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ADIS16135 Evaluation Tool Overview

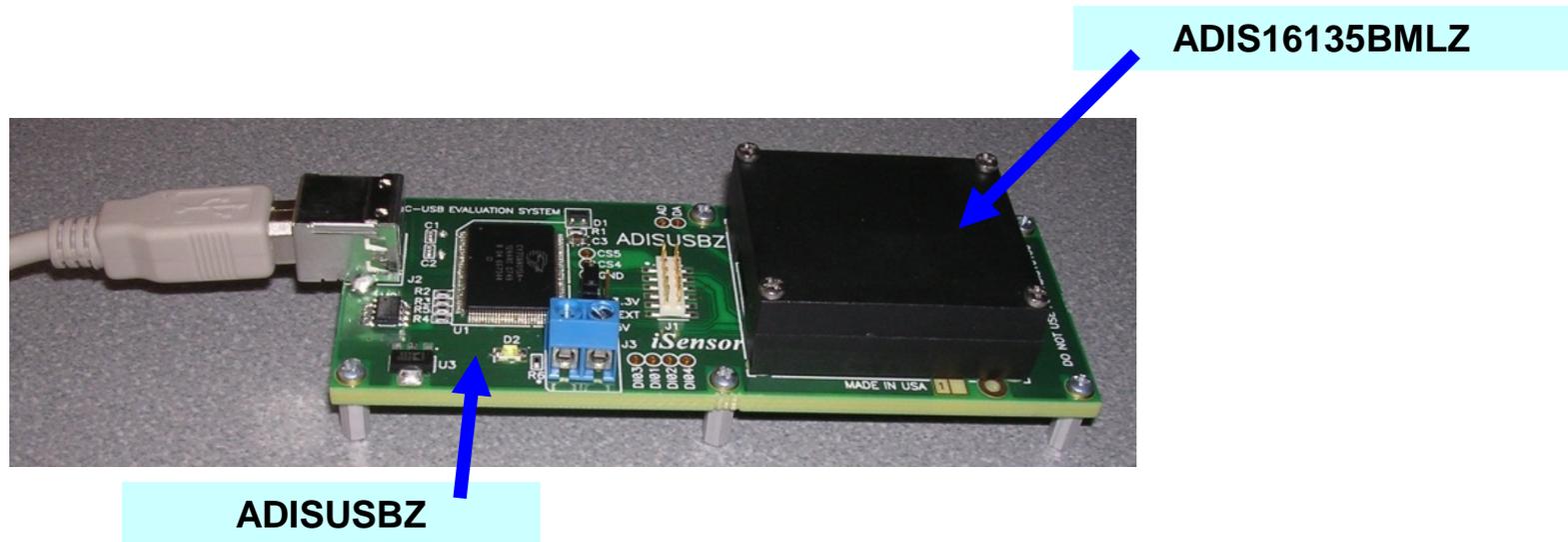


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*i*Sensor[®] Application Engineer
July 2011



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

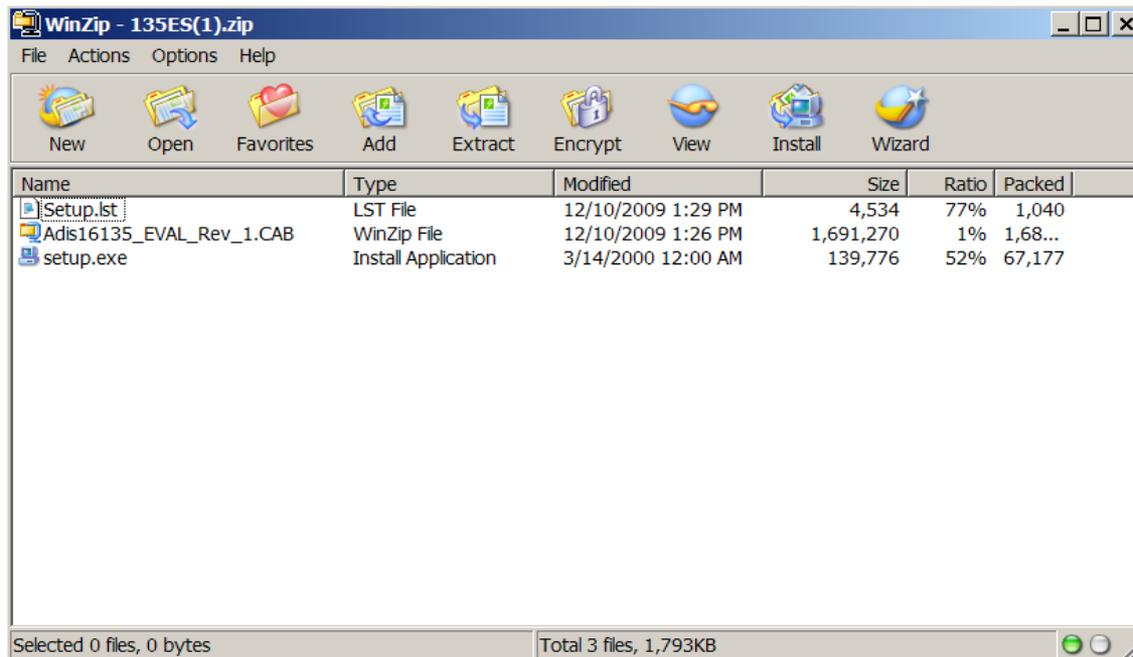


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ADIS16135 Demonstration Software Installation

The ADIS16135 demonstration software can be found at www.analog.com/ADIS16135

1. Click on “Evaluation Software Downloads”
2. Click on 135ES.zip and save it to a temporary directory
3. Open it and double click on setup.exe.

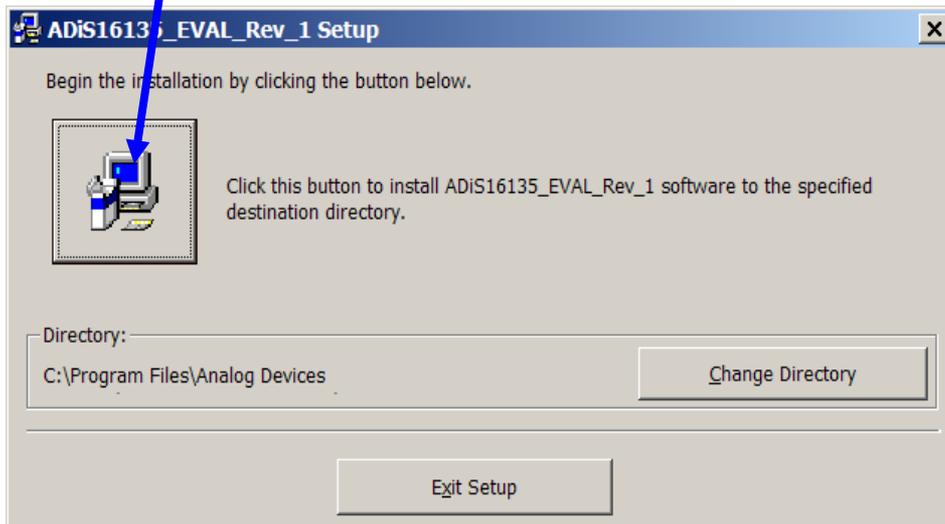
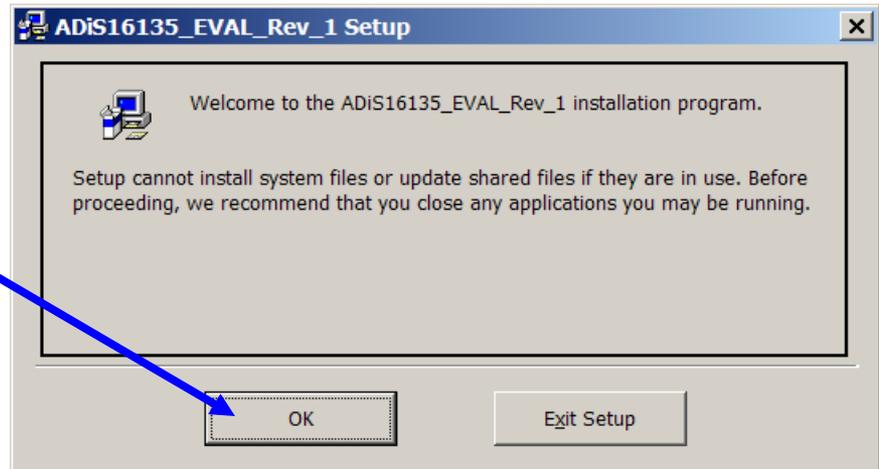


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ADIS16135 Demonstration Software Installation

Installation Steps (continued)

