

The World Leader in High Performance Signal Processing Solutions



iSensor[®]

ADIS16135 Evaluation Tool Overview



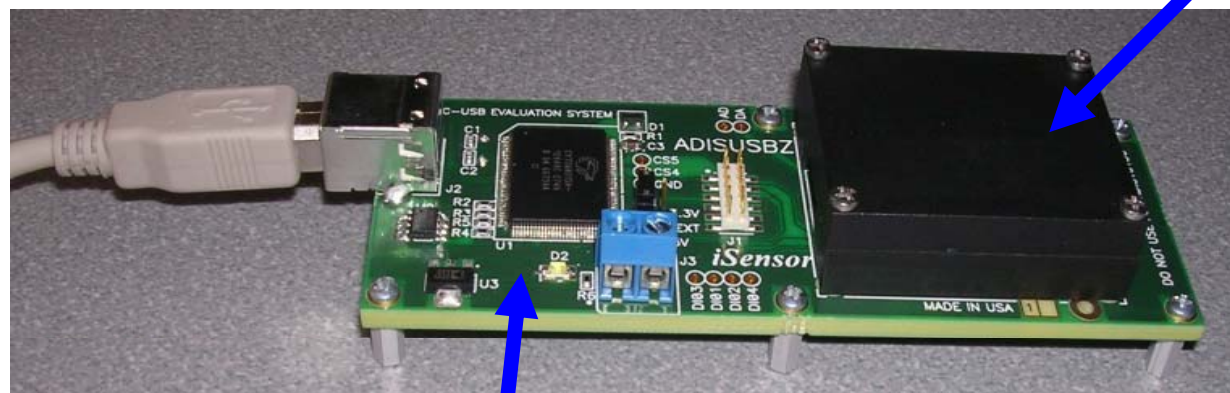
Mark Looney
iSensor[®] Application Engineer
January 22, 2010



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



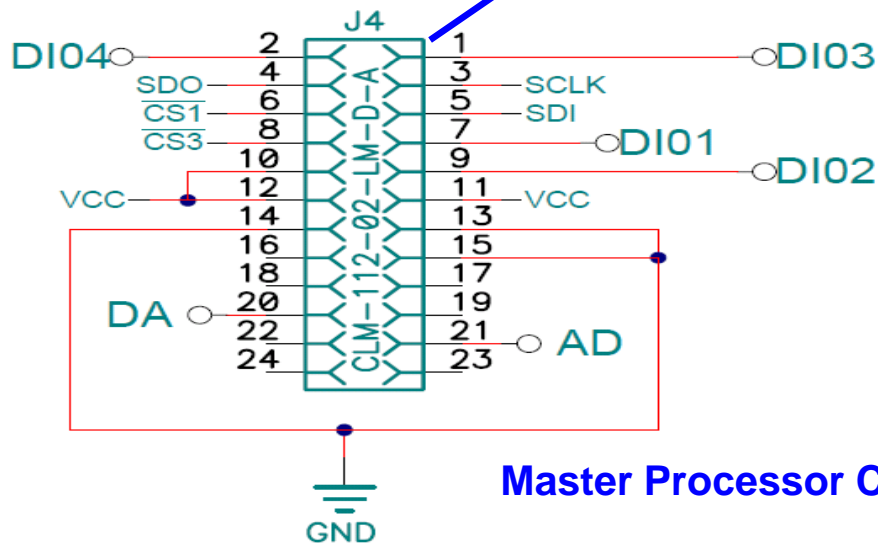
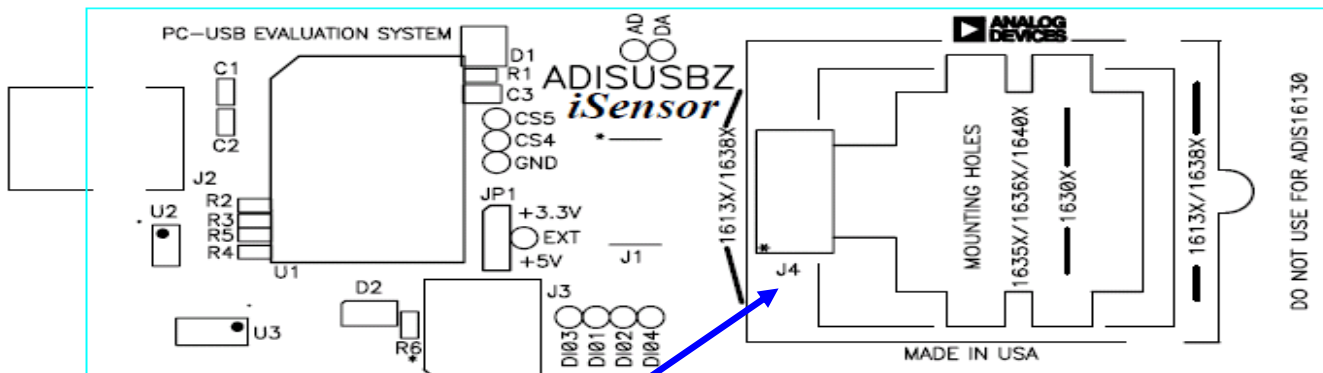
ADIS16135BMLZ

ADISUSBZ

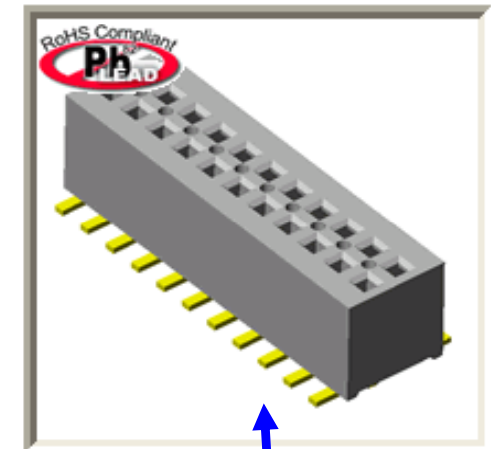
iSensor[®] The Simple Solution for Sensor Integration

Hooking up to the ADIS16135/PCBZ

Need to integrate J4 to a new PCB design?



Master Processor Connection



ADISEVALUSBZ-135 uses the following J4 connector from Samtec:

