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ADIS16240 Evaluation Tool Overview



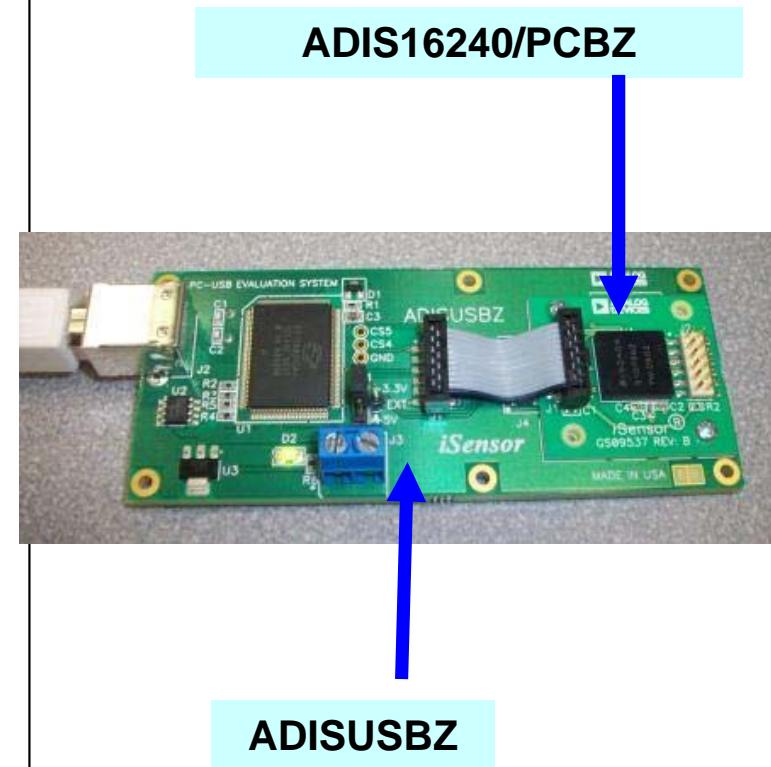
Mark Looney
iSensor[®] Application Engineer
September 7, 2009



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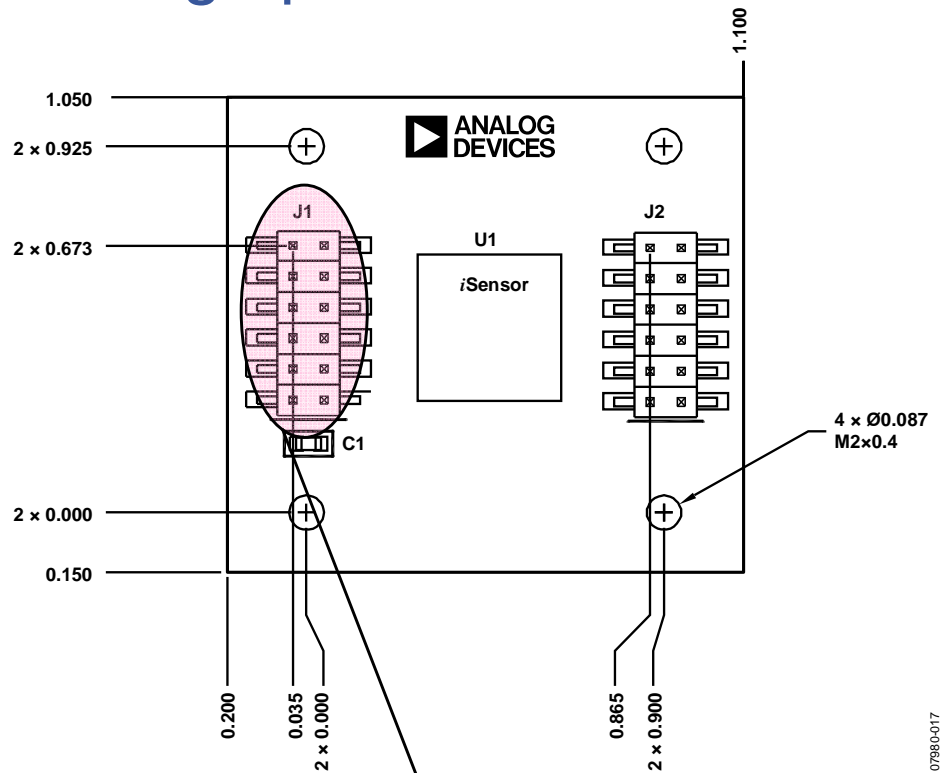
Evaluation Tool Overview

