

# Total Vu Software

## Users Guide

1/20/2016  
LaserLinc, Inc  
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Software Version 5.x.x.x

### NOTES:

**LaserLinc offers remote and lifetime software support.** Call us for support. Better yet, connect your PC to the internet and then give us a call. We'll take it from there!

Several video tutorials are available [here](#).

This document contains limited information and may be somewhat customized to your specific software configuration. Please refer to the Total Vu manual or Gauge manuals on the installation CD or in the Total Vu installation directory for more detailed explanations. Obviously, any changes you make to the system will not be reflected in this document! If you cannot find the Total Vu Manual, please call us for a link to download it.

Some screens may look different, depending on your configuration and software version.

***Always back up your software with the "Back Up" feature. This will make it easy to "fix" the system or to get a new system up and running quickly. When you get your system set up and running in a way you like, BACK IT UP!!!***

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## An Installation Overview

The following outlines the steps required to set up a new system. For more detailed instructions, see the “Quick Start” guides that came with the system, the Total Vu manual, or contact LaserLinc directly. Guides and the Manual can be found on the install CD under “Documentation”. The “Quick Start” guides can also be found in the package of printed information delivered with new systems.

1. Insure that you have Administrative Rights on the windows account you log into to install the software. Admin Rights can be removed after installation.
2. For Windows 7 & 10 installations, disable UAC (user account controls) by typing in UAC in the "Search programs & files" or "Cortana" field above or next to the windows start button. Set it to "Never Notify". This can be turned on again after installation. Reboot.
3. Install Total Vu. Use the corresponding Setup32 or setup64 for 32-bit/64-bit systems. The default installation settings will work in almost all situations.
4. If you've purchased the digital I/O or Auto Control options/hardware before 2014, also install "Instacal". Instacal can be found on the Total Vu install CD, possibly in a Drivers folder or "Measurement & Computing" folder. The digital I/O drivers will be installed automatically during the Total Vu software installation for systems purchased after January of 2014.
5. All users that will run Total Vu must have full access to the files in the LaserLinc directory in order for the software to work correctly under multiple accounts. In Windows 7/10, after Total Vu installation, right click on the "LaserLinc" folder, select "Properties" and then the "Security" tab. Click "Edit", highlight a "Group or user name" in the top box and check the "Allow" box next to "Full Control" for each of the groups/users and then click "Apply". This will allow any user to log into this computer and use Total Vu. Do the same for "Instacal" (Measurement & Computing folder) for systems purchased before 2014 that have digital I/O.
6. Plug in the micrometer
  - a. For PCI & PCIe micrometer interfaces shut down the PC, **unplug the PC**, open it up, install the PCI and/or PCIe card (or cards), close up the PC, plug it back in, and boot up. Windows will either automatically install the drives for the PCI/PCIe cards, or it may give you the "Found new Hardware" dialog. Do not choose to search the internet for the drivers; DO let windows install the drivers automatically. Windows should look to the install CD or the install folder in the drive to install the drivers. The drivers are also located in the Total Vu installation directory in the "Drivers" folder. You can tell windows where to look for the drivers or manually install them via the Windows "Device Manager".
  - b. For NetLinc gauge interfaces you'll need to define the PCs IP address under TCP/IP V4 properties.
    - i. Open up "Network & Sharing" from the control panel (Win7) or Settings/Ethernet (Win10).

