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## ADIS16240 Evaluation Tool Overview



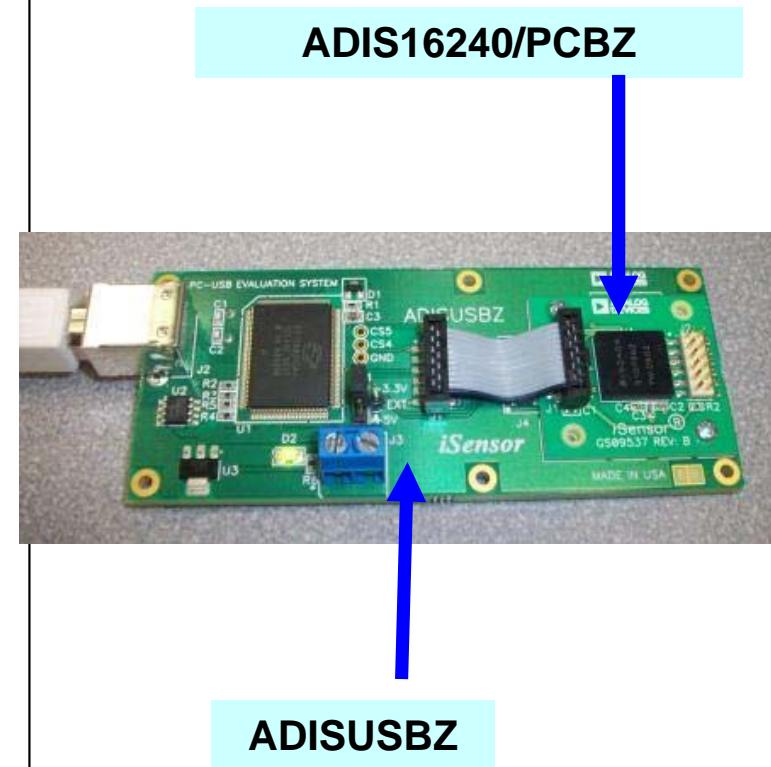
Mark Looney  
*iSensor*<sup>®</sup> Application Engineer  
September 7, 2009



# iSensor<sup>®</sup> *The Simple Solution for Sensor Integration*

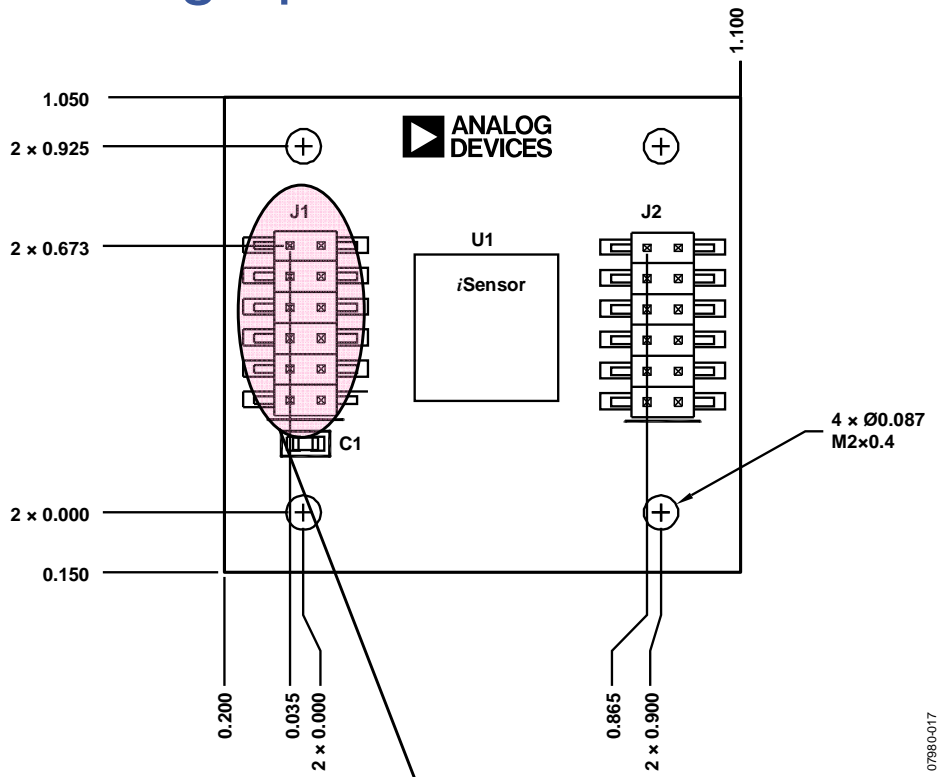
## Evaluation Tool Overview

1. **Evaluation/Interface Board (ADIS16240/PCBZ) for simpler connection to an existing processor/system PCB.**
  - ◆ These boards provide a simple connector translation that enables user to bypass BGA soldering. The 2mm pitch connectors are easy to interface with 1mm ribbon cable or solder to.
  - ◆ Part number for ordering: **ADIS16240/PCBZ**
2. **Evaluation System (ADISUSBZ) for those that prefer a simple PC interface**
  - ◆ This system provides a simple USB interface, along with a simple Graphical User Interface (GUI) package, for evaluating most of the ADIS16240 functions and performance.
  - ◆ Supports approximately 150-200SPS sample rate.
  - ◆ This system is not a development kit that comes with PC development tools, source code and software support.
  - ◆ Part number for ordering: **ADISUSBZ**

