



# **U-WAVE**

**Wireless Data Collector**

## **User's Guide**

For use with  
*MeasurLink*<sup>®</sup>

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# Introduction

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## Getting Started

This booklet is designed to be an installation and instruction guide for MeasurLink® SPC software and the Mitutoyo U-WAVE wireless system. Most of the instructions for installing the U-WAVE wireless system are in the U-WAVE manual. This Users Guide includes the instructions that are used for MeasurLink® SPC software and the U-WAVE wireless gage multiplexer system.

In addition, there will be a brief mention of the MeasurLink® PDA Navi program and how it can enhance the U-WAVE wireless system's use with MeasurLink® SPC software.

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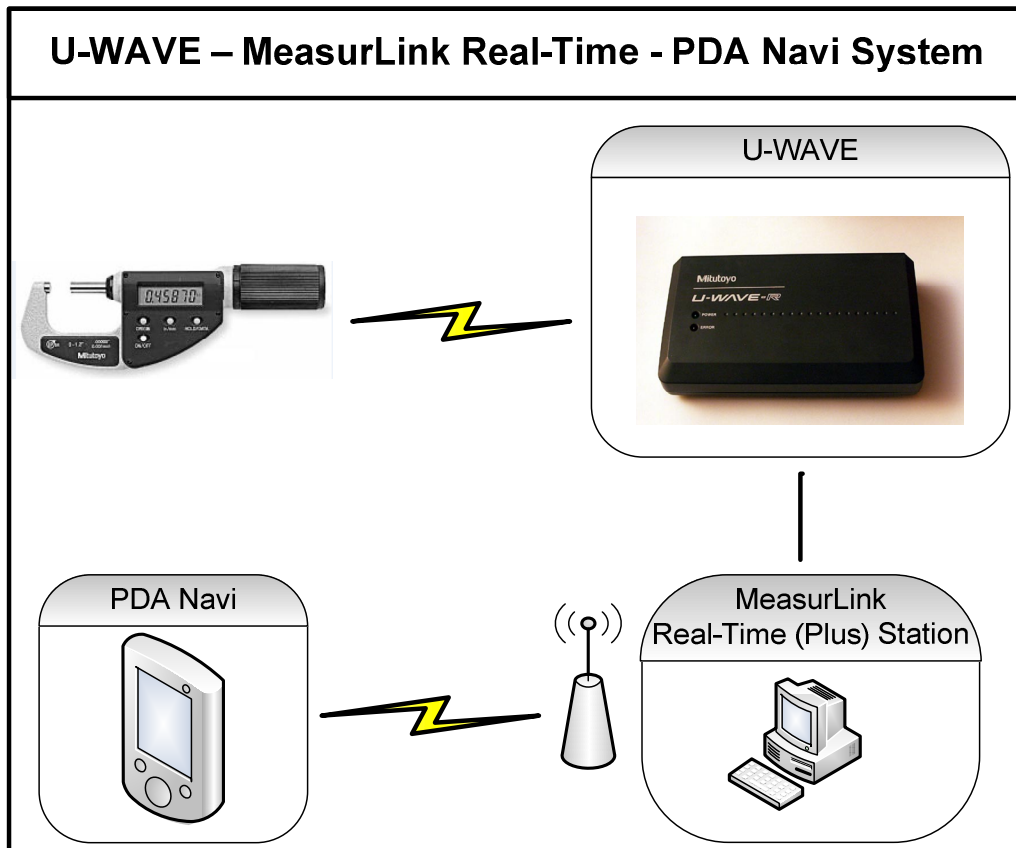
## Product Overview

**Using MeasurLink® with:**

**U-WAVE is... Wireless data transmission**

**PDA Navi is... Wireless monitoring of trends and statistics**

**Together... Complete Mobility for collecting & monitoring**



Mitutoyo's U-WAVE wireless data collection hardware gives the inspector the capability of remote data acquisition. The addition of MeasurLink® PDA Navi allows the inspector to view trends and statistics for multiple MeasurLink stations while on the move.

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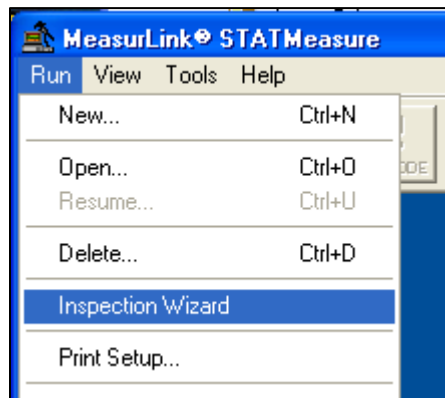
# MeasurLink Collecting Data from U-WAVE

## ◆ Inspection Wizard Setup (Using Real-Time (PLUS))

When it comes time to connect to the U-WAVE, the U-WAVEPAK program provides the necessary connection information.

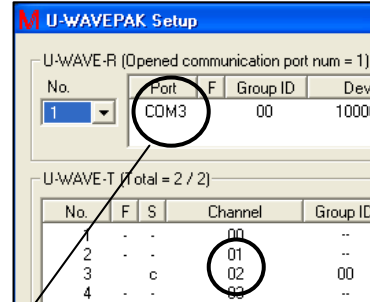
### ➤ To Use the Inspection Wizard in Real-Time (PLUS)

1. In Real Time / Real Time PLUS Click the Run menu and select Inspection Wizard. The MeasurLink Quick Start tutorials show how to setup parts in the Inspection Wizard and will not be repeated here.