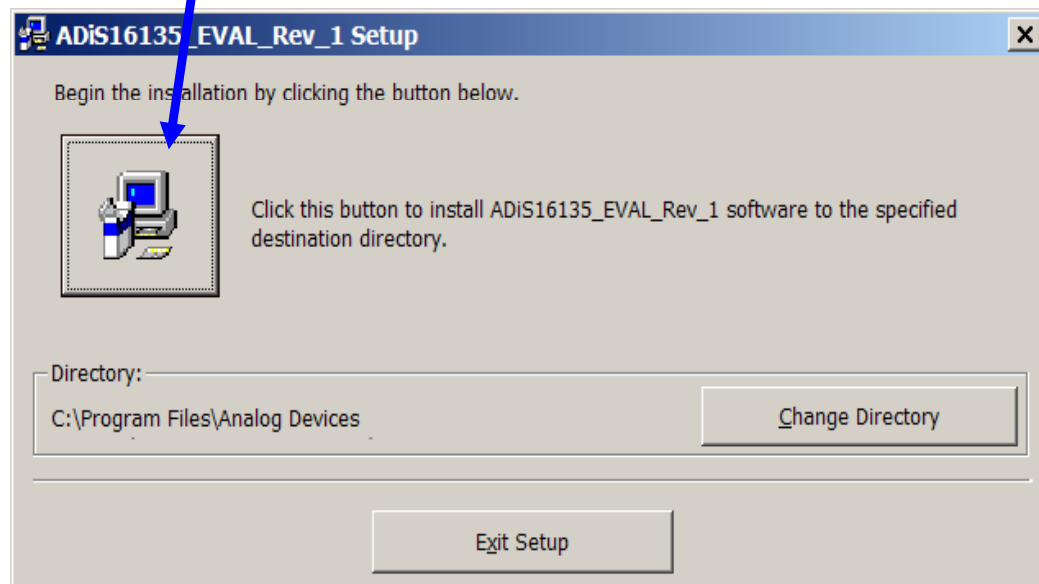
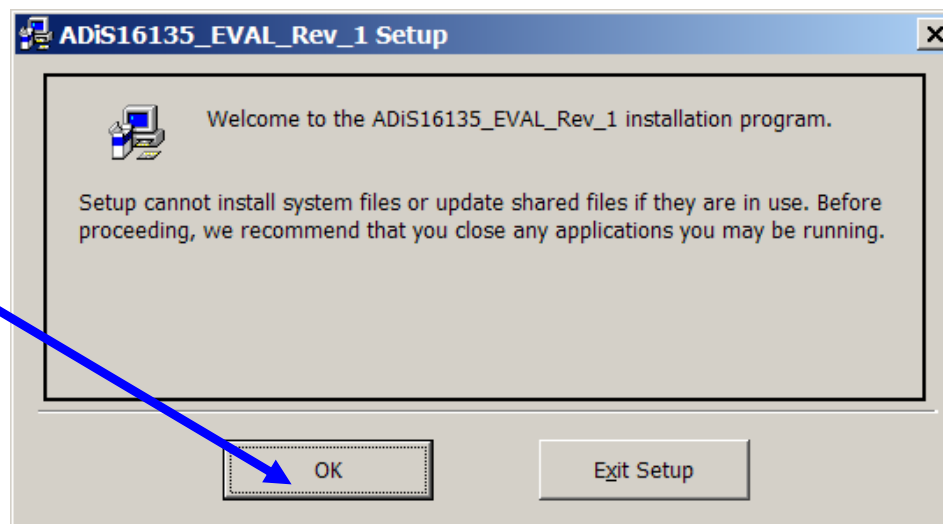
CLM-112-02-LM-D-A

*i*Sensor® The Simple Solution for Sensor Integration

ADIS16135 Demonstration Software Installation

Installation Steps (continued)

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



iSensor® The Simple Solution for Sensor Integration

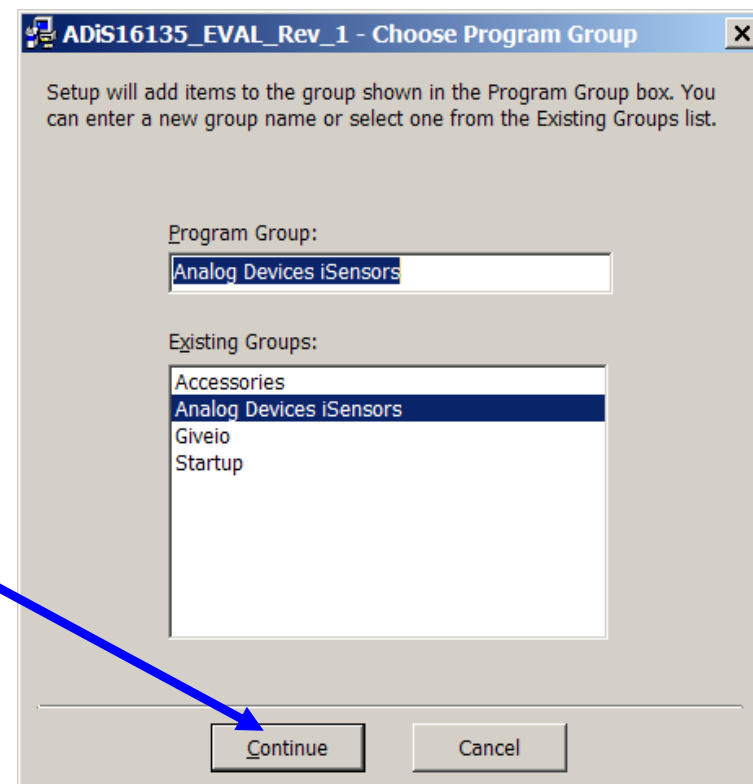
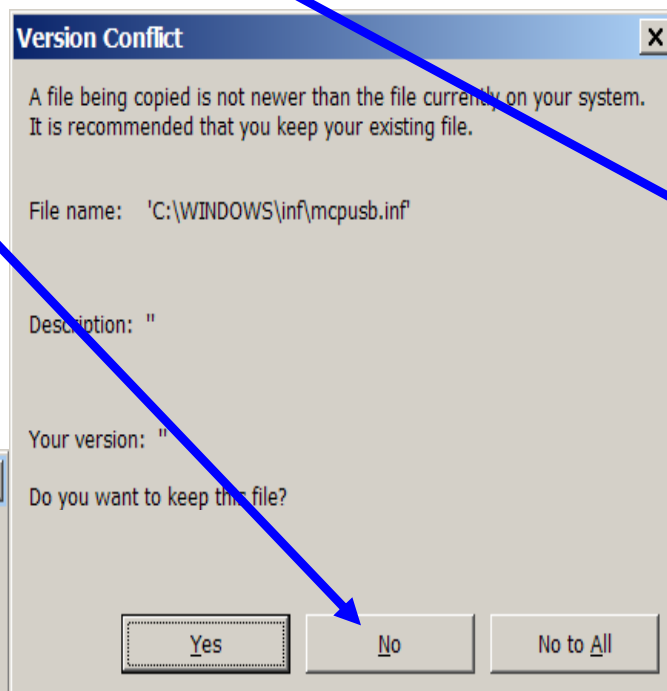
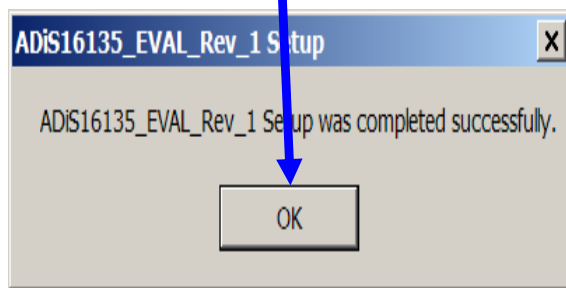
ADIS163135 Demonstration Software Installation

Installation Steps (continued)

