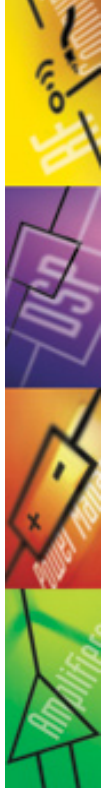




**THE DATASHEET OF
ADIS16365/PCBZ**



The World Leader in High-Performance Signal



iSensor[®]

Demo/Evaluation Tips for the ADIS16300



Mark Looney
iSensor Application Engineer
February 19, 2009

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Evaluation Tool Overview

- 1. Interface Connector for those that need to integrate this on a new PCB**
 - ◆ The ADIS1636xBMLZ use the FTMH-112-03 series of connectors from Samtec. www.samtec.com/FTMH
 - ◆ The evaluation tools use the CLM-112-02-LM-D-A connector from Samtec
 - ◆ Acquire mating connector from Samtec, not ADI. www.samtec.com/samples
 - ◆ Alternate mating connector: www.samtec.com/MLE

- 2. Evaluation/Interface Board (ADIS1636x/PCBZ) for simpler connection to an existing processor/system PCB.**

- ◆ These boards provide a simple connector translation from the 1mm pitch on the ADIS1636xBMLZ products to a 2mm pitch, which is easier to use in common prototyping environments such as hand-soldering and ribbon cabling.
- ◆ NOTE: PCB not sold separately.
- ◆ Part numbers for ordering:
ADIS16360/PCBZ, ADIS16364/PCBZ, ADIS16365/PCBZ

- 3. Evaluation System (ADISUSBZ) for those that prefer a simple PC interface**

- ◆ This system provides a simple USB interface, along with software for simple data collection and evaluating most of the ADIS1636x functions and performance.
- ◆ Supports approximately 150-200SPS sample rate.
- ◆ CAUTION: This system DOES NOT provide an appropriate framework for developing a system around the ADIS1636xBMLZ. NO source code or code development support is included with this kit.
- ◆ Part number for ordering: **ADISUSBZ**



