LoadVUE User Guide

LoadVUE
LoadVUE Lite

Thank you for choosing Loadstar Sensors.
Need additional help?
Call us at 510-623-9600 or email us at support@loadstarsensors.com

LoadVUE is compatible with Windows XP, Windows Vista and Windows 7, both 32-bit and 64-bit versions.

- *Due to continuous improvements the actual screens of LoadVUE software may differ from the screenshots depicted in this user guide.*
- *Screenshots for LoadVUE 4-Channel version are shown in the following pages. Versions of LoadVUE for connecting to a single load cell and for connecting up to 7 load cells are also available. Their installation and operation are similar to the 4-Channel version described here.*

Loadstar™ SENSORS

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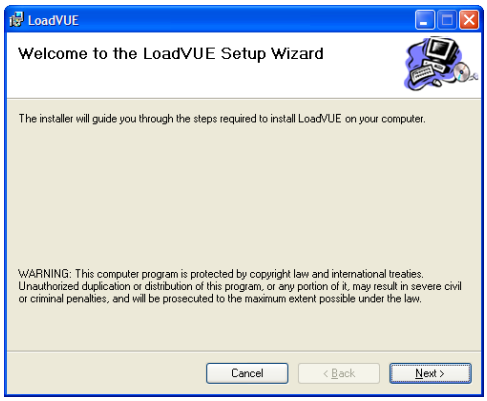
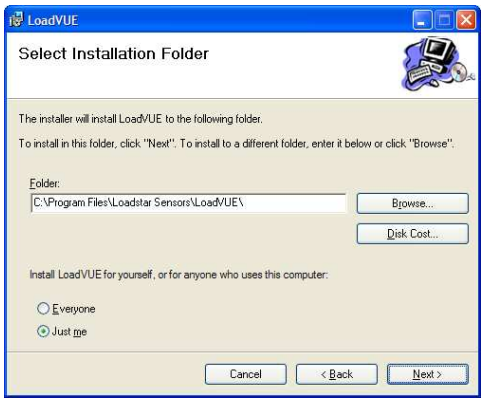
Installation

Insert the LoadVUE CD-ROM into your drive. The installation Wizard should start up automatically. If it does not, click ***Start...Run…***. and use the ***Browse*** button to select X:\setup.exe where X: stands for the letter of your CD-ROM drive. Click OK until the LoadVUE setup screen appears. Click ***Next***.



Select the installation folder. Click ***Next*** twice and LoadVUE will be installed.



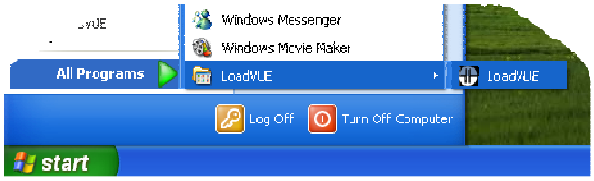
Note: LoadVUE requires the presence of Microsoft .NET Framework. Most versions of Windows XP and Windows Vista already contain .NET Framework. If your computer does not have it, you will be prompted to install it.

iLoad Digital USB Sensor Driver Installation

LoadVUE installation will also install the drivers needed automatically. If you want to connect the sensors to other computers without LoadVUE however, you may need to install the drivers manually. In that case, please connect your sensors first and then install the drivers following the instructions in the section Driver Installation and Operation of iLoad Digital USB Sensors. Otherwise, please skip to the next section.

Operation

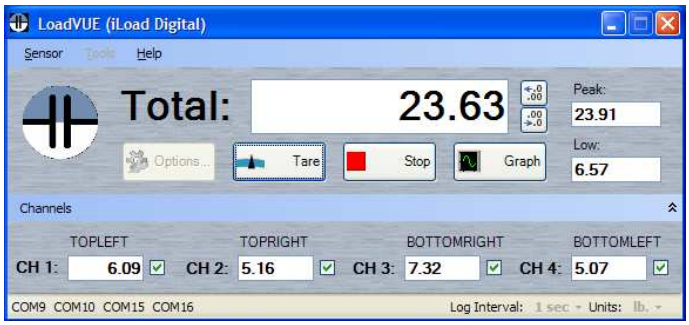
To run LoadVUE, click ***All Programs...LoadVUE*** or double-click on the Desktop shortcut for LoadVUE.



LoadVUE will scan all installed COM ports for attached sensors.

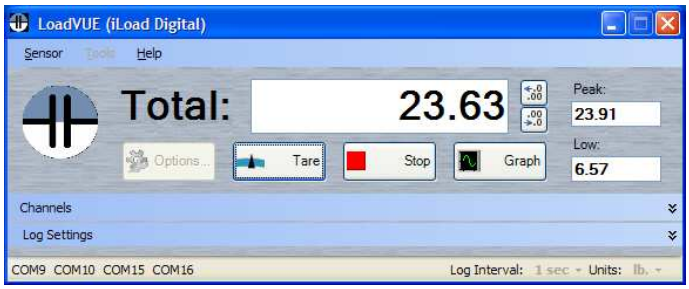
Note: Loadstar Sensors Drivers should first be installed for the sensors to be detected.

The LoadVUE main window is now shown with the default layout for displaying readings from up to 4 sensors as well as the total load. Peak and Low loads are also shown.

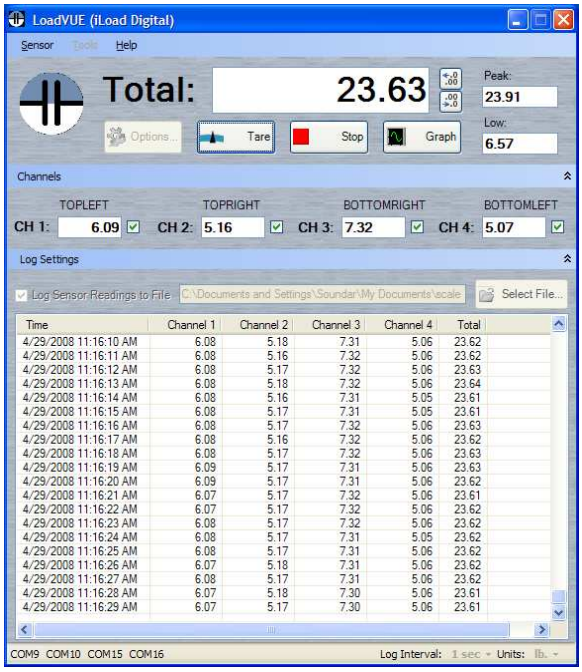


Note: Graph options are not available in LoadVUE Lite.

