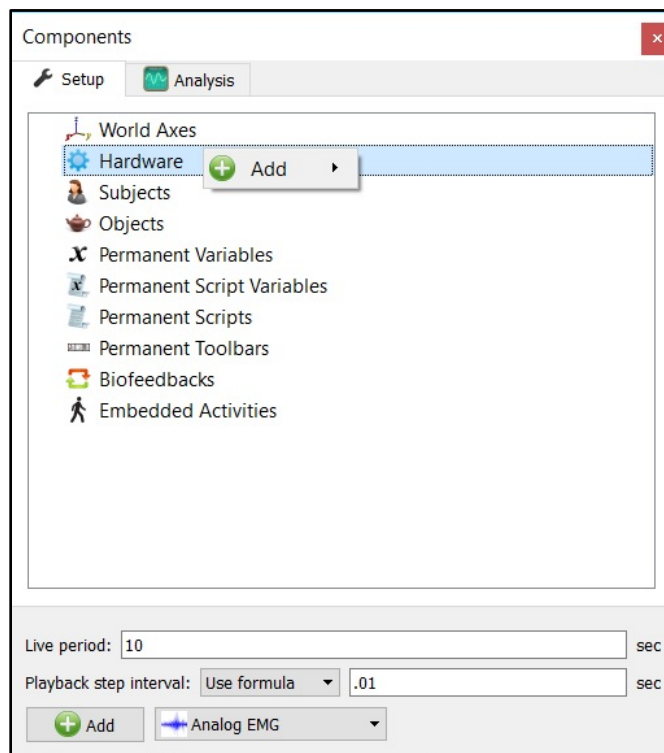


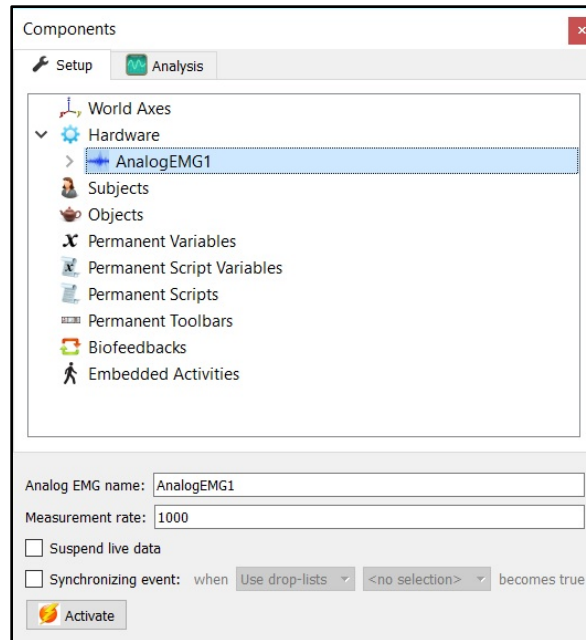
## The MotionMonitor xGen Hardware Guide: Adding an Analog EMG Device

The following document outlines the steps required for configuring and collecting data from an Analog EMG device using the Analog EMG Hardware component. The Analog EMG component provides a simplified means for performing some of the more standard EMG analyses but is not a required component for collecting or analyzing analog EMG data. The Analog EMG hardware device functions as an optional, intermediate, step when performing EMG analysis. It receives its data from a Measurement Computing A/D device or Motion Capture System that also supports the streaming of analog data into The MotionMonitor xGen, rather than generating and providing the data itself. It then provides additional smoothing capabilities that the actual hardware device streaming the analog signal does not have available.

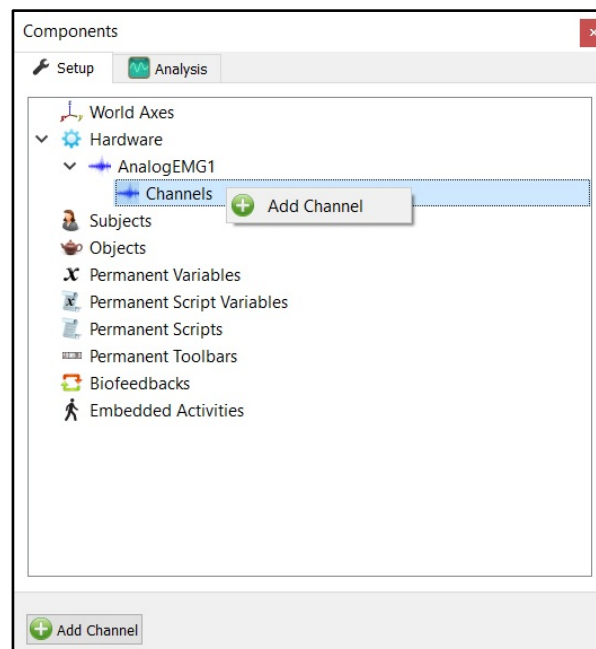
1. Start The MotionMonitor xGen and go to the Hardware node in the Setup Components window. Add an Analog EMG device from the Add button in the parameters panel at the bottom of the Components window or by right clicking the Hardware node and adding the device through the cascading drop list.



