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ADIS16135 Evaluation Tool Overview



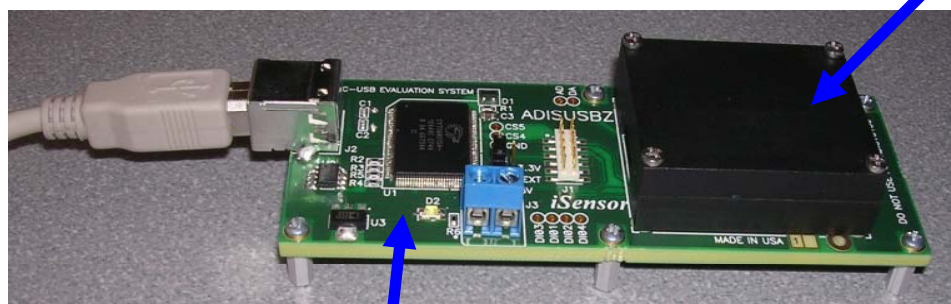
Mark Looney
***iSensor*[®] Application Engineer**
January 22, 2010





iSensor[®] The Simple Solution for Sensor Integration PC-Based Evaluation

- ◆ **The ADISUSBZ provides PC-based demonstration and basic evaluation support for the ADIS16135BMLZ.**
 - ◆ This system provides a simple USB interface, along with a simple graphical user interface (GUI) package, for evaluating most of the ADIS16135 functions and performance.
 - ◆ This system is most useful for basic data collection and performance validation.
 - ◆ This is not a real-time development system. No SDK available.
 - ◆ Part number for ordering: (1) ADIS16135BMLZ, (1) ADISUSBZ

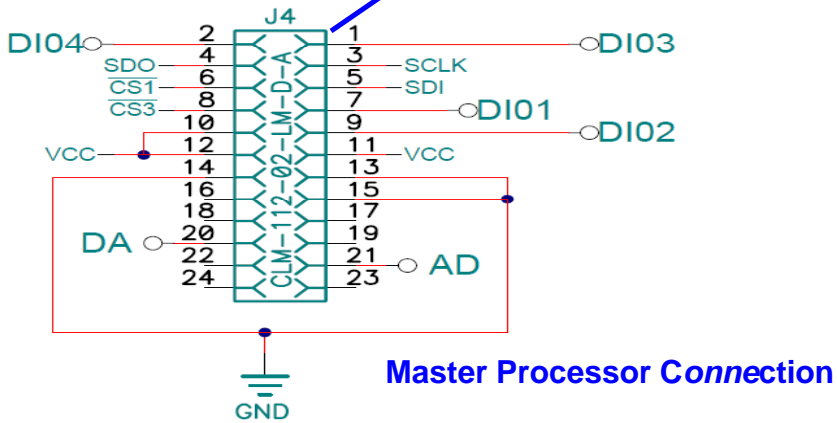
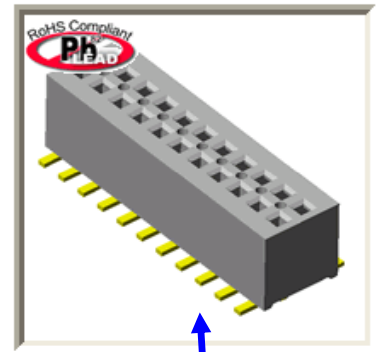
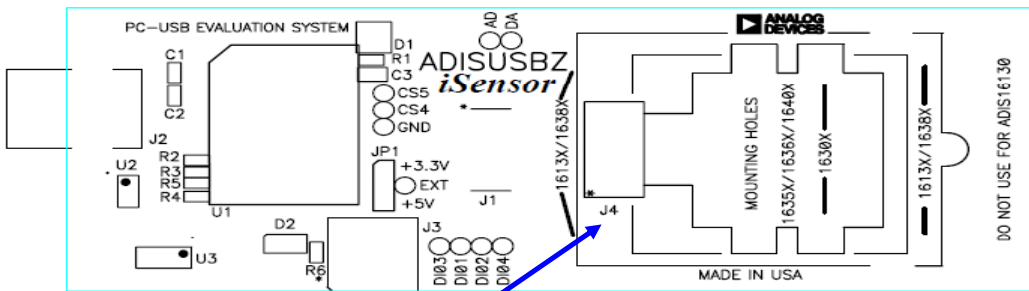




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Hooking up to the ADIS16135/PCBZ

Need to integrate J4 to a new PCB design?



