

Tri-Axis Inertial Sensor Evaluation System ADIS1635x/EVAL

Preliminary Technical Data

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.

1. 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	rallel P	ort 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"

Control Panel					
File Edit View Favorit	es To	ools Help			
🔇 Back 🔹 🕥 🕤 🏂		Search 🕞 Folders	•		
Address 🔂 Control Panel					🖌 🄁 Go
		Name 🔺	Comments		^
See Also	<u>م</u>	Internet Options	Configure your Inter		
Help and Support		💩 Keyboard 🕐 Mail	Customize your key Microsoft Office Outl		
		Mouse	Customize your mo		
		SNetwork Connecti	Connects to other c		
		Phone and Mode	Configure your telep		
		Portable Media De	View the portable m		
		Power Options Printers and Eaves	Configure energy-sa		
		Program Downloa	Manages downloadi		
		Program Undates	InstallShield Undate		
		OuickTime	Configures OuickTi		
		Regional and Lan	Customize settings f		
		Remote Control	Configures remote c		
		Run Advertised Pr	Runs advertised pro		
		Scanners and Ca	Add, remove, and c		
		🙆 Scheduled Tasks	Schedule computer		
		🜒 Security Center	View your current s		
		T SigmaTel Audio	Controls SigmaTel		
		Software Explorers	Display all software		
		Sounds and Audio	Change the sound s		
		Speech	Change settings for		_
		System	See information abo		
		Tackbar and Start	Configures this com		
		askbar and Staft	customize the Start		~
See information about your c	ompute	er system, and change se	ttings for hardware, perform	ance, and automatic updates.	

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				
🗉 🦇 Disk drives	^			
🗉 🧟 Display adapters				
🗄 🎱 DVD/CD-ROM drives				
🗉 📹 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)				
🕀 🛲 Processors				
🗉 🦓 Smart card readers				
🗄 🧶 Sound, video and game controllers				
🖅 🦇 Storage volumes				
🗇 🧐 Sustam davisas				

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 0378 - 037F
1/O Range 0778 - 3 (B
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			
Automatic Features							
Restore Factory Cali		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	D Contents	Ox1 Upd	late	
<u>Measurement R</u>	ange and C	Digital Filte	ering		
Select Gyro Range	💿 320 deg	g/sec 🔿 16	60 deg/sec 🕜 80 deg/s	ec	
8 Taps	SENS/AV	'G Contents	0x403	ate)	
<u>Auxilliary Digita</u>	I/O Config	uration			
Configure as a genera	al purpose I/O lii	ne			
Digital I/O Line 0:	Input	O Output	Set Line 0 Level:	 High 	C Low
Digital I/O Line 1:	Input	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 Converter Output					
0.0 Volts	AUX_DA0	Contents	0x0 Upd	late	
		Close Wir	Flash M Register	lemory Update	

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

Preliminary Technical Data



Figure 15 - iSensor TMPC 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