

4. Software setup

In the images provided below, two screenshots from the Battery Management Studio can be observed, captured prior to initiating the calibration process. These images serve as a reference to the initial conditions and settings before calibration.

Auto Refresh is ON. Click to Turn Off
bqStudio Version: 1.3.101

EV2400
Version:0.32

I2C

bq35100
0100_1_02
Addr: 0xAA
-39.1 degC

3619 mV

Data Memory

Filter/Search

Auto Export Export Import Write All Read All

Read/Write Data Memory Contents

Name	Value	Unit
CC Gain	99.958	mOhm
CC Delta	100.000	mOhm
CC Offset	-0.42	mA
AD I Offset	76	num
Board Offset	57	Counts
Int Temp Offset	0.0	°C
Ext Temp Offset	0.0	°C
Pack V Offset	0	mV
VIN Gain	29000	mV
Temp Model		
Current		
Filter	239	Num

Registers

Start Log Scan Refresh

Registers

Name	Value	Units
Charge Accumulation	-1478285	uAh
Temperature	-39.1	degC

Name	Value	Units
Voltage	3613	mV
Current	0	mA

Name	Value	Units
Measured Z	0	mOhm
Scaled R	0	mOhm

Name	Value	Units
Internal Temperature	22.6	degC
SOH	0	%
Design Capacity	2200	mAh

Bit Registers

Bit High Bit Low RSVD

Name	Value	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Control (high)	0x2080	FLASHF	SEC1	SEC0	CalMode	BCA	CCA	LT_EN	OCVFAIL
Control (low)		INITCOMP	G_DONE	SOH_ERR	SOH_MERIT	EOS_BAD_OCV	RSVD	RSVD	GA
Battery Status	0x0001	RSVD	RSVD	RSVD	RSVD	RSVD	ALERT	RSVD	DSG
Battery Alert	0x0041	BATLOW	TEMPLOW	TEMPHIGH	SOH_LOW	EOS	RSVD	G_DONE	INITCOMP

Read/Write Data Memory Contents

Name	Value	Unit
Registers		
Operation Config A	80	hex
Alert		
Clk C		
Bath		
Power		
Flas		
Offs		
Offs		

Write to Data Memory

5. Software setup

Following the bq35100 Manual, the calibration process was initiated.

3.3.3 Current Calibration

The gauge offers *CC Offset* and *Board Offset* calibration options to zero any residual current that may be reported by the gauge. These calibrations are only required if the gauge does not report 0 mA current when no current should be present.

- Select the *CC Offset* calibration option.
- Press the **Calibrate Gas Gauge** button to calibrate.
- Verify whether the Current reports 0 mA. Proceed with the *Board Offset Current* calibration of current is reported.
- Select *CC Offset* calibration option
- Press the **Calibrate Gas Gauge** button to calibrate.
- Verify whether the *Current* reports 0 mA.
- Connect a 1-A load from BAT+ to PACK-.
- Enter '-1000' in the Applied Current field and select the *Calibrate Current* box.
- Press the **Calibrate Gas Gauge** button to calibrate.
- Deselect the *Calibrate Current* box after current calibration has completed.

However, some steps were not possible due to the circuit under test having a minimum load, resulting in errors during the CC Offset and Board Offset calibration.

Calibration - Current flow across sense resistor. Please ensure no current is flowing and retry calibration.

To proceed with the calibration, a 1-A load was connected to the PCB and the apply current was set on the battery management studio (-979mA).

The screenshot shows the bqStudio software interface. On the left, a sidebar lists connected hardware: EV2400 (Version 0.32), I2C, bq35100 (0100_1_02, Addr: 0x4A, -39.1 degC), a battery (3196 mV, 0%), and a gauge. The main window is titled 'Calibration' and has tabs for 'Registers', 'Data Memory', and 'Calibration'. The 'Calibration' tab is active, showing a 'Perform Calibration' section. It lists several calibration options: CC Offset, Board Offset, Temperature, Current, and Voltage. The 'Current' section is selected, showing 'Gauge' at -86 mA and 'Applied Current' at -979 mA. The 'Calibrate Current' checkbox is checked. The 'Calibrate Gas Gauge' button is highlighted with a green checkmark.

6. Result

After the calibration process, no changes were observed in the data memory readings for CC gain and CC delta. The sensor resistor's current and voltage measurements were -980mA and 3.6V, respectively. The calibration process was also tested with a 2-A load but yielded no change in the results, indicating that the calibration process is not working as expected.

Dashboard

Auto Refresh is ON - Click to Turn OFF

bqStudio Version: 1.3.101

EV2400
Version: 0.32

I2C

bq35100
0100, 1.02
Addr: 0xAA
-39.2 degC

3616 mV
0%

Registers Data Memory Calibration

Data Memory

Filter/Search

Auto Export Export Import Write All Read All

Read/Write Data Memory Contents

Name	Value	Unit
CC Gain	99.958	mOhm
CC Delta	100.000	mOhm
CC Offset	-0.42	mA
AD I Offset	76	num
Board Offset	57	Counts
Int Temp Offset	0.0	°C
Ext Temp Offset	0.0	°C
Pack V Offset	0	mV
VIN Gain	29000	mV
Temp Model		
Current	239	Num
Filter		