

This anomaly list describes the known bugs, anomalies, and workarounds for the [ADIS16485](#).

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. Incorrect Scale Factors for the x_DELTANG_OUT and x_DELTANG_LOW Registers [er001]

Background	The ADIS16485 provides delta angle registers that contain sample-to-sample angle displacement estimates for all three axes. The x_DELTANG_OUT registers provide the upper 16 bits, and the x_DELTANG_LOW registers provide the lower 16 bits. The x_DELTANG_OUT registers typically provide a scale factor of $720 \div 2^{15}$ degrees per LSB, and the x_DELTANG_LOW registers provide additional resolution ($720 \div 2^{31}$ degrees per LSB).
Issue	On units that have firmware Revision 2.01 (or earlier), the delta angle registers do not have the same scale factors as those listed in the product data sheet. For these units, the scale factors are $274 \div 2^{15}$ degrees per LSB for x_DELTANG_OUT and $274 \div 2^{31}$ degrees per LSB for x_DELTANG_LOW.
Workaround	Use $274 \div 2^{15}$ degrees per LSB for the x_DELTANG_OUT scale factor and $274 \div 2^{31}$ degrees per LSB for the x_DELTANG_LOW scale factor. Use the FIRM_REV register to determine the firmware revision of a unit. For example, FIRM_REV = 0x0201 equates to a firmware revision of 2.01.
Related Issues	None.

Table 2. Incorrect Scale Factors for the x_DELTVEL_OUT and x_DELTVEL_LOW Registers [er002]

Background	The ADIS16485 provides delta velocity registers that contain sample-to-sample velocity estimates for all three axes. The x_DELTVEL_OUT registers provide the upper 16 bits, and the x_DELTVEL_LOW registers provide the lower 16 bits. The x_DELTVEL_OUT registers typically provide a scale factor of $50 \div 2^{15}$ mm/sec per LSB, and the x_DELTVEL_LOW registers provide additional resolution ($50 \div 2^{31}$ mm/sec per LSB).
Issue	On units that have firmware Revision 2.01 (or earlier), the delta velocity registers do not have the same scale factors as those listed in the product data sheet. For these units, the scale factors are $97.65 \div 2^{15}$ mm/sec per LSB for x_DELTVEL_OUT and $97.65 \div 2^{31}$ mm/sec per LSB for x_DELTVEL_LOW.
Workaround	Use $97.65 \div 2^{15}$ mm/sec per LSB for the x_DELTVEL_OUT scale factor and $97.65 \div 2^{31}$ mm/sec per LSB for the x_DELTVEL_LOW scale factor. Use the FIRM_REV register to determine the firmware revision of a unit. For example, FIRM_REV = 0x0201 equates to a firmware revision of 2.01.
Related Issues	None.

Table 3. Inaccurate TEMP_OUT Readings [er003]

Background	The TEMP_OUT register provides the internal temperature measurement, which serves as an input to the inertial calibration outputs and provides a variable that enables users to monitor relative temperature changes inside of the unit.
Issue	On units that have firmware Revision 2.01 (or earlier), the TEMP_OUT bias error is -10°C , and the scale factor is approximately 5% lower than reflected in the ADIS16485 data sheet.
Workaround	Use devices that have firmware Revision 2.02 or later to benefit from the improvement in the TEMP_OUT accuracy. For specific in-application accuracy, users may want to consider their own calibration process because attachment, airflow, and other mechanical variables can impact the relationship of TEMP_OUT with ambient temperature conditions. Use the FIRM_REV register to determine the firmware revision of a unit. For example, FIRM_REV = 0x0201 equates to a firmware revision of 2.01.
Related Issues	None.

Table 4. Incorrect Output Data String After Writing to FNCTIO_CTRL Register [er004]

Background	The FNCTIO_CTRL register provides user configuration control for the digital input/output pins, and the TEMP_OUT register provides the internal temperature measurement, which serves as an input to the inertial calibration outputs.
Issue	On units that have firmware Revision 2.01 (or earlier), a write to the FNCTIO_CTRL register causes the TEMP_OUT variable to contain an incorrect value for 120 samples. Because this is an input to the calibration function for the gyroscopes and accelerometers, this causes the appearance of a discrete bias change between Sample 120 and Sample 121.
Workaround	When using units that have firmware Revision 2.01 (or earlier), ignore the first 120 samples of the output registers after writing to the FNCTIO_CTRL register. Use the FIRM_REV register to determine the firmware revision of a unit. For example, FIRM_REV = 0x0201 equates to a firmware revision of 2.01.
Related Issues	None.

Table 5. Incorrect Offset and Scale Correction Order [er005]

Background	Each accelerometer and gyroscope has unique user-configurable offset and scale correction registers. For example, on the x-axis gyroscope, the XG_BIAS_HIGH and XG_BIAS_LOW registers combine to provide a 32-bit, twos complement bias (offset) correction factor, and the X_GYRO_SCALE register provides the scale correction function. The proper order of applying these correction factors is as follows: bias correction first, and scale correction second.
Issue	On units that have firmware Revision 2.01 (or earlier), the order of application is in reverse, where the ADIS16485 applies the scale correction value first, and then the offset value second.
Workaround	When using units that have firmware Revision 2.01 or earlier, be aware of this difference, if this function is part of system-level calibration processes. Use the FIRM_REV register to determine the firmware revision of a unit. For example, FIRM_REV = 0x0201 equates to a firmware revision of 2.01.
Related Issues	None.

Table 6. Factory Restore Command in GLOB_CMD[6] Not Working Properly [er006]

Background	GLOB_CMD[6] provides a factory restore function that enables users to reset all user-configurable calibration registers to 0x0000 (factory default). To activate this function, turn to Page 3 by setting DIN = 0x8003, and then set GLOB_CMD[6] = 1 by writing the following two 16-bit commands to the DIN line: 0x8240 and 0x8300.
Issue	On units that have firmware Revision 2.03 (or earlier), setting GLOB_CMD[6] = 1 does not reset all of these registers.
Workaround	When using units with firmware Revision 2.03 (or earlier), write 0x0000 to each calibration register individually. Use the FIRM_REV register to determine the firmware revision of a unit. For example, FIRM_REV = 0x0203 equates to a firmware revision of 2.03.
Related Issues	None.

ANOMALY STATUS

Reference Number	Description	Status	Date Code
er001	Incorrect scale factors for the x_DELTANG_OUT and x_DELTANG_LOW registers	Fixed	1226
er002	Incorrect scale factors for the x_DELTVEL_OUT and x_DELTVEL_LOW registers	Fixed	1226
er003	Inaccurate TEMP_OUT readings	Fixed	1226
er004	Incorrect output data string after writing to FNCTIO_CTRL register	Fixed	1226
er005	Incorrect offset and scale correction order	Fixed	1226
er006	Factory restore command in GLOB_CMD[6] not working properly	Fixed	1314