6. Click **Continue**

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

8. Click **OK**



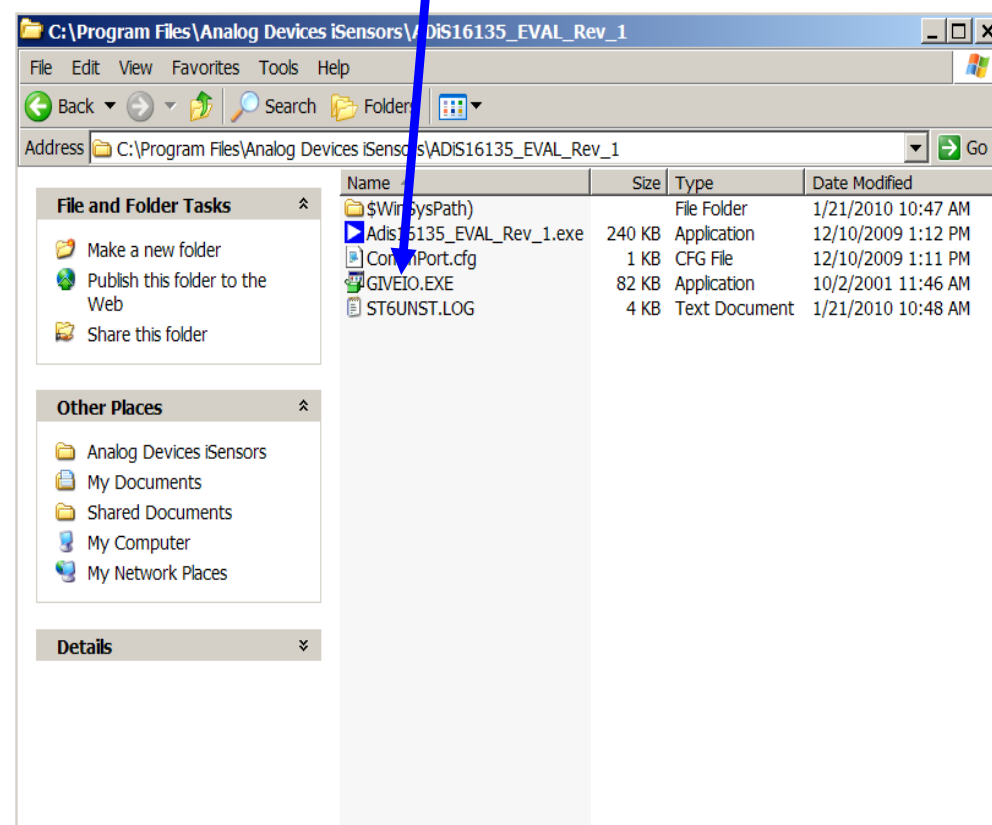
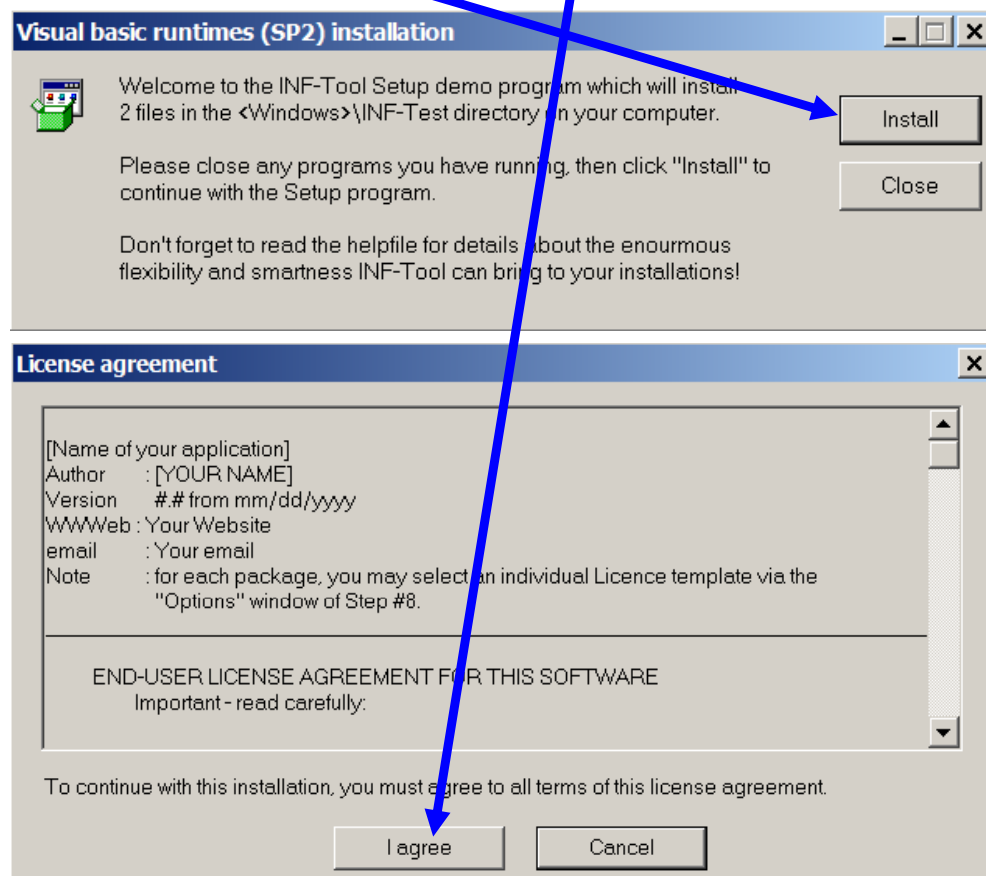
iSensor® The Simple Solution for Sensor Integration

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**



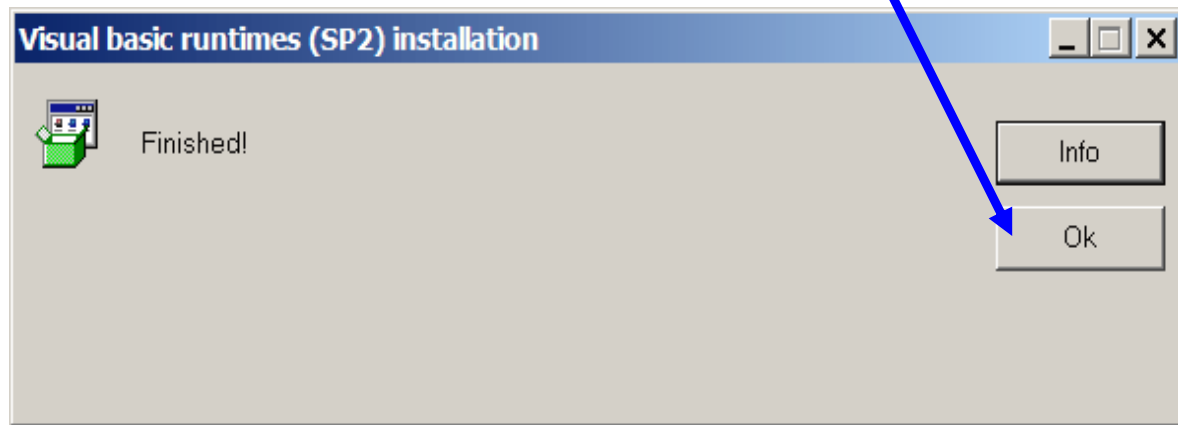
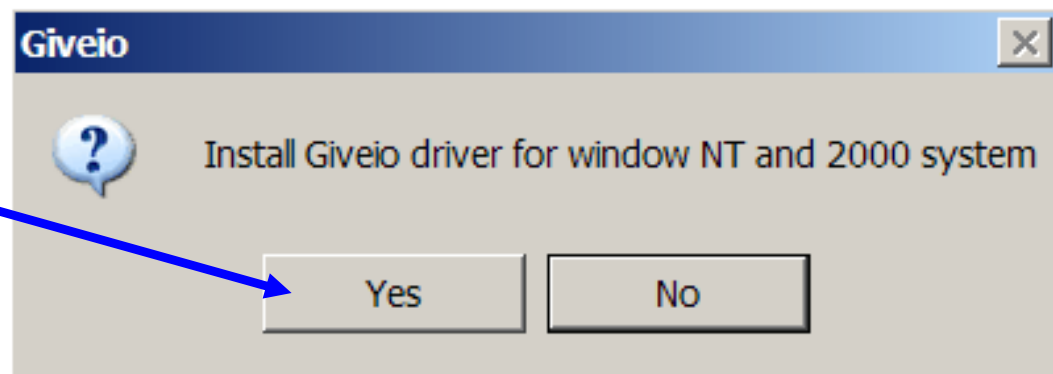
iSensor® The Simple Solution for Sensor Integration

ADIS16135 Demonstration Software Installation

Installation Steps (continued)

11. Click **Yes**

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



iSensor® The Simple Solution for Sensor Integration

ADIS16135BMLZ Installation on ADISEVALUSBZ-135

Installation Steps (continued)

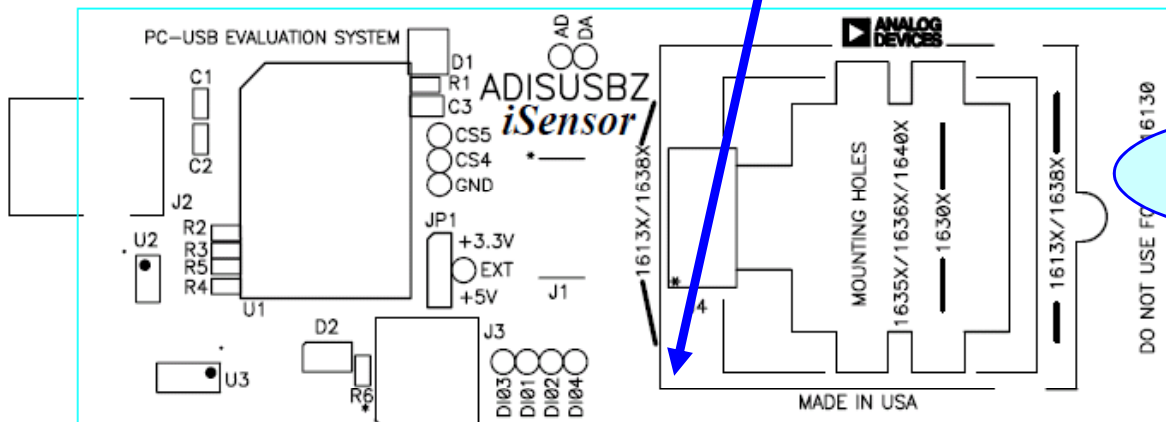
13. Install ADIS16135BMLZ on ADISEVALUSBZ
14. Remove ribbon cable and screws
15. Carefully insert the ADIS16135BMLZ into the J4 connector
16. Secure part with 2x18mm screws

1. Secure with 2x18mm screws

2. Attach 135/PCBZ to J4 Connector

3. Verify JP1 set to +5V

4. Hook USB cable up



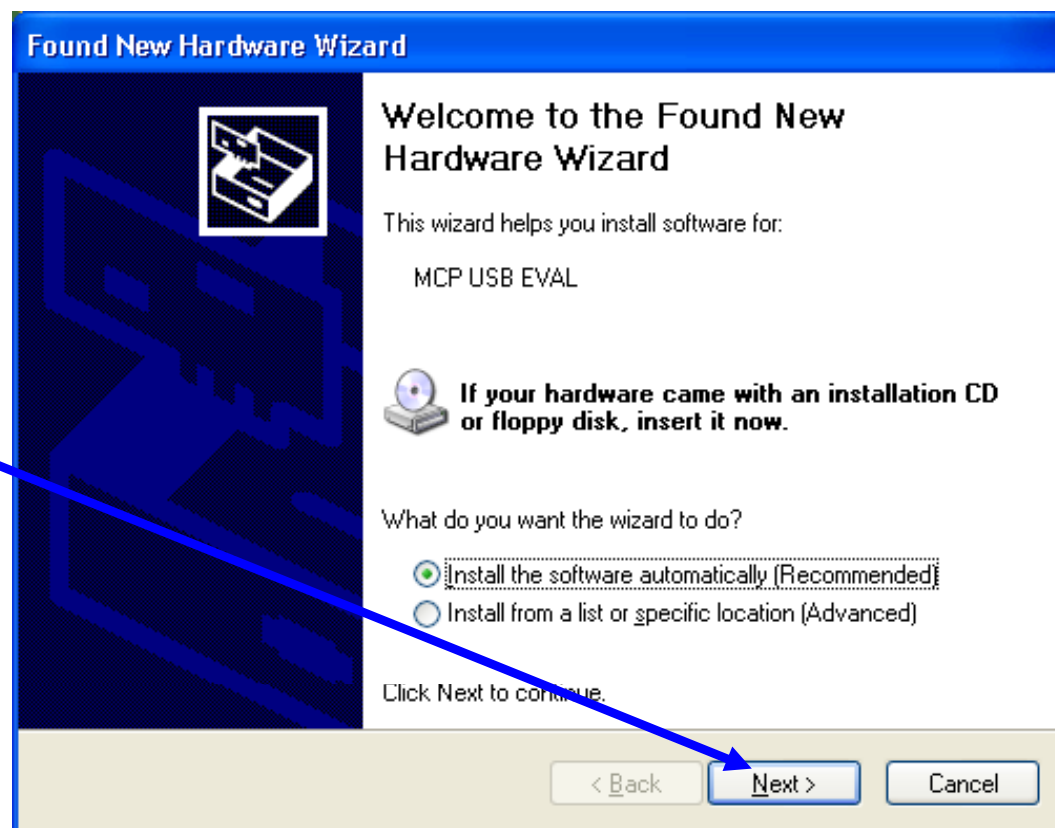
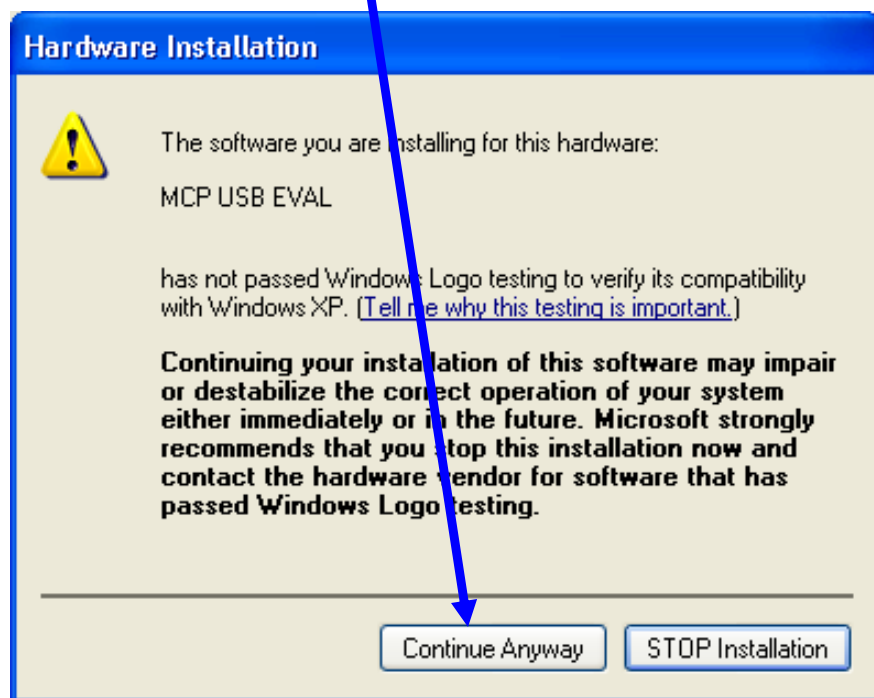
iSensor® The Simple Solution for Sensor Integration

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.

iSensor® The Simple Solution for Sensor Integration

ADIS16135 Demonstration Tips—Verify USB Driver

The screenshot shows the 'Analog Devices - ADIS 16135 Evaluation Software - Rev 1' window. The 'Interface' menu is highlighted. A blue arrow points from a callout bubble to the 'Interface' menu. The callout bubble contains the text: '#1 Click here to access setup'. The 'USB SPI Card Selection' dialog box is open, showing the 'Buffer Select' section. A blue arrow points from a callout bubble to the 'OK' button in the dialog. The callout bubble contains the text: '#2 Click OK to verify'. The 'Output Registers' section shows 'Gyro_Out (d/s)' as -0.233 and 'Temp (degC)' as 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 'Cursor (g)' vs 'Sample Number' with a scale from -300 to 300. The 'Self Test' section shows 'Self-Test' set to 'OFF' and 'Gyro Select' set to 'Gyro Select'. The 'Powerdown' section shows 'Set' as 0 sec and 'Elapsed' as 0.0 sec.

Output Registers

Gyro_Out (d/s) -0.233 ☒ Plot

Temp (degC) 20.357 ☐

Status Register

Read Status

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

USB SPI Card Selection

Buffer Select

	Descriptor0	Rev	Speed
<input checked="" type="radio"/> EzUsb0	MCP SPI	0.1	2.0
<input type="radio"/> EzUsb1			
<input type="radio"/> EzUsb2			
<input type="radio"/> EzUsb3			
<input type="radio"/> None			

Search

Debug

OK

Data Plot Device = 16135

Cursor (g) -293

sample # 215

Plot Scale

Sample Number 0 85 175 260 350

Self Test

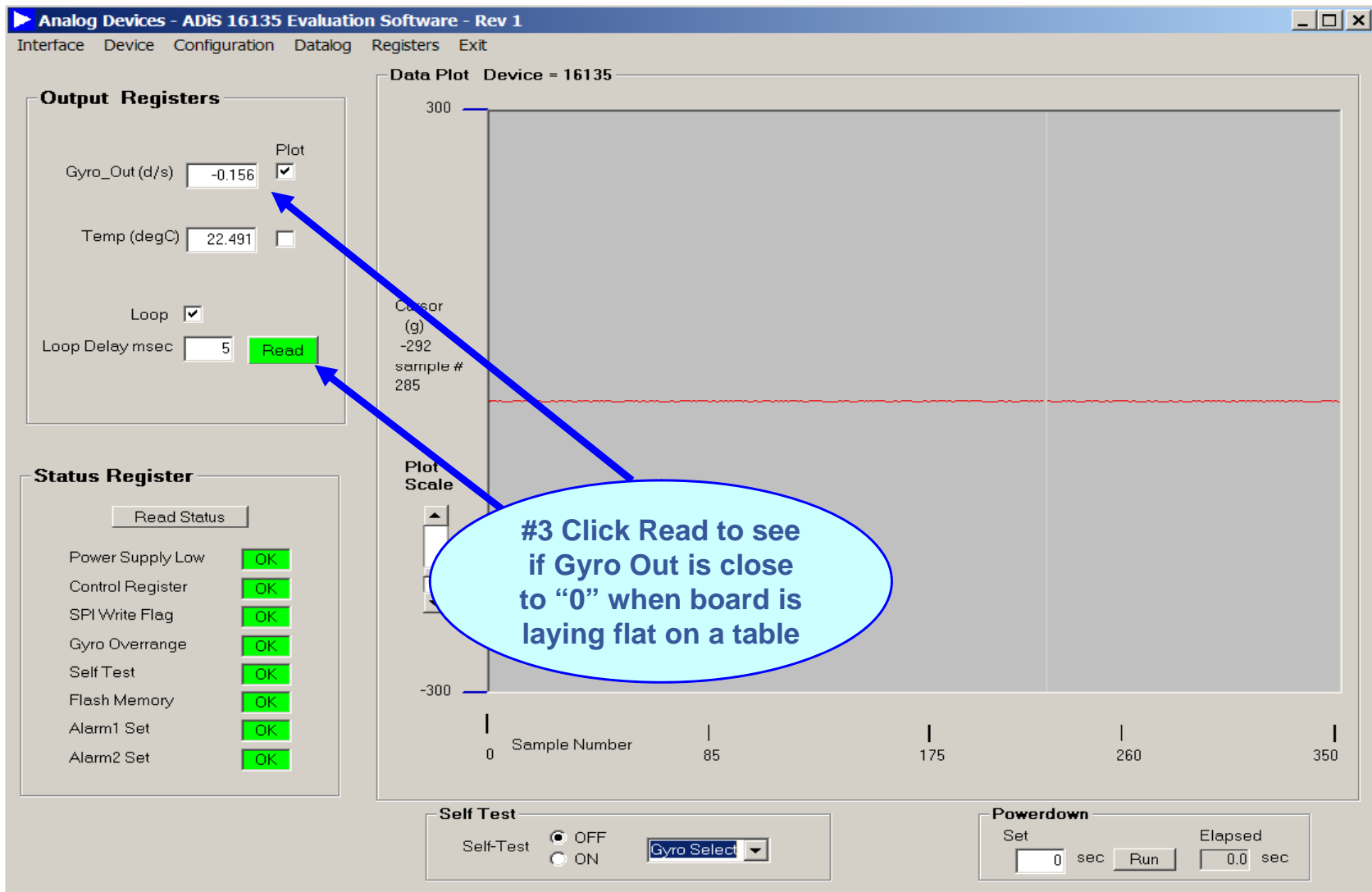
Self-Test ☒ OFF ☐ ON Gyro Select

Powerdown

Set 0 sec Run Elapsed 0.0 sec

iSensor® The Simple Solution for Sensor Integration

ADIS16135 Demonstration Tips— Initial Start up



iSensor® The Simple Solution for Sensor Integration

ADIS16135 Demonstration Tips—AUTO-Null

The screenshot displays the 'Analog Devices - ADIS 16135 Evaluation Software - Rev 1' interface. The 'Configuration' window is active, showing 'Output Registers' and 'Status Register' on the left, and a 'Data Plot' on the right. The 'Calibration' window is also open, showing 'Automatic Features' and 'Manual Calibration Adjustment' sections. A blue arrow points from the 'Configuration' window to a callout bubble that says 'Select Configuration and Calibration'. Another blue arrow points from the 'Run' button in the 'Automatic Features' section to a callout bubble that says 'While the part is flat on the table top click on Run button. When complete, click on Update, then Flash Memory Update.' A third blue arrow points from the 'Flash Memory Register Update' button to the same callout bubble. The 'Status Register' 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' shows a graph of 'Cursor (g)' vs 'Sample #'. The 'Calibration' window includes fields for 'Offset' (18.034 deg/sec), 'Decimate' (0), and 'Register Contents' (58C). The 'Flash Memory Register Update' section has a 'Set' field (0 sec) and an 'Elapsed' field (0.0 sec).

Output Registers

Gyro_Out (d/s) -0.156 ☒ Plot

Temp (degC) 22.491 ☐

Loop ☒ 5

Status Register

Power Supply Low

Control Register

SPI Write Flag

Gyro Overrange

Self Test

Flash Memory

Alarm1 Set

Alarm2 Set

Data Plot Device = 16135

Cursor (g) -292 sample # 285

Plot Scale

Calibration

Automatic Features

Restore Factory Calibration

Auto Null

Manual Calibration Adjustment

Gyroscope

Offset 18.034 deg / sec 58C

Decimate 0 (0-16) 0

Register Contents

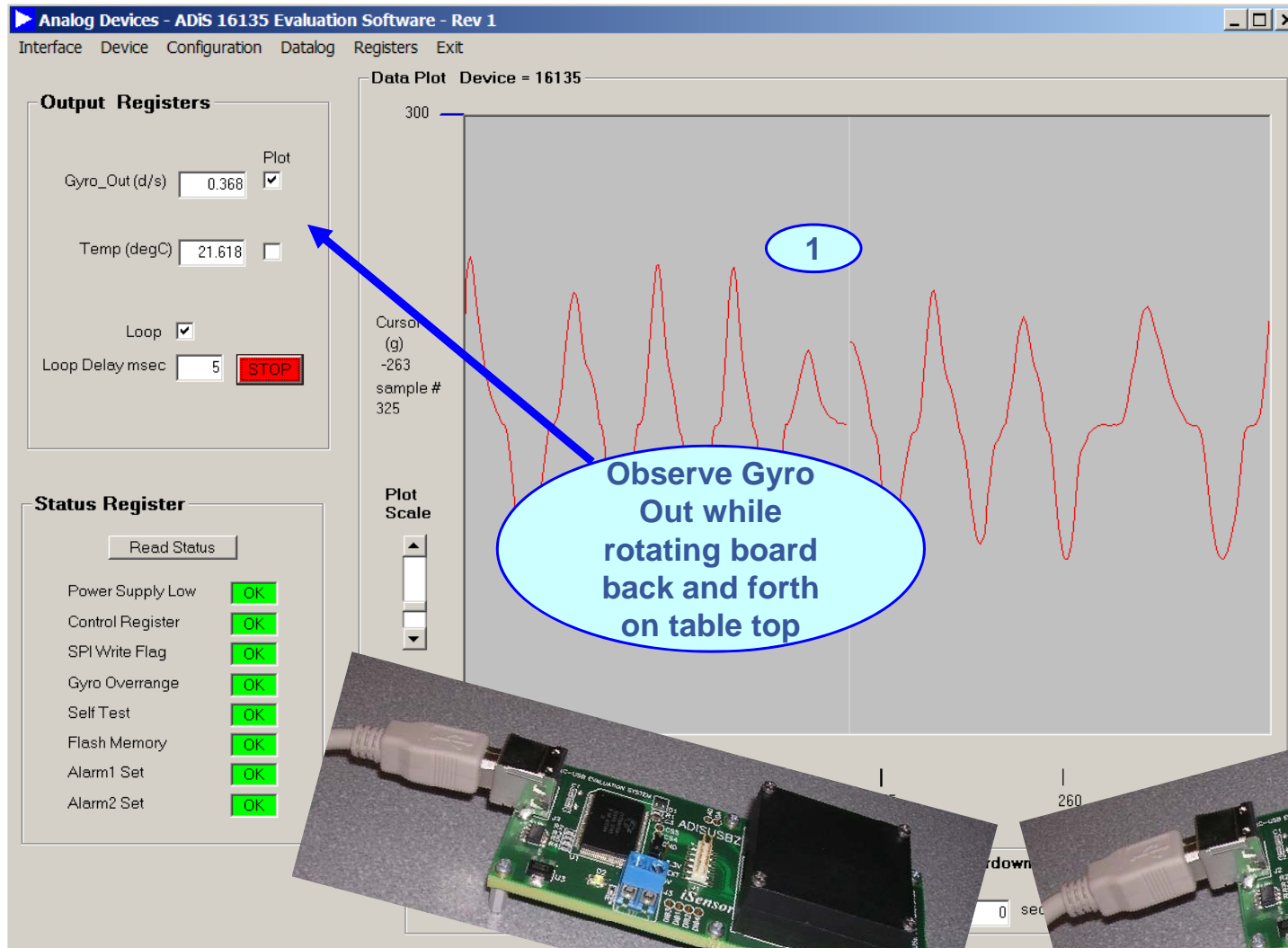
Self Test

Self-Test ☐ OFF ☐ ON

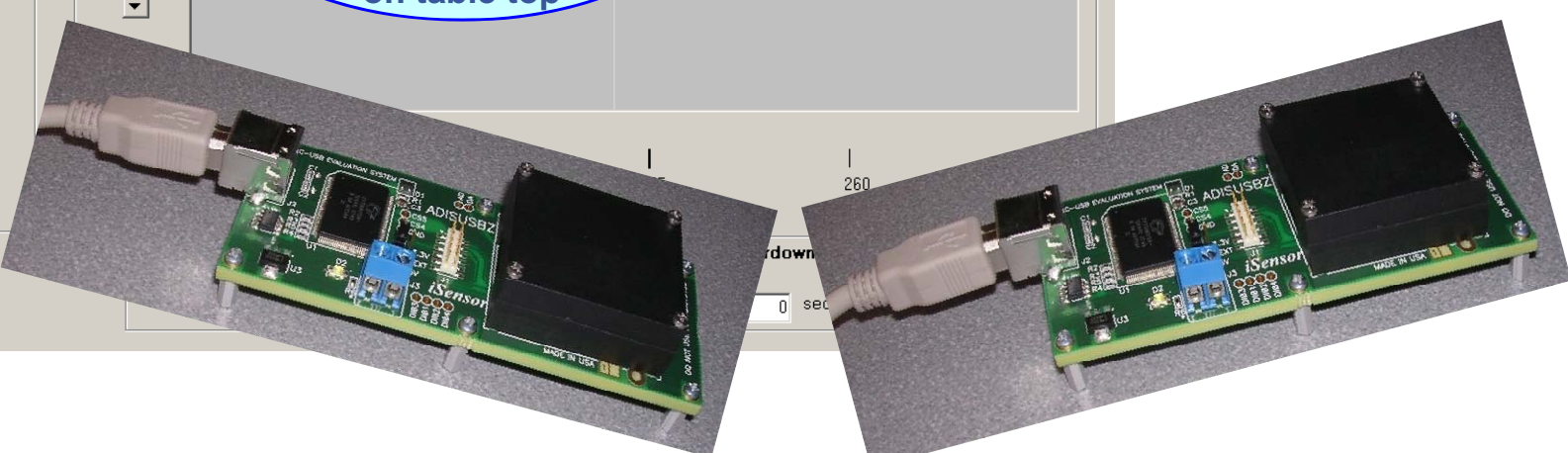
Set 0 sec Elapsed 0.0 sec

iSensor® The Simple Solution for Sensor Integration

ADIS16135 Demonstration Tips—Gyro

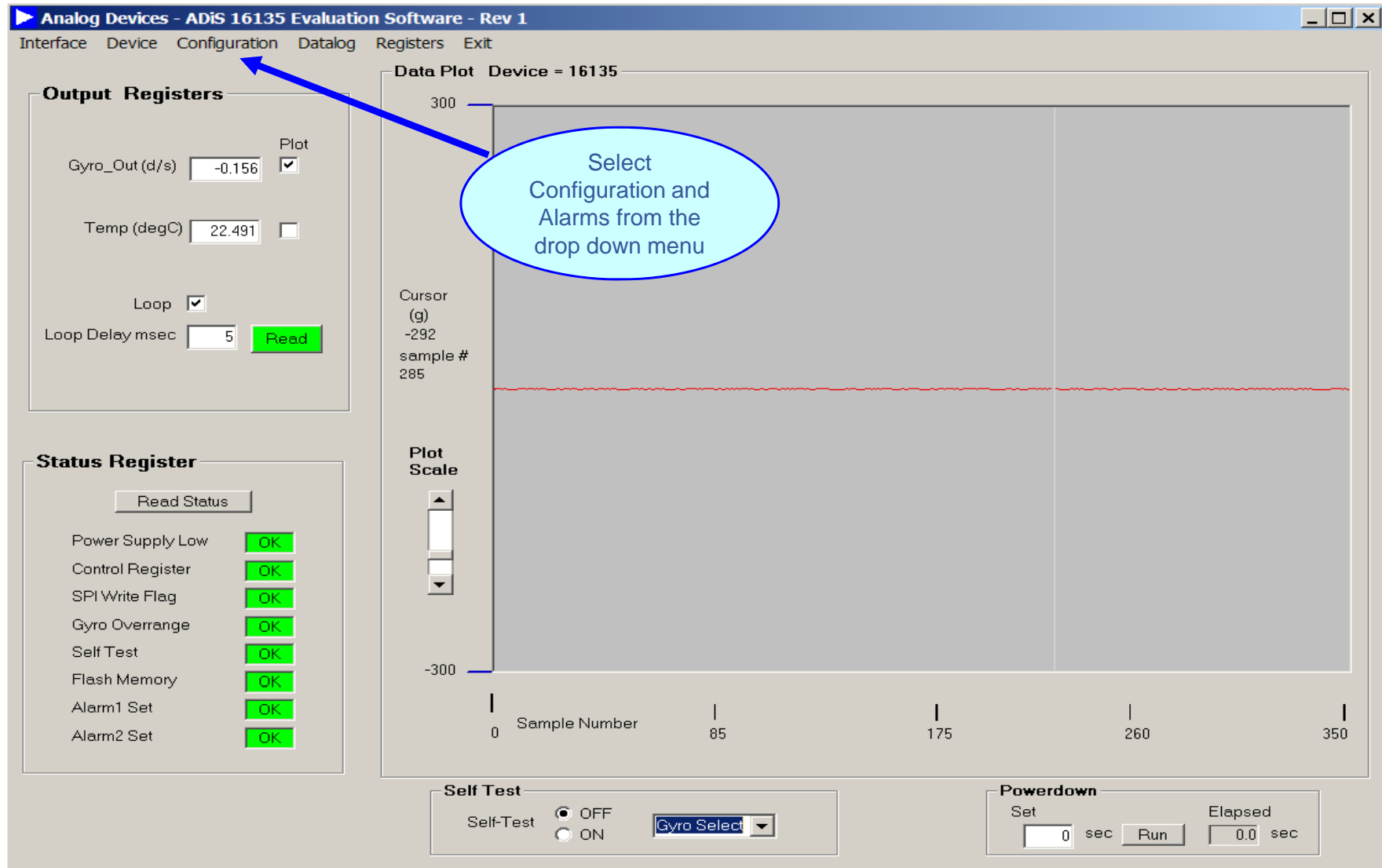


1. Watch the Gyro Out response on screen.



iSensor[®] The Simple Solution for Sensor Integration

ADIS16135 Demonstration Tips—Alarms??



iSensor® The Simple Solution for Sensor Integration

ADIS16135 Demonstration Tips—Alarm Set up

ALARM/DIO LINE CONFIGURATION AND CONTROL

ALARM 1		ALARM 2	
Source	Gyro Out	Source	Disabled
Trigger	50.000 ALM_MAG1 F61	Trigger	0.000 ALM_MAG2 0
Trigger	<input checked="" type="radio"/> Greater than <input type="radio"/> Less than	Trigger	<input type="radio"/> Greater than <input checked="" type="radio"/> Less than
ROC Sample	0 ALM_SMPL1 0	ROC Sample	0 ALM_SMPL2 0
Rate of change	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled	Rate of change	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled

Digital Alarm Indicator

Digital Alarm	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled
Digital Line	<input checked="" type="radio"/> DI/O1 <input type="radio"/> DI/O0
Output Polarity	<input checked="" type="radio"/> High <input type="radio"/> Low
Filtered Select	<input type="radio"/> Filtered <input checked="" type="radio"/> Unfiltered

3 **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 checked="" type="radio"/> Input <input type="radio"/> Output	Set Line 0 Level	<input checked="" type="radio"/> High <input type="radio"/> Low
Digital I/O Line 1	<input checked="" type="radio"/> Input <input type="radio"/> Output	Set Line 1 Level	<input type="radio"/> High <input checked="" type="radio"/> Low

Configure as a data ready line

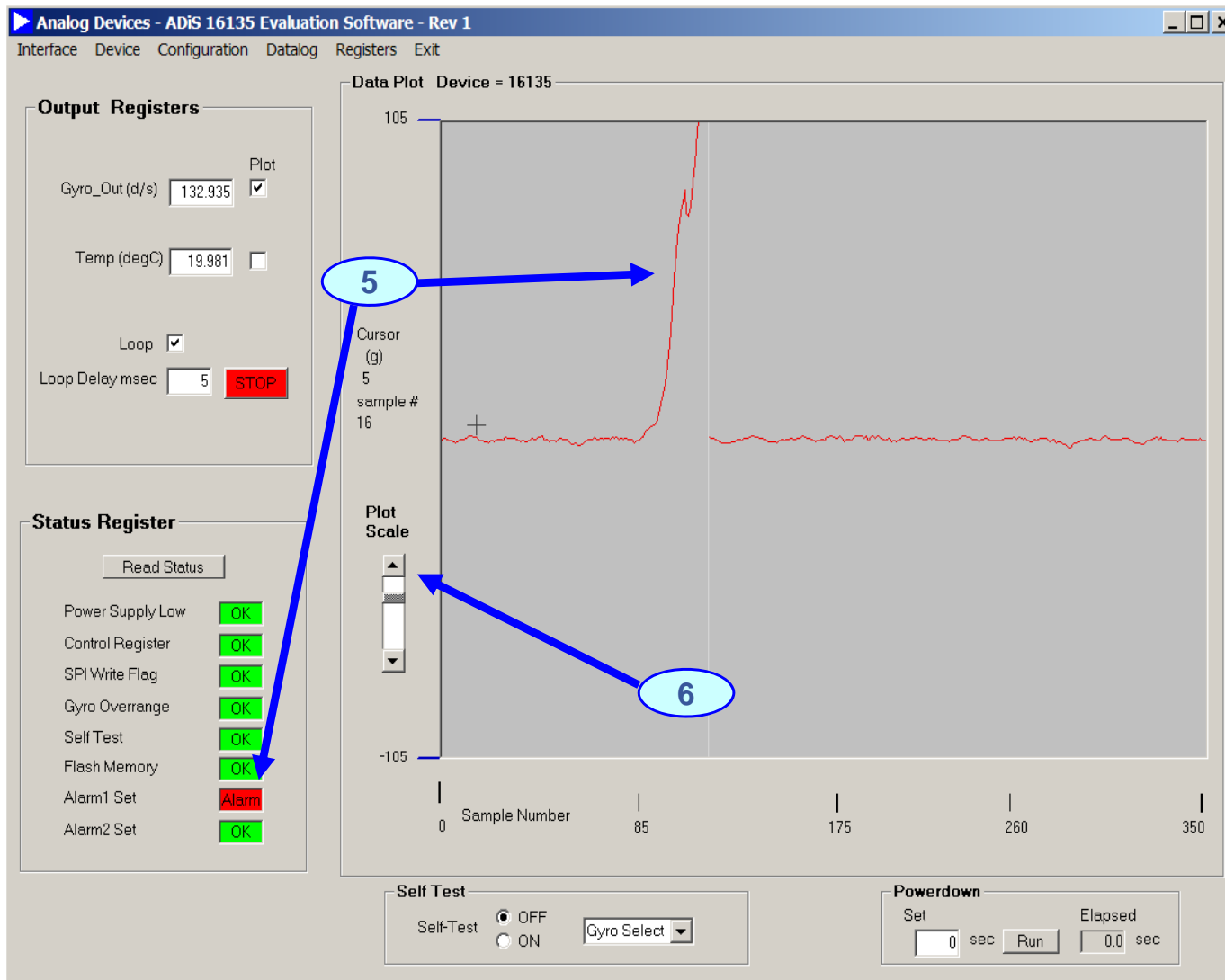
Enable	<input type="radio"/> ON <input checked="" type="radio"/> OFF	Select I/O line	<input type="radio"/> DI/O1 <input checked="" type="radio"/> DI/O0	Output Polarity	<input type="radio"/> High <input checked="" type="radio"/> Low
--------	---	-----------------	--	-----------------	---

4 **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

iSensor® The Simple Solution for Sensor Integration

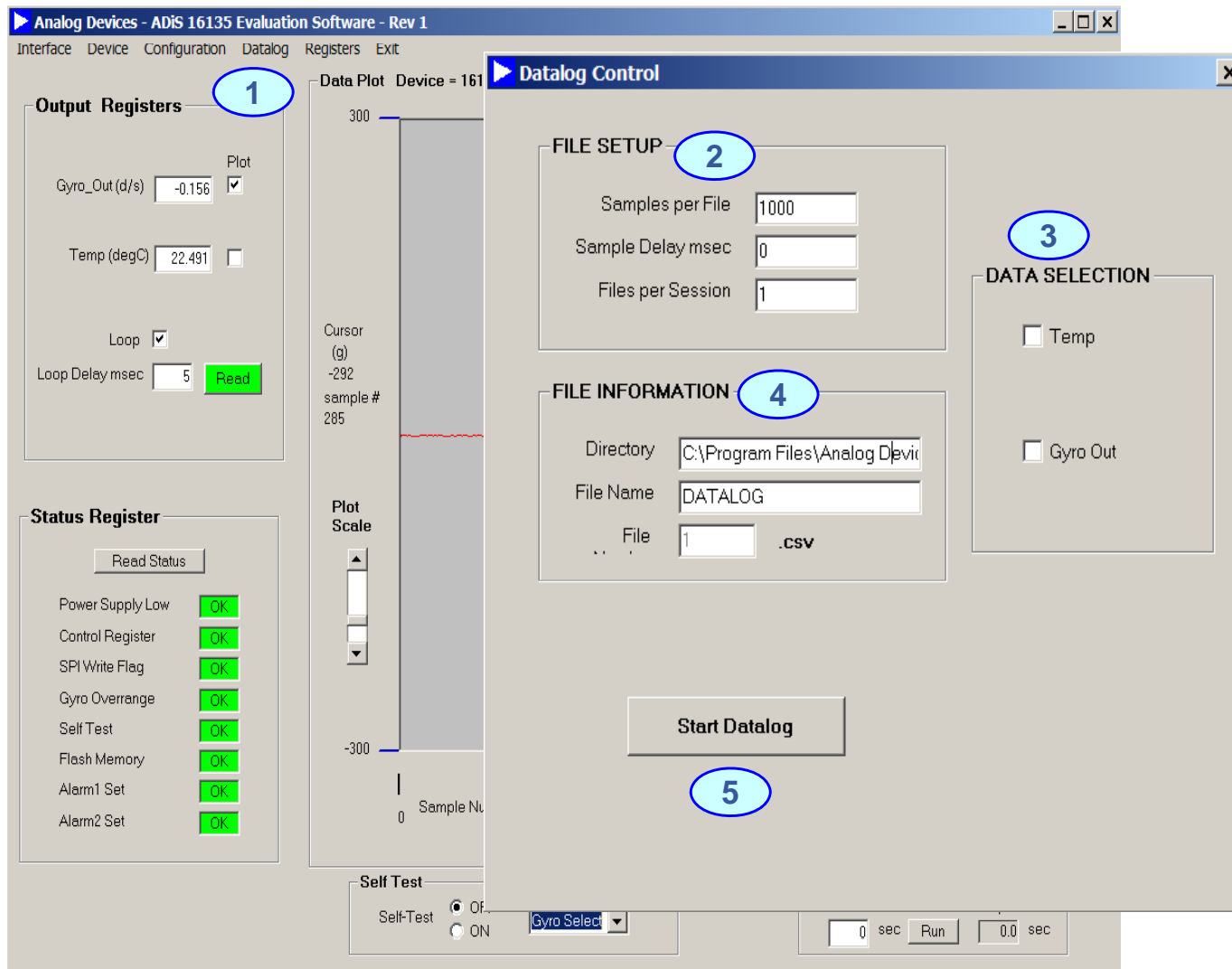
ADIS16135 Demonstration Tips—Alarms Continued



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

iSensor® The Simple Solution for Sensor Integration

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:

- **MARKETING:** Bob Scannell, 1-336-605-4031
- **APPLICATIONS ENGINEER:** Mark Looney, 1-336-605-4139

MORE INFORMATION:

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

Analog Devices, Inc.
7910 Triad Center Drive
Greensboro, NC 27409
EMAIL: mark.looney@analog.com