

The World Leader in High Performance Signal Processing Solutions



iSensor® Getting Started with the ADIS1622x Evaluation Tools



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

The *i*Sensor evaluation tools are designed for two purposes:

- 1. Enable fast connection to SPI-compatible processor systems.
- 2. Provide simple PC-based tools to demonstrate basic device functions.

ADIS16220/PCBZ, Interface board

- 1. Provides ADIS16220CCCZ on a small PCB with 2mm connectors.
- 2. Eliminates the need to solder the LGA package in a prototype process.
- 3. Connects directly to the PC-USB evaluation system, ADISUSBZ

ADIS16223/PCBZ, ADIS16227/PCBZ Interface boards

- 1. Provides ADIS16223CMLZ on a small PCB with a 2mm connector.
- 2. Eliminates the need to develop a prototype board with the mating connector.
- 3. Connects directly to the PC-USB evaluation system, ADISUSBZ

ADISUSBZ, PC-USB Evaluation System

3

- 1. Complete system for demonstrating device function.
- 2. Saves capture buffer data to Excel-friendly file formats.



ADIS16220/PCBZ







iSensor[®] *The Simple Solution for Sensor Integration* ADIS16220/PCBZ



A. Interface board general-purpose mounting holes. Use M2 (2mm) machine screws. Use these to manage PCB-level resonance threats.

- B. J1, J2 are dual-row, 12-pin connectors, which enable simple connection to embedded processor systems with 1mm ribbon cable systems. Hirose Hirose A3-12PA-2SV(71).
- C. Use cables for prototype only and keep them as short as possible. SPI serial communications rely on good signal integrity.



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*i***Sensor**[®] *The Simple Solution for Sensor Integration* ADIS16220/PCBZ Installation on ADISUSBZ

Installation Steps

- 1. Remove ribbon cable & (2) 2mm screws.
- 2. Place ADIS16220/PCBZ on the ADISUSBZ, using the silk screen and four corner mounting holes as a guide.
- 3. Install M2x6mm screws to secure ADIS16220/PCBZ on the ADISUSBZ. The ADISUSBZ provides 2mm threaded holes.
- 4. Re-install ribbon cable.
- 5. Set JP1 to "+3.3V", it isn't already in place option to "+5V" option. Do not plug USB in until completing ADIS16220 evaluation software installation.







iSensor[®] *The Simple Solution for Sensor Integration* ADIS16223/PCBZ, ADIS16227/PCB7



- ADISUSBZ mounting holes. Use M2 (2mm) machine screws.
- Electrical interface, J1. Pads provide 14-pins but the ADISUSBZ only accommodates 12 pins. Populated with a 12-pin, 2x6, 2mm connector. Pins 13 & 14 provide access to DIO1 & DIO2. Can manually replace J1 with 14-pin version. Example: Hirose A3-14PA-2SV(71).



iSensor[®] *The Simple Solution for Sensor Integration* ADIS16223/PCBZ, ADIS16227/PCBZ; ADISUSBZ Installation

- 1. Bend ribbon cable back.
- 2. Remove M2 screws if they are present.



- 3. Place M2x6mm screws in six ADISUSB mounting holes.
- 4. Place ADIS1622x/PCBZ onto the ADISUSBZ and tighten screws.
- 5. Connect ribbon cable, making sure that it is aligned with upper 12 pins.
- 6. Set JP1 to "+3.3V". Do not plug USB in until after completing ADIS1622x evaluation software installation.









iSensor® The Simple Solution for Sensor Integration ADIS1622x/PCBZ Ribbon Cable Interface

J1/J2 Ribbon Cable Interface Parts



ADISUSBZ uses the following cable assembly from Samtec:

ASP-140062-01



*i*Sensor[®] *The Simple Solution for Sensor Integration* Alternate Use for Best Mechanical Coupling

- 1. Remove ADIS1622xCMLZ from ADIS1622x/PCBZ by carefully unplugging the flex (it can break) and the 10-32 screw on the bottom side.
- 2. Cut the interface board down so that the ADIS1622xCMLZ can be mounted to the test frame using a 10-32 stud or machine screw.
- 3. Use the cut down version of the interface board, along with an extended ribbon cable to still use the ADISUSBZ to capture data into a test PC.
- 4. Use 2mm screws to attach the cut-down interface board and 4-40 screws to mounted the ADISUSBZ.





iSensor® The Simple Solution for Sensor Integration ADIS1622x Evaluation Software Installation

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EVALUATION BOARDS	& KITS — ADIS	16223 : Digital Tri-	axial Vibration Sensor		
Evaluation Boards/Tools (4)					

remonstration of the ADIS1622x product family, when used with the ADISUSB evaluation syste

The ADIS16220, ADIS16223, and ADIS16227 have their own demo/evaluation software packages, which can be downloaded from each product's web page at www.analog.com.

Use the following steps to download, install, and get the evaluation software running. Each package will use a similar setup, with differences noted in the following steps.

