

# Tri-Axis Inertial Sensor Evaluation System ADIS16350/EVAL

# **Preliminary Technical Data**

### **GENERAL DESCRIPTION**

The ADIS16350/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 ADIS16350/EVAL includes an ADIS16350AML 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.

#### Table 2- Power Supply Voltages

Evaluation Board	Power Supply Voltage
ADIS16350AMLZ	+4.75 to +5.25V

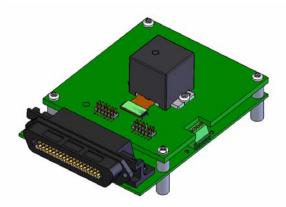
- 2. Hook up the system to a PC using the parallel cable provided.
- 3. Review the ReadMeFirst.pdf file, which is on the iSEnsor Documentation CD, under, "EVALUATION SOFTWARE DOWNLOADS."
- 4. Follow the installation steps for the software, located in the ReadMeFirst.pdf file.

#### **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.

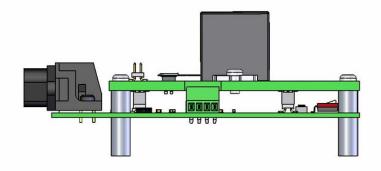
#### **ORDERING GUIDE**

Model	Package Description
ADIS16350/EVALZ	ADIS16350 PC Evaluation System



Rev. PrC

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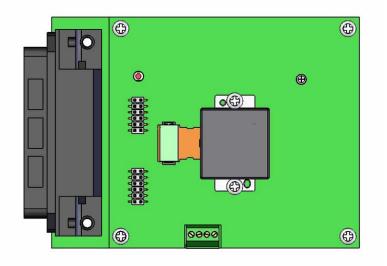


Figure 2. Top View

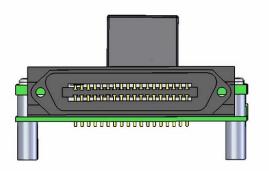


Figure 3. Parallel Port Side View

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#### **INITIAL SOFTWARE SETUP**

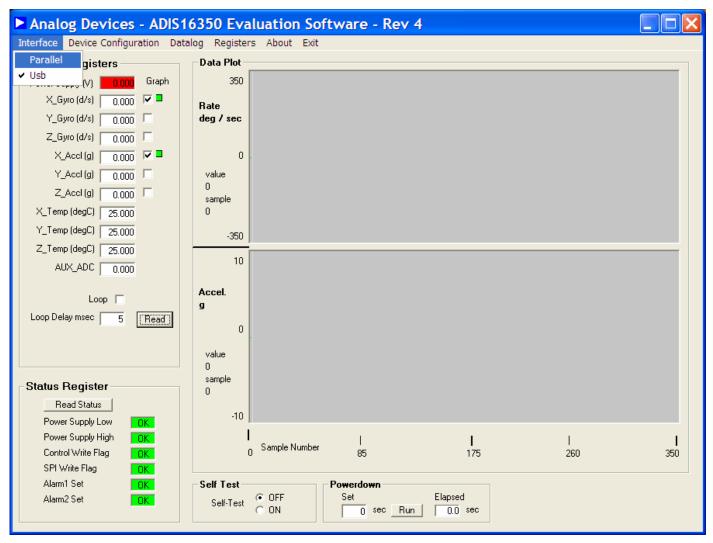


Figure 4. ADIS16350 Evaluation Software, Main Screen

🖻 Pa	arallel F	ort S	e 🔀
Po	rt Address	(Hex) [	378
	ОК		Cancel

Figure 5. Parallel Port Address Entry

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

le Edit View Favo	rites T	ools Help			<b></b>
3 Back - 🕥 - 🖻	5 ,0	Search 😥 Folders			
Idress 🔂 Control Panel				~	🔁 Go
	-	Name 🔺	Comments		1
See Also	۲	Internet Options	Configure your Inter		
()) Help and Support		🦢 Keyboard	Customize your key		
		🕐 Mail	Microsoft Office Outl		
		Mouse	Customize your mo		
		Network Connecti			
		Phone and Mode	Configure your telep		
		👰 Portable Media De			
		😘 Power Options	Configure energy-sa		
		Sector Printers and Faxes	Shows installed prin		
		Program Downloa	Manages downloadi		
		ᡖ Program Updates	InstallShield Update		
		QuickTime	Configures QuickTi		
		Regional and Lan	Customize settings f		
		Remote Control	Configures remote c		
		Run Advertised Pr			
		Scanners and Ca	Add, remove, and c		
		🖆 Scheduled 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 installed 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         Driver Signing       Windows Update         Hardware Profiles
Hardware profiles provide a way for you to set up and store different hardware configurations.
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	
🗈 🤝 Disk drives	^
🗄 🧕 Display adapters	
🗄 🥝 DVD/CD-ROM drives	
🖻 📹 IDE ATA/ATAPI controllers	
🗄 🔊 Infrared devices	
🕀 🖢 Teyboards	
🕀 🐌 Mice and other pointing devices	
🕀 🦢 Modems	
🗄 🧕 Monitors	
🕀 🕮 Network adapters	=
🕀 🔋 PCMCIA adapters	
🖻 🖉 Ports (COM & LPT)	
- Z Communications Port (COM1)	
ECP Printer Port (LPT1)	
🕀 🛲 Processors	
🗄 🍛 Smart card readers	
🗄 🧐 Sound, video and game controllers	
🕀 🖘 Storage volumes	~
🖶 🧧 System devises	

Figure 8. Device Manager Window

### SOFTWARE SETUP – CLICK ON RESOURCES, THEN OBSERVE THE ADDRESS

ECP Printer Port (LPT1) Properties ?
General Port Settings Driver Details Resources
ECP Printer Port (LPT1)
Resource settings:
Resource type Setting
I/O Range 0778 - 1748
Setting based on: Current configuration
Use automatic settings Change Setting
Conflicting device list:
No conflicts.
OK Cancel

Figure 9. Port Properties

## **SOFTWARE OPERATION – GETTING STARTED**

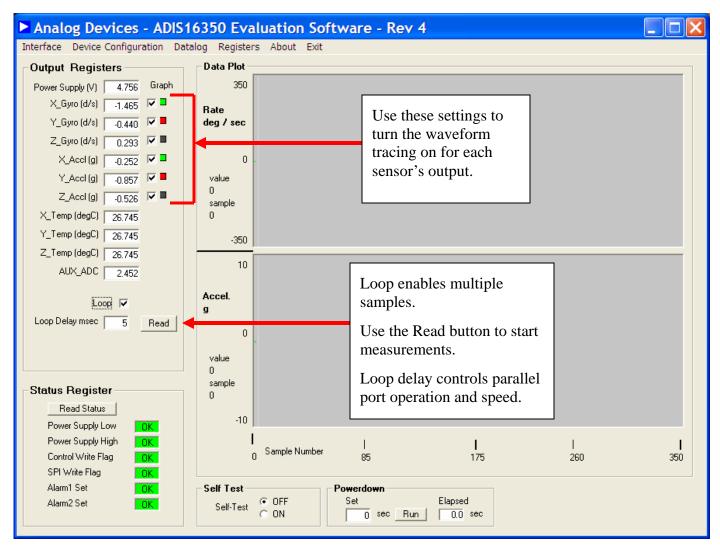


Figure 10.ADIS16350 Main Window, Getting Started

## 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				
<u>Automatic Features</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				
Close Window Flash Memory Register 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				
<u>Sample Rate</u>					
819.202 SPS	SMPL_PF	RD Contents	0x1 Upo	late	
<u>Measurement R</u>	ange and [	Digital Filter	ring		
Select Gyro Range	320 deg	g/sec 🔿 160	) deg/sec 🕜 80 deg/s	ec	
8 Taps	SENS/AV	/G Contents	0x403	late)	
<u>Auxilliary Digita</u>	I I/O Config	uration			
Configure as a gener	al purpose I/O li	ne			
Digital I/O Line 0:	<li>Input</li>	C Output	Set Line 0 Level:	<ul> <li>High</li> </ul>	C Low
Digital I/O Line 1:	Input	C Output	Read Line 1 Level:	<ul> <li>High</li> </ul>	C Low
<u>Configure as a data r</u>	eady line				
Select I/O line	OI/00	C DI/01	Output Polarity	🔿 High	€ Low
Enable	O ON	<ul> <li>OFF</li> </ul>			
Auxilliary D/A Converter Output					
0.0 Volts	AUX_DAI	C Contents	0x0 Upo	late	
		Close Wind	low Flash M Register		

Figure 12. Operational Control Window

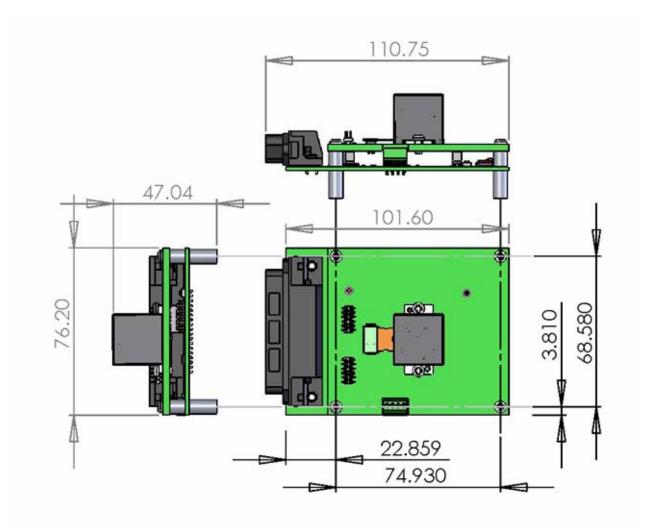
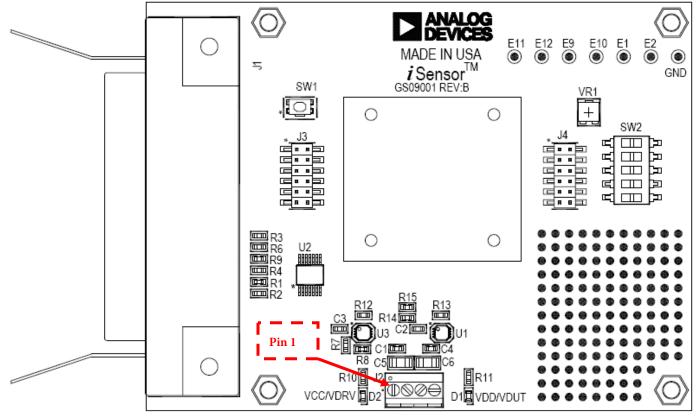


Figure 13. Basic Dimensions



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

Figure 14 – *i*Sensor<sup>™</sup> PC Interface Board Layout

# **Preliminary Technical Data**

# ADIS16350/EVAL

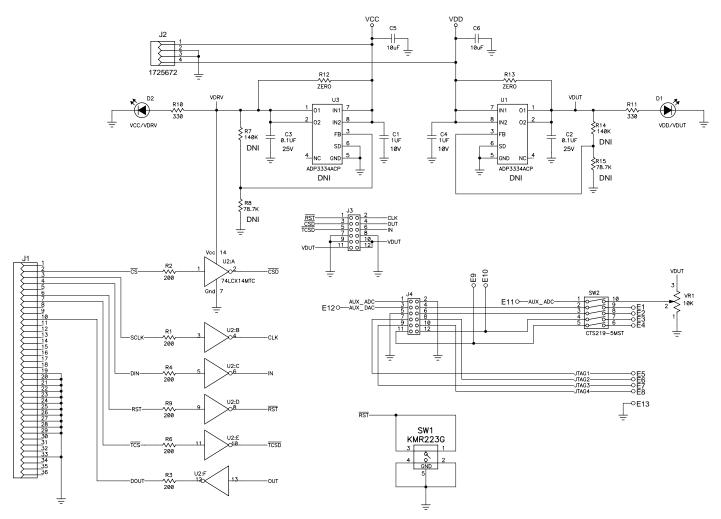


Figure 15 – *i*Sensor <sup>™</sup>PC Evaluation Board Schematic

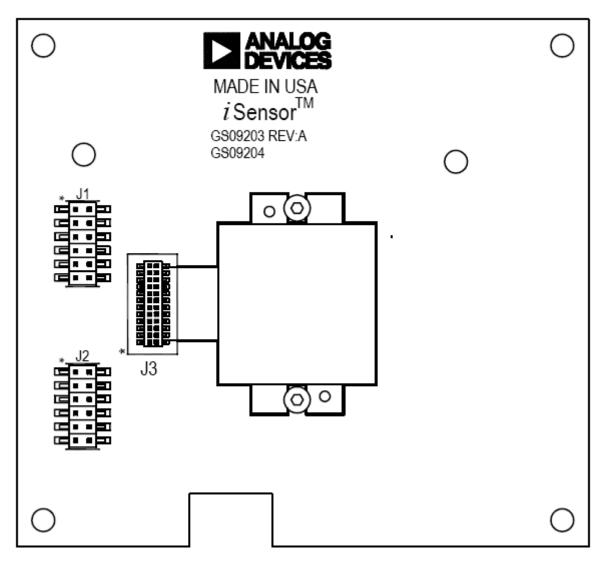


Figure 16 – ADIS16350 Interface Board (Top Side)

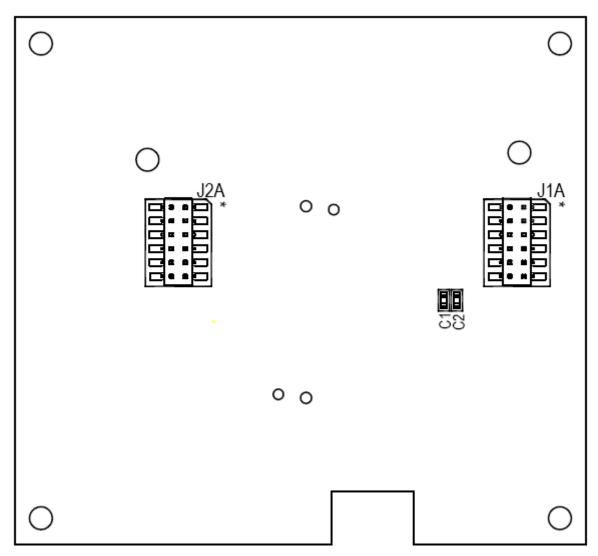


Figure 17 – ADIS16350 Interface Board (Bottom Side)

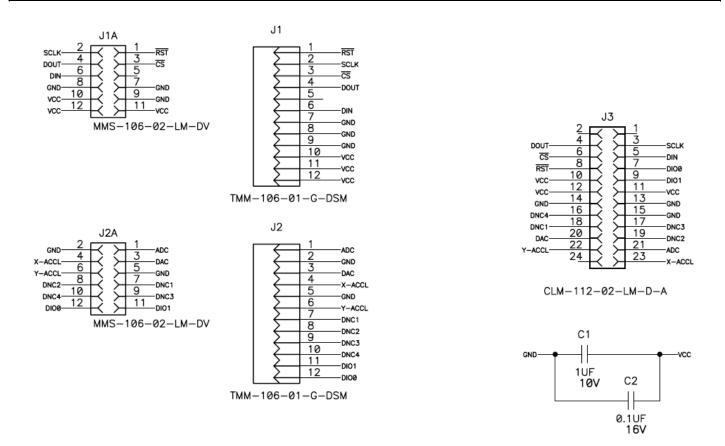


Figure 18 – ADIS16350 Interface Board Schematic, Pin Assignments

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