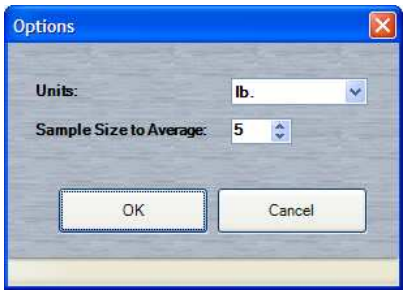
Click on ***Channels*** to view a collapsed layout as shown. The individual sensor readings are hidden and just the total is displayed.



Click on ***Log Settings*** to view an expanded layout that displays the log readings.



You can select the number of sensors readings that are averaged for display by clicking on the ***Options...*** button. Averaging more readings will reduce the noise level while fewer readings will improve the frequency response. On this screen you can also select your preferred display units: lb, oz., kg, g, N (Newton), or kN (kiloNewton).



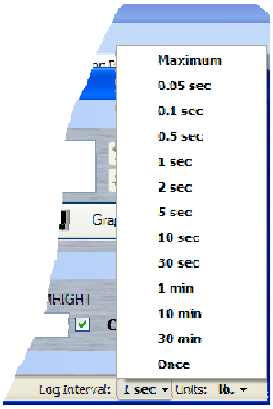
Click ***Tare*** to zero the load on the sensors. All four sensors and total will now display 0. (Further sensor readings will subtract the load at this point).

Click ***Start*** to start reading the sensors. The sensors will be polled as fast as possible but the data is displayed at a more human-readable rate.

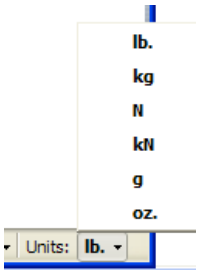
Click on ***Increase Decimals*** or ***Decrease Decimals*** to adjust the decimals displayed. This option is available only when the sensors are being read.

Click on ***Log to File*** to log the sensor readings to a comma separated file (.CSV) that can be read by Microsoft Excel. Logging to screen is available only be up to 1 reading/sec (1 sec polling interval) and slower rates, but logging to file can be done at the higher speeds. At the ***'Maximum'*** setting, logging is done as fast as the sensors can be polled. This rate of course depends on the hardware. Higher CPU speeds and/or multi-core processors will yield better performance.

Click on the arrow next to the ***Log Interval*** on the status bar to set the rate at which data is logged to file.

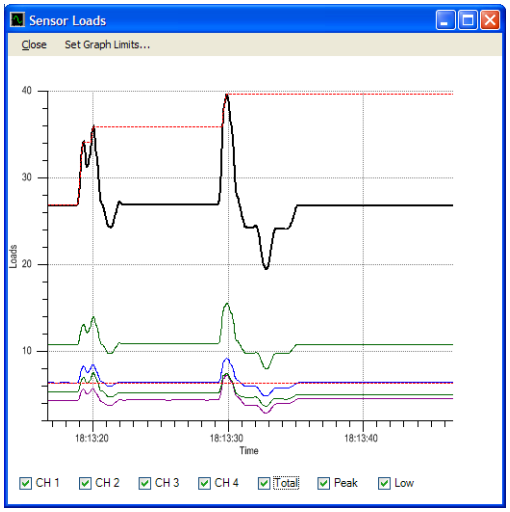


Click on the arrow next to the ***Units*** on the status bar to change the units in which the load is displayed.

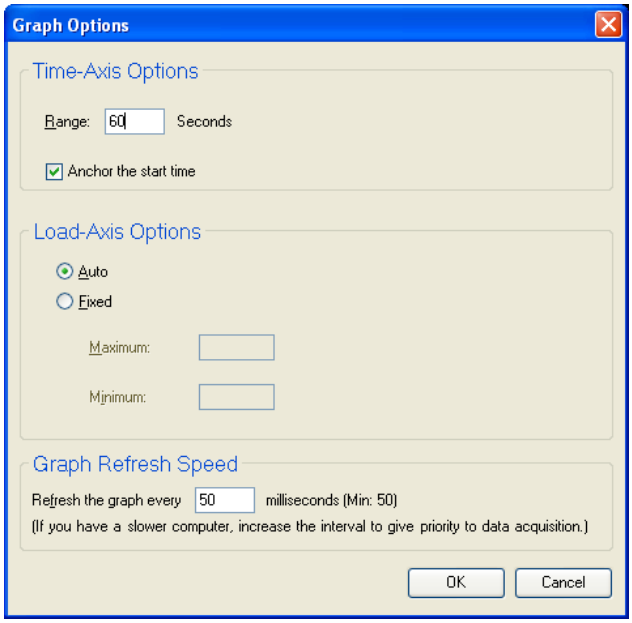


Click on the ***Graph*** button to display a graph of the load on each sensor as well as the total load. Peak and Low loads are also shown.

Note: Graph options are not available in LoadVUE Lite.



Select ***Set Graph Limits…*** (or ***Graph Options…*** in some versions of LoadVUE) from the menu on the graph window to set scaling options on the time axis (x-axis) and the load axis (y-axis).



Enter the maximum time-axis range in seconds in the ***Range*** field. (Minimum: 5 sec). (You must close the graph and click on the ***Graph…*** button again for this change to take effect.) To stop the readings from scrolling to the left, click on ***Anchor the start time***. This will show a cumulative graph. Please note that the cumulative data is limited to only about 10 minutes or so.

