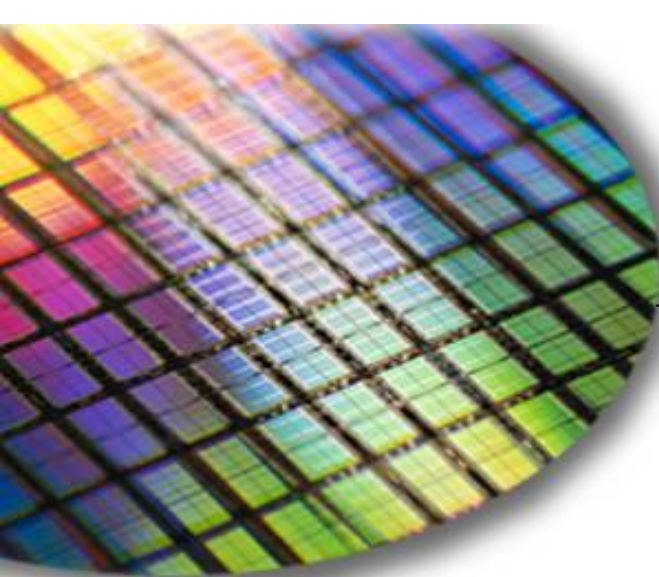




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ADIS1626x Evaluation Tool Overview



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

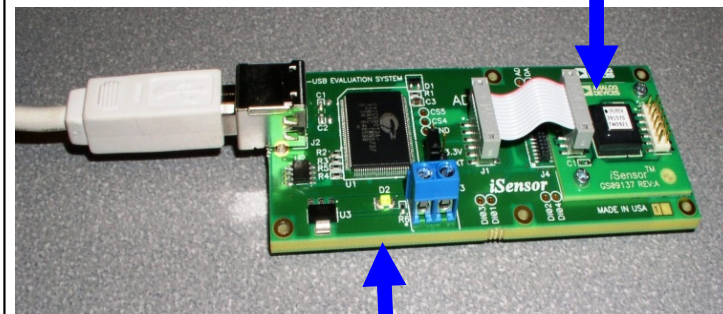


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Evaluation Tool Overview

- ◆ **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**

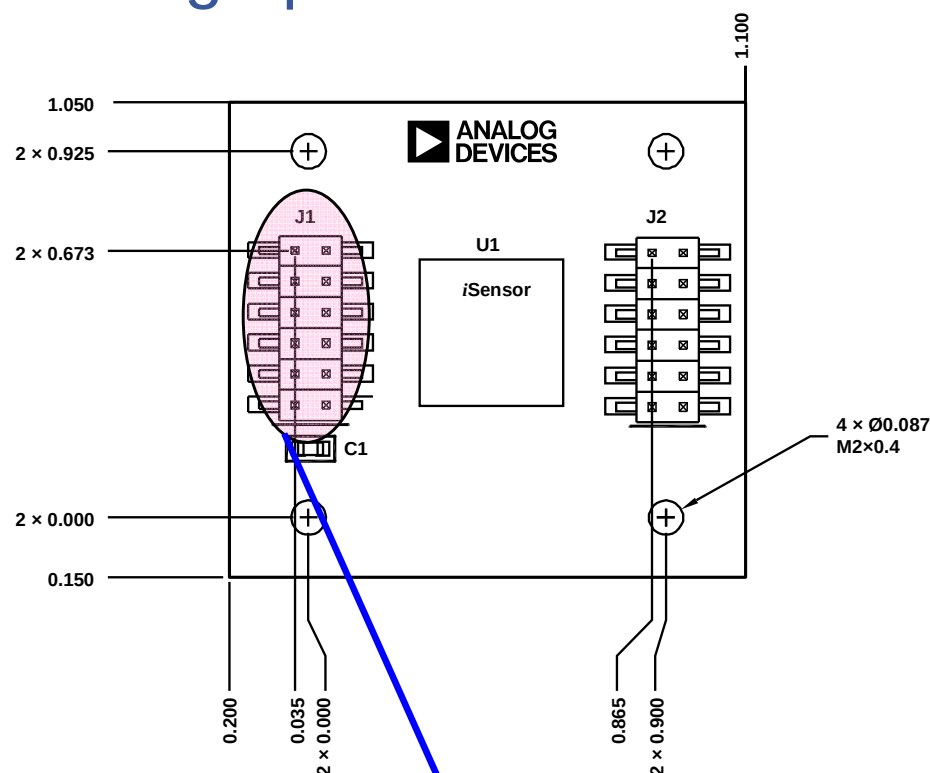
Shown
ADIS16265/PCBZ



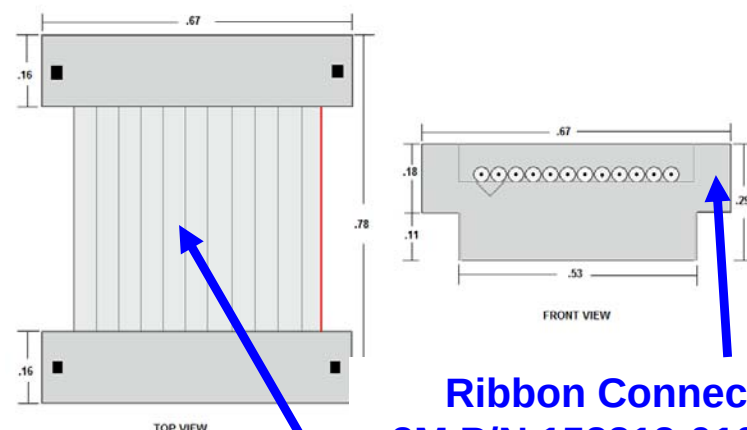
ADISUSBZ

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Hooking up to the ADIS1626x/PCBZ



