

bq27500-V120 to bq27500-V130 CHANGE LIST

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Battery Management

ABSTRACT

This document describes the changes made between firmware versions bq27500-V120 and bq27500-V130. The latest ordering information and data sheet is on the TI Web site.

NOTE: bq27500-V120 uses FW version 1.20 and the bq27500-V130 uses FW version 1.30

1 Introduction

bq27500-V130 firmware has been released to enable several feature additions and performance improvements.

The following new orderable part numbers have been released which ship preprogrammed with bq27500-V130 firmware:

- bq27500DRZR-V130
- bq27500DRZT-V130

The latest version of the evaluation software is required to be able to read and write all the data flash configuration locations.

The latest evaluation software and the corresponding V130 SENC file ([SLUC165](#)) can be downloaded from the bq27500-V130 product folder on www.ti.com. Existing bq27500 (including EVMs) can be upgraded to the latest firmware version by following the instructions in application report [SLUA453](#).

Note: If a golden image created for a previous version of bq27500 is loaded into an integrated circuit (IC) running firmware version 130, the IC becomes nonfunctional and must be replaced. Ensure that all instructions in [SLUA453](#) are followed if upgrading ICs or converting your production line to bq27500-V130. The best practice is to generate a new golden image (DFI file) for bq27500-V130.

2 Change Details

Table 1. Change Details

CHANGE	bq27500-V130	bq27500-V120	COMMENTS
Batt Insert Delay parameter added to Data Flash	Batt Insert Delay configurable from 0 to 65,535 ms. Default is 0. Allows for stabilization before taking current, temperature, and voltage measurements.	Batt Insert Delay not configurable. Power-up, initialization process, delay depends on hardware and firmware.	Added feature to delay initial measurements on battery insertion. Sometimes, initial measurements were incorrect due to insufficient waiting time after battery insertion.

Table 1. Change Details (continued)

CHANGE	bq27500-V130	bq27500-V120	COMMENTS
Sleep Insert Delay parameter added to Data Flash	Sleep Insert Delay configurable from 0 to 255 s. Allows gauge to continue measuring temperature before going to sleep to wait for TS voltage to stabilize.	Sleep Insert Delay not configurable. Gauge goes to sleep immediately after insertion. First temp measurement can be wrong and gauge goes to sleep for 20 s before waking and re-measuring correct temperature. If temp is wrong, BAT_GD pin is set and can affect system performance if system uses this pin.	Added feature to delay gauge sleeping after battery insertion. TS pin can bounce during pack insertion, resulting in incorrect initial temperature readings.
Fixed issue of CHG_INH and XCHG clearing if FC = 1	CHG_INH and XCHG remain set as long as the temperature conditions that set them are present.	If charge starts/continues despite CHG_INH and XCHG being set and full-charge is reached, when FC becomes set, then CHG_INH and XCHG can sometimes be cleared automatically, even though the out-of-range temperature conditions which set them are still present.	Problem occurred if charger/host ignores CHG_INH and XCHG bits and charges anyway.
Improved OCV measurement compensation	Better compensation for higher load currents during OCV measurements.	Compensation for load is more accurate at low currents than higher currents during OCV measurements.	Improved compensation method for current during OCV measurements.
Disable I2C engine during data flash writing.	Gauge ignores any I2C communication attempts from host during flash write to avoid lengthy clock stretches. Host can try again after flash write.	If host attempts I2C communication with any device on the bus during a gauge flash write, then clock stretch can occur because interrupts are disabled.	Added feature so bq27500 does not hold up the I2C bus during flash writes even if it is not the slave being addressed.
BAT_LOW pin function control added with BATL_CTL bit and BAT_LOW Enable Voltage data flash parameter.	BATL_CTL bit and BAT_LOW Enable Voltage added to data flash configuration options. See data sheet for details of new functionality.	BATL_CTL bit and BAT_LOW Enable Voltage parameter does not exist, and this functionality is not present.	Added feature to allow finer control over BAT_LOW functionality.
Added BATL_ENABLE & BATL_DISABLE commands.	New BAT_LOW behavior in data sheet. See data sheet for details of new functionality.	No BATL_ENABLE or BATL_DISABLE commands.	Added feature to allow finer control over BAT_LOW functionality.
Additional functionality for BAT_GD pin control.	See data sheet section 5.3.	See data sheet section 5.3.	Added features. No change to existing BAT_GD features.
Corrected function of CLEAR_SLEEP+ command.	CLEAR_SLEEP+ command clears SNOOZE bit.	CLEAR_SLEEP+ command clears the SNOOZE bit and can cause the gauge to reset.	An incorrect reset forces an OCV reading to be taken which can occur under the wrong conditions, leading to incorrect capacity calculations.
Minor Impedance Track™ algorithm improvements and hidden data flash modifications.	Tighter filters to limit jumps in resistance tables and Qmax.	Rare usage scenarios can result in temporary jumps in Ra and Qmax values.	Improve bq27500 gauging performance and smooth capacity jumps.
Qmax update disqualification when Rdis is set.	Qmax does not update when Rdis is set.	Qmax can be updated even if Rdis is set.	Remove possibility of inaccurate Qmax update from disrupted learning cycle.

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