ADISEVALUSBZ-135 uses the following J4 connector from Samtec:

CLM-112-02-LM-D-A

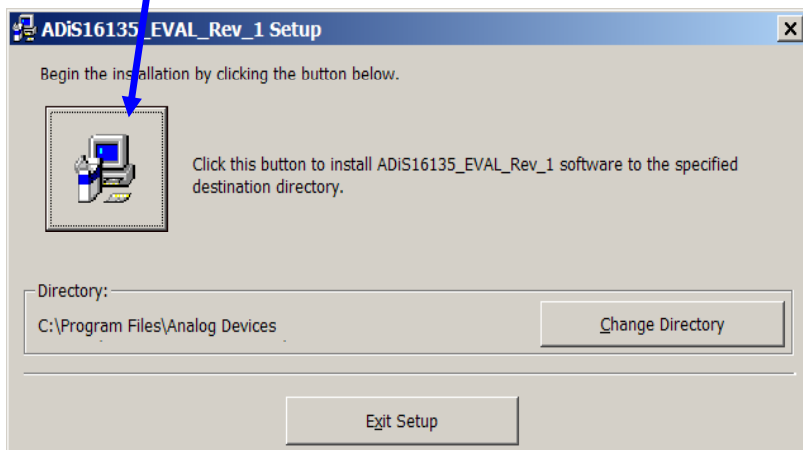
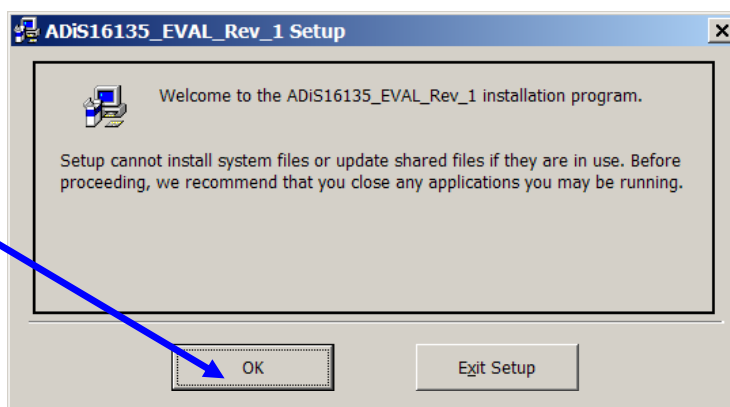


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ADIS16135 Demonstration Software Installation

Installation Steps (continued)

4. Click **OK** on next screen
5. Click here to start installation





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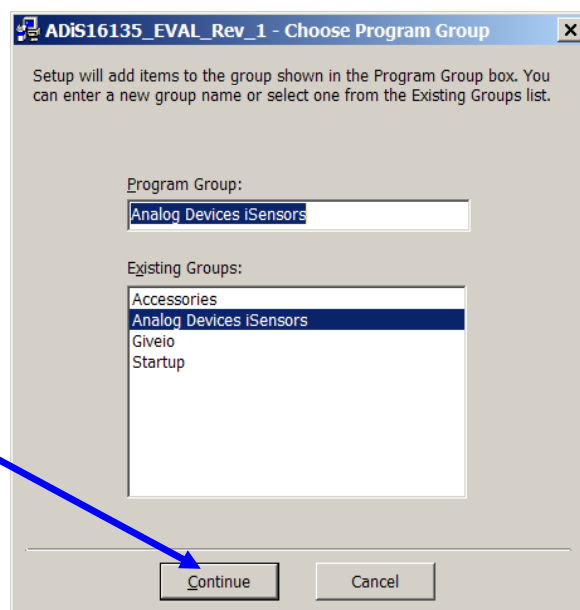
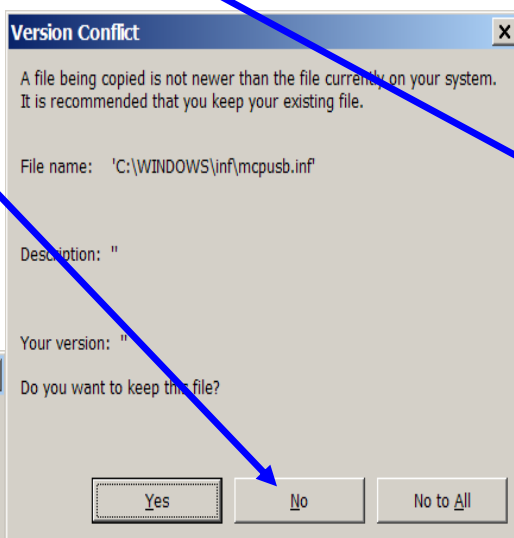
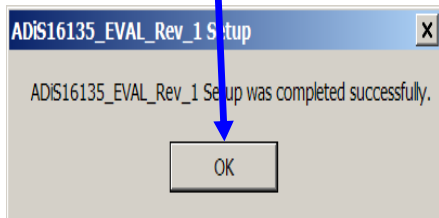
ADIS163135 Demonstration Software Installation