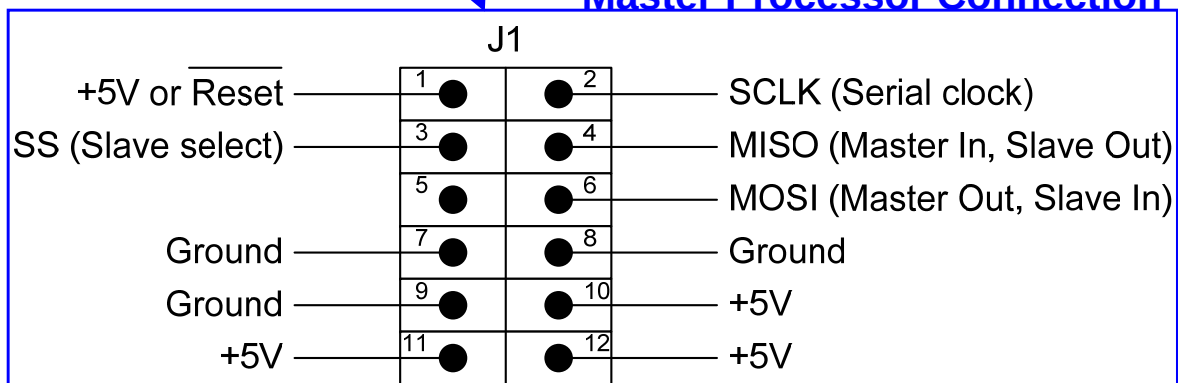
J1 Ribbon Cable Interface Parts



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

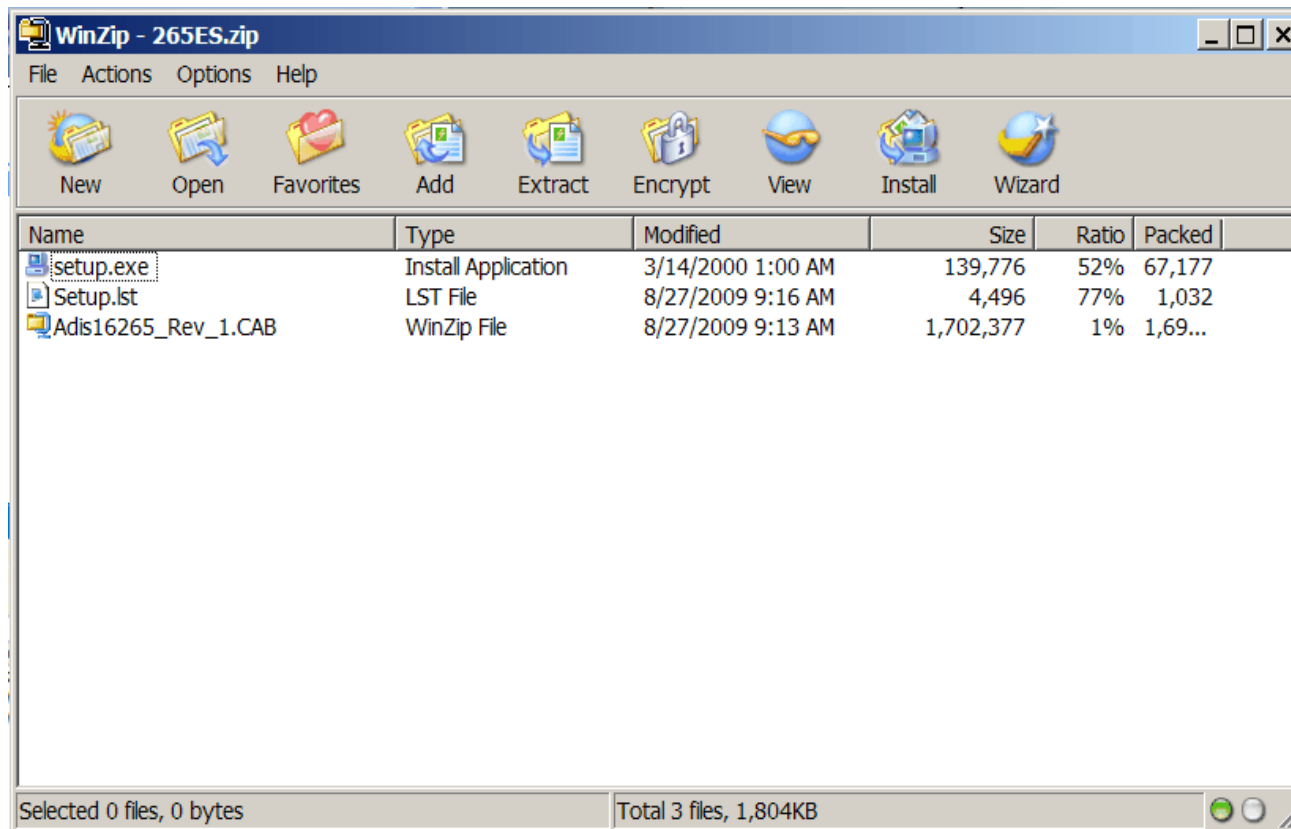
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ADIS1626x Demonstration Software Installation

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.

