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ADIS1626x Evaluation Tool Overview



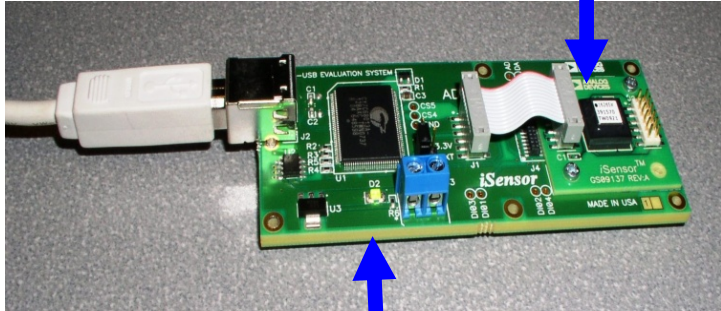
Mark Looney
iSensor[®] Application Engineer
September 21, 2009



iSensor[®] *The Simple Solution for Sensor Integration* Evaluation Tool Overview

- ◆ **Evaluation/Interface Board (ADIS1626x/PCBZ) for simpler connection to an existing processor/system PCB.**
 - ◆ These boards provide a simple connector translation that enables user to bypass LGA soldering. The 2 mm pitch connectors are easy to interface with 1 mm ribbon cable or solder to.
 - ◆ Part number for ordering: **ADIS1626x/PCBZ**
- ◆ **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 ADIS1626x functions and performance.
 - ◆ This system is most useful for basic data collection and performance validation.
 - ◆ This is not a real-time development system but, under appropriate circumstances, it could offer some prototype software support.
 - ◆ Part number for ordering: **ADISUSBZ**

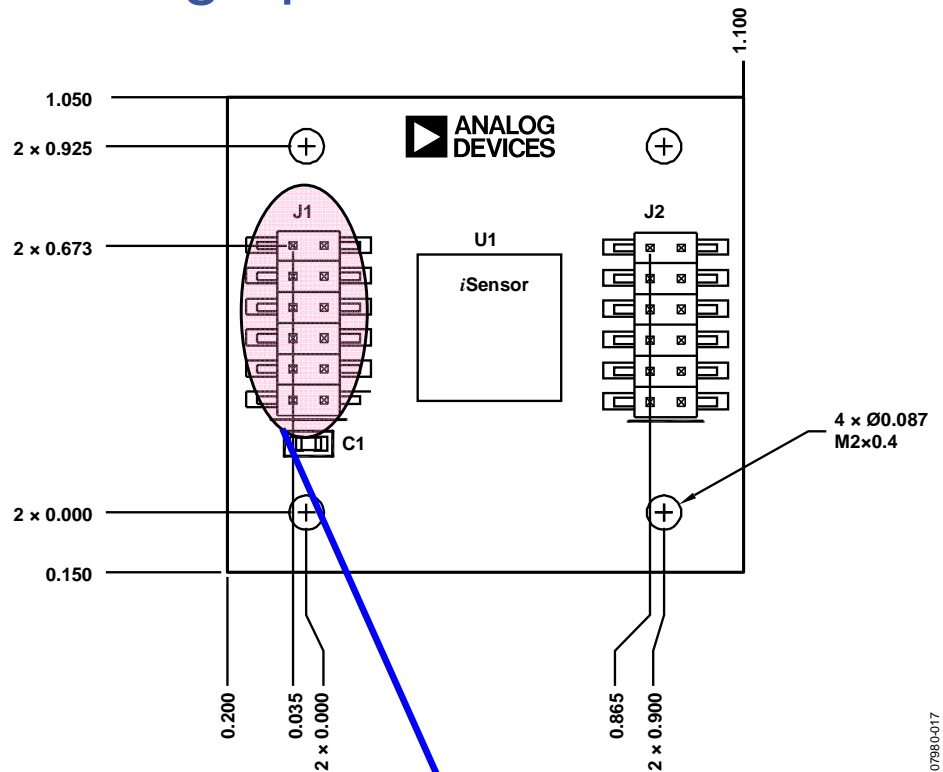
Shown
ADIS16265/PCBZ



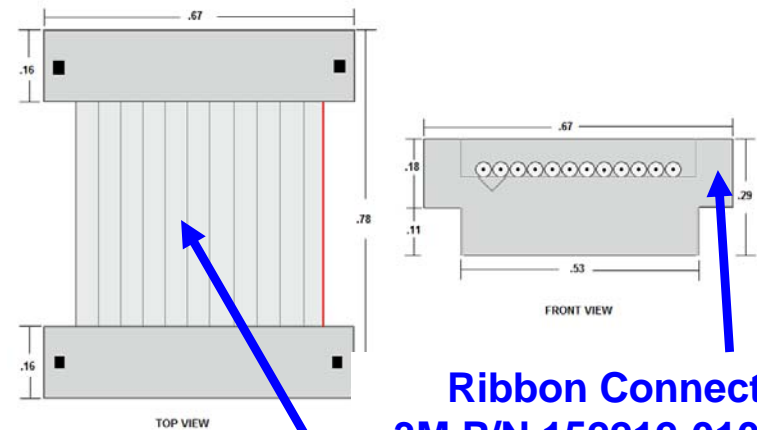
ADISUSBZ

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Hooking up to the ADIS1626x/PCBZ



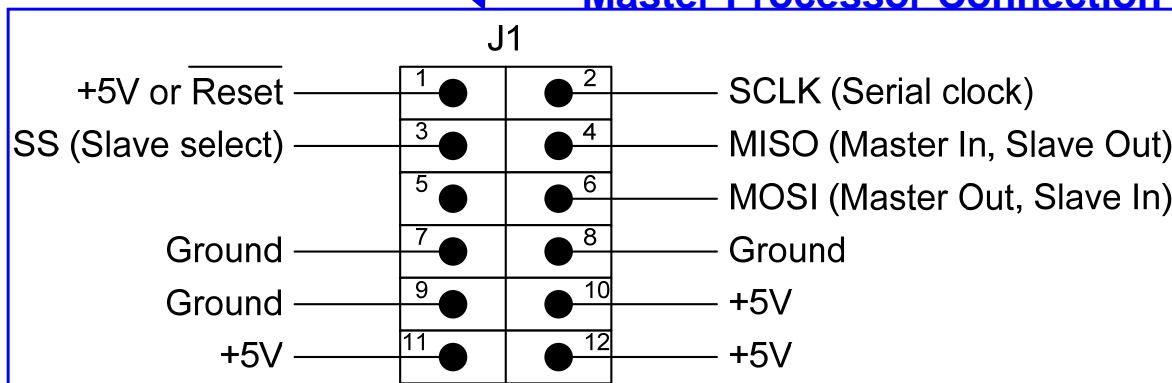
J1 Ribbon Cable Interface Parts



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

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

Master Processor Connection



ADISUSBZ uses the following cable assembly from Samtec:

ASP-140062-01

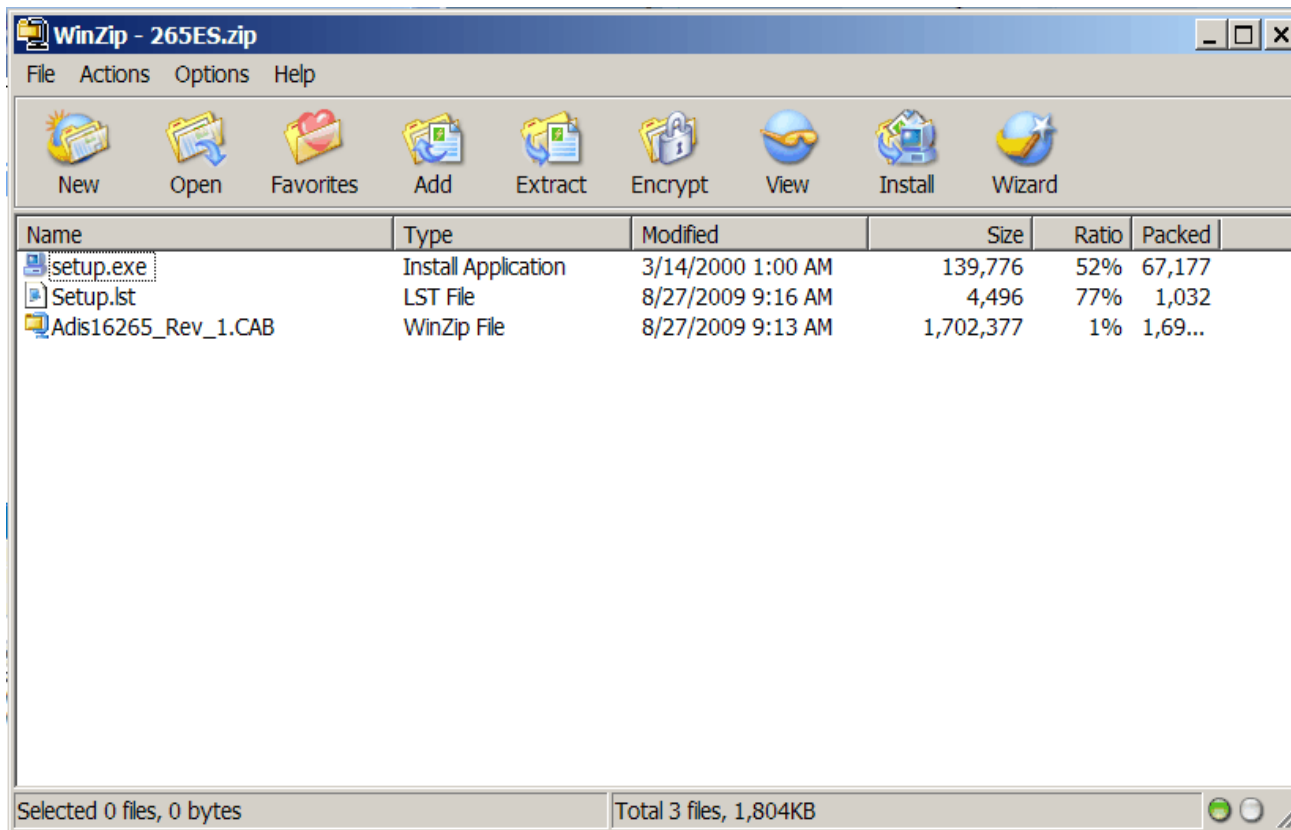
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ADIS1626x Demonstration Software Installation

The ADIS1626x demonstration software can be found at

www.analog.com/isensor-evaluation

1. Click on “Evaluation Software Downloads”
2. Click on 265ES.zip and save it to a temporary directory
3. Open it and double click on setup.exe.

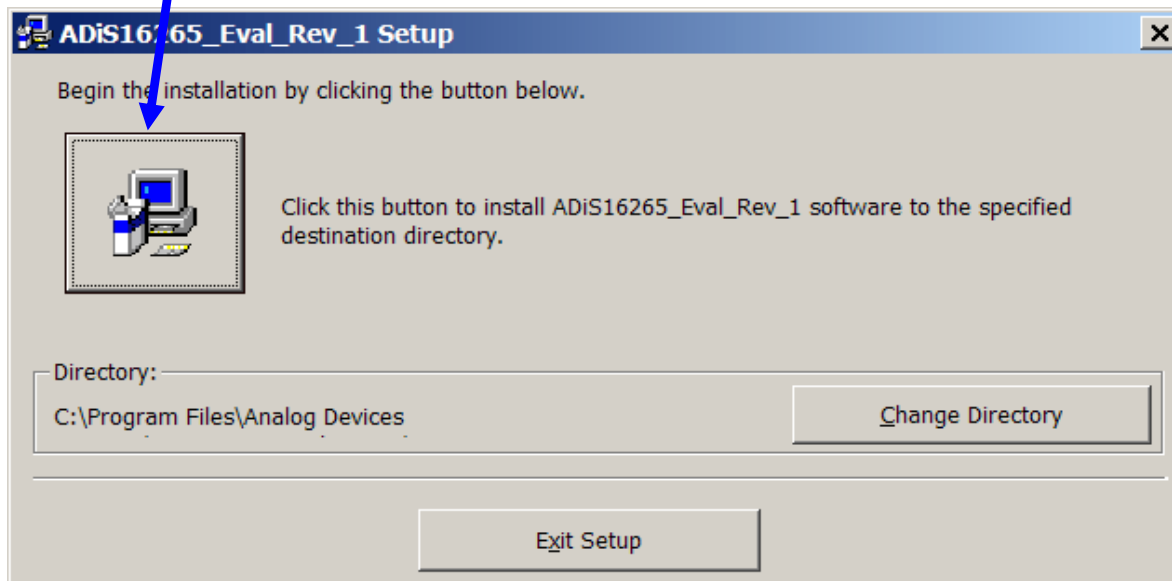
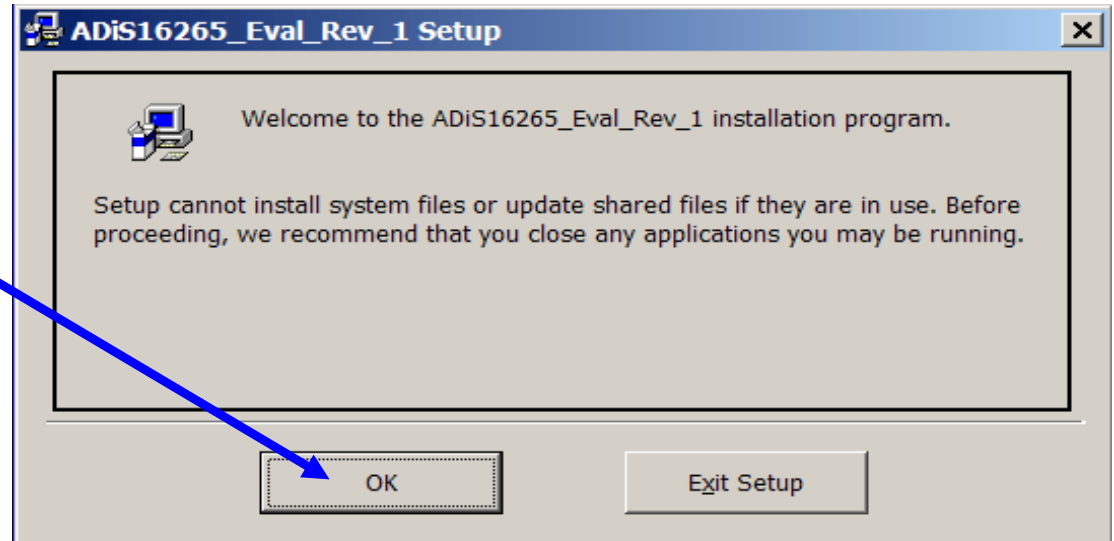


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ADIS1626x Demonstration Software Installation

Installation Steps (continued)

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



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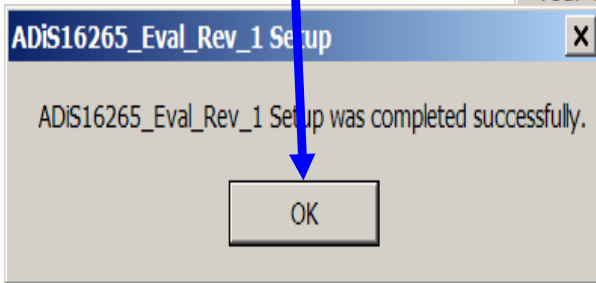
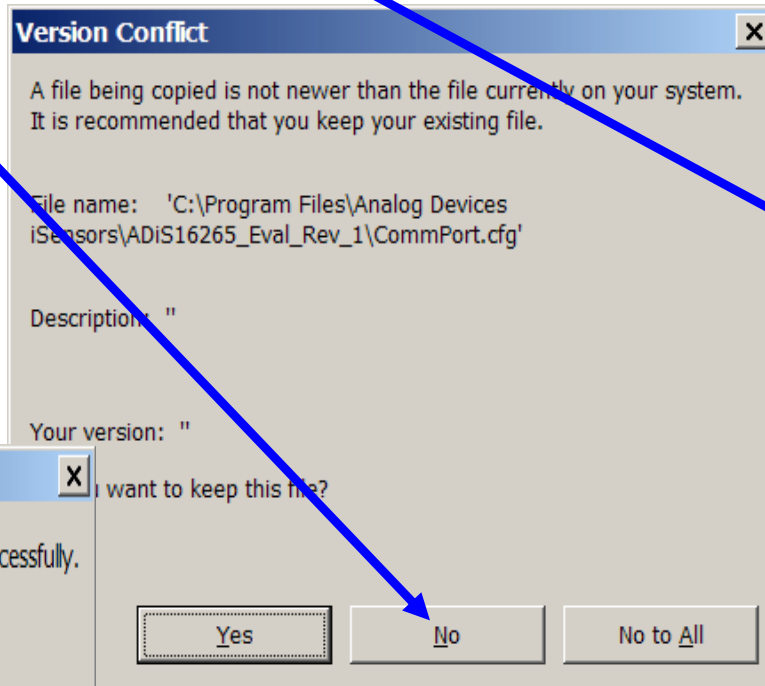
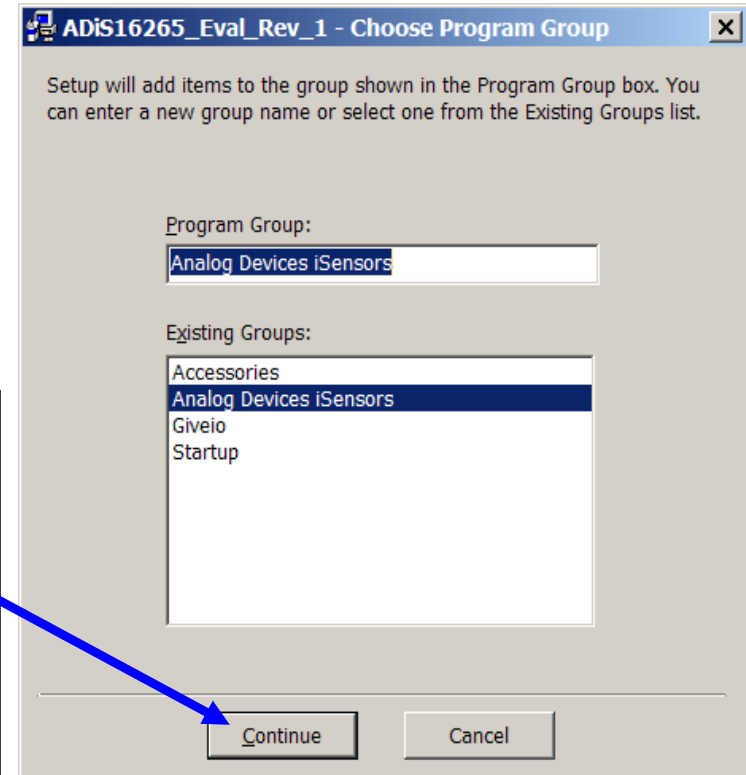
ADIS1626x Demonstration Software Installation

Installation Steps (continued)

6. Click **Continue**

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

8. Click **OK**



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ADIS1626x 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 ADIS16265 Eval software. It consists of three main components:

- Visual basic runtimes (SP2) installation:** A dialog box with the following text:
 - Welcome to the INF-Tool Setup demo program which will install 2 files in the <Windows>\INF-Test directory on your computer.
 - Please close any programs you have running, then click "Install" to continue with the Setup program.
 - Don't forget to read the helpfile for details about the enormous flexibility and smartness INF-Tool can bring to your installations!The **Install** button is highlighted with a blue arrow.
- License agreement:** A dialog box with the following text:
 - [Name of your application]
 - Author : [YOUR NAME]
 - Version : ## from mm/dd/yyyy
 - WWWWeb : Your Website
 - email : Your email
 - Note : for each package, you may select an individual Licence template via the "Options" window of Step #8.The **I agree** button is highlighted with a blue arrow.
- Windows Explorer:** A window showing the directory `C:\Program Files\Analog Devices iSensors\ADIS16265_Eval_Rev_1`. The file list is as follows:

Name	Size	Type	Date Modified
driver		File Folder	8/18/2009 8:26 AM
Adis16265_Rev_1.exe	292 KB	Application	8/12/2009 3:01 PM
ComPort.cfg	1 KB	CFG File	8/27/2009 9:06 AM
GIVEIO.EXE	82 KB	Application	10/2/2001 12:46 PM
ST6UNST.000	4 KB	000 File	9/16/2009 3:24 PM
ST6UNST.LOG	4 KB	Text Document	8/18/2009 8:26 AM

The **GIVEIO.EXE** file is highlighted with a blue arrow.

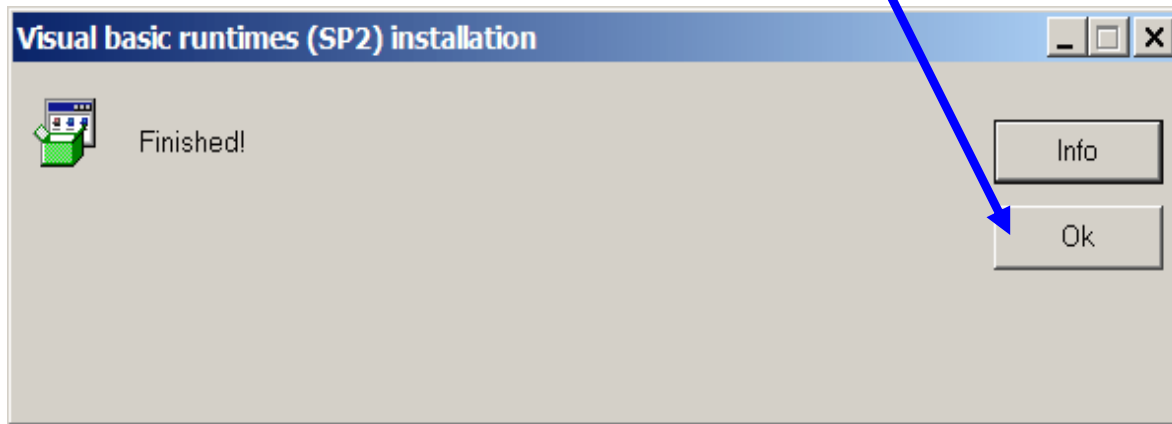
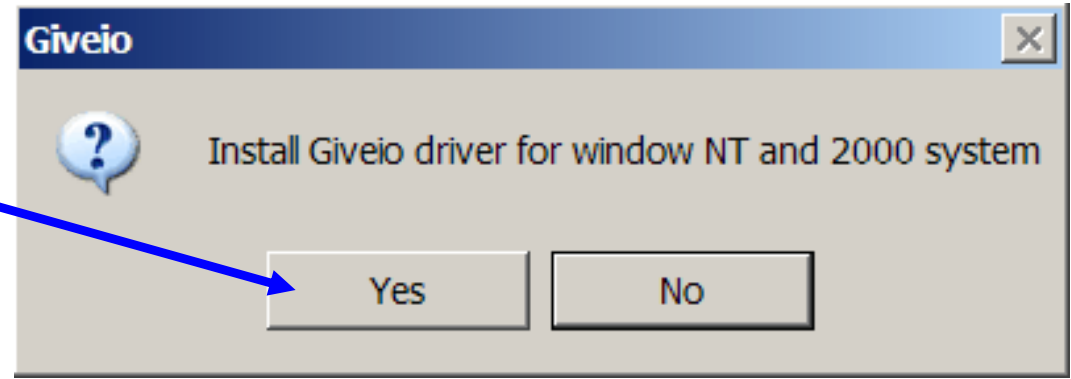
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ADIS1626x Demonstration Software Installation

Installation Steps (continued)

11. Click **Yes**

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



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ADIS1626x/PCBZ Installation on ADISUSBZ

Installation Steps (continued)

13. Install 26x/PCBZ on ADISUSBZ

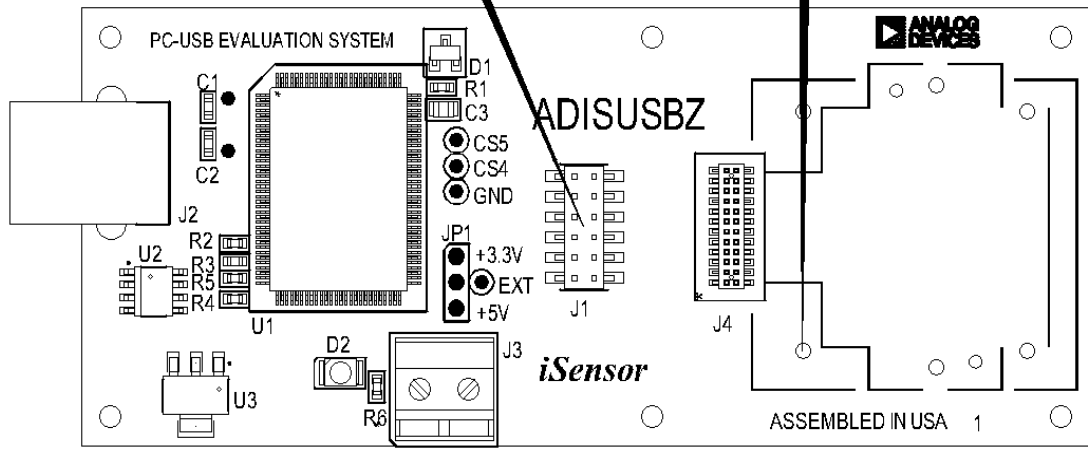
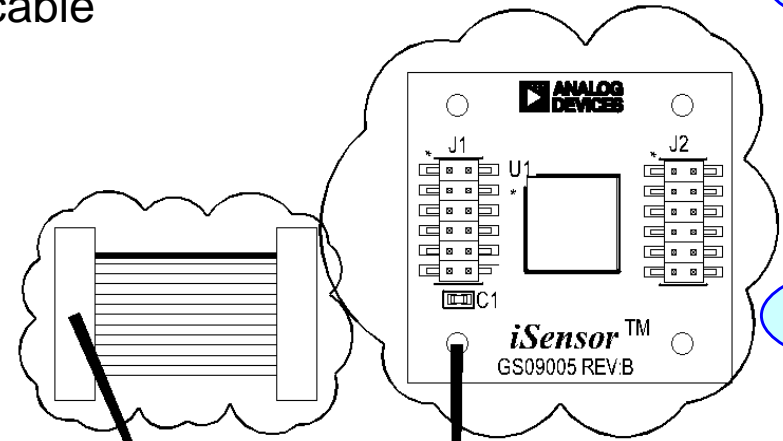
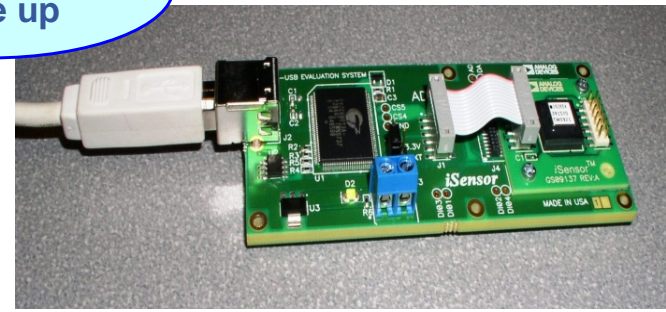
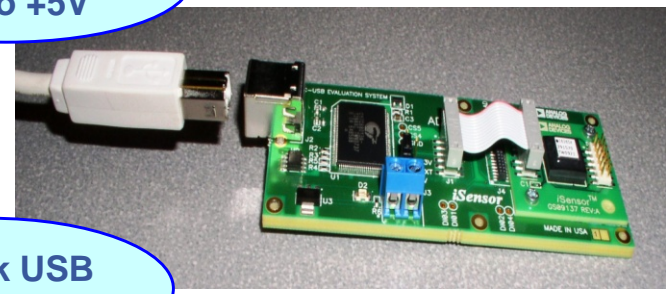
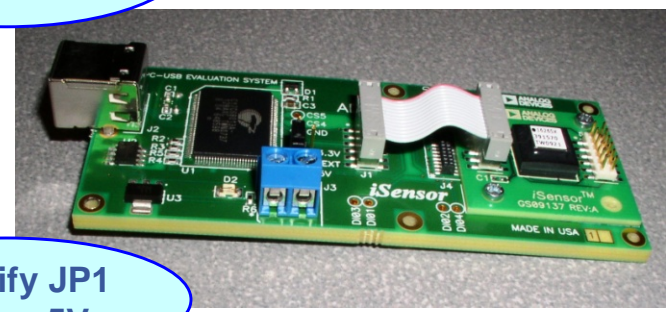
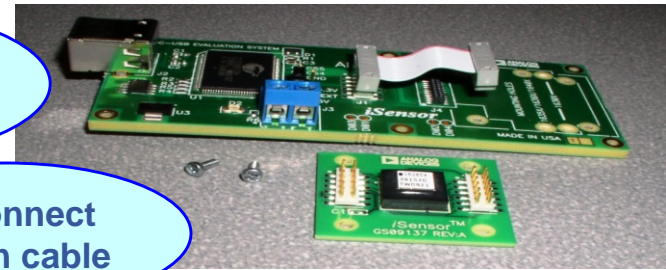
14. Plug in USB cable

1. Secure 26x/PCBZ with 2mm screws

2. Connect ribbon cable

3. Verify JP1 set to +5V

4. Hook USB cable up



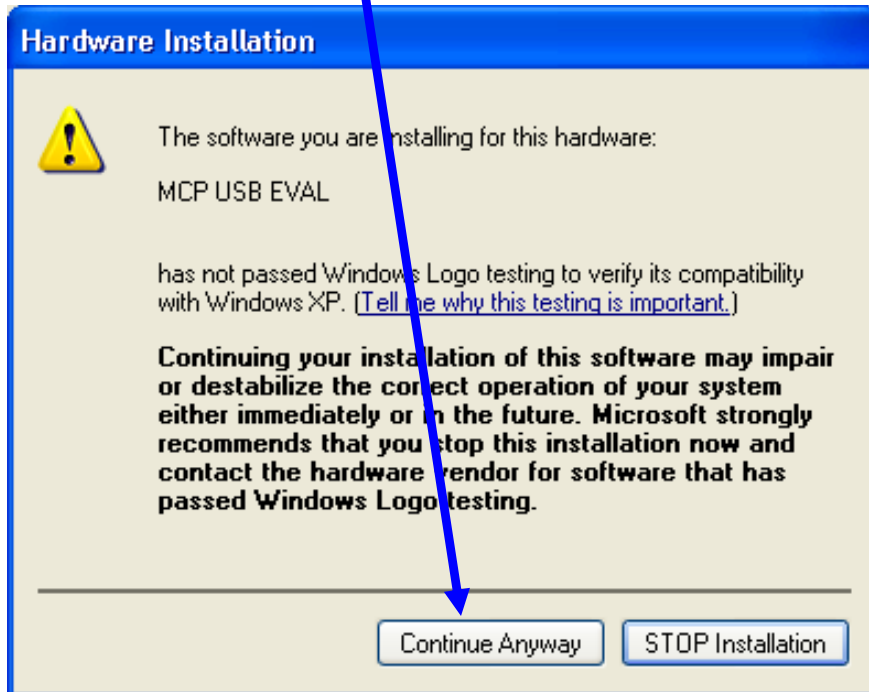
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ADIS1626x Demonstration Software Installation

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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ADIS1626x Demonstration Tips—Verify USB Driver

Output Registers

Supply_Out (V)	4.99
Gyro_Out (deg/s)	-0.66
AngL_Out (deg)	—
Temp_Out (dC)	25.73
Aux_ADC (LSB)	1.55

Status Register

Power Supply Low	OK
Power Supply High	OK
Control Write Flag	OK
SPI Write Flag	OK
Gyro Over Range	OK
Self Test Failure	OK
Alarm1 Set	OK
Alarm2 Set	OK

Data Plot Device = 16265

Rate deg / sec

Temp. C

Sample Number

USB SPI Card Selection

Buffer Select

	Descriptor0	Rev	Speed
<input checked="" type="radio"/> EzUsb0	MCP SPI	0.1	1.1
<input type="radio"/> EzUsb1			
<input type="radio"/> EzUsb2			
<input type="radio"/> EzUsb3			
<input type="radio"/> None			

#1 Click here to access setup

#2 Click OK to verify

#3 Click Read to see if #'s are close to "0" when board is laying flat on a table

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ADIS1626x Demonstration Tips—Angle Out Function

Output Registers

Supply_Out (V)	5.00
Gyro_Out (deg/s)	-0.88
AngL_Out (deg)	18.43
Temp_Out (dC)	30.23
Aux_ADC (LSB)	1.55

Loop
Loop Delay msec

Status Register

Power Supply Low	OK
Power Supply High	OK
Control Write Flag	OK
SPI Write Flag	OK
Gyro Over Range	OK
Self Test Failure	OK
Alarm1 Set	OK
Alarm2 Set	OK

Data Plot Device = 16265

Rate deg / sec

Temp. C

Sample Number

Self Test: ON OFF

Powerdown: Set sec Elapsed sec

Rotate board 90° clockwise and see angle shift

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ADIS1626x Demonstration Tips—Bias Correction

Auto Null and Drift control calibration

Enter averaging time, click on Run button next to this entry box (Button name will change to **Stop**). When complete, click on Update, then **Flash Memory Update**. Use 100 seconds for optimal results.

Calibration

Automatic Features

- Restore Factory Calibration
- Auto Null

Bias Correction Calculation

- Averaging Time (sec)
- Gyro_Out (deg/sec)
- Average Offset

Manual Calibration Adjustment

- Gyro Offset deg / sec
- Register Contents

Self Test

Self-Test ON OFF

Powerdown

Set sec Elapsed sec

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ADIS1626x Demonstration Tips—Compare Filter Settings

The screenshot displays the iSensor software interface for the ADIS1626x sensor. It is divided into several main sections:

- Output Registers:** Shows real-time sensor data:
 - Supply_Out (V): 4.99
 - Gyro_Out (deg/s): 113.41
 - Angl_Out (deg): 4.78
 - Temp_Out (dC): 29.51
 - Aux_ADC (LSB): 1.55
- Status Register:** Displays various status flags, all of which are currently 'OK':
 - Power Supply Low: OK
 - Power Supply High: OK
 - Control Write Flag: OK
 - SPI Write Flag: OK
 - Gyro Over Range: OK
 - Self Test Failure: OK
 - Alarm1 Set: OK
 - Alarm2 Set: OK
- Data Plot:** Contains two graphs:
 - Rate (deg / sec):** A plot showing the angular rate over time, with a scale from -400 to 400. The x-axis is labeled 'Sample Number' and ranges from 0 to 350.
 - Temp. C:** A plot showing the temperature over time, with a scale from -45 to 90. The x-axis is labeled 'Sample Number' and ranges from 0 to 350.
- Operational Control:** A panel for configuring sensor parameters:
 - Sample Rate:** Set to 256.016 SPS. SMPL_PRD is 0x1.
 - Measurement Range and Digital Filtering:**
 - Select Gyro Range: 320 deg/sec (selected), 160 deg/sec, 80 deg/sec.
 - Analog Sensor Bandwidth: 0 to 50 Hz (selected), 0 to 300 Hz.
 - Taps: 3.
 - SENS/AVG: 0x400.
 - Auxiliary Digital I/O Configuration:**
 - Configure as a general purpose I/O line: GPIO_CTRL 0x300.
 - Digital I/O Line 0: Input (selected), Output. Set Line 0 Level: High (selected), Low.
 - Digital I/O Line 1: Input (selected), Output. Read Line 1 Level: High (selected), Low.
 - Configure as a data ready line: MISC_CTRL 0x0.
 - Select I/O line: DIO 1 (selected), DIO 2. Output Polarity: High, Low (selected).
 - Enable: ON, OFF (selected).
 - Auxiliary D/A Converter Output:** Set to 0.0 Volts. AUX_DAC is 0x0.
- Self Test and Powerdown:**
 - Self-Test: ON, OFF (selected).
 - Powerdown: Set 0 sec, Elapsed 0.0 sec.

A central callout bubble with a blue border contains the text: "Change filter settings. Select Configuration and Operational Control." Two blue arrows point from this bubble to the 'Operational Control' window and the 'Data Plot' area.

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ADIS1626x Demonstration Tips—Compare Filter Settings

Analog Devices - ADIS16265_Eval_Rev_1

Interface Device Configuration Datalog Registers Exit

Output Registers

- Supply_Out (V) 5.00
- Gyro_Out (deg/s) 38.75
- Angl_Out (deg) 172.96
- Temp_Out (dC) 27.91
- Aux_ADC (LSB) 1.55

Loop
Loop Delay msec 5

Status Register

- Power Supply Low OK
- Power Supply High OK
- Control Write Flag OK
- SPI Write Flag OK
- Gyro Over Range OK
- Self Test Failure OK
- Alarm1 Set OK
- Alarm2 Set OK

Data Plot Device = 16265

Rate deg / sec

value 400
Scale
-65
sample 13
-400

Temp. C

value 90
Scale
22.5
-45
sample 124

0 Sample Number 85 175 260 350

Self Test Self-Test ON OFF

Powerdown Set 0 sec Run Elapsed 0.0 sec

Operational Control

Sample Rate 256.016 SPS SMPL_PRD 0x1

Measurement Range and Digital Filtering

Select Gyro Range 320 deg/sec 160 deg/sec 80 deg/sec

Analog Sensor Bandwidth 0 to 50 Hz 0 to 300 Hz

129 Taps SENS_AVG 0x406

Auxiliary Digital I/O Configuration

Configure as a general purpose I/O line GPIO_CTRL 0x300

Digital I/O Line 0: Input Output Set Line 0 Level: High Low

Digital I/O Line 1: Input Output Read Line 1 Level: High Low

Configure as a data ready line MISC_CTRL 0x0

Select I/O line DIO 1 DIO 2 Output Polarity High Low

Enable ON OFF

Auxiliary D/A Converter Output

0.0 Volts AUX_DAC 0x0

Make changes to digital filtering and observe attenuated signals



◆ 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)

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