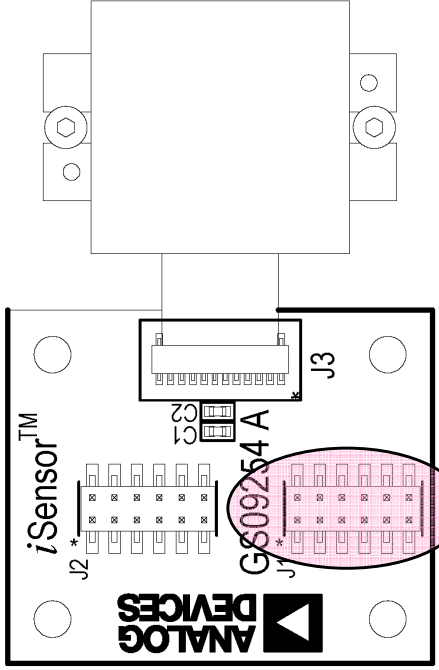
ADIS1636x



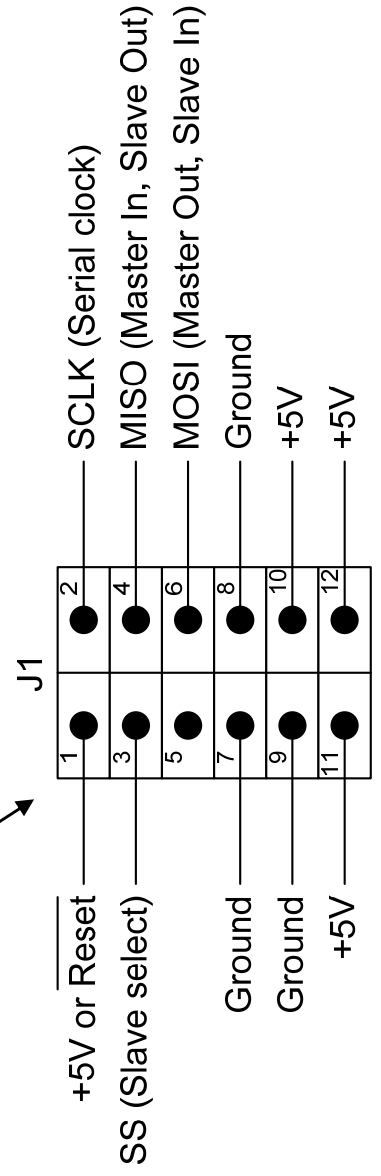
ADISUSBZ

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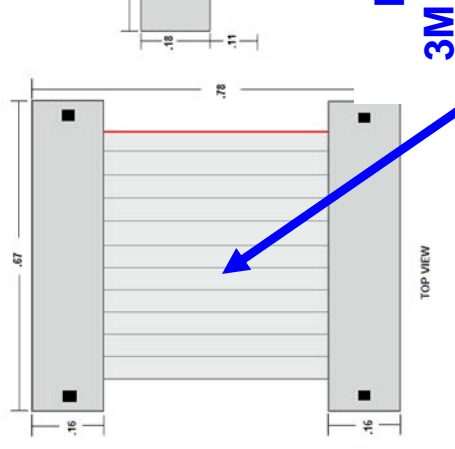
Hooking up to the ADIS1636x/PCBZ



Suggested connections with a Master Processor



J1 Ribbon Cable Int



ADISUSBZ cable assem

ASP-



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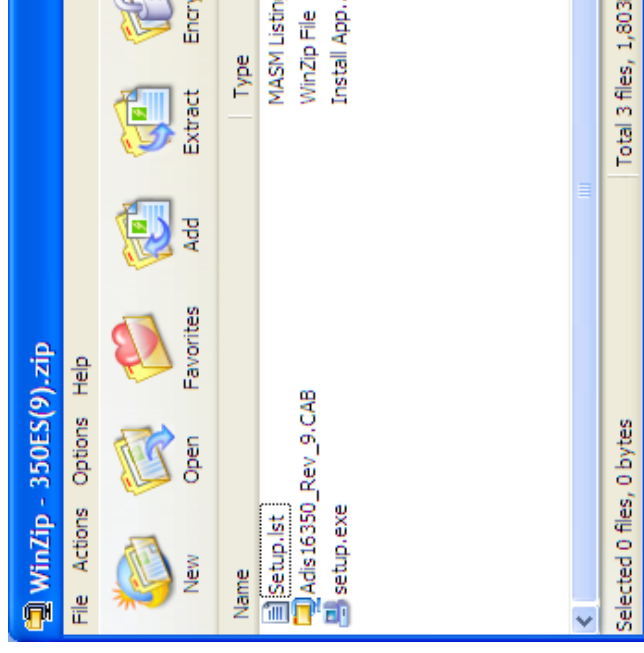
All ADIS1636x parts use the ADIS16350 evaluation software package.

1. Download 350ES.zip into a temporary directory and unpack its contents at http://www.analog.com/static/imported-files/eval_boards/350ES.zip

OR GO TO:

www.analog.com/isensor-evaluation,
then click on EVALUATION SOFTWARE DOWNLOADS
then click on 350ES.zip option

2. Double-click on “setup.exe”

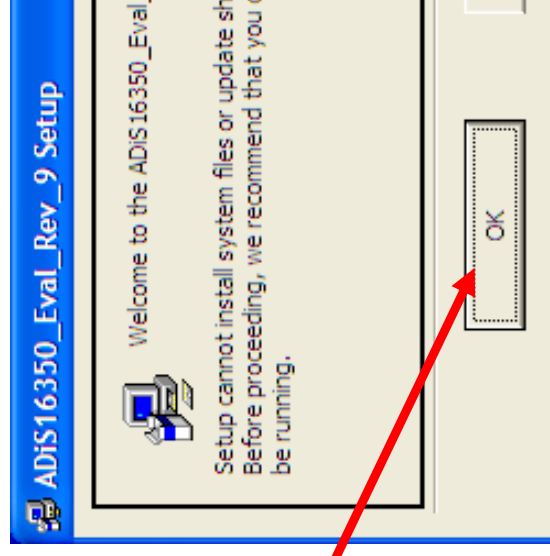


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ADIS16350 Demonstration Software Installation

Installation Steps (continued)