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



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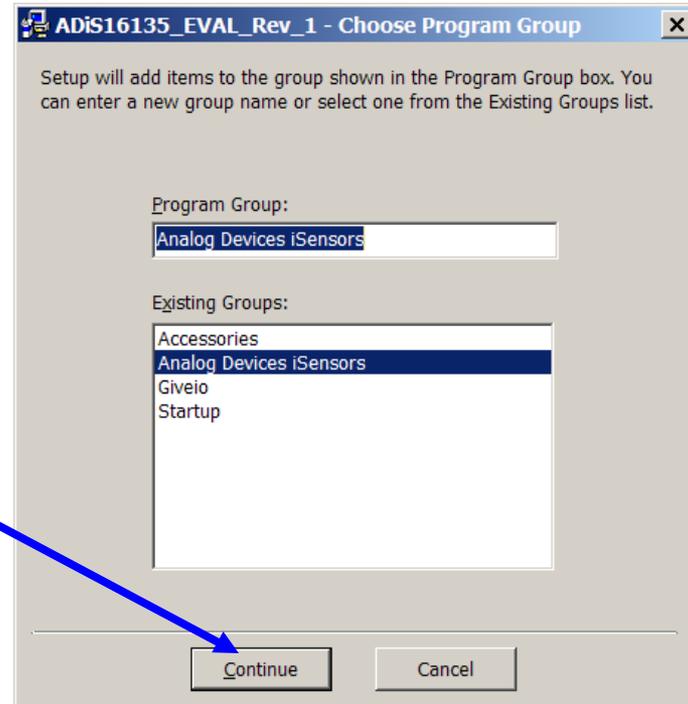
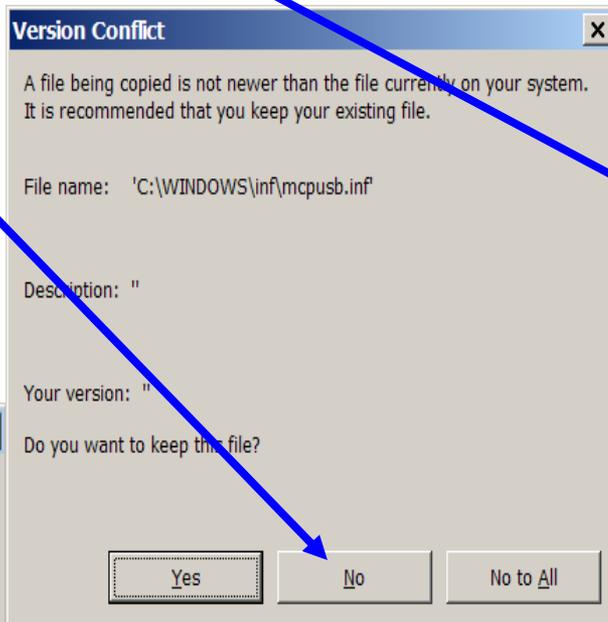
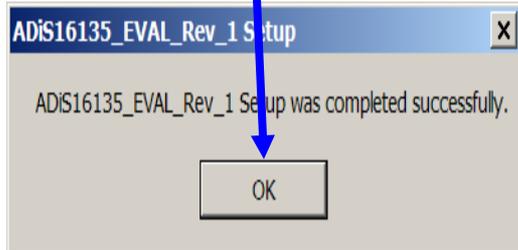
ADIS16135 Demonstration Software Installation

Installation Steps (continued)