NOTE: The demo/evaluation software packages use a driver set that is not currently compatible with Windows Vista and Windows 7. Use a machine with Windows XP operating system.

- 1. Go to home page, for example: www.analog.com/ADIS16223
- 2. Click on "Evaluation Boards & Kits."
- 3. Click on the Evaluation software link to download the software and follow instructions to save it to a temporary directory.



ADIS1622x Evaluation Board/Tool Overview (pdf, 1092 kB)

22x Evaluation Software (zip. 1826 kB)

This provides an overview of each evaluation tool, along with tips for getting started with them guickly

ADISUSBZ iSensor® PC-USB Evaluation System (Preliminary Rev. PrA) (pdf, 1122 kB This system enables basic ADIS16xxx device evaluation using a PC-USB interface.

National Instruments LabVIEW Based I²C and SPI Drivers for ADI iSensor Products

*i*Sensor[®] *The Simple Solution for Sensor Integration* ADIS1622x Evaluation Software Installation

Installation Steps (continued)

- 4. Unpack contents from zipped file and click on "setup.exe".
- 5. Click OK on the next screen.
- 6. Click on computer icon to start the installation process.



	🚰 ADiS16220_Eval_rev_4 Setup	×
ADiS16220_Eval_rev_4 Setup	Welcome to the ADiS16220_Eval_rev_4 installation program. Setup cannot install system files or update shared files if they are in use. Before proceeding, we recommend that you close any applications you may be running.	
Begin the installation by clicking the button below.	OK E <u>x</u> it Setup	
Directory: C:\Program Files\Analog Devices Exit Setup	hange Directory	



iSensor® The Simple Solution for Sensor Integration ADIS1622x Evaluation Software Installation

Installation Steps (continued)

- 7. Click Continue.
- 8. If a window like this appears, we suggest keeping the existing files. In this case, click "Yes" to keep existing files.



🛃 ADiS16220_Eval_rev_4 - Choose Program Group

Setup will add items to the group shown in the Program Group box. You can enter a new group name or select one from the Existing Groups list.







×

*i*Sensor[®] *The Simple Solution for Sensor Integration* ADIS1622x Evaluation Software Installation

Installation Steps (continued)

- 9. Open the newly created directory and double-click onto "giveio.exe".
- 10. Click "Install".

		🚞 C:\Program Files\An	alog Devi	ces iSensors\ADiS1(220_Eval_rev	v_4 _ 🗆 🗙
		File Edit View Favorit	es Tools	Help	A
		🔆 Back 🔻 🕘 👻 🏂	Sear	ch 🦻 Folders 📳 🔽	
		Address 🛅 C:\Program Fil	es\Analog	Devices iSensors\AI iS16220_Eval_re\	/_4 ▼ ∋ Go
		File and Folder Task Rename this file Move this file	5 *	 Name Adis16220_Eval_rev_4.exe CommP.rt.cfg GIVEIO_PLL GIVEIO.EXE 	Size Type 280 KB Application 1 KB CFG File 201 KB Application Extension 82 KB Application
		 Copy this file Publish this file to t Web E-mail this file 	he	ST6UNST.000	4 KB 000 File 4 KB Text Document
Visual basic r	runtimes (SP2) installation				
Wel 2 file Plea cont Don flexi	Icome to the INF-Tool Setup demo program which will install es in the <windows>\INF-Test directory on your computer. ase close any programs you have running, then click "Install" to tinue with the Setup program. n't forget to read the helpfile for details about the enourmous ibility and smartness INF-Tool can bring to your installations!</windows>	Install Close			



*i*Sensor[®] *The Simple Solution for Sensor Integration* ADIS1622x Evaluation Software Installation





iSensor[®] *The Simple Solution for Sensor Integration* MCP USB Driver Installation

Installation Steps

- 1. Plug the ADISUSBZ to the PC using an A-to-B USB cable. The USB Driver screen will pop-up. Click "Next" to start this process.
- 2. Then click on "Continue Anyway"

Hardwa	re Installation
<u>.</u>	The software you are installing for this hardware: MCP USB EVAL has not passed WindowsLogo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.) Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you sop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
	Continue Anyway STOP Installation

Found New Hardware Wizard



Welcome to the Found New Hardware Wizard

This wizard helps you install software for:

MCP USB EVAL



What do you want the wizard to do?



