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
- Nordic Semiconductor nRF8001 SDK v1.7 (for Master Emulator USB drivers)
- 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/en-us/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/en-us/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	Type	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
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.dll	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.xml	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.
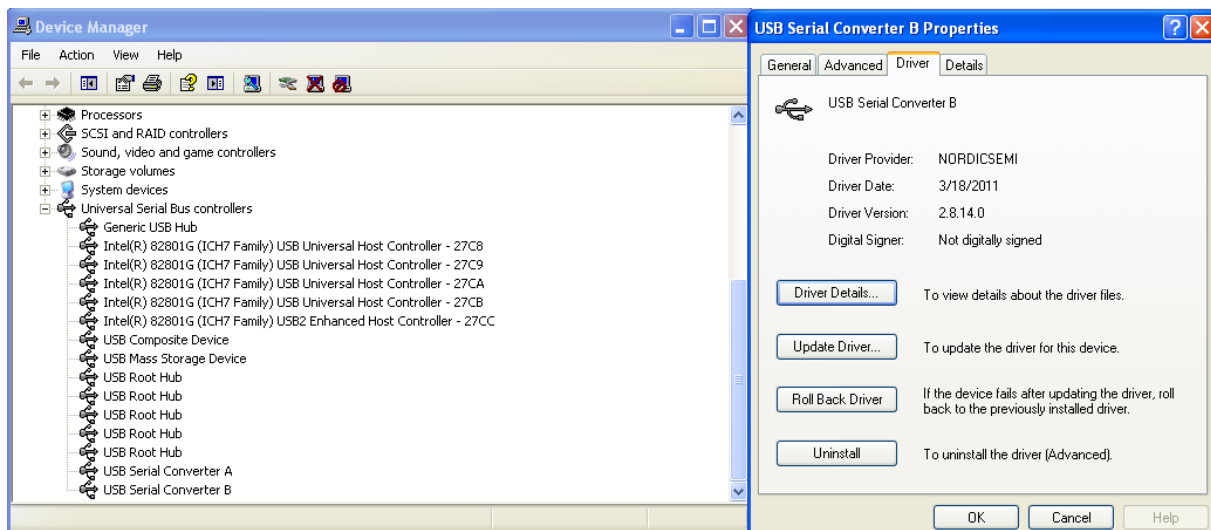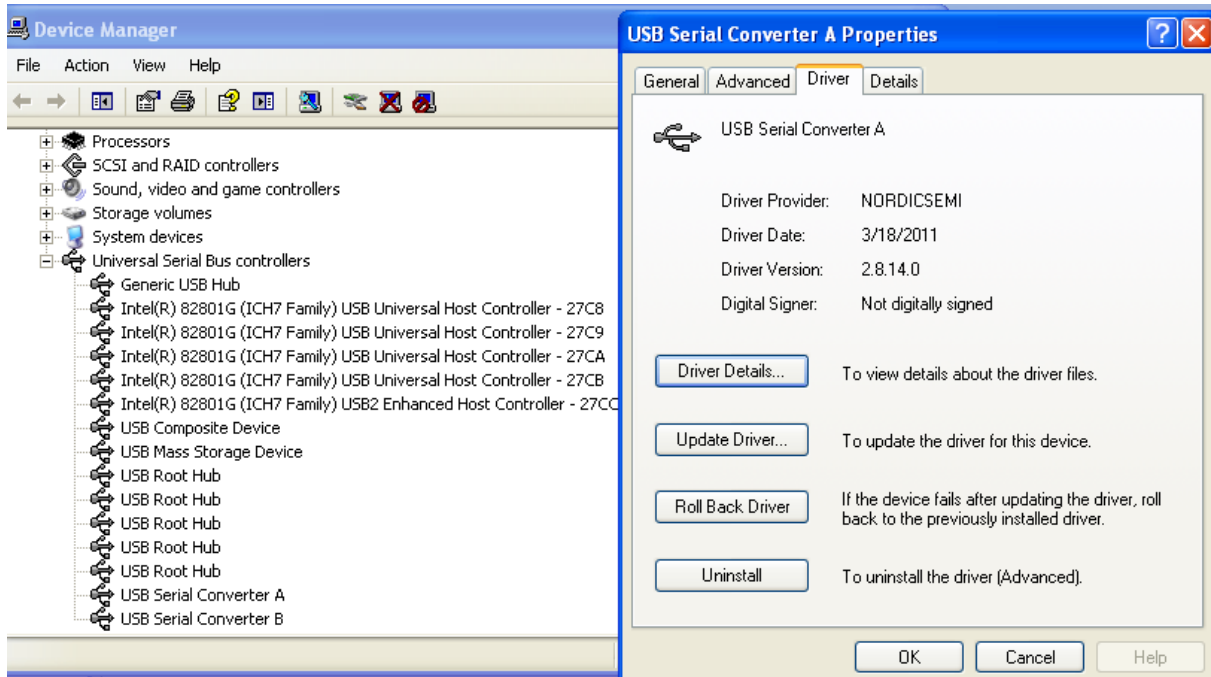
This can be checked on the Control Panel Device Manager under USB Controllers:
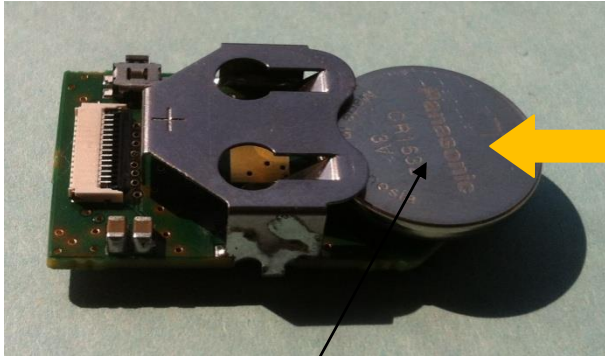USB Serial Converter A
USB Serial Converter B

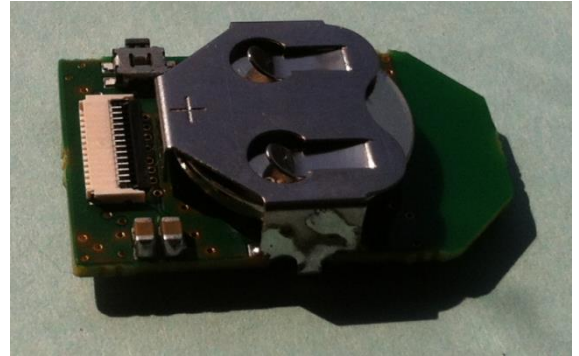Should both be installed see below for details:

Document Ref: isp_ble_AN130402_R2.docx

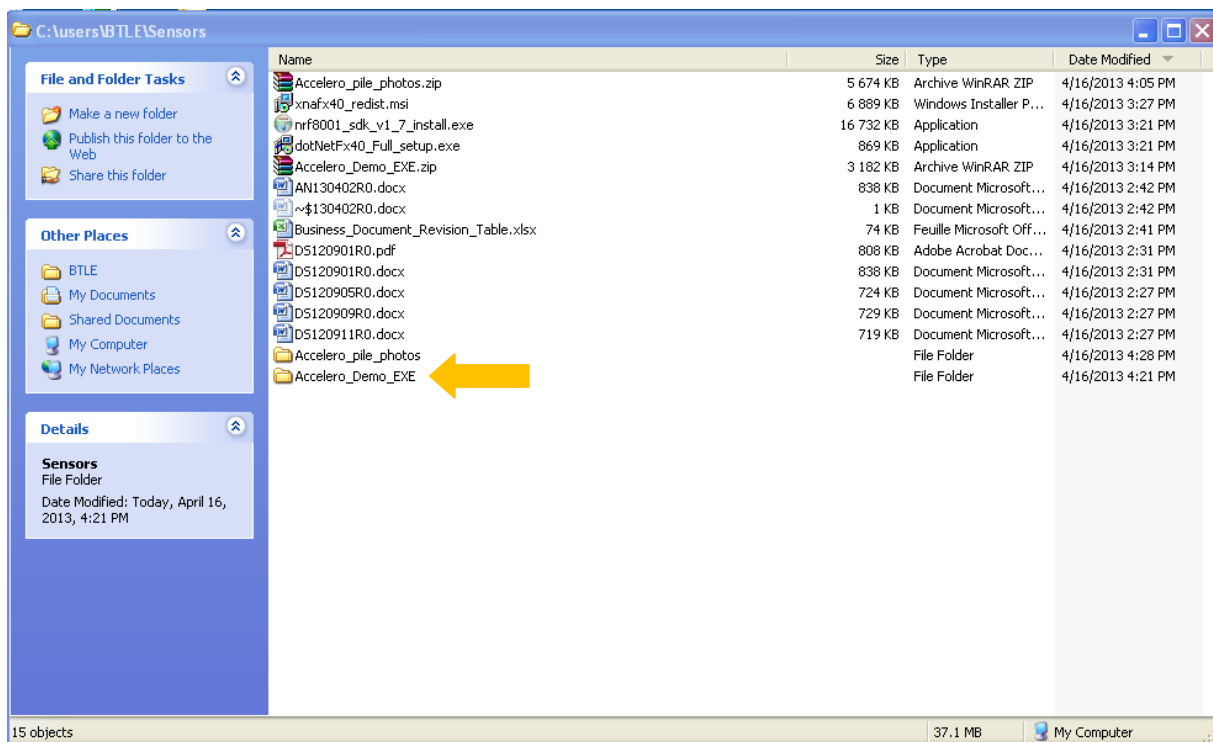Connect Battery to ISP120901 Accelerometer as shown below:
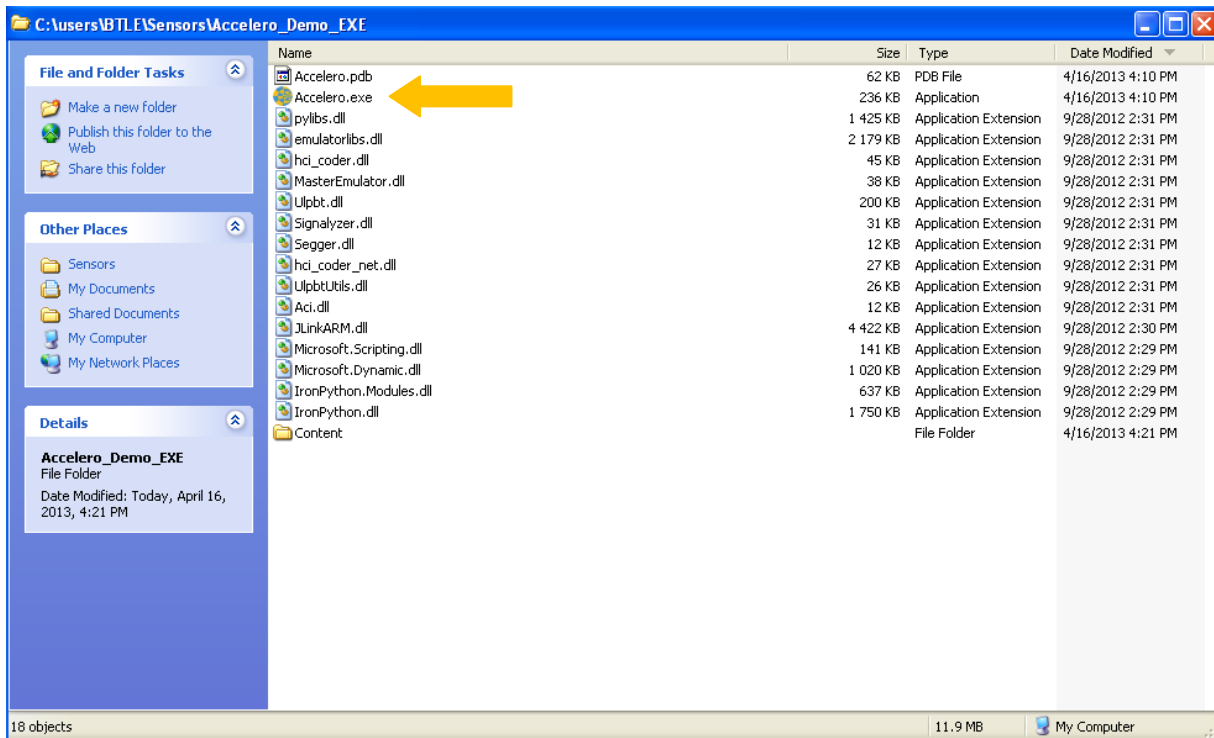

Battery CR1632 POS Terminal UP

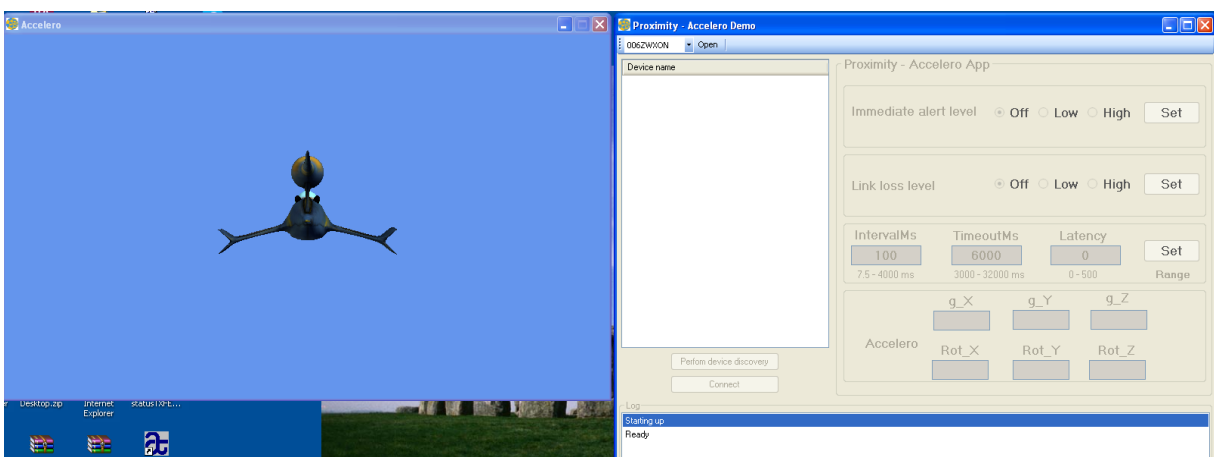Battery CR1632 Fully Installed

Run Software
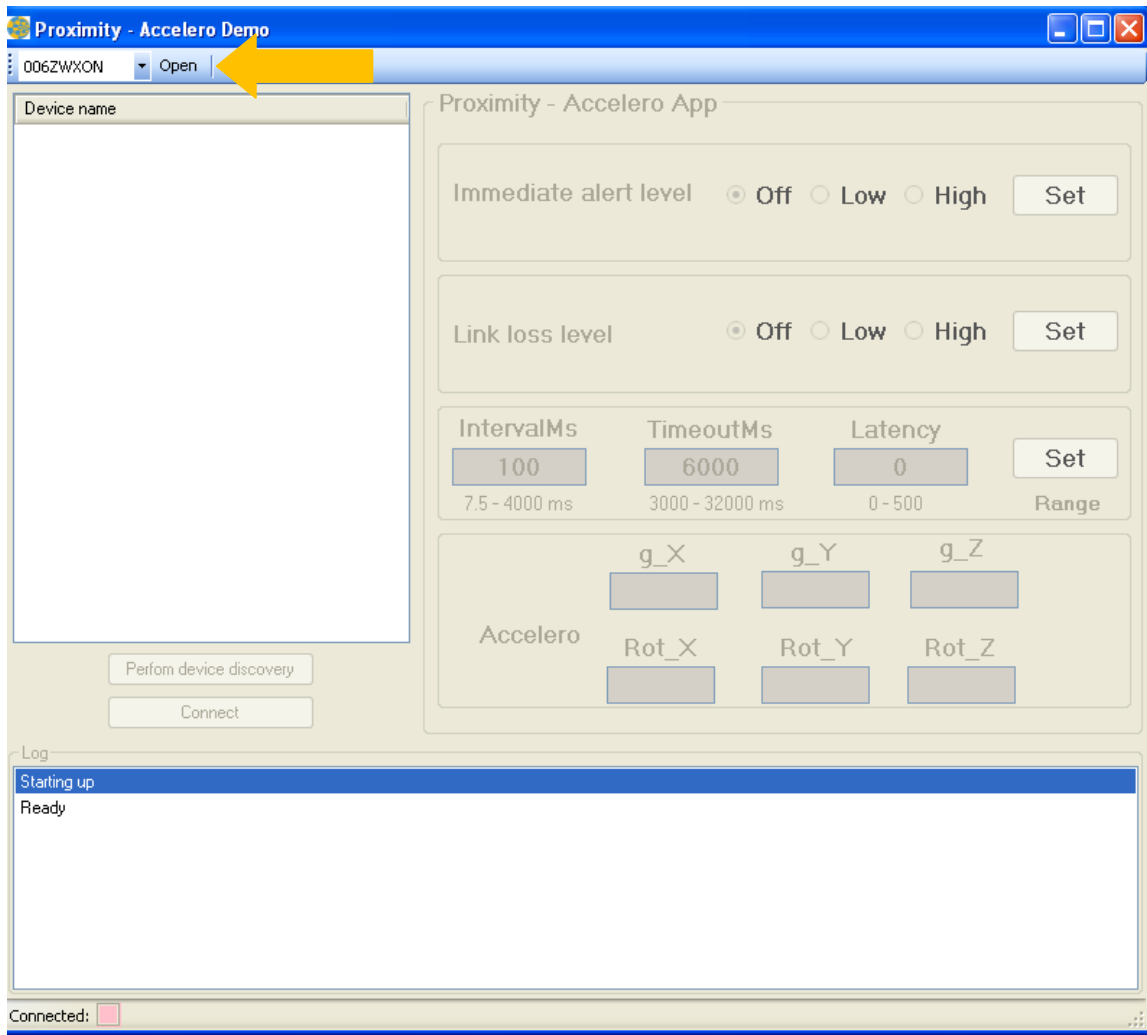
Navigate to the Accelero_Demo_EXE folder:

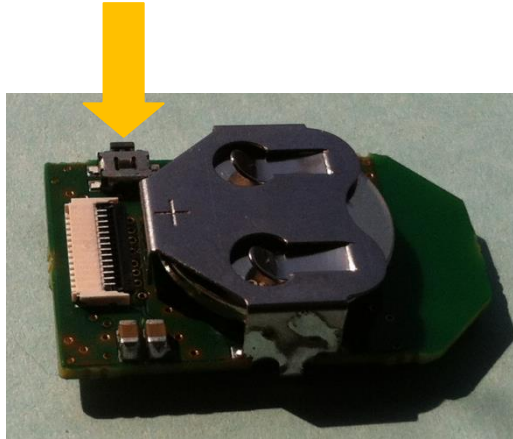Launch Accelero.exe (on some systems you may need to launch using "run as administrator")
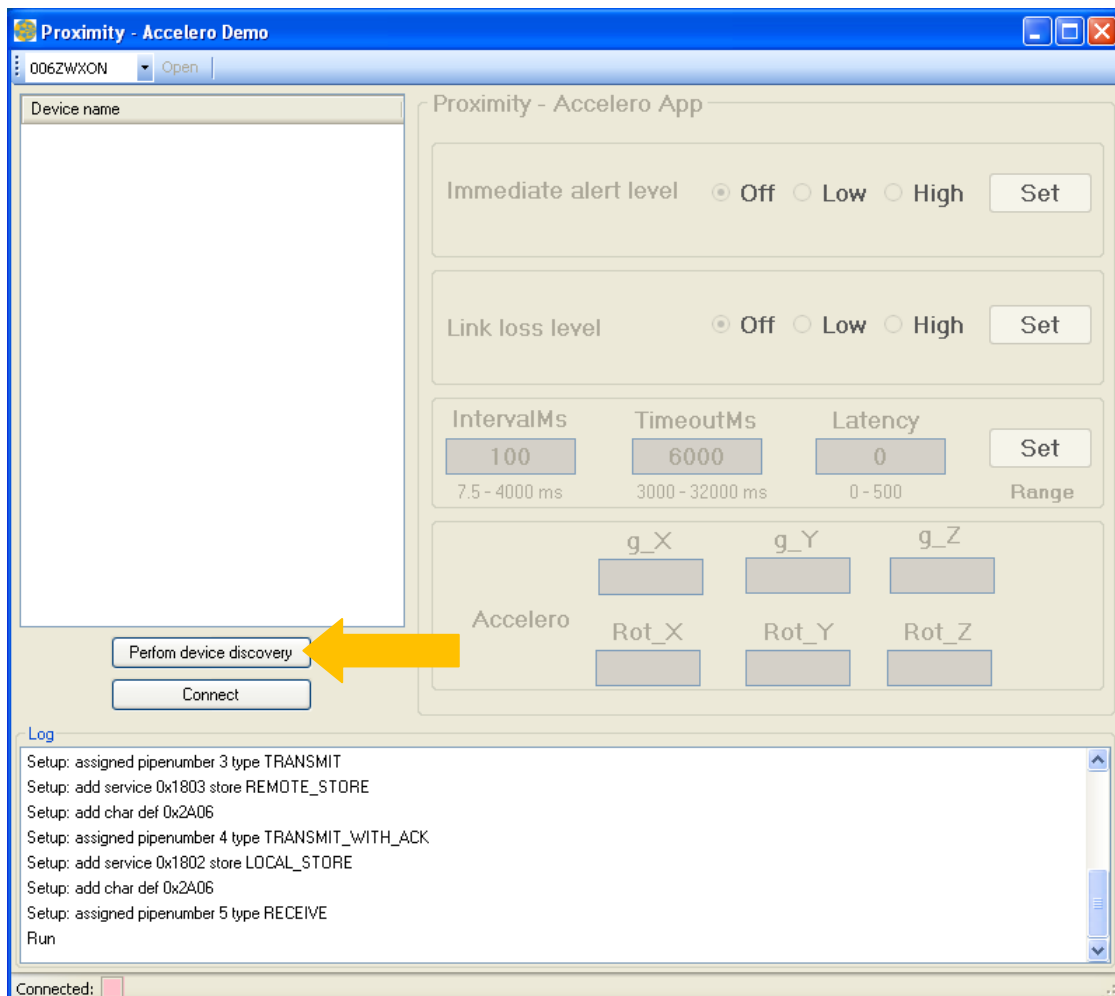

Two screens should open:

On the Right hand screen click on Open

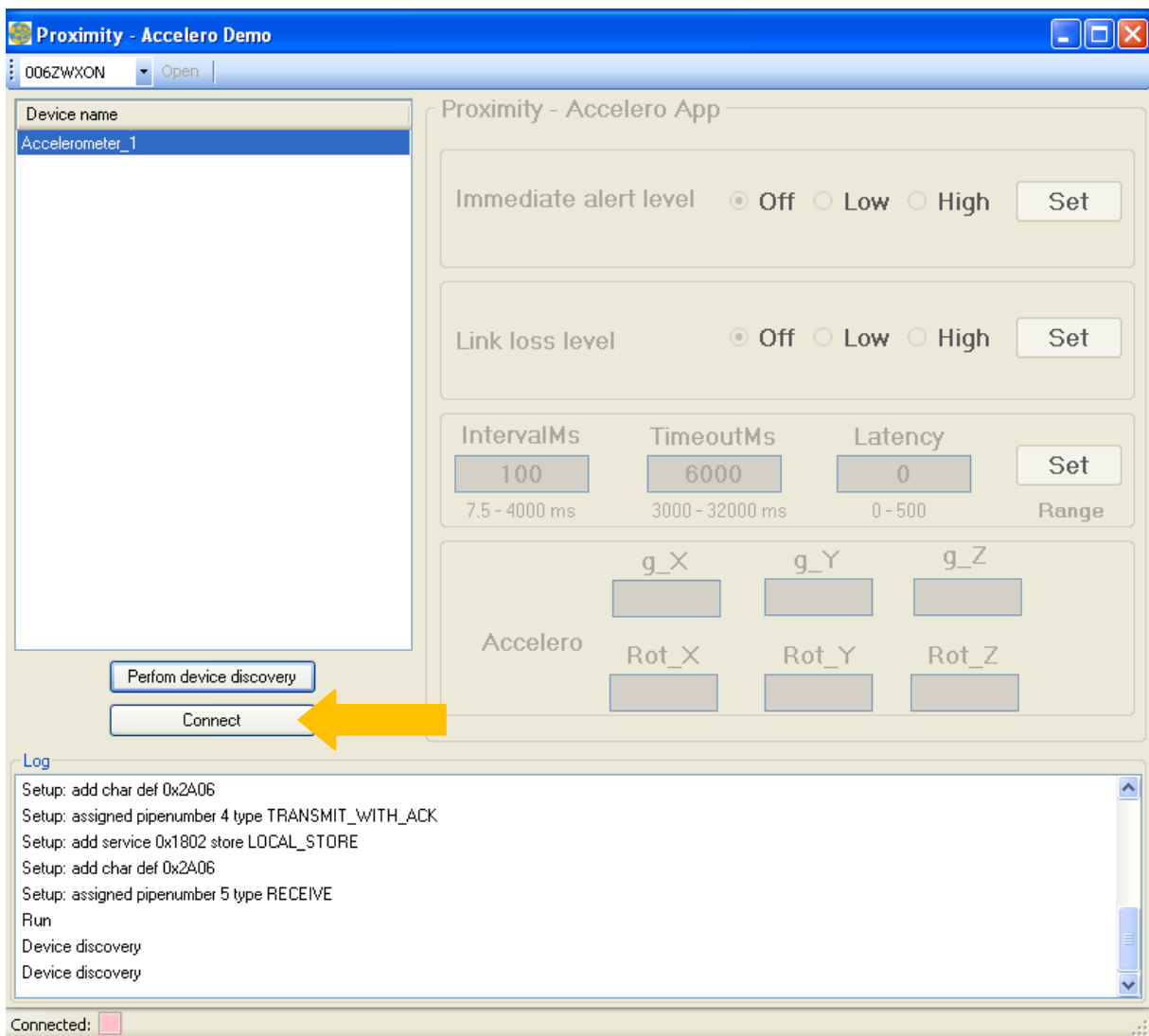Reset Accelerometer with small reset button:
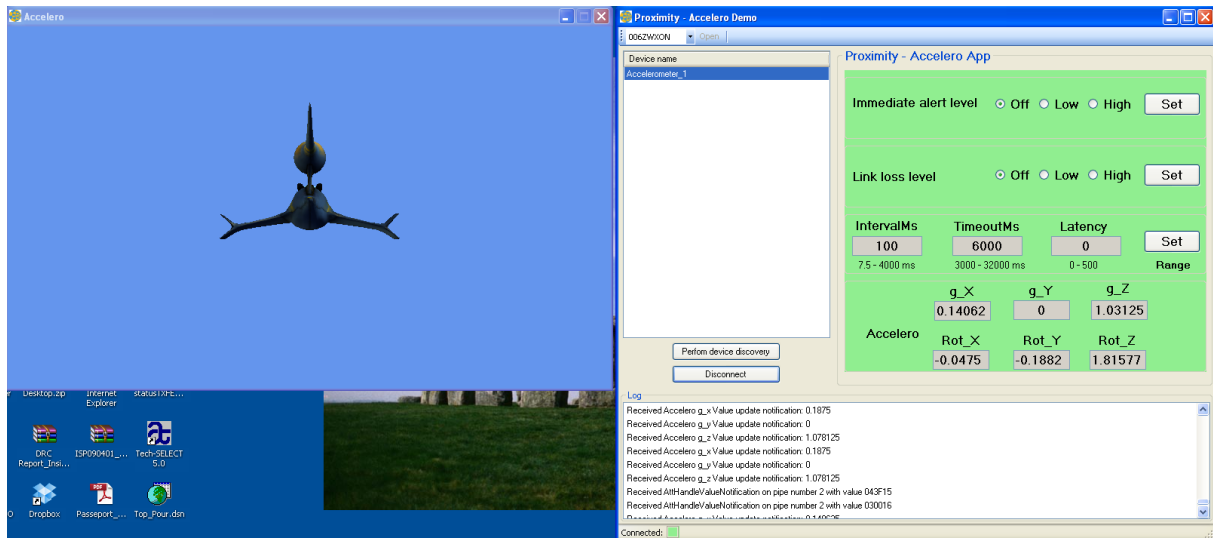

On Panel "Perform Device Discovery"

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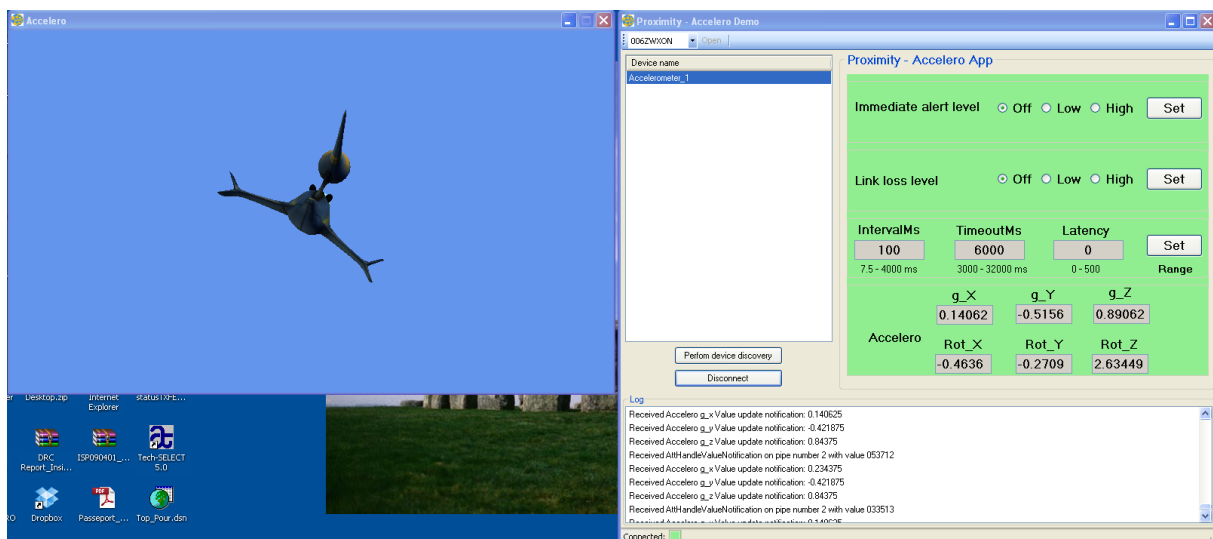
Press on "Connect"

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:

Stop Software

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

To switch off accelerometer remove battery as shown: