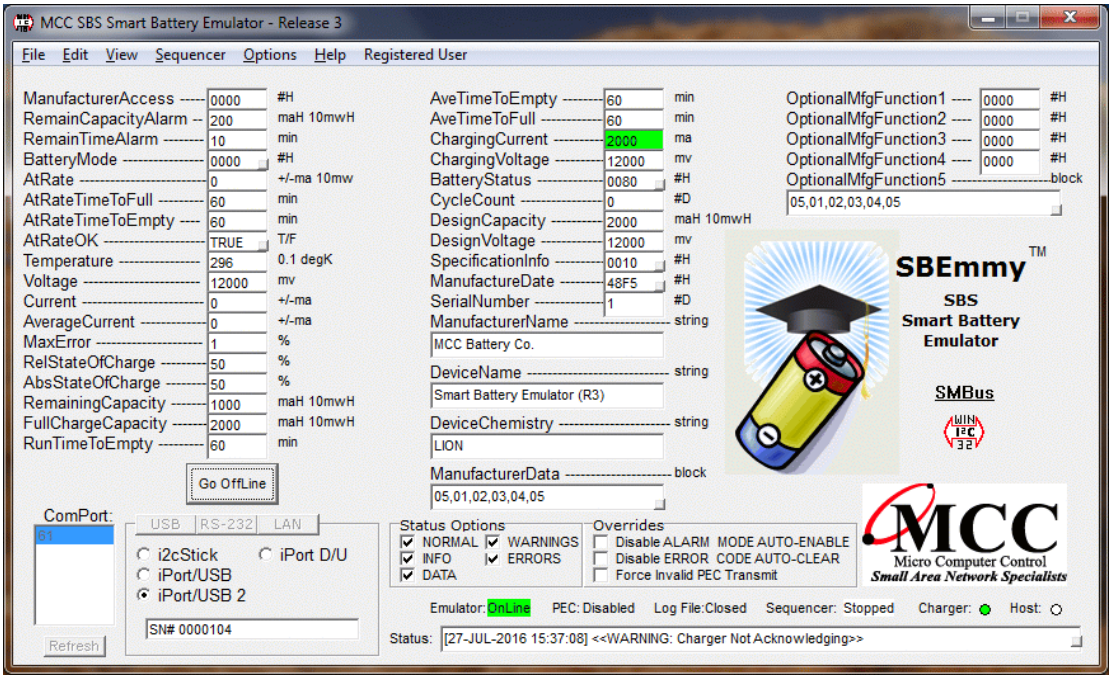
User's Guide

Smart Battery System (SBS)

Smart Battery Emulator Release 3



This document contains information on the Smart Battery System (SBS) Smart Battery Emulator Software (SBEmmy) including installation, equipment setup, and use.

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WARNING - Life Support Applications: MCC products are not designed for use in life support appliances, devices, or systems where the malfunction of the product can reasonably be expected to result in a personal injury.

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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29-JUL-2016

Reference Specifications:

System Management Bus Specification Revision 1.1

SBS Smart Battery Data Specification Revision 1.1

NOTICE

SBEmmy is a debugging tool, and is not intended for the validation of compliance with SMBus or Smart Battery Data Specifications.

WARNING
SMBus TIMING VIOLATIONS

The SBS Smart Battery Emulator Software may not meet all message timing requirements as stated in the System Management Bus specifications.

In particular, reading SBS Smart Battery Data from the Smart Battery Emulator software may violate the TTIMEOUT and TLOW:SEXT maximum limits. Depending on your system configuration and concurrent processing activity, TTIMEOUT and TLOW:SEXT with the Smart Battery Emulator Software may exceed 150 milliseconds.

Use of the SBS Smart Battery Emulator Software may require SMBus timeouts be suspended during message testing activities.

