

Noraxon Plug-In for Vicon v1.0.3.12 Setup Guide

Often, Noraxon users wish to use their Noraxon EMG systems in conjunction with Vicon technology. When used together, synchronization of the systems becomes imperative for accurate data collection and analysis. This guide will outline how to setup and synchronize a Noraxon EMG system with Vicon in the Vicon Nexus software using the Noraxon Vicon Interface (plug-in).

Setup Nexus:

Install the Nexus software version 1.8.3 or later and ensure it is working properly with your Vicon equipment. Please consult the Vicon manual for software instructions or troubleshooting for the Vicon Nexus software.

Note: This plug-in was tested with the MX Giganet and Lock+. Compatibility has not been confirmed with other Vicon equipment.

Setup Noraxon Plug-In:

1. Close Nexus if it is running
2. Install MR3 or MRXP to ensure the Noraxon G2 driver is installed before continuing.
3. Close MR3 if it is running
4. Uninstall any previous version of the Noraxon interface for Vicon.
 - a. Navigate to Control Panel\Programs and Features
 - b. Select the "Noraxon.Acquire.Vicon #.#.#.#" program and Uninstall
5. Install Noraxon's interface for Vicon: run the ViconInterfaceForNoraxon.msi
 - a. Once the installer is run, the prompt window will appear, click "Next" to confirm and begin installation
 - b. The Noraxon plug-in will automatically search for the correct installation folder, but the user should verify the install directory.
 - i. For Nexus 1.8 through 2.1 it should be where Nexus is installed. Typically "C:\Program Files (x86)\Vicon\Nexus\DigitalDevices\" or "C:\Program Files (x86)\Vicon\Nexus2.1\DigitalDevices\"
 - ii. For Nexus 2.2 and on it should be "C:\Users\Public\Documents\Vicon\Nexus2.x\DigitalDevices\", note the "2.x" is literal, do not change the "x" to the version number.
 - c. Click "Install" to begin installation, installation will begin and the green progress bar will indicate progress...
 - d. Click "Finish" when installation is complete

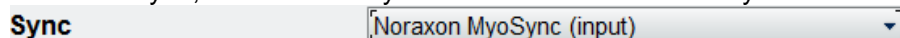
Note: If it is desired to use the plug-in on more than one version of Nexus at the same time, install the plug-in for one version, and then copy the "Noraxon.Acquire.Vicon" folder from the "...DigitalDevices\" for the installed version to the "...DigitalDevices\" folder for the other version of Nexus. See 5.b above for the location of these folders.

6. Turn on the Noraxon EMG system to be used

Note: The Nexus plug-in supports only one Noraxon device at a time

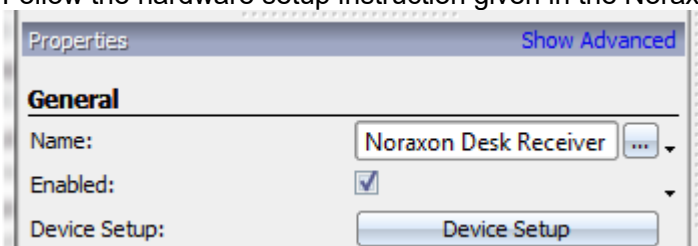
7. Follow the hardware setup instructions as given in the Noraxon system's hardware manual.

Note: to use hardware sync, the Noraxon system should be set to use Sync In:



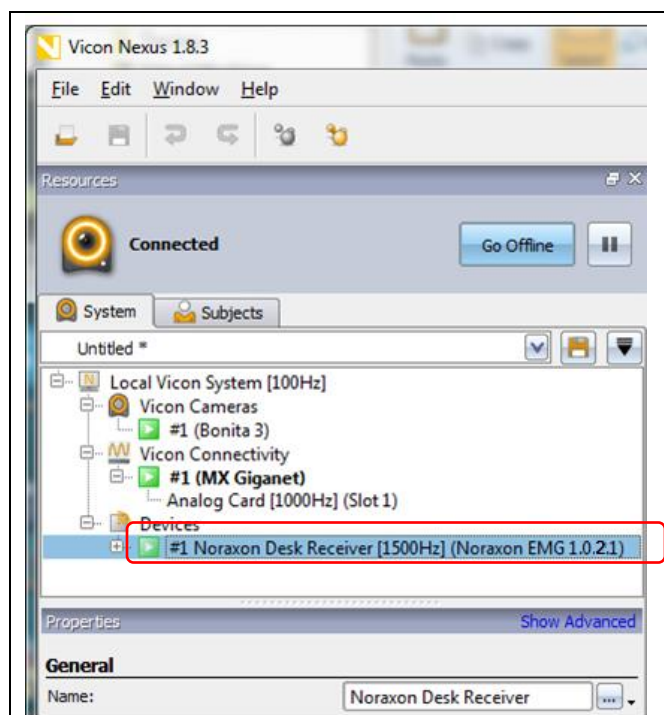
Setup EMG Hardware:

1. In the Nexus software, select the Noraxon device; it will appear on the System tab under Devices.
2. Either right-click the device and click Device Setup, or click the Device Setup button under Properties. Follow the hardware setup instruction given in the Noraxon system's hardware manual.



Setup Hardware Sync:

1. In the Nexus software, select the Noraxon device; it will appear on the System tab under Devices.

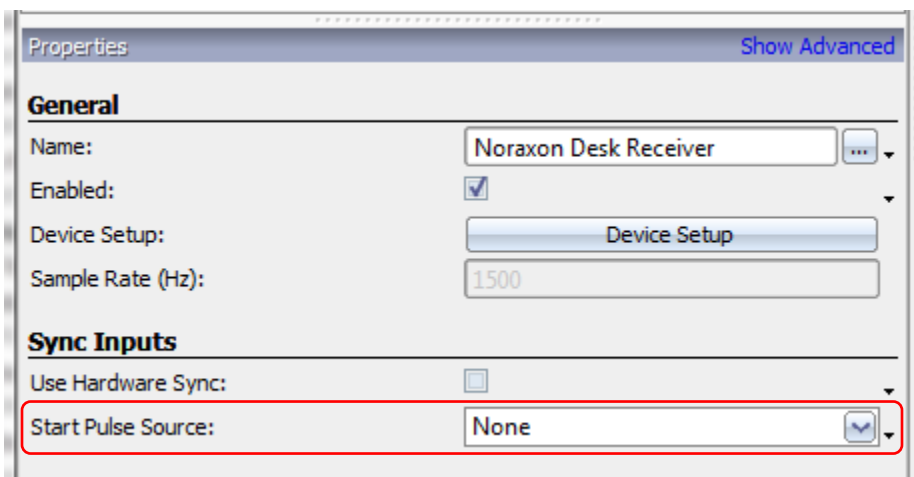


Note that the icon next to the Noraxon device indicates the status:

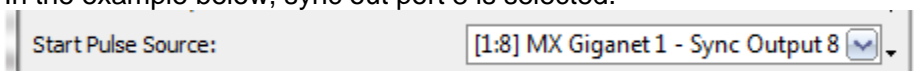
- Red X – not connected
- Gray Arrow – connected, but not receiving data
- Green Arrow – connected and receiving data

2. Configure hardware sync under Properties, use Start Pulse Source to select a Sync Output that the Start Pulse will come from. This sync output is the port being used to send a sync signal from the Vicor system to

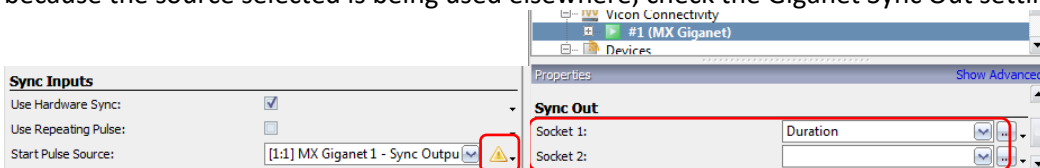
the Noraxon system, meaning the sync cable will run from this port to the sync in port of the Noraxon system.

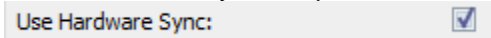


In the example below, sync out port 8 is selected.