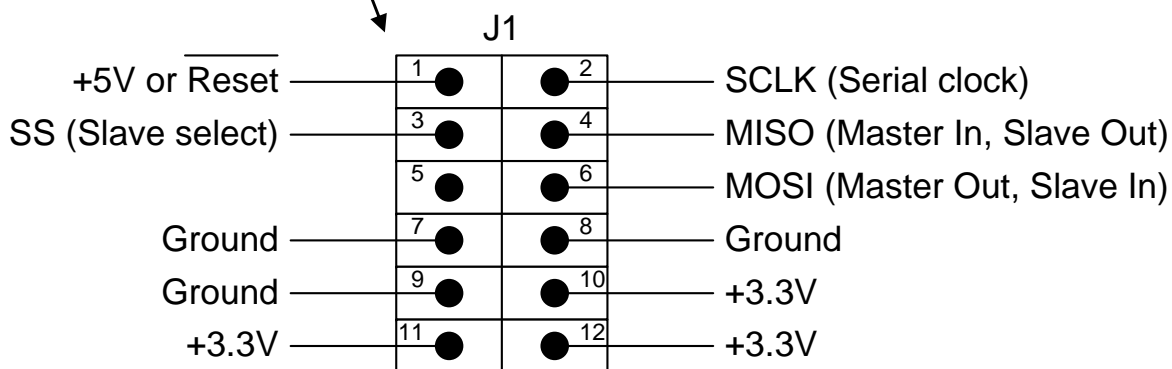


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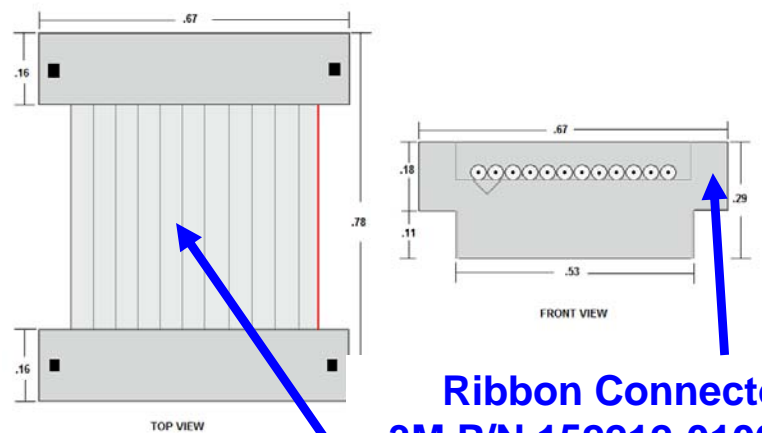
## Hooking up to the ADIS16240/PCBZ



### Master Processor Connection



### J1 Ribbon Cable Interface Parts



**Ribbon Connector**  
3M P/N 152212-0100-GB

**Ribbon Cable**  
3M P/N 3625/12 (100m)

**ADISUSBZ uses the following cable assembly from Samtec:**

**ASP-140062-01**

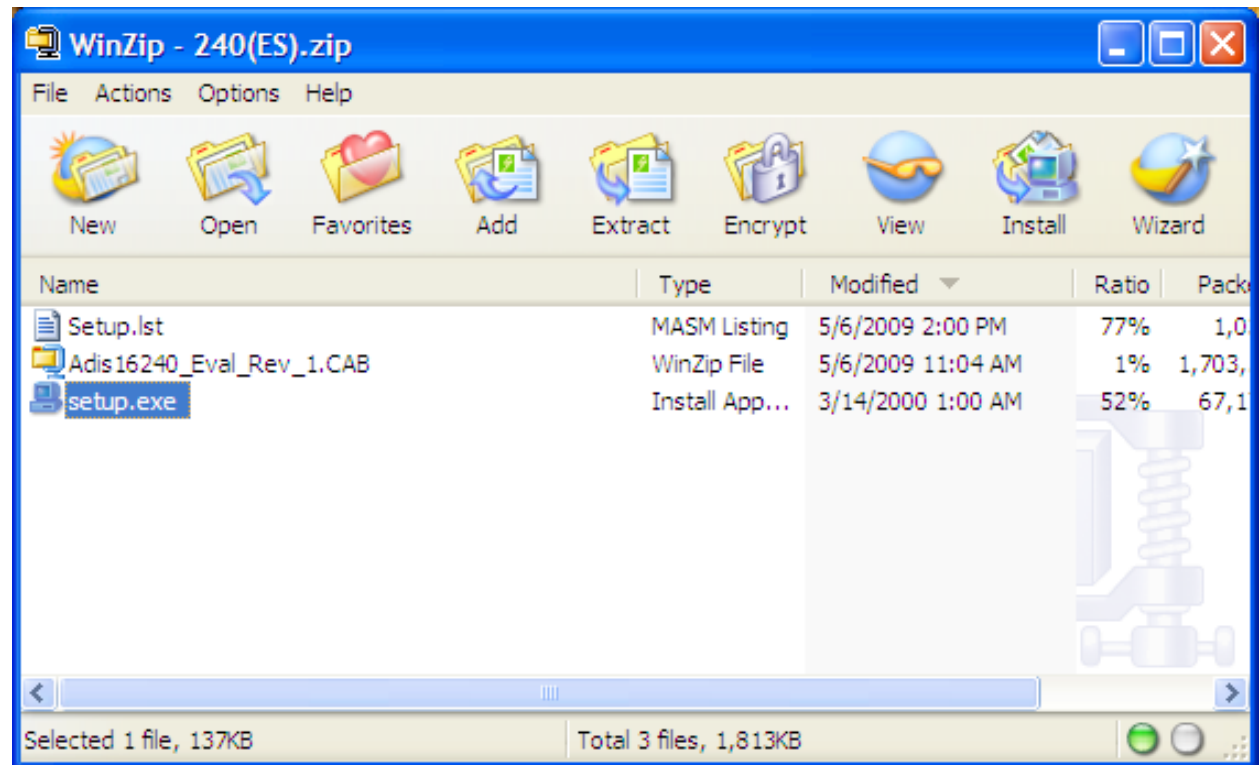
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## ADIS16240 Demonstration Software Installation

