

This anomaly list describes the known bugs, anomalies, and workarounds for the [ADIS16488A](#).

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. Error in Soft Iron Correction Factors [er001]**

<b>Background</b>	The signal chain for the tri-axis magnetometer in the <a href="#">ADIS16488A</a> includes a user-configurable, 3 × 3 soft iron correction matrix. Users configure each value in the soft iron correction matrix by writing to its corresponding register. For example, the SOFT_IRON_S12 register contains the value for correction factor S12. In these registers, 1 LSB = 100/2 <sup>15</sup> .
<b>Issue</b>	On units that have firmware Revision 1.07 (or earlier), 1 LSB = 12.5/2 <sup>15</sup> , which is eight times lower than the correct value, on the following registers: SOFT_IRON_S12, SOFT_IRON_S13, SOFT_IRON_S21, SOFT_IRON_S31, and SOFT_IRON_S32.
<b>Workaround</b>	Read FIRM_REV to determine the firmware revision of a unit. If FIRM_REV < 0x0108, clear all soft iron correction values (write 0x0000 to each SOFT_IRON_Sxy register) and perform the soft iron correction outside of the <a href="#">ADIS16488A</a> .
<b>Related Issues</b>	None.

**Table 2. User Offset Addition Error [er002]**

<b>Background</b>	The ADIS16488A provides user-configurable bias correction values for each gyroscope and accelerometer(x, y, and z), through the following registers: XG_BIAS_HIGH, XG_BIAS_LOW, YG_BIAS_HIGH, YG_BIAS_LOW, ZG_BIAS_HIGH, ZG_BIAS_LOW, XA_BIAS_HIGH, XA_BIAS_LOW, YA_BIAS_HIGH, YA_BIAS_LOW, ZA_BIAS_HIGH, and ZA_BIAS_LOW.
<b>Issue</b>	On units that have firmware Revision 1.07 (or earlier), there is a computation error that results in a small error in the bias of each sensor (for example, less than 0.02°/sec for the gyroscopes).
<b>Workaround</b>	Read FIRM_REV to determine the firmware revision of a unit. If FIRM_REV < 0x0108, write 0x0000 to XG_BIAS_HIGH, XG_BIAS_LOW, YG_BIAS_HIGH, YG_BIAS_LOW, ZG_BIAS_HIGH, ZG_BIAS_LOW, XA_BIAS_HIGH, XA_BIAS_LOW, YA_BIAS_HIGH, YA_BIAS_LOW, ZA_BIAS_HIGH, and ZA_BIAS_LOW. Apply the bias correction factors to the gyroscope and accelerometer signals outside of the <a href="#">ADIS16488A</a> .
<b>Related Issues</b>	None.

**Table 3. Temperature Compensation Error [er003]**

<b>Background</b>	The <a href="#">ADIS16488A</a> leverages internal temperature sensors as control inputs for the compensation of gyroscope and accelerometer measurements.
<b>Issue</b>	On units that have firmware Revision 1.08 (or earlier), one of the three temperature sensors can be corrupted when using an external clock to drive the sampling. The external clock causes elevated levels of sensitivity to variation in temperature.
<b>Workaround</b>	Read FIRM_REV to determine the firmware revision of a unit. If FIRM_REV < 0x0109, use the internal sample clock if the best temperature sensitivity is necessary.
<b>Related Issues</b>	None.

**Table 4. Real-Time Clock (RTC) Functional Issues [er004]**

<b>Background</b>	The <a href="#">ADIS16488A</a> provides a RTC function that keeps track of time (seconds, minutes, hours, days, months, and years) while the main processor function is not operating (sleep, powered off).
<b>Issue</b>	On units that have firmware Revision 1.08 (or earlier), the days information in TIME_DH_OUT can experience an overflow condition when the device recovers from sleep mode.
<b>Workaround</b>	Read FIRM_REV to determine the firmware revision of a unit. If FIRM_REV < 0x0109, do not use sleep mode if the RTC function is critical for the application.
<b>Related Issues</b>	None.

Table 5. Erroneous Barometer Self Test Result in DIAG\_STS [er005]

<b>Background</b>	The DIAG_STS register provides an error flag for the self test function in Bit 11.
<b>Issue</b>	On units that have firmware Revision 1.08 (or earlier), Register DIAG_STS, Bit 11 may remain in a low state, even if the barometer is failing its self test routine.
<b>Workaround</b>	Read FIRM_REV to determine the firmware revision of a unit. If FIRM_REV < 0x0109, do not use Register DIAG_STS, Bit 11 to determine the health of the barometer for mission critical functions.
<b>Related Issues</b>	None.

Table 6. Barometer New Data Bit Continues Updating After Failure [er006]

<b>Background</b>	Register SYS_E_FLAG, Bit 9 indicates that there is new barometer data in the BAROM_OUT register when it is in a high state.
<b>Issue</b>	On units that have firmware Revision 1.08 (or earlier), Register SYS_E_FLAG, Bit 9 still indicates that new data is available, even if the barometer has experienced a failure.
<b>Workaround</b>	Read FIRM_REV to determine the firmware revision of a unit. If FIRM_REV < 0x0109, do not use Register SYS_E_FLAG, Bit 9 to determine the operational state of the barometer function.
<b>Related Issues</b>	None.

Table 7. Sleep Mode Recovery Causes Barometer Failure [er007]

<b>Background</b>	The ADIS16488A provides a sleep mode that has a faster recovery time than a complete restart (power-on or reset recovery).
<b>Issue</b>	On units that have firmware Revision 1.08 (or earlier), recovery from sleep mode can cause failure in the barometer function.
<b>Workaround</b>	Read FIRM_REV to determine the firmware revision of a unit. If FIRM_REV < 0x0109, do not use sleep mode if the barometer is important for the application.
<b>Related Issues</b>	None.

Table 8. Writing to Register FNCTIO\_CTRL Causes Barometer Failure [er008]

<b>Background</b>	The FNCTIO_CTRL register provides a number of user configurations for the input/output lines (DIO1, DIO2, DIO3, and DIO4).
<b>Issue</b>	On units that have firmware Revision 1.08 (or earlier), writing to the FNCTIO_CTRL register can cause the barometer measurement function to lock up.
<b>Workaround</b>	Read FIRM_REV to determine the firmware revision of a unit. If FIRM_REV < 0x0109 and the barometer function is important for the application, reset the operation after writing to Register FNCTIO_CTRL and after backing up those settings in the flash.
<b>Related Issues</b>	None

Table 9. Writing to Register GLOB\_CMD, Bit 1 Causes Barometer Failure [er009]

<b>Background</b>	The Register GLOB_CMD, Bit 1 provides a trigger bit for running the self test function on all of the sensors inside of the ADIS16488A.
<b>Issue</b>	On units that have firmware Revision 1.08 (or earlier), running the self test routine by setting Register GLOB_CMD, Bit 1 equal to 1 can cause the barometer measurement function to lock up.
<b>Workaround</b>	Read FIRM_REV to determine the firmware revision of a unit. If FIRM_REV < 0x0109 and the barometer function is important for the application, reset the operation after running the self test function.
<b>Related Issues</b>	None

Table 10. Daylight Savings Time Error in Real-Time Clock [er010]

<b>Background</b>	The ADIS16488A provides a RTC function that keeps track of time (seconds, minutes, hours, days, months, and years) while the main processor function is not operating (sleep, powered off). Register CONFIG, Bit 1 provides a control for managing against daylight savings time.
<b>Issue</b>	On units that have firmware Revision 1.08 (or earlier), turning daylight savings time on by setting Register CONFIG, Bit 1 equal to 1 causes a malfunction in the tracking of the RTC.
<b>Workaround</b>	Read FIRM_REV to determine the firmware revision of a unit. If FIRM_REV < 0x0109, do not use the daylight savings time setting of Register CONFIG, Bit 1 equal to 1.
<b>Related Issues</b>	None

Table 11. Flash Memory Corruption From Power Loss During Manual Flash Updates [er011]

<b>Background</b>	Setting Register GLOB_CMD, Bit 3 equal to 1 causes an update of the flash memory, which takes 375 ms to execute.
<b>Issue</b>	On units that have firmware Revision 1.09 (or earlier), power loss during manual flash execution has a 1 in 1000 chance of causing corruption in the flash memory, which destroys the device.
<b>Workaround</b>	Read FIRM_REV to determine the firmware revision of a unit. If FIRM_REV < 0x0109, keep VDD > 3.0 V during manual flash update process. Note that this best practice has broader application; however, it does address this specific sensitivity.
<b>Related Issues</b>	None

**ANOMALY STATUS**

Reference Number	Description	Status	Date Code
er001	Error in soft iron correction factors	Fixed	1438
er002	User offset addition error	Fixed	1438
er003	Temperature compensation error	Fixed	1514
er004	Real-time clock (RTC) functional issues	Fixed	1514
er005	Erroneous barometer self test result in DIAG_STS	Fixed	1514
er006	Barometer new data bit continues updating after failure	Fixed	1514
er007	Sleep mode recovery causes barometer failure	Fixed	1514
er008	Writing to Register FNCTIO_CTRL causes barometer failure	Fixed	1514
er009	Writing to Register GLOB_CMD, Bit 1 causes barometer failure	Fixed	1514
er010	Daylight savings time error in real-time clock	Fixed	1514
er011	Flash memory corruption from power loss during manual flash updates	Fixed	1526

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