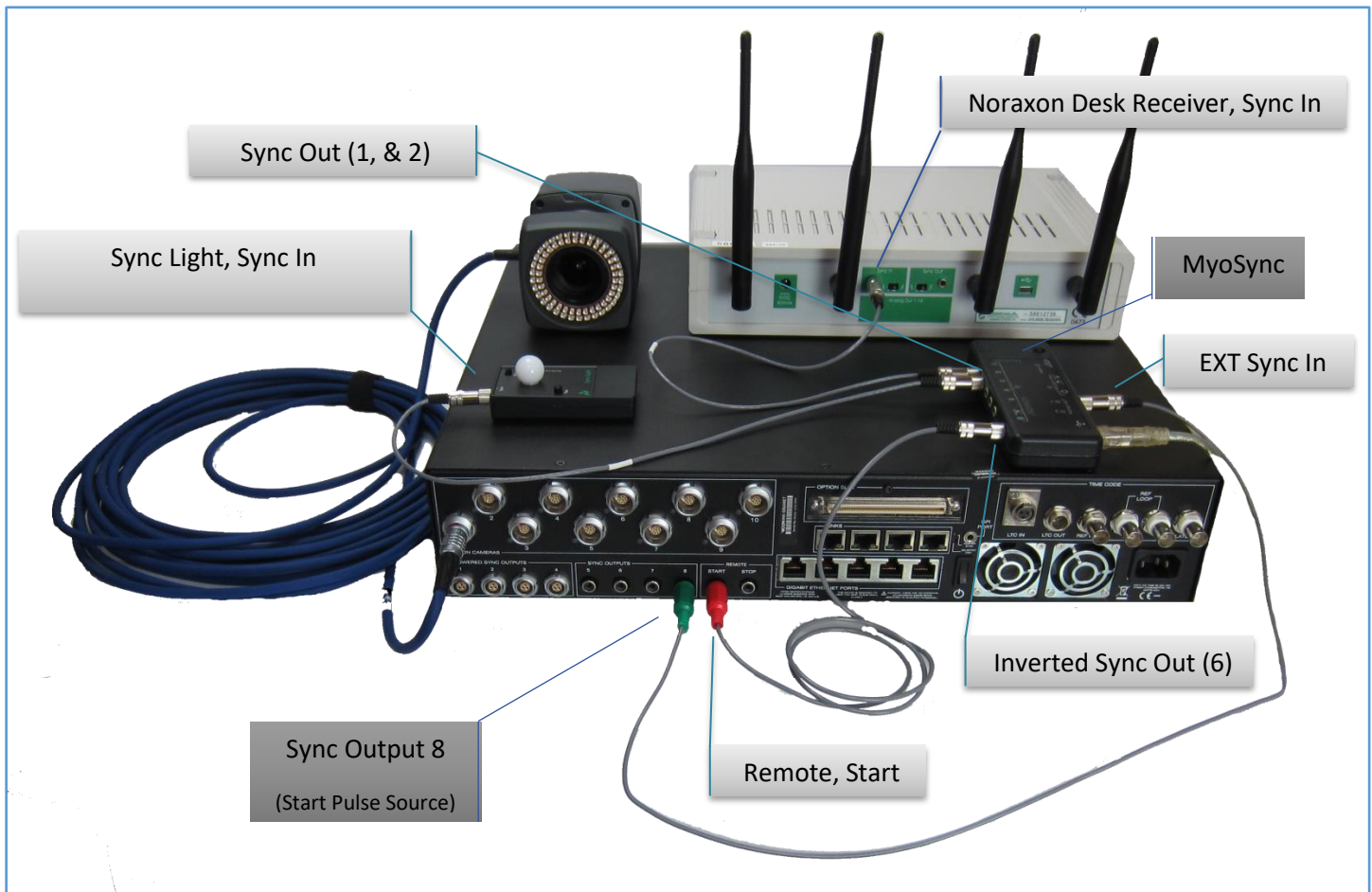
Caution! If the caution symbol appears next to the selected Start Pulse Source, hardware sync will not work because the source selected is being used elsewhere; check the Giganet Sync Out settings.