Installation Steps (continued)

6. Click **Continue**

7. If this message comes up, click on **No**

8. Click **OK**



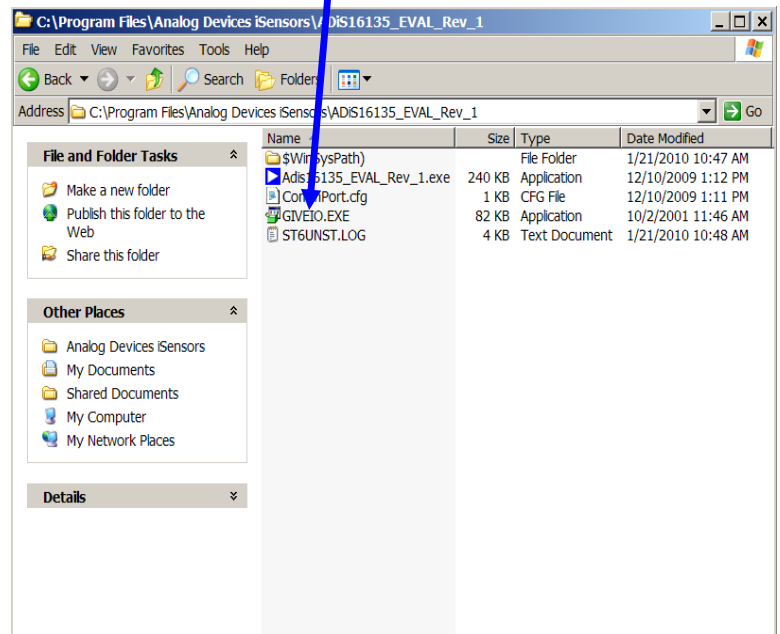
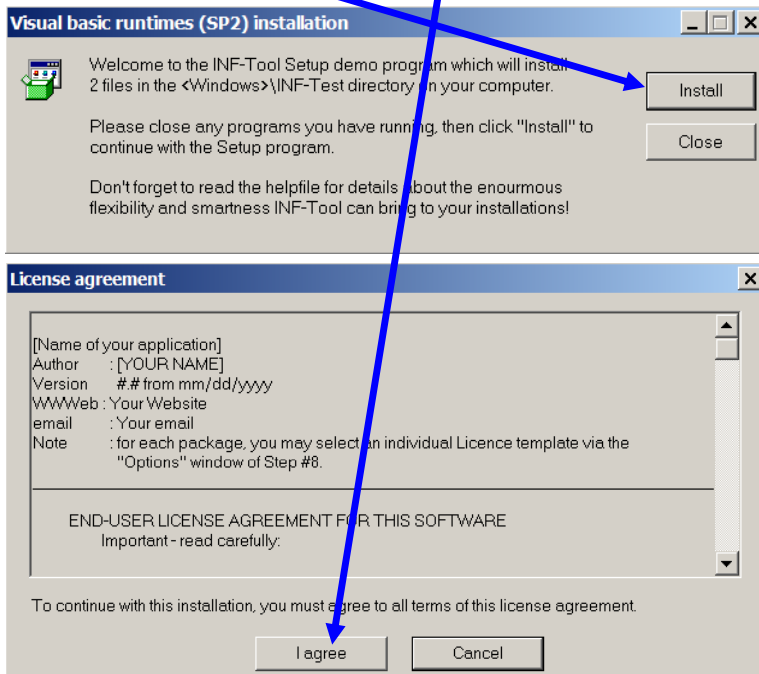


