

# **Myomonitor<sup>®</sup> IV EMG System**

## **Installation Guide**

**August 2009 Edition  
PM-M06**

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**Specifications and procedures outlined in this document are subject to change without notice.**

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# Table of Contents

<b>Table of Contents .....</b>	<b>1</b>
<b>Introduction to Wireless Operation.....</b>	<b>3</b>
Myomonitor and EMGworks Wireless Mode.....	4
Minimum System Requirements.....	5
Recommended Requirements for Optimal Performance.....	5
Technical Service and Support.....	5
<b>Step 1: Install EMGworks on Host Computer .....</b>	<b>6</b>
Pre-Installed Systems.....	6
EMGworks Acquisition and Analysis Software Installation .....	6
<b>Step 2: Insert the D-Link Adapter.....</b>	<b>7</b>
D-Link Adapter Installation.....	7
<b>Step 3: Configure the D-Link Adapter.....</b>	<b>8</b>
Automatic Configuration (Windows XP Users) .....	8
Manual Configuration (Windows Vista Users) .....	8
Start the Myomonitor .....	9
<b>Step 4: Setup EMGworks and Acquire Data.....</b>	<b>11</b>
Define a Hardware Configuration in EMGworks Acquisition. ....	11
Create and Initiate a Test Configuration in EMGworks.....	13
Verify Connectivity and Run the Test .....	18
<b>Optional Trigger Output Module .....</b>	<b>21</b>
Overview.....	21
Pre-Installed Systems.....	21
National Instruments Driver Installation .....	22
Connect the Trigger Output Module .....	22
Rename the USB-6501 in NI MAX .....	24
<b>Appendix 1: Wireless Configuration Tool .....</b>	<b>26</b>
Wireless Adapter Manual Configuration .....	26
Communication Test.....	26



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## Introduction to Wireless Operation

The Myomonitor wearable signal acquisition system is a versatile device that can be operated in a variety of modes to accommodate a wide range of research needs.



*Figure 1. Myomonitor System Primary Components*

The Myomonitor operates in any of the following modes:

1. EMGworks Wireless Mode
2. Analog Output Mode
3. Datalogger Mode

This installation document will guide you through the various technical maneuvers that must be executed for successful installation of this device in EMGworks Wireless Mode.



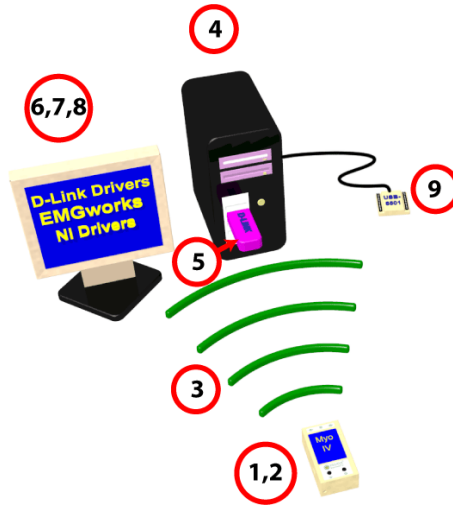
**Refer to the Myomonitor Analog Output System User's Guide and the Myomonitor IV User's Guide for information regarding device operation in Analog Output mode.**



**Refer to the Myomonitor IV User's Guide for information regarding device operation in Datalogger mode.**

## Myomonitor and EMGworks Wireless Mode

It is important to understand the functional blocks of EMGworks operating mode so that each can be properly installed according to this guide. Figure 2 presents a schematic of the EMGworks Wireless operating mode.



1	Myomonitor Main Unit	6	D-Link Drivers
2	EMGworks Wireless Application	7	EMGworks Acquisition & Analysis Software
3	Wireless Transmission	8	NI drivers for optional Trigger Output Module (wireless)
4	Host Computer	9	Optional Trigger Output Module (wireless)
5	D-Link USB Receiver		

Figure 2. EMGworks Wireless Operation Mode

In this operational mode, data are acquired and digitized by the Main Unit and its associated sensors (1,2) and transmitted over a wireless network (3) to a host PC (4) outfitted with a USB wireless receiver (5,6). Data are displayed, stored, and analyzed by EMGworks software (7). An optional USB-connected Trigger Output Module (wireless) can be installed (8,9) for synchronizing the Myomonitor System with other data acquisition systems in the recording environment.