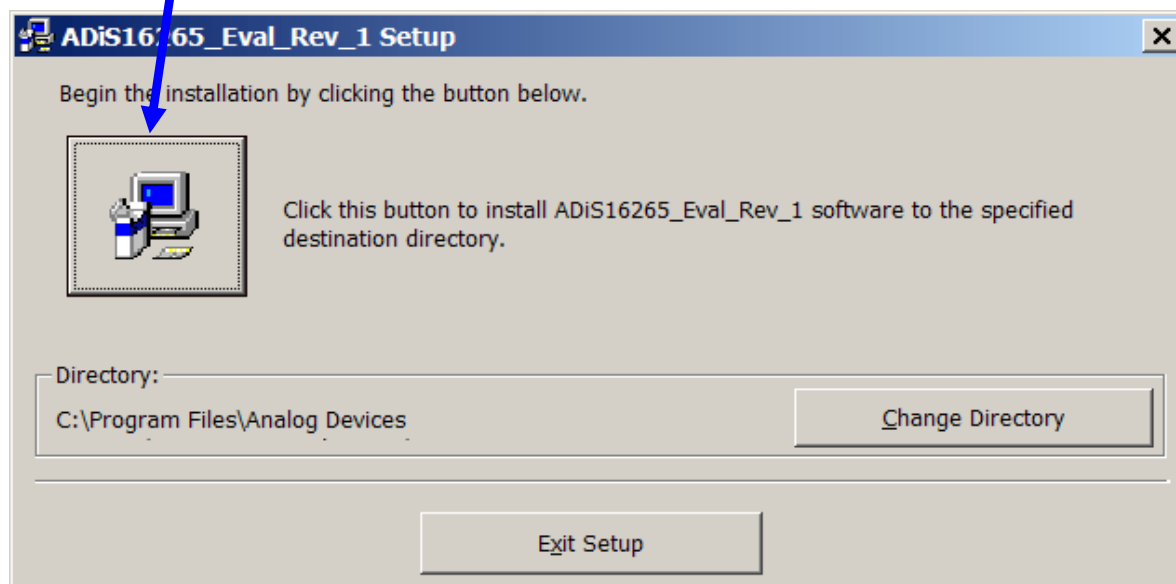
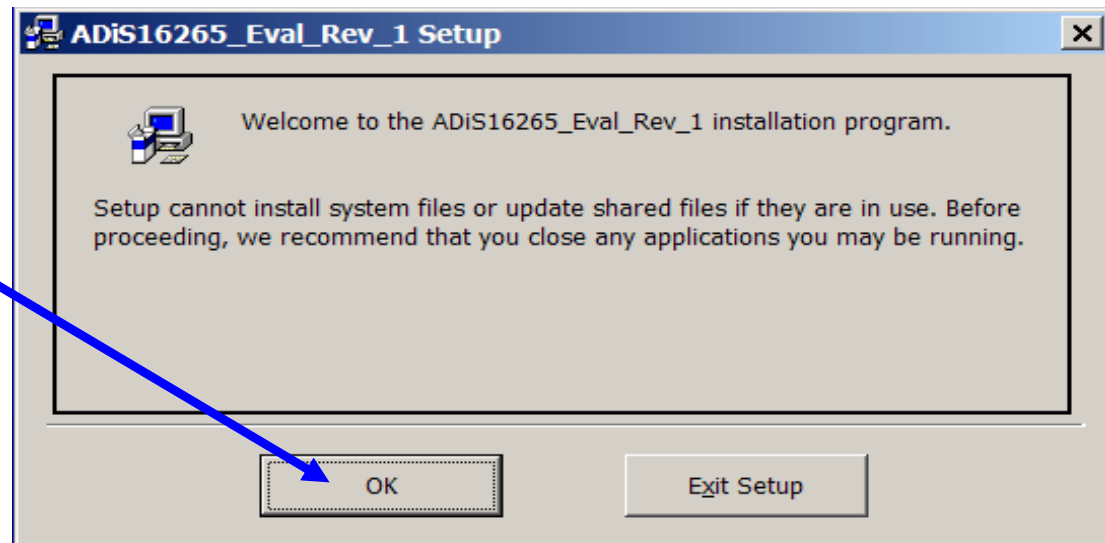


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ADIS1626x Demonstration Software Installation

Installation Steps (continued)

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



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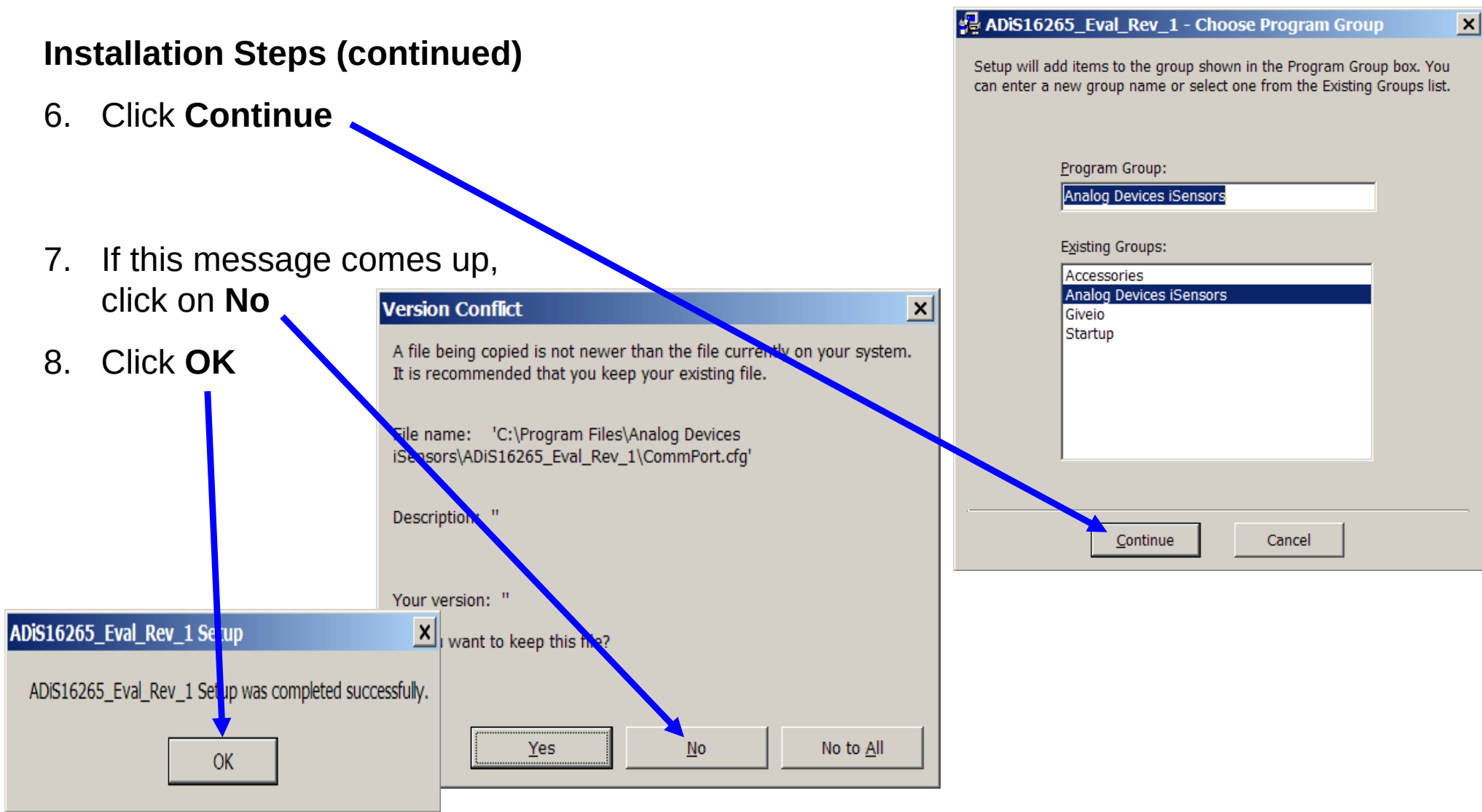
ADIS1626x Demonstration Software Installation