6. Click **Continue**

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

8. Click **OK**

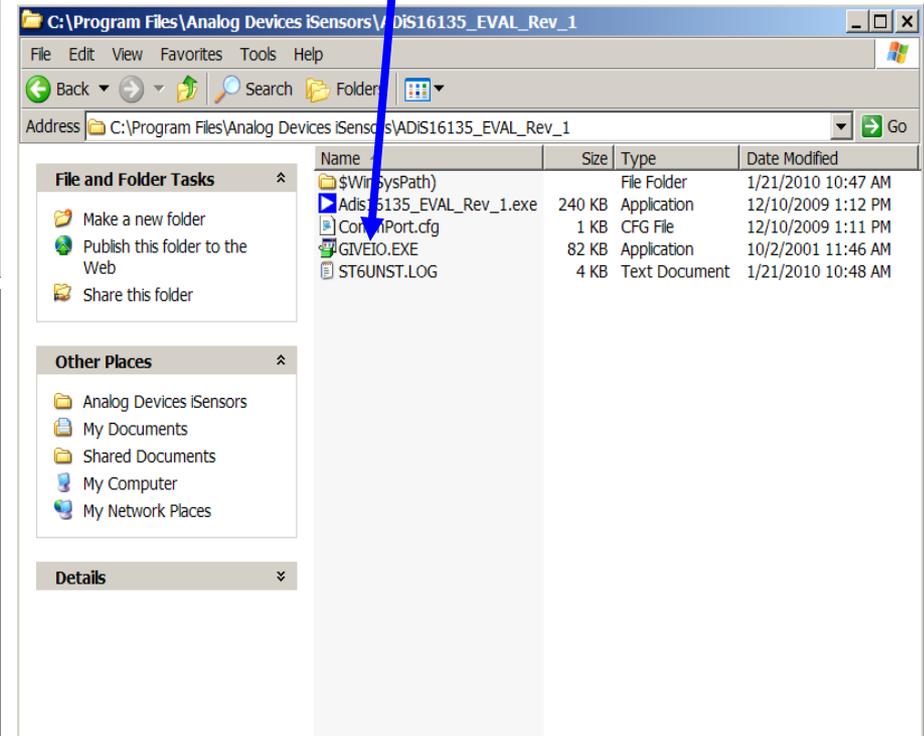
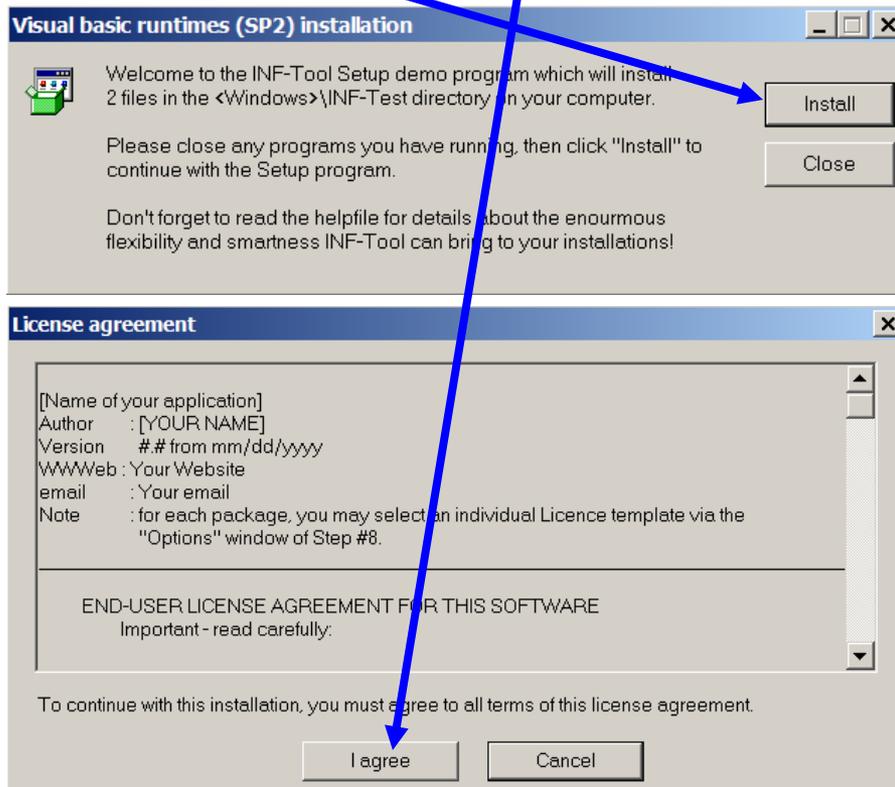


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ADIS16135 Demonstration Software Installation

Installation Steps (continued)

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

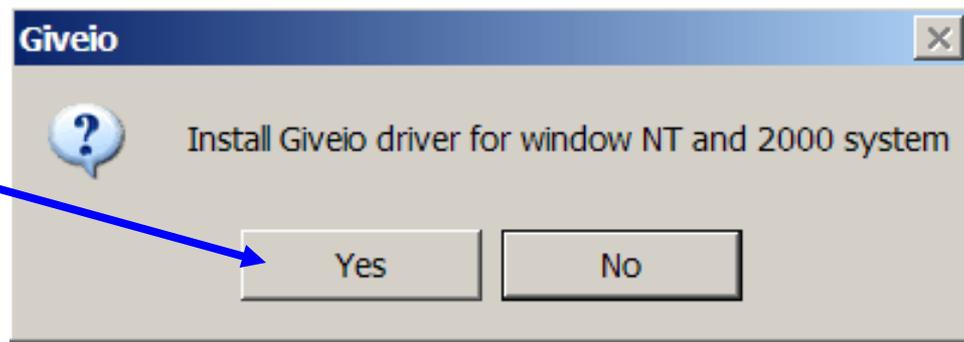


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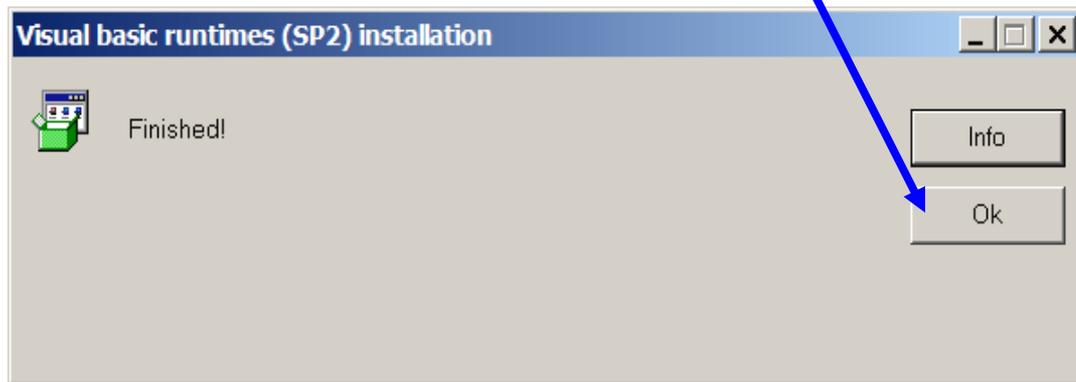
ADIS16135 Demonstration Software Installation

Installation Steps (continued)

11. Click **Yes**



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



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ADIS16135BMLZ Installation on ADISEVALUSBZ-135

Installation Steps (continued)

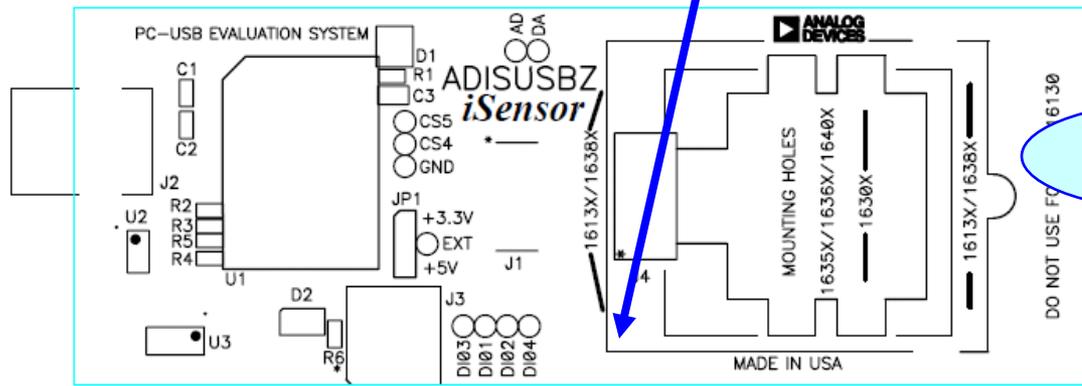
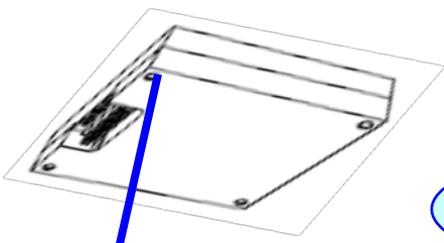
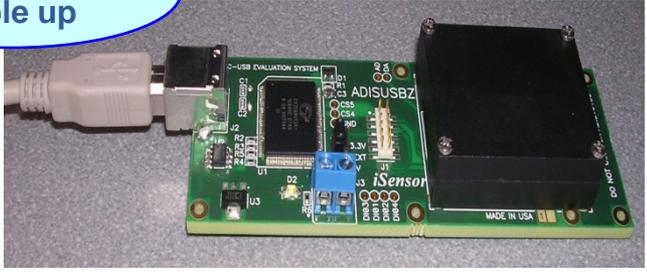
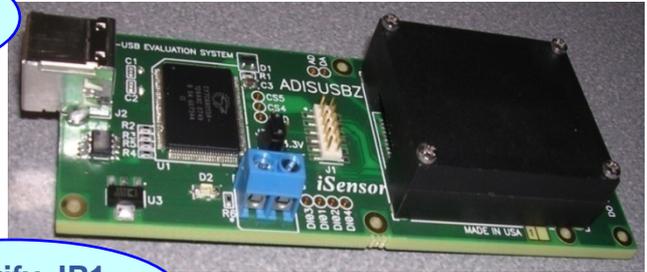
13. Install ADIS16135BMLZ on ADISEVALUSBZ
14. Remove ribbon cable and screws
15. Carefully insert the ADIS16135BMLZ into the J4 connector
16. Secure part with 2x18mm screws

1. Secure with 2x18mm screws

2. Attach 135/PCBZ to J4 Connector

3. Verify JP1 set to +5V

4. Hook USB cable up



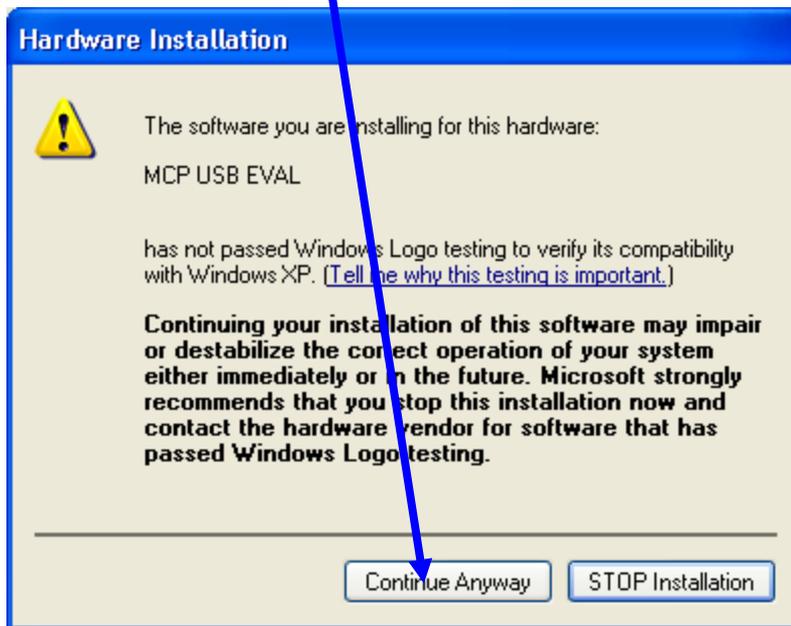
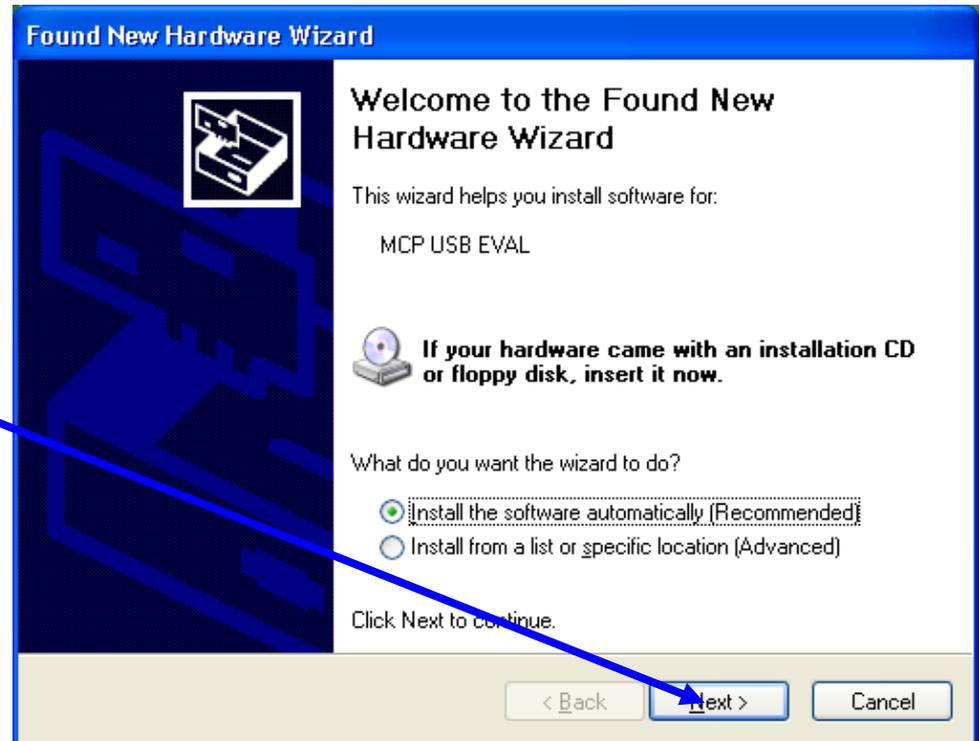
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ADIS16135 Demonstration Software Installation

Installation Steps (continued)

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

18. 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, the devices is ready for test.

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ADIS16135 Demonstration Tips—Verify USB Driver

The screenshot shows the 'Analog Devices - ADIS 16135 Evaluation Software - Rev 1' window. The 'Output Registers' section on the left has a blue arrow pointing to the 'Gyro_Out (d/s)' field, which contains the value '-0.233'. A callout bubble next to it says '#1 Click here to access setup'. The 'Status Register' section below it shows various status indicators (Power Supply Low, Control Register, SPI Write Flag, Gyro Overrange, Self Test, Flash Memory, Alarm1 Set, Alarm2 Set) all with green 'OK' indicators. The 'Data Plot' window in the center shows a graph of 'Cursor (g)' vs 'Sample Number' with a value of -293 at sample 215. A 'USB SPI Card Selection' dialog box is open over the plot, with a blue arrow pointing to the 'OK' button. A callout bubble next to it says '#2 Click OK to verify'. The dialog box has a 'Buffer Select' section with radio buttons for 'EzUsb0' (selected), 'EzUsb1', 'EzUsb2', 'EzUsb3', and 'None'. The 'EzUsb0' option is associated with 'MCP SPI', '0.1' Rev, and '2.0' Speed. There are 'Debug' and 'Search' buttons in the dialog. At the bottom of the software window, there are 'Self Test' and 'Powerdown' sections with various controls.

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ADIS16135 Demonstration Tips— Initial Start up

The screenshot displays the 'Analog Devices - ADIS 16135 Evaluation Software - Rev 1' interface. The 'Output Registers' section shows 'Gyro_Out (d/s)' at -0.156 and 'Temp (degC)' at 22.491. The 'Data Plot' section shows a graph of Gyro Out (g) vs Sample Number, with a red horizontal line at 0g. A blue callout bubble contains the text: '#3 Click Read to see if Gyro Out is close to "0" when board is laying flat on a table'. The 'Status Register' section shows various status indicators (OK). The 'Self Test' section shows 'Self-Test' set to OFF and 'Gyro Select' set to 'Gyro Select'. The 'Powerdown' section shows 'Set' at 0 sec and 'Elapsed' at 0.0 sec.

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ADIS16135 Demonstration Tips—AUTO-Null

The screenshot displays the 'Analog Devices - ADIS 16135 Evaluation Software - Rev 1' interface. The main window is titled 'Data Plot Device = 16135' and shows a plot of acceleration (g) versus sample number. A 'Calibration' window is overlaid on the plot, containing sections for 'Automatic Features' and 'Manual Calibration Adjustment'. The 'Automatic Features' section includes 'Restore Factory Calibration' and 'Auto Null', each with a 'Run' button. The 'Manual Calibration Adjustment' section includes '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. The 'Output Registers' panel on the left shows 'Gyro_Out (d/s)' at -0.156 and 'Temp (degC)' at 22.491. The 'Status Register' panel shows various status indicators, all marked 'OK'. The 'Self Test' panel at the bottom shows 'Self-Test' set to 'OFF' and 'Gyro Select' set to 'Gyro Select'. A blue callout bubble points to the 'Configuration' menu item, and another blue callout bubble points to the 'Run' button for 'Auto Null'. A third blue callout bubble points to the 'Flash Memory Register Update' button.

Output Registers

Gyro_Out (d/s) Plot

Temp (degC)

Loop

Read

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

Calibration

Automatic Features

Restore Factory Calibration

Auto Null

Manual Calibration Adjustment

Gyroscope

Offset deg / sec 58C

Decimate (0-16) 0

Self Test

Self-Test OFF ON

set sec elapsed sec

Select Configuration and Calibration

While the part is flat on the table top click on Run button. When complete, click on Update, then Flash Memory Update.

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ADIS16135 Demonstration Tips— Gyro

1. Watch the Gyro Out response on screen.

The screenshot shows the 'Analog Devices - ADIS 16135 Evaluation Software - Rev 1' interface. On the left, the 'Output Registers' panel has 'Gyro_Out (d/s)' set to 0.368 and the 'Plot' checkbox checked. Below it, 'Temp (degC)' is 21.618 with its plot checkbox unchecked. The 'Status Register' panel shows all status indicators (Power Supply Low, Control Register, SPI Write Flag, Gyro Overrange, Self Test, Flash Memory, Alarm1 Set, Alarm2 Set) as 'OK'. The 'Data Plot' window shows a red waveform for Gyro Out (d/s) with a peak value of 300 and a trough of -300. A blue oval with the number '1' is placed over the waveform. A blue arrow points from this oval to the 'Plot' checkbox in the 'Output Registers' panel. A larger blue oval contains the text 'Observe Gyro Out while rotating board back and forth on table top'. At the bottom, the 'Self Test' panel has 'Self-Test' set to 'OFF' and 'Gyro Select' selected. The 'Powerdown' panel shows 'Set' at 0 sec and 'Elapsed' at 0.0 sec.



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ADIS16135 Demonstration Tips— Alarms??

Output Registers

Gyro_Out (d/s) Plot

Temp (degC)

Loop

Loop Delay msec

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

Sample Number 0 85 175 260 350

Self Test

Self-Test OFF ON

Powerdown

Set sec Elapsed sec

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ADIS16135 Demonstration Tips— Alarm Set up

ALARM/DIO LINE CONFIGURATION AND CONTROL

ALARM 1

Source: Gyro Out

Trigger: 50.000 ALM_MAG1: F61

Trigger: **2** Greater than Less than

ROC Sample: 0 ALM_SMPL1: 0

Rate of change: Enabled Disabled

ALARM 2

Source: Disabled

Trigger: 0.000 ALM_MAG2: 0

Trigger: Greater than Less than

ROC Sample: 0 ALM_SMPL2: 0

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

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 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