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## Minimum System Requirements

- Windows XP with Service Pack 2 or Windows Vista Home Premium, Business, or Ultimate 32-bit Operating System
- 1.5 GHz processor
- 1 GB system memory
- 1 GB free hard disk space
- 1024x768 (XGA) display resolution
- Any computer carrying the “Windows Vista Premium Ready PC” logo meets these requirements and can run EMGworks
- Alternatively, a Windows Vista System with an “Experience Index of 3.0 or greater

## Recommended Requirements for Optimal Performance

- Multi-core processor, at 2.0 GHz or more.
- 128 MB video memory
- 2 GB system memory
- 1GB free hard disk space.
- Dual Monitor with 1280x1024 (SXGA) display resolution or better
- If Windows Vista System, an Experience Index of 4.0 or greater.

## Technical Service and Support

For information and assistance visit our web site at:

[www.delsys.com](http://www.delsys.com)

Contact us at:

E-mail: [support@delsys.com](mailto:support@delsys.com)

tel: (617) 236 0599

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## Step 1: Install EMGworks on Host Computer

### Pre-Installed Systems

If you purchased a pre-installed laptop with your Myomonitor system, EMGworks installation has been performed by Delsys.

### EMGworks Acquisition and Analysis Software Installation

1. Insert the Delsys Software CD into the host computer.

If you downloaded the EMGworks installation program from the Delsys website, you should locate the downloaded file and double-click it to start the installation program.

2. From the menu screen, click **EMGworks Installation** to continue (appearance of menu screen may vary).



If you do not see the installation screen when you insert the CD, navigate to the CD drive using **My Computer** or **Windows Explorer** and click on **autorun.hta**.



Refer to the “EMGWorks Installation Guide” located on the Delsys Software CD for detailed installation information.

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## Step 2: Insert the D-Link Adapter

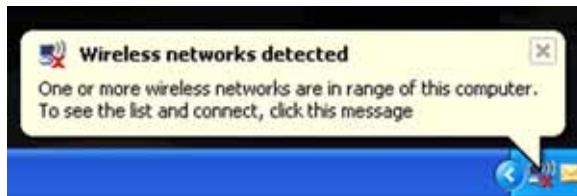
The Myomonitor System is supplied with a D-Link Wireless USB Adapter (Figure 3) to enable the connection between the Myomonitor and the host computer when used in Wireless or Analog Output Mode. Delsys only supports the use of the D-Link Wireless USB Adapter (part # WUA-1340) supplied with the Myomonitor system.



*Figure 3. D-Link WUA-1340 Wireless G USB Adapter (\* D-Link is a registered trademark of D-Link Corporation)*

### D-Link Adapter Installation

1. For optimal performance, disable any built-in WiFi present in the host computer through the **Control Panel**.
2. Insert the D-Link USB WiFi Adapter into an available USB port on the host computer. Delsys recommends using the D-Link USB Extender Cable provided with your system to position the Receiver for optimal performance.
3. Wait several moments for Windows to recognize the D-Link Adapter. A message will appear in the system tray of the host computer when Windows is finished saying “Wireless networks detected”.



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## Step 3: Configure the D-Link Adapter

The D-Link adapter needs to be configured to communicate with the Myomonitor. The configuration process depends on which version of Windows being used.

### Automatic Configuration (Windows XP Users)

1. Ensure the D-Link Adapter is inserted and is finished being recognized by Windows.
2. To automatically configure the D-Link Adapter for communication with the Myomonitor, simply start EMGworks Acquisition on the host computer by double clicking the **EMGworks Acquisition** icon on the Windows desktop.



