SPI-/I²C-Compatible Temperature Sensor and 8-Channel Analog-to-Digital Converter

Silicon Anomaly

ADT7411

This anomaly list describes the known bugs, anomalies, and workarounds for the ADT7411 and applies to all ADT7411 generics as supplied by Analog Devices, Inc.

Analog Devices is committed, through future silicon revisions, to continuously improving silicon functionality. Analog Devices tries to ensure that these future silicon revisions remain compatible with your present software/systems implementing the recommended workarounds outlined here.

ADT7411 FUNCTIONALITY ISSUES

Silicon Revision Identifier	Kernel Revision Identifier	Chip Marking	Silicon Status	Anomaly Sheet	No. of Reported Anomalies
1.00		All silicon branded ADT7411	Release	Rev. 1	1
			Release	Rev. A	4

ANOMALIES

Table 1. Averaging Function [er001]

Background	Averaging mode may output incorrect measurements before giving a final result.
Issue	Averaging mode enabled (for any channel) may output incorrect results.
Workaround	Disable the averaging function by setting C5 = 1 in the Control Configuration 2 register. The user may still accomplish averaging by reading back 16 conversions and averaging all 16 readings to get a value that has reduced noise levels.
Related Issues	None.

Table 2. Round Robin (Fast Clock Mode Only) [er002]

Background	Erroneous results can be read intermittently in round robin fast clock mode (SPI and I²C).
Issue	As the temperature of the device is ramped from cold to hot, irregular temperature and/or voltage measurements may be obtained.
Workarounds	Enable slow clock mode by setting C0 = 0 in the Control Configuration 3 register.
Related Issues	None.

Table 3. Single Channel (Continuous Monitoring Mode Only) [er003]

Background	Changing a channel in single channel continuous monitoring mode during a conversion can result in data being written into the new channel register instead of the previous register (SPI and I²C).
Issue	An error can be obtained where the data read back appears from the previous converted channel instead of the current channel.
Workaround	Disable continuous monitoring before changing a channel. Once a channel is selected, turn monitoring on, wait for a conversion and then turn monitoring off. Wait one conversion period to allow any in progress conversion to complete before changing the channel; then take a measurement. The recommended list of steps are described in the Workaround Steps for the er003 section.
Related Issues	None.

Workaround Steps for the er003

1. Enable single channel mode by setting C4 = 1 in the Control Configuration 2 register.
2. Set monitoring off (Set C0 = 0 in the Control Configuration 1 register).
3. Select a channel, for example, the channel for internal temperature (write 0x71 to Control Configuration 2 register).
4. Set monitoring on (Bit C0 = 1 in the Control Configuration 1 register).
5. Wait 2x the typical conversion time for the channel selected (depending on which one is being measured, the power supply [VDD] or the analog input [AIN]) and 3x the typical conversion time for the temperature conversion.
6. Set monitoring off (Bit C0 = 0 in the Control Configuration 1 register).
7. Wait 1x the typical conversion time to allow any in progress conversion to complete before changing the channel.
8. Take a measurement.
9. Select the next channel (go back to Step 3).

Table 4. Software Reset (Round Robin Only) [er004]

Background	Erroneous results can be read if resetting the part repeatedly in round robin mode.
Issue	Resetting the part repeatedly by setting Bit C7 = 1 in Control Configuration 2, can cause all data registers to read back 00 after several software resets.
Workaround	Power down the part by setting Bit D7 (PD) = 1 in Control Configuration 1 and power up the part again by clearing Bit D7 = 0 in Control Configuration 1, just before asserting the software reset bit in Control Configuration 2.
Related Issues	None.

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