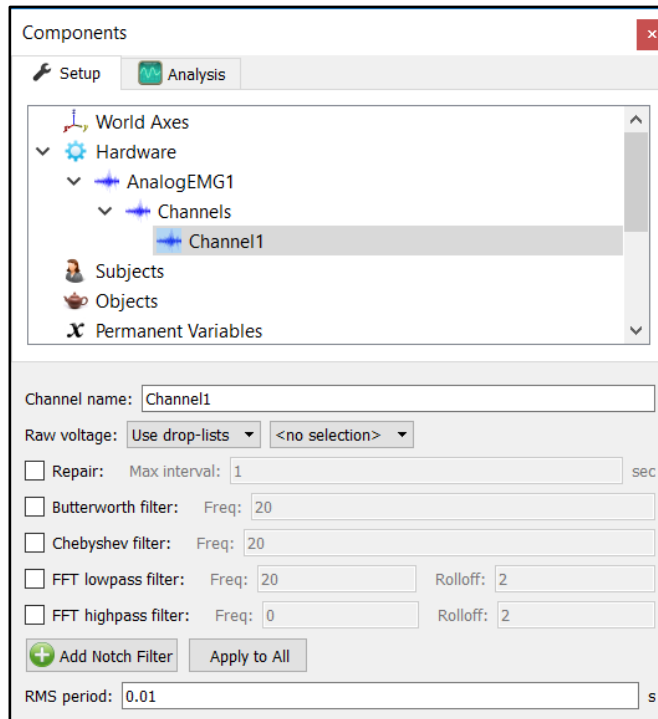
2. Click on the Analog EMG device to bring up the Analog EMG parameters panel. The Measurement rate should match or be less than the rate for the device physically streaming the analog data. Remember, the Analog EMG device isn't providing any data itself, but is rather receiving data from another device with analog data. The suspend live data checkbox will suppress any data from the Analog EMG device from being displayed in graphs or used in any equations. However, the data would immediately be available and presented in a recorded activity. This is a means for limiting the computer resources being used while running in the Live Window.



3. To add EMG channels, expand the Analog EMG device node and click on Channels. Add an Analog EMG channel from the Add Channel button in the parameters panel at the bottom of the Components window or by right clicking and adding the device through the cascading drop list.



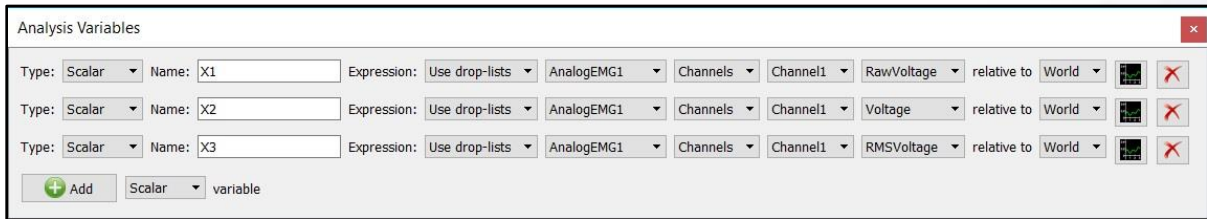
- Select an added Channel to bring up that Channel's parameters panel. The Channel name can be updated here to reference a muscle or analog signal source, for instance. The analog signal source needs to be selected from the Raw Voltage drop lists. For instance, if collecting analog EMG data through a Measurement Computing A/D device, the drop list selections could be MCCDAQ1.Channel0.RawVoltage. Raw voltages should be selected here to ensure that any smoothing parameters applied to the device streaming the analog signal aren't applied to the Analog EMG Channel.



- The smoothing parameters can be enabled or disabled at any time through the nodes for the Analog EMG Channels in the Setup Components tab, as shown above. These smoothing parameters provide additional options that would not typically be available for the Measurement Computing A/D device or Motion Capture System that supports the streaming of analog data.
- Click on the “Activate” button in the Analog EMG parameters panel or the “Activate/Deactivate Hardware” icon in the Setup toolbar to activate the Analog EMG hardware device. When activated, the Analog EMG device will start receiving and “re-streaming” any specified analog channels. In order for the Analog EMG device to actually receive a signal, the actual device streaming the analog signal must also be activated.

6. Sample data definitions for Analog EMG Channels are displayed below.

The following image shows the Raw Voltage, Voltage and RMS Voltage defined for Analog EMG Channel 1.



RMS Voltage, Raw Voltage and Voltage can be selected from the drop-list. 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.