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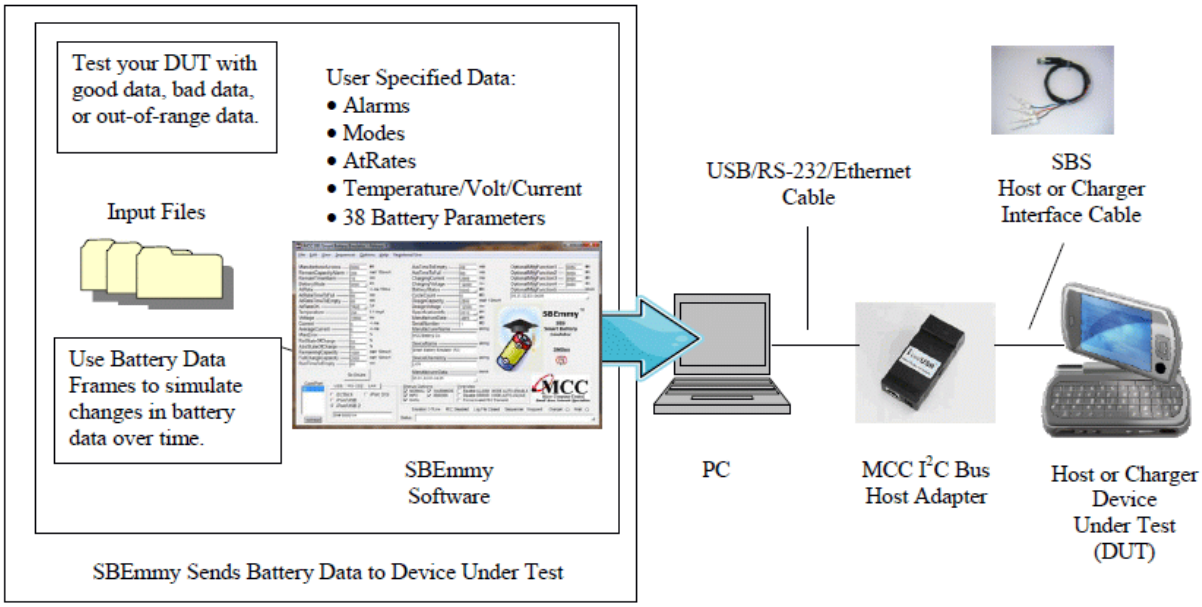
Introduction:

The SBS Smart Battery Emulator Software (SBEmmy) is designed to emulate SBS Smart Battery communications, enabling the user to exercise SBS host and charge devices by easily changing Smart Battery Data, and automating sequences of such data.

The program consists of a main screen, used to display, enter and save Smart Battery Data, and a Frame Sequencer, used to automatically step the emulator through a series Smart Battery Data frames that model changing battery conditions over time.



MCC
Small Area Network Specialists
www.mcc-us.com

Smart Battery Emulation Solutions

SBEmmy Software + MCC I²C Bus Host Adapter

System Requirements:

1. MCC I^2C Bus Host Adapter including:
   A. iPort (#MIIC-201)
   B. iPort DLL/USB (#MIIC-201D/U)
   C. iPort/AI (#MIIC-202)
   D. iPort/AFM (#MIIC-203)
   E. iPort/USB (#MIIC-204)
   F. iPort/LAN (#MIIC-205)
   G. i2cStick (#MIIC-207)
   H. iPort/USB 2 (#MIIC-208)
   I. iPort/AI 2 (#MIIC-212)
   J. iPort/AFM 2 (#MIIC-213)
2. SBS Smart Battery host or charger device with interfacing cable.
3. Windows XP or above.
4. One serial communications port (USB, RS-232 or Ethernet).

Installation:

1. Install the software (see CD/Download Installation below).
2. Connect the MCC I^2C Bus Host Adapter to the SBS host or charger (see Equipment Setup below).
3. Start the program.
4. Select the adapter interface type and ComPort on the main screen.
5. Set SBS Smart Battery parameter values as required (see onscreen pop-up hints and the SBS Smart Battery Data Specification for details).
6. Click the “Go Online” button to enable communication.

Software Installation (CD)

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

Software Installation (Download)

1. Administrative Privilege May Be Required.
2. Follow download instructions provided at time of purchase.
3. Double-click the Setup.exe file provided in download.
4. Follow instructions on screen.

Equipment Setup:

1. Connect the MCC I^2C Bus Host Adapter to a USB/RS-232/Ethernet communications port (see the specific adapter user's guide for details).
2. Connect MCC I^2C Bus Host Adapter Ground, Clock, and Data lines to target SBS Smart Battery host or charger device.

Note:

When connected to an SBS Smart Battery system, the Pull-Up switch on the I^2C Bus Host Adapter should be OFF. Pull-Up resistors (approximately 15K Ohm) for the I^2C Clock and Data lines should be provided by SBS host or charger.

3. If using an RS-232 or Ethernet I^2C Bus adapter, apply power to the adapter. (See I2C Bus adapter user's guide for details)

To Start Program:

Click Start | Programs | Smart Battery Emulator 3 | Smart Battery Emulator.

To communicate with SBS Smart Battery devices:

1. Select the interface type and ComPort connected to the I^2C Bus Host Adapter.
2. Set the Smart Battery parameters by,
   a) Entering parameters on main screen,
   b) Loading a previously saved parameter frame file, or
   c) Configuring and starting the frame sequencer.
3. Click the "Go OnLine" button.

The Smart Battery Emulator is now "OnLine", ready to perform SBS Smart Battery messaging operations.

Program Controls:

Go OnLine/Go Offline Button

This button controls connection of the Smart Battery Emulator to the SBS bus. When "OnLine", the emulator is ready to perform SBS Smart Battery messaging operations as provided in the Smart Battery Data Specification.

Using Com List

Select the interface type and communications port connected to the I^2C Bus Host Adapter.

Status Options

Select battery data and events displayed in the Status text box and Status Log:

Normal - Display normal battery events.
Info - Display informational battery events.
Data - Display battery communication data.
Warnings - Display battery warning events.
Errors - Display battery error events.

Overrides

Override normal battery operations to assist debugging:

Disable ALARM MODE AUTO-ENABLE.
Disable ERROR CODE AUTO-CLEAR.
Force Invalid PEC Transmit.

Emulator Status

Indicates if the Smart Battery Emulator is ON or OFF the SBS bus.

PEC Status

Indicates if the Smart Battery Emulator Packet Error Check (PEC) is enabled or disabled (see SpecificationInfo version support for details).

Log File Status

Indicates if the Smart Battery Emulator is logging status reports to a file.

Sequencer Display

Indicates if the Frame Sequencer is Stopped or Running.

Charger Display

Indicates when messages are sent or received from the SBS Charger device.

Host Display

Indicates when messages are sent or received from the SBS Host device.

Status Text Box

Displays status information.

Smart Battery Data Text Boxes

These text boxes contain Smart Battery Data that is:

1. Writable data received from another SBS device.
2. Readable data reported to other SBS devices.

This data also controls automatic emulator Alarm, Warning, and Data transmission to SBS host and charger (see onscreen pop-up hints and SBS Smart Battery Data Specifications for details).

Smart Battery Data may be entered directly into a text box, or modified by clicking the View/Edit button in the lower corner of some boxes.

The current values Smart Battery Data may also be saved to a Frame File for retrieval or replay with the Frame Sequencer.

Menu Controls:

File|New Frame

Used to dis-associate the current Frame file.

File|Open Frame

Used to load an existing Frame file.

File|Save Frame

Used to update the current Frame file.

File|Save Frame As

Used to save current Smart Battery Data to a new Frame file.

File|Exit

Exit the program.

Edit|BatteryMode
Edit|BatteryStatus
Edit|SpecificationInfo
Edit|ManufactureDate
Edit|ManufactureData

Used to pop-up the Viewer/Editor for the specified data.

View|Status

Displays status information log.

Sequencer

Used to pop-up the Frame Sequencer.