**If a message should appear that reads: “Automatic configuration of the D-Link adapter failed”, proceed to the “Wireless Adapter Manual Configuration” section of Appendix 1.**

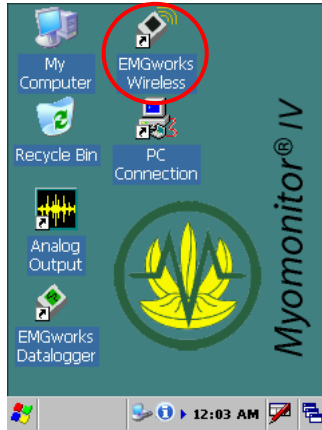
### Manual Configuration (Windows Vista Users)

1. Ensure the D-Link Adapter is inserted and is finished being recognized by Windows.
2. Start EMGworks Acquisition on the host computer by double clicking the **EMGworks Acquisition** icon on the Windows desktop.
3. Follow the “Wireless Adapter Manual Configuration” procedure described in Appendix 1.

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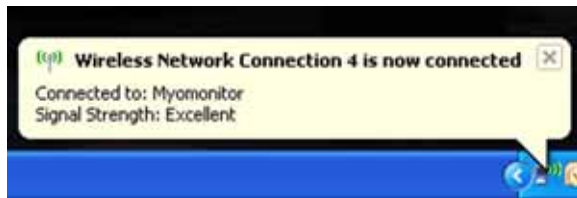
## Start the Myomonitor

1. Power on the Myomonitor unit and start the **EMGworks Wireless** application.

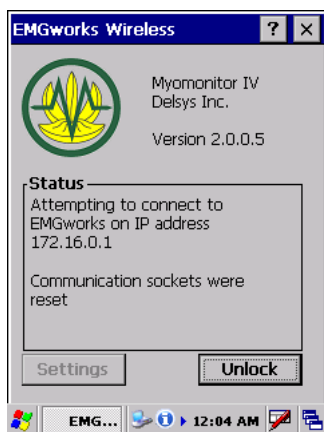


By default, EMGworks Wireless attempts to connect to the host computer running the Windows XP operating system. If the host computer is running the Windows Vista operating system please refer to the “Manual Network Configuration” section in the “Myomonitor IV User’s Guide”.

2. A message should appear from the wireless connection icon in the system tray of the host computer to indicate the Myomonitor and the D-Link adapter are communicating.



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3. The Myomonitor will display the message “**Attempting to connect to EMGworks...**” as its status until EMGworks is configured to communicate with the Myomonitor.



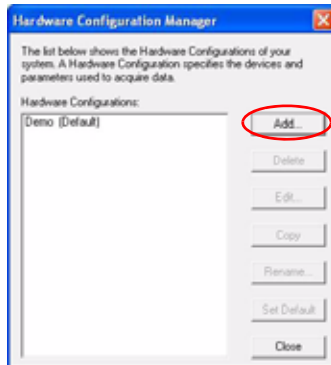
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## Step 4: Setup EMGworks and Acquire Data

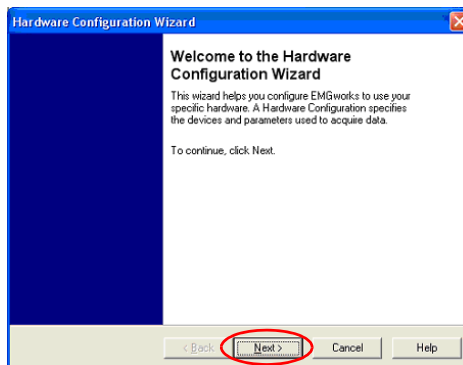
A Hardware Configuration needs to be created in EMGworks to define the hardware being used. To acquire data, a Test Configuration needs to be created that defines data collection parameters, such as number of channels, sample rate, and duration.

### Define a Hardware Configuration in EMGworks Acquisition

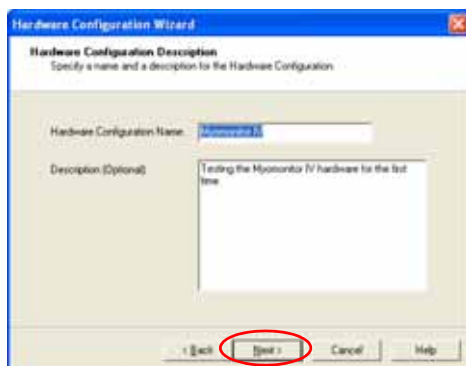
1. Click on the **Define Hardware Configuration** button in the EMGworks home window, or choose **Tools > Hardware Configuration...?**.
2. The **Hardware Configuration Manager** will appear. Click on the **Add...** button.



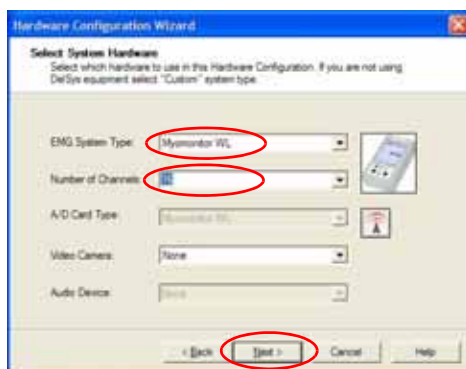
3. The **Hardware Configuration Wizard** will begin. Click **Next**.



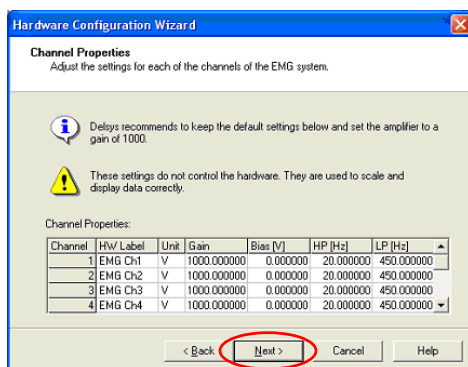
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4. Enter **Myomonitor IV** in the **Hardware Configuration Name** field and a description if desired. Click **Next**.



5. Select “Myomonitor WL” from the **EMG System Type** drop down list. Select the number of channels supported by your system (“8” or “16”) from the **Number of Channels** drop down list. Click **Next** to continue.



6. Keep the default channel properties and click **Next**.



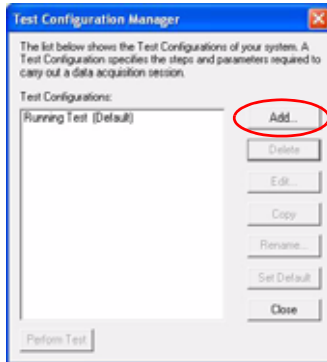
7. Click **Finish** in the window that appears to close the wizard. The **Hardware Configuration Manager** will now list the new Hardware Configuration.



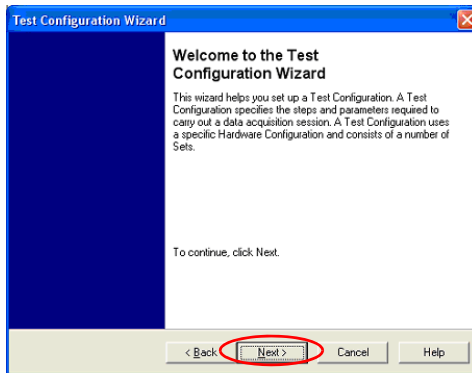
## Create and Initiate a Test Configuration in EMGworks

1. Click on the **Define Test Configuration** button in the EMGworks home window, or choose **Tools > Test Configuration...**

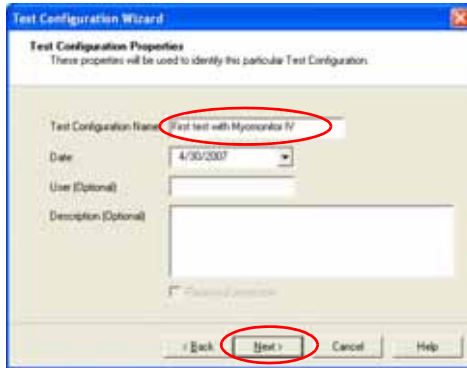
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2. The **Test Configuration Manager** will appear. Click on the **Add...** button.



