

Preliminary Technical Data

Tri-Axis Inertial Sensor Evaluation System ADIS1635x/EVAL

GENERAL DESCRIPTION

The ADIS1635x/EVAL is a PC-based evaluation system for the Tri-Axis Inertial Sensor (ADIS1635x) family of products. This evaluation system is an extension of the ADISEVAL system, which provides PC Evaluation support for all of the digital ADIS161xx and ADIS162xx products. The ADIS1635x/EVAL includes an ADIS1635xAML sensor, which is already mounted to a board assembly. This assembly provides the SPI-to-Parallel port interface. This kit also includes a parallel cable, and iSensor Documentation CD.

GETTING STARTED

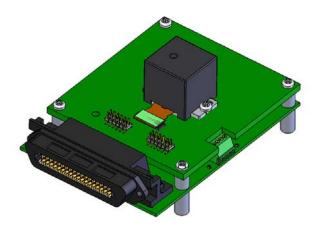
Getting started with this system requires four simple steps.

 Connect J2 of the Parallel Interface Board (see Figure 14) to the appropriate power supply. For simplicity, Pins 1 and 4 can be tied together and Pins 2 and 3 can be tied together.

Table 1 – Power Supply Hook-up – J2

Pin Number	Function					
1	Digital I/O Power Supply					
2	Common					
3	Common					
4	Sensor Power Supply					

NOTE: No reverse polarity protection provided.



Rev. PrD

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Table 2- Power Supply Voltages

Evaluation Board	Power Supply Voltage		
ADIS1635xAMLZ	+4.75 to +5.25V		

- 2. Hook up the system to a PC using the parallel cable provided.
- 3. Review the ReadMeFirst.pdf file, which is on the iSEnsor Documentation CD, under, "EVALUATION SOFTWARE DOWNLOADS."
- 4. Follow the installation steps for the software, located in the ReadMeFirst.pdf file.

SOFTWARE TIPS

The evaluation software is currently designed to work with numerical systems that are compatible with the United States' system. This can create scaling issues in European-based countries, and perhaps others that do not use a "period" to denote the decimal place. A simple way to fix this is to change the regional setting s on the test PC, to the US, or comparable North/South American country.

ORDERING GUIDE

Model	Package Description		
ADIS16350/EVALZ	ADIS16350 PC Evaluation System		
ADIS16354/EVALZ	ADIS16354 PC Evaluation System		
ADIS16355/EVALZ	ADIS16355 PC Evaluation System		