Options|Show Hints

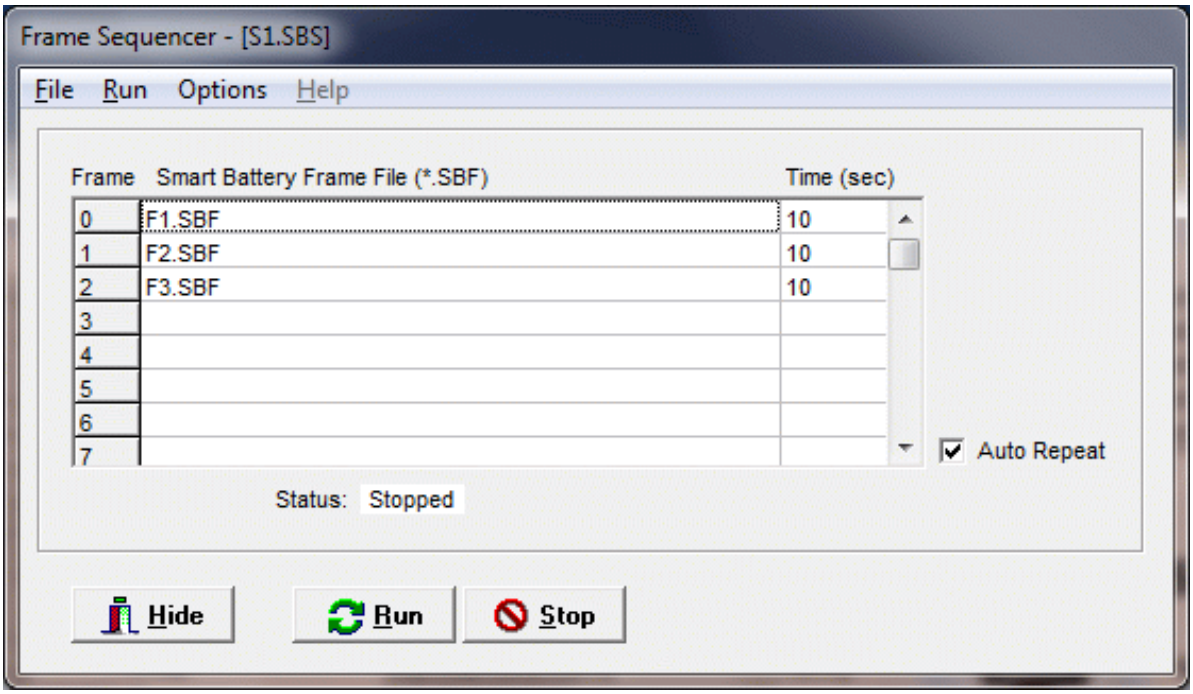
Enables/Disables display of Smart Battery parameter information.

Options|Fast Message Mode

Enables rapid transmission of Alarm, Warning, and Data to other SBS devices. Normally, when CHARGER_MODE is enabled, the Smart Battery Emulator transmits messages at 10 second intervals. Fast Message Mode causes the emulator to send these messages at approximately 2 second intervals. This feature can be used to reduce testing time, and to stress other system devices.

Frame Sequencer

The Frame Sequencer provides a way to automate Smart Battery Emulator operations by playing a sequence pre-recorded Smart Battery Data Frames.



A Smart Battery Data Frame consists of set of Smart Battery Data values displayed on the emulator's main screen. These data values can be saved to a Frame file using the File|Save Frame menu on the main screen.

Typically, multiple Frame files are created. Each Frame represents one step in a battery's condition over a period of time. The Frame Sequencer automates the replay of a series of Frame files over time.

Frame Sequencer Controls:

Frame Grid Control

This spreadsheet-like control is used to display and enter Frame File sequences and timing parameters.

Each row of the Frame Grid Control identifies a Smart Battery Data Frame File saved from the main program screen, and specifies the amount of time the Frame will be active.

To enter or change a Frame File, double click on a Frame File cell to pop-up the file selection dialog box. Once a Frame file is selected, the Time Adjust control can be used to set the frame active time.

Time Adjust Control

This control is used to adjust the amount of time the currently selected Frame File is active. When the Frame active time is completed, the Frame Sequencer moves to the next Frame.

Time Remaining Control

When the Frame Sequencer is running, this control display the remaining active time for the current Frame.

Auto Repeat Check Box

This control directs the Frame Sequencer to restart the sequence upon completion of the current sequence.

Hide Button

Hides the Frame Sequencer from view.

Run Button

Starts or resumes the current Frame sequence.

Stop Button

Stops the current Frame sequence.

Menu Controls:

File|New Sequence

Used to clear the Frame Sequencer.

File|Open Sequence

Loads a previously stored sequence into the Frame Sequencer.

File|Save Sequence

Updates the current Frame Sequence file

File Save Sequence As

Creates a new Frame Sequence file.

File|Hide Sequencer

Hides the Frame Sequencer from view.

Run|Run Sequencer

Starts or resumes the current Frame sequence.

Run|Stop Sequencer

Stops the current Frame sequence.