Installation Steps (continued)

6. Click **Continue**

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

8. Click **OK**



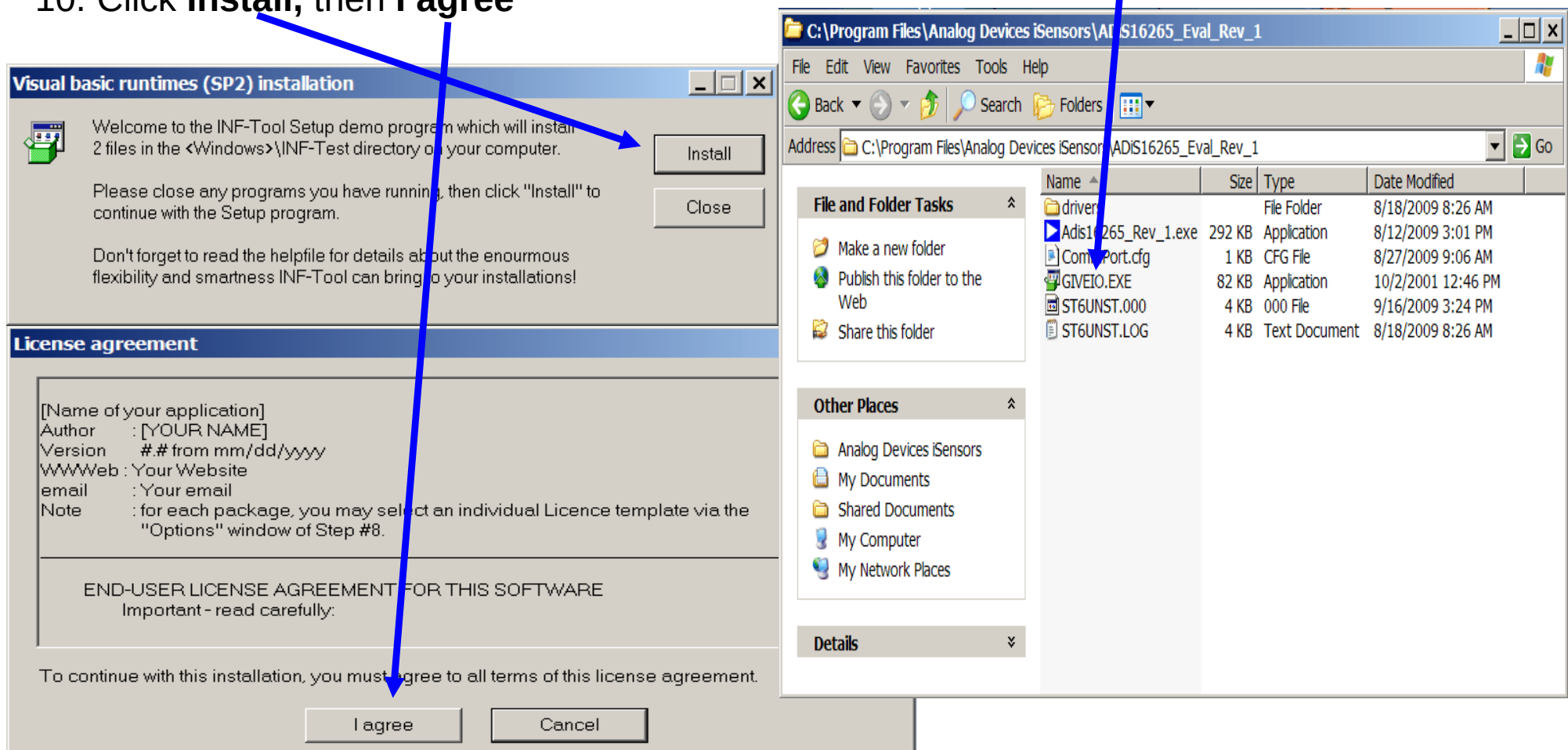
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ADIS1626x Demonstration Software Installation

Installation Steps (continued)