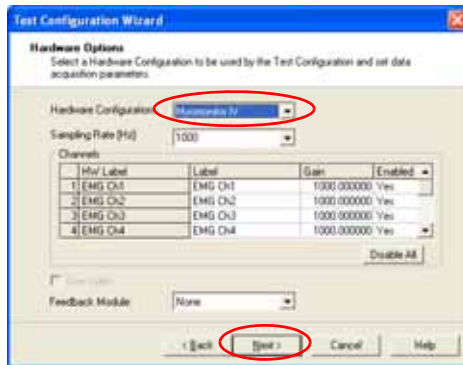
3. The **Test Configuration Wizard** will begin. Click **Next**.



4. Enter “First test with Myomonitor IV” in the **Test Configuration Name** field and click **Next**.



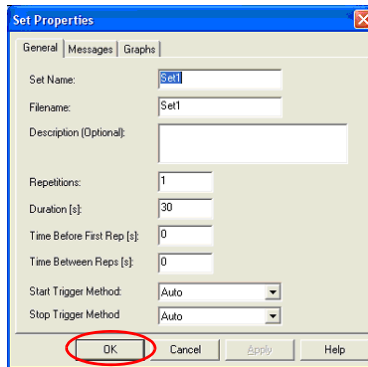
5. Select “Myomonitor IV” from the **Hardware Configuration** drop down list. This populates all the Channel properties according to your Hardware Configuration.



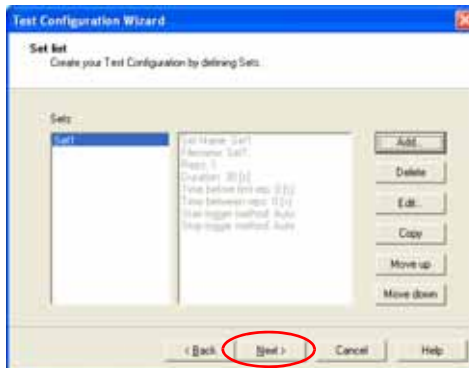
6. Click **Next**.



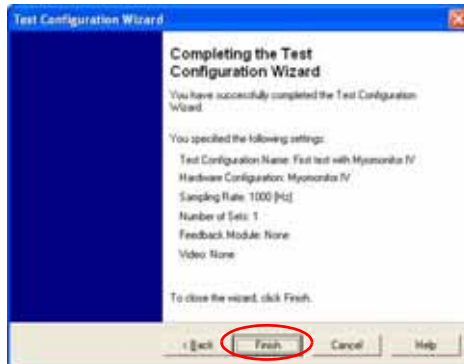
7. The default settings will create a simple one-set Test with one Repetition and a duration of 30 seconds. Click **OK**.



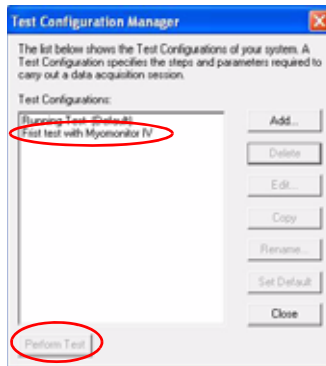
8. Click **Next**.



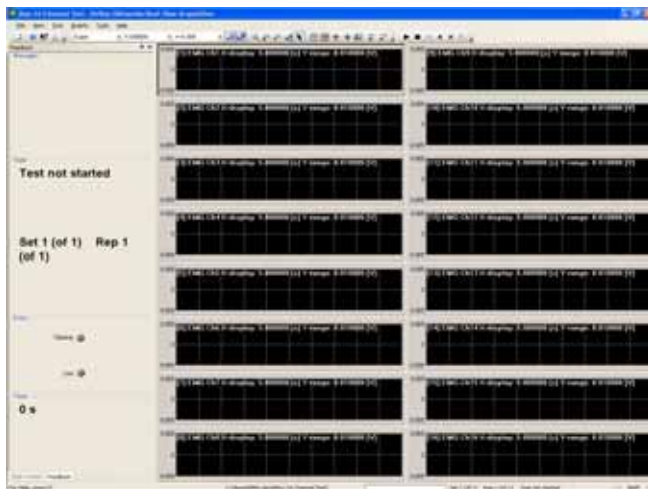
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9. Click **Finish**. The **Test Configuration Manager** will now list the new Test Configuration.



10. Select the Test that was defined and click on **Perform Test**.

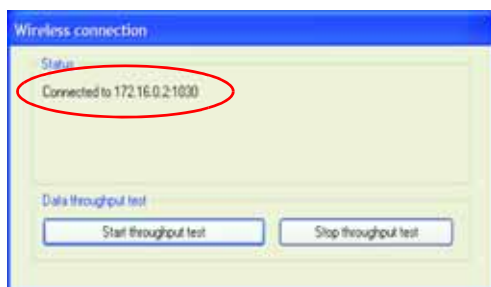


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11. Select the location for the data and click **OK**. EMGworks is now ready to run the test.

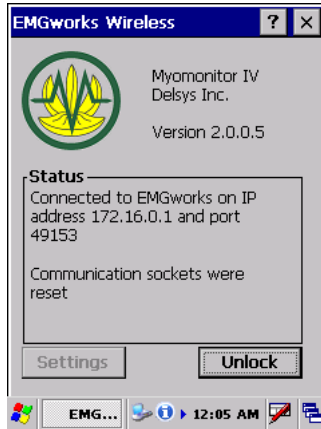


## Verify Connectivity and Run the Test

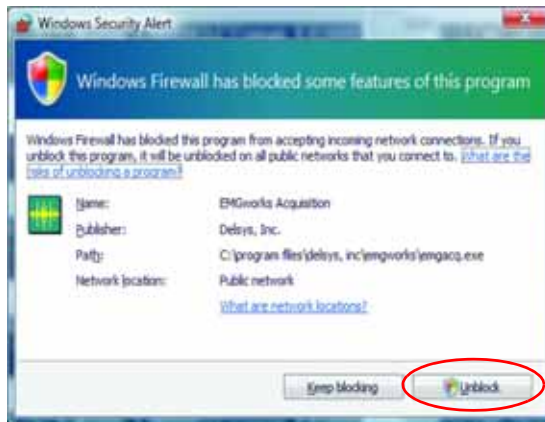
1. The “Wireless connection” window opens when a Myomonitor Test is initiated. This window shows information about the current status of the wireless connection between the Myomonitor and the host computer. Verify the status of the EMGworks program is “**Connected to 172.16.0.2...**” before starting the Test.



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2. The Myomonitor should display its status as “Connected to EMGworks...”.

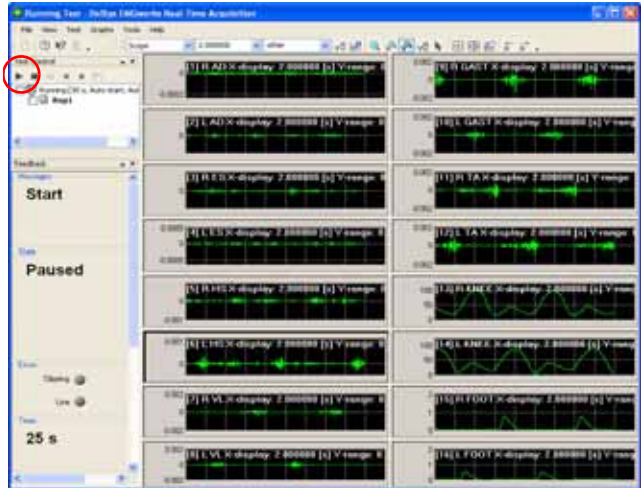


3. If you receive a Windows Firewall message when starting a Test on the host PC, click **Unblock**.



4. Once connection has been verified, start the test by clicking the **Play** button in the EMGworks Acquisition main screen.

The Mymonitor and host computer system will start recording, transmitting, and displaying data.



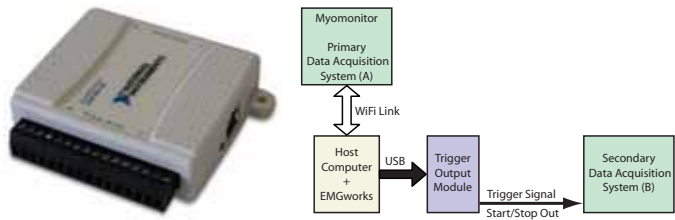
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## Optional Trigger Output Module

### Overview

The Trigger Output Module (Wireless) is a USB device that outputs a digital signal when the Myomonitor starts data acquisition and a separate signal when it stops data acquisition. It also outputs a third signal which lasts the duration of a data acquisition period. This device is connected to the Host PC so that the Myomonitor remains wireless. It can be used to control the starting and stopping of a Secondary Data Acquisition System.

The hardware component of the Myomonitor Trigger Output Module (wireless) is the National Instruments USB-6501 Digital I/O device. It outputs digital Start and Stop Trigger signals using the communication scheme outlined below.



*Figure 4. The USB-6501 Digital I/O device for Myomonitor wireless triggering. Start and Stop trigger signals are sent from the Myomonitor to the USB device through the wireless network and EMGworks.*

Use of the Trigger Output Module requires the installation of National Instruments software and drivers.



**Refer to the National Instruments USB-6501 documentation and the Delsys “Trigger Output Module User’s Guide” for operational and functional details.**

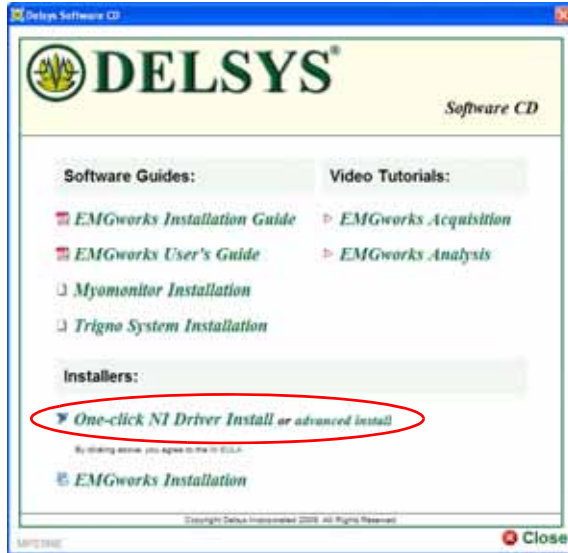
### Pre-Installed Systems

If you purchased a pre-installed laptop with your Myomonitor system, National Instruments driver installation has been performed by Delsys.

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## National Instruments Driver Installation

The NI Drivers can be installed by clicking **One-click NI Driver Install** from the Delsys software CD menu. Additional NI installation options are available by selecting **Advanced Install**.

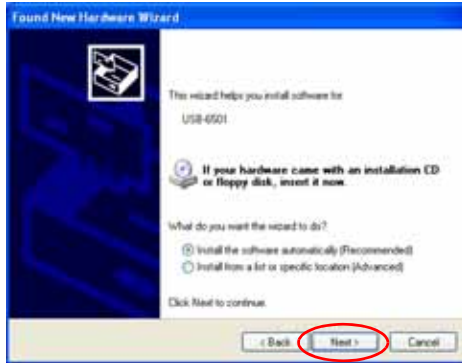


## Connect the Trigger Output Module

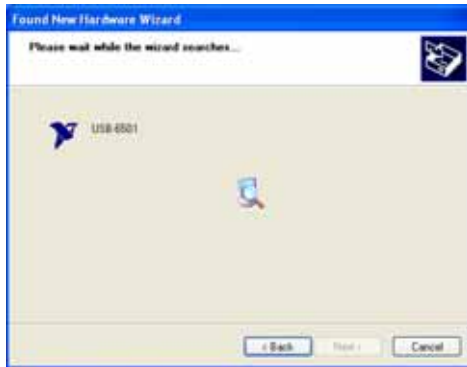
1. Connect the USB-6501 Digital I/O device to an available USB port on the Host Computer.
2. The **Found New Hardware Wizard** will appear. Leave “Yes, this time only” selected and click **Next**.