Run|Reset Sequencer

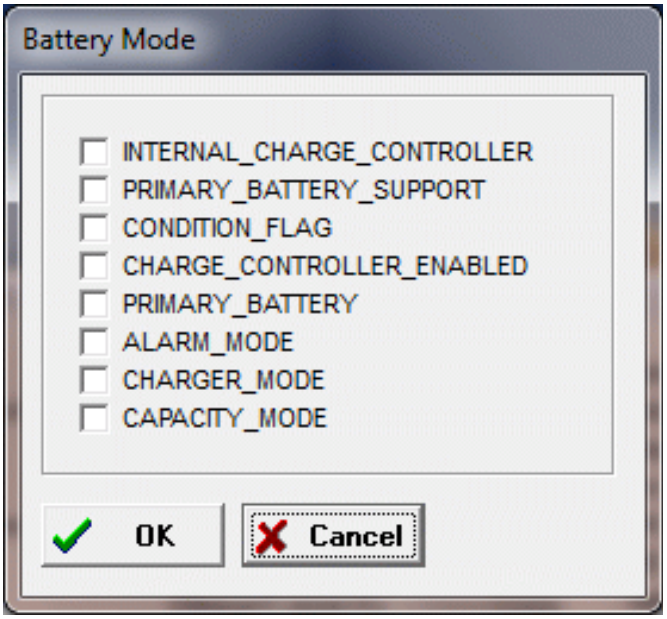
Resets the Sequencer to the first frame in the sequence.

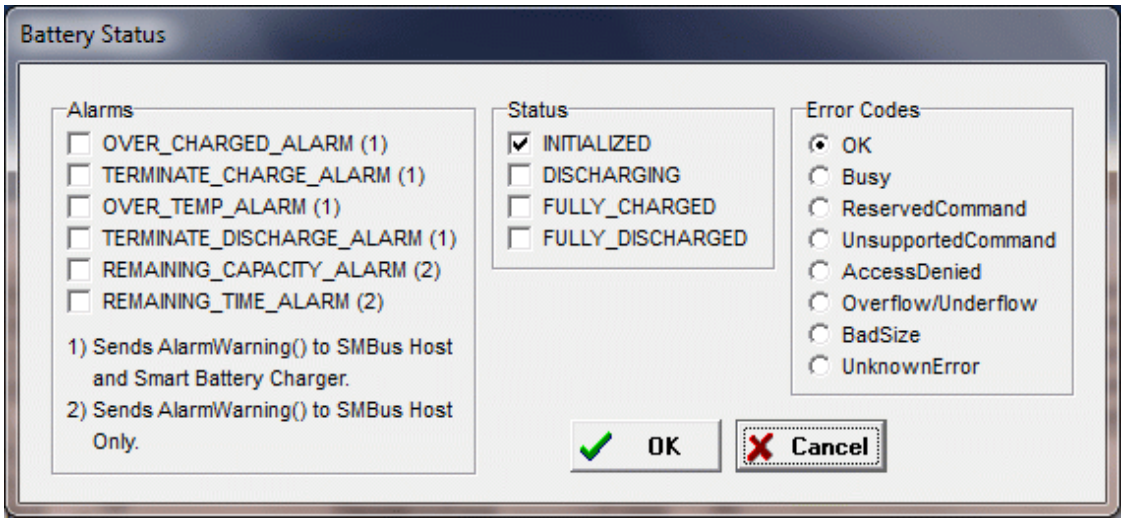
Options|Use Full Pathnames

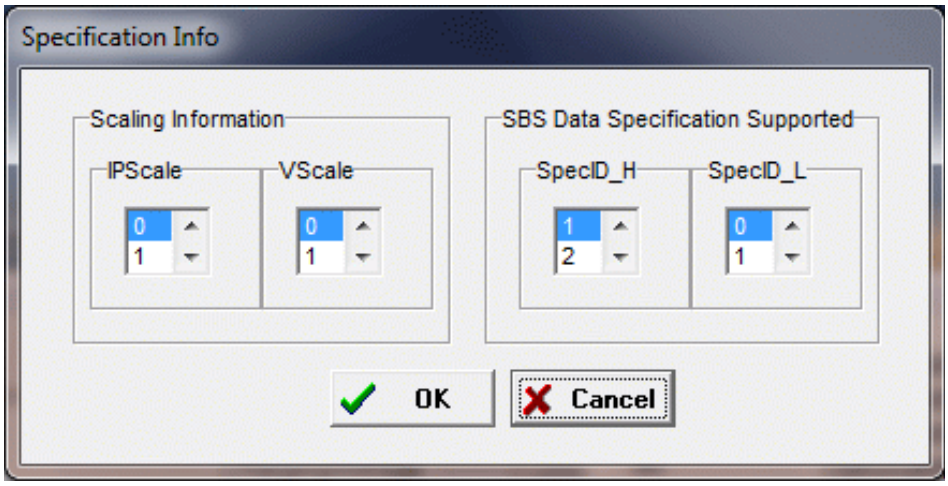
Instructs the Frame File selector to use full pathnames for Frame Files. When off, the Frame Files must be in the current sub-directory/folder, making it easier to move Frame and Sequence files to another system.

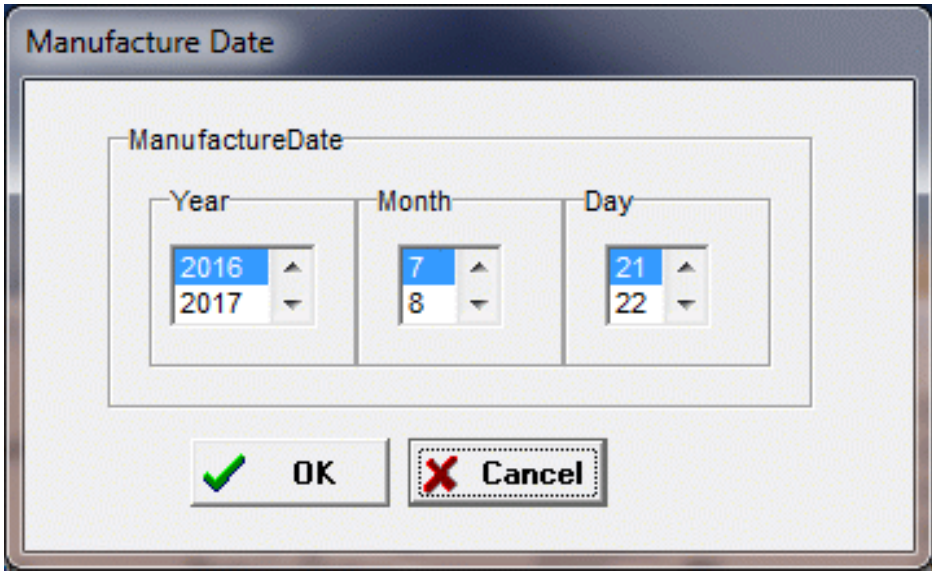
Edit/View Battery Data

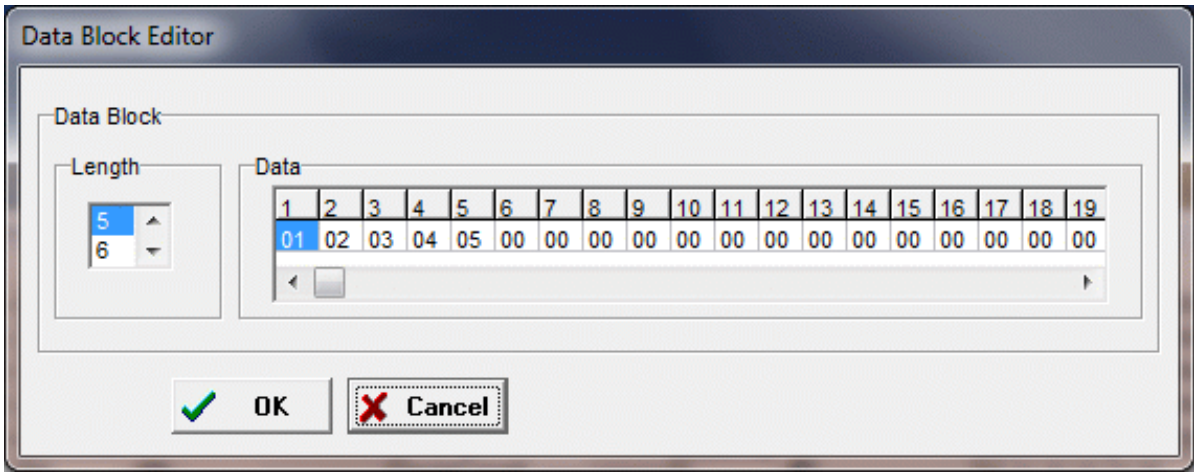
You can edit/view the battery data on the main screen, or by clicking on the small buttons you can edit/view selected data in more specific Smart Battery language.