Select ***Auto*** on the Load-Axis options for the load axis to scale automatically. You can specify the maximum and minimum load axis values on the graph by selecting ***Fixed*** and entering the values in the ***Maximum*** and ***Minimum*** fields.

Troubleshooting

If you see the error message below, it may sometimes be caused by a temporary problem in the COM port connection or the sensor connections.

Check the connections and try again. As a last resort, close LoadVUE and restart the program. All data in the saved datasets and log files will be preserved. You may also be able to solve this problem by unplugging the relevant sensor from the USB port and plugging it back in after a second or two and then using the Options button to poll the ports again.

Driver Installation and Hyperterminal Operation of iLoad Digital USB Sensors

Driver Installation

Insert the iLoad Digital USB Driver CD OR the LoadVUE or LoadVUE Lite CD into your computer's drive. If you have downloaded the driver files from our web site onto a location in your hard disk, substitute that location instead of the CD drive in the instructions below. Drivers for Windows XP and Windows Vista are available here.

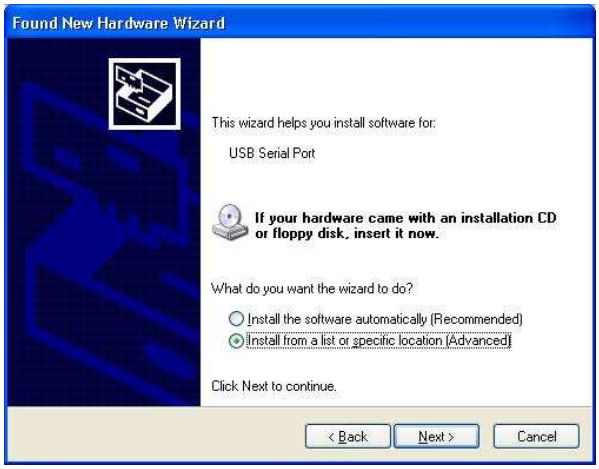
If you have purchased LoadVUE or LoadVUE Lite software with your iLoad Digital USB sensor, please ensure that you install the drivers as described in this document before you install the LoadVUE software. Also note that the screen shots in this document are for Windows XP, but the process is the same with Windows Vista although the appearance of screens is different.

Note: The iLoad series sensors are intended for use with an NRTL approved device such as a computer or regulated power supply.

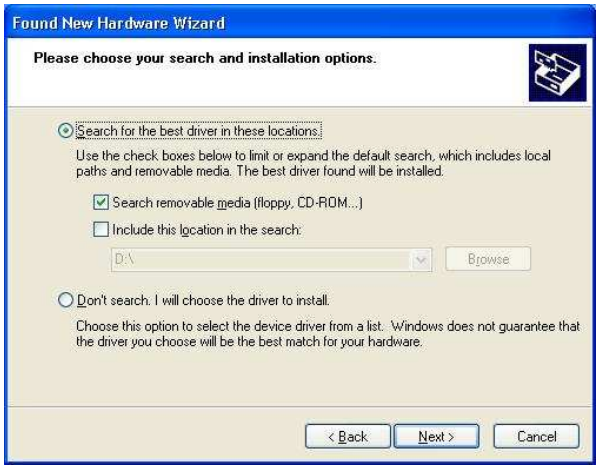
Plug in your iLoad Digital USB sensor into an available USB port on your Windows computer. The New Hardware Wizard window will come up in a few seconds.

Select the option for "No, not this time" and click ***Next***.

On the next screen select the option for ***"Install the software automatically"*** option and click ***Next***. Your computer should scan the CD to find appropriate drivers for the sensor.

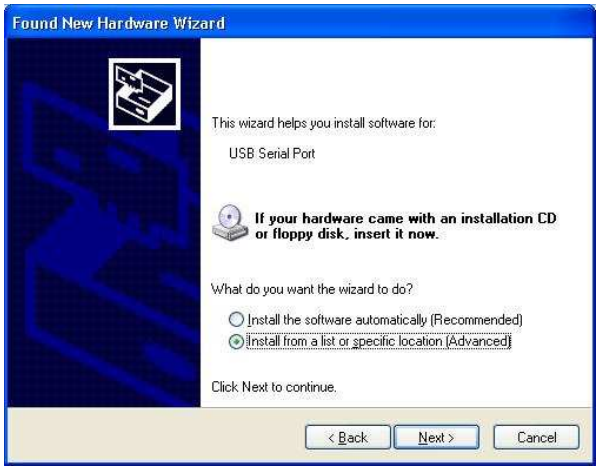


On the next screen make sure that ***Search for removable media*** is checked and click ***Next***.



Windows installs the first part of the driver. Click ***Finish***.

The driver is installed in two parts. Windows will ask you **again** for the driver, this time prompting you for a driver for 'USB Serial Port'



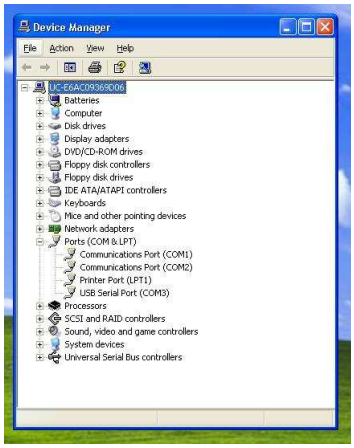
Repeat the steps above. Select 'Install from a list or specific location', click ***Next.***

On the next screen, select ***'Search removable media'***, click ***Next***.

Windows will then install the second part of the driver and display the results.

To verify the COM port number that has been assigned to the sensor, open the Hardware Device Manager. You can do so by going to the Control Panel in Windows and double-clicking on ***System***. On the System dialog box click on the Hardware tab and click on the ***Device Manager*** button.

When your iLoad Digital USB sensors is connected and correctly installed, you should see a COM port assigned to it as shown highlighted in the following screen shot (next page).



If you have more COM ports than you have sensors connected, you can double-click on the entry for a COM port. The ports associated with iLoad Digital USB sensors will indicate that they have FTDI driver as shown below.

You are now ready to start using your iLoad Digital USB sensor.