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

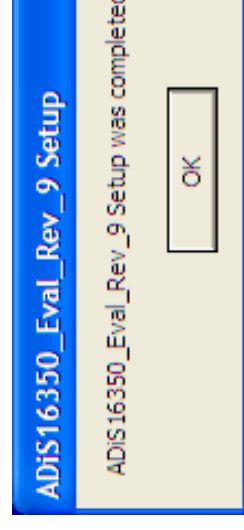
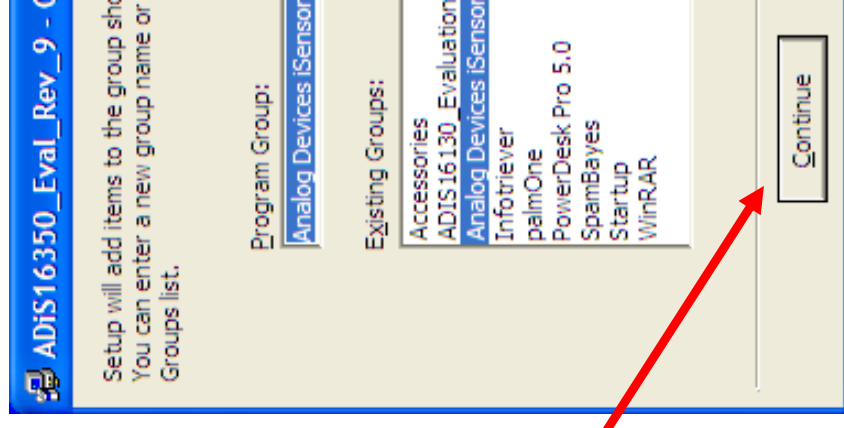
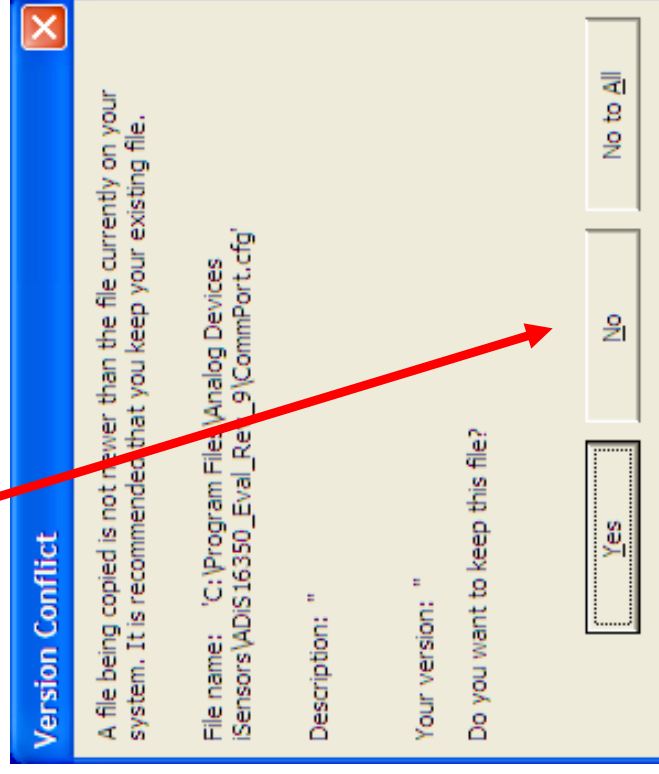


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ADIS16350 Demonstration Software Installation

Installation Steps (continued)

5. Click Continue
6. If this message comes up, click on “No”

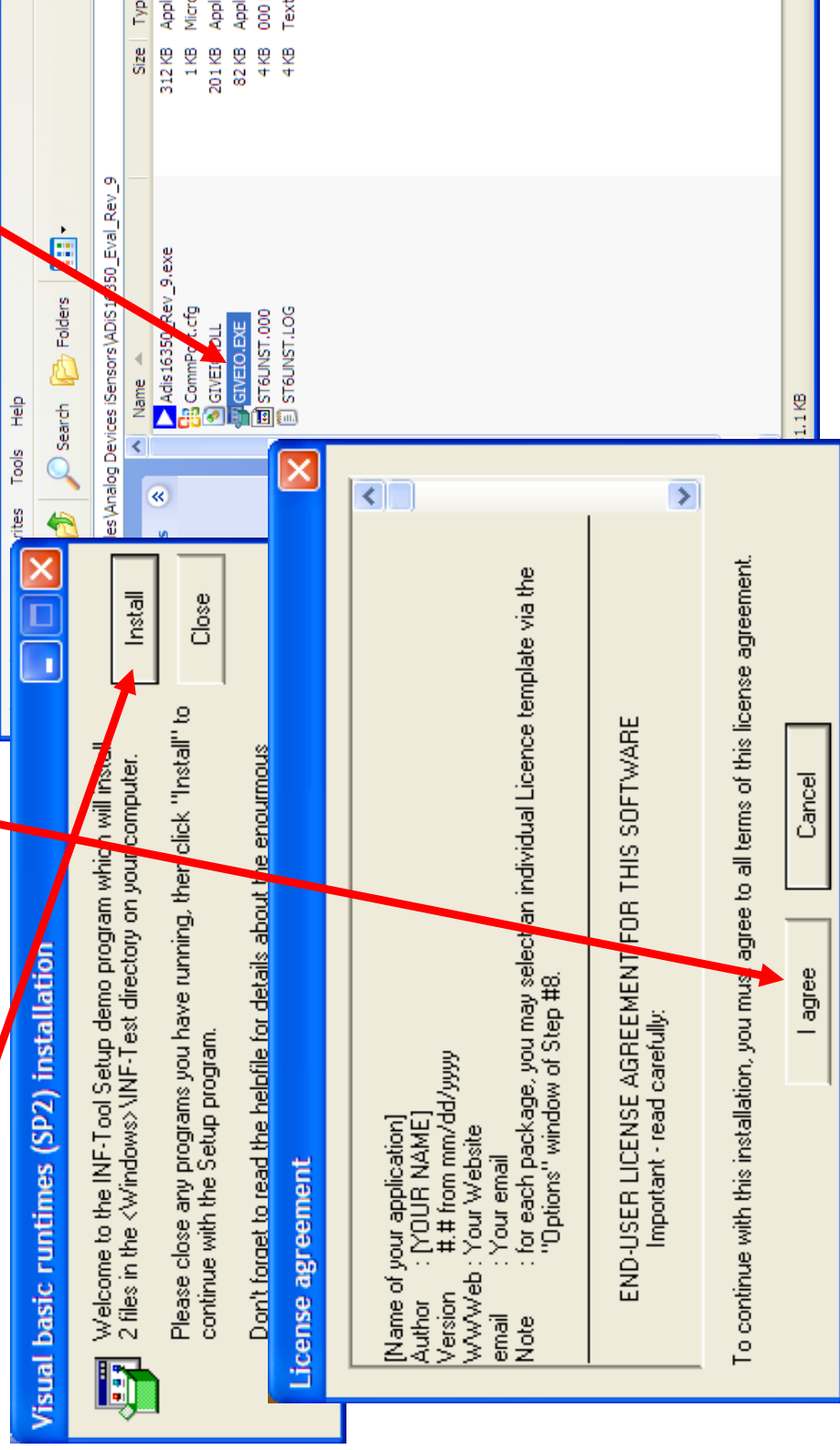


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ADIS16350 Demonstration Software Installation

Installation Steps (continued)

7. Open the newly created directory and double-click onto “giveio.exe”
8. Click “Install,” then “I Agree”

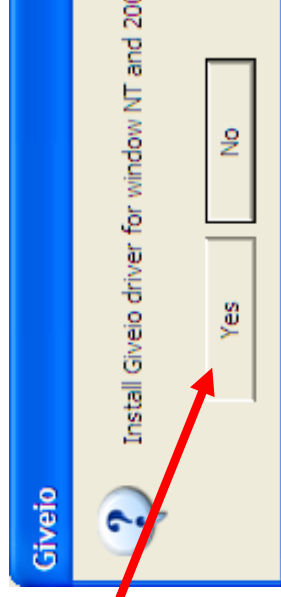


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ADIS16350 Demonstration Software Installation

Installation Steps (continued)

