



High Accuracy, Dual-Axis Digital Inclinometer and Accelerometer

Silicon Anomaly

ADIS16209

This anomaly list describes the known bugs, anomalies, and workarounds for the [ADIS16209](#).

Analog Devices, Inc., is committed, through future silicon revisions, to continuously improve silicon functionality. Analog Devices tries to ensure that these future silicon revisions remain compatible with your present software/systems by implementing the recommended workarounds outlined within this document.

PERFORMANCE ISSUES

Table 1. Anomalous Start-up Behavior [er001]

Background	The ADIS16209 uses a number of internal functions (accelerometer, A/D, D/A, I/O, clock, reference) to produce highly accurate tilt angles, with respect to gravity. Once the power supply level reaches +2.35 V, the ADIS16209 begins its power-on sequence to start each of these functions. The ADIS16209 uses an internal processor core and firmware to facilitate this power-on sequence.
Issue	On a small percentage of units that have Date Code 1233 (or lower), the start-up process occasionally exhibits behaviors that preclude correct inclinometer function and supply measurements. The observable symptoms include (but are not limited to) the following: <ul style="list-style-type: none">SUPPLY_OUT < 1 V (when VCC = +3.0 V to 3.3 V)STATUS[0] = 1, indicating the low-supply error conditionIncorrect XINCL_OUT, YINCL_OUT measurements
Workaround	Investigation of this phenomenon has found that the anomalous start-up behavior depends on external power supply configurations and the source impedance they present to the ADIS16209 . When experiencing these behaviors, review the application design for opportunities to lower the source impedance of the power supply (situational improvements in power trace routing and/or bypass have eliminated this behavior). Units that have a Date Code of 1234 (or higher) use firmware revision 1.5, which modifies the power-up sequence in a manner that improves its noise immunity during start-up. For units that have a Date Code of 1233 (or lower), all current inventory was updated to firmware revision 1.5, while shipments that came before this update have a firmware revision 1.4, which does not incorporate this modified power-on sequence. Note that the firmware revision resides in an undocumented register location, at Address 0x46 and uses an 8-bit, 2-digit binary digital code (BCD) format. Reading Address 0x46 returns a 16-bit number, which represents address locations 0x46 and 0x47. Mask off the upper 8-bits to eliminate the contents from Address 0x47 and use the remaining 8-bits to determine the firmware revision on an ADIS16209 . The lower nibble represents the tenths digit and the upper nibble represents the ones digit. For example, 0x14 would represent firmware revision 1.4, which indicates that the unit does not employ the updated power-on sequence. If this location contains the hexadecimal number of 0x15, then the unit uses firmware revision 1.5, which employs the modified power-on sequence.
Related Issues	None.

ANOMALY STATUS

Reference Number	Description	Status	Date Code
er001	Anomalous Start-up Behavior	Fixed	1234

Rev. 0

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