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**

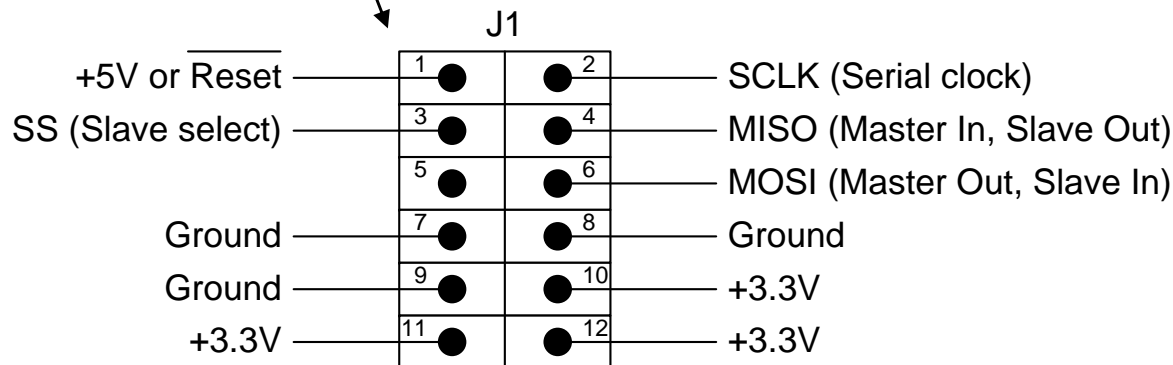


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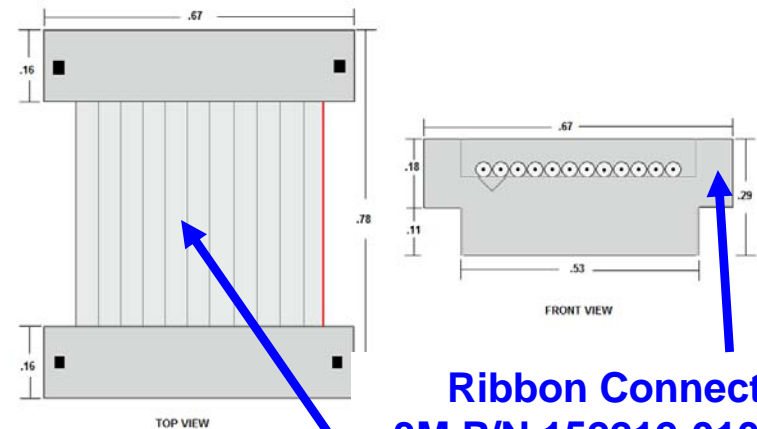
Hooking up to the ADIS16240/PCBZ



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

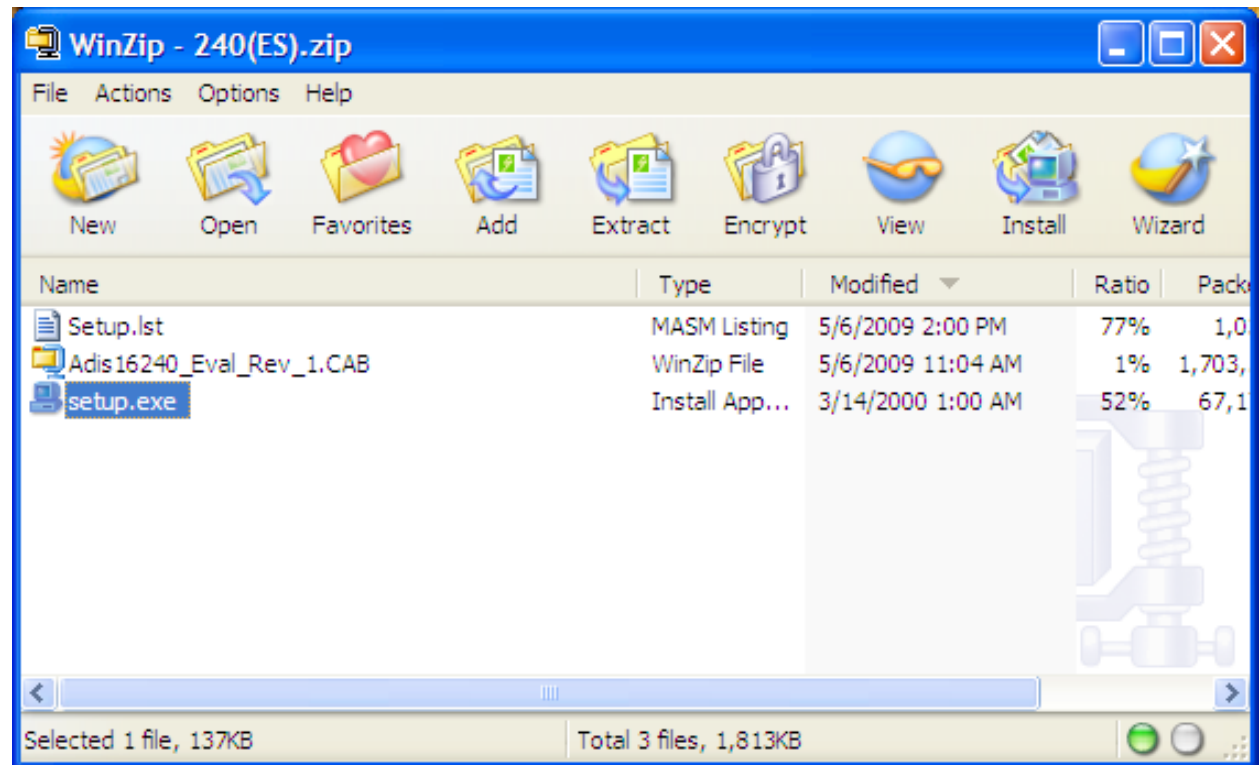
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ADIS16240 Demonstration Software Installation

The ADIS16240 demonstration software can be found at

www.analog.com/isensor-evaluation

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.

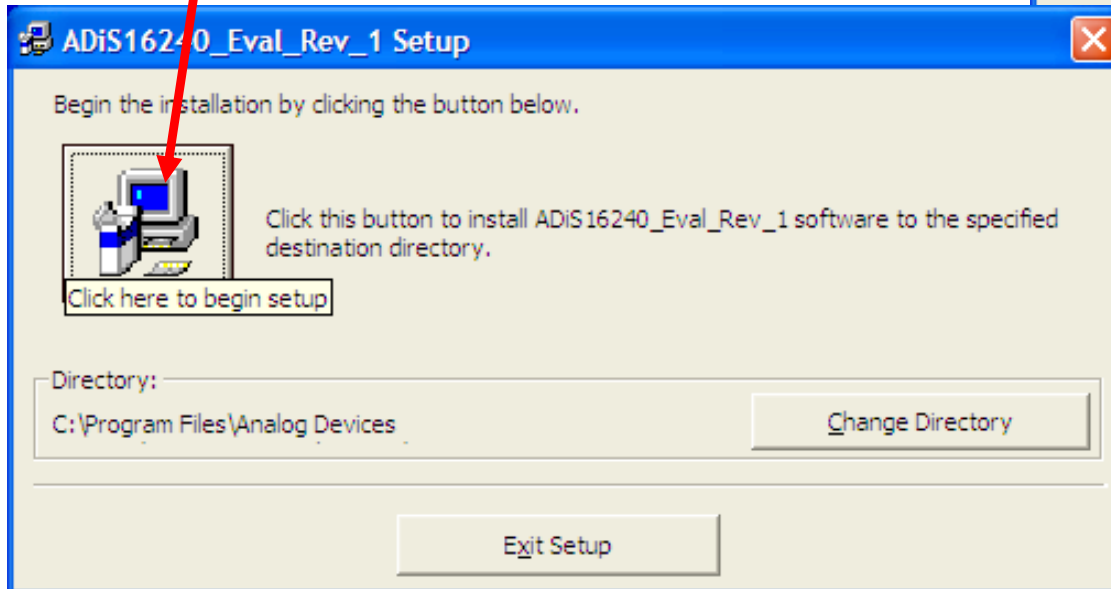
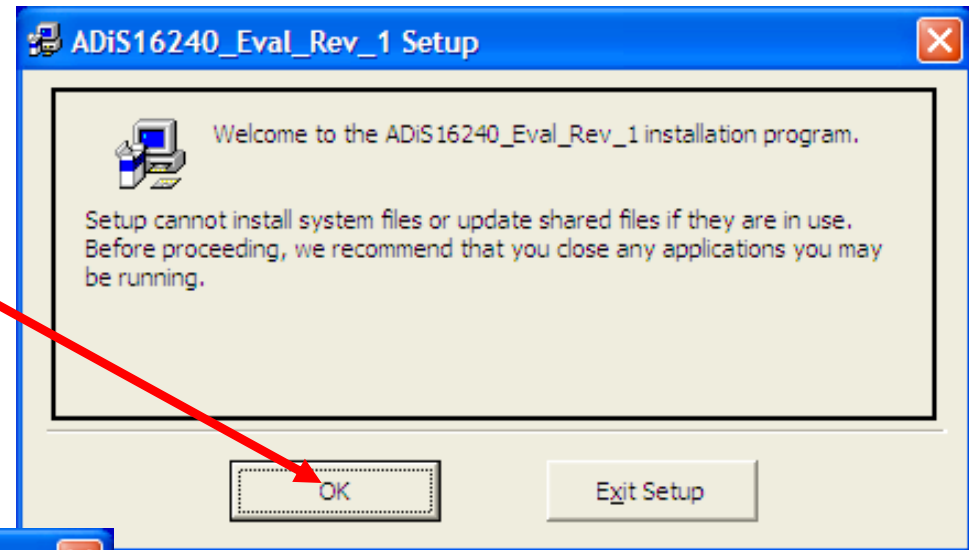