9. Open the newly created directory and double-click onto **GIVEIO.EXE**

10. Click **Install**, then **I agree**



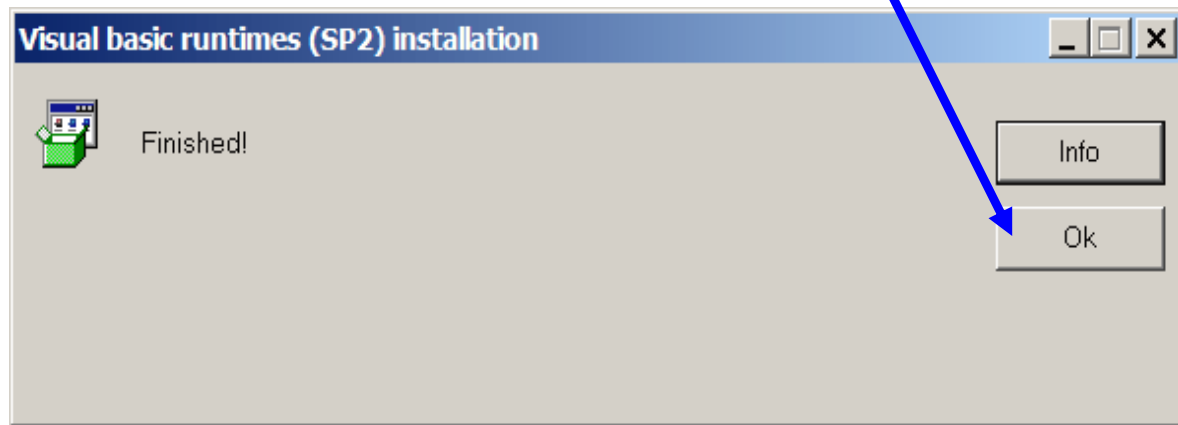
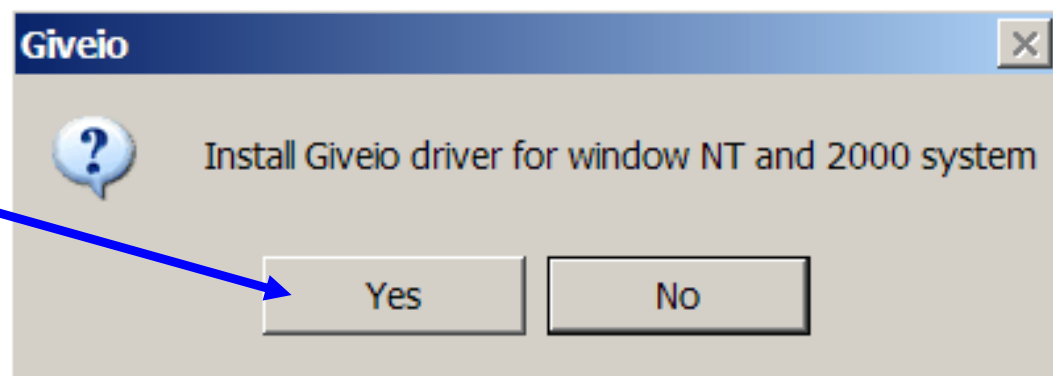
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ADIS1626x Demonstration Software Installation

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

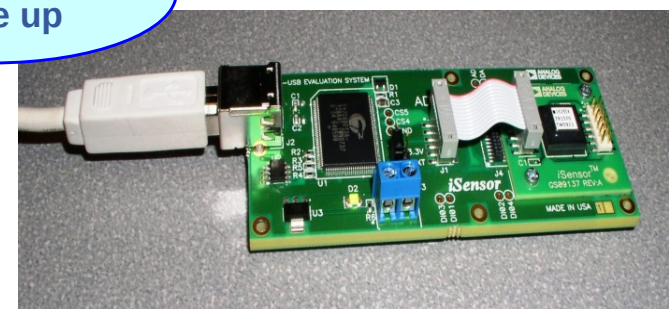
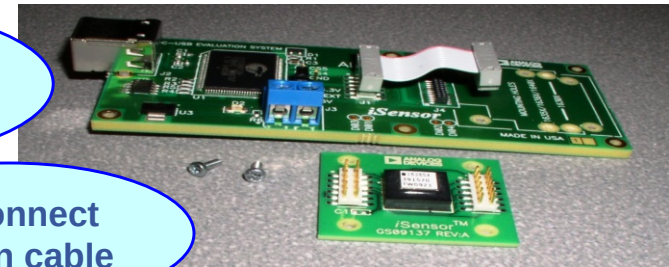
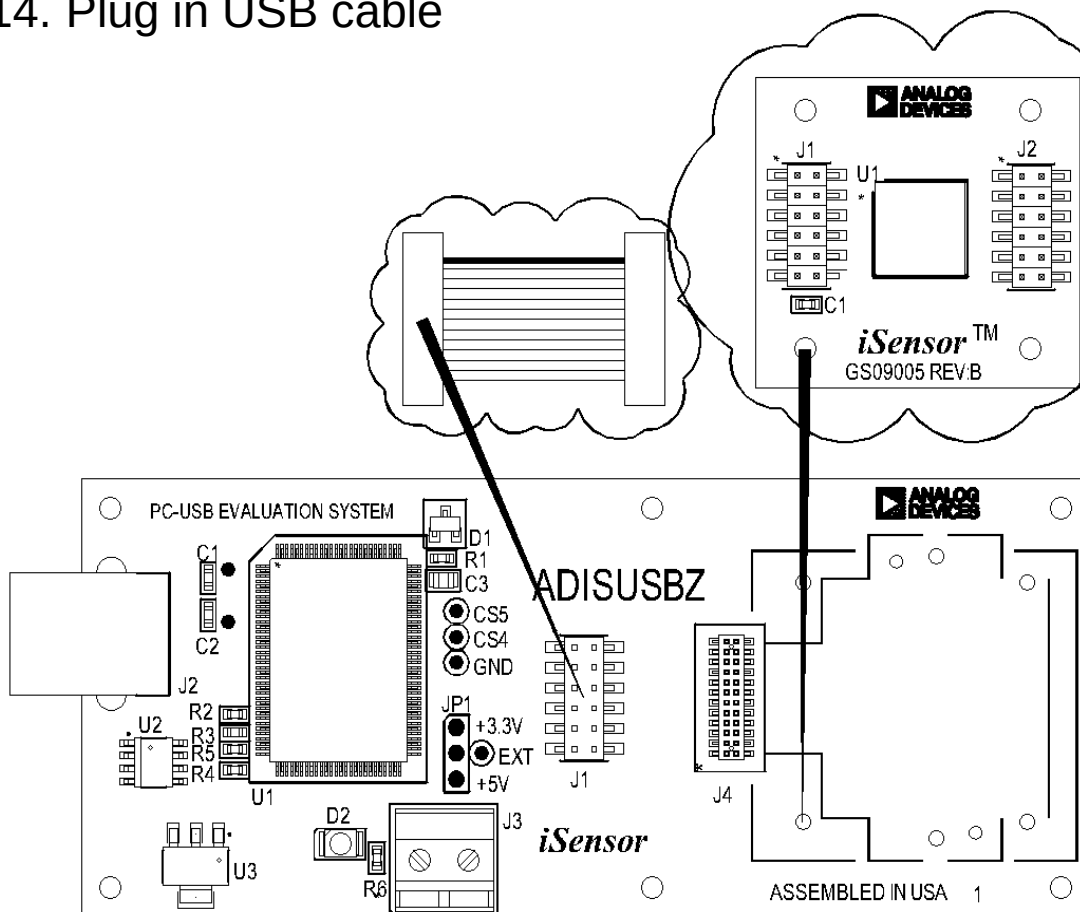
14. Plug in USB cable