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ADIS16135 Demonstration Software Installation

Installation Steps (continued)

9. Open the newly created directory and double-click onto **GIVEIO.EXE**
10. Click **Install**, then **I agree**





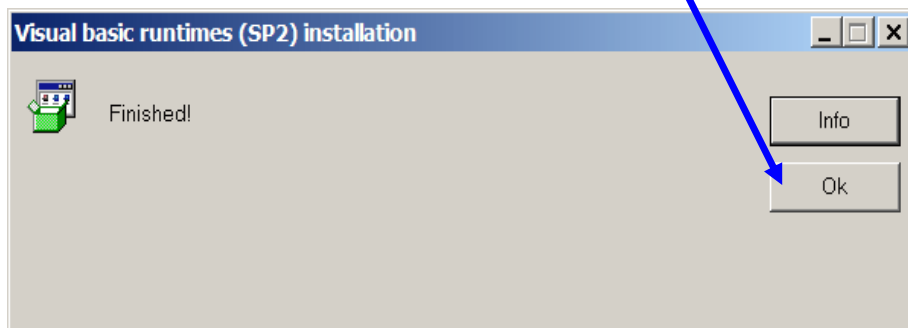
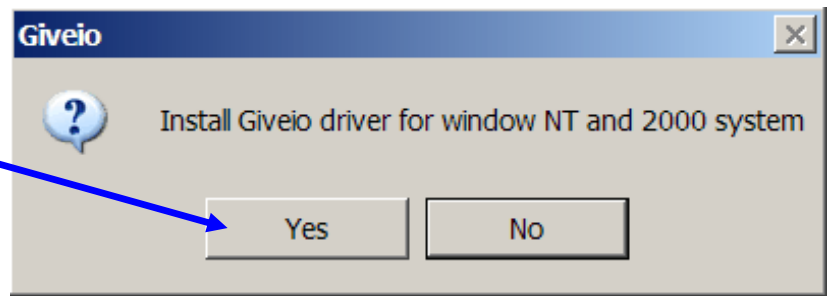
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ADIS16135 Demonstration Software Installation

Installation Steps (continued)

11. Click **Yes**

12. Giveio Driver complete, click **OK**





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ADIS16135BMLZ Installation on ADISEVALUSBZ-135

Installation Steps (continued)

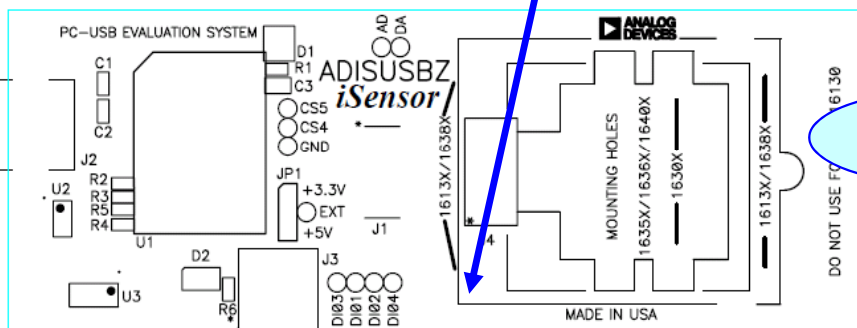
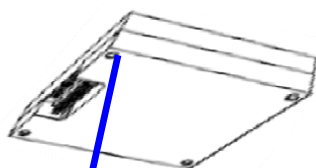
13. Install ADIS16135BMLZ on ADISEVALUSBZ
14. Remove ribbon cable and screws
15. Carefully insert the ADIS16135BMLZ into the J4 connector
16. Secure part with 2x18mm screws