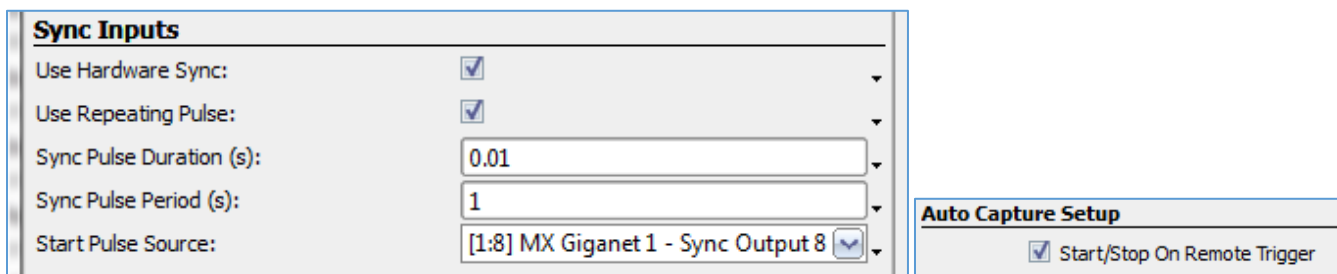
3. Wait for the MX Giganet and other devices to finish booting (Steady green arrow appears next to them in the system tree).
4. Check the box next to Use Hardware Sync. This tells the Vicon system to generate a sync pulse on the above selected Sync Output at the start of each session.

5. Right click on the Vicon System and click Resynchronize. This will ensure the sync signal mentioned in step 6 will be correctly generated. (This only needs done when first configuring hardware sync.)
6. Wait for the MX Giganet to respond to the request to generate a sync pulse. When ready, the icon next to the Noraxon device will change to a steady green arrow.

Optional Steps for aligning the start of recording with a sync pulse:

1. It is possible to align the Start of a recording with one of the repeating pulses by configuring Nexus auto capture to start on remote trigger and connect the sync pulse to the remote trigger Start port.
 - a. On the Tools panel under Capture , under Auto Capture Setup, check Start/Stop On Remote Trigger.
 - b. Connect the sync signal to the Start trigger port. **Note:** the signal needs inverted, it is best to use the Noraxon MyoSync to do this. See image with example setup below.



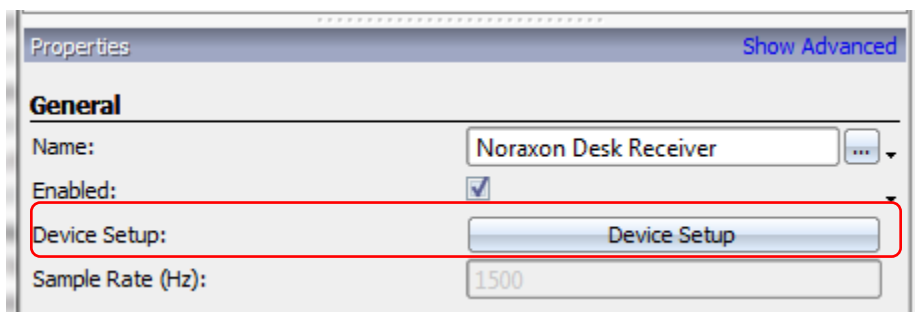
Hardware Sync Cabling Example



Property Settings Used for Hardware Sync Cabling Example

Setup Sample Rate:

The Sample Rate is setup using Hardware Setup and is display only in Nexus. See the “Setup EMG Hardware” section above.



Setup Drift Correction:

Noraxon does not recommend using Drift Correction for short recordings. Instead, remove drift before the beginning of a recording by doing a “Resynchronize” just before starting a recording. Right click on the Vicon System and click Resynchronize.

