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# *i*Sensor®

## ADIS1633x Demonstration Tips Using IMU\_6DOF



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## IMU\_6DOF Evaluation Software, Interface selection

1. Install the ADIS16334BMLZ onto the ADISUSBZ, using the directions found at:
  - A. Go to [www.analog.com/ADIS16334](http://www.analog.com/ADIS16334)
  - B. Click on Evaluation Boards & Kits
  - C. Click on “ADIS1633x Installation for PC-USB Evaluation” to download instructions.
2. Hook up the PC-USB port to the ADISUSBZ, using the A-to-B USB adapter cable, which is provided with the ADISUSBZ kit.
3. Start the IMU\_6DOF program, using the following Windows sequence> Start > Programs > Analog Devices iSensor > IMU\_6DOF
4. Verify that the software is communicating with the device, using the “Interface” option in the main window.

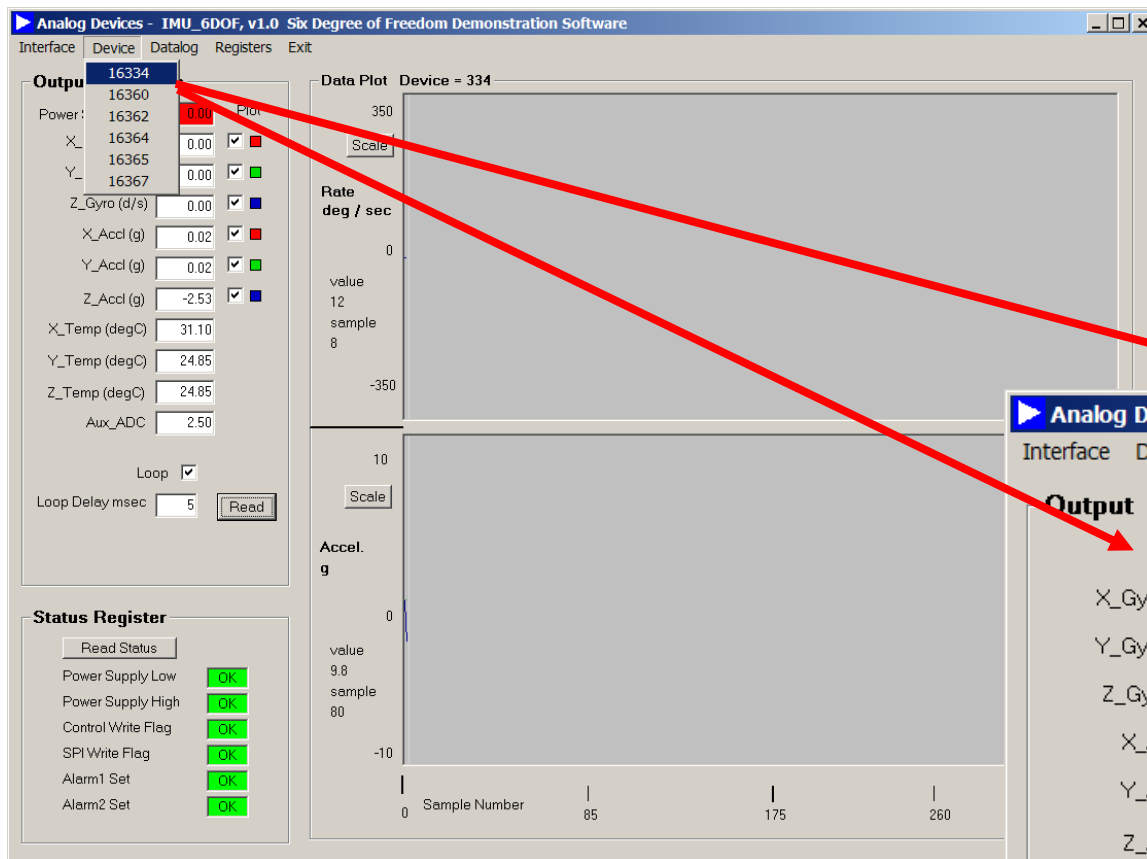
The image shows two overlapping windows from the iSensor software. On the left is a 'USB SPI Card Selection' dialog box with a 'Buffer Select' section containing radio buttons for EzUsb0, EzUsb1, EzUsb2, EzUsb3, and None. EzUsb0 is selected, and its fields show 'MCP SPI', '0.1', and '2.0'. There is an 'OK' button and a 'Search' button. On the right is the main software window titled 'Analog Devices - IMU\_6DOF, v1.0 Six Degree of Freedom Demonstration Software'. The 'Interface' menu is open, showing 'Usb' selected with a checkmark. Below the menu is a 'Registers' section with a table of sensor data and checkboxes for plotting. To the right of the registers is a 'Data Plot' section with a 'Scale' button and a 'Rate deg / sec' section with a 'value' of 3 and a 'sample' rate of 10. A red circle highlights the 'Usb' option in the menu, and a red arrow points from it to the 'EzUsb0' radio button in the dialog box.

Register	Value	Plot
X_Gyro (d/s)	0.00	<input checked="" type="checkbox"/>
Y_Gyro (d/s)	0.00	<input checked="" type="checkbox"/>
Z_Gyro (d/s)	0.00	<input checked="" type="checkbox"/>
X_Accd (g)	0.02	<input checked="" type="checkbox"/>
Y_Accd (g)	-0.13	<input checked="" type="checkbox"/>
Z_Accd (g)	-2.52	<input checked="" type="checkbox"/>
X_Temp (degC)	23.69	

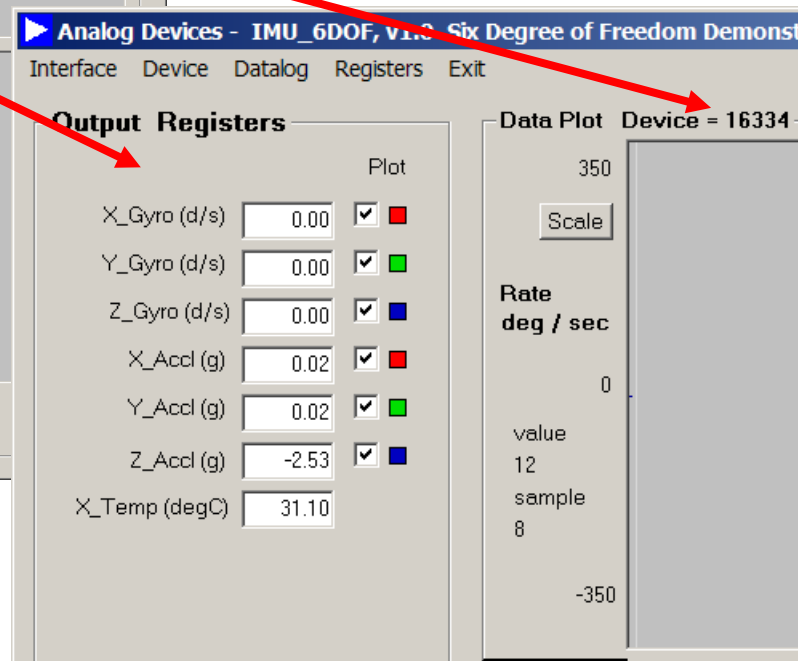


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## IMU\_6DOF Evaluation Software, Device Selection

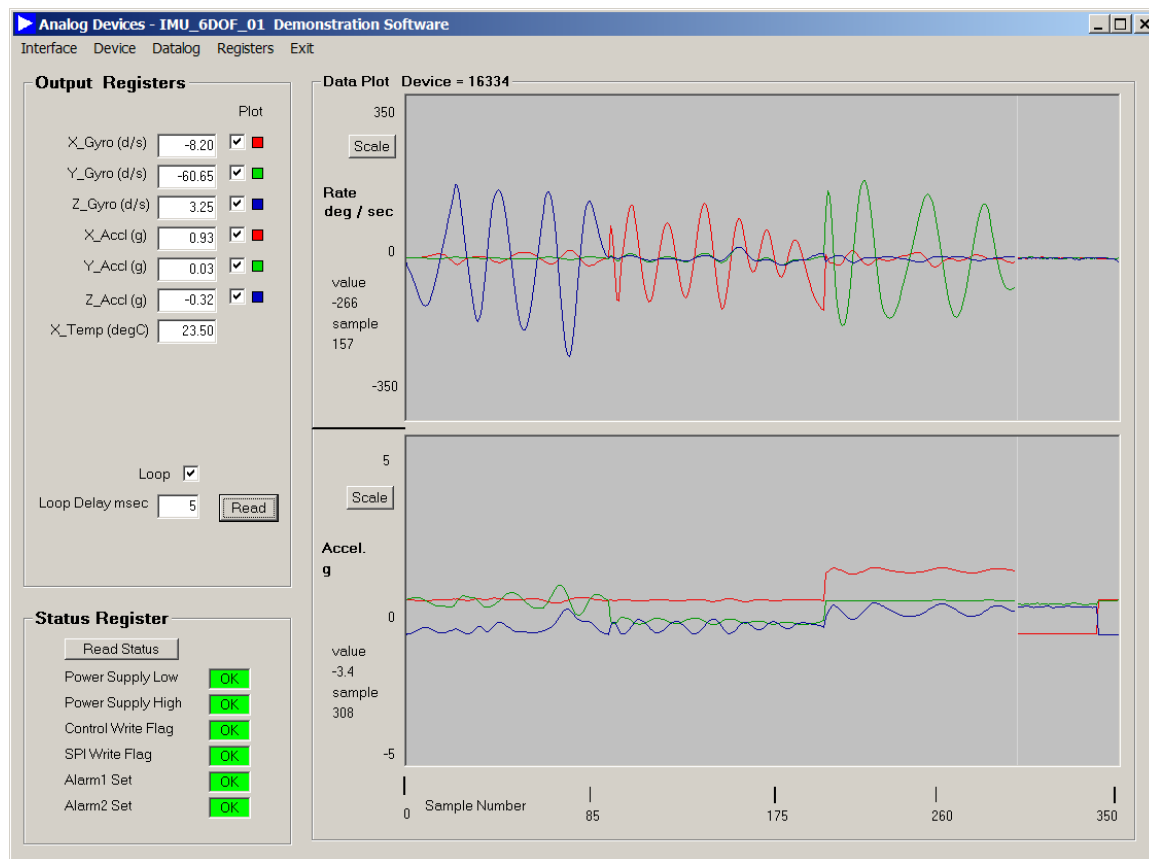


1. If the program doesn't recognize the device, then use the "Device" drop-down menu to select the "ADIS16334".
2. The main menu will adjust the view to reflect the ADIS16334's options and be ready for use.



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## IMU\_6DOF Evaluation Software, Main menu demos

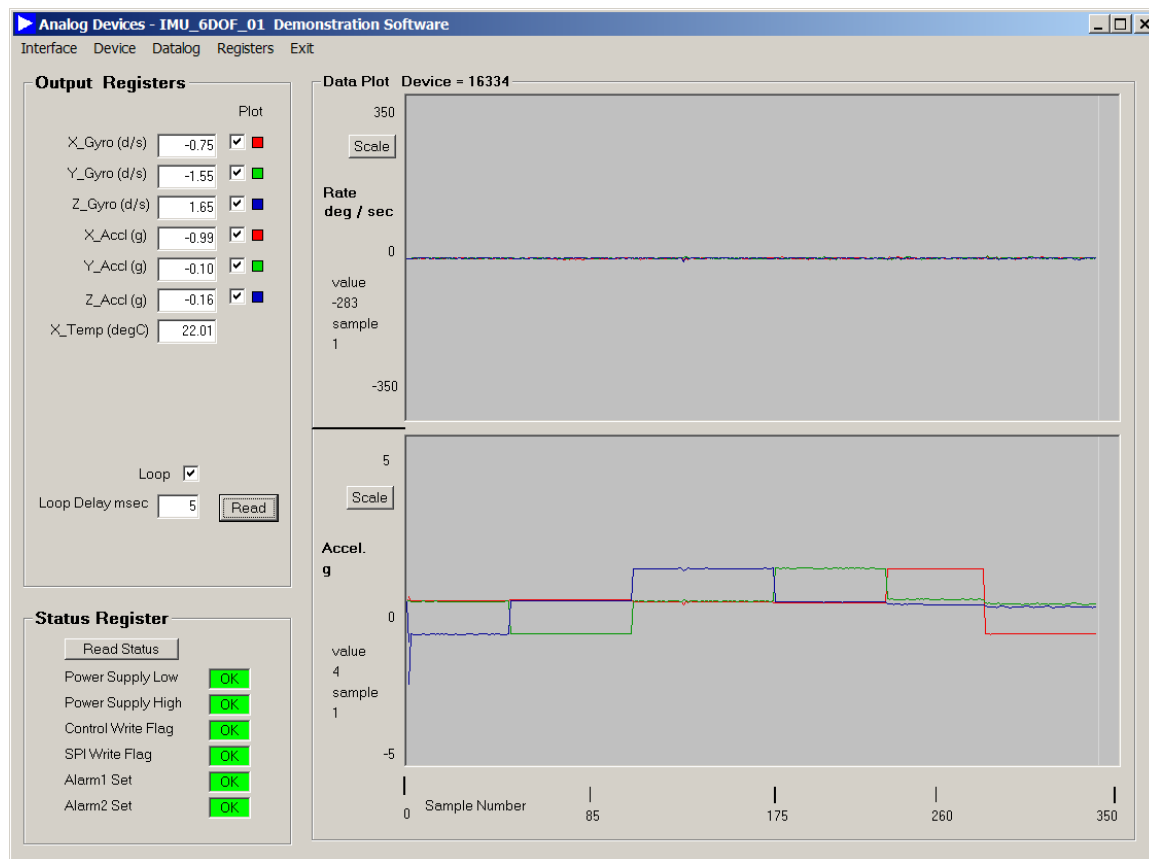


1. Click on the “Read” button to start the demo mode, which is a screen-based waveform recorder.
2. Use the color codes next to the Output Register assignments to observe each sensor’s response.



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## IMU\_6DOF Evaluation Software, Main menu demos



1. Use different orientations to show the static response that each accelerometer has to gravity.



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## IMU\_6DOF Evaluation Software, Register access

**Register Information**

Register Read/Write

Base Addr (Hex)

Num Bytes

Read Flag

Write Flag

Deci. Value

Read (Hex)

Write (Hex)

Update Flash

Close Window

**User Registers (Hex Values)**

Name	Addr	hexValue	decValue
FLSH_CNT	0000	0018	24
SUPPLY_OUT	0002	0000	0.0000
XGYRO_OUT	0004	BFF8	-0.4000
YGYRO_OUT	0006	BFF4	-0.6000
ZGYRO_OUT	0008	8002	0.1000
XACCL_OUT	000A	8008	0.0080
YACCL_OUT	000C	8008	0.0080
ZACCL_OUT	000E	BC15	-1.0030
XTEMP_OUT	0010	802B	30.8480
XGYRO_OFF	001A	0000	0.0000
YGYRO_OFF	001C	0000	0.0000
ZGYRO_OFF	001E	0000	0.0000
XACCL_OFF	0020	0000	0.0000
YACCL_OFF	0022	0000	0.0000
ZACCL_OFF	0024	0000	0.0000
ALM_MAG1	0026	0000	
ALM_MAG2	0028	0000	
ALM_SMPL1	002A	0000	
ALM_SMPL2	002C	0000	
ALM_CTRL	002E	0000	
AUX_DAC	0030	0000	
GPIO_CTRL	0032	0F00	
MSC_CTRL	0034	0000	
SMPL_PRD	0036	0001	
SENS_AVG	0038	0400	
SLP_CNT	003A	0000	
CONT_SLP	003B	0000	
DIAG_STAT	003C	0000	
GLOB_CMD	003E	0000	
Rev_	0052	0113	
Day_	0053	0113	
MONTH	0054	1102	
YEAR_	0055	1102	
PROD_ID	0056	014E	
SERIAL_NUM	0058	000C	

Read

Print

Registers\_Log

Save

1. In the main window, click on “Register.”
2. The register listing shows the contents of each register when the screen first opens.
3. Also, use the “Read” button on the right side of the window to refresh these readings.



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## IMU\_6DOF Evaluation Software, Register access

**Register Information**

**Register Read/Write**

SENS\_AVG

Base Addr (Hex): 0038

Num Bytes: 2

Read Flag: True

Write Flag: True

Deci. Value: 1024.0000

Read (Hex): 0

Write (Hex): 406

Update Flash

Close Window

**User Registers (Hex Values)**

Name	Addr	hexValue	decValue
FLSH_CNT	0000	0018	24
SUPPLY_OUT	0002	0000	0.0000
XGYRO_OUT	0004	BFF7	-0.4500
YGYRO_OUT	0006	BFFF	-0.0500
ZGYRO_OUT	0008	BFFB	-0.2500
XACCL_OUT	000A	8005	0.0050
YACCL_OUT	000C	8006	0.0060
ZACCL_OUT	000E	BC18	-1.0000
XTEMP_OUT	0010	802B	30.8480
XGYRO_OFF	001A	0000	0.0000
YGYRO_OFF	001C	0000	0.0000
ZGYRO_OFF	001E	0000	0.0000
XACCL_OFF	0020	0000	0.0000
YACCL_OFF	0022	0000	0.0000
ZACCL_OFF	0024	0000	0.0000
ALM_MAG1	0026	0000	
ALM_MAG2	0028	0000	
ALM_SMPL1	002A	0000	
ALM_SMPL2	002C	0000	
ALM_CTRL	002E	0000	
AUX_DAC	0030	0000	
GPIO_CTRL	0032	0F00	
MSC_CTRL	0034	0000	
SMPL_PRD	0036	0001	
SENS_AVG	0038	0406	
SLP_CNT	003A	0000	
CONT_SLP	003B	0000	
DIAG_STAT	003C	0000	
GLOB_CMD	003E	0000	
Rev__	0052	0113	
Day__	0053	0113	
MONTH	0054	1102	
YEAR_	0055	1102	
PROD_ID	0056	014E	
SERIAL_NUM	0058	000C	

Read

Print

Registers\_Log

Save

1. Use the pull-down menu, under the “Register Read/Write” title, to gain access to each register.
2. Select a register, such as “SENS\_AVG.”
3. Enter the new hexadecimal value in the white box, next to the “Write (Hex)” button.
4. Press the “Write (Hex)” button to write the contents into the register.
5. Press the “Read” button on the right side of the window to verify that the register contents were updated.  
NOTE: “Read (Hex)” button is not functional on v1.0, but will be in future revisions.
6. Use “Update Flash” button to write the changes into non-volatile flash

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## IMU\_6DOF Evaluation Software, Data log

**Datalog Control**

**FILE SETUP**

Samples per File: 1000

Sample Delay msec: 0

Files per Session: 1

**FILE INFORMATION**

Directory: C:\Program Files\Analog Devic

File Name: DATALOG

File: 1 .csv

**DATA FORMAT**

Numeric Data Only... No file header

LSB Data Only... No scaling

Disable New Data Flags

**DATA SELECTION**

XGYRO\_OUT

YGYRO\_OUT

ZGYRO\_OUT

XACCL\_OUT

YACCL\_OUT

ZACCL\_OUT

XTEMP\_OUT

**Start Datalog**

The data log function is not synchronized with the ADIS163xx sampling.

PC-USB read rates are typically limited to ~1800 registers reads per second.

1. Use the Sample Delay box to add time to the USB read loop. Use a small number of samples to test the effect and tune the read rates for specific needs. Make sure to use the SENS\_AVG[7:0] filter settings to lower the internal bandwidth if slower read rates are being used.
2. Use the check boxes in the “DATA SELECTION” section to enable data logging of the different sensor outputs. Note that these registers will split the PC-USB’s reading bandwidth.





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**More Information on *i*Sensor Evaluation Tools:**

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