- ii. Click on the “Local Area Connection” that the gauge (or network switch if you have more than one of NetLinc Gauges, NetI/O, and DSP for wall measurement) is plugged into. You’ll use the PC’s network port to plug in the LaserLinc equipment. You can use a USB to network adaptor to plug the PC into your plant network/internet. It is easiest to keep these separate.
  - iii. Select Properties
  - iv. Double Click on Version 4 (TCP/IPv4)
  - v. Click the button next to “Use the following IP address”
  - vi. Type in the following:
    1. IP Address: 10.10.10.1
    2. Subnet Mask: 255.255.255.0
  - vii. Click OK, OK, Close... and close all of the network settings windows.
7. Plug in the laser micrometer
8. If you’ve purchased the “Encoder” option, plug it in.
  - a. For NetLinc gauges the Encoder plugs into the micrometer or the external NetLinc.
  - b. For PCI or PCIe systems the encoder plugs into the back panel on the PC that is connected to channel 4 on the PCI/PCIe card.
9. If you’ve purchased the NetI/O device or a DSP (for UltraGauge ID/OD/Wall systems), plug them into the network port of the PC or the Network Switch that is plugged into the PC. All network devices must plug into the same port in the PC, the use of a network switch makes this easy. Simply plug the network switch into power, then plug one of the ports into the PC, use the rest of the ports to connect any LaserLinc gear requiring a network port.
10. If you’ve purchased the PCIe I/O device, plug it into the PCIe card via the back panel of the PC.
11. If you’ve purchased other devices like analog I/O, etc... This hardware may require the Measurement & Computing software mentioned in step 4 even if you have purchased it after 2014. Plug in the hardware. Windows will automatically see the I/O device and install “Human Interface Device Drivers”. For systems purchased before 2014, or systems utilizing “Measurement & Computing” I/O hardware, run Instacal. Instacal will pop up a window that says it found the hardware. Click OK and then close Instacal. You should not have to run Instacal again unless I/O devices are added, moved, or removed... **IMPORTANT** – If you are using devices that plug into the USB port: in the device manager of windows, under “Universal Serial Bus Controllers”, right click on each of the “USB Root Hub” and select “Properties”. Under the “Power Management” tab make sure the options “Allow the computer to turn off this device to save power” is NOT checked. Otherwise, Windows will sporadically disconnect the I/O Devices connected to USB ports... In more recent versions of Total Vu the Power Management will automatically be set correctly during the installation process.
12. Start Total Vu. With some older versions of software, when started for the first time, you will be prompted for a license code. You must call LaserLinc at 888-707-4852 for this code or a more recent version of software that does not require the license code.

13. If your install CD came with a predefined configuration you're good to go! If not, you can either "Restore" a configuration to get up and running quickly (See "Restoring a Configuration" and contact your LaserLinc sales person for existing configurations to start with) or design your own interface. We are available to help with this process, just give us a call. Continue on with Step 14 for a brief outline of the process to design your own interface.
14. The main program window should be visible. Under the Total Vu drop down menu, select "Full Configuration". This is where most set up options are performed.
15. Under "Scanners", add your scanner if it is not already there. Make sure the serial number is correctly entered. Calibrate the micrometer under the "Calibration" tab.
16. Under "Measurements", Add Scanner Measurements. You can also adjust resolution and scan averaging on the measurements. If you highlight several measurements, then Right click on any one of them, you can select "General Properties" and change certain parameters for all the measurements at once.
17. Exit out of full configuration. In the main program window, select "Window" and "New Window". You can now create live trend charts, measurement displays, etc...
18. To record data... Back in Full Configuration, under "Data Logging", select "file" -> New. Create a new data log.
19. Under Display, create buttons you want to use.
20. Under Actions, create the actions the buttons will execute. Then assign the actions to the buttons.
21. Add control loops, Alarms, digital inputs, SPC plans, Etc...