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ADIS16240 Demonstration Software Installation

Installation Steps (continued)

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



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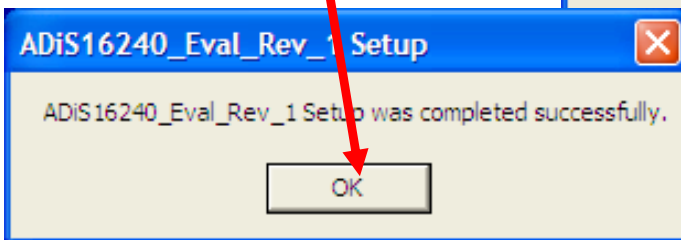
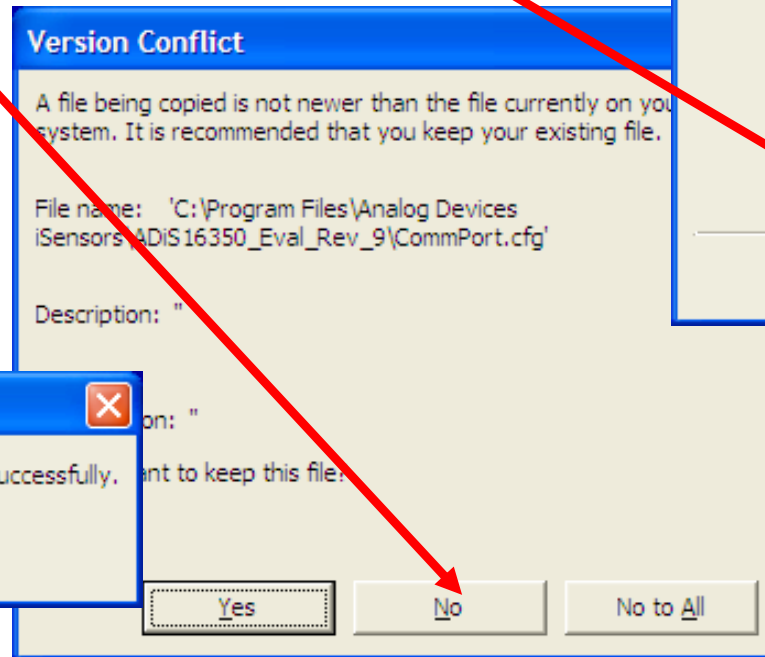
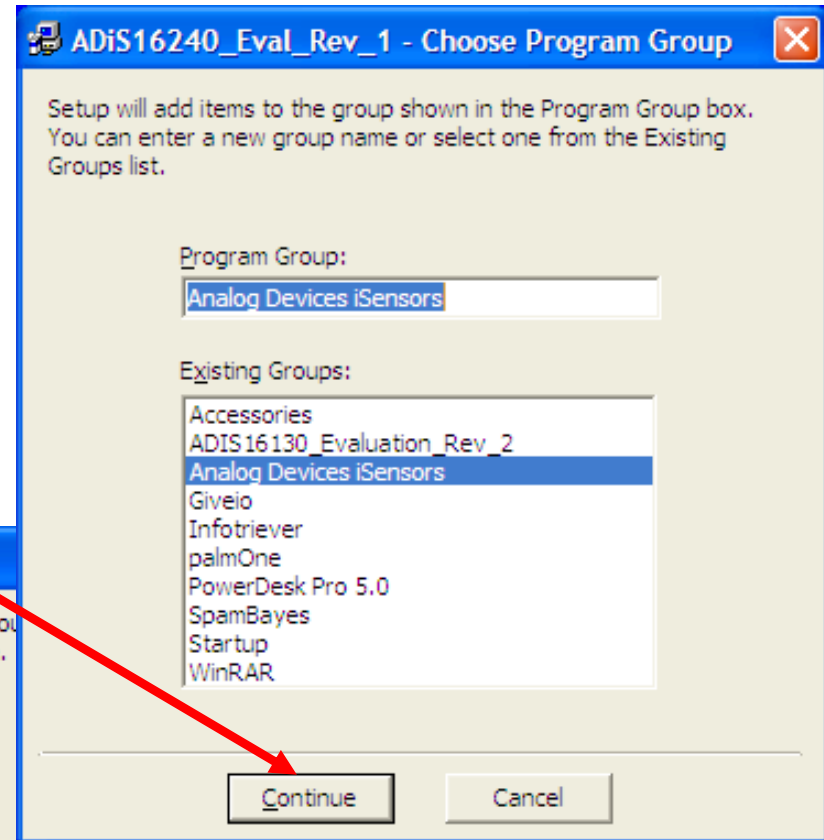
ADIS16240 Demonstration Software Installation