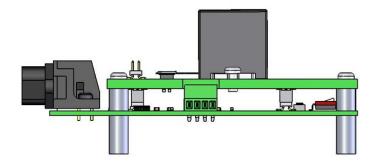


Figure 1. Power Connector Side View

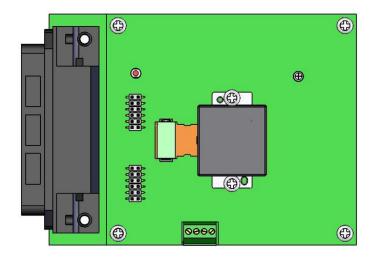


Figure 2. Top View

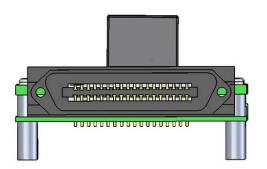


Figure 3. Parallel Port Side View

INITIAL SOFTWARE SETUP

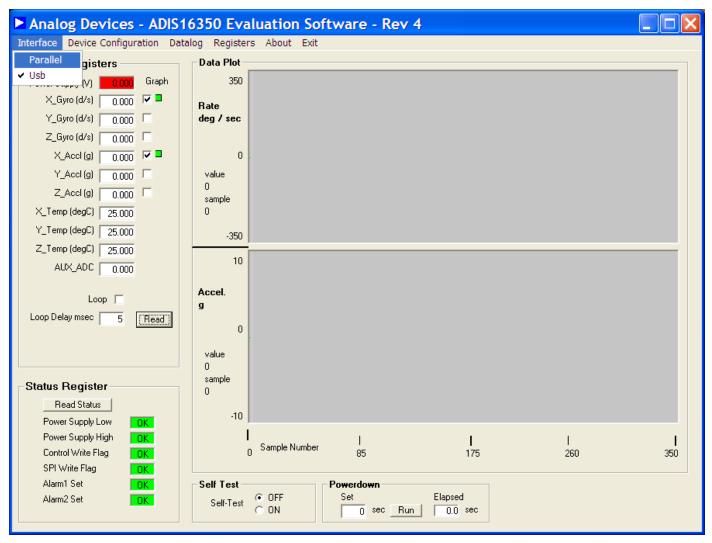


Figure 4. ADIS16350 Evaluation Software, Main Screen

🖻 Pa	arallel F	Port Se [<
Po	rt Address	(Hex) 378	
	ОК	Cancel	

Figure 5. Parallel Port Address Entry

PARALLEL PORT ADDRESS – START IN CONTROL PANEL, THEN CLICK ON "SYSTEM"

ile Edit View Favo	rites T	ools Help			
3 Back - 🕥 - 🕻	2 ,0	Search 🌔 Folders	•		
ddress 🔂 Control Pane				~	🗦 Go
		Name 🔺	Comments		-
See Also	۲	Internet Options	Configure your Inter		
()) Help and Support		🚋 Keyboard	Customize your key		
		🥥 Mail	Microsoft Office Outl		
		Mouse	Customize your mo		
		Setwork Connecti			
		hone and Mode	Configure your telep		
		Portable Media De			
		Power Options	Configure energy-sa		
		Printers and Faxes	Shows installed prin		
		Program Downloa	Manages downloadi		
		Program Updates	InstallShield Update		
		QuickTime	Configures QuickTi		
		Regional and Lan			
		Remote Control	Configures remote c		
		Run Advertised Pr			
		Scanners and Ca			
		Cheduled Tasks	Schedule computer		
		Security Center	View your current s		
		SigmaTel Audio	Controls SigmaTel		
		Software Explorers	Display all software		
		Sounds and Audio	-		
		Speech	Change settings for		
		System	See information abo		
		Systems Manage			
		🛃 Taskbar and Start	Customize the Start		

Figure 6. Control Panel View

PARALLEL PORT ADDRESS - FROM SYSTEM, CLICK ON "HARDWARE," AND THEN THE DEVICE MANAGER.

System Properties 🛛 🛛 🛛 🛛 🖓 🔀
Advanced Automatic Updates Remote General Computer Name Hardware
Device Manager The Device Manager lists all the hardware devices instilled on your computer. Use the Device Manager to change he properties of any device. Device Manager
Drivers Driver Signing lets you make sure that installed drivers are compatible with Windows. Windows Update lets you set up how Windows connects to Windows Update for drivers. Driver Signing Windows Update
Hardware Profiles Hardware profiles provide a way for you to set up and store different hardware configurations.
Hardware Profiles
OK Cancel Apply

Figure 7. System Properties Window

PARALLEL PORT ADDRESS - IN DEVICE MANAGER, OPEN "PORTS" THEN THE PRINTER PORT

🖴 Device Manager					
File Action View Help					
\leftarrow \rightarrow \blacksquare $\textcircled{2}$ $\textcircled{2}$ $\textcircled{2}$ $\textcircled{2}$ $\textcircled{2}$ $\textcircled{2}$					
🗉 🖘 Disk drives	^				
🗉 🧟 Display adapters					
🗉 🥝 DVD/CD-ROM drives					
i 🔁 🗃 IDE ATA/ATAPI controllers					
🖅 🔊 Infrared devices					
🕀 🦢 Keyboards					
🕀 🐚 Mice and other pointing devices					
🕀 🕹 Modems					
🕀 🧝 Monitors					
🕀 🕮 Network adapters	=				
PCMCIA adapters					
Ports (COM & LPT)					
Communications Port (COM1)					
ECP Printer Port (LPT1)					
E 🕷 Processors					
🗈 🍣 Smart card readers					
Sound, video and game controllers					
🗄 🤝 Storage volumes	*				
E System devices					