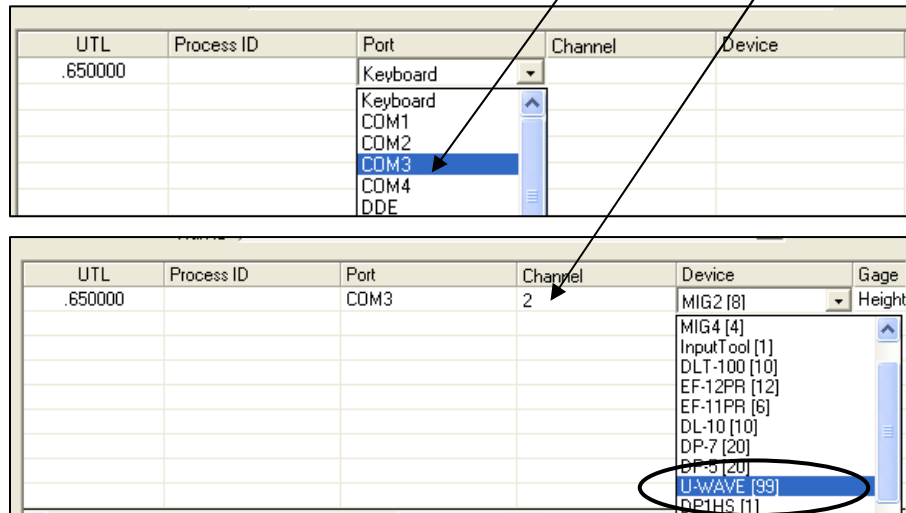


2. U-WAVE uses the same mapping techniques as any other RS232 device. Select the port that matches the virtual COM Port created in U-WAVEPAK
3. The channel is the channel number selected for the gage.

In U-WAVE:



In Inspection Wizard:



4. Select the U-WAVE device.

## ◆ Retake Last Measurement

### ➤ To use U-WAVE-T Device Retake function

1. Press and hold the data button **for 5 seconds**. The light will flash red. Then release the button to send a remove data command.

Summary of data transmission:

- Press and release – Send data
- Press and hold 5 seconds – Retake

**Only the most recent data value received by MeasurLink can be removed when the Inspection Routine Option Collect Method = By Part or By Feature.**

**When the Inspection Routine Option Collect Method = Random more than one data value can be removed. Each time the data button is held for the 5 seconds, the most recent data value for the selected feature is removed.**

Note: If purchased, the PDA Navi device offers additional options for removing data using the U-WAVE-T device remove data command.



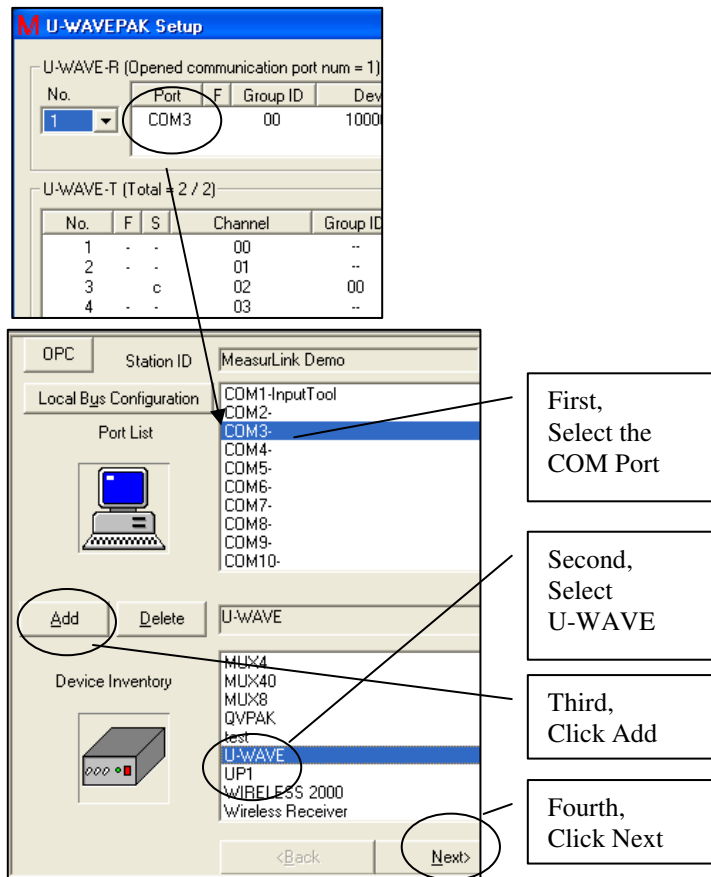
# Support Center – Workstation Center (MeasurLink)

## ◆ Workstation Center setup (In Support Center)

IMPORTANT: MeasurLink 6.1 (or higher) must be installed before using U-WAVE. If the U-WAVE device is not available in the Device Inventory, check the Help menu in Support Center then select About to see the MeasurLink version installed.

### ➤ To Assign U-WAVE COM Port and Channels

1. Open Support Center, Workstation Center. Select the Com Port created by U-WAVEPAK.
2. Select the U-WAVE device and Click add so the top box becomes COM3 – U-WAVE in this example.
3. Click **Add**
4. **Next**





5. Select Channel that matches the channel number assigned to the gage in U-WAVEPAK.
6. Pick the gage that matches the gage sending the data. (Note: MeasurLink will not restrict your use of any gage, but a good reminder here prevents improper assignment of the channels in the mapping step.)
7. Click **Add**
8. When all channels are assigned, click **Exit**.

**U-WAVEPAK Setup**

U-WAVE-R (Opened communication port num = 1)

No.	Port	F	Group ID	Dev
1	COM3	00	00	1000

U-WAVE-T (Total = 2 / 2)

No.	F	S	Channel	Group ID
1	-	-	00	..
2	-	-	01	..
3	-	c	02	00
4	-	-	03	..

Port: COM3 U-WAVE

Channel: 0 1 2 3 4 5 6 7

Gage: 0 1 2 3 4 5 6 7

**Add** **Delete** **Caliper**

Gage Inventory

- Caliper
- Micrometer
- Height Gage
- Bore Gage
- Indicator

Fifth, Select Channel (Note: Channel is in Column 4 of U-WAVEPAK)

Sixth, Select Gage

Seventh, Click Add

Click Exit

## ◆ Variable Inspection Routine – Mapping

### ➤ To Map U-WAVE Gage

The technique is the same as for any other direct gage input into MeasurLink.

The screenshot displays the MeasurLink software interface for mapping a U-WAVE gage. The 'Station ID' is set to 'MeasurLink Demo'. The 'Mapped Station IDs' list includes 'MeasurLink Demo' and 'MeasurLink Demo2'. The 'Input Channel' list shows 'COM3, U-WAVE, Channel2, Caliper' selected. The 'Feature List' on the right shows 'F212', 'F213', and 'F214'. Below the lists are buttons for 'Add feature to channel', 'Add all features to channel', 'Delete feature from channel', '<- List', and 'Exit'. At the bottom, the 'Inspection Routine : Part XYZ' table is shown.

Feature No.	Part ID	Feature ID	Revision	Output to Chart	Output to Database
F214	Part XYZ	Thickness	1	1	1
F213	Part XYZ	Outside Diameter	1	1	1
F212	Part XYZ	Inside Diameter	1	1	1

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# System Requirements

## ◆ Desktop PC / MeasurLink Client

Requirements for the MeasurLink Client can vary slightly depending on the PDA NAVI system architecture used. Architecture diagrams are provided in the Appendix section of this manual.

- MeasurLink Real-Time or Real-Time PLUS version 6.1 or higher.
- Microsoft Windows XP service pack 2 or higher

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# Support

## ◆ Direct U.S. Support

**Call 888 - Mitutoyo**

# Installation

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## MeasurLink<sup>®</sup> Real-Time / Real-Time PLUS



MeasurLink Real-Time / Real-Time PLUS 6.1 should be installed on the computer where you are adding the Mitutoyo U-WAVE wireless gage multiplexer. If not, follow the instructions that come with the MeasurLink Real-Time (PLUS) programs and perform a regular installation. No special requirements are needed for the Mitutoyo U-WAVE gage multiplexer.

If using an earlier version of the MeasurLink Real-Time (PLUS) programs you must go to the MeasurLink Web site

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

Support > Down loads > register for the user ID and password > then in the down loads section go to the Service Packs folder. Down load (save) the MeasurLink 6.1.xx program, do not try and run it across the internet. After the down load is finished, then run the update program at the MeasurLink computer.

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## U-WAVE® Installation



### ◆ U-WAVEPAK Installation on MeasurLink Real-Time

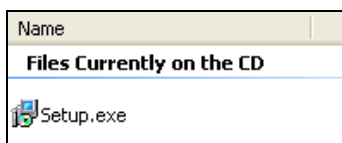
#### ➤ To Install U-WAVEPAK

1. Insert the U-WAVEPAK CD into the CD drive of the computer.

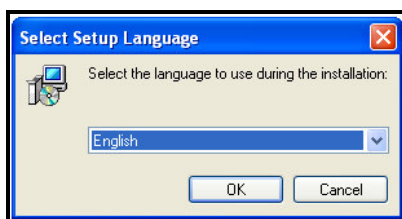
If Windows Explorer does not open to the CD disk, use Windows Explorer to get to the C drive > Setup folder

Name	Size	Type
<b>Files Currently on the CD</b>		
Drivers		File Folder
MFC		File Folder
PDF_Manual		File Folder
Setup		File Folder

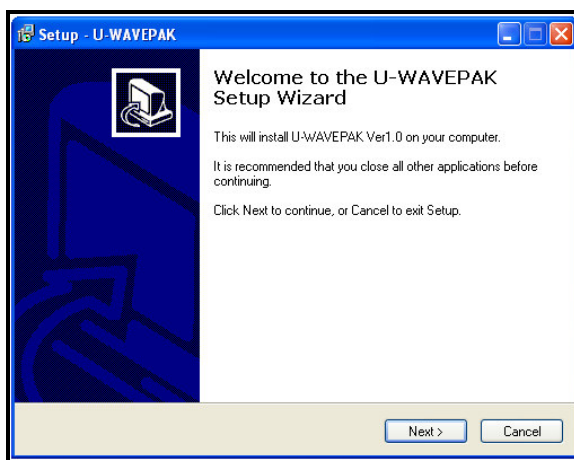
2. Double Click **Setup.exe**



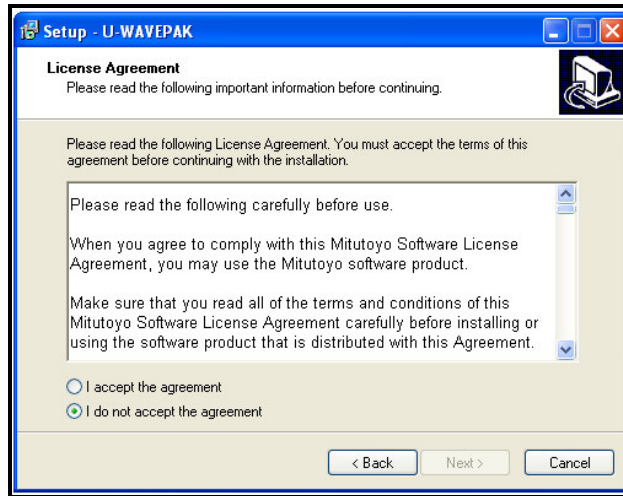
3. Select English and click **OK**



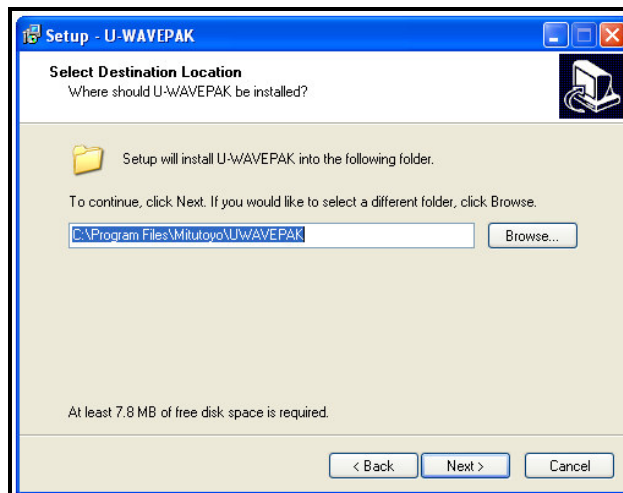
4. Click on **Next**



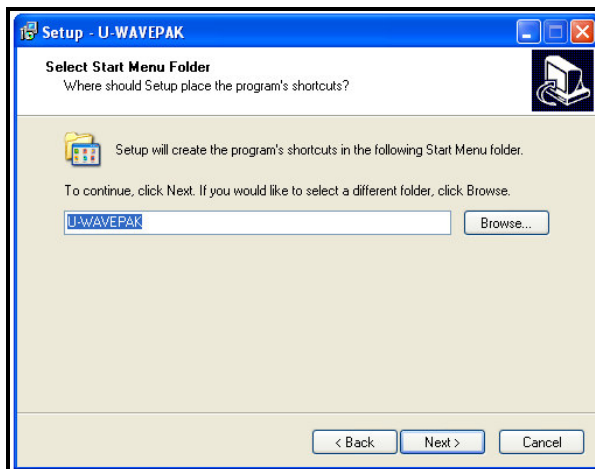
5. Read the License Agreement, and if you agree, select **I accept the agreement** and select **Next**. (Otherwise cancel and exit the setup.)



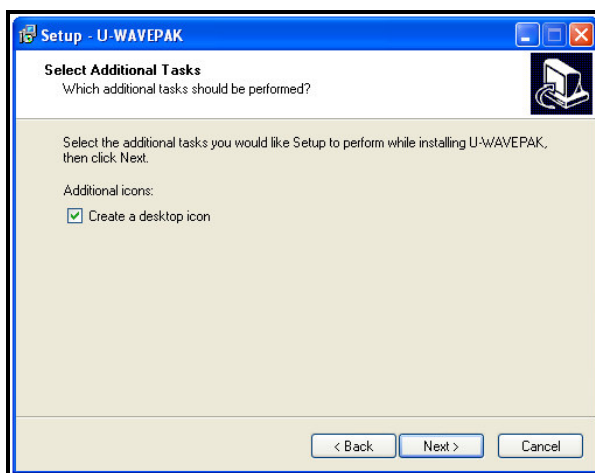
6. Click **Next** to accept the default location for the program installation or Browse for another location.



7. Select a name for the U-WAVE Start Menu Folder, **Next**

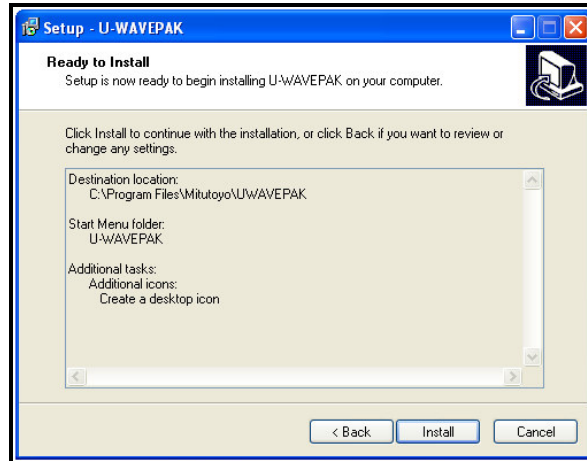


8. Add a check to create a U-WAVE icon on the desktop, **Next**

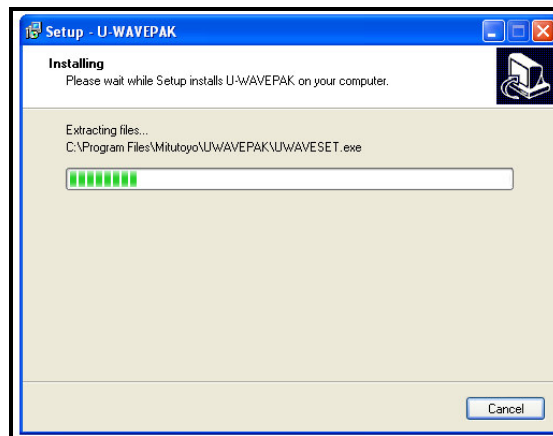




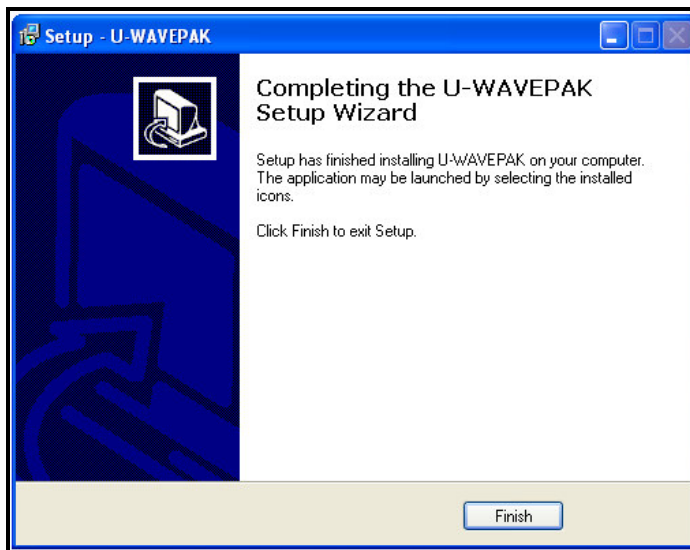
9. Review the install parameters you selected and click **Install**.



10. Progress bar during the install.



11. Click **Finish**. The installation of the software is complete.



12. Leave the CD in the CD drive.

## ◆ U-WAVE Wireless Receiver

### ➤ To Install U-WAVE® Wireless Receiver

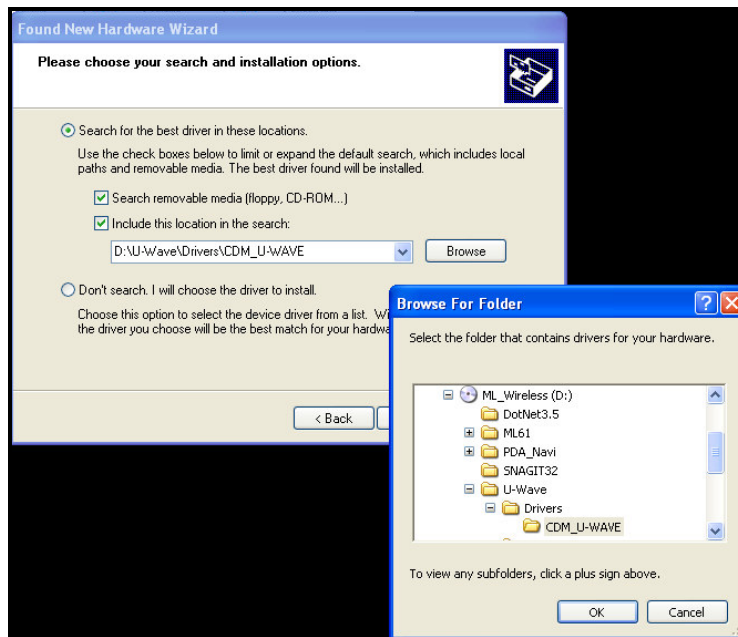
1. Plug the Wireless Receiver into a USB port on the computer.
2. Select **No, not this time** & click **Next**.



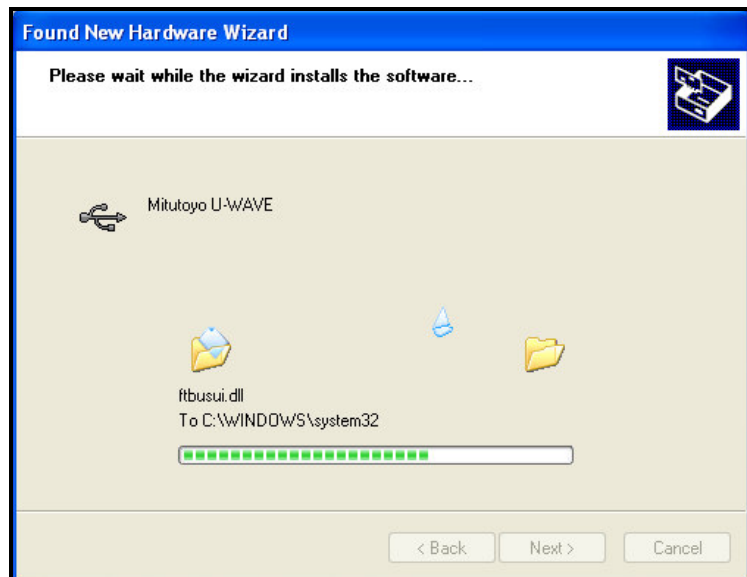
3. Select **Install from a list or specific location (Advanced)** & click **Next**.



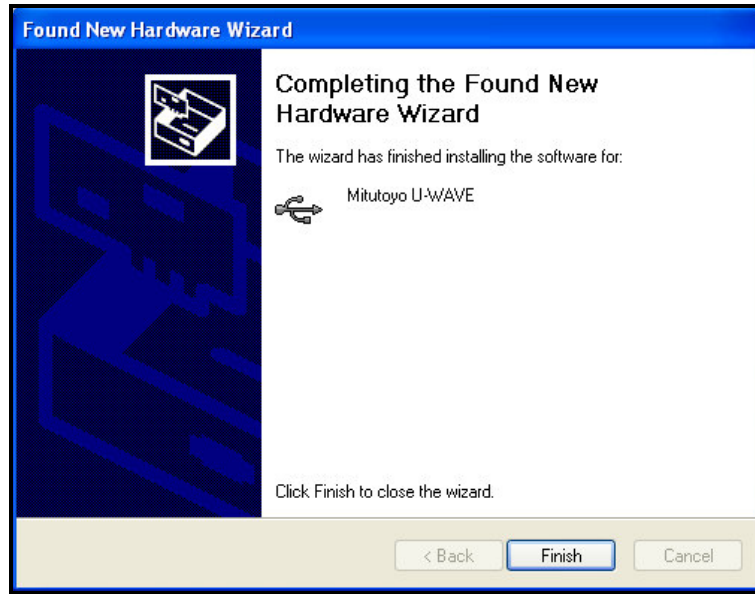
4. **Browse** out to the U-WAVE CD to the Drivers folder, select COM\_U-WAVE, then **OK** and **Next**.



5. Select **Continue Anyway**.



6. Driver software is being installed. Select **Finish**.



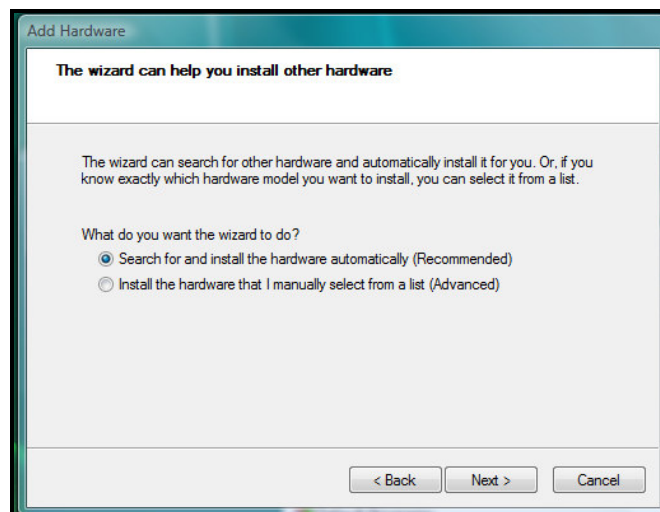
7. NOTE: This New Hardware message will appear 3 times, once for the U-WAVE device, once for the virtual com port software, and once to create the U-WAVE com port assignment.

**Only if New Hardware did not start automatically:**

1. Click Start > Control Panel > Add Hardware and click **Next**.



2. Select **Search for and install the hardware automatically (Recommended)** and click **Next**. Otherwise refer to the U-WAVE manual.



# U-WAVE<sup>®</sup> Organization

- Location of factory assigned IDs used in setup
- List of gages by Com port number and channel number used by MeasurLink.
- U-WAVE-R wireless signals and gages sending data

The diagram illustrates the U-WAVE organization and setup process. It features the MeasurLink logo at the top. Below the logo, a small image of a U-WAVE-R device is shown, with an arrow pointing to a larger image of the device's back panel. The back panel shows the CE mark and the text "U-WAVE-R" and "MeasurLink Corporation". An arrow points from the back panel to a screenshot of the U-WAVE PAK 5 setup software. The software window shows a table of U-WAVE-T (Total = 4 / 4) devices. The table has columns for No., F, S, Channel, Group ID, Device ID, Band ID, and Mode. The first row is highlighted, showing Channel 02, Group ID 00, Device ID 000000020, and Band ID 15. An arrow points from the highlighted row to a small image of a U-WAVE-T device. Below the software window, there are three images: a digital caliper, a U-WAVE-T device, and a U-WAVE-R device. Arrows indicate the flow of data from the U-WAVE-T device to the U-WAVE-R device, and from the U-WAVE-R device to the digital caliper.

**MeasurLink**

U-WAVE PAK 5 setup

U-WAVE-R (Open communication port num = 1)

No.	F	S	Channel	Group ID	Device ID	Band ID	Data lock check level
1	-	-	00	00	1000000160	15	9

U-WAVE-T (Total = 4 / 4)

No.	F	S	Channel	Group ID	Device ID	Band ID	Mode
1	-	-	00	-	-	-	-
2	-	-	01	-	-	-	-
3	-	-	02	00	000000020	15	Button driven
4	-	-	03	-	-	-	-
5	-	-	04	-	-	-	-
6	-	-	05	-	-	-	-
7	-	-	06	-	-	-	-
8	-	-	07	-	-	-	-
9	-	-	08	-	-	-	-
10	-	-	09	-	-	-	-
11	-	-	10	-	-	-	-
12	-	-	11	-	-	-	-
13	-	-	12	-	-	-	-
14	-	-	13	-	-	-	-
15	-	-	14	-	-	-	-
16	-	-	15	-	-	-	-
17	-	-	16	-	-	-	-
18	-	-	17	-	-	-	-
19	-	-	18	-	-	-	-
20	-	-	19	-	-	-	-
21	-	-	20	-	-	-	-
22	-	-	21	-	-	-	-
23	-	-	22	-	-	-	-

Some disconnected or editing U-WAVE-T exists (S=1,2,3,4). Please connect.

Send the setting    List view    Select language    Exit setup

Receive information    Environment    About

U-WAVE-T

U-WAVE-R

# Setup for U-WAVE<sup>®</sup> with MeasurLink<sup>®</sup>

MeasurLink setup requires some additional steps after installing the U-WAVE software and drivers.

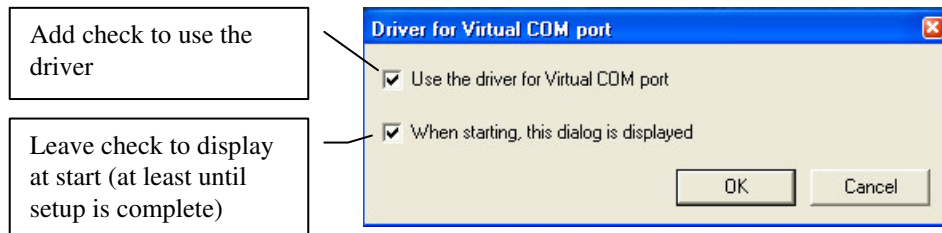
## ◆ U-WAVEPAK Setup

### ➤ To Setup U-WAVEPAK

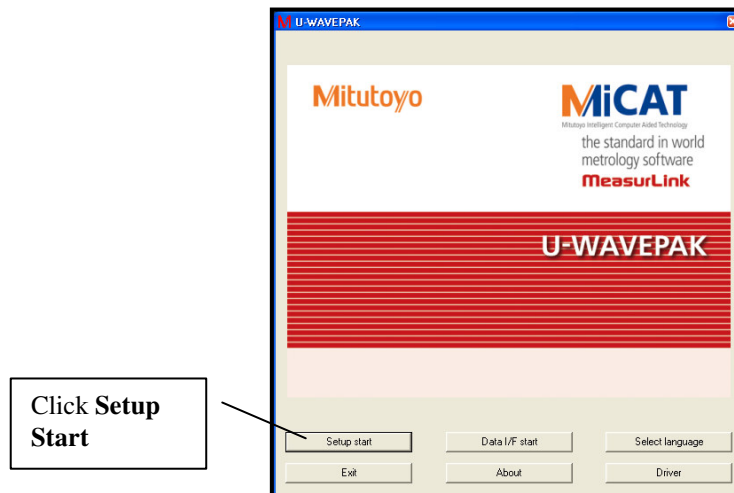
1. Start U-WAVEPAK program using the icon on the desktop if requested (or use Start > All Programs > U-WAVEpak).



2. The first time this program is started, the following screen will be displayed:
  - Add check to **Use the driver for Virtual Com Port**
  - Leave the check for **When starting, this dialog is displayed** (later removal ok) & click **OK**.



3. Click **Setup Start**.



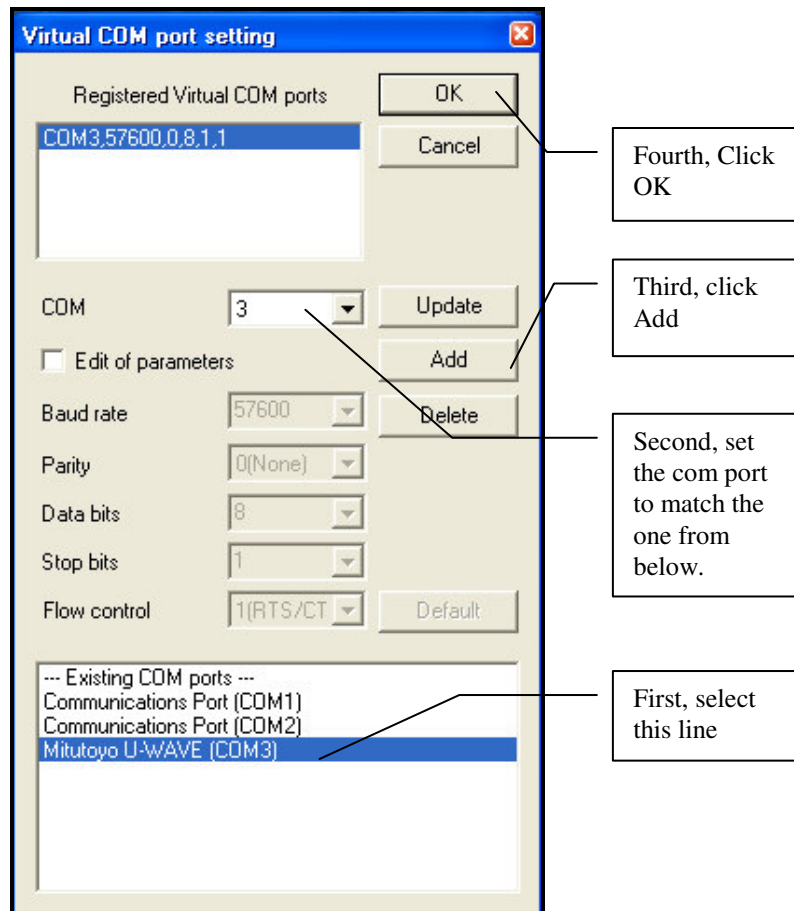
4. Complete the Virtual Com Port settings.



**NOTE:** Complete the Virtual Com Port settings in order shown below.

1. During the installation, Mitutoyo U-WAVE was assigned a com port, select the **Mitutoyo U-WAVE (COM\_)** line.
2. Set the Com port to match the one the installer selected.
3. Click the **Add** button – The com port parameters are always set to Baud 57600, 0 (no parity), 8 data bits, 1 stop bit. To view the wireless data using the Windows program Hyper Terminal, these settings are required. MeasurLink 6.1 has a built-in device set for these parameters.
4. Click OK.

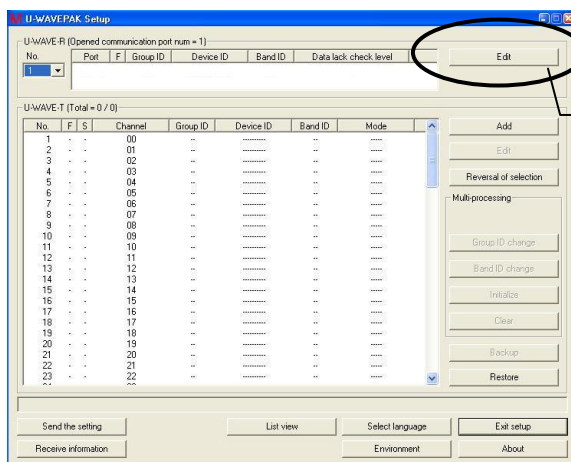
This process will generally only be required once.



## ◆ U-WAVE-R (Receiver) Setup

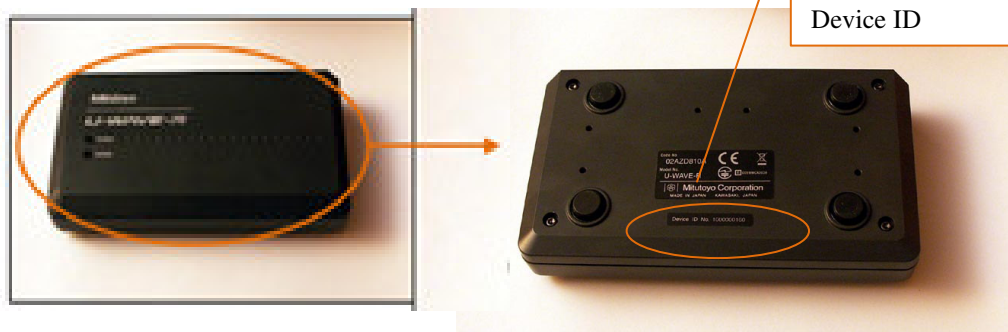
### ➤ To Setup U-WAVE-R (Receiver)

1. If the **U-WAVE-R** box at the top of this dialog is empty, Click **Edit** in the top right corner to add the **U-WAVE-R** device.



Click Edit to add U-WAVE-R device

The factory assigned **U-WAVE-R ID** is the Device ID on the U-WAVE-R setting information dialog.



2. The Device ID must match the ID on the **U-WAVE-R** device.  
Accept all other default values and Click **OK**

U-WAVE-R setting information - Edit

Device ID: 1000000160

Group ID: 00

Band ID: 15

Noise Level: 000 \*

☐ All Band ID scan

Data lack check level: 9

☐ Initialize

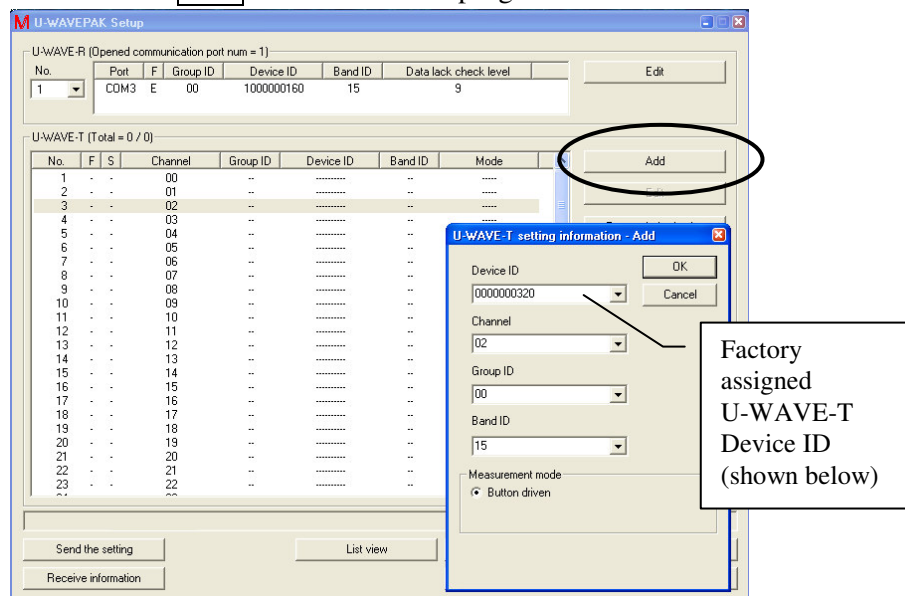
Factory assigned U-WAVE-R ID (Shown in prior picture)

DO **NOT** SELECT INITIALIZE BUTTON

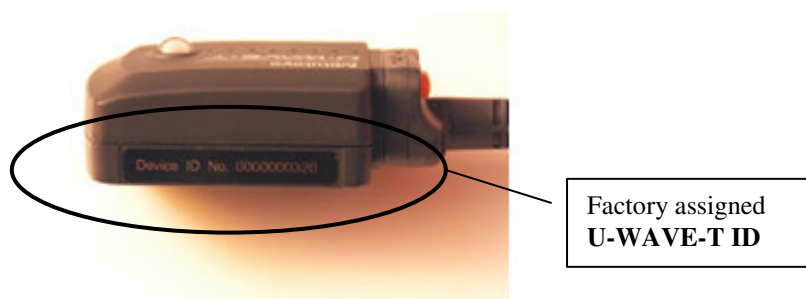
## ◆ U-WAVE –T (Transmitter) Setup

### ➤ To Setup U-WAVE-T (Transmitter)

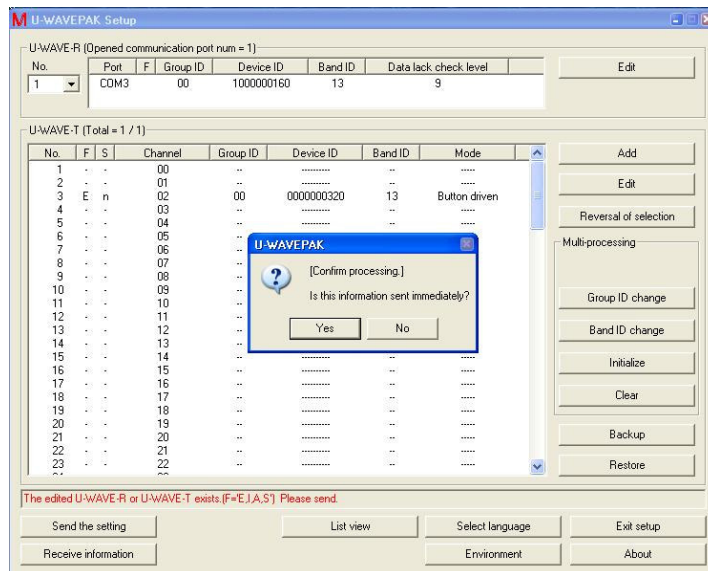
1. Click the **ADD** button near the top right.



2. In the U-WAVE-T setting Information – Add dialog, type in the Device ID found on the U-WAVE-T device. Change the Channel number as needed, but leave all other defaults.

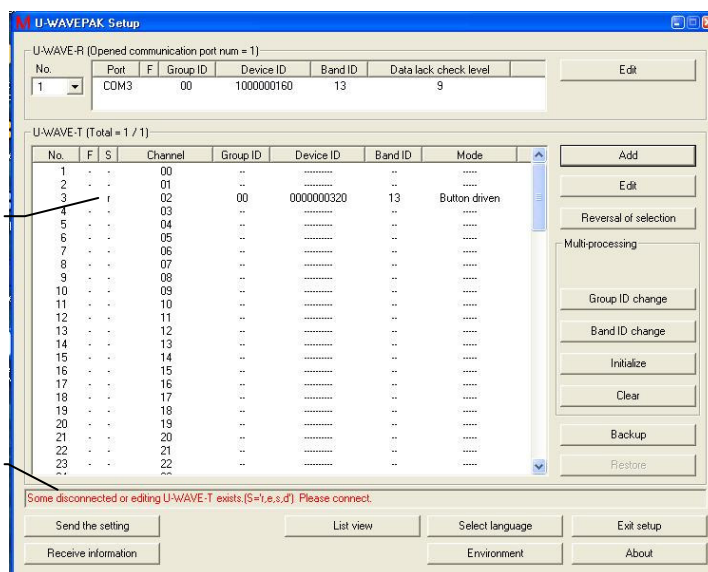


3. Click **OK** & then **Yes** to confirm processing.

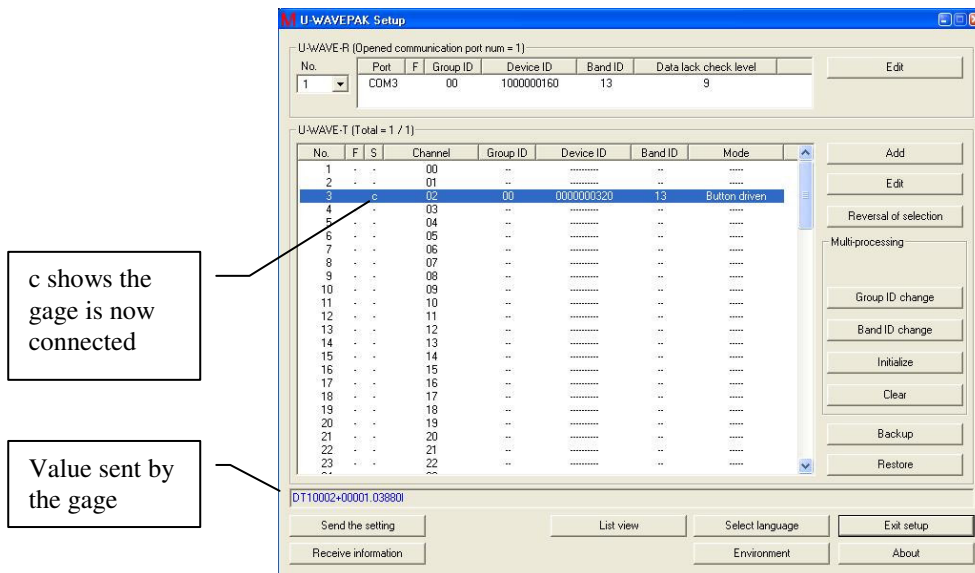


r = registered, but not connected

Instructions to connect the gage with U-WAVE-T device



4. The r = registered with the U-WAVE-T device, but the gage is not connected for transmitting data.



5. Connect a gage and turn on. Push the data button **on the U-WAVE-T** (transmitter). There should be two beeps heard and a green light visible two times. Check column S for the “r” (for registered) to change to “c” for connected.
6. Only if the gage did not connect as expected, perform a scan. Press and hold for 10 seconds the data button on the U-WAVE-T. There should be a fast flashing red light followed by a slower flashing red light. Check column S for “c” for connected to be displayed.
7. If there are problems, see the U-WAVE manual about resetting both the U-WAVE-R and the U-WAVE-T devices.
8. Add additional gages as needed. When using two or more U-WAVE-R devices (Receivers) on the same computer, the Group ID is used to automatically connect the U-WAVE-T, wireless transmitters with the U-WAVE-R.

Write down on paper the **Com port** assigned to **U-WAVE-R**

Write down on paper the **channel** number assigned to **U-WAVE-T**  
**NOTE:**  
**CHANNEL COLUMN!**

9. **IMPORTANT:** Write down the Com Port assigned to the **U-WAVE-R** device and the channel number (in the **4<sup>th</sup> column**) assigned to the **U-WAVE-T** device. These will be used during MeasurLink Setup.
10. Once all the gages have been assigned, exit from the setup and exit from the U-WAVEPak program.

**IMPORTANT:** Exit is required from both setup and **U-WAVEPak** to allow MeasurLink to capture data directly from the wireless devices.