The ADIS16240 demonstration software can be found at

[www.analog.com/isensor-evaluation](http://www.analog.com/isensor-evaluation)

1. Click on “Evaluation Software Downloads”
2. Click on 240ES.zip and save it to a temporary directory
3. Open it and double click on setup.exe.

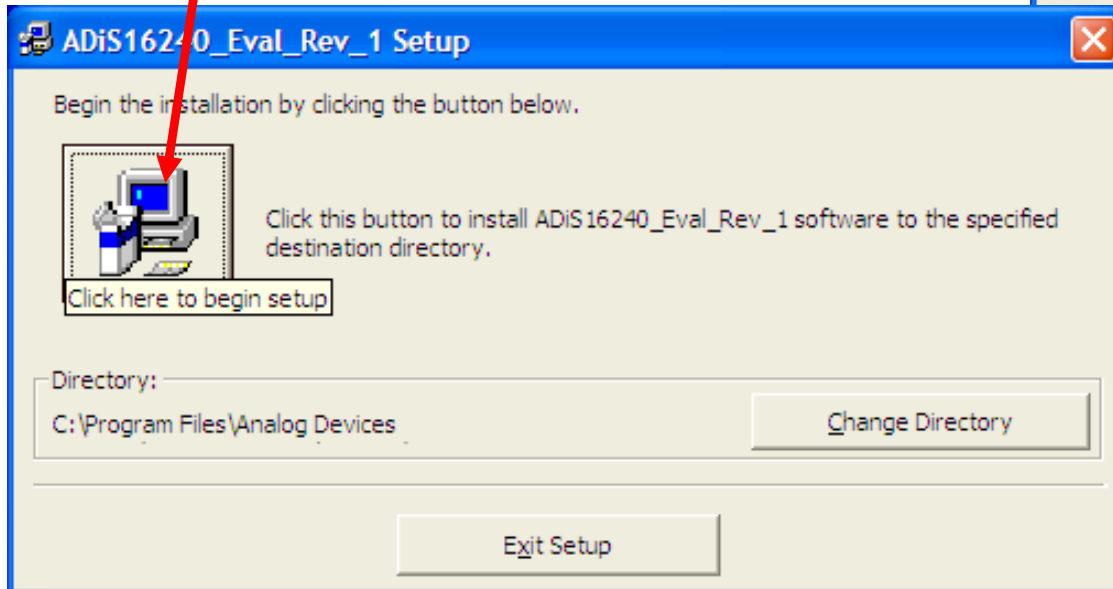
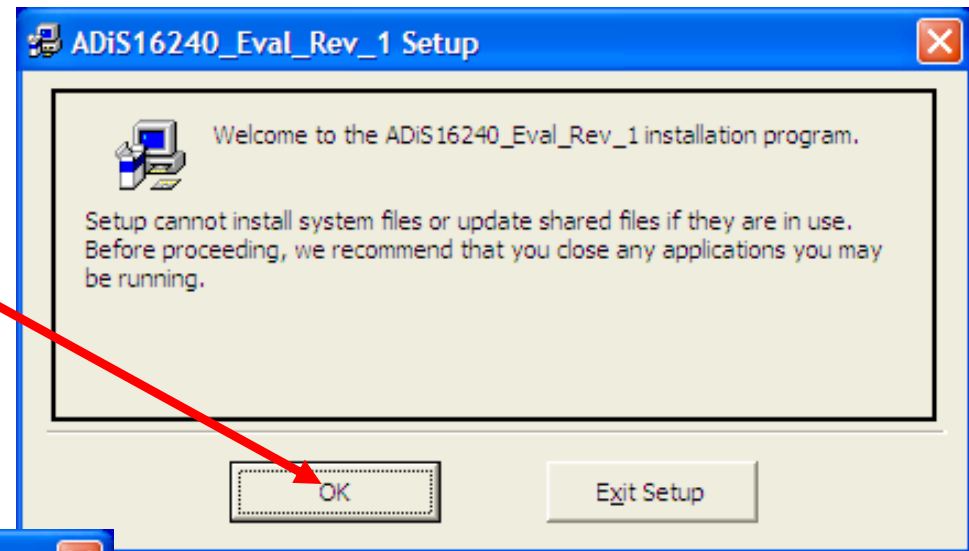