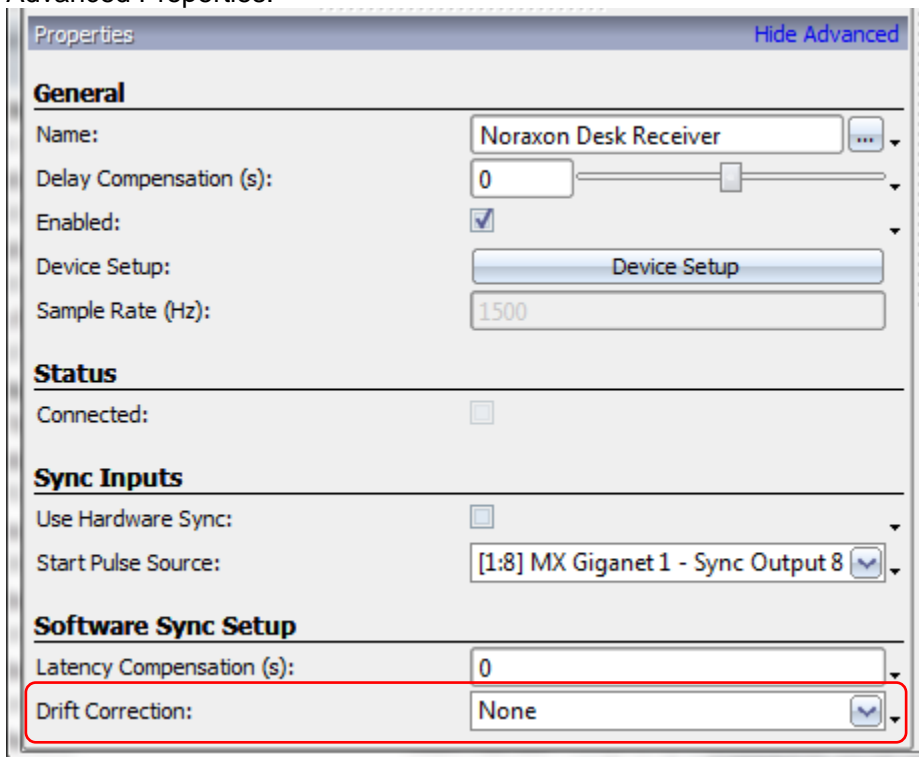
For long recordings, clock drift between devices may be consequential. The drift correction option helps correct for this drift. When enabled, Vicon Nexus will correct for drift by continuously measuring sample delivery times in order to estimate a sample rate to adjust to. This option can be configured to use the nearest sample or to interpolate between samples when making corrections. Please note that Drift Correction can be used in conjunction with hardware sync.

Consult Vicon for more information regarding drift correction.

1. Select the Noraxon Device
2. Under the Properties panel, click on “Show Advanced”



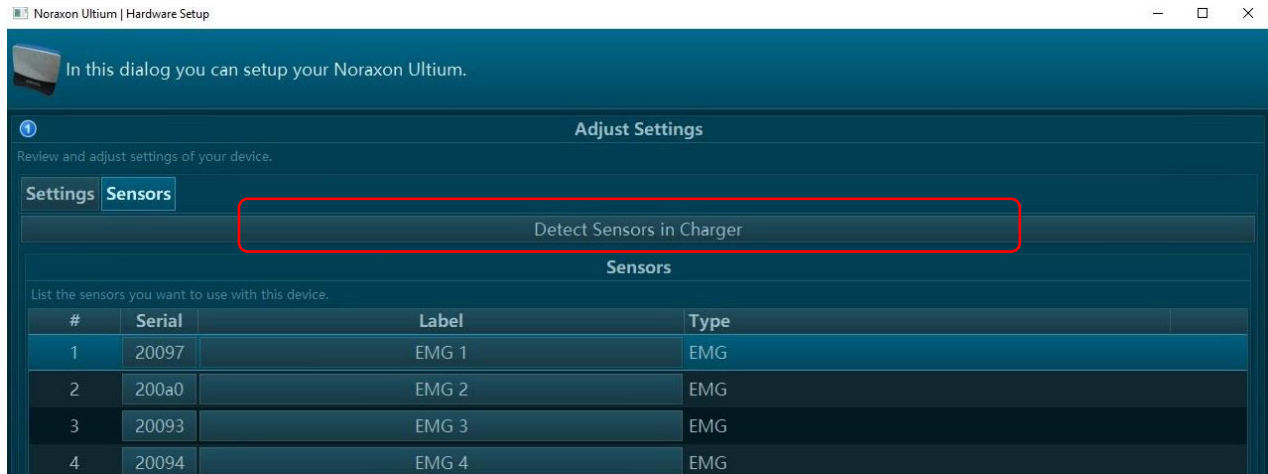
Advanced Properties:



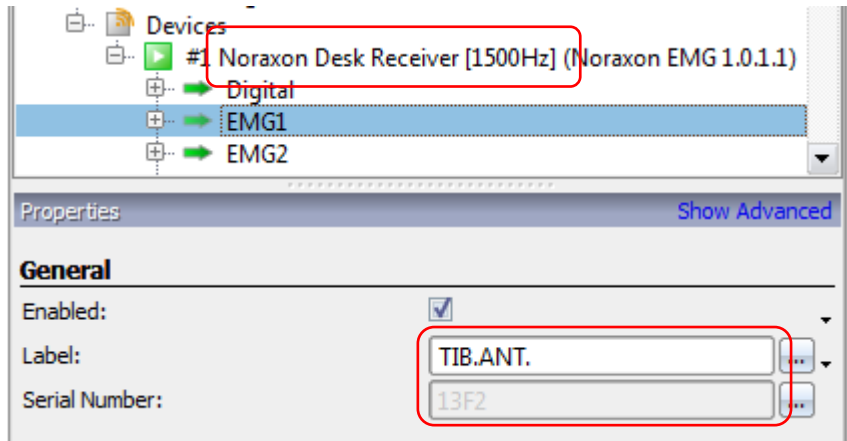
3. Configure Drift Correction – select one of the Vicon options to correct for drift:
 - a. "None", Do not perform drift correction.
 - b. "Nearest", Prefer drift correction to nearest sample.
 - c. "Interpolate", Prefer drift correction that interpolates between samples.

Setup Channel Properties:

1. Select the Noraxon Device and expand the tree
2. Select the a Channel
3. Optionally enter a different Label. Each channel can have a user specified Label assigned to it. If a label is entered for a channel during hardware setup, this same label will appear in Nexus as the Label for the channel. Note that changing the channel Label in Nexus has no effect on the Label value in the Hardware Setup, and the change will only persist for the current session (and recording). Changing the value in hardware setup will overwrite the value in Nexus.



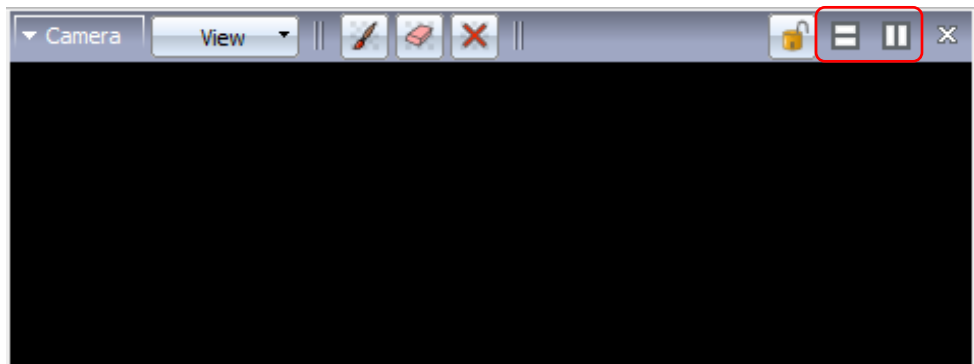
4. Confirm the Serial Number is correct. Serial Numbers are read only in Nexus, they are assigned in Hardware Setup.



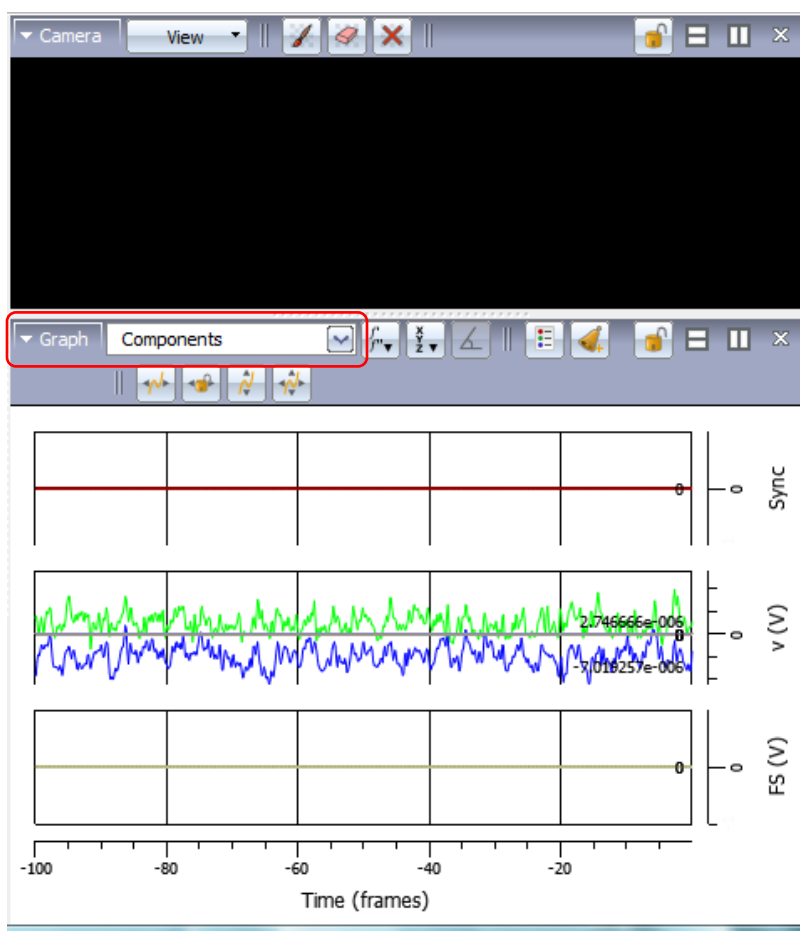
Setup Nexus to view the device output:

1. The view in the software will automatically display the Vicon camera(s) view. To see the sync signal(s) and EMG signal(s) from the Noraxon device, it is necessary to add another window. Hit one of the window buttons in the upper right corner.

Note: the EMG signal is best seen if the two windows are horizontally parallel, but it is possible to also make them vertically parallel.



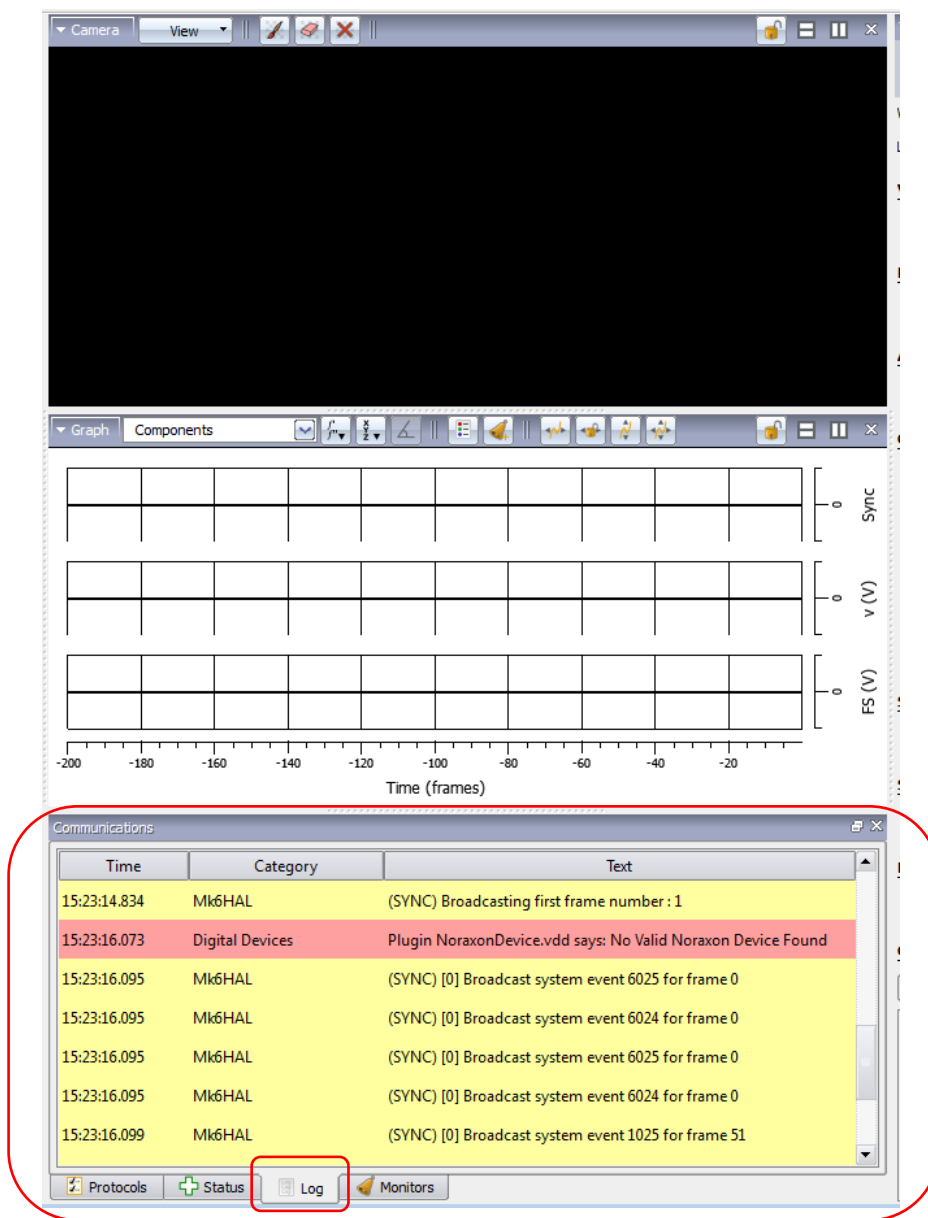
2. In the left hand corner of the window, select “Graph” and “Components” from the drop down menus.