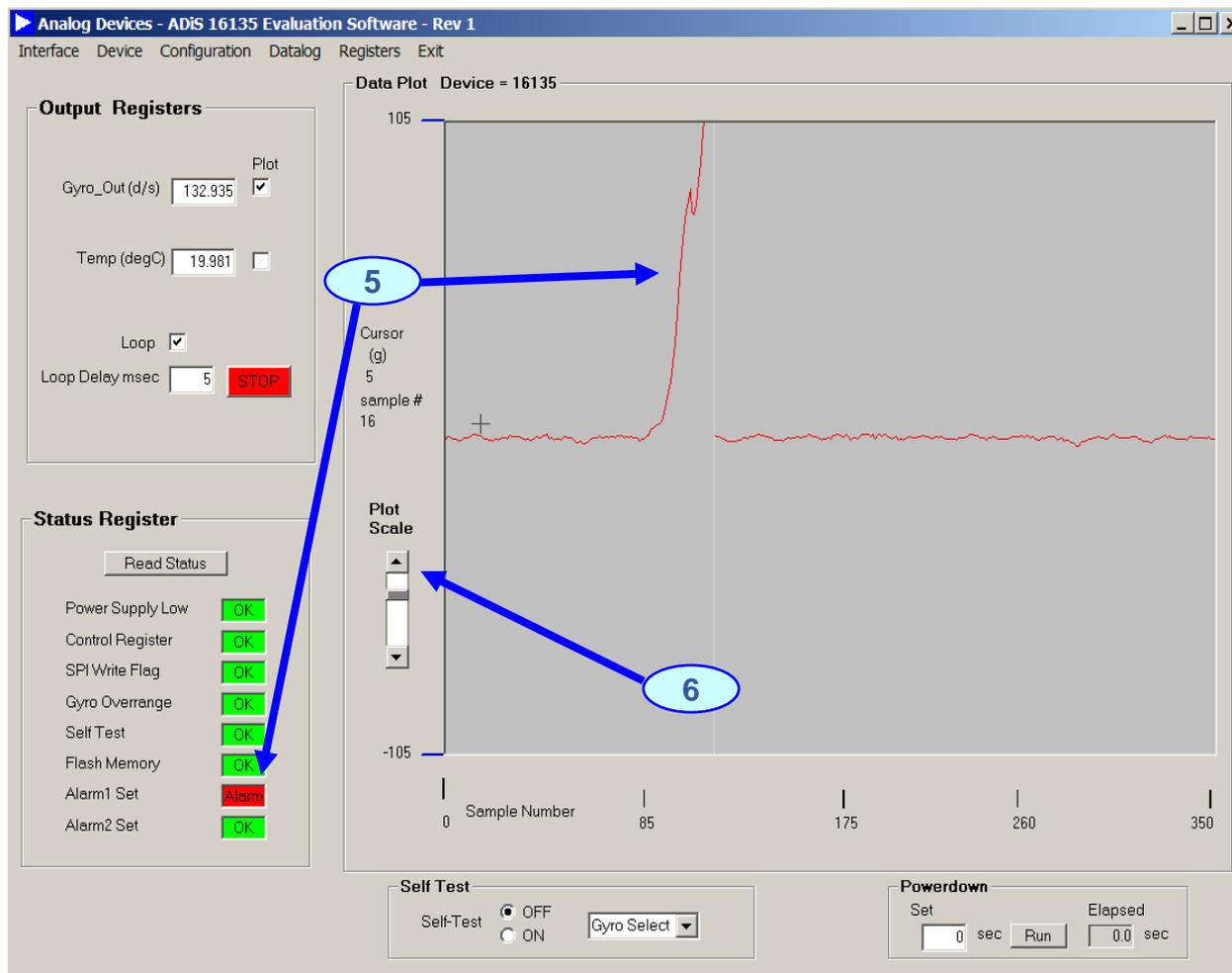
Output Polarity: High Low

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

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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

The screenshot shows the 'Analog Devices - ADIS 16135 Evaluation Software - Rev 1' interface. A 'Datalog Control' dialog box is open, overlaid on the main software window. The dialog box contains the following sections:

- FILE SETUP (2):** Samples per File (1000), Sample Delay msec (0), Files per Session (1).
- FILE INFORMATION (4):** Directory (C:\Program Files\Analog Devices), File Name (DATALOG), File (1) .csv.
- DATA SELECTION (3):** Temp (unchecked), Gyro Out (unchecked).
- Start Datalog (5):** A button at the bottom of the dialog.

The main software window shows the 'Output Registers' section (1) with Gyro_Out (d/s) at -0.156 and Temp (degC) at 22.491. The 'Status Register' shows all status indicators as 'OK'. The 'Data Plot' shows a graph of Gyro (g) vs Sample Number, with a cursor at -292 sample # 285. The 'Self Test' section shows 'Self-Test' set to OFF and 'Gyro Select' set to 'Gyro'.

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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