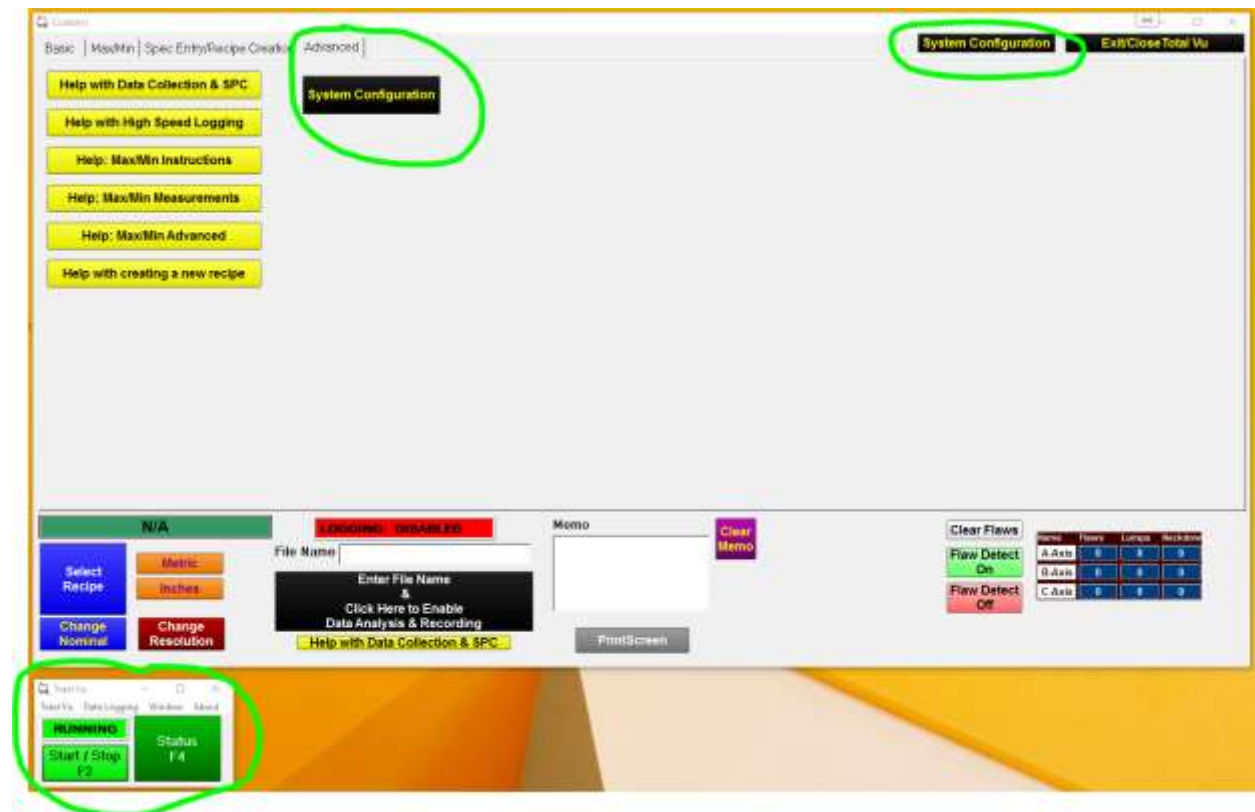


## A General Overview of Total Vu

Total Vu is a fully customizable display and interface to your measurement and control system. When first started up, you will either be looking at a canned/basic interface or almost nothing at all. Contact your LaserLinc sales person or LaserLinc directly for canned interfaces, or review the Total Vu manual and continue to work with what you have.

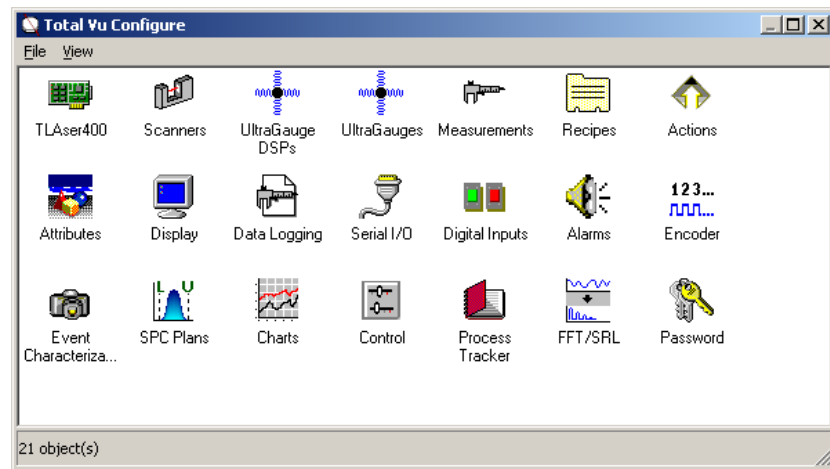
### Getting into Full Configuration

“Full Configuration” is where all of the components of the LaserLinc System can be configured.



Start Total Vu. The main program window may look different than the pictured screen (bottom left window). Enter “Full Configuration” via the “Total Vu” drop down menu or Ctrl C via the main program window, or click a preconfigured “Engineering” button that may also be labeled “System Settings” or “System Configuration” in one of the displays.

## The Full Configuration Window



“TLAser400” – information on the TLAser400 PCI/PCIe card installed in the PC, if there is one. Laser Micrometers and Encoders plug into this card. Information under this icon is rarely used with the exception of troubleshooting.

“Scanners” – Information pertaining to the laser micrometers associated with the system. Items of interest are *gauge serial number, calibration, glass logic, and “scans to ignore”*.

“Measurements” – Set up measurements, adjust scans to average, resolution, etc.

“Recipes” – Add, remove, delete, modify, and copy recipes or recipe templates. Set remote folder locations.