Setup Nexus to view the device error messages in the Log:

To see communications such as error messages from the Noraxon device, display the Communications Log window in nexus.

1. On the Nexus Menu click Window
2. Check Communications
3. Click on the Log tab at the bottom of the window to display the Log



Example with an error message indicating the Noraxon Device was not found highlighted.

Hardware Requirements

- The Vicon system must have sync out capabilities compatible with those of the MX Giganet or Lock+.
- The Noraxon EMG must be one of the following transmitters or device combinations:

| Transmitters | Connected Directly to PC | Connected Via Receiver | | |
|---------------------------|--------------------------|------------------------|-----------------------|------------------|
| | | TeleMyo PC Interface | TeleMyo Mini Receiver | TeleMyo 2400R G2 |
| TeleMyo DTS Belt Receiver | ✓, HS | ✓, HS | ✓, HS*, WS** | ✓, HS*, WS** |
| TeleMyo 2400T G2 | | ✓, HS | ✓, HS*, WS** | ✓, HS*, WS** |
| TeleMyo DTS Desk Receiver | ✓, HS | | | |
| Mini DTS | ✓, HS | | | |
| Ultium EMG | ✓, HS | | | |

✓ - Supported

HS - Hardwired Sync Supported

WS - Wireless Sync Supported

* If using Hardwired Sync, it must be connected to the transmitter, not the receiver.

** Requires a wireless sync receiver (connected to the transmitter system) as well as a receiver with a wireless sync antenna (2400 Mini Receiver or 2400R G2) connected to the PC. The sync cable from the Vicon system will then be connect to the receiver that will send the sync signal wirelessly through the wireless sync antenna to the wireless sync receiver connected to the Belt Receiver the or 2400T G2.

Optional Hardware:

- Noraxon MyoSync – facilitates splitting (and inverting) of the sync signal.

Sync Cables:

Sync cables with appropriate connectors are required. The sync connectors required may vary between different Vicon and Noraxon systems. See the “Hardware Sync Cabling Example” above.

To connect the MX Giganet Sync Output to the sync in of a Noraxon system a cable with a Male RCA connector on one end and a Male Mono 3.5mm on the other is needed.



Example:

Alternatively, an adapter could be used with one of the standard 3.5mm sync cables. For example a 2 x RCA Male, 1 x 3.5mm Stereo Female, Y-Cable



Example: