

LTC3887 ERRATA

The errata below describes conditions that cause an LTC[®]3887 device to operate differently than expected or described in the data sheet.

ERRATA SUMMARY

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ERRATA #1: VOUT_MAX

The device may incorrectly detect an overcurrent condition when the current is within limit after VOUT_MAX is modified.

Conditions:

The following conditions, when present simultaneously, may expose this problem:

- 1) VOUT_MAX is modified.
- 2) The part is regulating and supplying sufficient current to the load such that the differential voltage across the current sense element exceeds positive 20mV.

Impact:

If the VOUT_MAX command is modified while the regulator is supplying current to the load, the LTC3887 may incorrectly detect an output overcurrent condition and process a fault accordingly. The rail output voltage may decrease or turn off erroneously.

Root Cause:

Internal firmware sets the overcurrent limit to the minimum programmable value immediately after VOUT_MAX is modified.

Workarounds:

Several workarounds are possible, depending on the system configuration and requirements. Contact LTC Factory Applications for additional assistance.

Write the desired user configuration to EEPROM and load the EEPROM to RAM – MFR_VOUT_MAX is usually set once for a voltage rail and not modified subsequently. Use the standard procedure for programming the EEPROM user space by modifying the appropriate PMBus commands, including VOUT_MAX, and issuing a STORE_USER_ALL command or by using the bulk EEPROM commands. Once the EEPROM is programmed, load the EEPROM to RAM and the part will operate as desired. The EEPROM can be loaded to RAM either through a power on reset, or by issuing a MFR_RESET or RESTORE_USER_ALL command over the PMBus.

Modify the VOUT_MAX command when the rail is turned off, re-write the IOUT_OC_FAULT_LIMIT then turn the rail on – When the rail is turned off, write the VOUT_MAX command. Monitor bit 5 in MFR_COMMON to transition back to a one. Write the desired IOUT_OC_FAULT_LIMIT to both pages of the controller. Monitor bit 5 in MFR_COMMON to transition to a one. Turn the rail on.

ERRATA #2: STATUS_WORD VS. STATUS_BYTE

Bits in STATUS_WORD LSB may be asserted when the STATUS_WORD MSB reports all zeros.

Conditions:

The following conditions, when present simultaneously, may expose this problem:

- 1) When polling STATUS_WORD, if a fault occurs at the right time, the read value can have a bit set in the lower byte with no corresponding bits set in the upper byte.

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Product Errata

Impact:

A minor inconsistency can occur when firmware is polling the STATUS_WORD register of the part.

Root Cause:

The two bytes making up STATUS_WORD are transferred separately to the I²C controller of the LTC3887. If STATUS_WORD is read between transfers, an incoherent read can occur.

Workarounds:

Several workarounds are possible, depending on the system configuration and requirements. Contact LTC Factory Applications for additional assistance.

Poll STATUS_BYTE instead of STATUS_WORD – STATUS_BYTE indicates the part status sufficiently.

Poll STATUS_WORD twice if a discrepancy is detected – STATUS_WORD will poll correctly immediately after the first incorrect reading.

ERRATA #3: SHORT ROUND ROBIN LOOP

When using MFR_ADC_CONTROL command 0xD8 to monitor a specific ADC parameter or group of parameters, the user must select standard round robin mode 0x00 for at least one round robin period, nominally 100ms.

Conditions:

The following conditions may expose this problem:

- 1) MFR_ADC_CONTROL command 0xD8 is set to some value other than standard round robin mode 0x00.

- 2) The user commands short round robin mode directly without first returning to standard round robin mode 0x00 for at least one full ADC period.

or

- 1) MFR_ADC_CONTROL command 0xD8 is set to short round robin mode 0x0D.
- 2) The user commands a different non-zero mode without first returning to standard round robin mode 0x00 for at least one full standard round robin period.

Impact:

Erroneous temperature telemetry or out of date temperature telemetry may be reported. In addition calculations such as current readback and over current limits, which are based on the temperature telemetry, may be incorrect. If the temperature readback error is above the OT or below the UT fault limits, the part may incorrectly detect a temperature fault and turn off one or both of the output rails.

Root Cause:

The MFR_ADC_COMMAND when used to only monitor a single parameter does not update the other parameters causing stale data. The standard round robin ADC must be run periodically to assure data is up to date.

Workarounds:

Select Round Robin Mode all the time – This is the most common way the part will be used.

When using MFR_ADC_CONTROL always go to standard round robin mode after using short round robin mode for 1 round robin period, nominally 100ms – This is required to avoid excess temperature readings and to keep the temperature data up to date.

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