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Quickstart Guide
Using the BHI160 / BHI160B shuttle board

Application Note

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Notes	Data in this document are subject to change without notice. Product photos and pictures are for illustration purposes only and may differ from the real product´s appearance.

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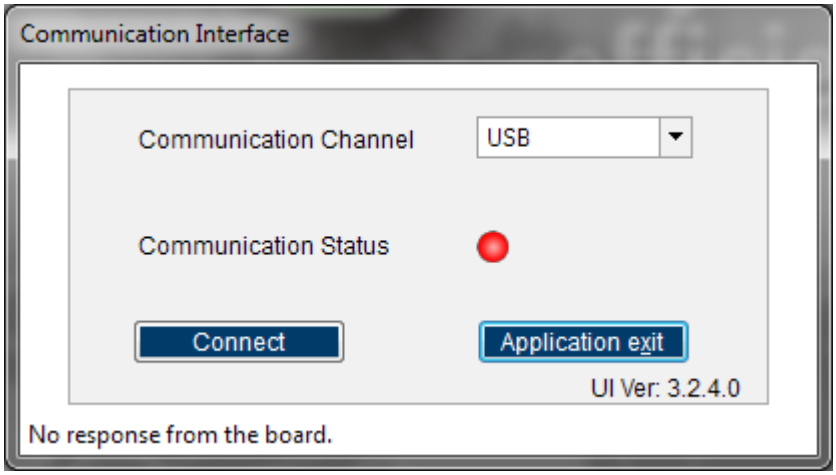
1 General description

This guide will guide you step by step and explain how to connect the BHI160 shuttleboard to a Windows computer using the Application board 2.0, configuring it and streaming data.

2 PC connection

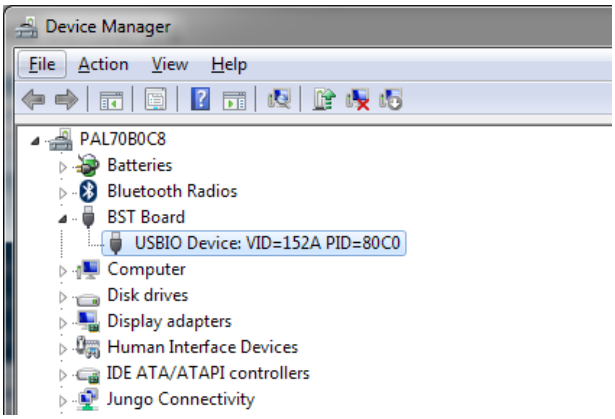
Make sure that the rightmost 2 DIP switches are in the “ON” position.

Open the “Development Desktop 2.0” windows application. You will be prompted with the following dialog:



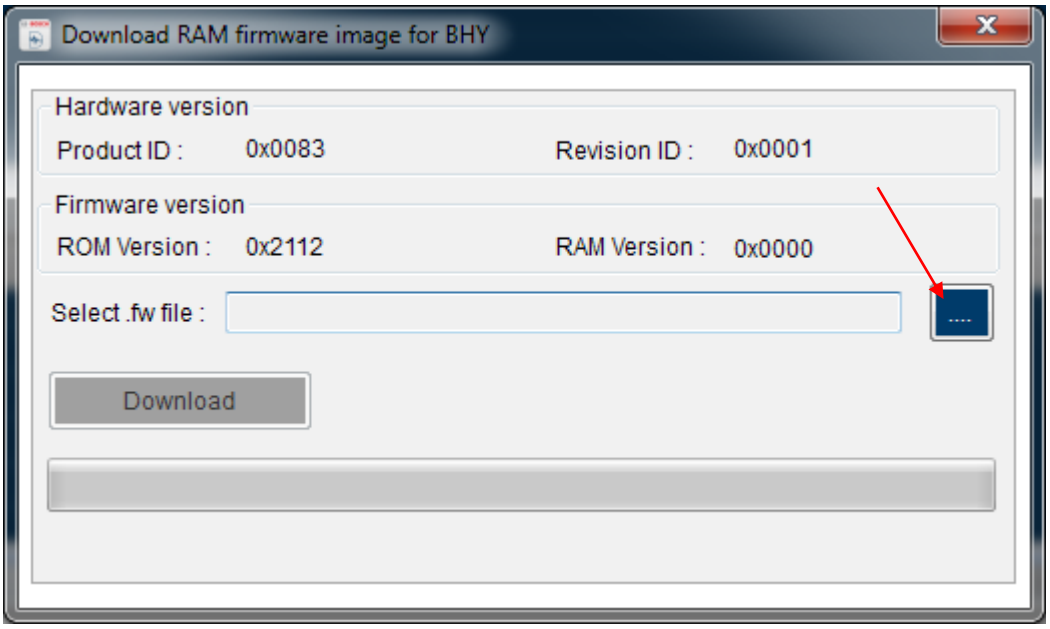
UI version should be greater or equal than 3.1.2.1

Connect the Application board 2.0 to one of the USB ports and turn is on via the sliding switch. Make sure it is connected to the computer in the device manager. It should show up under the “BST Board” category.

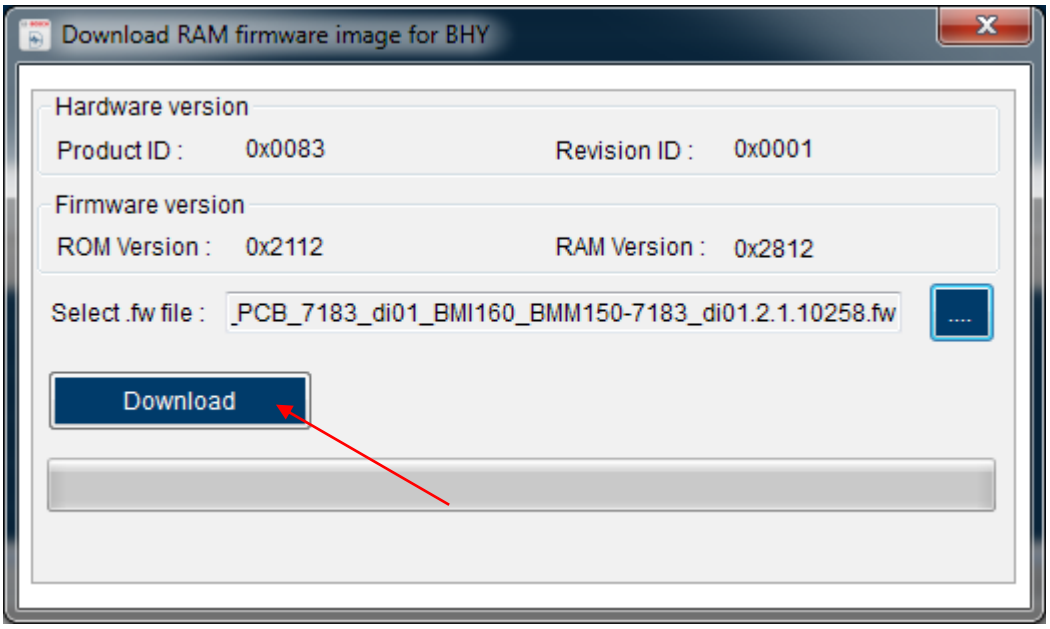


3 Downloading the RAM firmware image

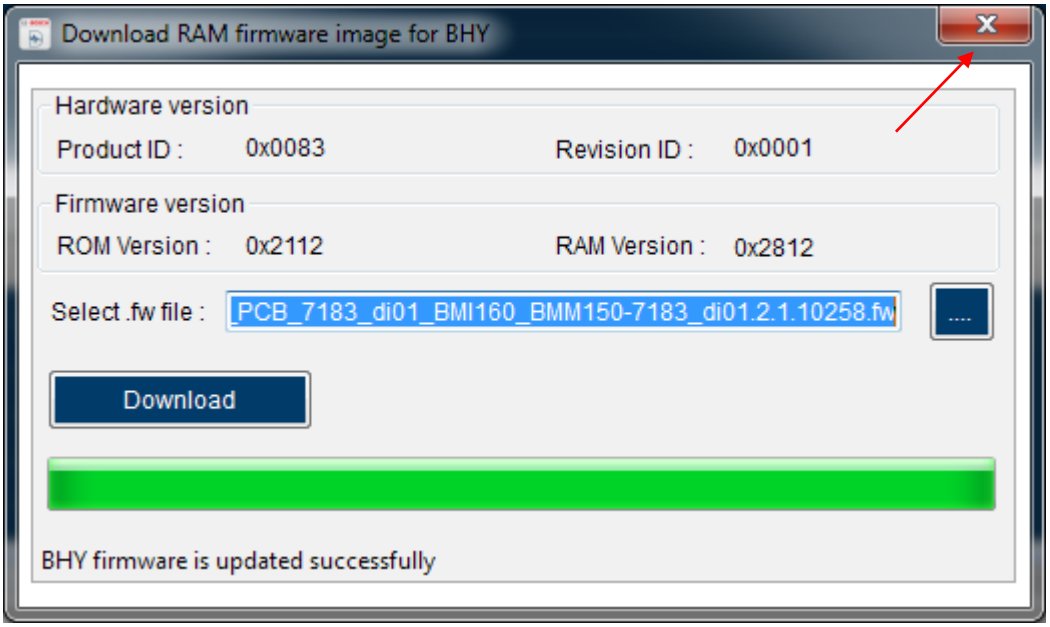
Click connect. Development Desktop will start, recognize the BHI160 and you will be prompted to download the RAM patch.



Click on the "..." and select the "Bosch_PCB_7183_dixx_BMI160_BMM150-7183_dixx.x.x.xxxxx" located in the "C:\Program Files\Bosch Sensortec\Development Desktop 2.0\Firmware\BHI" folder on your computer.

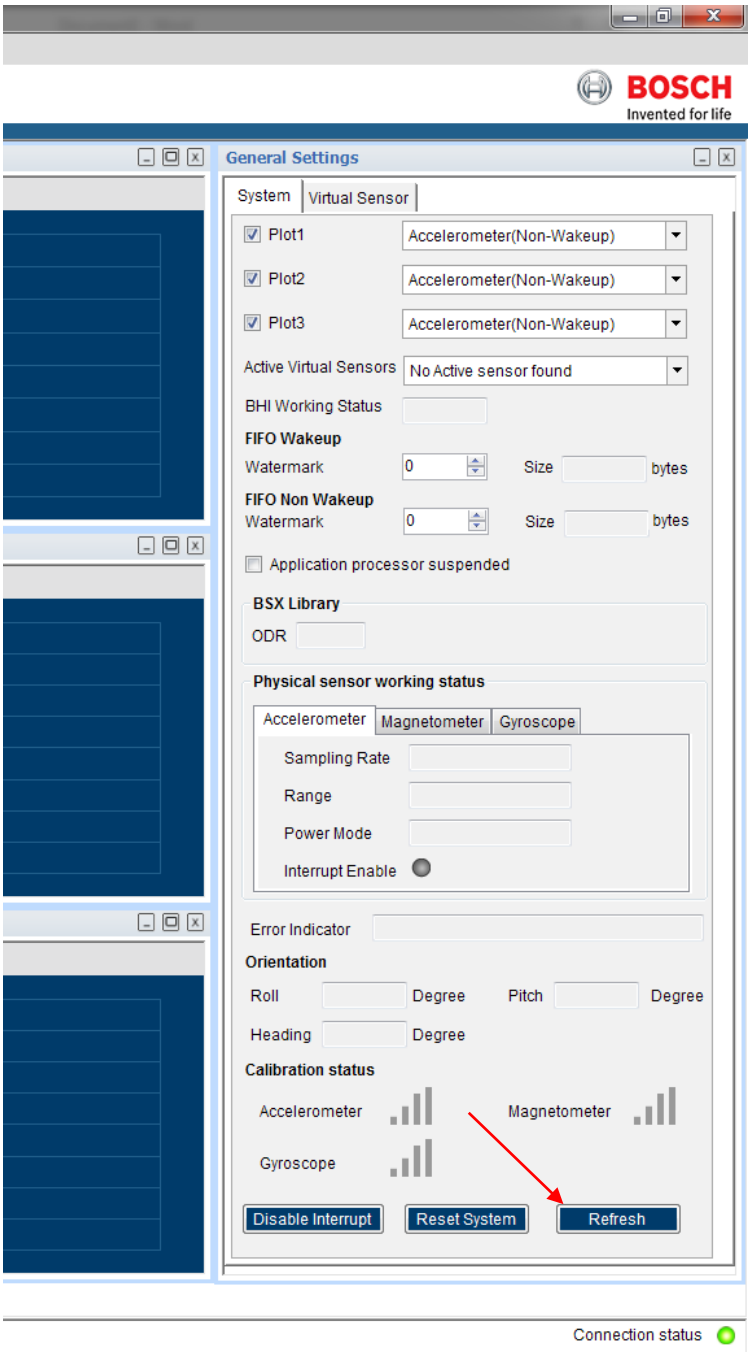


Next, click on download. You should see the text "BHY firmware is updated ...".



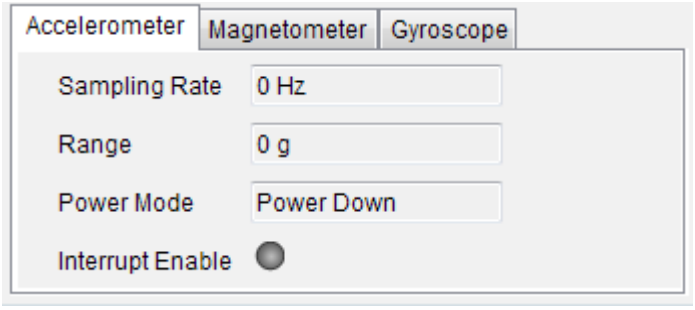
Close this dialog.

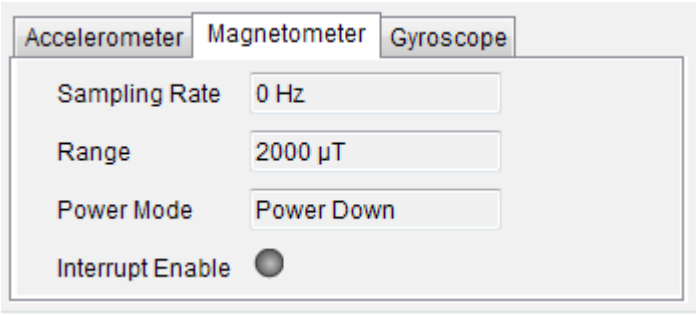
Then, Click on the refresh button on the bottom right corner.

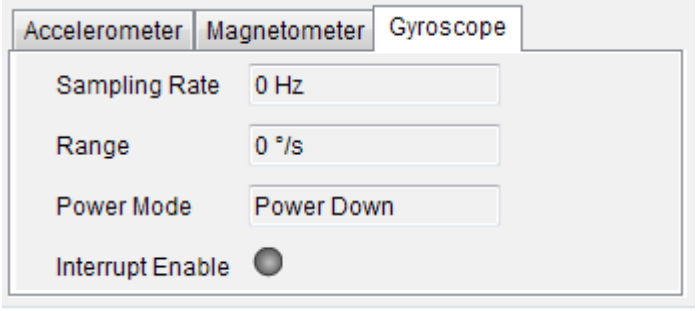


This will poll the sensor to refresh all the statuses.

You should then see that all the sensors are in the “Power Down” state, with a sampling rate of 0Hz. This means that everythin is working normally.

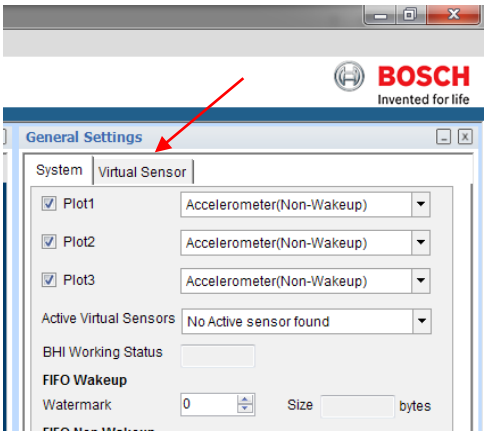




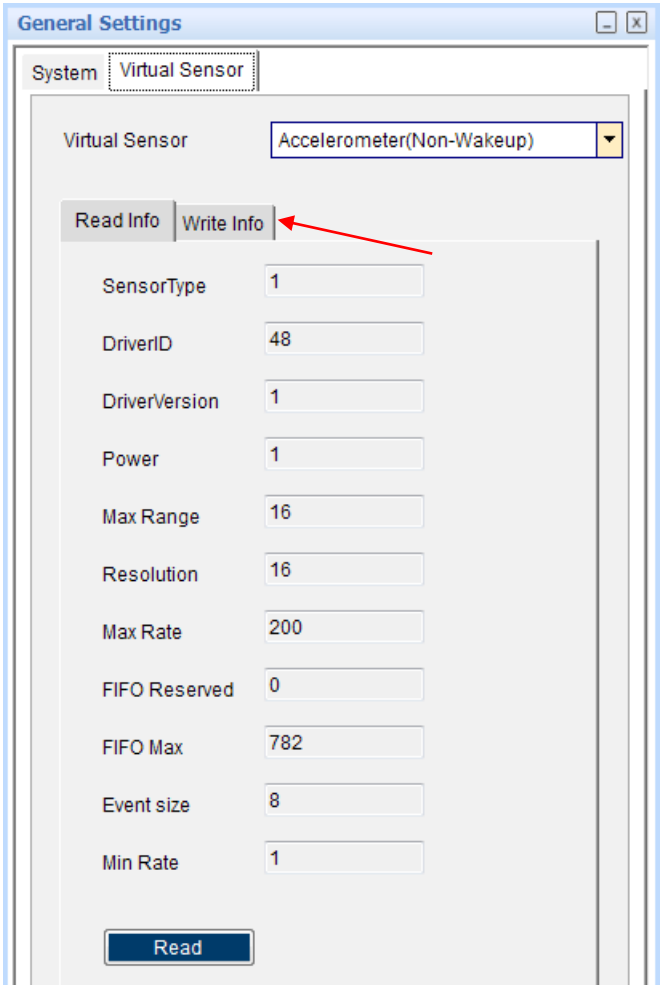


4 Configuring the sensor

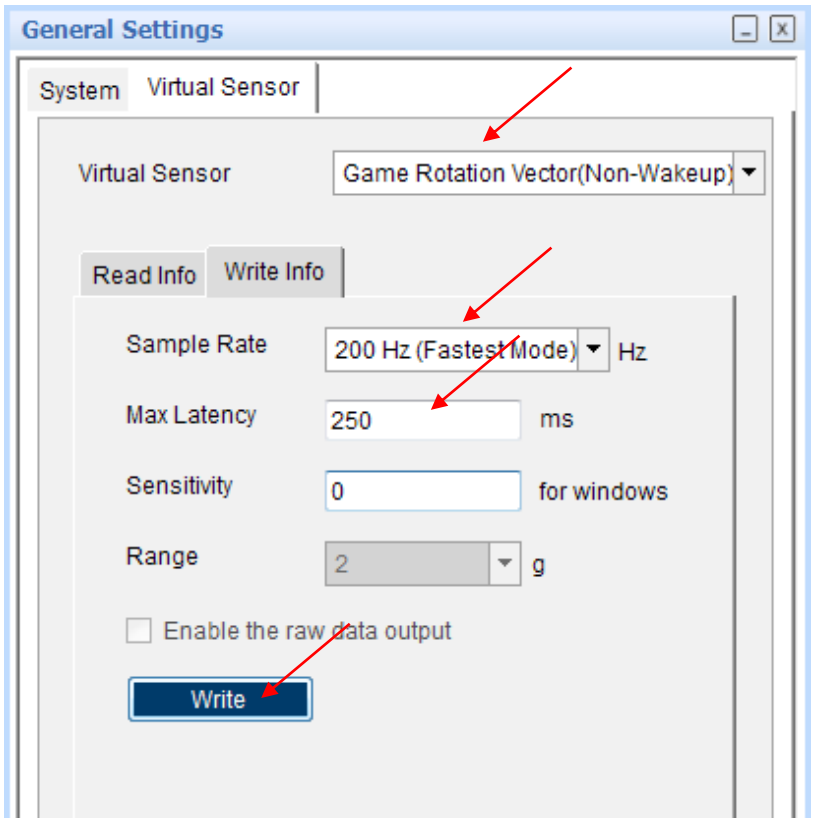
Next step is to enable a virtual sensor. Click on the “Virtual Sensor” tab on the top right.



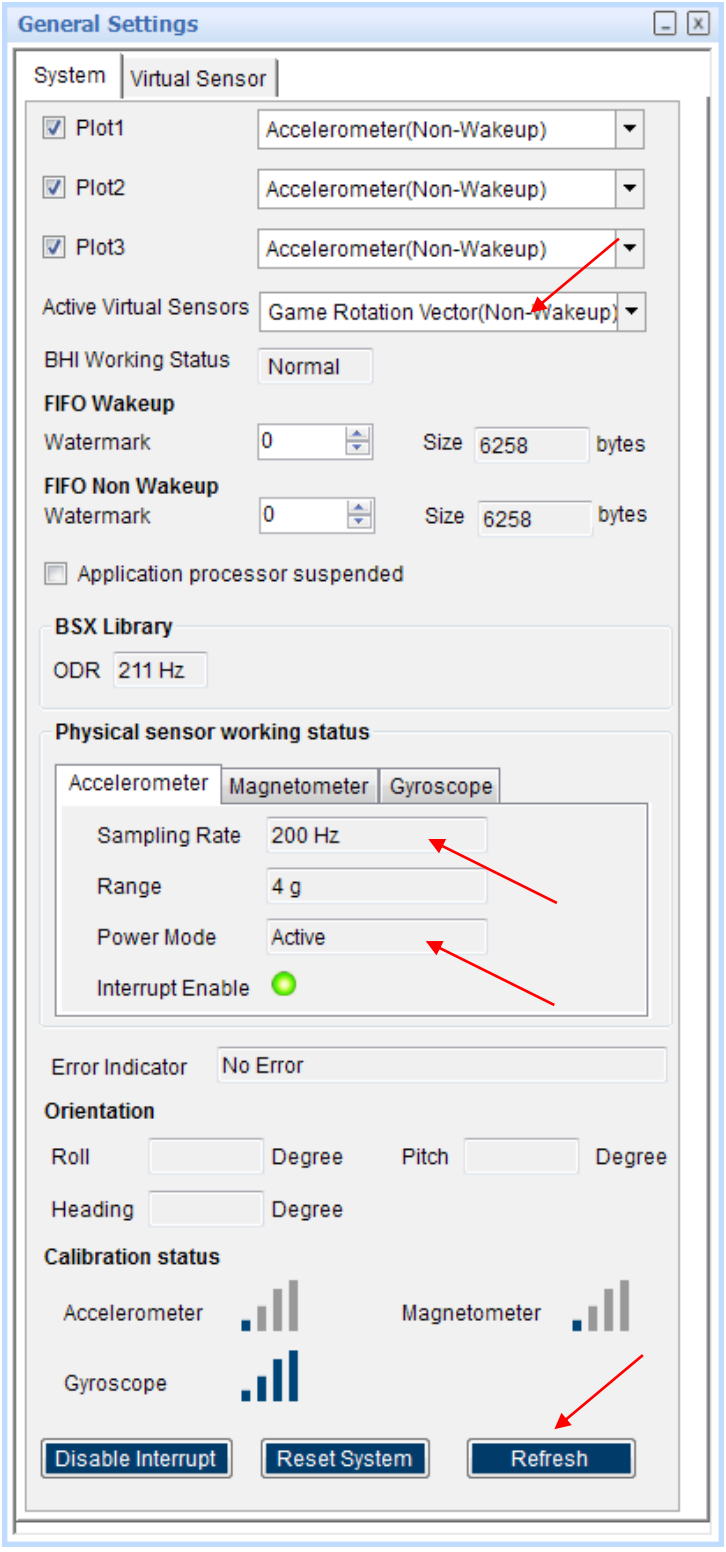
Click on the “Write Info” tab



From the drop-down list, select the sensor “Game Rotation Vector(Non-Wakeup)”. Set the sample rate to 200Hz, and the latency to 250ms. This means that the BHI160 will buffer the data for 250ms before sending it to the Host. Then click Write.

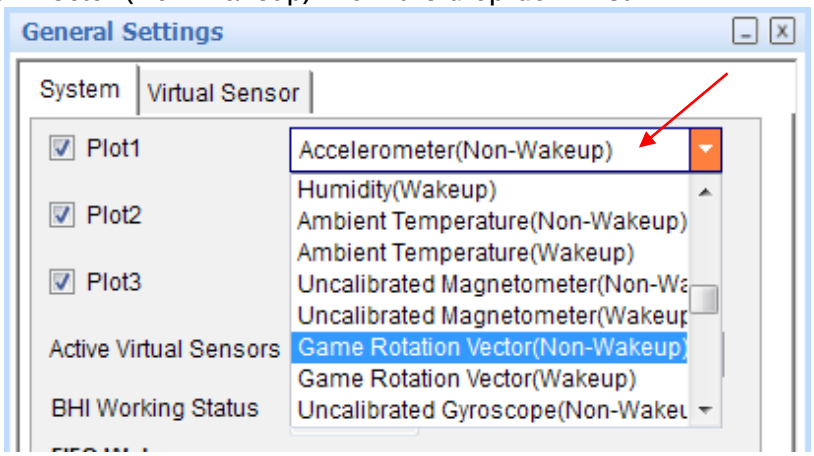


If you go back to the “System” tab again and click refresh, you should see that the accelerometer and gyroscope are now enabled and sampling. You should also now see “Game Rotation Vector (Non-Wakeup)” in the list of active virtual sensors.

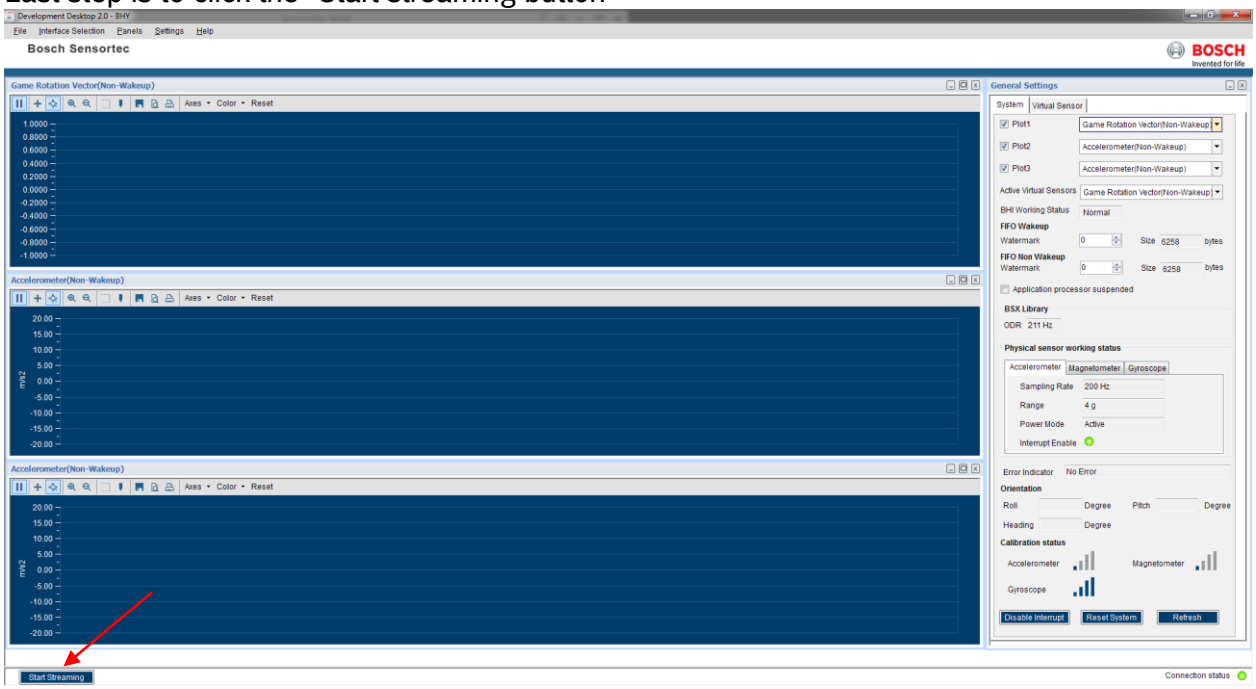


5 Streaming the data

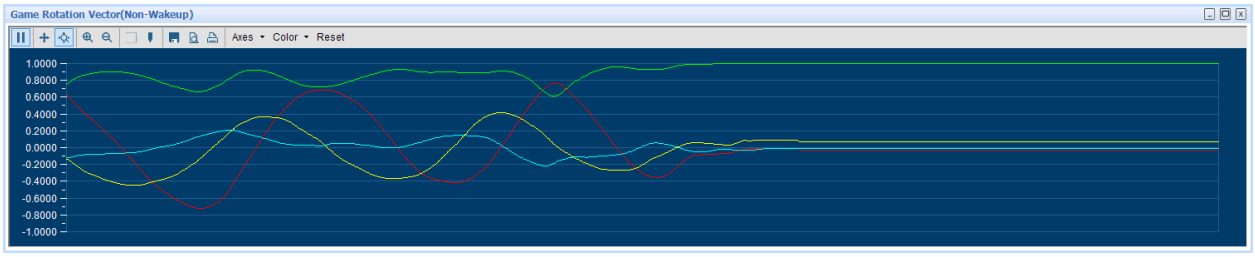
In order to see the data output, you need to select the right sensor to plot in the graphs. Pick “Game Rotation Vector (Non-Wakeup)” from the drop-down list.



Last step is to click the “Start streaming button”

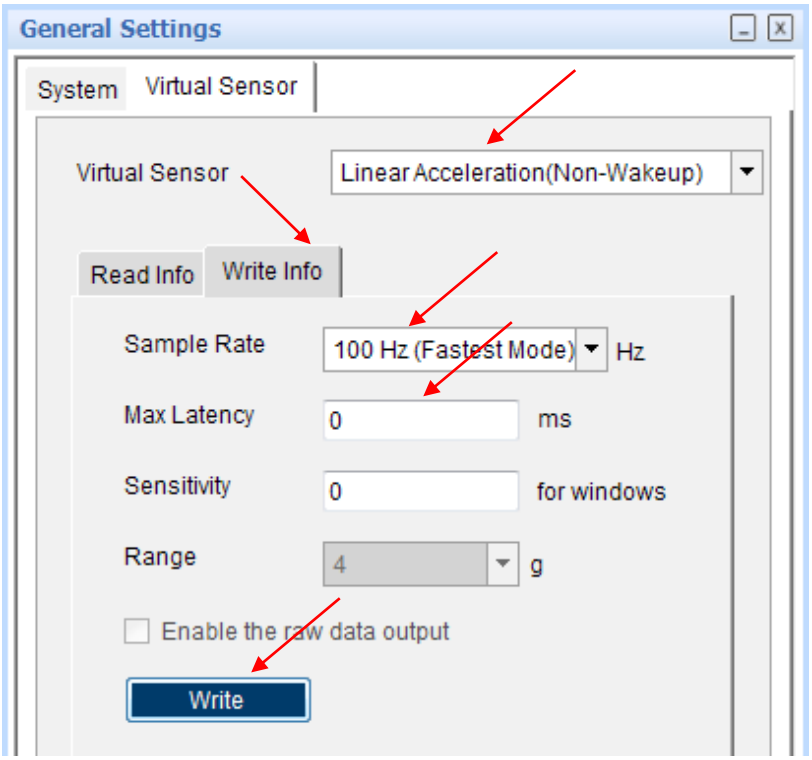


You should now see quaternion data with 200Hz Output data rate, 4Hz Refresh rate (1/250ms = 4Hz).

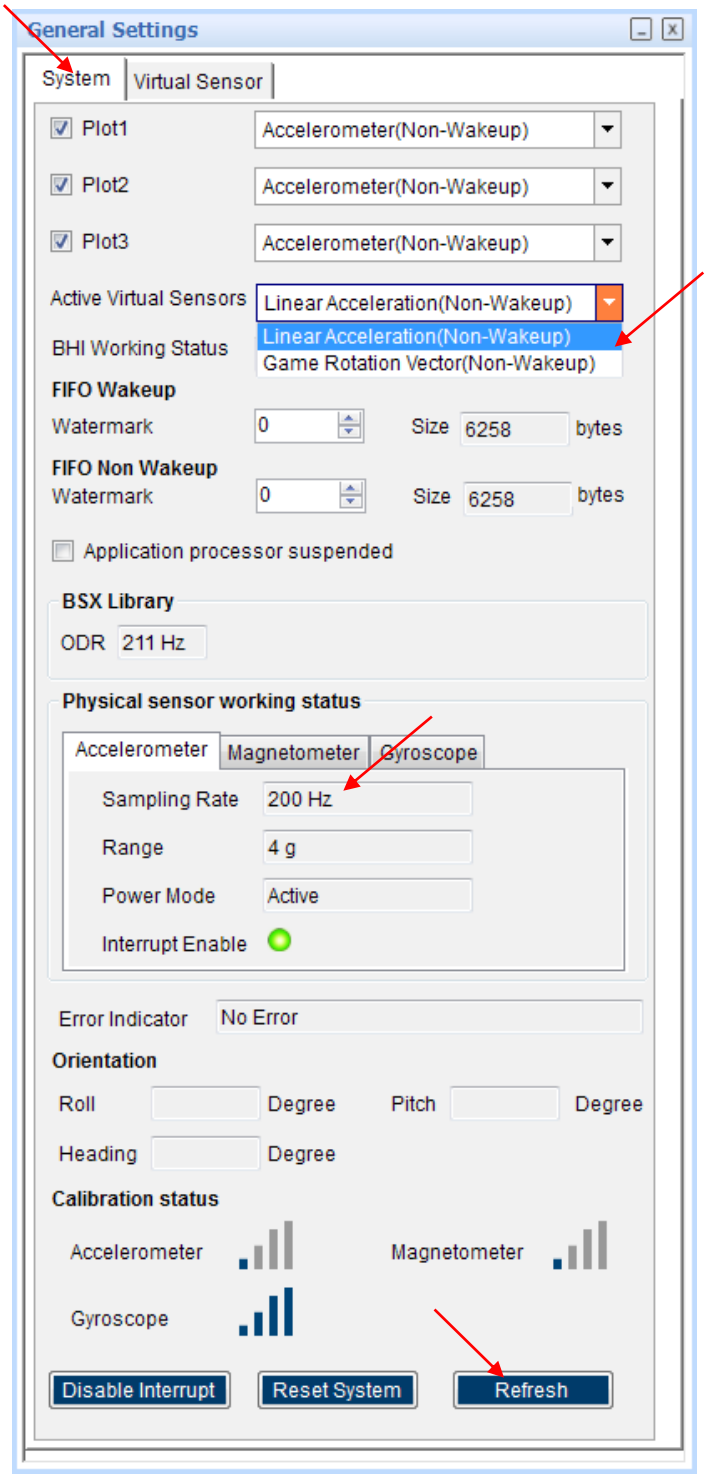


6 Activating more than one virtual sensor

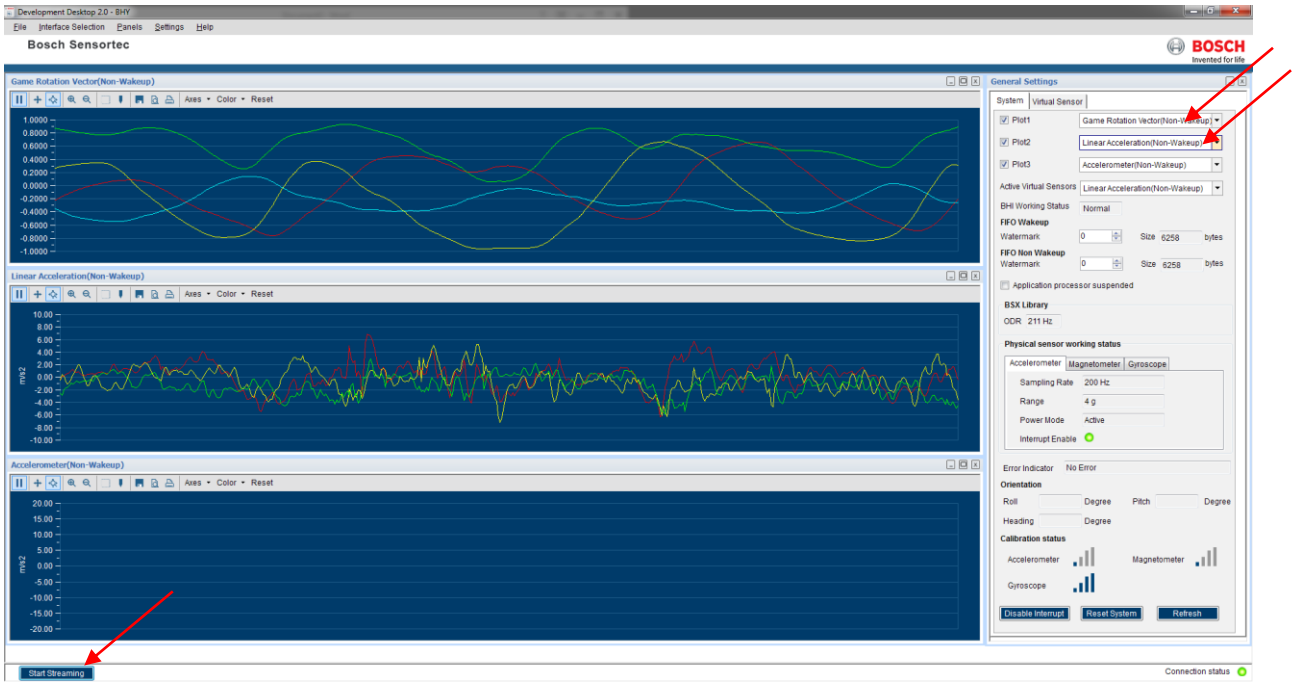
Go back to the Virtual sensor tab, but this time enable “Linear Acceleration (Non-Wakup)”. Use a sample rate of 100Hz and a latency of 0ms.



Back to the System tab and clicking refresh, you should now see two active virtual sensor. Note that the Accelerometer hardware is still running at 200Hz, even if the Linear acceleration is running at 100Hz.



Configure the plots to see both virtual sensor, click start streaming again and you should now see both outputs simultaneously.



You should now see quaternion data with 200Hz Output data rate, Linear acceleration with 100Hz Output data rate, both at 100Hz Refresh rate.

Now it is worth noting that both game rotation vector AND linear acceleration outputs are refreshed at 100Hz since interrupt rate is dictated by the lower latency enabled sensor, in this case the linear acceleration.

7 Document history and modification

Rev. No	Chapter	Description of modification/changes	Date
0.1	all	Document creation	Mar. 02, 2016
1.0	all	Release	Jul. 25, 2016
1.1		Added 2 new tech. ref. codes: - 0.273.141.309 (BHI160B) - 0.273.141.310 (BHA250B)	Jan. 04, 2017

Bosch Sensortec GmbH
Gerhard-Kindler-Strasse 9
72770 Reutlingen / Germany
Contact@bosch-sensortec.com
www.bosch-sensortec.com

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Тел: +7 (812) 336 43 04 (многоканальный)
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