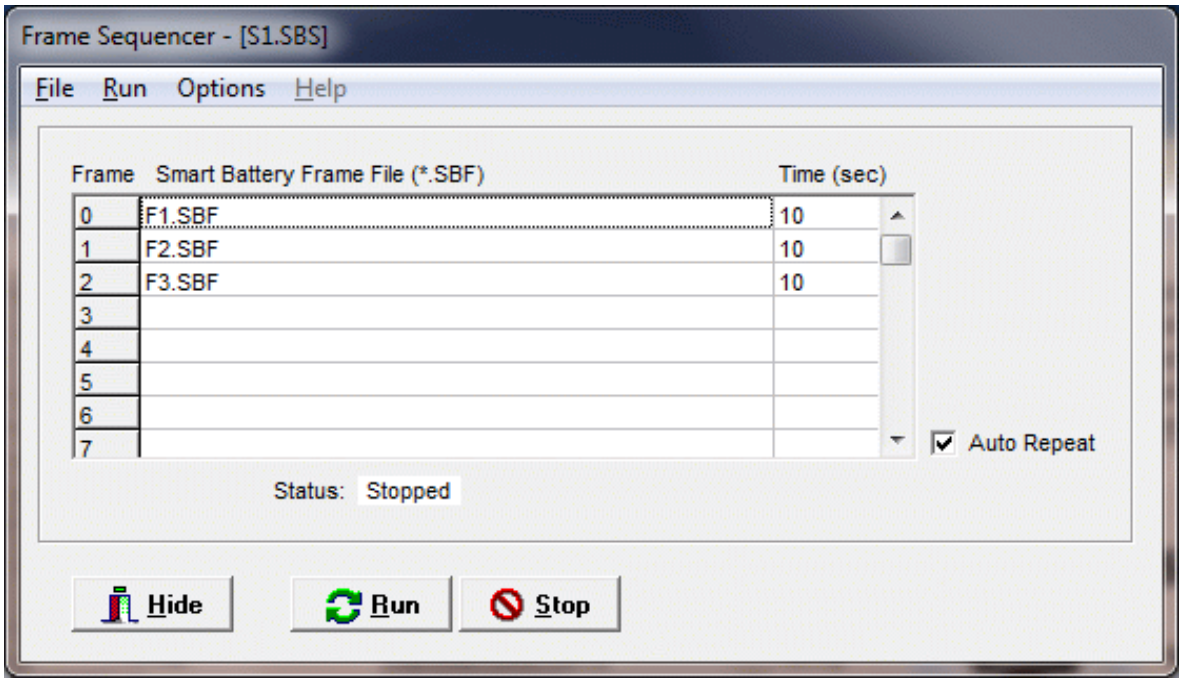





Specification Info
Scaling Information
IPScale
0
1
VScale
0
1
SBS Data Specification Supported
SpecID_H
1
2
SpecID_L
0
1
OK
Cancel


Manufacture Date
ManufactureDate
Year
2016
2017
Month
7
8
Day
21
22
OK
Cancel


Data Block Editor
Data Block
Length
5
6
Data
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
01 02 03 04 05 00 00 00 00 00 00 00 00 00 00 00 00 00 00
OK
Cancel


Frame Sequencer - [S1.SBS]
File Run Options Help
Frame Smart Battery Frame File (*.SBF) Time (sec)
0 F1.SBF 10
1 F2.SBF 10
2 F3.SBF 10
3
4
5
6
7
Auto Repeat
Status: Stopped
Hide
Run
Stop

Revision Report:

Date	Description
27-JUL-16	Release SBEMMY Release 3 SP0
27-JUL-16	Add support for SMBus v1.1.
27-JUL-16	Add support for all MCC I^2C Bus Host Adapters.
10-NOV-06	Release SBEMMY V2.0.0
10-NOV-06	Add ComPort discovery.
09-NOV-06	Convert to Win32 to support USB-based adapters.
29-NOV-97	Release SBEMMY V1.10

Direct Comments/Feedback to:

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