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## ADIS16240 Demonstration Software Installation

### Installation Steps (continued)

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



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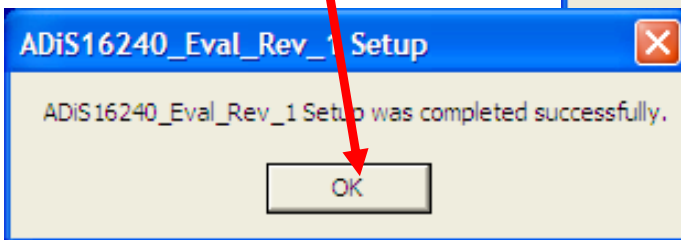
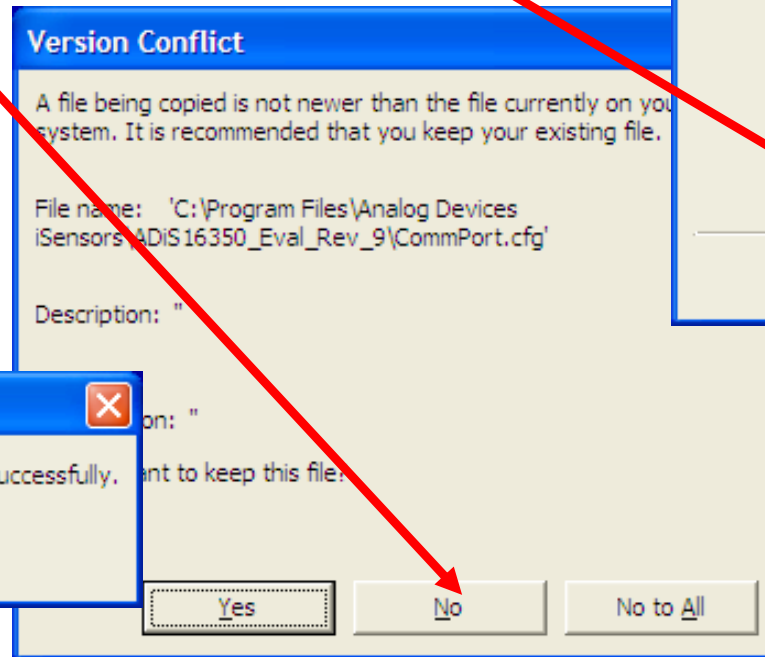
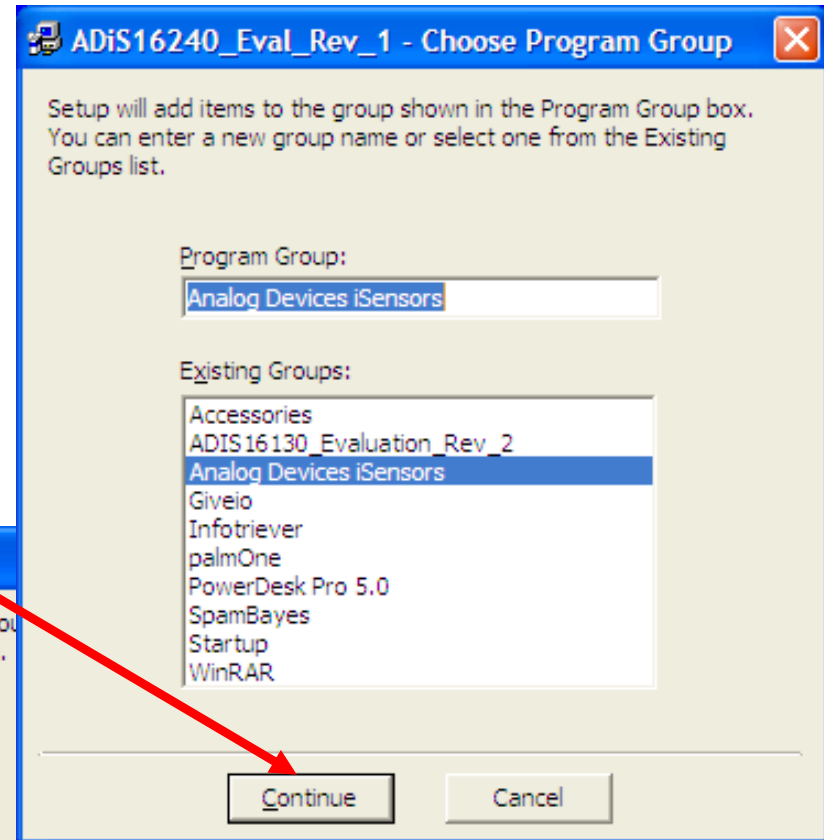
## ADIS16240 Demonstration Software Installation