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 screenshot displays the installation process for the ADIS16240 demonstration software. It features three main windows:

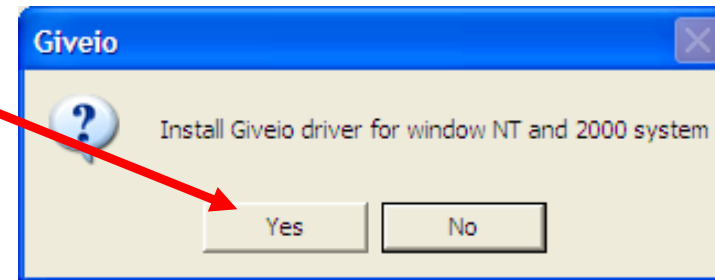
- Visual basic runtimes (SP2) installation:** A dialog box with a blue header. The main text reads: "Welcome to the INF-Tool Setup demo program which will install 2 files in the <Windows>\INF-Test directory on your computer." Below this, it says: "Please close any programs you have running, then click 'Install' to continue with the Setup program." At the bottom, there is a "License agreement" section with a blue header. The agreement text includes: "[Name of your application] Author : [YOUR NAME] Version #.# from mm/dd/yyyy WWWeb : Your Website email : Your email Note : for each package, you may select an individual Licence template via the 'Options' window of Step #8." Below the agreement text, it says: "END-USER LICENSE AGREEMENT FOR THIS SOFTWARE Important - read carefully: To continue with this installation, you must agree to all terms of this license agreement." At the bottom of this dialog are "I agree" and "Cancel" buttons.
- Windows Explorer:** A window showing the directory "C:\Program Files\Analog Devices iSensors\ADIS16240_Eval_Rev_1". The file list includes: "Adis16240_Eval_Rev_1.exe" (316 KB, Application), "Comport.cfg" (1 KB, Microsoft Office Ou...), "GIVEIO.EXE" (82 KB, Application), "ST6UNST.000" (4 KB, 000 File), "ST6UNST.001" (4 KB, 001 File), and "ST6UNST.LOG" (4 KB, Text Document). The "GIVEIO.EXE" file is selected. The "Details" pane shows: "GIVEIO.EXE Application Date Modified: Tuesday, October 02, 2001, 12:46 PM Size: 81.1 KB".
- Visual Basic Runtimes (SP2) installation:** A dialog box with a blue header. The main text reads: "Welcome to the INF-Tool Setup demo program which will install 2 files in the <Windows>\INF-Test directory on your computer." Below this, it says: "Please close any programs you have running, then click 'Install' to continue with the Setup program." At the bottom, there is a "License agreement" section with a blue header. The agreement text includes: "[Name of your application] Author : [YOUR NAME] Version #.# from mm/dd/yyyy WWWeb : Your Website email : Your email Note : for each package, you may select an individual Licence template via the 'Options' window of Step #8." Below the agreement text, it says: "END-USER LICENSE AGREEMENT FOR THIS SOFTWARE Important - read carefully: To continue with this installation, you must agree to all terms of this license agreement." At the bottom of this dialog are "I agree" and "Cancel" buttons.