1. Secure
26x/PCBZ with
2mm screws

2. Connect
ribbon cable

3. Verify JP1
set to +5V

4. Hook USB
cable up



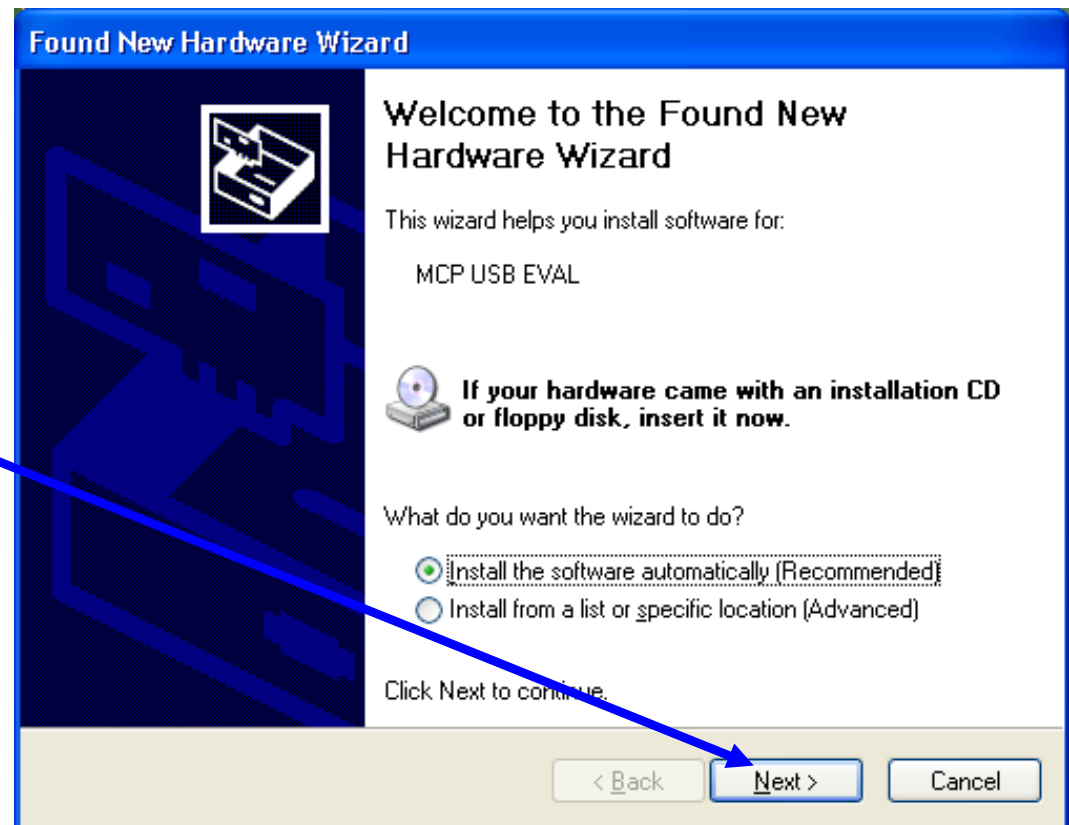
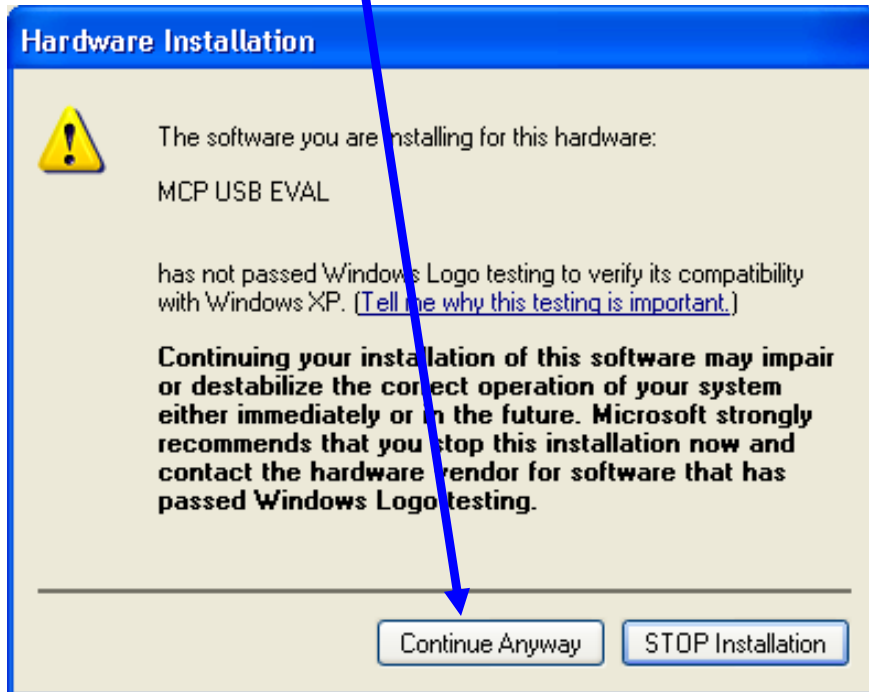
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ADIS1626x Demonstration Software Installation

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

The screenshot shows the Analog Devices - ADIS16265_Eval_Rev_1 software interface. The main window has a menu bar (Interface, Device, Configuration, Datalog, Registers, Exit) and a toolbar. The left panel contains the 'Output Registers' section with fields for Supply_Out (V), Gyro_Out (deg/s), Angl_Out (deg), Temp_Out (dC), and Aux_ADC (LSB), each with a 'Read' button. Below this is the 'Status Register' section with a 'Read Status' button and a list of status indicators (Power Supply Low, Power Supply High, Control Write Flag, SPI Write Flag, Gyro Over Range, Self Test Failure, Alarm1 Set, Alarm2 Set) each with an 'OK' button. The right panel features a 'Data Plot' section with a 'Device = 16265' label, a 'Scale' button, and a 'Rate deg / sec' plot area. A 'USB SPI Card Selection' dialog box is open, showing a 'Buffer Select' table with columns for Descriptor0, Rev, and Speed. The table lists EzUsb0 (MCP SPI, 0.1, 1.1), EzUsb1, EzUsb2, EzUsb3, and None. There are 'Debug' and 'OK' buttons in the dialog. A 'Self Test' section at the bottom left has 'Self-Test' radio buttons for ON and OFF. A 'Powerdown' section at the bottom right has 'Set' and 'Elapsed' time fields and a 'Run' button. Three blue callout boxes provide demonstration tips: #1 points to the 'Read' button in the Output Registers; #2 points to the 'OK' button in the USB SPI Card Selection dialog; #3 points to the 'Read' button in the Status Register.

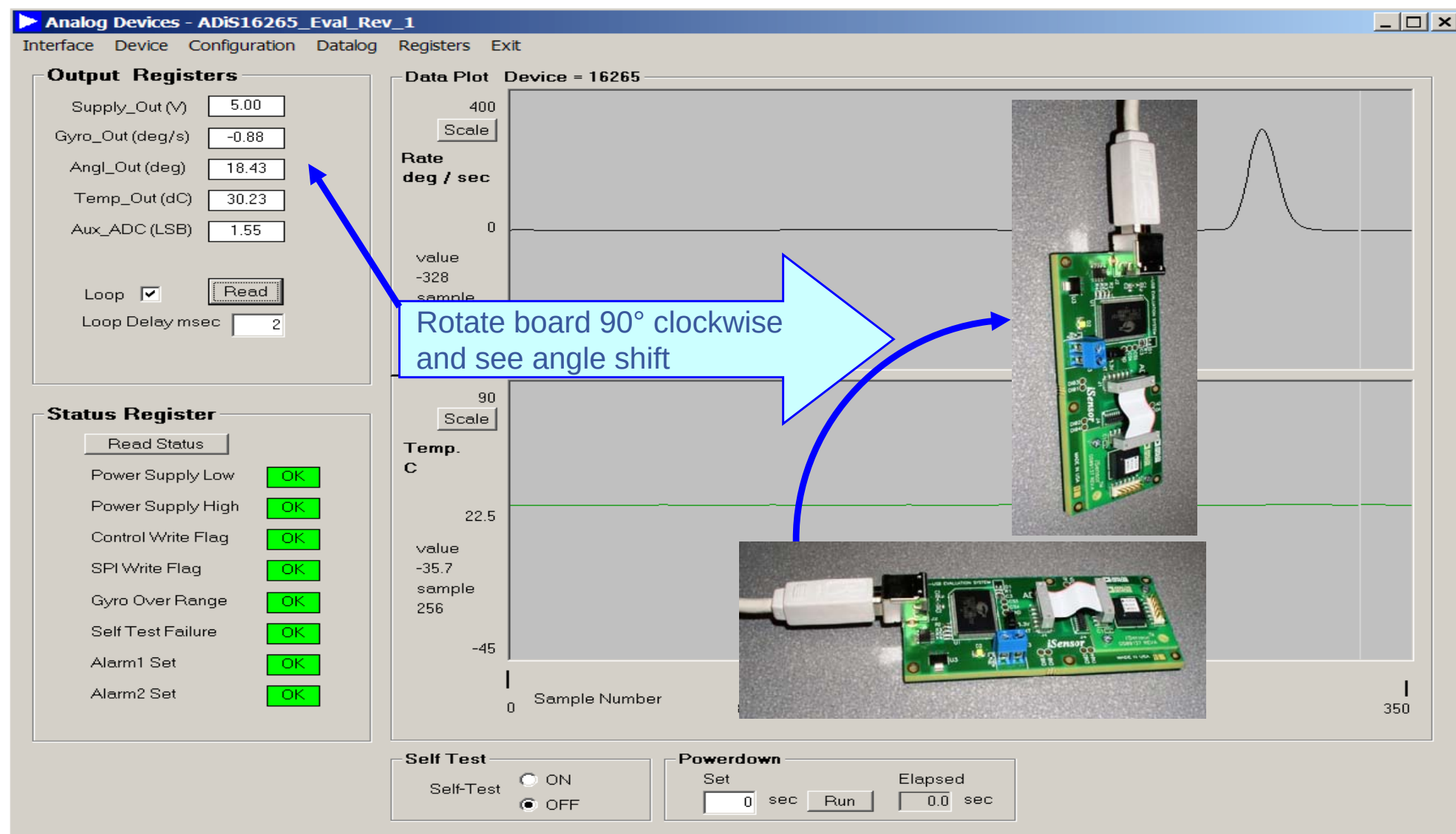
#1 Click here to access setup

#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



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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