Figure 8. Device Manager Window

SOFTWARE SETUP – CLICK ON RESOURCES, THEN OBSERVE THE ADDRESS

ECP Printer	Port (LPT1) Propertie	s ? 🔀
General Port Settir	ngs Driver Details Resources	
ECP Prin	ter Port (LPT1)	
Resource settings:	:	
Resource type	Setting	
I/O Range		
I/O Range	0778 - 174В	
Setting based on:	Current configuration	*
	Use automatic settings	nge Setting
Conflicting device	list:	
No conflicts.		~
	ОК	Cancel

Figure 9. Port Properties

SOFTWARE OPERATION – GETTING STARTED

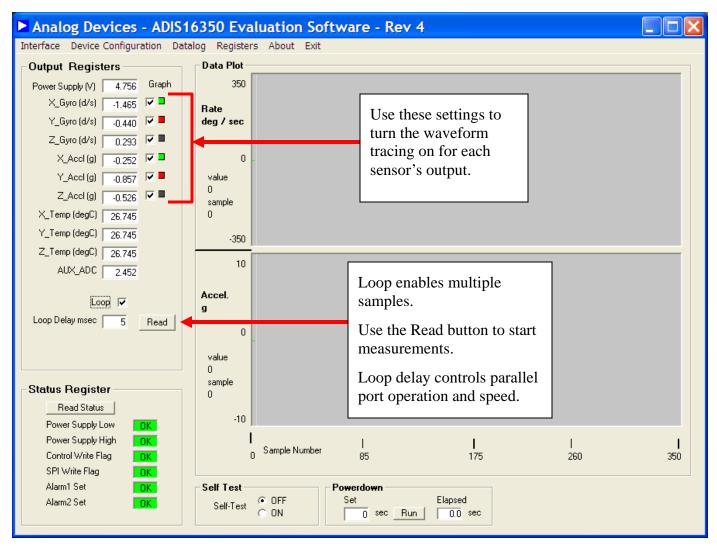


Figure 10.ADIS16350 Main Window, Getting Started

SOFTWARE OPERATION – CALIBRATION

- 1. TO GET TO THIS WINDOW, CLICK ON "DEVICE CONFIGURATION" DROP-DOWN MENU, AND THEN ON "CALIBRATION"
- 2. FOR EACH REGISTER BELOW, ENTER THE DECIMAL ADJUSTMENT LEVEL, AND THEN CLICK ON THE UPDATE BUTTON, WHICH WILL LOAD THE REGISTER WITH THE VALUE THAT IS CLOSEST TO WHAT WAS ENTERED. UNTIL UPDATE BUTTON IS CLICKED, THE REGISTER IS NOT CHANGED AND THE PRODUCT CONFIGURATION WILL NOT BE CHANGED.
- 3. USE FLASH UPDATE TO STORE THE CHANGES IN NON-VOLATILE FLASH.

Calibration				X
Automatic Features	<u>5</u>			
Restore Factory Cali	bration		Run	
Precision Auto Null			Run	
Auto Null			Run	
Manual Calibration	Adjustme	ent		
Gyroscopes				Register Contents
X-Axis Offset	-0.07326	deg / sec	Update	0xFFFC
Y-Axis Offset	0	deg / sec	Update	0x0
Z-Axis Offset	0.80586	deg / sec	Update	0x2C
Accelerometers				
X-Axis Offset	0	g	Update	0x0
Y-Axis Offset	0	g	Update	0x0
Z-Axis Offset	0	g	Update	0x0
	Clos	se Window		n Memory ter Update

Figure 11. Calibration Control

SOFTWARE OPERATION – CALIBRATION

- 1. TO GET TO THIS WINDOW, CLICK ON "DEVICE CONFIGURATION" DROP-DOWN MENU, AND THEN ON "OPERATIONAL CONTROL"
- 2. FOR EACH REGISTER BELOW, ENTER THE DECIMAL ADJUSTMENT LEVEL, AND THEN CLICK ON THE UPDATE BUTTON, WHICH WILL LOAD THE REGISTER WITH THE VALUE THAT IS CLOSEST TO WHAT WAS ENTERED. UNTIL UPDATE BUTTON IS CLICKED, THE REGISTER IS NOT CHANGED AND THE PRODUCT CONFIGURATION WILL NOT BE CHANGED.
- 3. USE FLASH UPDATE TO STORE THE CHANGES IN NON-VOLATILE FLASH.

Operational	Control				×
Sample Rate 819.202 SPS	SMPL_PF	RD Contents	0x1 Upc	late	
Measurement R	ange and (Digital Filt	ering		
Select Gyro Range	-	- g/sec (C) 1	- 60 deg/sec 🕜 80 deg/s	ec	
8 Taps	SENS/A\	/G Contents	0x403	late	
Auxilliary Digital	IVO Config	uration			
Configure as a genera	al purpose I/O li	ne			
Digital I/O Line 0:	Input	C Output	Set Line 0 Level:	 High 	C Low
Digital I/O Line 1:	Input	C Output	Read Line 1 Level:	High	C Low
<u>Configure as a data re</u>	ady line				
Select I/O line	OI/00	C DI/01	Output Polarity	🔿 High	• Low
Enable	C ON	 OFF 			
Auxilliary D/A Co	onverter O	utout			
0.0 Volts		C Contents	0x0 Upc	late	
		Close Wi	ndow Flash M Register		

Figure 12. Operational Control Window

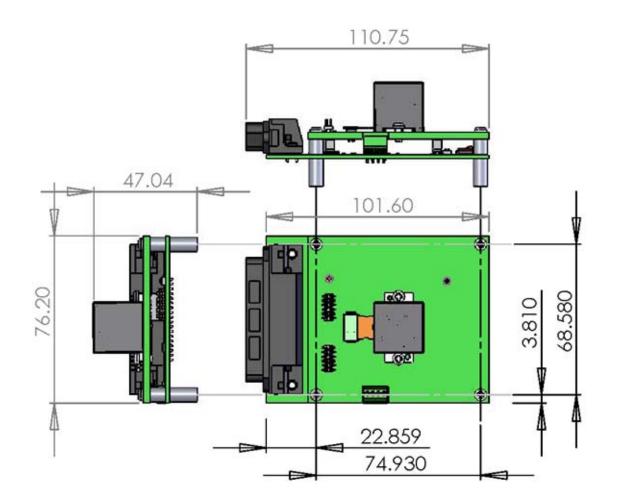
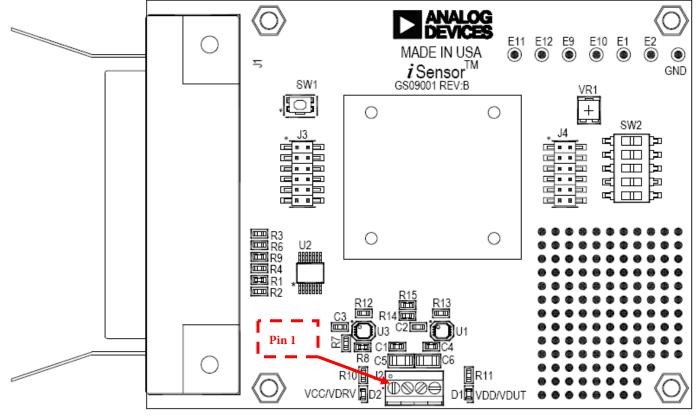


Figure 13. Basic Dimensions



DO NOT INSTALL U1, U3, R7, R8, R14 AND R15.

Figure 14 – *i*Sensor[™] PC Interface Board Layout

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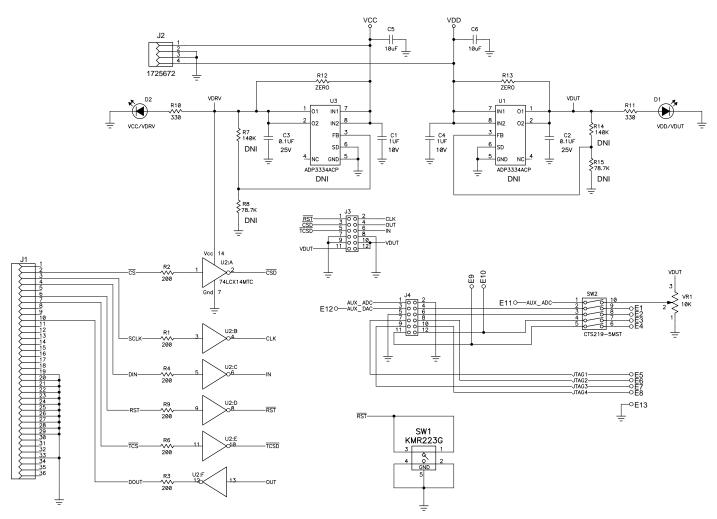


