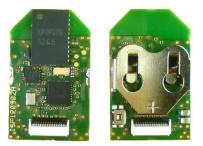


AN130402 **Orientation / Motion Sensor** Demonstration



Introduction

This application note describes the PC software setup to use the ISP120901 accelerometer demonstration program. The demonstration requires a ISP120901 accelerometer with a 1632 battery, a Windows PC running XP, Vista or Windows 7, a Nordic Semiconductor Master Emulator nRF2739 (delivered with uBlue SDK) and appropriate software from Insight SiP.

The note describes the software installation procedure and the operating mode.

Software Installation

In order for the demonstration to operate the following software packages need to be installed on the PC:

- Microsoft .NET framework 4
- Microsoft XNA Framework Redistribuable 4.0
- Interpretation of the provide the provide the provided the provided
- Accelerometer Demo folder from Insight SIP with executable file and dll files

Microsoft .NET framework 4 Re-distribuable package

This can be downloaded from Microsoft at the following address http://www.microsoft.com/enus/download/details.aspx?id=17718. To install this package follow the instructions on the Microsoft website.

Microsoft XNA Framework Re-distribuable 4.0

This can be downloaded from Microsoft at the following address http://www.microsoft.com/enus/download/details.aspx?id=20914. To install this package follow the instructions on the Microsoft website. This is necessary since the visual representation of the orientation of the accelerometer uses Microsoft Game studio.

Nordic Semiconductor nRF8001 SDK v1.7

Run the nRF8001 SDK so as to be able to use the Master Emulator (USB drivers).





Accelerometer Demo Folder

The Accelero_Demo_EXE.zip file should be un zipped at any suitable location on the PC. This contains the executable file and all the dll files necessary for the demonstration to run.

The directory should be as shown below:

Name	Size	Туре	Date Modified 🔻
Accelero.exe	236 KB	Application	4/16/2013 11:05 AM
🚾 Accelero.pdb	54 KB	PDB File	1/22/2013 4:22 PM
🔊 pylibs.dll	1 425 KB	Application Extension	9/28/2012 2:31 PM
🔊 emulatorlibs.dll	2 179 KB	Application Extension	9/28/2012 2:31 PM
🔊 hci_coder.dll	45 KB	Application Extension	9/28/2012 2:31 PM
MasterEmulator.xml	77 KB	XML Document	9/28/2012 2:31 PM
S MasterEmulator.dll	38 KB	Application Extension	9/28/2012 2:31 PM
🔊 Ulpbt.dll	200 KB	Application Extension	9/28/2012 2:31 PM
Signalyzer.dll	31 KB	Application Extension	9/28/2012 2:31 PM
🔊 Segger.dll	12 KB	Application Extension	9/28/2012 2:31 PM
🔊 hci_coder_net.dl	27 KB	Application Extension	9/28/2012 2:31 PM
🕥 UlpbtUtils.dll	26 KB	Application Extension	9/28/2012 2:31 PM
🔊 Aci.dll	12 KB	Application Extension	9/28/2012 2:31 PM
🕋 Microsoft.Scripting.×ml	201 KB	XML Document	9/28/2012 2:29 PM
🕋 Microsoft.Scripting.Metadata.xml	17 KB	XML Document	9/28/2012 2:29 PM
🔊 Microsoft.Scripting.Metadata.dll	91 KB	Application Extension	9/28/2012 2:29 PM
🔊 Microsoft. Scripting. dll	141 KB	Application Extension	9/28/2012 2:29 PM
🕋 Microsoft.Dynamic.xml	360 KB	XML Document	9/28/2012 2:29 PM
🔊 Microsoft.Dynamic.dll	1 020 KB	Application Extension	9/28/2012 2:29 PM
🕋 IronPython.xml	399 KB	XML Document	9/28/2012 2:29 PM
🔊 IronPython.Modules.dll	637 KB	Application Extension	9/28/2012 2:29 PM
🔊 IronPython.dll	1 750 KB	Application Extension	9/28/2012 2:29 PM
Content		File Folder	4/8/2013 12:41 PM

Hardware Setup

Master Emulator

Connect the nRF2739 Master Emulator to the PC and check to ensure that the USB drivers are correctly installed.

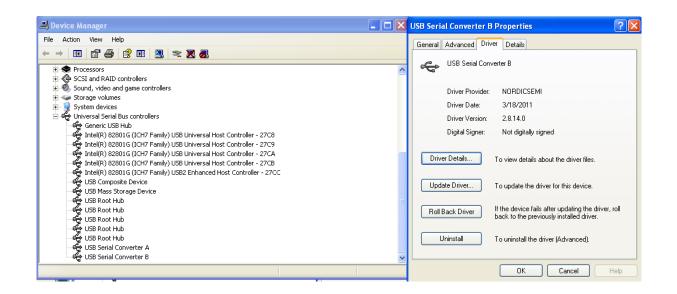
This can be checked on the Control Panel Device Manager under USB Controllers: **USB Serial Converter A USB Serial Converter B**





Should both be installed see below for details:

🚇 Device Manager	USB Serial Converter A Properties ? 🔀
File Action View Help ← → 📧 😂 😫 📧 🥘 📚 👧	General Advanced Driver Details
 Processors Sound, video and game controllers Sound, video and game controllers Sound, video and game controllers System devices Universal Serial Bus controllers Generic USB Hub Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C8 Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C9 Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C8 Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C8 Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C8 Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C8 Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C8 USB Composite Device USB Composite Device USB Root Hub 	USB Serial Converter A Driver Provider: NORDICSEMI Driver Date: 3/18/2011 Driver Version: 2.8.14.0 Digital Signer: Not digitally signed Driver Details To view details about the driver files. Update Driver To update the driver for this device. Roll Back Driver If the device fails after updating the driver, roll back to the previously installed driver. Uninstall To uninstall the driver (Advanced).
USB Serial Converter B	OK Cancel Help



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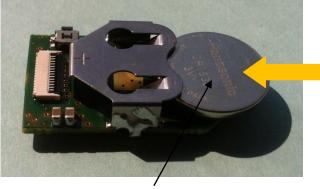
Document Ref: isp_ble_AN130402_R2.docx

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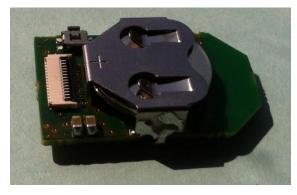




Connect Battery to ISP120901 Accelerometer as shown below:



Battery CR1632 POS Terminal UP



Battery CR1632 Fully Installed

Run Software

Navigate to the Accelero_Demo_EXE folder:

	Name	Size	Туре	Date Modified 🔻
File and Folder Tasks 👘 🔕		5 674 KB	Archive WinRAR ZIP	4/16/2013 4:05 PM
	wnafx40 redist.msi	6 889 KB	Windows Installer P	4/16/2013 3:27 PM
🎽 Make a new folder	🗑 nrf8001_sdk_v1_7_install.exe	16 732 KB	Application	4/16/2013 3:21 PM
Publish this folder to the Web	RdotNetFx40_Full_setup.exe	869 KB	Application	4/16/2013 3:21 PM
Web Share this folder	Accelero_Demo_EXE.zip	3 182 KB	Archive WinRAR ZIP	4/16/2013 3:14 PM
Share this rolder	MN130402R0.docx	838 KB	Document Microsoft	4/16/2013 2:42 PM
	🔤 ~\$130402R0.docx	1 KB	Document Microsoft	4/16/2013 2:42 PM
Other Places	Business_Document_Revision_Table.xlsx	74 KB	Feuille Microsoft Off	4/16/2013 2:41 PM
	D5120901R0.pdf	808 KB	Adobe Acrobat Doc	4/16/2013 2:31 PM
🛅 BTLE	105120901R0.docx	838 KB	Document Microsoft	4/16/2013 2:31 PM
My Documents	DS120905R0.docx	724 KB	Document Microsoft	4/16/2013 2:27 PM
	DS120909R0.docx			4/16/2013 2:27 PM
👰 My Computer	🗐 DS120911R0.docx	719 KB		4/16/2013 2:27 PM
My Network Places	Accelero_pile_photos		File Folder	4/16/2013 4:28 PM
S Hy Network Flates			File Folder	4/16/2013 4:21 PM
Details 💲				
_				
Sensors File Folder				
Date Modified: Today, April 16,				
2013, 4:21 PM				

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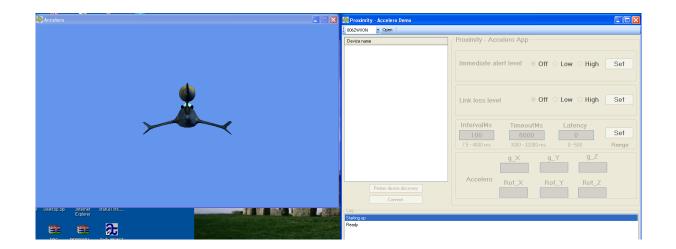




Launch Accelero.exe (on some systems you may need to launch using "run as administrator")

	Name	Size	Туре	Date Modified 🔻
ile and Folder Tasks 🔹 🔕	🖬 Accelero.pdb	62 KB	PDB File	4/16/2013 4:10 PM
• · · · · · · · · · · · · · · · · · · ·	Accelero.exe	236 KB	Application	4/16/2013 4:10 PM
Make a new folder	S pylibs.dll	1 425 KB	Application Extension	9/28/2012 2:31 PM
Publish this folder to the Web	S emulatorlibs.dll	2 179 KB	Application Extension	9/28/2012 2:31 PM
3 Share this folder	Shci_coder.dll	45 KB	Application Extension	9/28/2012 2:31 PM
Share this folder	MasterEmulator.dll	38 KB	Application Extension	9/28/2012 2:31 PM
	🔊 Ulpbt.dll	200 KB	Application Extension	9/28/2012 2:31 PM
ther Places 🔹	Signalyzer.dll	31 KB	Application Extension	9/28/2012 2:31 PM
	Segger.dll	12 KB	Application Extension	9/28/2012 2:31 PM
Sensors	Shci_coder_net.dll	27 KB	Application Extension	9/28/2012 2:31 PM
My Documents	🔊 UlpbtUtils.dll	26 KB	Application Extension	9/28/2012 2:31 PM
Shared Documents	🔊 Aci.dl	12 KB	Application Extension	9/28/2012 2:31 PM
-	🔊 JLinkARM.dll	4 422 KB	Application Extension	9/28/2012 2:30 PM
	🔊 Microsoft. Scripting. dll	141 KB	Application Extension	9/28/2012 2:29 PM
My Network Places	🔊 Microsoft.Dynamic.dll	1 020 KB	Application Extension	9/28/2012 2:29 PM
	🔊 IronPython.Modules.dll	637 KB	Application Extension	9/28/2012 2:29 PM
etails 🙁	🔊 IronPython.dll	1 750 KB	Application Extension	9/28/2012 2:29 PM
etails	Content		File Folder	4/16/2013 4:21 PM
ccelero_Demo_EXE				
ile Folder				
ate Modified: Today, April 16,				
013, 4:21 PM				
jects			11.9 MB 🔍	My Computer

Two screens should open:



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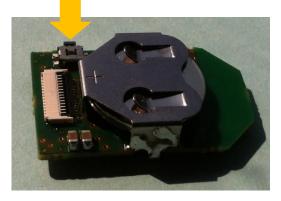


On the Right hand screen click on Open

Proximity - Accelero Demo		
Device name	Proximity - Accelero App	
	Immediate alert level	
	Link loss level	
	IntervalMs TimeoutMs Latency 100 6000 0 Set 7.5 - 4000 ms 3000 - 32000 ms 0 - 500 Range	
	g_X g_Y g_Z Accelero Rot_X Rot_Y Rot_Z	
Perfom device discovery Connect		
Connected:		



Reset Accelerometer with small reset button:



On Panel "Perform Device Discovery"

006ZWXON V Open	
Device name Proximity - Accelero App	
Immediate alert level Off Low High Se	t
Link loss level Off Low High Se	t
IntervalMs TimeoutMs Latency 100 6000 0 Se 7.5 - 4000 ms 3000 - 32000 ms 0 - 500 Ran	
g_X g_Y g_Z Accelero Rot_X Rot_Y	
Connect	
Setup: assigned pipenumber 3 type TRANSMIT Setup: add service 0x1803 store REMOTE_STORE Setup: add char def 0x2406 Setup: assigned pipenumber 4 type TRANSMIT_WITH_ACK Setup: add service 0x1802 store LOCAL_STORE	
Setup: add char def 0x2A06 Setup: assigned pipenumber 5 type RECEIVE Run	.:

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Accelerometer_x should appear. If this fails, reset accelerometer (to put into advertising mode) and perform device discovery again.

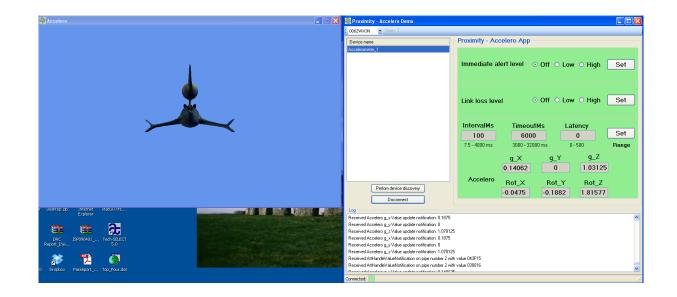
Press on "Connect"

🥮 Proximity - Accelero Demo		
006ZWXON - Open		
Device name Accelerometer 1	Proximity - Accelero App	
	Immediate alert level	Set
	Link loss level	Set
	IntervalMs TimeoutMs Latency 100 6000 0 7.5 - 4000 ms 3000 - 32000 ms 0 - 500	Set Range
Perfom device discovery Connect	g_X g_Y g_Z Accelero Rot_X Rot_Y Rot_Z	
Setup: add char def 0x2A06 Setup: assigned pipenumber 4 type TRANSMIT_WITH_A Setup: add service 0x1802 store LOCAL_STORE Setup: add char def 0x2A06 Setup: assigned pipenumber 5 type RECEIVE Run Device discovery Device discovery	лСК	

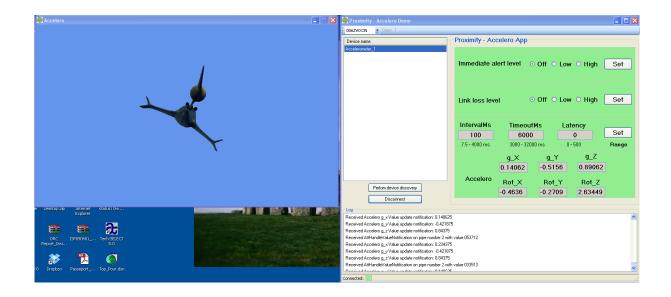




Both Displays should change and be updated every 100ms:



As the orientation of the module changes so will the position of the aircraft on the Left Hand Screen:





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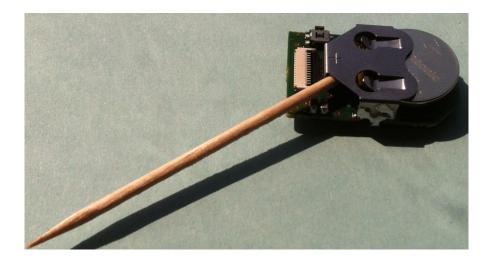
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Stop Software

To switch off PC program, click on top Right Corner of both windows.

To switch off accelerometer remove battery as shown:



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