This process will repeat with another file. Just follow the instructions and allow it to go through one more time. After completing this, the device is ready for test.



iSensor® The Simple Solution for Sensor Integration ADIS1622x Software Tips, Manual Trigger Mode



- 1. Click on "Interface" and select USB, then OK when the pop-up window shows the USB device is connected.
- 2. Software should start up and place the ADIS1622x device in Manual mode.
- 3. Click to trigger button and wait for the capture to complete inside the device, then load to the screen.



iSensor[®] *The Simple Solution for Sensor Integration* ADIS1622x Software Tips, Automatic Trigger Mode

Analog Devices ADiS16220_Eval_R	ev_5		>
Interface Product Configuration Datalog	Registers Exit		
16223 Buffer CAPT_CTRL Pre-Trigger Capture Mode 64 Automatic Power Down Between Captures Event Alarm Write to Flash Enable Band Pass Filter Read Flash Write to Flash	Timer CAPT_PRD Units Interval Seconds 30 Data Log File Count □ Data Log OFF 0	AVG_CNT Capt Duration 1.10 sec 64 Capt_SUPPLY (V) [Capt_TEMP (C) [CAPT_PEAK_X (g) [C ON CAPT_PEAK_Z (g) [noData noData noData noData noData
Status Register Read Status Clear Supply < 3.150 ∨ OK Supply > 3.625 ∨ OK Flash Update Failure OK SPI Comm Failure OK Capture Period Violation OK Flash Memory Failure OK Data Ready OK Alarm X OK Alarm Z OK	Data Plot 7 Cursor value -6.2 sample 281 0 Scale(g) 7 -7		
System Alarm OK Alarm X Event OK Alarm Y Event OK Alarm Z Event OK	Horz. Offset 0 _ +		1023

- 1. Automatic mode in the ADIS1622x products uses an internal timer to trigger new data capture events.
- 2. Since the ADISUSBZ doesn't connect to the "Busy" signal, DIO1 per factory default, use the LEDs on the ADIS16223/PCBZ to determine if the device is busy. Do not attempt to read when the LED is on. Note that the ADISUSBZ takes a few seconds to read and process the data. Keep the capture period of above 10 seconds for best results in read-back.
- 3. This screen shows a quick example. The AVG_CNT is extended to 64 so that the DIO1 LED is on longer for observation.
- 4. Click "Start" to begin, once the settings are finished.



iSensor® The Simple Solution for Sensor Integration ADIS1622x Software Tips, Event Trigger Mode



1. Use the pull-down menu to set the device up for "Event Capture Mode".



*i*Sensor[®] *The Simple Solution for Sensor Integration* ADIS1622x Software Tips, Event Trigger Mode

Analog Devices ADiS16220_Eval_Re	ev_4	
Interface Product Configuration Datalog	Registers Exit	
16223 ALARMS Buffer CAPT_C Calibration Pre-Trigger Cap COMMAND Pite Eve DIO_CTRL / GPIO_CTR 128 Eve MSC_CTRL Automatic Re-arm Automatic Re-arm Power Down Between Captures Write Capture to Flash Memory Enable Band Pass Filter Read Flash	Timer CAPT_PRD AVG_CNT Buffer Data Units Interval Capt Duration Read Image: Section of the section of	
Statua Dagiatar		
Read Status Clear Supply < 3.150 V	Usta Plot 120 Cursor value 6.7 sample 140 0 Scale(g) 120 -120	
Alarm X Event OK Alarm Y Event OK Alarm Z Event OK	Horz. Offset 0 - + Vacc V Yacc V Zacc Horz. Scale 1023 - + 0 • 0 • 0 •	1023

2. Use the "ALARMS" option in the configuration pull-down menu to set up the trigger levels.



iSensor[®] *The Simple Solution for Sensor Integration* ADIS1622x Software Tips, Event Trigger Mode, Alarms

Alarms Alm_Mag Alm_Ctrl	×
Alarm_X accelerattion	
Enable Alarm 1	
Magnitude Write A1	
Alarm_Y accele	
Enable Alarm 2	
Magnitude (g) Write A2	
9.9993	
Alarm_Z acceleration	
Magnitude (g)	
9.9993	
Alarm 4	
🔲 Enable Alarm 4	
Source	
 Temperature Power Supply 	
Polarity	
0.00 Write A4	
- Flash Memory	
Baad Flack Save To	
Flash	

Alarms Alm_Mag Alm_Ctrl	×
Alarm_X accelerattion	
Enable Alarm 1	
Magnitude (g) Write A1	
9.9993	
Alarm_Y acceleration	
Enable Alarm 2	
Magnitude (g) Write A2	
9.9993	
Alarm_Z acceleration	
I Enable Alarm 3	
Magnitude (g) Write A3	
3.333	
Alarm 4	
Enable Alarm 4	
Source	
C Temperature Power Supply	
Polarity	
Greater Than C Less Than	
Magnitude (V)	
0.00 Write A4	
Flash Memory	
Read Flash Save To	

- 1. In this example, enable each alarm, then enter the acceleration threshold for triggering the capture.
- 2. In this case, enter "10", then click "Write A1".
- 3. Notice how the device changes the value to something close. This is the closest register value for the user entry.
- 4. Then repeat for each Alarm.
- 5. Click on "Save to Flash" to back the settings up in non-volatile flash memory.
- 6. Click on "X" in upper right hand corner to exit.



iSensor[®] *The Simple Solution for Sensor Integration* ADIS1622x Software Tips, Event Mode Capture Example



- 1. Click on "Arm" and notice that the DIO1 LED light turns on.
- 2. Tap the assembly on non-valuable surface. Increase the intensity of the tap until the capture triggers.
- 3. This will be evident when the DIO1 LED is not longer lit.
- 4. Click on "DisArm," which is the same button that was "Arm" at the start of the process.
- 5. Under "Buffer Data," click "Read" to plot the captured data on the screen.



iSensor[®] *The Simple Solution for Sensor Integration* ADIS1622x Software Tips, Filtering, No Filtering Enabled

Analog Devices ADiS16220_Eval_R	ev_5	
Interface Product Configuration Datalog	Registers Exit	
16223 Buffer CAPT_CTRL Pre-Trigger Capture Mode Trigger Manual Power Down Between Captures Event Alarm Write to Flash Enable Band Pass Filter Read Flash Write to Flash	Timer CAPT_PRD AVG_CNT Units Interval Seconds 0 Image: Seconds 0 Data Log File Count Image: Provide the second	Read Capt_SUPPLY (V) 3.2788 Capt_TEMP (C) 28.57 CAPT_PEAK_X (g) 2.6083 CAPT_PEAK_Y (g) 2.532 CAPT_PEAK_Z (g) 1.5354
Status Register Read Status Clear Supply < 3.150 ∨	Data Plot 1.5 Cursor value 1.2 sample 5 0 Scale(g) 1.5 -1.5 Horz. Offset 0 · Yacc Vacc	V 2 acc
System Alarm OK Alarm X Event OK Alarm Y Event OK Alarm Z Event OK	Horz. Offset 0 - + V Xacc V Yacc Horz. Scale 1023 - + 0 • 0	▼ Z acc

- 1. The ADIS1622x are wideband filters.
- 2. Lower frequency applications tend to value lower noise.
- 3. The filtering helps optimize the noise and frequency content of the data capture.
- 4. This plot is when no filters are enabled and the device is in its widest bandwidth.



iSensor® The Simple Solution for Sensor Integration ADIS1622x Software Tips, Band-Pass Filtering



- 1. Enable the band-pass filter.
 - 2. Click on Trigger.
 - 3. Notices the lower amount of noise and the fact that it is centered around 0g now.



iSensor[®] *The Simple Solution for Sensor Integration* ADIS1622x Software Tips, Band-Pass & Low-Pass Filtering

Analog Devices ADiS16220_Eval_R	ev_5	
Interface Product Configuration Datalog	Registers Exit	
16223 Buffer CAPT_CTRL Pre-Trigger Capture Mode Trigger Image: State of the state of t	Timer CAPT_PRD AVG_CNT Units Interval Seconds 0 Seconds 0 Data Log File Count ON 32	Buffer Data Read Capt_SUPPLY (V) 3.2776 Capt_TEMP (C) 28.57 SAPT_PEAK_X (g) 0.1097 CAPT_PEAK_X (g) 0.1144 CAPT_PEAK_Z (g) 0.1192
Status Register	Data Plot	
Read Status Clear Supply < 3.150 ∨	1.5 Cursor value 1.4 sample 32 0 0 Scale(g) 1.5 -1.5	Navatin artual and a labor to a manufacture of the Association of the
Alarm X Event OK Alarm Y Event OK Alarm Z Event OK	Horz. Offset 0 - + Horz. Scale 1023 - + 0 • 0 •	✓ Z acc 1023 0 ▲

- 1. Click on the AVG_CNT pull-down menu and select 64.
- 2. Click on Trigger.
- 3. Observe the lower noise and longer capture time.



*i*Sensor[®] *The Simple Solution for Sensor Integration* ADIS16227 Software Tips: Basic Setup

Analog Devices ADiS16227_Eval_Rev	_2		
Interface Product Configuration Datalog	Registers Exit		
16227 Main Control	Sample Rate Options Buffer Data	Automatic Mode Settings	Data Log
Rec Mode Manual 👻	SR0(Fs/1) Read	Interval 0	Data Log OFF
Hanning	SR1 (Fs / 8) Capt_SUPPLY (V) 3.2813	Linite Seconds	File Count
	SR2 (Fs / 64) Capt_TEMP (C) 27.16		
	SR3 (Fs / 512)		Configure
	Peak Alarms	- Spectral Alarms	Record Storage
FFT Avgs	Peak(g) Freq(bin) Band Alarm	Band	Record Count 0
Power Down Between Captures	X-axis 0.000 0 0 None	X-axis 1 2 3 4 5 6	Record Num 0
Auto Plot Null Start	Y-axis 0.000 0 0 None	Y-axis 1 2 3 4 5 6	Clear All Retrieve
	Z-axis 0.000 0 0 None	Z-Axis 1 2 3 4 5 6	Rec_Info
Status Register	- Data Plot		
Dead Status Class	2		
	Cursor		
Supply < 3.150 V OK	value 1.790		
Elash Undate Eailure	bin		
SPI Comm Failure OK			
Recording Esc. Flag OK			
Self-test Diagnostic OK	1		
Flash Memory Failure OK			
Data Ready SET	Scolo(a)		
Y axis Alarm 1 OK			
Z axis Alarm 1 OK			
X axis Alarm 2 OK			
Y axis Alarm 2 OK	0		
Z axis Alarm 2 OK	0		255
System Alarm	Trace 🔽 Xaxis 🔽 Yaxis 🔽 Zaxis		

- 1. Double click on the ADIS16227*.exe file to start the software.
- 2. Make sure that the settings under "Main Control" and "Sample Rate Options" match those in this graphic. The Signal Range, FFT Avgs, SR3 settings are the most common settings that need to be changed for this demo.
- 3. Take a baseline measurement by clicking on "Start".
- 4. Click on "Null" and hold the device in a stationary position until it completes.
- 5. Take another measurement by hitting "Start" and notice that the DC response is much lower.



Interface Product Configuration Datalog Registers Ext 1227 Main Control Rec Mode Menual Sample Rate Options Sample Rate Options	Analog Devices ADiS16227_Eval_Rev_2		×
Namic Control Main Control SR0 (Fe /1) SR1 (Fe /8) Read Outsource Data Log Storage Options None SR0 (Fe /1) SR1 (Fe /8) SR2 (Fs /64) Capt_SUPPLY (M 2813) Interval Units Seconds Configure Storage Options None FTF Avgs SR1 (Fs /8) SR2 (Fs /64) Capt_SUPPLY (M 2813) Seconds Truer Value 0 Configure Power Down Between Ceptures Ter Avgs Peak Marms Second Social Second Social Record Storage Record Social Record Num 0 Configure Y = axis 0.000 0 0 None Y = axis 0.000 0 None Y = axis 0.	Interface Product Configuration Datalog Registers Exit		
Rec Mode Menual Image: Set (Fs / 1) Image: Se	16227 Main Control Buffer Data Buffer Data	Automatic Mode Settings Data Log	
Window Hanning Image: Seconds	Rec Mode Manual SR0 (Fs / 1) Read	Interval 0 Data Log OFF	
Signal Range 0 to 59 • Storage Options None • FT Avgs • • • • • • • • • • • • • • • • • • •	Window Hanning V Capt_SUPPLY (V) 3.2813	Units Seconds File Count 0	
Storage Options None FFT Avgs Peak Alarms Peak (g) Freq(bin) Band Alarm </td <td>Signal Range 0 to 5g ✓ Signal Range Capt_TEMP (C) 27.63</td> <td>Timer Value 0 Configure</td> <td></td>	Signal Range 0 to 5g ✓ Signal Range Capt_TEMP (C) 27.63	Timer Value 0 Configure	
FTT Avgs Image: Constraint of the cons	Storage Options None		
Power Down Between Captures X - axis 0 None X - axis 0 None X - axis 0 None Record Num 0 <	FFT Avgs 1 Peak Alarms Peak (g) Freg(bin) Band Alarm	Band Record Count 0	
Image: Auto Plot Null Stert Y - exis 0.000 0 None Y - exis 2 4 5 Clear All Petrieve Z - exis 0.000 0 0 None Y - exis 2 4 5 Clear All Petrieve Status Register Read Status Clear 0 0 0 None Y - exis 2 4 5 Clear All Petrieve Supply < 3150 V	Power Down Between Captures X-axis 0.000 0 0 None	X-axis 1 2 3 4 5 6 Record Num 0 -	
Z - axis 0 00 0 None Z - Axis 2 3 5 Rec_Info Status Register Read Status Clear Clear Status Plot	Auto Plot Null Start Y-axis 0.000 0 None	Y-axis 1 2 3 4 5 6 Clear All Retrieve	
Status Register Data Plot Supply < 3.150 V	Z - exis 0.000 0 0 None	Z-Axis 1 2 3 4 5 6	
Read Status Clear Supply < 3.150 V	Status Register Data Plot		
Supply < 3150 V	Read Status Clear 10		
Supply > 3.625 V 0K Flash Update Failure 0K SPI Comm Failure 0K Self-test Diagnostic 0K Self-test Diagnostic 0K Flash Memory Failure 0K Self-test Diagnostic 0K Self-test Diagnostic 0K Y exis Alarm 1 0K Z exis Alarm 2 0K Z exis Alarm 2 0K System Alarm 0K System Alarm 0K	Supply < 3.150 V OK Value		
Flash Update Failure OK SPI Comm Failure OK Self-test Diagnostic OK Self-test Diagnostic OK Data Ready SET Xaxis Alarm 1 OK Zaxis Alarm 2 OK Y axis Alarm 2 OK Zaxis Alarm 2 OK System Alarm OK	Supply>3.625 ∨ OK 3.522		
SPI Comm Failure OK Recording Esc. Flag OK Self-test Diagnostic OK Flash Memory Failure OK Data Ready SET Kaxis Alarm 1 OK Zaxis Alarm 1 OK Y axis Alarm 2 OK Y axis Alarm 2 OK Y axis Alarm 2 OK O 0 2 axis Alarm 2 OK Y axis Alarm 2 OK Y axis Alarm 2 OK Y axis Alarm 2 OK Z axis Alarm 2 OK	Flash Update Failure OK		
Self-test Diagnostic OK Flash Memory Failure OK Data Ready SET X axis Alarm 1 OK Y axis Alarm 1 OK Z axis Alarm 2 OK Y axis Alarm 2 OK Z axis Alarm 2 OK D D D D D D D D D D D D D D D D D D D D D D D D D D D D	SPI Comm Failure OK 5 Hz		
Flash Memory Failure OK Data Ready SET X axis Alarm 1 OK Y axis Alarm 1 OK Z axis Alarm 2 OK Y axis Alarm 2 OK Z axis Alarm 2 OK System Alarm 0 K	Self-test Diagnostic OK		
Data Ready SET Xaxis Alarm 1 OK Z axis Alarm 1 OK Z axis Alarm 2 OK Z axis Alarm 2 OK Z axis Alarm 2 OK Z axis Alarm 2 OK	Flash Memory Failure OK		
Kaxis Alarm 1 OK Yaxis Alarm 1 OK Zaxis Alarm 1 OK Zaxis Alarm 2 OK Yaxis Alarm 2 OK Zaxis Alarm 2 OK Zaxis Alarm 2 OK System Alarm 2 OK System Alarm 2 OK	Data Ready SET		
Y axis Alarm 1 OK Z axis Alarm 2 OK Y axis Alarm 2 OK Z axis Alarm 2 OK Z axis Alarm 2 OK System Alarm 0 K	Xaxis Alarm 1 OK Scale(g)		
Z exis Alarm 1 OK X exis Alarm 2 OK Z exis Alarm 2 OK System Alarm 0 K 2 exis Alarm 0 K 2 exis Alarm 2 OK 2 exis Alarm 2 OK 2 exis Alarm 2 OK 2 exis Alarm 2 OK	Y axis Alarm 1 OK 10		
V axis Alarm 2 OK Z axis Alarm 2 OK System Alarm 0 K	Z axis Alarm 1 UK		
Z axis Alarm 2 OK	Y axis Alarm 2 OK		
System Alarm OK	Z axis Alarm 2 OK		
Trace V Xaxis V Yaxis	System Alarm OK Trace V Xaxis V Xaxis V Zaxis	255	

- 1. Shake the ADIS16227 in a repetitive manner and click on "Start." Continue the shaking until the software completes collecting data.
- 2. After data collection is complete, use the mouse pointer to measure the response.
- 3. In this case, the mouse pointer is held over the peak of the green response.
- 4. Color coding: X = red Y = green Z = blue



Ditterace Product Configuration Datalog Registers Ext Main Control All/CTRL mple Rate Options Braffor Data Automatic Mode Settings Data Log Name Signal Range 100.5 g · C SR1 (Fs / 8) Braffor Data Interval Units Data Log	Analog Devices ADiS16227_Eval_Rev_	_2		
1622 AUA_CTRL mple Rate Options Buffer Data Automatic Mode Settings Data Log Min Control Coloration SR0 (Fs / 1) SR1 (Fs / 8) Dot_CTRL (GPID_CTRL SR2 (Fs / 64) Copt_SUPPLY (M_S2813) Data Log Dot_CTRL (GPID_CTRL Data Log Data Log Data Log Data Log Dot_CTRL (GPID_CTRL SR2 (Fs / 64) Copt_SUPPLY (M_S2813) Data Log	Interface Product Configuration Datalog	Registers Exit		
Ret Node Calibration SR0 (Fs / 1) Nindow DD0_CTRL (GPD_CTRL SR1 (Fs / 8) Storage Options None SR2 (Fs / 4) Storage Options None Pek Alarms Power Down Between Captures V sk3 (Fs / 512) Storage Options V Auto Pict Null Start V Auto Pict Null Start Supply < 3150 /V	16227 ALM_CTRL	mple Bate Ontions	-Automatic Mode Settings-	-Data Log
Pec Mode COMMAND Dip_CTRL / GPID_CTRL SR1 (Fs /8) Signal Range Dip_GTRL / GPID_CTRL SR2 (Fs /64) CapL_SUPPLY(M_22813) Units Seconds File Count Configure Signal Range Dip_GTRL / GPID_CTRL SR3 (Fs /512) Peck/(g) File Count Configure Dista Log OFF File Count Configure Storage Options None P Peck/(g) File Colin Band Alarm Dista Log OFF File Count Configure Power Down Between Captures Peck/(g) File Colin Band Alarm Dista Log OFF Peck/(g)	Alarm Spectrum			
Window DD_CTRL / GPID_CTRL GR2 (Fs / 64) CopL_SUPFLY (N) 32813 Units File Count 0 Signal Range Dio 5g Y SR3 (Fs / 512) CopL_SUPFLY (N) 32813 Timer Value 0 Configure Prower Down Between Captures Y Signal Range Peck (Alarms Spectral Alarms Record Surge Record Num 0 0 0 None Peck (B) Y-axis 0.000 0 0 None Y-axis 0.000 0 None Y-axis 0 0 Peck (B) Y-axis 0.000 0 None Y-axis 0 0 Peck (B) Y-axis 0 0 None Y-axis 0 0 Peck (B) Y-axis 0 0 Peck (B) Y-axis 0 0 Peck (B) Peck (B) Y-axis 0 0 Peck (B)	Rec Mode COMMAND	SB1(Fs/8)	Interval 0	Data Log OFF
Signal Range 0 to 5g Signal Range Signal Range	Window DIO_CTRL / GPIO_CTR	Capt_SUPPLY(V) 3.2813	Units Seconds 💌	File Count 0
Storage Options None Image: Control (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	Signal Range 0 to 5g 🗨	Capt_TEMP (C) 25.75	Timer Value 0	Configure
FFT Args Image: Peak Alarms Peak Alarms Peacord Storage Power Down Between Captures Peak Mint Null Status Image: Peak Mint Nune X - axis Image: Peak Mint Nune X - axis Image: Peak Mint Image: Peak Mint </td <td>Storage Options None 💌</td> <td></td> <td></td> <td></td>	Storage Options None 💌			
Prover Down Between Captures X-axis 0000 0 None X-axis 0 Record Count 0 V Auto Plot Null Status 0000 0 None Y-axis 0 0 Record Num 0 Record Num 0 Record Num 0 Image: None Y-axis 0 0 Precision 0 0 Precision 0 Precision 0 Precision 0 Precision 0 Precision 0 Precision Precision 0 Precision 0 Precision Precision Precision Precision Preci	FET Avgs 1	Peak Alarms	Spectral Alarms	Record Storage
Power Down Between Captures V - axis 0.00 0 None X - axis X = axis Multicity V - axis 0.00 0 0 None Y - axis X = axis <		Peak(g) Freq(bin) Band Alarm	Band	Record Count 0
V Auto Plot Null Stert V - exis 0.000 0 None V - exis 0 None V - exis 0 <td>Power Down Between Captures</td> <td>None None</td> <td></td> <td></td>	Power Down Between Captures	None None		
Z - axis 0.000 0 None Z - Axis 2 3 4 5 6 Pec_Info Status Peed Status Clear 0.000 0 None Z - Axis 2 3 4 5 6 Pec_Info Status Clear Supply < 3.150 /	Auto Plot Null Start	Y-axis 0.000 0 0 None	Y-axis 1 2 3 4 5 6	Clear All Retrieve
Status Register Read Status Supply 3 150 V Supply 3 3625 V OK Supply 3 3625 V Flash Update Failure OK Self-test Diagnostic OK Self-test Diagnostic OK Scale(g) Image: Name Information of Section of S		Z-axis 0.000 0 0 None	Z-Axis 1 2 3 4 5 6	Rec_Info
Read Status Clear Supply < 3150 V	Status Register	- Data Plot		
Read Status Clear Supply < 3.150 V				
Supply < 3.150 V	Read Status Clear	Dursor		
Supply > 3.625 V OK Flash Update Failure OK SPI Comm Failure OK SPI Comm Failure OK Self-test Diagnostic OK Flash Memory Failure OK Data Ready SET Kaxis Alarm 1 OK Yaxis Alarm 1 OK Yaxis Alarm 2 OK System Alarm OK	Supply < 3.150 V OK	Value		
Flash Update Failure OK SPI Comm Failure OK Self-test Diagnostic OK Self-test Diagnostic OK Data Ready SET Xaxis Alarm 1 OK Scale(g) Yaxis Alarm 1 OK Yaxis Alarm 1 OK Zaxis Alarm 2 OK System Alarm OK	Supply > 3.625 ∨ OK	0.215		
SPI Comm Failure UK Recording Esc. Flag 0K Self-test Diagnostic 0K Data Ready SET Kaxis Alarm 1 0K Zaxis Alarm 1 0K Zaxis Alarm 2 0K Yaxis Alarm 2 0K System Alarm 0K	Flash Update Failure OK	56		
Recording Set. Hag OK Self-test Diagnostic OK Flash Memory Failure OK Data Ready SET X axis Alarm 1 OK Y axis Alarm 1 OK Y axis Alarm 2 OK Y axis Alarm 2 OK Y axis Alarm 2 OK System Alarm OK	SPI Comm Failure UK	22 Hz		
Flash Memory Failure 0K Data Ready SET Data Ready SET X axis Alarm 1 0K Z axis Alarm 1 0K Y axis Alarm 2 0K Q axis Alarm 2 0K System Alarm 0K	Self-test Diagnostic OK			
Data Ready SET X axis Alarm 1 OK Y axis Alarm 1 OK Z axis Alarm 2 OK Y exis Alarm 2 OK Z axis Alarm 2 OK System Alarm OK	Flash Memory Failure OK	5		
X axis Alarm 1 OK Y axis Alarm 1 OK Z axis Alarm 2 OK Y axis Alarm 2 OK Z axis Alarm 2 OK System Alarm OK Trace Y axis I Y axis Y axis Z axis Z axis	Data Ready SET			
Y axis Alarm 1 OK Z axis Alarm 2 OK Y axis Alarm 2 OK Z axis Alarm 2 OK System Alarm OK Trace Y axis Y axis Y axis OK Z axis Alarm 2 OK Trace Y axis Y axis	X axis Alarm 1 OK	Scale(g)		
Z axis Alarm 1 OK X axis Alarm 2 OK Z axis Alarm 2 OK System Alarm OK Trace V Xaxis V Yaxis V Z axis 255	Y axis Alarm 1 OK	10		
X axis Alarm 2 OK Y axis Alarm 2 OK Z axis Alarm 2 OK System Alarm OK Trace V xxis V xxis V zxis	Z axis Alarm 1 OK			
Y exis Alarm 2 OK Z exis Alarm 2 OK System Alarm OK Trace X axis Y exis Z exis	X axis Alarm 2 OK	I. M		
Z axis Alarm Z UN System Alarm OK Trace V Axis V Axis Z Axis 255	Y axis Alarm 2 OK	0 Minhore		
Trace V Xaxis V Yaxis V Zaxis	L axis Alarm 2 OK	lo		255
		Trace 🗹 Xaxis 🔽 Yaxis 🔽 Zaxis		

1. Use the "Configuration" drop-down menu to click on the "Alarm Spectrum" option.



Spectra	l Alarm Ba	nds						_ 🗆 🗙
Sample I	Rate Optio	n RE	C_CTRL (r	ange)				
3	▼	0	- 5g					
Band #	F-Low	F-High	ALM1 X	ALM1 Y	ALM1 Z	ALM2 X	ALM2 Y	ALM2 Z
1	1	50	1	0	0	0	0	0
2	50	80	2	0	0	0	0	0
3	80	120	3]	0	0	0	0
4	120	170	2	2	2	0	0	0
5	170	220	3	3	3	0	0	0
6	220	255	2	2	2	0	0	0
			Write All		Clear All	Rea	ad All	
	values rea	d from flash.	mem.	•	Read File	Save	To File	
					_	_	_	
				0	DX OY	oz (• off	
					P	otBands		

- 2. Under "Sample Rate Option," use the dropdown menu to select "3".
- 3. Change each entry by highlighting the numbers and then typing it in.



Spectra	l Alarm Ba	nds						_ 🗆 ×
Sample I	Rate Optic	on RE	C_CTRL (r	ange)				
3	•	0	- 5g					
Band #	F-Low	F-High	ALM1 X	ALM1 Y	ALM1 Z	ALM2 X	ALM2 Y	ALM2 Z
1	1	40	1	1	1	2	2	2
2	40	80	3	3	3	4	4	4
3	80	120	1	1	1	2	2	2
4	120	150	3	3	3	4	4	4
5	150	190	1	1	1	2	2	2
6	190	255	3	3	3	4	4	4
					<u></u>			
		C	Write All	ν_	Clear All	Hea	ad Al	
	values rea	ad from flash	mem.	•	Read File	Save	To File	
							- "	
						OZ (οπ	
					P	otBands		

- 4. Enter all of the numbers show for this demo in the graphic.
- 5. Click on "Write All" to save them to the flash memory in the ADIS16227.
- 6. Enable the "X" axis band to plot by click on the "X" dot.
- 7. Minimize this window and return the main window.



ALM_CTRL X					
Hex Value 87					
Spectral Band Alarms					
Sectral Alarm X Enable					
Spectral Alarm Y Enable					
Spectral Alarm Z Enable					
Enable Alarm 1 2 on DIO 1 2					
Response Delay 0					
System Alarm					
System Alarm Enable					
System Alarm Comparison Polarity					
Less Than Threashold					
C Greater Than Threshold					
System Alarm Source					
○ Temperature					
Power Supply					
System Alarm Magnitude (g) SAMag					

- 8. After returning to the main window, use the "Configuration" dropdown menu to select the "ALM_CTRL" option.
- 9. Use the ALM_CTRL menu to enable all three (x,y,z) spectral alarms.
- 10. Close the window to return to the main menu.





- 11. Repeat the shaking motion and click on "Start".
 - 12. Observe the Peak Alarms and Spectral Alarms outputs.



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