Figure 15 – *i*Sensor [™]PC Evaluation Board Schematic

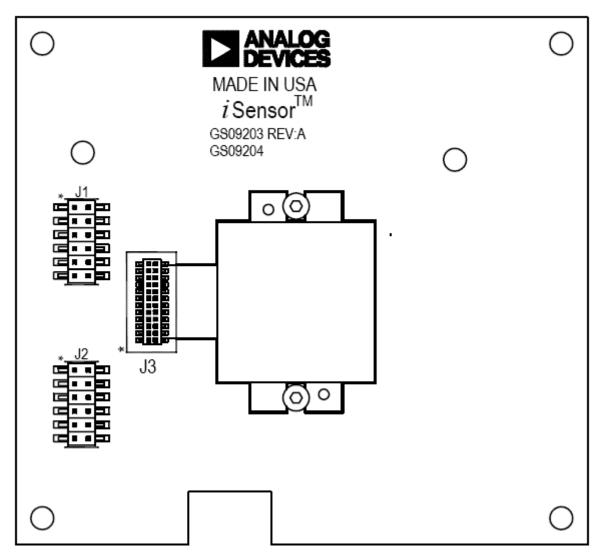


Figure 16 – ADIS16350 Interface Board (Top Side)

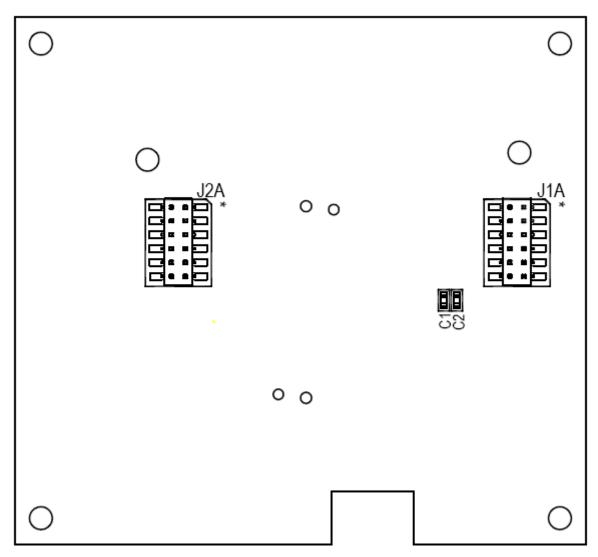


Figure 17 – ADIS16350 Interface Board (Bottom Side)

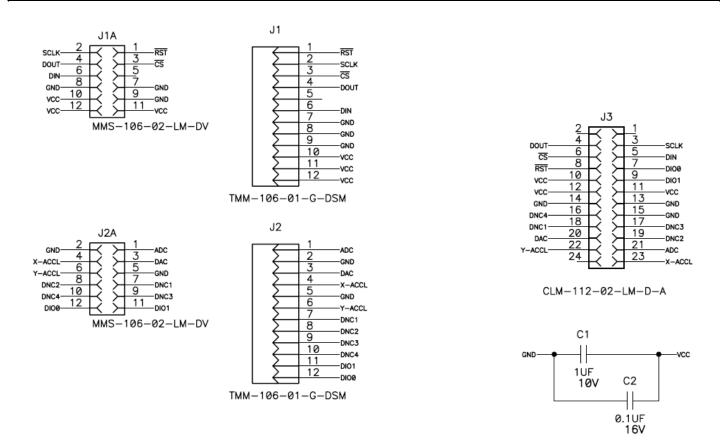


Figure 18 – ADIS16350 Interface Board Schematic, Pin Assignments