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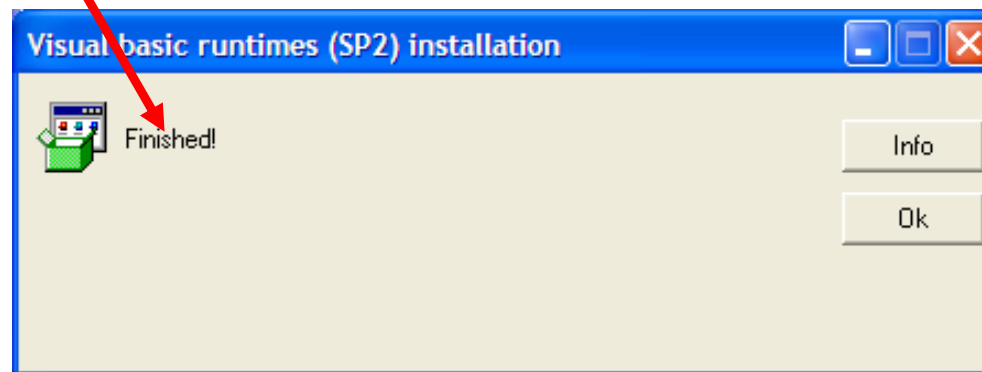
ADIS16240 Demonstration Software Installation

Installation Steps (continued)

11. Click “yes”



12. Giveio Driver complete



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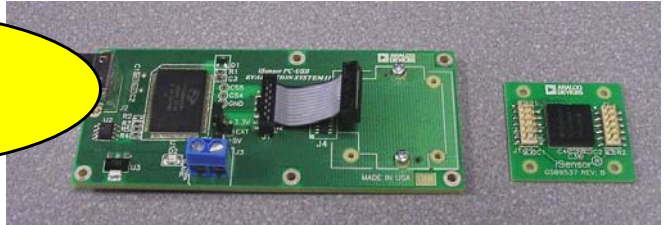
ADIS16240 Installation on ADISUSBZ

Installation Steps (continued)