9. Click “yes”



10. Giveio Driver complete

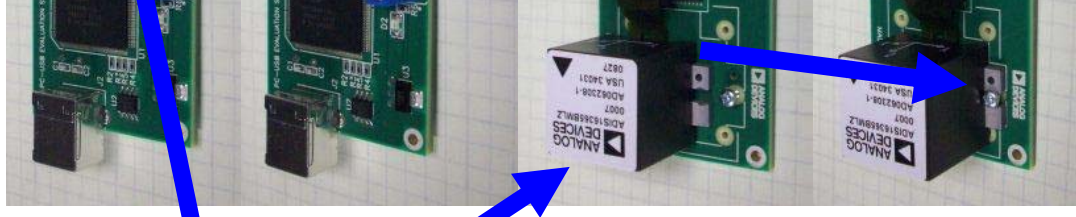


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ADIS1636x Installation on ADISUSBZ

Installation Steps (continued)

11. Install ADIS1636xBMLZ on ADISUSBZ
 1. Remove ribbon cable & (1) 2mm screw
 2. Place ADIS1636xBMLZ using silk on ADISUSBZ
 3. Slide ADIS1636xBMLZ onto screw head. Screw may need loosening
 4. Secure ADIS1636xBMLZ using 2 M6x2mm pan head screws (provided) between two tabs
 5. Align ADIS1636xBMLZ connector over J4 on ADISUSBZ and press it down to make connection
 6. Change JP1 from “+3.3V” option to “+5V” option



12. Plug in USB cable

CAUTION

DO NOT PULL ON THE ADIS1636x BODY TO BREAK THE CONNECTION WITH THE MATING CONNECTOR. WHEN DISCONNECTING, BREAK THE CONNECTION BY USING A SMALL SLOTTED SCREWDRIVER TO PRY THE CONNECTOR UP BEFORE REMOVING SCREWS

The flex circuit can break when mishandled and in most cases, repair is impossible. ADI does not offer repair or replacement service for broken flex and encourages appropriate care when handling the flex.

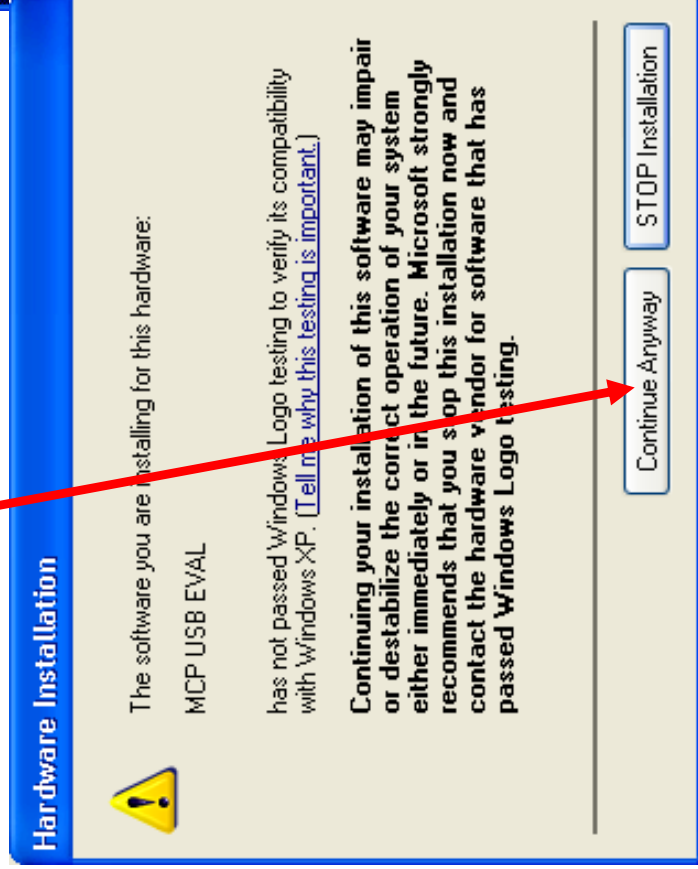
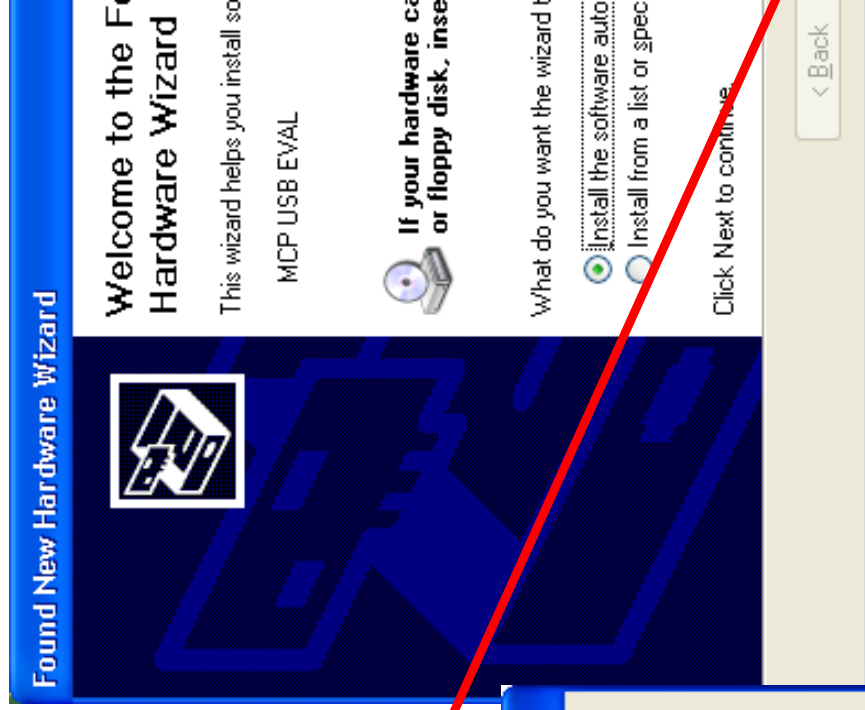
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MCP USB Driver Installation

Installation Steps (continued)

13. USB Driver screen will pop-up
Click “Next” to start this process

14. Then click on
“Continue Anyway”



This process may repeat. Just follow the instructions and allow it to go through its time. After completing this, the hardware will be ready for test.

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ADIS16350 Software Tips

The screenshot displays the iSensor software interface for the ADIS16350 sensor. The title bar indicates the software version: "ADIS 16300 / 16350 / 16354 / 16355 / 16360 / 16364 / 16365 Evaluation Software - Rev 9".

1. Analog L (Yellow circle 1) points to the "Interface" menu in the top-left corner.

2. Device = 16365 (Yellow circle 2) points to the "Device" dropdown menu in the top-right corner, which is currently set to "16365".

3. Rate (Yellow circle 3) points to the "Rate" dropdown menu in the "Output" section, which is currently set to "4.93".

4. Loop (Yellow circle 4) points to the "Loop" checkbox in the "Output" section, which is currently checked.

5. Data Plot (Yellow circle 5) points to the top plot area, which displays "Rate" data in "deg / sec" over 350 samples. The plot shows three distinct waveforms in red, green, and blue.

6. Accel. (Yellow circle 6) points to the bottom plot area, which displays "Accel." data in "g" over 350 samples. The plot shows three distinct waveforms in red, green, and blue.

Output Section:

- Power: 16300, 16350, 16354, 16355, 16360, 16364, 16365
- X_{Rate}: 4.93
- Y_{Rate}: -0.45
- Z_{Rate}: 0.00
- X_{Accel} (g): 0.01
- Y_{Accel} (g): 0.00
- Z_{Accel} (g): -0.96
- X_{Temp} (degC): 28.94
- Y_{Temp} (degC): 28.53
- Z_{Temp} (degC): 23.64
- Aux_ADC: 1.24

Status Register Section:

- Read Status: OK
- Power Supply Low: OK
- Power Supply High: OK
- Control Write Flag: OK
- SPI Write Flag: OK
- Alarm1 Set: OK
- Alarm2 Set: OK

Data Plot Section:

- Device = 16365
- Rate (deg / sec): value 350, sample 32
- Accel. (g): value 9.5, sample 115
- Sample Number: 0, 85, 175, 260, 350

Self Test Section:

- Self-Test: OFF
- Powerdown Set: 0 sec
- Run: 0.0 sec
- Elapsed: 0.0 sec

1.

2.

3.

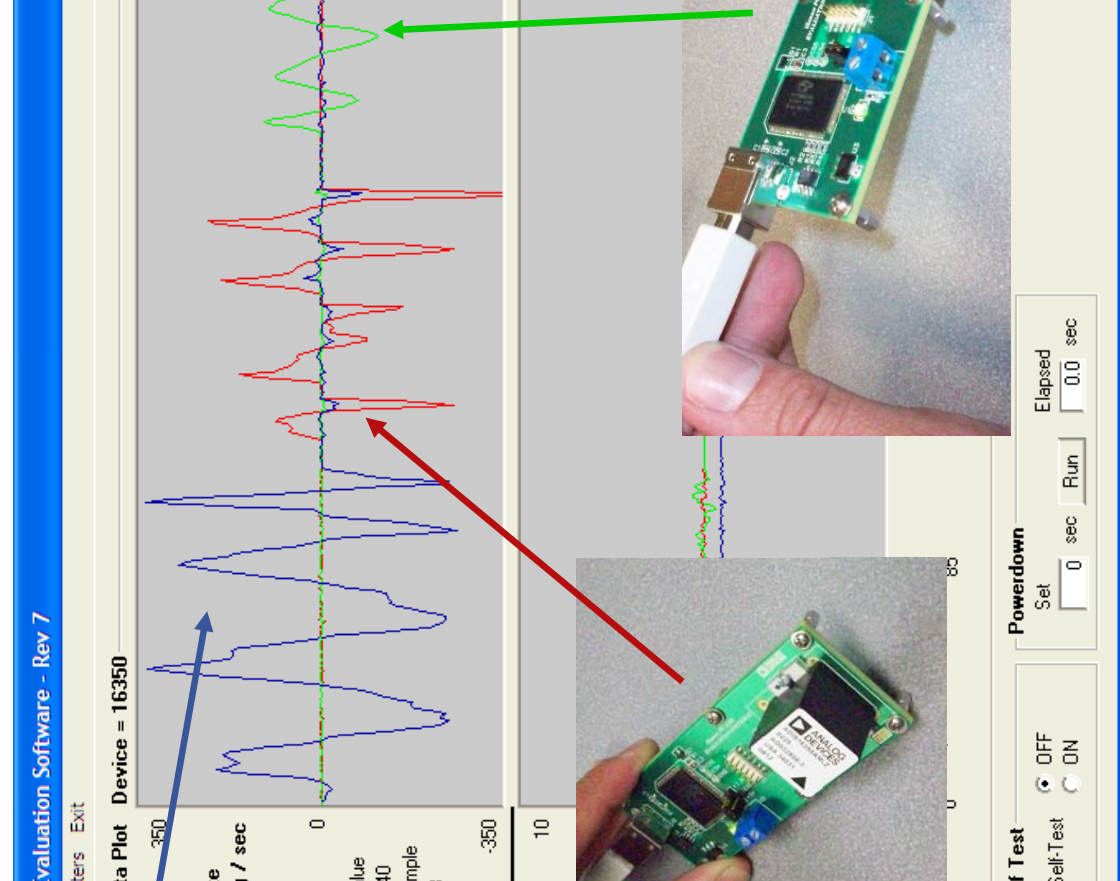
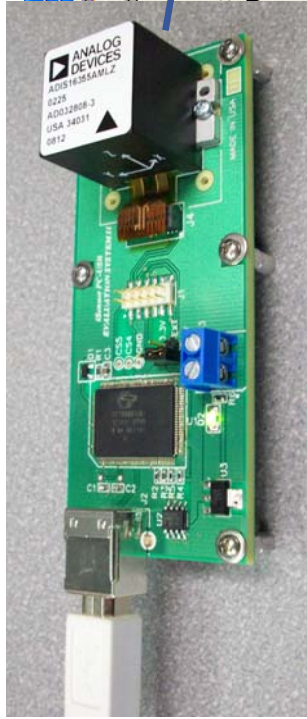
4.

5.

6.

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ADIS16350 Demonstration Tips – Look at each axis



X_Accel (g) -0.015
 Y_Accel (g) 0.008
 Z_Accel (g) -0.936
 Y_Temp (degC) 30.671
 29.508
 17

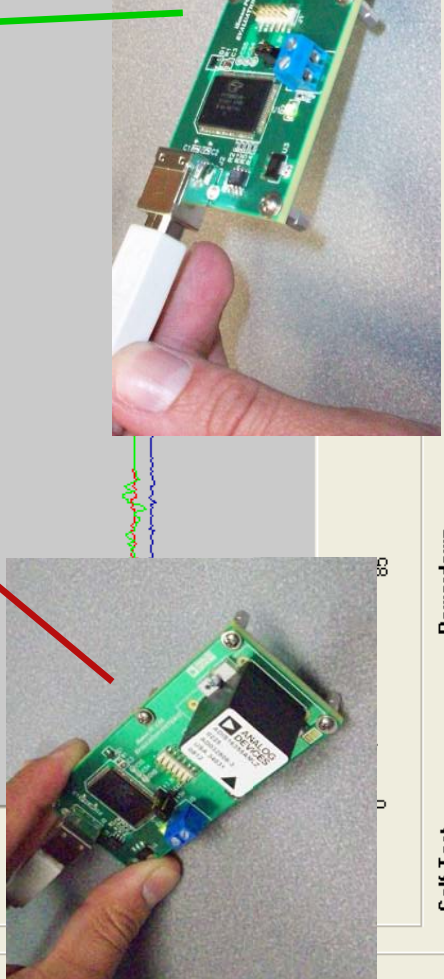
Status Register

Read Status
 Power Supply Low **OK**
 Power Supply High **OK**
 Control Write Flag **OK**
 SPI Write Flag **OK**
 Alarm1 Set **OK**
 Alarm2 Set **OK**

Self Test
 Self-Test OFF ON

Powerdown
 Set sec sec
 Elapsed sec

Tip
Use standoffs to isolate each axis



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ADIS16350 Evaluation Software, Calibration Menu



1. From the main menu, select **Calibration**, then **Configuration**, then **Auto Null** to reach this menu.
2. Use **Auto Null Run** for a quick offset calibration.
3. Use **Precision Auto Null** for this option inside **Calibration**, which takes a 30-second period to produce these numbers. The device still and a second period.
4. Use the **Flash Memory Register Update** to store settings to volatile flash.
5. Use the **Restore Factory Calibration** to return all of the settings to factory defaults.

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ADIS16350 Evaluation Software, Operation Menu

Operational Control

Sample Rate
819.202 SPS SMPL_PRD Contents: 0x1 Update

Measurement Range and Digital Filtering
Select Gyro Range: 320 deg/sec 160 deg/sec 80 deg/sec **2**

Taps: 32 SENS/AVG Contents: x405 Update **3**

Auxiliary 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 Read Line 1 Level: High Low
Configure as a data ready line
Select I/O line: DI/DO DI/DI Output Polarity: High Low
Enable: ON OFF

Auxiliary D/A Converter Output
0.0 Volts AUX_DAC Contents: 0x0 Update **5**

Close Window Flash Memory Register Update

1. From the main menu, click on **Operational Control**. From the **Configuration**, then click on **Operational Control** to reach this menu.
2. Bias stability performance is typically best when the maximum sample rate is used.
3. Use the on-board potentiometer (to reduce noise), the number of taps (to reduce noise), the ADISUSBZ size (to reduce noise), the ADISUSBZ sample rates of 150-2000 SPS (to reduce noise), and at least 8 taps.
4. Digital and analog outputs are configured in the **Operational Control** menu.
5. Use the **Flash Memory Register Update** button to store the configuration to volatile flash.

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ADIS16350 Evaluation Software, Data log Menu

Data Log Control

FILE SETUP

Samples per File: 4096 (1)

Sample Delay msec: 0

Files per Session: 1

FILE INFORMATION

Directory: C:\Program Files\Analog Devic

File Name: DATALOG

File Number: 1

DATA SELECTION

Power Supply

X Gyro (2)

Y Gyro

Z Gyro

X Accel

Y Accel

Z Accel

X Temperature

Y Temperature

Z Temperature

Aux Adc

Start Datalog (3)

1. Set the total number of samples per file.
2. Set the inertial sensor data to be monitored.
3. When the data logging is completed, a message will appear until the data collection is completed.



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MORE INFORMATION ON iSENSOR EVALUATION TO

- **www.analog.com/isensor-evaluation**

Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

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