Hyperterminal Operation

In Windows XP, launch the Hyperterminal program.

Start...All Programs...Accessories...Communications...Hyperterminal

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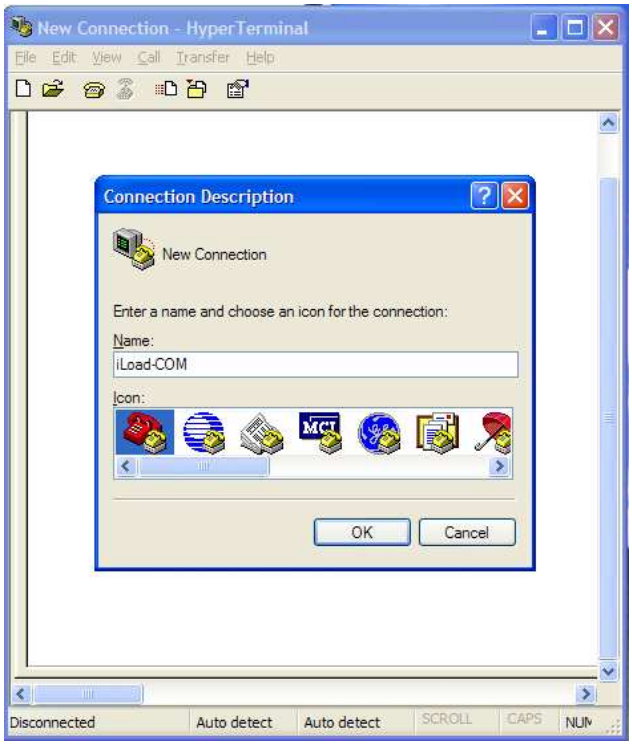
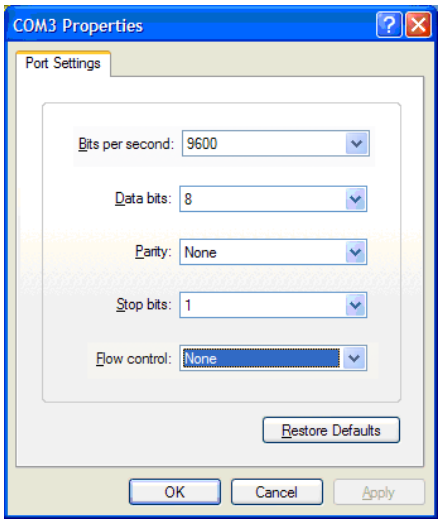
Note: Windows Vista does not include a terminal client. However, free terminal client software like Teraterm is available.

Set up a new connection to connect to the iLoad Digital USB sensor's COM port.

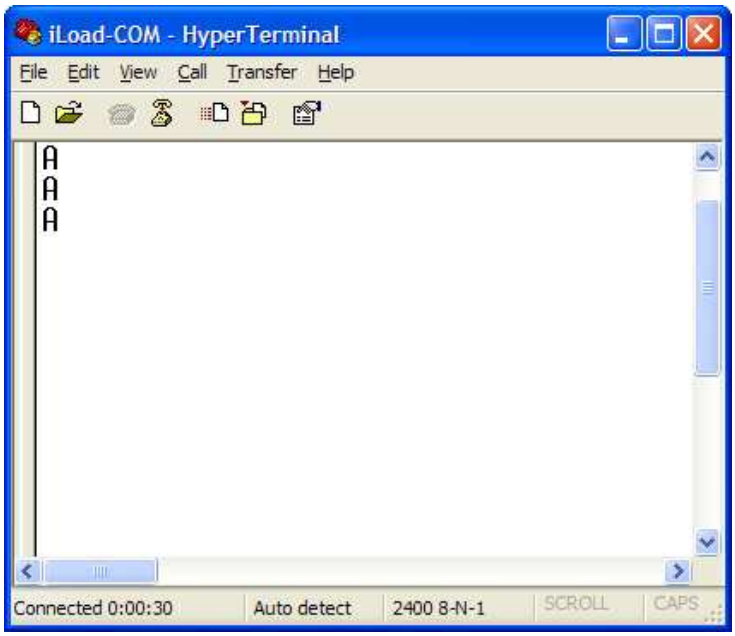


In the **"Connect To"** window, select the appropriate COM port.

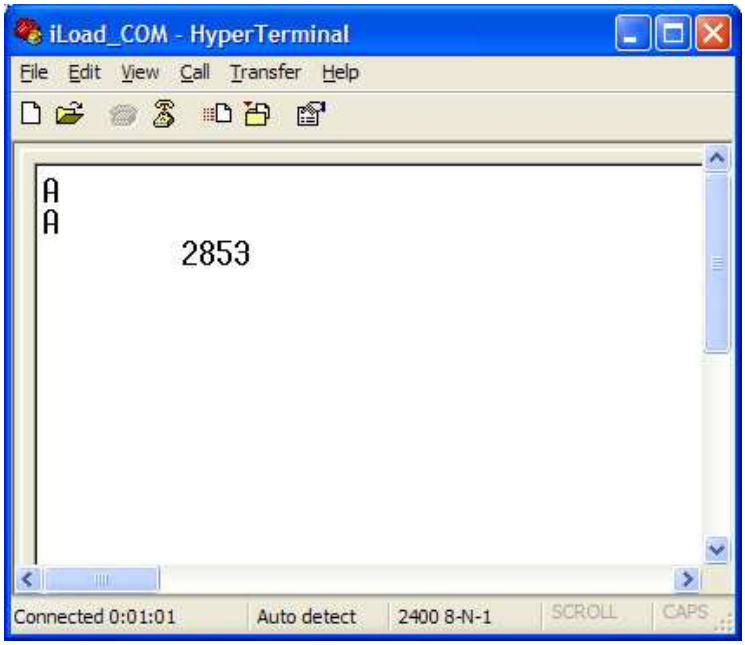
In the "Port Settings" dialog box, select ***9600*** as Bits per Second and ***None*** as the Flow Control.



Click ***OK*** to accept the settings. Then click "Enter" a few times. You should see the sensor respond with an "A".

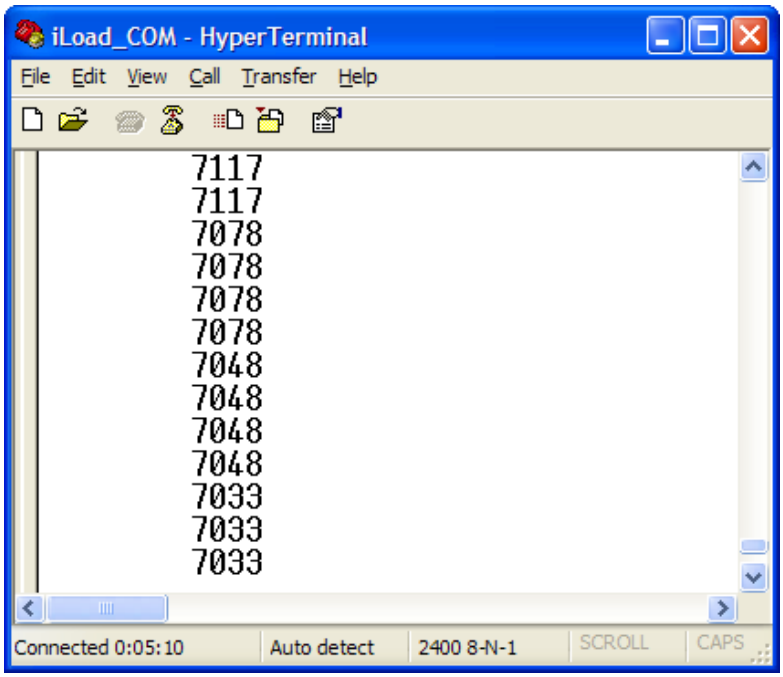


Type *"O0W1"* and hit <*Enter*>. The sensor will respond with the current load on the sensor in millipounds. In the figure below the load is 2.853 pounds.



Type *"CT0<Enter>"* to tare the sensor. This will zero the load (all further readings will subtract the load sensed at this point.)

Type *"O0W0<Enter>"* to output the load continuously. Hitting <*Enter*> at any time will stop outputting the readings.



Basic command set

The iLoad Digital USB sensor can be used through LoadVUE or LoadVUE Lite software from Loadstar Sensors. It can also be used directly as a COM port using any terminal emulation software such as HyperTerminal that is included with Windows XP. To set up Hyperterminal or other terminal emulation program to communicate with the sensor, select the appropriate COM port in the program and connect. Once connected, a few simple commands are all that are needed to operate the sensor:

<Enter>	This just pings the port and the sensor responds with “A” to indicate that it is set up and ready.
CT0	This sets the tare (or zero) for the sensor. If you plan to zero out a preload, please use this command.
O0W1 O0W0	The O0W1 command outputs the weight or force reading once. O0W0 outputs a continuous stream of weight or force readings. Simply send a <carriage Enter> to stop streaming. The output is in 1/1000 of a pound (millipound). E.g., if the reading returned is 2345, the sensor reading is equivalent to 2.345 lb.
O0S2	Outputs the temperature within the sensor in deg. C. Note that this is the temperature within the sensor and is usually a few degrees higher than ambient.
SLC	This command outputs a floating point number that indicates the load capacity of the sensor in lb.
SS1	This command outputs the last three digits of the serial number of the sensor.
SS0	This command outputs the model number of the sensor.

Writing Your Own Software to Communicate with iLoad Digital USB Sensors

Since the iLoad Digital USB Sensors present themselves to Windows as COM ports, it is very easy to write your own program to read the sensor loads. Simply open the COM port from your application and send the string O0W1<CR>. Then read the returned string back in millipounds. We recommend the following steps:

1. Open the port at 9600 (baud rate is not important), N, 8, 1.
2. Write a *<CR>* to the port.
3. Wait for a few milliseconds (say, 100 to 1000, this depends on your hardware, try a longer wait first then shorten it to see what works. (An alternative is to wait until there is a required number of characters in the input buffer, in this way the wait time is reduced to a minimum).
4. Read the input buffer and discard till there are no characters to read. (You can check if you get an '*A*' back)
5. Write *O0W1<CR>* to the port,
6. Wait again for a few milliseconds.
7. Read the input buffer and process. This will contain the weight.
8. Repeat Steps 5 to 7 as needed.
9. Discard any bytes left in the input buffer before you close the port.
10. Close the port.

If callbacks (or events) are available, it is preferable to use them instead of polling the sensor in step 7 above. This way Windows will inform the application that there is data to be read.

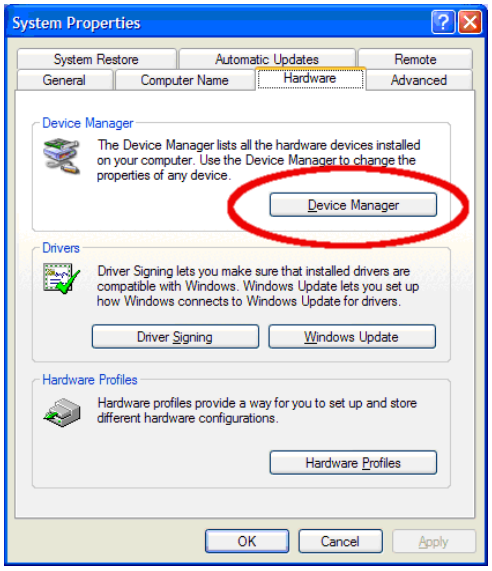
Examples for Labview and Matlab are available on our support pages.

Appendix A: Special Instructions for High Data Output Rate Sensors

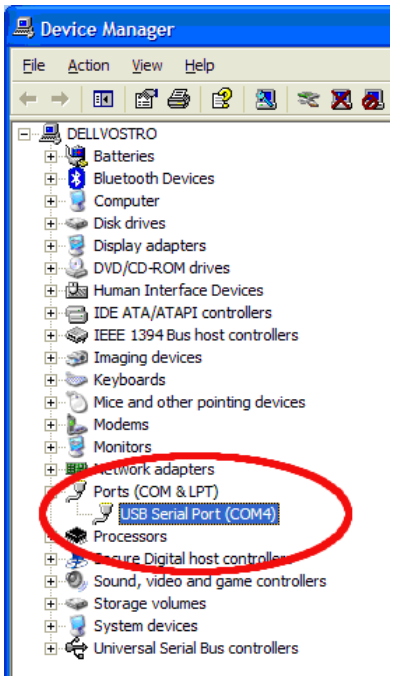
Some versions of iLoad Digital USB load cells offer a high data output rate of more than 500 weight readings per sec. When used with these load cells, LoadVUE can log data at these high rates (at the ***Maximum*** log interval setting). To obtain data at these higher rates, you must change the COM port settings as shown below.

Note: *The actual logging rate will depend on the computer speed. It is strongly recommended that a dual-core (or more) processor be used to log the data for high throughput load cells.*

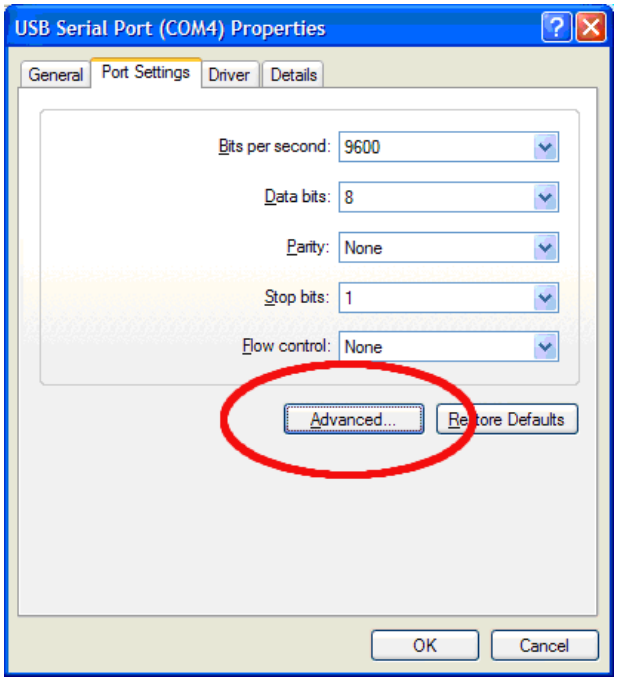
Open the Hardware Device Manager. You can do so by going to the Control Panel in Windows and double-clicking on ***System***. On the System dialog box click on the Hardware tab and click on the ***Device Manager*** button.



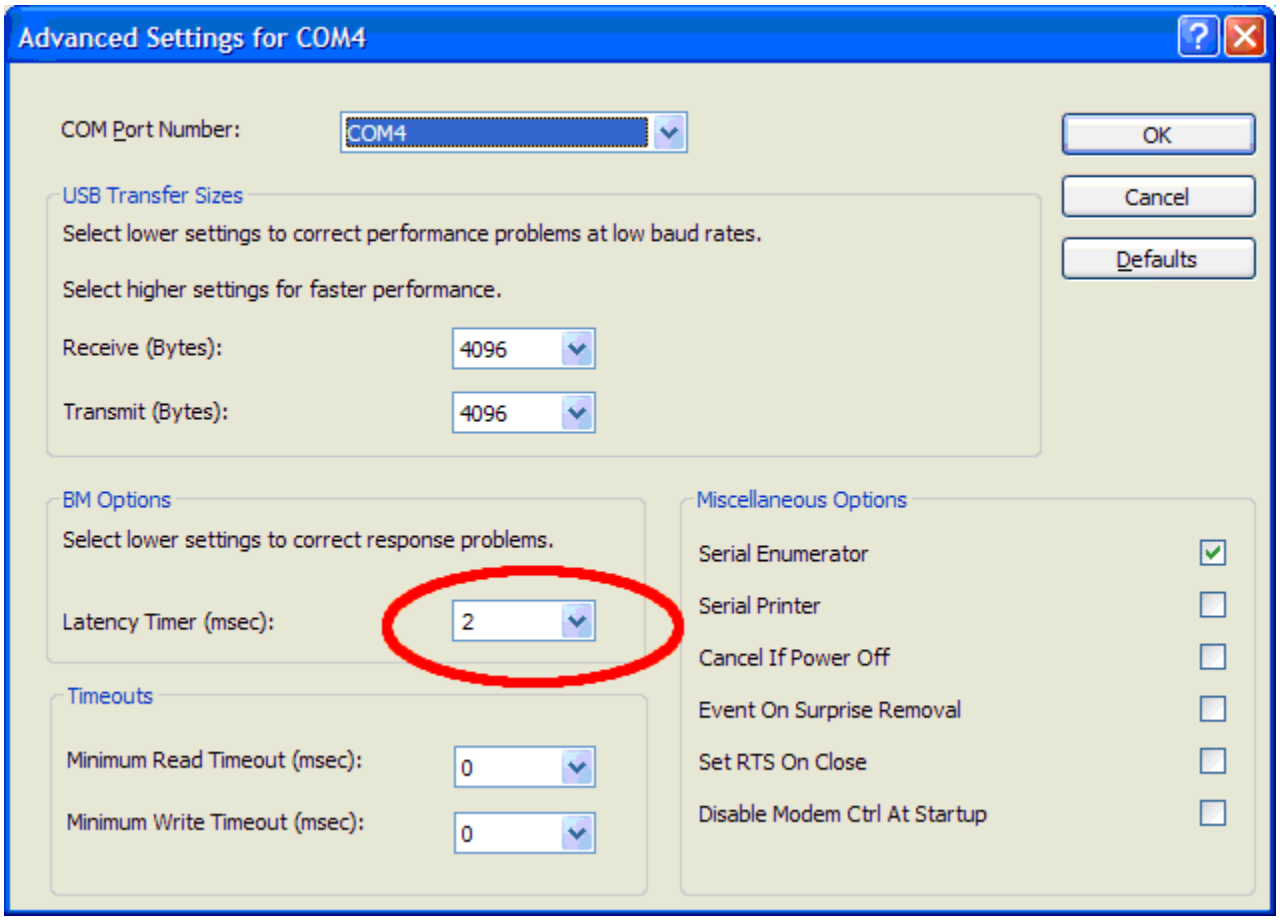
When your iLoad Digital USB sensors is connected and correctly installed, you should see a COM port assigned to it as shown highlighted in the following screen shot (next page).



Right-click on the COM port and select ***Properties***. Select the ***Port Settings*** tab and click on ***Advanced…***



Set the ***Latency Timer*** to 2



Click ***OK*** to save the settings.

Appendix B: LoadVUE with USB Relay Control

An optional LoadVUE feature is the ability to control a USB Single Pole Switchover relay at preset loading or loading rate events. A Sentinel USB SPS relay is shipped along with LoadVUE. Simply connect the relay to any USB port on your PC, no drivers are needed. The relay is in the 'closed' position when not connected to the PC. It is also in the 'closed' position as soon as it is connected to the PC. A green indicator on the relay lights up when the relay is in the 'open' position.

A relay status indicator on the status bar shows the following icons to indicate the status of the relay.

Open

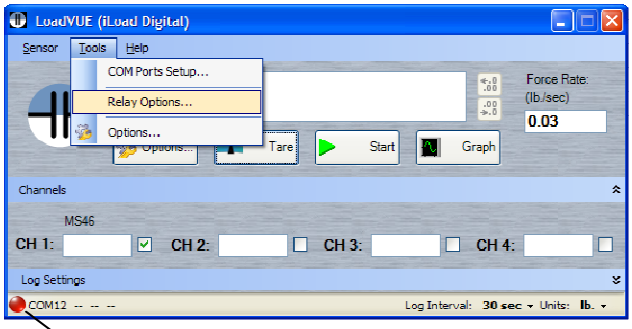
Closed

Detached

The relay must be attached to the PC before LoadVUE is started; otherwise LoadVUE will not detect the relay. Once it is detected however, the relay can be detached and reattached if necessary.

Please follow the steps outlined below to setup the relay options.

Select ***Tools…Relay Options…*** from the menu or click on the relay status indicator icon on the status bar to display the Relay Options Window.



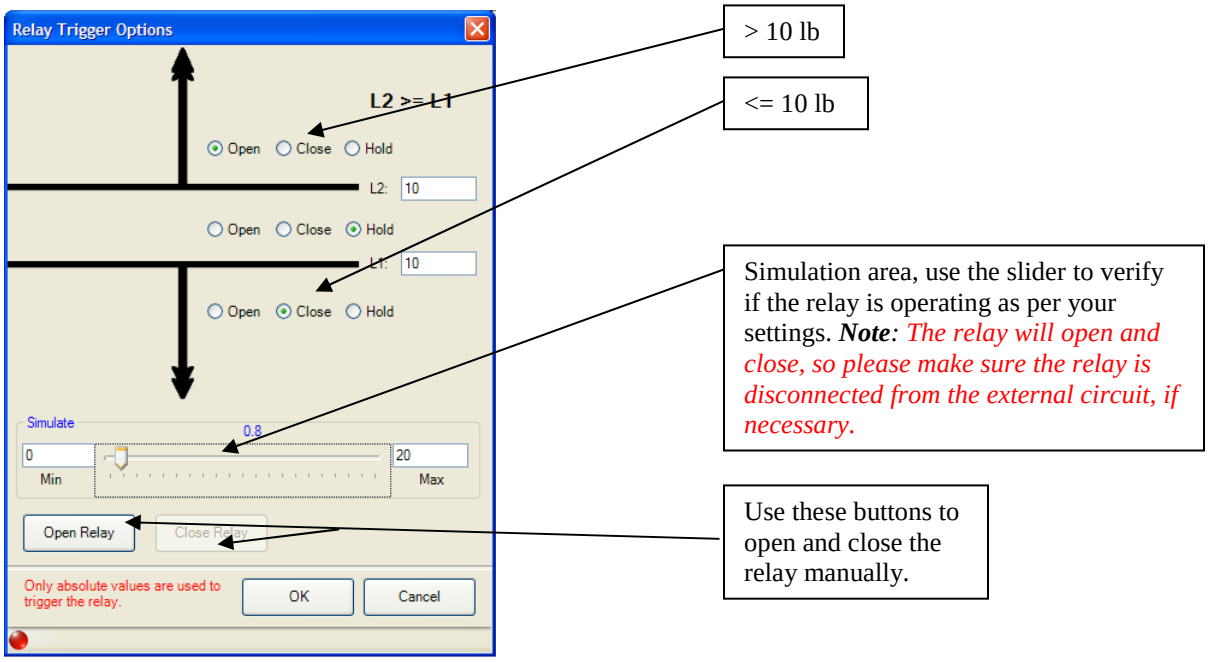
Relay Status Indicator

The USB Relay is triggered by LoadVUE when a preset trigger point is reached. The trigger points can either be preset loads or preset loading rates (but not both). The relay is triggered by the total load (or total loading rate) and is not based on individual load cell outputs.

Note: The default LoadVUE-Relay program does not support the loading rate option. Please contact us if you need this feature.

The following examples illustrate how to set the relay options.

Example 1: *The relay is closed from 0 – 10 lb.*
The relay is open for values > 10 lb.



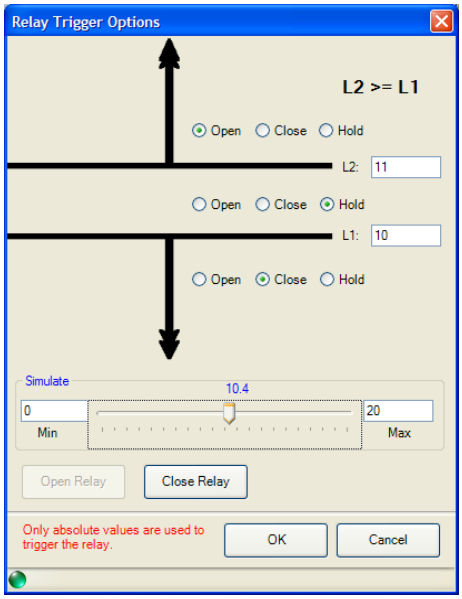
Set L2 = 10, L1=10
Select 'Close' for values below L1 and 'Open' for values above L2. The option between L1 and L2 is ignored since L1 and L2 are equal.
Enter 0 on the 'Simulate-Min' box and 20 on the 'Simulate-Max' box. These are just values you enter to verify the operation of the relay, and do not have to match actual loading min and max.
Move the slider between the Min and Max values to test the relay operation.

Note: This simulation will actually open and close the relay so you can verify that your settings are working properly. Please ensure that the relay is disconnected from the external circuitry to avoid triggering any real equipment by accident.

Example 2: *The relay is closed from 0 to 11 lb.*

The relay is open for values > 11 lb.

The relay retains its status between 10 and 11 lb. That is, if the load decreases from 11.5 to 10.5 lbs, the relay will stay open. If the load increases from 9.5 lb to 10.5 lb, the relay will stay closed.



Set L2 = 11, L1=10
Select 'Close' for values below L1 and 'Open" for values above L2. Select 'Hold' for values between 10 and 11 lb.
Enter 0 on the 'Simulate-Min' box and 20 on the 'Simulate-Max' box. These are just values you enter to verify the operation of the relay, and do not have to match actual loading min and max.
Move the slider between the Min and Max values to test the relay operation.

Note: If you are using a preset loading rate to trigger the relay (instead of just the load), the graph window also shows the loading rate in addition to the loads. The loading rate axis is drawn on the right hand side as a secondary axis. During logging operations, the loading rate is also logged along with the load readings.

The loading rate is computed at 1 second intervals. If the logging is done at a higher rate, say 10 times a second, the same loading rate will be logged.

The default LoadVUE-Relay program does not support the loading rate option. Please contact us if you need this feature.

You can ensure the state of the relay at certain key instants, such as when LoadVUE is started or shutdown, by selecting the options from the ***Advanced*** tab of the Relay Options window, as shown below. The following choices are available:

- When LoadVUE is started
- When LoadVUE is shut down
- When the ***Start*** button is clicked, or
- When the ***Stop*** button is clicked

At each of these instants, you can choose to

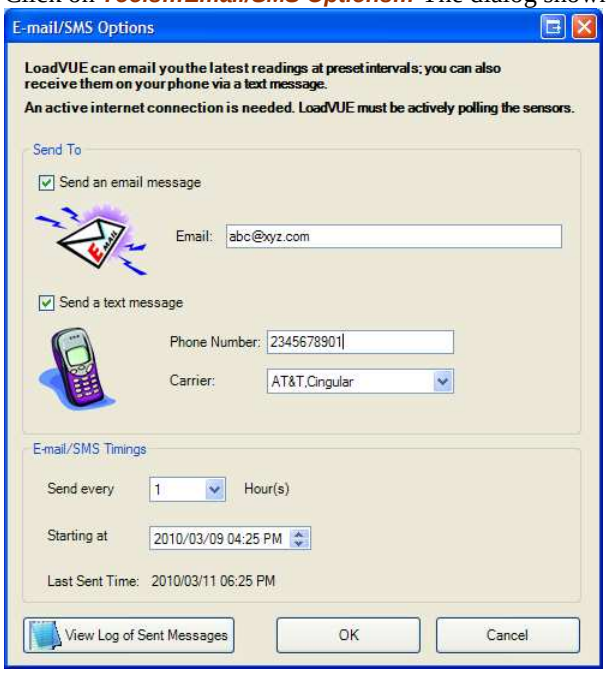
- Open the relay.
- Close the relay, or
- Do nothing. (Hold the relay in its current state).

Appendix C: Email and Text Messages from LoadVUE (Optional)

LoadVUE can email you the latest readings at preset time intervals; you can also receive the readings on your mobile phone as a text message (SMS). This feature will enable monitoring of your sensors remotely and if necessary, to control any associated relays or other equipments using other software or hardware.

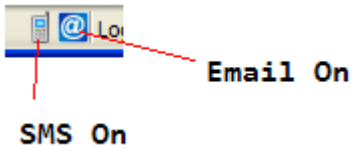
Note: *This feature may not be available on all versions of LoadVUE. An active internet connection is needed for transmitting emails and text messages. You may have to give permission to any firewall or internet security programs to let LoadVUE connect to the internet. LoadVUE must be actively polling the sensors at the time email is due.*

- Click on ***Tools…Email/SMS Options…*** The dialog shown below will be displayed.



- Check the ***Send an email message*** checkbox to enable sending of emails.
- Enter your email address in the ***Email*** field.
- Check the ***Send a text message*** checkbox to enable sending of text messages.
- Enter your phone number in the ***Phone Number*** field. Select your phone carrier from the list of available carriers in the ***Carrier*** field.
- Choose when and how often to receive the readings by filling in ***Send every*** and ***Starting at*** fields.
- Click on the ***View Log of Sent Messages*** to view a list of successful and failed attempts to send out the emails.

To send a text message to your phone, LoadVUE uses the email to SMS gateway of your mobile carrier. For example, if your mobile carrier is AT&T, LoadVUE will attempt to send an email to *[10 digit phone number]@txt.att.com*. If your phone is not receiving these messages, please contact your carrier to see if their email to SMS gateway is functioning, and also the correct formatting of your phone number. For some carriers in US, you may need to add a 1 in front of the 10 digit phone number. You can also try sending an email to your phone from your own email program to see if this feature is currently available for your carrier.



The status bar of the main LoadVUE screen includes icons that will indicate whether the email and SMS options are currently enabled.

Appendix D: LoadVUE for Displacement Sensing

Certain versions of LoadVUE also support a displacement sensor to read displacements. Displacements are logged and plotted in addition to the load readings.