“Actions” – The guts of the system. Buttons on the main screen or digital inputs (if the I/O option has been purchased) execute actions. Actions can be items like start logging, reset the encoder, load a recipe, etc. Macro actions may also be created, so that executing one action results in the execution of all actions within. The custom interface you are using is built on actions, and buttons executing those actions.

“Attributes” – Other pieces of information like Lot Number, Operator, Spool Number, Spec Limits, etc. They can be drop down lists, radio buttons, off line measurements, etc. Typically, the operator will select or enter these values. These values can be logged along with other process data, or used to create file names. Two attributes come standard on all systems, more can be purchased. You can create an unlimited number of “Spec Attributes”.

“Display” – Buttons are on the main screen, where they are located, and what actions they execute. Lock the interface in place. Allow only some recipe activities. Security items, etc.

“Data Logging” – Define what gets logged, how often, where it goes, file name, etc.

“Serial I/O” – Output data from Total Vu via RS232, or communicate with another device via RS232.

“Alarms” – If the Digital I/O option is installed on the system, you can define how relays act, what measurements trigger alarms, delays, how alarms are cleared, Etc.

“SPC Plans” – Define your SPC plan.

“Charts” – Add new charts to the screen and/or define how they behave, what measurements are trended, etc. X-Bar & R, Histograms, and live Trend Charts. Histograms and X-Bar & R charts are part of the “Advanced SPC” package, an optional item.

“Password” – Set/remove your password. (Old or Master Password = 400X22, this password always works and cannot be changed!)

Other icons that may appear, depending on Options purchased with the system:

“UltraGauge DSP’s” - Information pertaining to the UG+ DSP, e.g., IP address. (ID/OD/Wall Systems Only)

“UltraGauges” - Information pertaining to the Wall Sensors, e.g., Number of sensors, sensor frequency, etc. (ID/OD/Wall Systems Only)

“OPC Server” & “OPC Client” - Appear if OPC communications was purchased with the system. Used to configure the OPC communications.

“Digital Inputs” – If the Digital I/O option is installed on the system, you may define how an input is used, what action it executes, etc...(purchased option)

“NetIO” – If a NetI/O device was purchased you’ll add it to the system and configure it here.

“Encoder” – When the Encoder option has been purchased with the system, the “Encoder” icon is the place to set the pulses/foot, resolution, units, etc... for speed and length.

“Control” – Add/Edit control loops and control settings like gain, delay, etc... (Purchased option)

“Process Tracker” – Track events in Total Vu. (Purchased option)

“Part Profile” – Used to configure “zones” if the Part Profiling option was purchased, usually as part of the “Taper Tube” software option or for the Linear Profile Vu systems.

“FFT/SRL” – Used to configure the FFT & SRL settings when these options are purchased

“Event Characterization” – Used to capture data around an event, like a flaw.

“Analog” – Configure the analog devices purchased with the system.

## Security & Password Protection

In Total Vu, you can set a System password via the “Password” icon in Full Configuration (use 400X22 as the old password, and then enter your new password which must be at least 5 characters long). This will stop users from entering full configuration and Right clicking on windows to change their appearance. You can further protect the integrity of the system by going into the “Display” icon in “Full Configuration”; under the “Options” tab check the following:

1. Prevent closing displays
2. Prevent moving displays
3. Prevent minimizing displays
4. Prevent resizing displays

There are several other options you can check here that further prevent users from changing particular settings.

As an added level of security, any action created may have a password applied to it. It can either be the system password or another user defined password. Any button that executes that action will require the password.

In any case, if the system password is forgotten, the password 400X22 will always work, and can NOT be changed. If you forget your password and call LaserLinc, 400X22 is the password we give you that will get you into the system.

TO REMOVE THE PASSWORD, go into “Full Configuration” and double click on the “Password” icon. Simply enter the old or master password in the top field, and nothing in the bottom two fields, and then click OK.

The last level of security is Windows itself, applying a password to log in.

## Laser Micrometer Calibration

### Calibration V.S. Calibration Verification

Laser micrometers need to be calibrated when they are first set up, if they've been moved around, connected to a new system, etc. Once installed however, the frequency of calibration will depend on the type of laser micrometer, the environment in which it is installed, and the specific applications accuracy requirements. Calibration frequency can be as short as every couple months, or as long as every 5 or more years. In any case, a “calibration verification” can be done on a daily, weekly, monthly, or yearly schedule simply by placing a calibration standard in the gauge to “verify” that the gauge is measuring within acceptable limits. When the “verification” fails or comes close to failing, a “Calibration” can be performed.