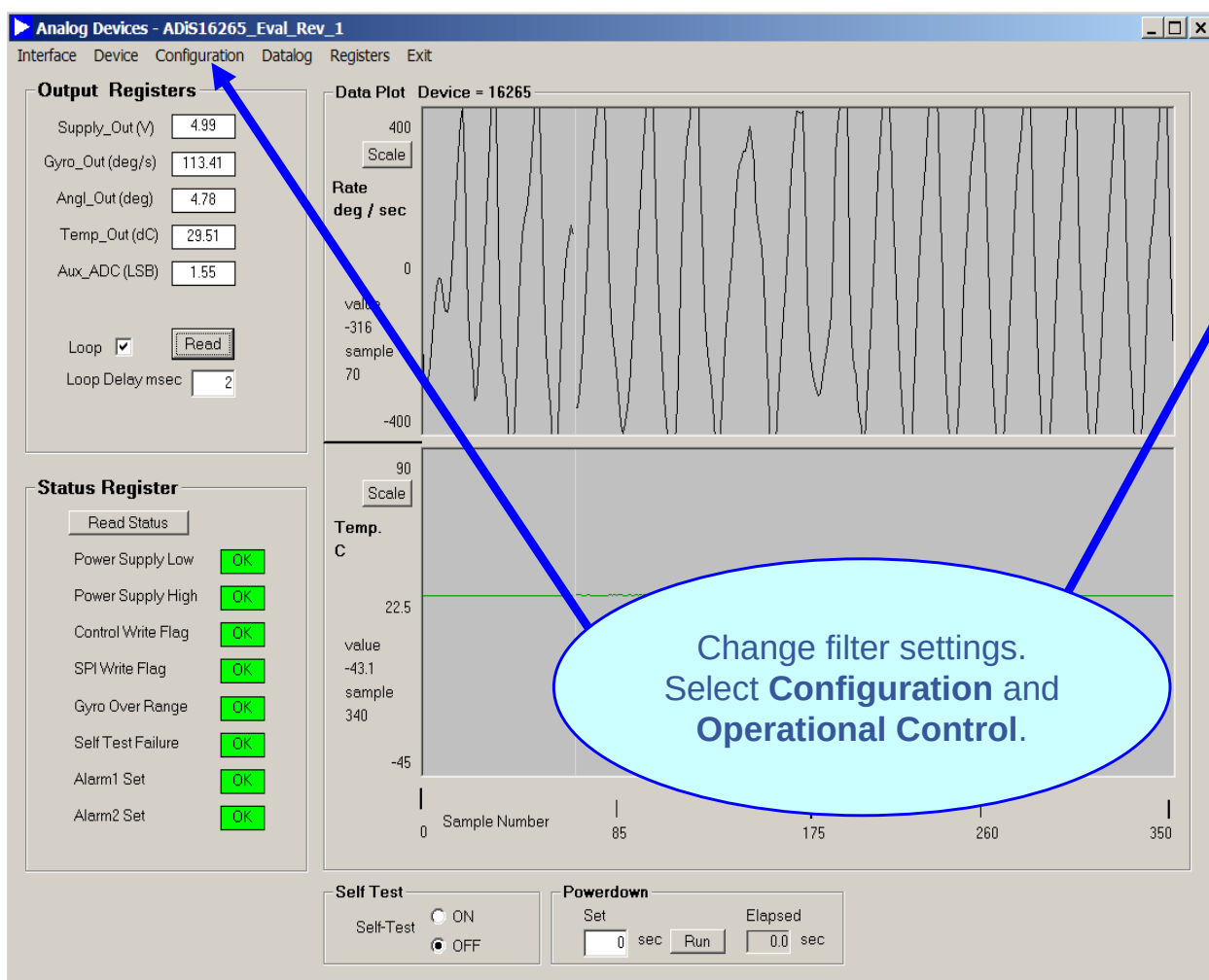
- Self-Test ☐ ON ☒ OFF

Powerdown

- Set sec
- Elapsed sec

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ADIS1626x Demonstration Tips—Compare Filter Settings



The screenshot shows the Operational Control window, which is used to configure the sensor's operational parameters. The window includes the following sections:

- Sample Rate:** Allows setting the sample rate (e.g., 256.016 SPS) and the sample period (SMPL_PRD).
- Measurement Range and Digital Filtering:** Includes options for Select Gyro Range (320 deg/sec, 160 deg/sec, 80 deg/sec), Analog Sensor Bandwidth (0 to 50 Hz, 0 to 300 Hz), and Taps (3).
- Auxilliary Digital I/O Configuration:** Includes options for Configure as a general purpose I/O line (GPIO_CTRL), Digital I/O Line 0 and 1 (Input/Output), Set Line 0 Level, Read Line 1 Level, Configure as a data ready line (MISC_CTRL), Select I/O line (DIO 1, DIO 2), Output Polarity, and Enable (ON/OFF).
- Auxilliary D/A Converter Output:** Includes a field for the output voltage (e.g., 0.0 Volts) and the AUX_DAC value.

Buttons for 'Update', 'Close Window', and 'Flash Memory Register Update' are also present.

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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 ☒ **Read**
Loop Delay msec 5

Status Register

Read Status

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 -65
sample 13

Scale 400

Temp. C

value 73.9
sample 124

Scale 90

Sample Number 0 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 **Update**

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 **Update**

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 **Update**

Close Window **Flash Memory Register Update**

Make changes to digital filtering and observe attenuated signals



◆ CONTACTS:

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- **APPLICATIONS ENGINEER:** Mark Looney, 1-336-605-4139

MORE INFORMATION:

- www.analog.com/isensor
- **New Brochure: iSensor Motion Sensor Products**
 - ◆ BR067755-2.5-4/08(A)

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