### Installation Steps (continued)

6. Click Continue

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

8. Click OK



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## ADIS16240 Demonstration Software Installation

### Installation Steps (continued)

9. Open the newly created directory and double-click onto “giveio.exe”

10. Click “Install,” then “I Agree”

The image displays three overlapping windows from a Windows XP environment. The top-left window is titled "Visual basic runtimes (SP2) installation" and contains a welcome message and an "Install" button. The bottom-left window is titled "License agreement" and contains a form for application details and an "I agree" button. The right window is a Windows Explorer window showing the directory "C:\Program Files\Analog Devices iSensors\ADIS16240\_Eval\_Rev\_1" with a list of files including "GIVEIO.EXE". Red arrows point from the text instructions to the "Install" button, the "I agree" button, and the "GIVEIO.EXE" file.

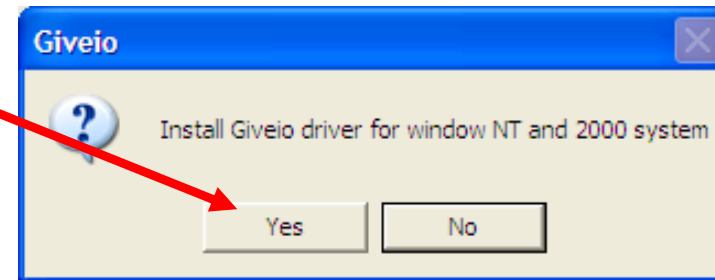
Name	Size	Type	Date Modified
Adis16240_Eval_Rev_1.exe	316 KB	Application	5/6/2009 8:38 AM
Comport.cfg	1 KB	Microsoft Office Ou...	5/6/2009 10:53 AM
GIVEIO.EXE	82 KB	Application	10/2/2001 12:46 PM
ST6UNST.000	4 KB	000 File	5/6/2009 3:07 PM
ST6UNST.001	4 KB	001 File	5/6/2009 3:10 PM
ST6UNST.LOG	4 KB	Text Document	5/6/2009 2:47 PM

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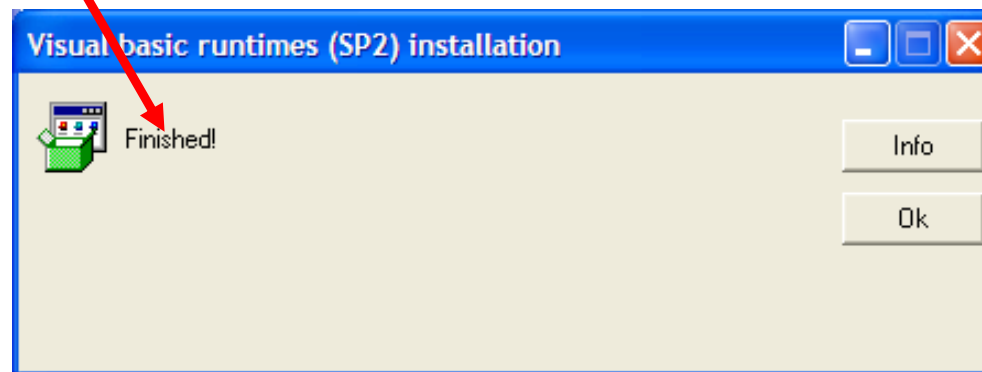
## ADIS16240 Demonstration Software Installation

### Installation Steps (continued)

11. Click “yes”



12. Giveio Driver complete





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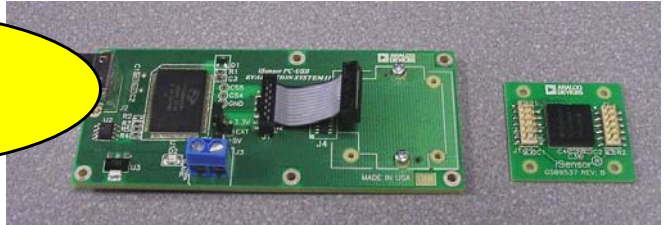
## ADIS16240 Installation on ADISUSBZ

