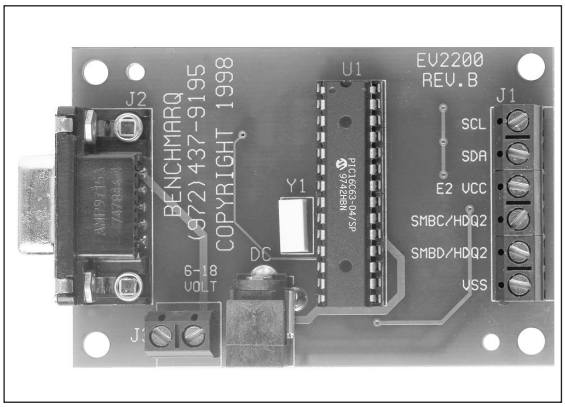
EV2200-50H

Evaluation System User Guide

Contents



Introduction

The bq2050H is Benchmarq's second-generation Li-Ion gas gauge. It provides the full range of gas-gauge functions with specific compensations for Li-Ion rechargeable batteries. The bq2050H offers a high-speed 1-wire serial interface for access to the capacity measurements and other data as will as a 5 LED display for a stand-alone system.

General Description

The bq2050H is an evaluation system for the bq2050H device. It allows the user to evaluate the full features of the bq2050H in a short period of time.

Kit Contents

The EV2200-50H contains the following items:

1 EV2200 Interface Board

1 Serial PC cable

3 Software disks entitled *EV2200-13H/14H/50H Software*

This kit should be used in conjunction with the bq2050H data sheet for reference.

Hardware and Software Setup

For the board to work correctly, an IBM PC-AT compatible computer with an available serial port is required. This computer can be running under either Windows 3.x or Windows95, with approximately 5M bytes of hard disk space required for a full installation.

Hardware Installation

PC Connection:

The serial cable should be connected between the spare serial communications (COM) port on the PC and the 9-pin D-type connector on the EV2200 interface board. Your computer manual shows the COM port locations if you are unsure.

bq2050H Connection

Connect a bq2050H-based circuit, such as the bq2150H, to the EV2200. Only two connections on the EV2200 are required for this operation, SMBD/HDQ2 and VSS. These two connections should be made to the HDQ and GND connections on the bq2050H-based module, respectively. The bq2050H circuit should be powered correctly, as detailed in the bq2050H data sheet.

Note: The hardware should be connected correctly and powered *before* the EV2200-50H software is run.

Software Installation

The following steps install the EV2200 software,

1. Insert disk 1 into a 3 ½ inch floppy drive.
2. Select the 3 ½ inch drive using **My Computer** or **File Manager**.
3. Double-click on the **Setup.exe** icon.
4. Make sure to select *bq2050h* when prompted with the **Enter Program to Load** box.
5. The setup program prompts for the remaining disks and installs a Windows application group.

Starting the Program

The installation process creates an icon labeled *bq2050h*. Find this icon and double-click on it. The evaluation software loads in 3 to 10 seconds, depending on the speed of the PC.

During this time the EV2200-50H software is testing the communications to the EV2200. The subsequent message indicates the board status. After the port is detected, the software displays the bq2050H screen. See Figure 1.

If you do not see the **RS-232 Interface Ok** message at the top of the screen, see the *Troubleshooting Guide*.

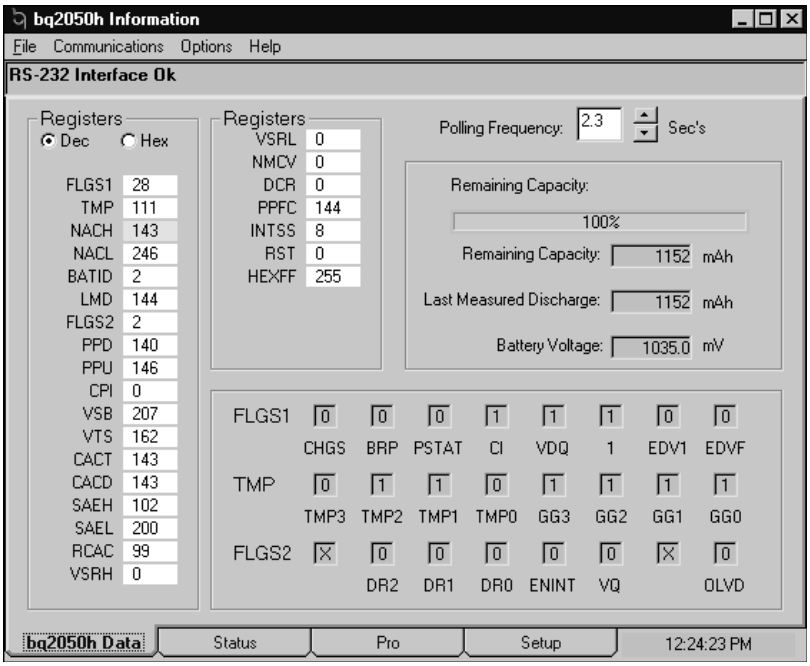


Figure 1. bq2050H Data Screen

Software Instructions

When the software is running, you can select 4 tabs: **bq2050H Data, Status, Pro**, and **Setup**.

Setup Screen

Enter the Rsns (current sense resistor), RB1 (battery divider-top), and RB2 (battery divider-bottom) resistor values from the bq2050H-based circuit. (The application diagram in the bq2050H data sheet helps you locate these components.) These entries configure the software for the circuit you are using; the values can be changed at any time. The **Programming Pins** display shows how pins 2, 3, 4, 5, and 6 of the bq2050H are connected. This information is read when the bq2050H is powered up or initialized. Clicking on the **Save Setup to Disk** button stores all the resistor data on this screen to the file *bq2050H.ini* located in the Windows directory. See Figure 2.

The **Initial Settings** frame allows changes to be made to several registers in the bq2050H. When these are edited, they turn red until the **Write to bq2050H** button is clicked.

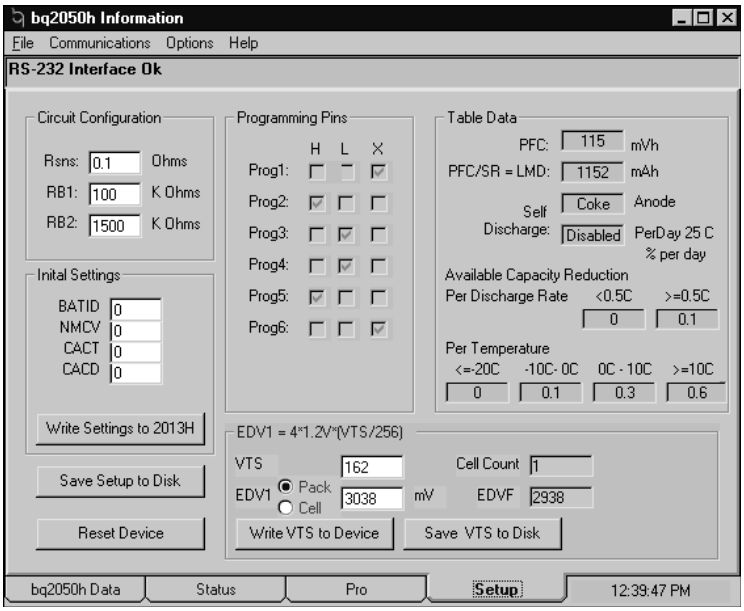


Figure 2. Setup Data Screen

bq2050H Data Screen

On this tab all the accessible registers of the bq2050H are shown and the register name and register value are displayed in hexadecimal (blue) or decimal (black). See Figure 3. By clicking the register data you can edit that value. When the new value has been entered in Hex or Dec, press ENTER to write the new value to the bq2050H registers. **Note: if the original data was in Hex, then the new data needs to be in Hex.** Also shown are some of the possible functions that an end application could use. The user can update the register data fields by polling automatically with a specified delay selected by the **Polling Frequency** selector.

Data in these registers can be logged using the features available from the **File** menu. Select **Start Data Log** and select the rate and file name. The file is tab-limited and is suitable to import to most common spreadsheet programs.

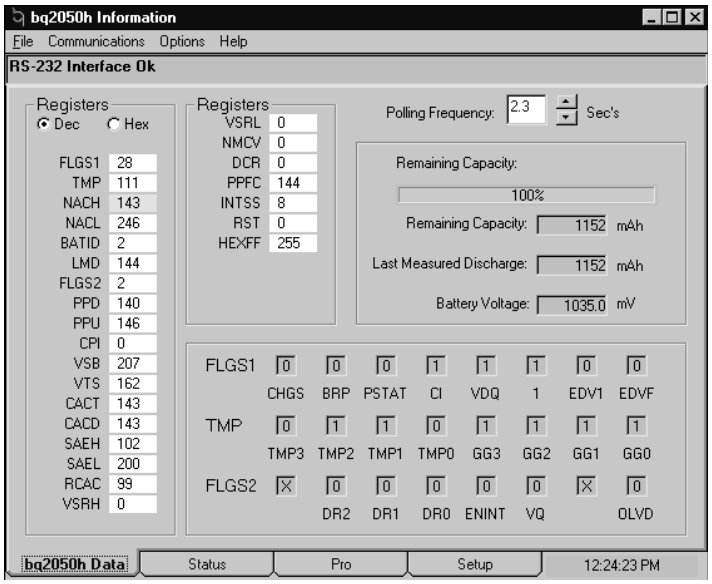


Figure 3. bq2013 Data Screen

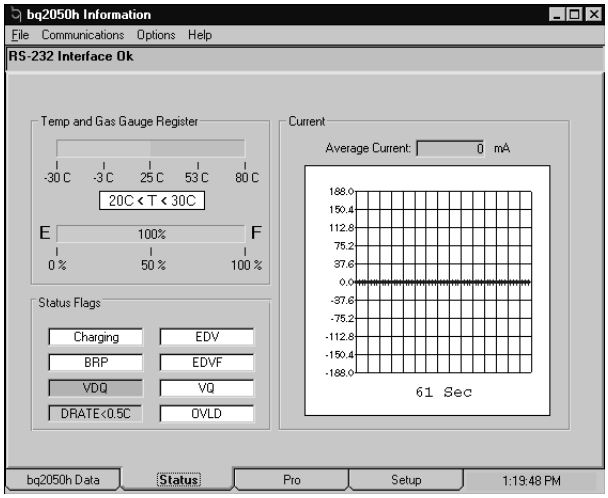


Figure 4. Status Screen

Status Screen

This tab shows the average current activity graph along with the actual current value. It also shows the available capacity and the temperature of the battery under evaluation. See Figure 4.

Pro Screen

The **Pro** screen allows read and write access to all the registers of the bq2050H. See Figure 5. Simply select the registers to read or write to from the pull-down address list and then enter any data required and click **read** or **write**. The **Send Break** button should be used each time you attach the board to the EV2200 to ensure good communications. The **Options** menu provides a choice of communication ports for the EV2200, either HDQ1 or HDQ2. The choice is shown on at the top of the **Pro** screen. The HDQ1 port is SMBD/HDQ2 and the HDQ2 port is SMBC/HDQ2 on the EV2200. The **Dwell** feature shows the continuous stream of the selected HDQ command.

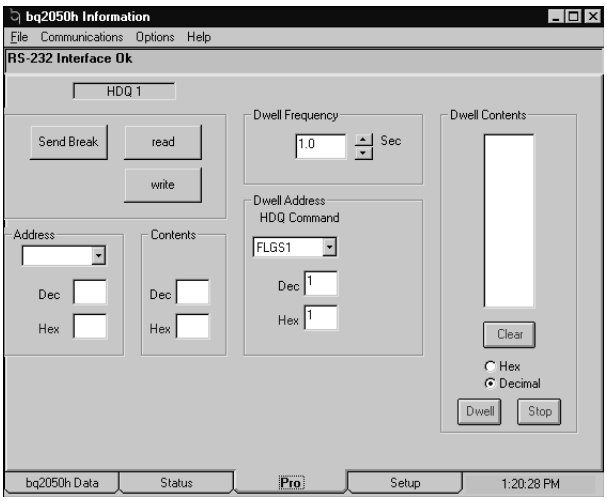


Figure 5. Pro Screen

Troubleshooting Guide

Q – Why can't my software communicate with the EV2200 interface board?

A – If you are shown the screen in Figure 6 when you first clicked on the bq2050h icon, the serial link is not connected correctly. Secure the serial cable connection at the EV2200 and the PC and check with the computer manual to verify the COM port selection.

If you see the Board Status message at the top of the screen in Figure 7, the EV2200 connection has failed. Secure cable connection at the EV2200 and the PC.

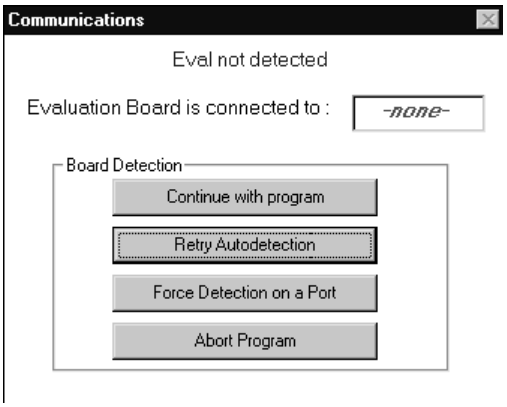


Figure 6. Board Detection Screen

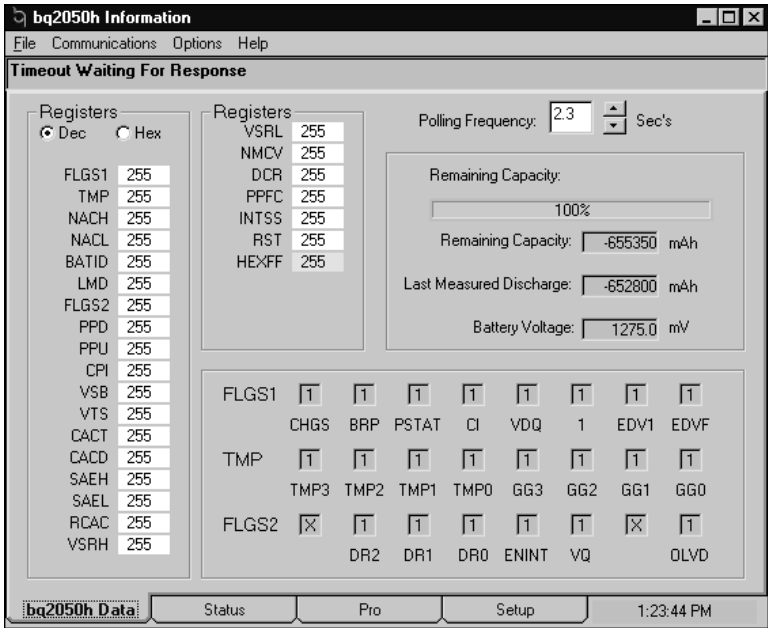


Figure 7. bq2050H Data Screen–Communication Failure

Q – The EV2200 is communicating properly but the data registers are all FFh (255 Dec); see Figure 8. What is wrong?

A – The problem here is that the HDQ interface between the bq2050H and the EV2200 is not functioning. Ensure that the bq2050H and EV2200 are connected correctly and the bq2050H circuit is powered correctly. The bq2050H IC must see a potential of 3.0–6.5V on V_{CC} (pin 16) for proper operation.

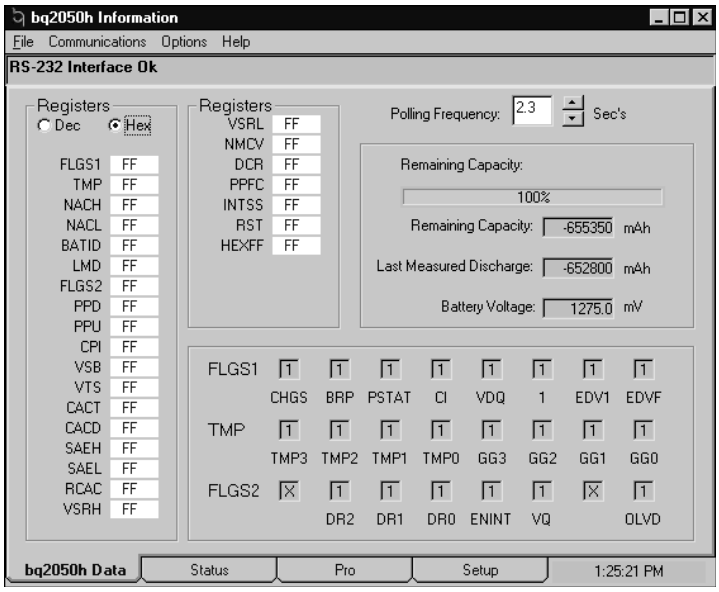


Figure 8. bq2050H Data Screen

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