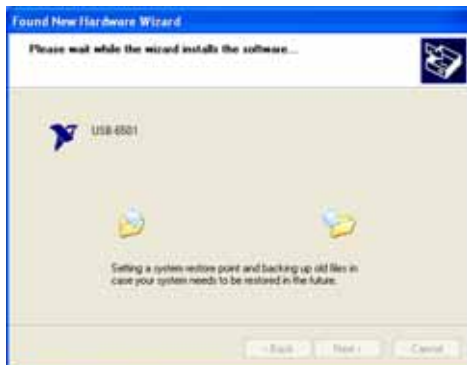
- 
3. Leave “Install the software automatically (Recommended)” selected and click **Next**.



4. The wizard will automatically search for the software.



5. The wizard will automatically install the software.



- When the wizard is complete, click **Finish**.



## Rename the USB-6501 in NI MAX

It is necessary to properly name the USB-6501 Digital I/O device so that EMGworks can establish communication with it. To do this, run the **Measurement & Automation Explorer (MAX)** by double clicking the shortcut that was placed on the Windows desktop during installation.

- The **Measurement and Automation Explorer** will open. Locate the “NI USB-6501” in the **NI-DAQmx Devices** tree and select it.



- Right click the selection and choose “**Rename**” from the menu. Rename the device to “**GPIO**”.



- The device name will appear as shown below.



- Start and Stop trigger output signals will now be present each time data acquisition starts and stops.

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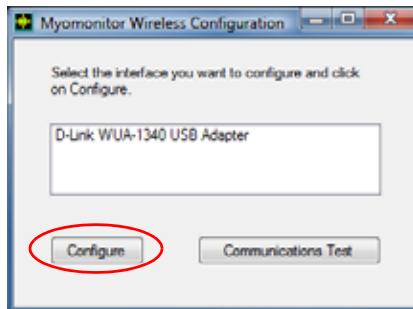
## Appendix 1: Wireless Configuration Tool

If the host computer has Windows Vista, the D-Link WiFi Adapter must be manually configured through EMGworks using the procedure outlined below. This procedure is also valid for Windows XP systems.

Use the Communication Test feature to check the connection between EMGworks Acquisition and the Myomonitor unit.

### Wireless Adapter Manual Configuration

1. From the EMGworks Acquisition window, go to **Tools > Wireless Configuration**.  
If Windows prompts for permission, click **Allow**.
2. Select the “D-Link WUA-1340 USB” Adapter from the list and click **Configure**.



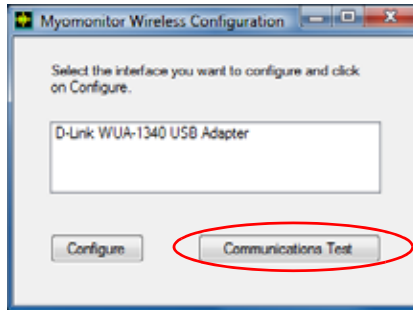
3. Upon successful configuration, the dialog box below will be displayed.



### Communication Test

1. Ensure the Myomonitor unit is powered on, and the EMGworks Wireless application is running.

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2. From the EMGworks Acquisition window on the host computer, go to **Tools > Wireless Configuration**.  
If Windows prompts for permission, click **Allow**.
  3. Select the D-Link WUA-1340 USB Adapter from the list and click **Communications Test**.



4. After several moments, a window will appear with the results of the Communication Test.

