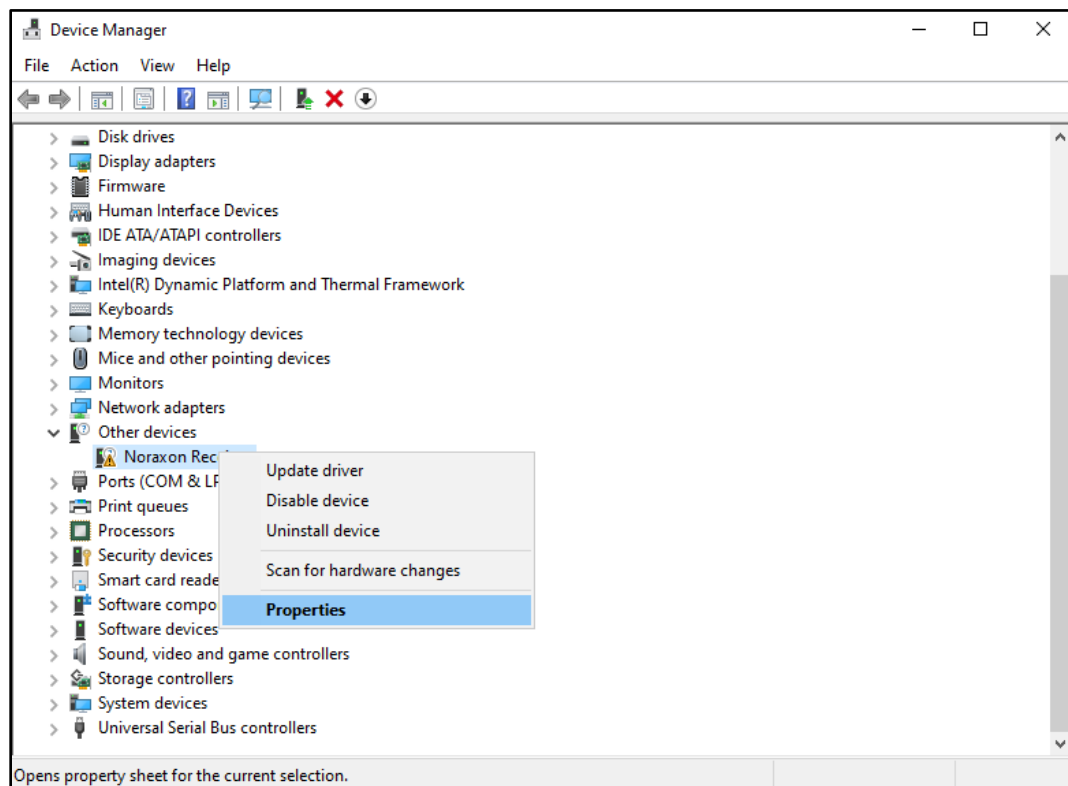


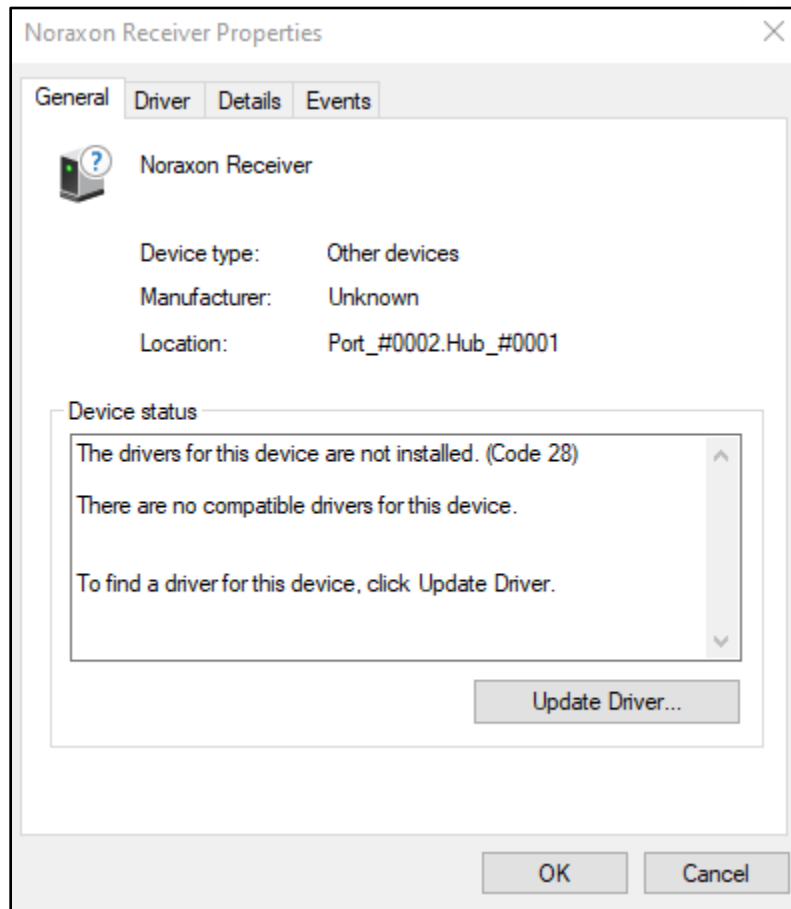
## **The MotionMonitor xGen Hardware Guide: USB based Noraxon EMG Device Configuration**

The following document outlines the steps required to configure and collect data from a Noraxon EMG unit that is connected to The MotionMonitor computer via a USB connection. The USB device must first be installed on the computer before it is configured within The MotionMonitor xGen. Before beginning ensure that the Noraxon drivers, supplied by your Client Support Engineer, are saved on the computer. **Note:** The driver and settings for your particular Noraxon USB device may vary from the Noraxon Ultium system what was used in this guide. However, the procedures that follow are generally the same across all Noraxon USB devices.

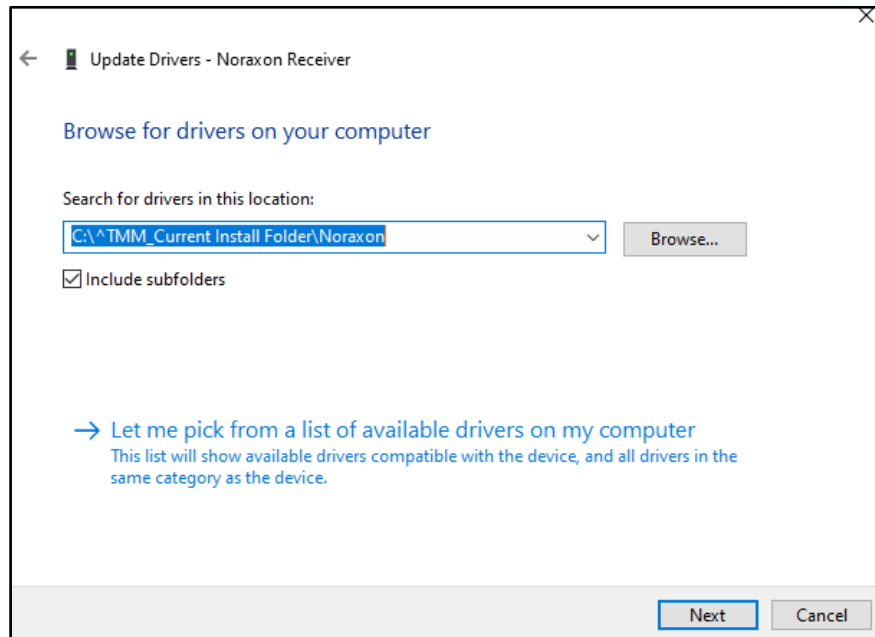
1. Power the EMG unit and connect it to the computer. Launch the Windows Device Manager. Go to **Start| Control Panel| Device Manager**. Right click on the Noraxon Receiver under Other Devices and select properties.



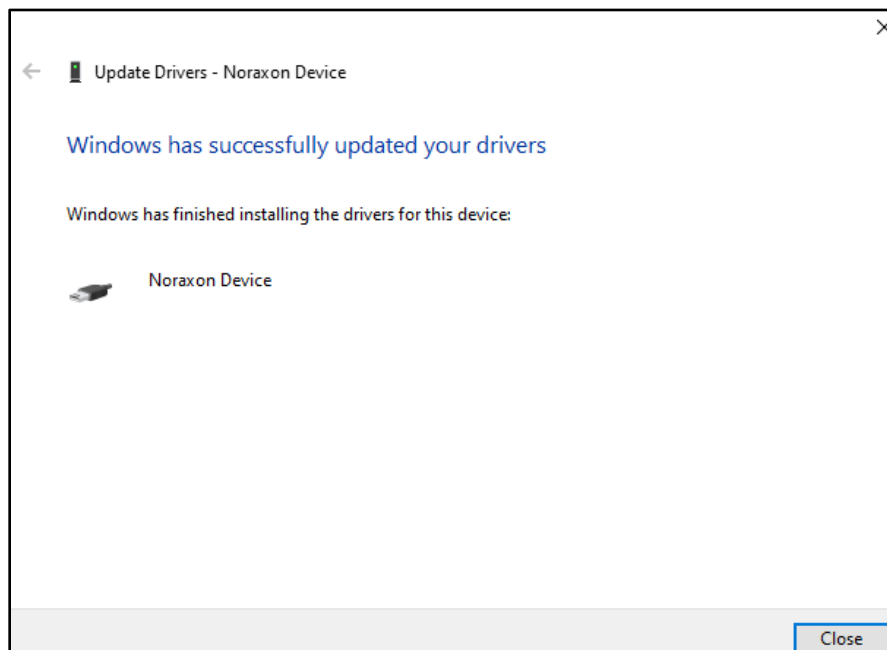
2. Go to the General tab and select Update Driver. Select “Browse my computer for driver software.”



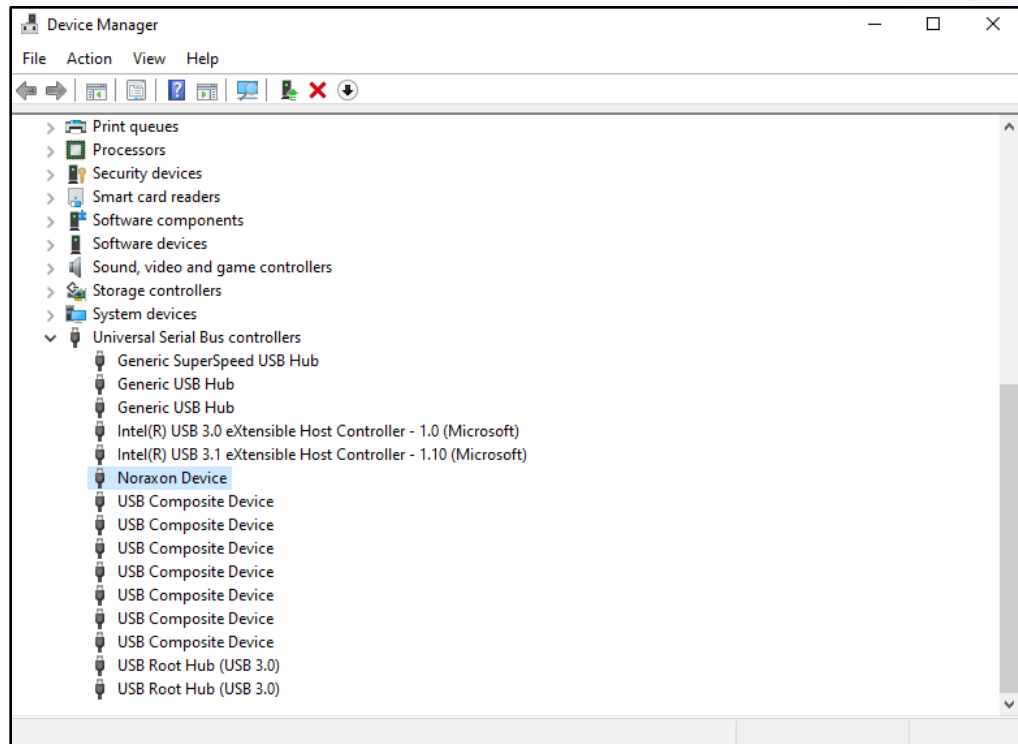
3. In the next window, use the Browse button to browse to the folder where the drivers are stored. Click Next. Depending on your computer security settings, you may be prompted by Windows Security to give permission to install the Noraxon driver. If prompted, click "Install".



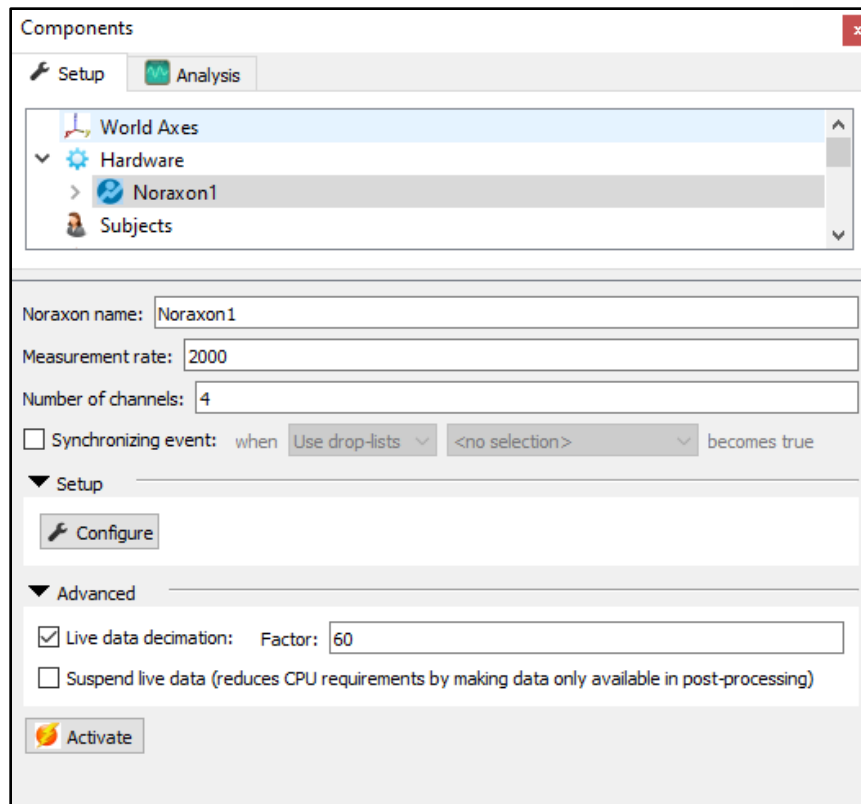
4. Once the device is installed you will receive a notice that Windows has successfully installed the driver software.



5. Return to the Device Manager and confirm that the “Noraxon Device” is listed under the Universal Serial Bus Controllers. If the device is not recognized and listed below, contact a Client Support Engineer for assistance.



6. Start The MotionMonitor xGen and go to the Hardware node in the **Components|Setup** window. Add a Noraxon device from the Add button in the parameters panel at the bottom of the Components window or by right clicking the Hardware node and adding the device through the cascading drop list.

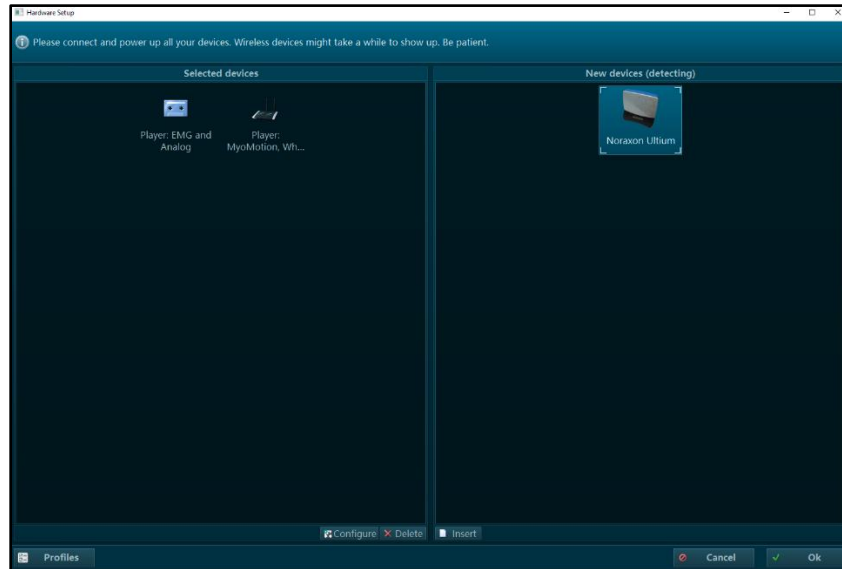


The Noraxon Ultium system can be recorded at 2000 or 4000 Hz. The measurement rate can be specified in this menu. The number of channels that will be collected from should also be specified. In the example shown above, 4 EMG channels will be activated.

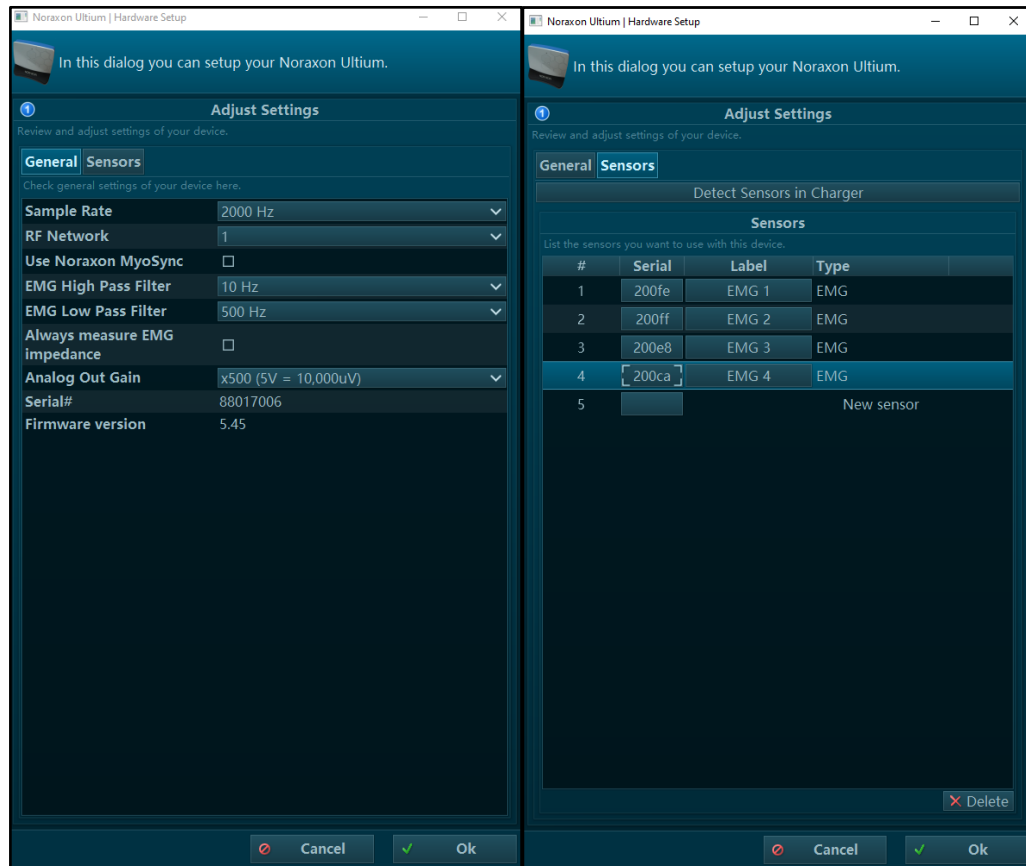
Please follow the steps below for configuring the Noraxon device.

A decimation factor can be set for the EMG data. This is a means for limiting the computer resources being used while running in the Live Window by displaying only a fraction of captured data points in real-time. This does not affect the measurement rate as data will still be captured at its full resolution. If visualizing the EMG data in real-time is not desired, the suspend live data checkbox will suppress any data from the Noraxon device from being displayed in graphs or used in any equations. However, the data would immediately be available and presented in a recorded activity. **Note:** The Noraxon data stream will not be able to be displayed in a graph without enabling a Live data decimation factor. Data can be displayed at the full measurement rate in post processing.

7. Click the “Configure” button under the Setup dropdown in the Noraxon parameters panel to access the Noraxon settings. The Noraxon Ultium should be displayed under “New Devices Detected” if this is the first time connecting to the device. Select the device and click “Insert” to add the device to your “Selected devices” list. Click the “Configure” button at the bottom of this Hardware Setup window to access the Noraxon Ultium settings. Make certain to also remove any other devices that may be listed under the Selected devices, as these will interfere with the collection of data from your Noraxon device.



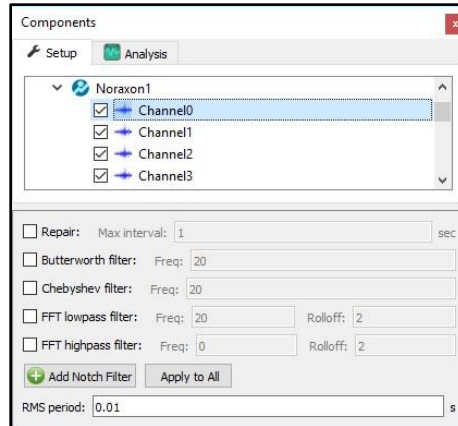
8. Make sure that the Sample Rate specified in the General tab displayed below matches what was previously specified as the Measurement rate in the Noraxon Parameters panel in Step 6. The MotionMonitor xGen cannot confirm congruity for these settings with all Noraxon hardware devices, so it's best to confirm that these match manually. Specify the RF network, filters, and any other settings to the desired selection. Ensure that all sensors which will be used for data collection appear under the "Sensors" tab. To establish connection to the sensors select "Detect Sensors in Charger" or manually input the sensors using their serial number (found on the back of the sensor). During this process the sensors should still be connected to the docking station. Select OK once this process has been completed. The number of sensors listed in the Sensors tab displayed below should match the number of channels specified in the Noraxon Parameters panel in Step 6.



These settings can be saved as a profile in order to quickly switch between configurations with different general settings or number of sensors.

Some models of Noraxon sensors are also shut down through a "Shutdown Sensors" button at the bottom of the tab in the Hardware Setup dialog. This is where the sensors can be powered off.

- Click on the “Activate” button in the Noraxon parameters panel or the “Activate/Deactivate Hardware” icon in the Setup toolbar to activate the Noraxon hardware. Smoothing parameters can be enabled or disabled at any time through the nodes for Channels listed under the Noraxon Hardware device in the Setup Components tab, as shown below.



**Note:** Some Noraxon devices require that the sensors be removed from the docking station prior to activation.

- The following image shows the Raw Voltage being defined for Channel 0. RMS Voltage, Raw Voltage, Voltage Mean Frequency and Mean Frequency can be selected from the drop-list as well. RMS voltage calculates the RMS for the defined variable using the smoothing settings enabled for that Channel under the Setup Components Hardware node. Raw Voltage will always return the raw voltage, regardless of any enabled smoothing parameters. Voltage will report the voltage including any smoothing, if enabled.