1. Secure with 2x18mm screws

2. Attach 135/PCBZ to J4 Connector

3. Verify JP1 set to +5V

4. Hook USB cable up





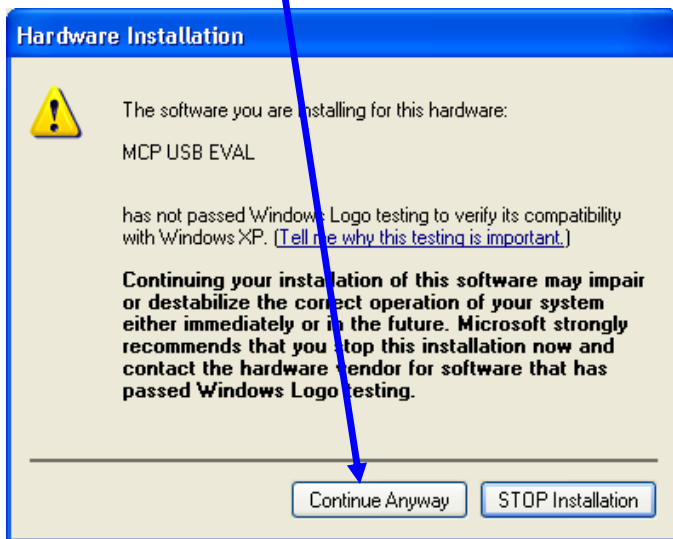
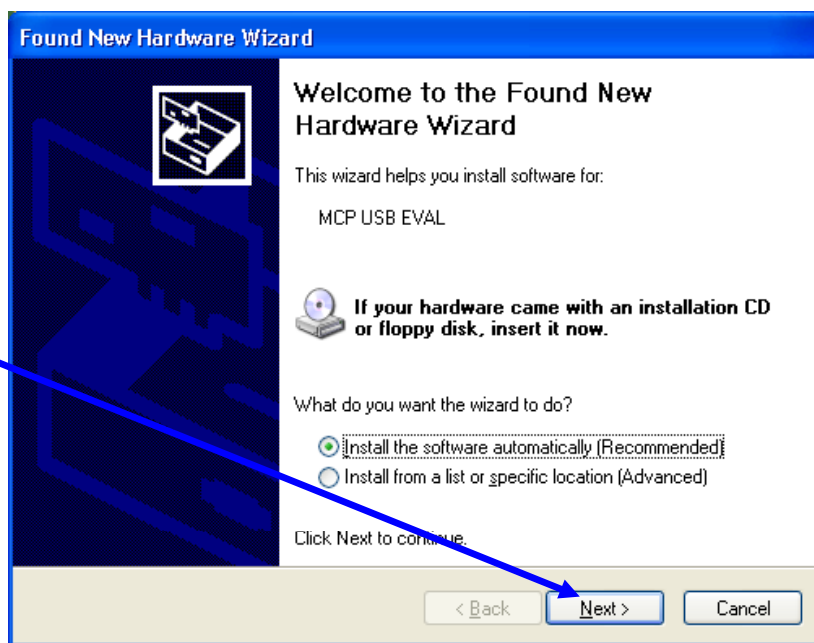
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ADIS16135 Demonstration Software Installation

Installation Steps (continued)

15. USB Driver screen will pop-up
Click **Next** to start this process

16. Then click on
Continue Anyway



This process will repeat for a second driver file. Just follow the instructions and allow it to go through one more time. After completing this, then the devices is ready for test.

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ADIS16135 Demonstration Tips—Verify USB Driver

The screenshot shows the 'Analog Devices - ADIS16135 Evaluation Software - Rev 1' interface. The main window has a menu bar with 'Interface', 'Device', 'Configuration', 'Datalog', 'Registers', and 'Exit'. The 'Output Registers' section shows 'Gyro_Out (d/s)' at -0.233 and 'Temp (degC)' at 20.357. The 'Status Register' section shows various status indicators (Power Supply Low, Control Register, SPI Write Flag, Gyro Overrange, Self Test, Flash Memory, Alarm1 Set, Alarm2 Set) all marked as 'OK'. The 'Data Plot' section shows a graph of 'Gyro (g)' vs 'Sample Number' with a cursor at -293 g and sample # 215. The 'USB SPI Card Selection' dialog box is open, showing a 'Buffer Select' table with columns 'Descriptor0', 'Rev', and 'Speed'. The 'EzUsb0' row is selected, showing 'MCP SPI', '0.1', and '2.0'. The 'OK' button in the dialog is highlighted with a blue callout. A blue arrow points from a callout to the 'Read' button in the 'Output Registers' section.

#1 Click here to access setup

#2 Click OK to verify

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ADIS16135 Demonstration Tips— Initial Start up

Output Registers

Gyro_Out (d/s) Plot

Temp (degC)

Loop

Loop Delay msec

Status Register

Power Supply Low OK

Control Register OK

SPI Write Flag OK

Gyro Overrange OK

Self Test OK

Flash Memory OK

Alarm1 Set OK

Alarm2 Set OK

Data Plot Device = 16135

Gyro (g) -292

sample # 285

Plot Scale

0 Sample Number 85 175 260 350

Self Test

Self-Test OFF ON

Powerdown

Set sec Elapsed sec

#3 Click Read to see if Gyro Out is close to "0" when board is laying flat on a table



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ADIS16135 Demonstration Tips—AUTO-Null

The screenshot shows the 'ADIS 16135 Evaluation Software - Rev 1' interface. The 'Configuration' menu is selected. On the left, the 'Output Registers' section shows 'Gyro_Out (d/s)' at -0.156 and 'Temp (degC)' at 22.491. Below it, the 'Status Register' shows various status indicators like 'Power Supply Low', 'Control Register', 'SPI Write Flag', 'Gyro Overrange', 'Self Test', 'Flash Memory', 'Alarm1 Set', and 'Alarm2 Set', all with green 'OK' indicators. The main window is titled 'Data Plot Device = 16135' and shows a plot of acceleration (g) vs. sample number. A 'Calibration' dialog box is open, with the 'Automatic Features' section containing 'Restore Factory Calibration' and 'Auto Null', both with 'Run' buttons. The 'Manual Calibration Adjustment' section has 'Gyroscope' settings for 'Offset' (18.034 deg/sec) and 'Decimate' (0), each with an 'Update' button. A 'Flash Memory Register Update' button is also present. A blue callout bubble points to the 'Run' button for 'Auto Null' with the text: 'While the part is flat on the table top click on Run button. When complete, click on Update, then Flash Memory Update.' Another blue callout bubble points to the 'Flash Memory Register Update' button with the text: 'Select Configuration and Calibration'. At the bottom, there is a 'Self Test' section with 'Self-Test' set to 'OFF' and 'Gyro Select' set to 'Gyro Select'.



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ADIS16135 Demonstration Tips— Gyro

Output Registers

Gyro_Out (d/s) Plot

Temp (degC)

Loop

Loop Delay msec

Status Register

Power Supply Low OK

Control Register OK

SPI Write Flag OK

Gyro Overrange OK

Self Test OK

Flash Memory OK

Alarm1 Set OK

Alarm2 Set OK

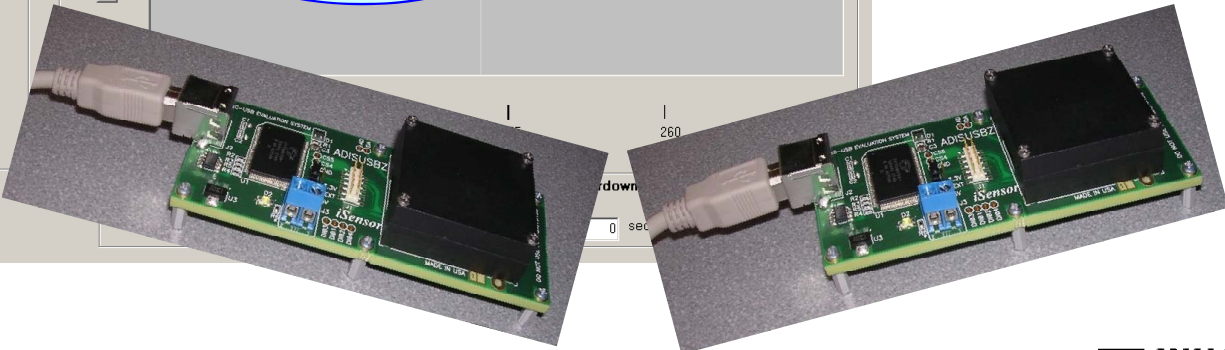
Data Plot Device - 16135

Cursor (g) -263
sample # 325

Plot Scale

Observe Gyro Out while rotating board back and forth on table top

1. Watch the Gyro Out response on screen.





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ADIS16135 Demonstration Tips— Alarms??

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ADIS16135 Demonstration Tips— Alarm Set up

ALARM/DIO LINE CONFIGURATION AND CONTROL

ALARM 1

Source:

Trigger: ALM_MAG1

Trigger: Greater than Less than

ROC Sample: ALM_SMPL1

Rate of change: Enabled Disabled

ALARM 2

Source:

Trigger: ALM_MAG2

Trigger: Greater than Less than

ROC Sample: ALM_SMPL2

Rate of change: Enabled Disabled

Digital Alarm Indicator

Digital Alarm: Enabled Disabled

Digital Line: DI/O1 DI/O0

Output Polarity: High Low

Filtered Select: Filtered Unfiltered

Update

***Update button must be pressed to activate all option changes!**

Auxilliary Digital I/O Configuration

Configure as a general purpose I/O line

Digital I/O Line 0: Input Output

Set Line 0 Level: High Low

Digital I/O Line 1: Input Output

Set Line 1 Level: High Low

Configure as a data ready line

Enable: ON OFF

Select I/O line: DI/O1 DI/O0

Output Polarity: High Low

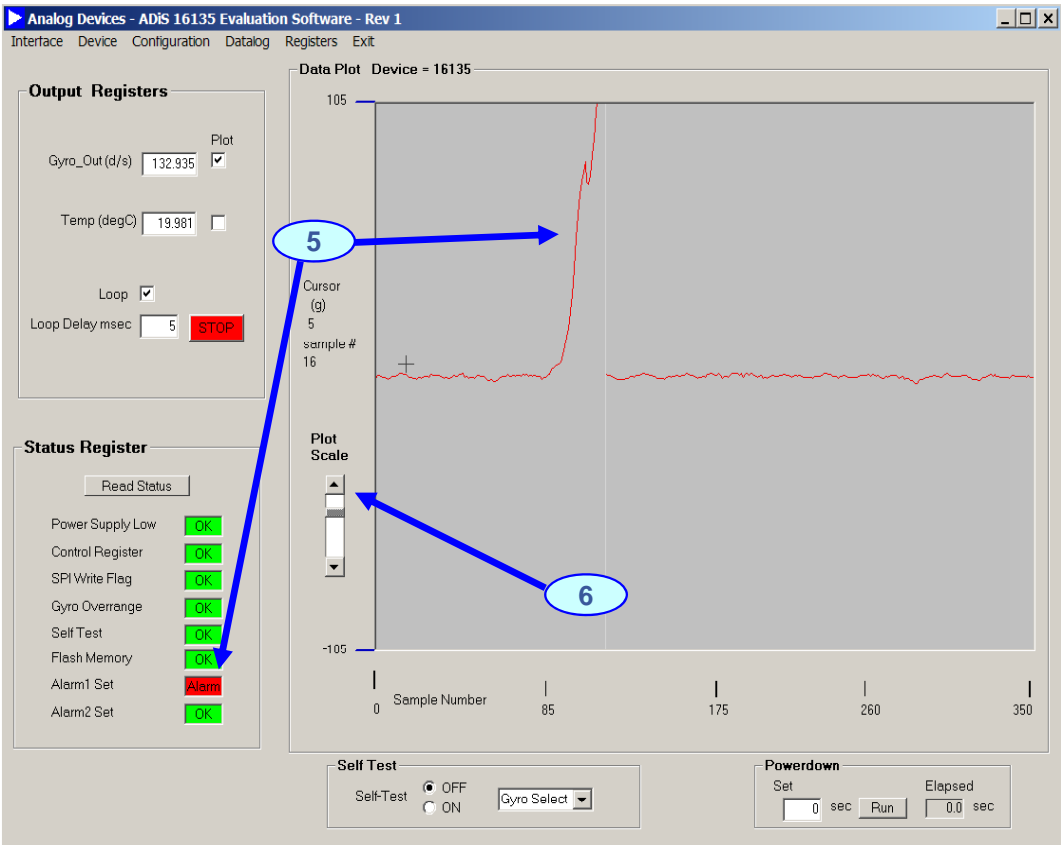
Close Window **Flash Memory Register Update**