### Installation Steps (continued)

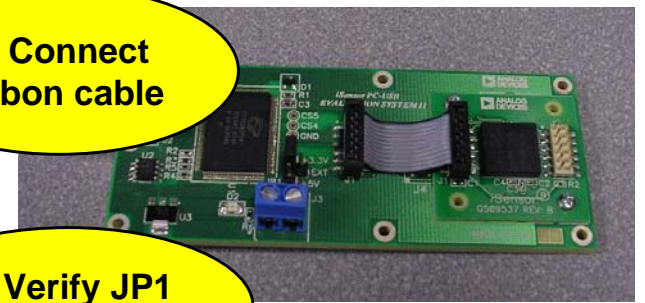
13. Install 240/PCBZ on ADISUSBZ

14. Plug in USB cable

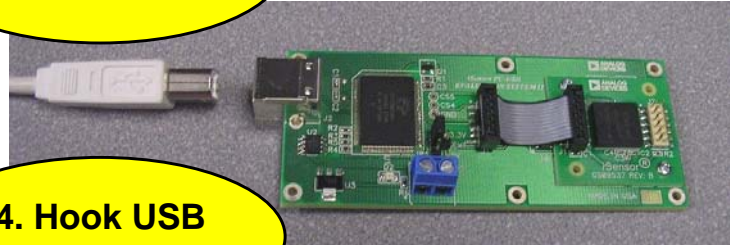
1. Secure 240/PCBZ w/ 2mm screws



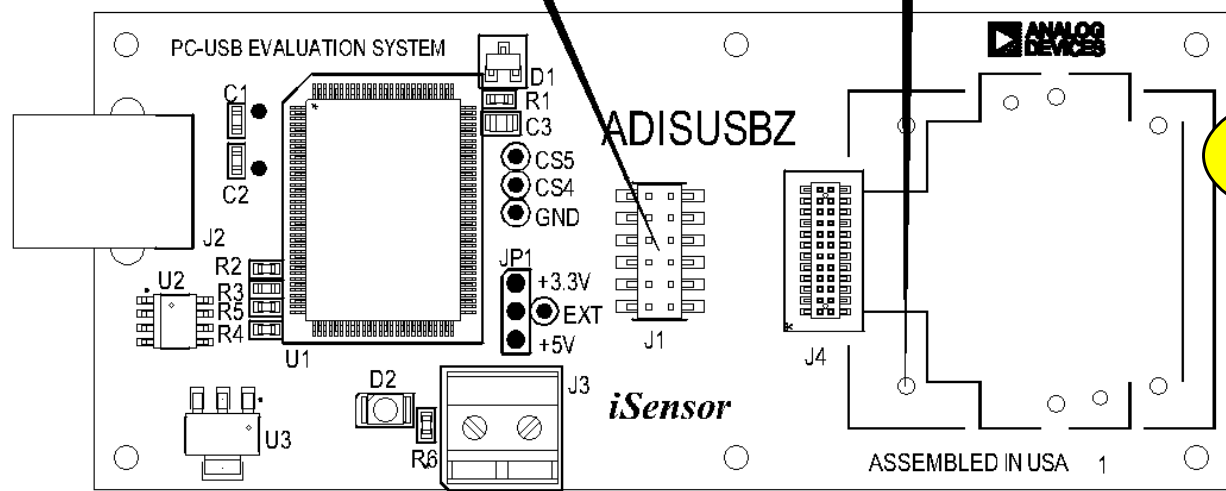
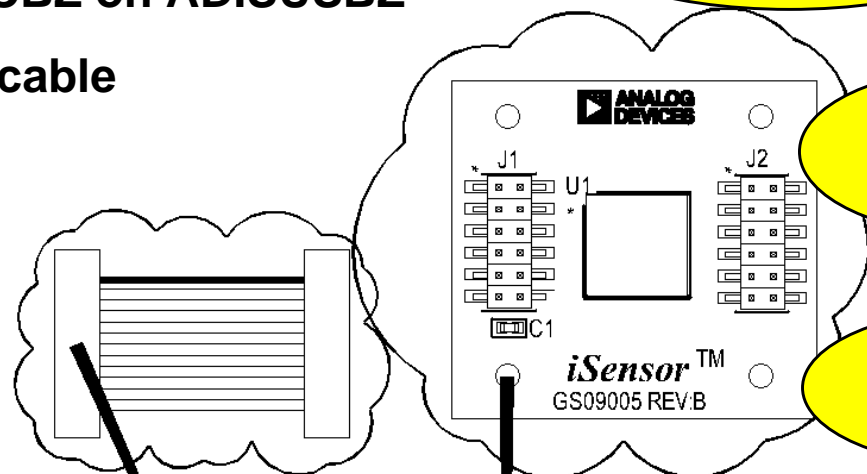
2. Connect ribbon cable



3. Verify JP1 set to +3.3V



4. Hook USB cable up



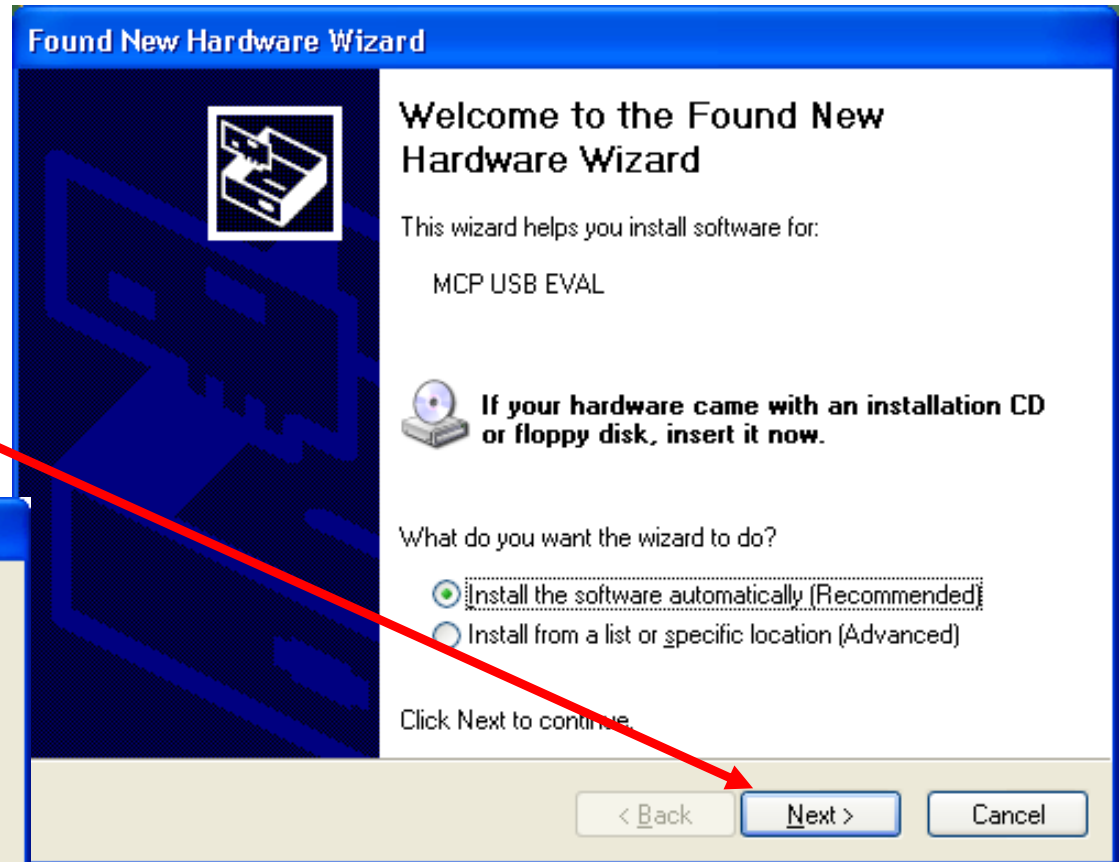
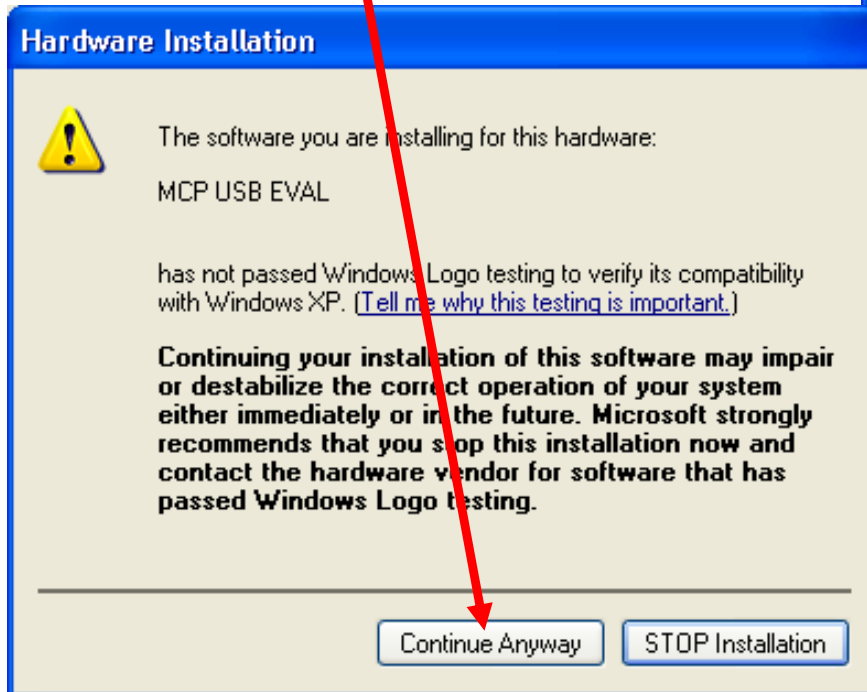
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## ADIS16240 Demonstration Software Installation

### 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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## ADIS16240 Demonstration Software Screen

The screenshot shows the ADIS16240 Evaluation Software interface. The window title is "Analog Devices ADIS16240 Evaluation Software Rev 3". The menu bar includes "Interface", "Device Configuration", "Datalog", "Registers", and "Exit".

**1** (Interface button) and **3** (Device Configuration button) are highlighted in red circles. The "Interface" menu is open, showing "USB" selected.

**2** (Graph checkbox) is highlighted in a red circle. The "Output Registers" section shows the following values:

Register	Value
SUPPLY_OUT (V)	3.294
XACCL_OUT (g)	-0.103
YACCL_OUT (g)	-0.308
ZACCL_OUT (g)	0.925
AUX_ADC (V)	-0.740
TEMP_OUT (C)	24.707
X_PEAK_OUT (g)	0.000
Y_PEAK_OUT (g)	0.000
Z_PEAK_OUT (g)	0.000
XYZ_PEAK_OUT (g)	0.000

**4** (Read button) is highlighted in a red circle. The "Loop" checkbox is checked, and the "Loop Delay msec" is set to 5.

**5** (Sync to PC time button) is highlighted in a red circle. The "Date/Time" section shows "Read Date" as 2/12/09 and "Read Time" as 16:11.

**6** (Show Buffer button) is highlighted in a red circle. The "Event Capture" section shows "Events Capt." as 0.

The "Data Plot" section shows a graph with "Sample" 555 and "Value (g)" 5595. The x-axis is labeled "Sample Number" and ranges from 0 to 350. The y-axis is labeled "Scale(g)" and ranges from -7 to 7.

The "Status Register" section shows the following status:

Status	Indicator
Power Supply Low	OK
Power Supply High	OK
Buffer Write Error	OK
SPI Error	OK
Alarm1 Set	OK
Alarm2 Set	OK
Buffer Full	OK
Self Test Fail	OK
Checksum Error	OK

1. Click on "Interface" and select USB, then OK when the pop-up window shows the USB device is connected.
2. Click to enable different accelerometer axes (x,y,z)
3. Device configuration options. Turn on peak tracking (MSC\_CTRL option), adjust sample rate, etc.
4. Start on-screen log
5. Sync ADIS16240's time to the current PC time.
6. Capture, Click on Config button and see next page

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## ADIS16240 Demonstration Software Installation

**ADIS16240 Event Trigger Configuration**

Step #1 - Configure Capture Parameters (CAPT\_CFG) 0023

Pre-Trigger Length Equals This Value Times 1/16 of Capt. Buff. Length: 2

Capt\_Buff Length: 128

Update CAPT\_CFG Register

Step #2 - Set Trigger Source (ALM\_CTRL) 3230

Data Source - Buffer #1: X\_Acc

Data Source - Buffer #2: Y\_Acc

Alarm I/O Line: OutPut Disabled, Active LOW, DIO0

Update ALM\_CTRL Register

Step #3 - Set Trigger Levels and Polarity (TRIG\_MAG) 804E 804E

ALM\_MAG1 Polarity: Greater Than

ALM\_MAG1 Trigger Level: 4.0092

ALM\_MAG2 Polarity: Greater Than

ALM\_MAG2 Trigger Level: 4.0092

Update TRIG\_MAG1/2 Registers

**Trigger Configuration Example:**

Step 1 - Set Pre-trigger to zero then set Capt\_Buff Length to 1024 and press the update Capt\_CFG Register button

Step 2 - Set Data Source # 1 to Xacc and select Trigger #1 button. Press the Update ALM\_CTRL Register button

Step 3 - Set Trigger Level to 12 then set Polarity to greater than. Press the Update TRIG\_MAG 1/2 Registers button

Update Flash

1. Set number of captures vs. capture length and pre-capture length. Remember to click on the update button!
2. Set trigger source. Suggest both triggers. Remember to click on the Update button!
3. Set trigger levels and polarity, then hit the Update button.
4. Updating the flash makes the changes non-volatile.
5. Click on the red X to close and return to the main menu

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## ADIS16240 Demonstration Software Installation

**Output Registers**

SUPPLY_OUT (V)	3.314	Graph
XACCL_OUT (g)	-0.154	<input checked="" type="checkbox"/>
YACCL_OUT (g)	-1.285	<input checked="" type="checkbox"/>
ZACCL_OUT (g)	0.000	<input checked="" type="checkbox"/>
AUX_ADC (V)	-0.751	
TEMP_OUT (C)	24.951	
X_PEAK_OUT (g)	0.000	
Y_PEAK_OUT (g)	0.000	
Z_PEAK_OUT (g)	0.000	
XYZ_PEAK_OUT (g)	0.000	

Reset Pk

Loop  STOP

Loop Delay msec 5

**Status Register**

Read Status	Clear
Power Supply Low	OK
Power Supply High	OK
Buffer Write Error	OK
SPI Error	Alarm
Alarm1 Set	Alarm
Alarm2 Set	Alarm
Buffer Full	OK
Self Test Fail	OK
Checksum Error	OK

**Data Plot**

Sample 0

Value (g) 3225

Scale(g) 7

Sample Number 0 85 175 260

**Event Capture**

Config Events Capt. 7

Show Buffer Clear Capt.

**Self Test**

OFF ON

**Date/Time**

**Click on Run and start tapping ADISUSBZ on the desk, then click stop, then "Show Buffer"**

**Note that the event counter is increasing with each time the ADISUSBZ tap exceeds the pre-set shock level**

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## ADIS16240 Demonstration Software Installation



1. Place the mouse pointer over different spikes to see the Event header in the upper right hand corner change.
2. Slider bar in lower left hand corner will move event log as desired.



## ◆ CONTACTS:

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

## MORE INFORMATION:

- [www.analog.com/isensor](http://www.analog.com/isensor)
- **New Brochure:** *i*Sensor Motion Sensor Products
  - ◆ BR067755-2.5-4/08(A)
- **CD's with Product Info and Eval SW**

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