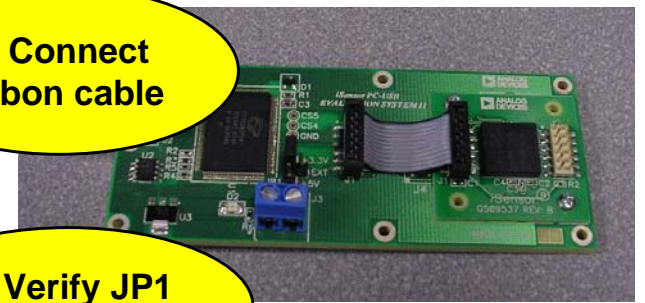
13. Install 240/PCBZ on ADISUSBZ

14. Plug in USB cable

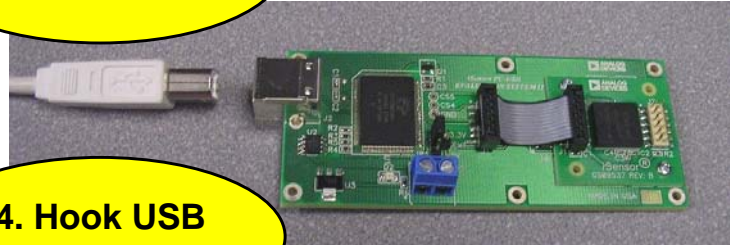
1. Secure 240/PCBZ w/ 2mm screws



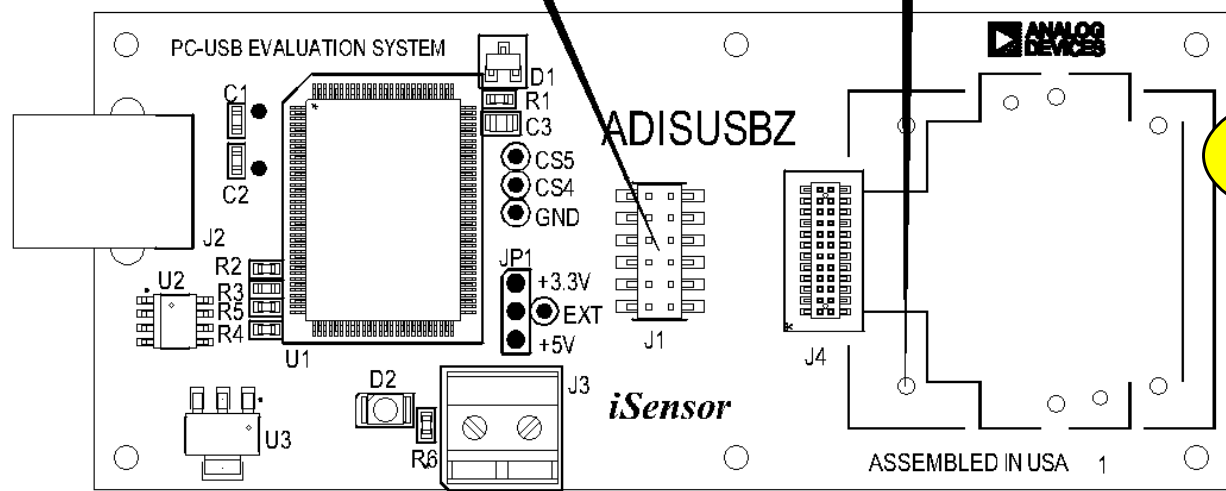
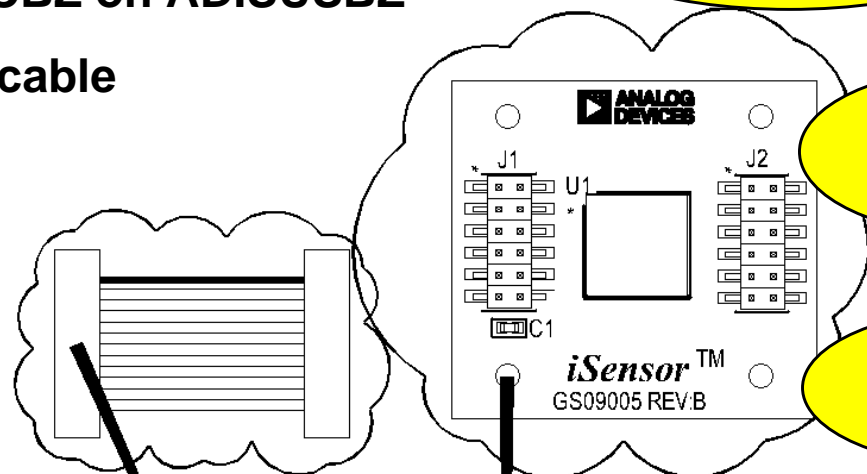
2. Connect ribbon cable



3. Verify JP1 set to +3.3V



4. Hook USB cable up



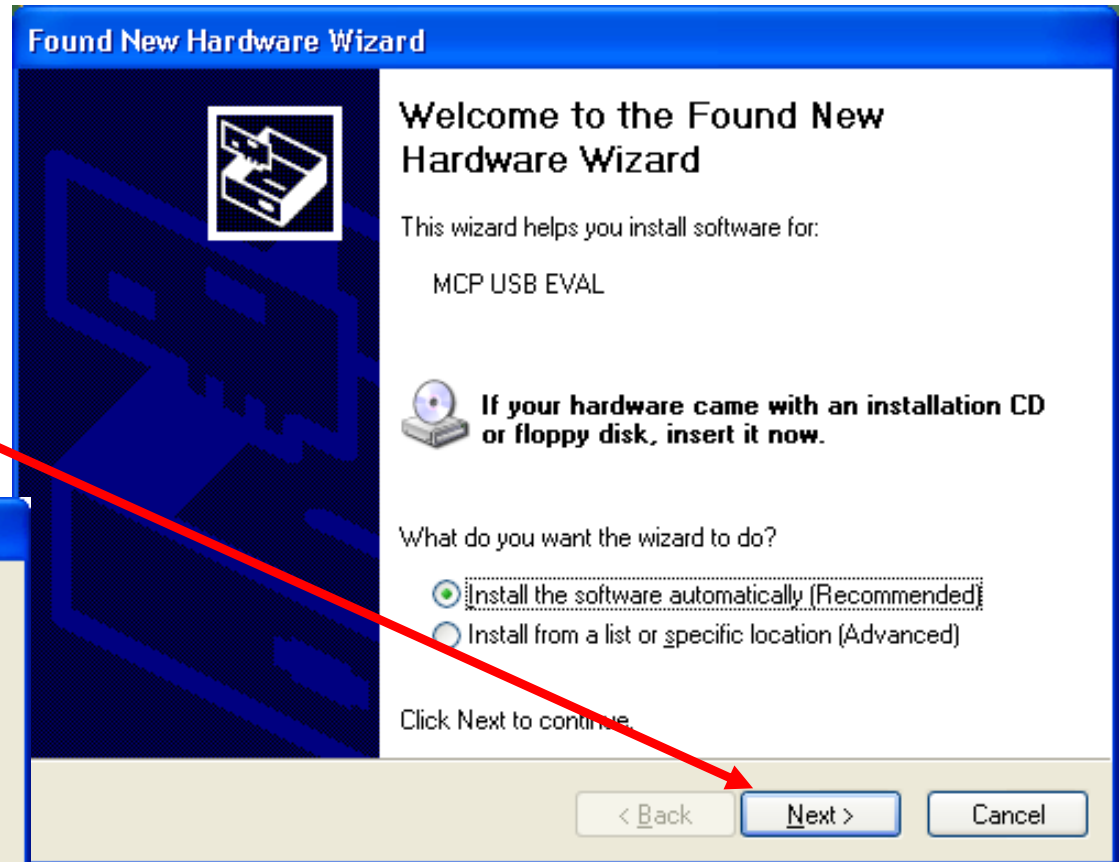
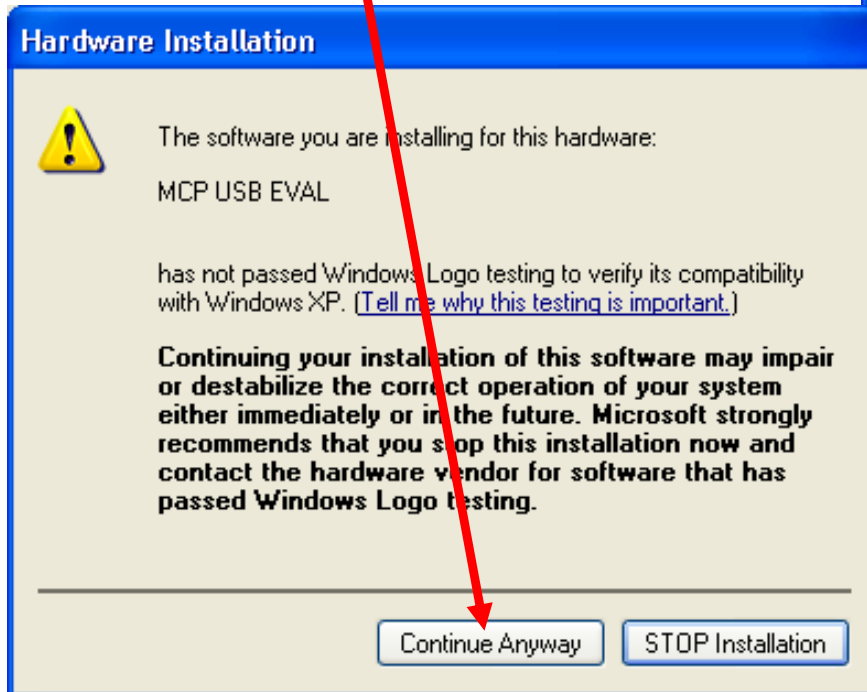
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ADIS16240 Demonstration Software Installation

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 Callout points to the "Interface" menu item.

2 Callout points to the "Graph" checkbox in the "Output Registers" section.

3 Callout points to the "Device Configuration" menu item.

4 Callout points to the "Read" button in the "Output Registers" section.

5 Callout points to the "Sync to PC time" button in the "Date/Time" section.

6 Callout points to the "Config" button in the "Event Capture" section.

The "Output Registers" section displays 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

The "Data Plot" section shows a graph with "Sample Number" on the x-axis (0 to 350) and "Value (g)" on the y-axis (-7 to 7). The current sample is 555, and the value is 5595. The plot is titled "lblmidS2".

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

The "Event Capture" section shows "Events Capt." as 0. The "Self Test" section has "OFF" selected. The "Powerdown" section has "Power Up" selected. The "Date/Time" section shows "Read Date" as 2/12/09 and "Read Time" as 16:11.

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

Data Plot

Sample 0

Value (g) 3225

Scale(g) 7

Sample Number 0 85 175 260

Status Register

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

Event Capture

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
- **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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