For information on how accurate your gauge is, see ["how accurate are the measurements"](#)

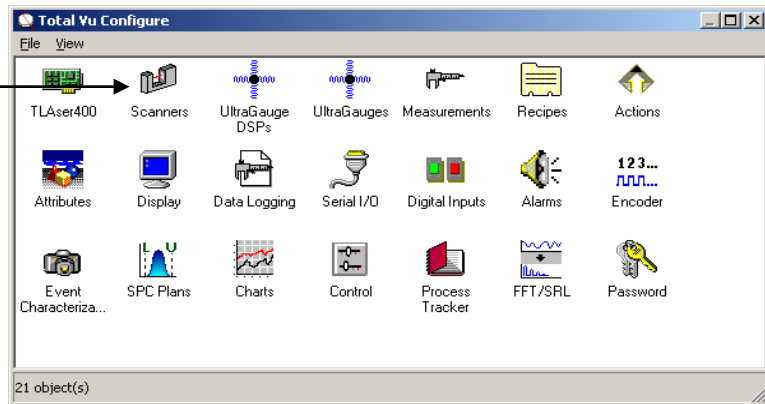
## Calibrating a Micrometer

Before calibrating the micrometer, make sure the gauge windows and calibration standards are as clean as possible. If red light is seen on the micrometer window, it is the laser lighting up debris on the glass. Little or no red light should be seen on the windows after cleaning. Compressed air, isopropyl or ethyl alcohol, Windex, lens cleaners, etc., can be used to clean the windows. Be extremely careful not to scratch the window. If wiping, always wipe along the length of the window, not back and forth the short way across the glass as this could cause a scratch which would appear to the gauge as a part in the field. Wipe once, and then turn the swab. Never “scrub”. If the windows are scratched or permanently coated, they should be replaced. Contact LaserLinc in this case.

### Step 1:

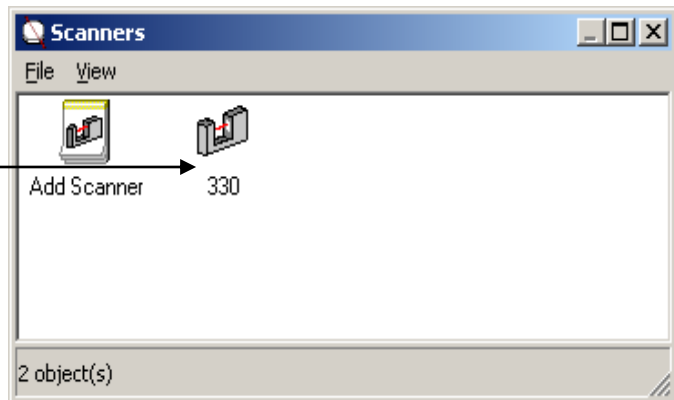
Double click on the “Scanners” icon in Full Configuration.

Alternately, you may have an “Engineering” or “Calibration” button on the main screen



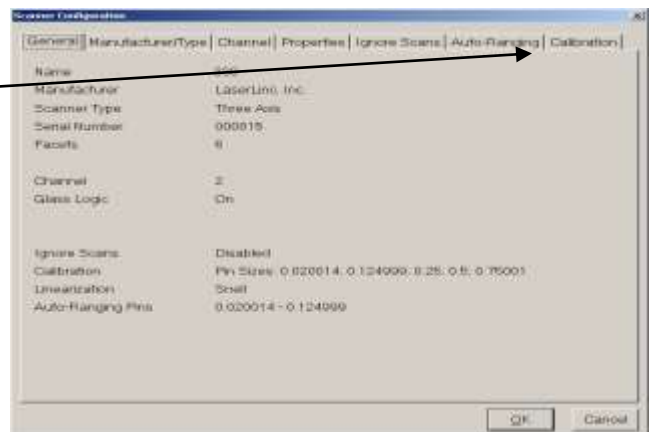
### Step 2:

Double click on the icon for the scanner to be calibrated.



### Step 3:

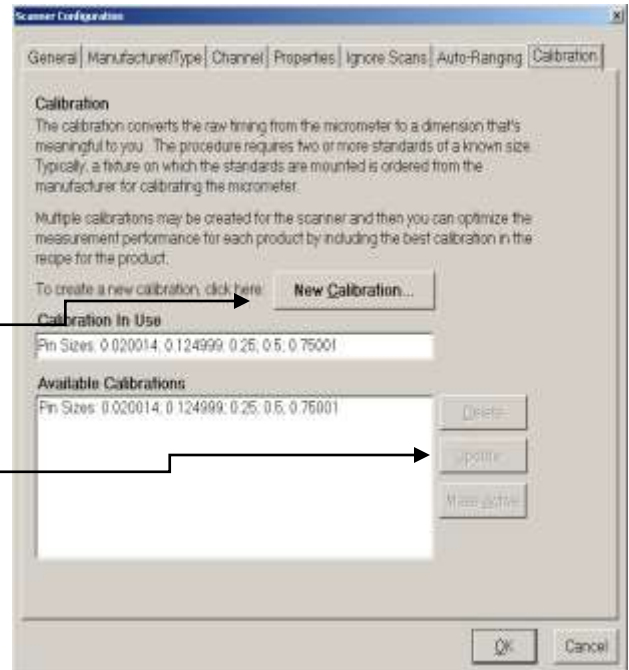
Click on the Calibrate tab to begin the calibration process.



## Step 4:

You can perform one of four tasks at this point:

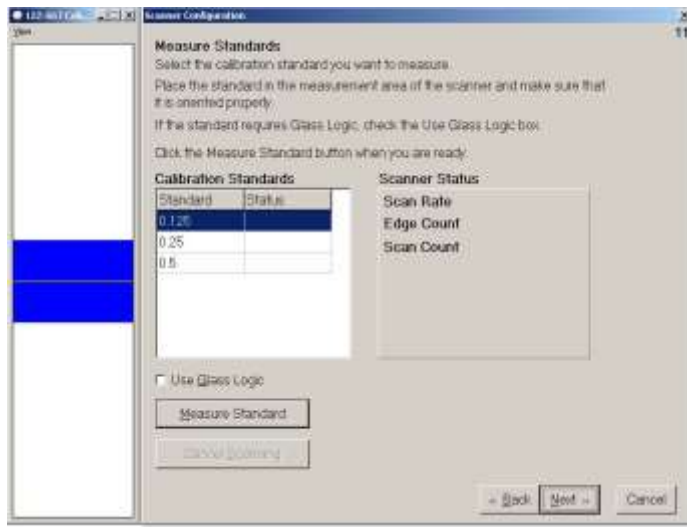
1. **Make one of the available calibrations active.** If calibrations are listed in the lower portion (Available Calibrations) of the window, simply select the most appropriate calibration range for the products to be measured and click on the “Make Active” button. Then click on the OK button at the bottom of the screen.
2. **Calibrate the micrometer.** Add a calibration to the list of “Available Calibrations”. Click on the “New Calibration Button” and proceed to step 5
3. **Update an existing calibration.** Click on the calibration to be updated in the “Available Calibrations” Window and click on “Update”. Proceed to step 6.
4. **Duplicate a Calibration.** Highlight the calibration you would like to duplicate. On the following screen select inches or metric for the duplicate calibration. (If you update one calibration and a duplicate calibration is also in the list make sure you select the calibration you updated and select duplicate, you will be asked if you want to replace the existing calibration, select yes to update it as well.



## Step 5

Enter the size of the calibration standard to be used in the “Standard Size” field then click “Add Standard”. Do this for all standards to be used. At least two must be used. Once all standards have been entered, click on “Next” and proceed to step 6.





### Step 6:

On this screen, choose each standard by clicking once on it, place the matching pin in the measurement field of the micrometer, and click on the "Measure Standard" Button. As each standard is measured, the scan rate and edges detected will be displayed and the number of scans for the standard will be counted and displayed. When the standard has been measured and the results stored by the program. The status field next to the Standard will display the word "Complete". Highlight the next standard in the list and repeat the process. When all standards have been measured, click the "Next" button. Proceed to step 7

### Step 7:

On the final screen of the calibration wizard, a description can be entered for the calibration or the default description can be accepted. To make this calibration active, click on the check box at the bottom of this screen. Click on "Finish" to complete the calibration of the micrometer.



**NOTE:** If the system has been set up to measure in both Inches & MM you will need to "Duplicate" the calibration. Also, if you make a "New" calibration, rather than "Updating" the calibration, the buttons on the main interface for Inches & MM will continue to refer to the OLD calibration unless you update the actions for loading the correct inches or mm calibration. See ["How can I measure in both English & Metric units?"](#)



## Working with Recipes

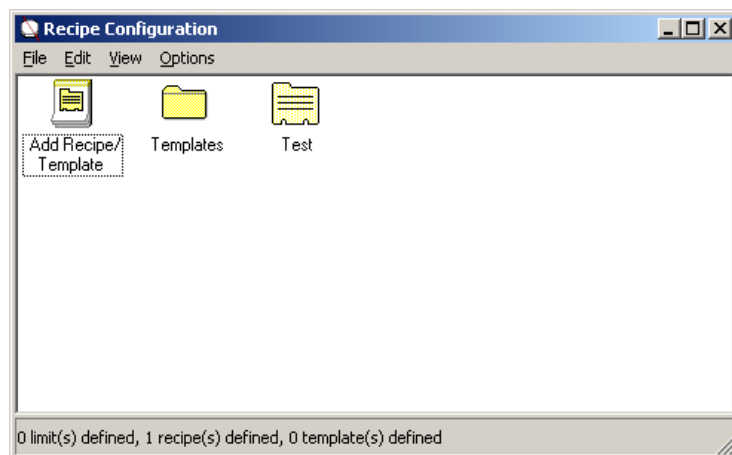
Recipes contain process information specific to a product. You can store specification limits, control settings, flaw detection settings, Ultragaugage settings if you have an ID/OD/Wall system, and finally, an action to execute when the recipe is loaded and unloaded.

### Creating a new Recipe

1. Add, Modify, Delete, Rename or Copy a recipe via the “Recipe” icon in “Full Configuration”
2. Possibly one or all of Add, Modify, Delete, Rename or Copy a recipe via the “Select Recipe” Button.
3. Possibly utilize the “Recipe” Tab in a Custom Window.

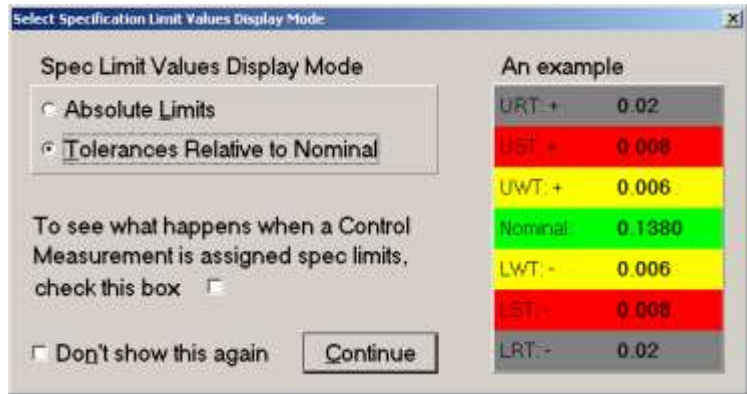
### Working with Recipes in Full Configuration

1. Go into “Full Configuration” & double click on the “Recipes” icon.



2. Double Click on the “Add Recipe/Template” icon to add a recipe from scratch. **OR, Right Click on a known good recipe, click Copy, Rt. Click in the white space of the window, select Paste, enter a name for the new Recipe, and then double click that recipe to edit the specifications. Skip to step 5.**

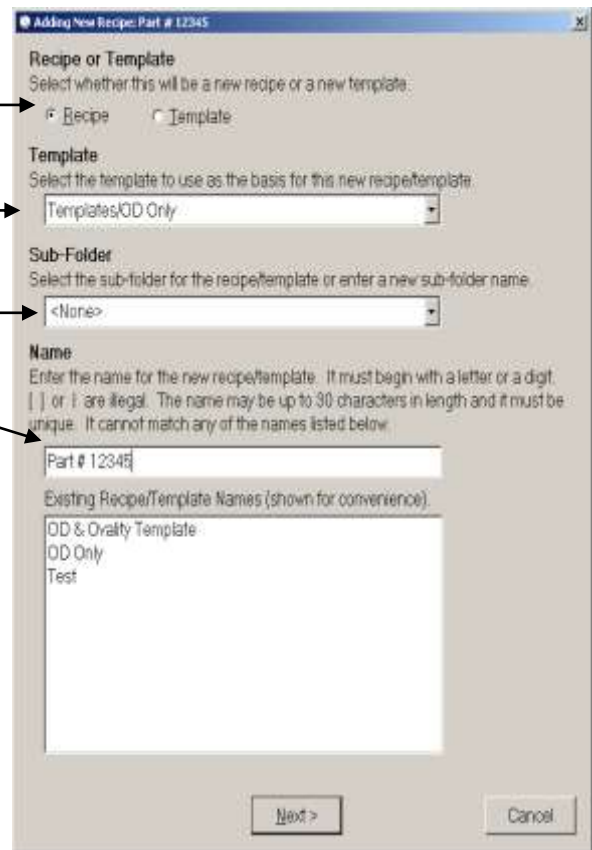
3. Select "Absolute" or "Relative" tolerance entry and press "Continue". This window can be prevented from popping up every time by checking the box at the bottom of the window. An example of how the specs will look is shown on the Right for the selected method of spec entry.