1. Set Alarm 1 source for Gyro Out.
2. Set the Trigger level to 50 and Greater Than
3. Click the Update button to accept changes
4. Click on Close Window to return to the main screen



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ADIS16135 Demonstration Tips— Alarms Continued



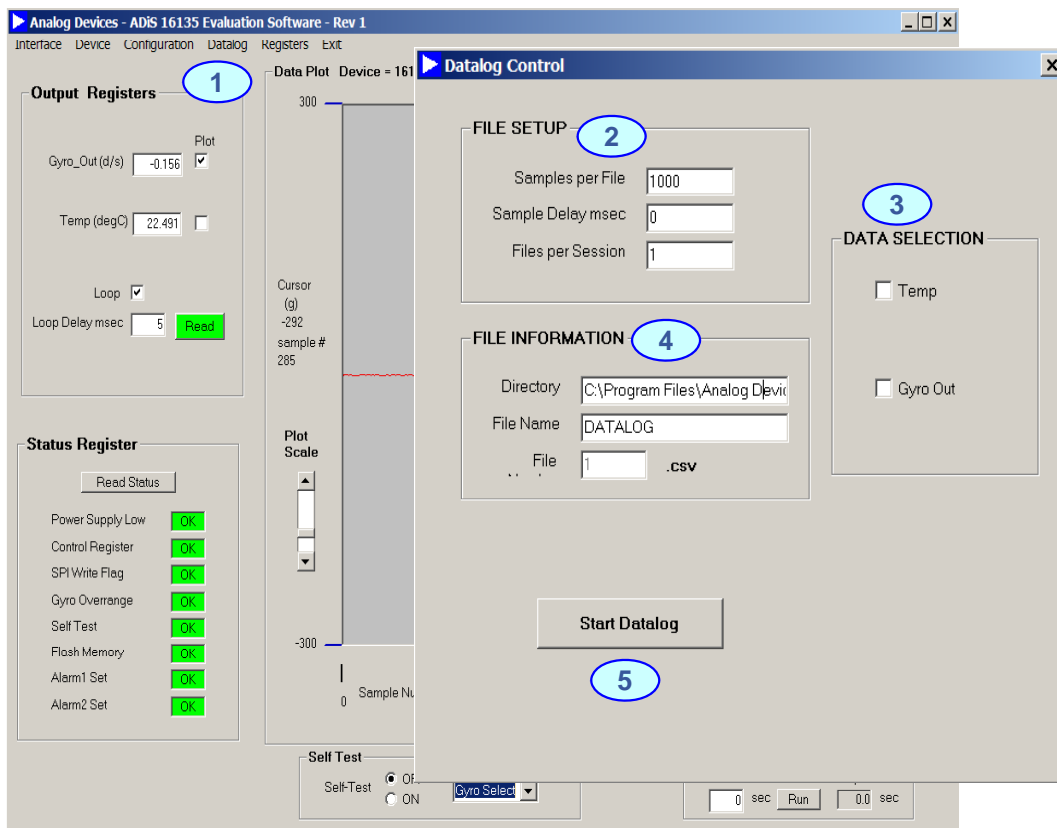
- 5. Alarm 1 is set when the Gyro level is above 50
- 6. The Plot Scale can be changed for a more accurate reading by moving the slider





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ADIS16135 Demonstration Tips— Collect Data



1. Select Datalog on the main screen
2. File Setup- enter # of samples delay and # of files
3. Data Selection- Choose the output data you want
4. File Information- Enter the file name and # of files
5. Start Datalog- Click the button to begin data processing
 - a. File is output to program file folder created during installation



◆ CONTACTS:

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- **APPLICATIONS ENGINEER:** Mark Looney, 1-336-605-4139

MORE INFORMATION:

- www.analog.com/isensor
- **New Brochure: *i*Sensor Motion Sensor Products**

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