

## ***bq40z50-R2 v2.08 to v2.11 Change List***

---

---

---

### **ABSTRACT**

This document describes the changes made from bq40z50-R2 v2.08 to v2.11, as well as new features and bug fixes. The bq40z50-R2 ICs will continue shipping with v2.08 pre-programmed, but v2.11 is available for download from ti.com. All previous versions of bq40z50 ICs can be upgraded to run v2.11.

---

### **Contents**

1	Introduction .....	2
2	Change Details.....	3

### **Trademarks**

All trademarks are the property of their respective owners.

## 1 Introduction

bq40z50-R2 firmware version 2.11 has been released to enable several feature additions and performance improvements.

To work with bq40z50-R2 v2.11, download and install the latest version of the [Battery Management Studio](#) (bqStudio) evaluation software from ti.com. Alternatively, place a copy of the 4500\_2\_11-bq40z50R2.bqz file in to the following directory before launching bqStudio: C:\ti\BatteryManagementStudio\config.

The existing bq40z50, bq40z50-R1, and bq40z50-R2 integrated circuits and evaluation modules (EVMs) can be upgraded to bq40z50-R2 v2.11 firmware by programming the .srec firmware file for v2.11.

An installer is available from the Software section of the bq40z50-R2 product folder on ti.com, which places the v2.11 .srec and .bqz files on the PC. If users have any existing golden .srec files used for the bq40z50-R2 v2.08 firmware, they can be migrated to v2.11.

The recommended steps to migrate from v2.08 to v2.11 firmware using bqStudio follow:

1. Program an existing v2.08 .srec golden file in to a bq40z50EVM.
2. Export a .gg.csv file with *\_v208\_golden.gg.csv* in the filename.
3. Use the CHEM\_ID button to confirm the chemistry ID used in the file.
4. Program the default v2.11 .srec file.
5. Export a .gg.csv file with *bq40z50-R2\_v211\_default.gg.csv* in the filename.
6. Compare the two files. Copy the firmware versions and build numbers from the v2.11 file header to the v2.08 file and save the new file with *\_v211\_goldendraft.gg.csv* in the filename.
7. Import the new gg.csv file into the IC.
8. Program the desired chemID using the Chemistry plugin—this overwrites the learned Ra tables and Ra flags back to the default and unlearned values, so the user must manually update the tables back to the learned values after programming the chemID.
9. Review all other data flash parameters and modify if desired.
10. Export a new *\_v211\_golden.gg.csv* file.
11. Export a new *\_v211\_golden.srec* file to use for production.

No change in gauging performance is expected due to the firmware upgrade, but testing is recommended to ensure the process was followed correctly.

## 2 Change Details

**Table 1. Change Details**

CHANGE HIGH-LEVEL DESCRIPTION	bq40z50-R2 v2.11	bq40z50-R2 v2.08	COMMENTS
Repair timing issue with AD conversions on entry to and exit from Sleep.	Bug fixed.	If Sleep mode is used there is a small but non-zero chance for incorrect ADC readings to occur, leading to large temporary jumps in measured voltages and temperatures.	Sleep mode should not be enabled if using v2.08, or there is a possibility for a false PF to occur.
Add new <b>[CUDEP_REQ_CHG]</b> option to the <b>Protection Configuration</b> data flash parameter.	New feature. Bit is marked as <b>[CUDEP_REQ_CHG]</b> .	Feature does not exist. Bit is marked as <b>[RSVD]</b> .	When enabled, the charging voltage and current requested will be non-zero during the CUDEP period (when SUV_MODE = 1). When the battery voltage is below CVUV and the gauge wakes up from shutdown, some systems using v2.08 firmware were unable to charge the battery. The following happens: On wake up from shutdown, the gauge performs a copper deposition check. As part of this check the following tasks are carried out: 1) Turn off DFET and CFET. 2) Request Charging Voltage and Charging Current = 0 (in v2.08). Some chargers interpret the request for Charging Voltage = 0 to mean that they should turn off completely. This can result in no power from the battery or charger and the system may crash. In v2.11 the user has the option to enable this bit to specify a non-zero Charging Voltage and Charging Current during the copper deposition check period. Actual charge current would be blocked during the check because FETs will be off temporarily.
Prevent sleep during copper deposition check period.	Will not sleep during CUDEP period.	Sleep allowed during CUDEP check period.	In v2.11, when [SUV_MODE] is enabled the gauge will not be allowed to enter Sleep mode at POR until the SUV check has passed.
Fix timing for <b>[CS_CV]</b> feature.	<b>Time Interval</b> units are 1 s. This matches documentation.	<b>Time interval</b> units are 0.8 s. This does not match documentation.	Only relevant if <b>Charging Configuration: [CS_CV]</b> is enabled. This feature is disabled by default in both versions.
Fix AFE latch safety never clearing due to latch decay gated by latch status.	ASCC, AOLD, and ASCD Latch Counters decrement and reset correctly, per documentation. Okay to use ASCCL, AOLDL, and ASCDL protections if desired.	ASCC, AOLD, and ASCD Latch Counters do not decrement and reset per documentation, possibly causing spurious ASCCL, AOLDL, and ASCDL protection to be triggered. Recommend keeping these protections disabled.	These protections are disabled by default in both versions.
Removed <b>Valid Wake up Comm check Delay</b> from data flash.	Data flash parameter not present.	Data flash parameter visible but unused.	This parameter is not used in either version, so it has been hidden.

---

## Revision History

Changes from Original (March 2018) to A Revision	Page
• Changed column headers of <i>Change Details</i> table to include version number .....	3
• Added the <i>Removed Valid Wake up Comm check Delay</i> row to the <i>Change Details</i> table.....	3

---

## IMPORTANT NOTICE FOR TI DESIGN INFORMATION AND RESOURCES

Texas Instruments Incorporated ("TI") technical, application or other design advice, services or information, including, but not limited to, reference designs and materials relating to evaluation modules, (collectively, "TI Resources") are intended to assist designers who are developing applications that incorporate TI products; by downloading, accessing or using any particular TI Resource in any way, you (individually or, if you are acting on behalf of a company, your company) agree to use it solely for this purpose and subject to the terms of this Notice.

TI's provision of TI Resources does not expand or otherwise alter TI's applicable published warranties or warranty disclaimers for TI products, and no additional obligations or liabilities arise from TI providing such TI Resources. TI reserves the right to make corrections, enhancements, improvements and other changes to its TI Resources.

You understand and agree that you remain responsible for using your independent analysis, evaluation and judgment in designing your applications and that you have full and exclusive responsibility to assure the safety of your applications and compliance of your applications (and of all TI products used in or for your applications) with all applicable regulations, laws and other applicable requirements. You represent that, with respect to your applications, you have all the necessary expertise to create and implement safeguards that (1) anticipate dangerous consequences of failures, (2) monitor failures and their consequences, and (3) lessen the likelihood of failures that might cause harm and take appropriate actions. You agree that prior to using or distributing any applications that include TI products, you will thoroughly test such applications and the functionality of such TI products as used in such applications. TI has not conducted any testing other than that specifically described in the published documentation for a particular TI Resource.

You are authorized to use, copy and modify any individual TI Resource only in connection with the development of applications that include the TI product(s) identified in such TI Resource. NO OTHER LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE TO ANY OTHER TI INTELLECTUAL PROPERTY RIGHT, AND NO LICENSE TO ANY TECHNOLOGY OR INTELLECTUAL PROPERTY RIGHT OF TI OR ANY THIRD PARTY IS GRANTED HEREIN, including but not limited to any patent right, copyright, mask work right, or other intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information regarding or referencing third-party products or services does not constitute a license to use such products or services, or a warranty or endorsement thereof. Use of TI Resources may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

TI RESOURCES ARE PROVIDED "AS IS" AND WITH ALL FAULTS. TI DISCLAIMS ALL OTHER WARRANTIES OR REPRESENTATIONS, EXPRESS OR IMPLIED, REGARDING TI RESOURCES OR USE THEREOF, INCLUDING BUT NOT LIMITED TO ACCURACY OR COMPLETENESS, TITLE, ANY EPIDEMIC FAILURE WARRANTY AND ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT OF ANY THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

TI SHALL NOT BE LIABLE FOR AND SHALL NOT DEFEND OR INDEMNIFY YOU AGAINST ANY CLAIM, INCLUDING BUT NOT LIMITED TO ANY INFRINGEMENT CLAIM THAT RELATES TO OR IS BASED ON ANY COMBINATION OF PRODUCTS EVEN IF DESCRIBED IN TI RESOURCES OR OTHERWISE. IN NO EVENT SHALL TI BE LIABLE FOR ANY ACTUAL, DIRECT, SPECIAL, COLLATERAL, INDIRECT, PUNITIVE, INCIDENTAL, CONSEQUENTIAL OR EXEMPLARY DAMAGES IN CONNECTION WITH OR ARISING OUT OF TI RESOURCES OR USE THEREOF, AND REGARDLESS OF WHETHER TI HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

You agree to fully indemnify TI and its representatives against any damages, costs, losses, and/or liabilities arising out of your non-compliance with the terms and provisions of this Notice.

This Notice applies to TI Resources. Additional terms apply to the use and purchase of certain types of materials, TI products and services. These include; without limitation, TI's standard terms for semiconductor products (<http://www.ti.com/sc/docs/stdterms.htm>), [evaluation modules](#), and [samples](http://www.ti.com/sc/docs/sampterm.htm) (<http://www.ti.com/sc/docs/sampterm.htm>).

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265  
Copyright © 2018, Texas Instruments Incorporated