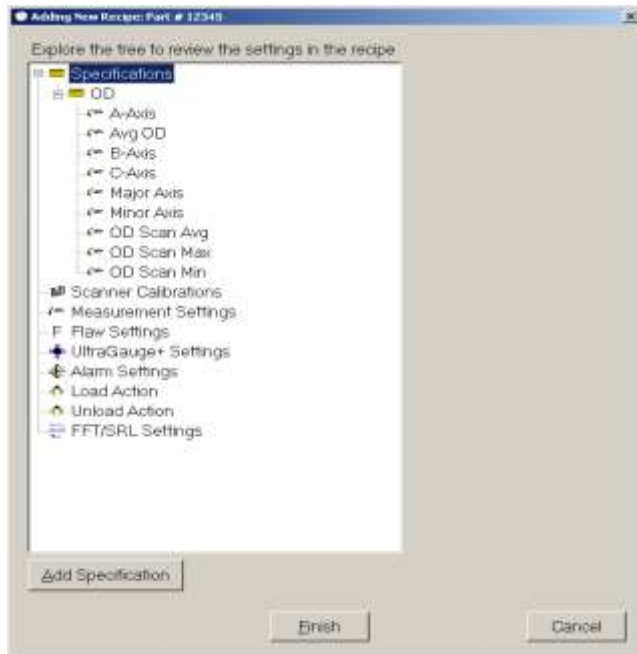
4. Select "Recipe" to create a recipe. Under "Template", select the template to use, or "None" to start from scratch.

Under "Sub-Folder", select "None". Under "Name", enter the name of the new recipe.

Then click on the "Next" button.



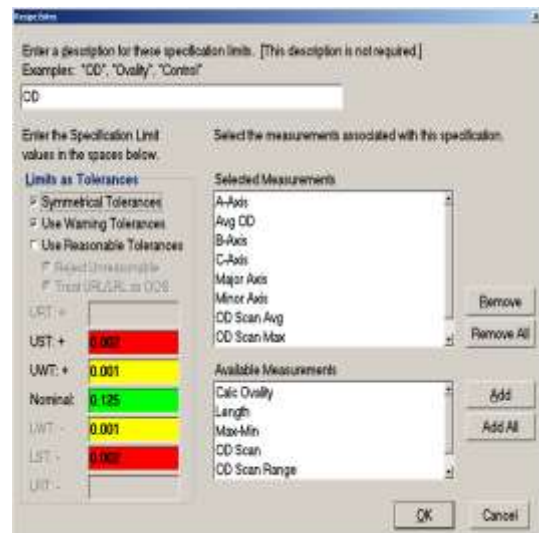
It is far easier to start with a template, or copy and then edit a recipe, rather than starting from scratch. If you start from scratch, on the next window click "Add Specification" to begin. Enter a name for the spec at the top of the window (example: ID, OD, Ovality, Wall, etc.). Enter the specifications. Select the measurements to apply the spec to.



5. If copying, editing, or starting from a template the “Adding New Recipe” window will come up. You can view, edit, or add specifications to the recipe. The example recipe to the left shows one specification called OD. The OD specification has been applied to all of the measurements listed below it. To see what the specification is, click once on OD or any of the measurements below it and the specification will show up on the right side of the window. To modify the specification double click on the specification or any of the measurements under it to bring up the spec edit window. For example, double click on “OD” or “A-Axis” in the example window will both bring up the same “Add/Edit Specification” window shown in step 6.

6. Modify the Specification Limits and click on “OK”.  
 UST (Upper Spec Tolerance)  
 UWT/UDT (Upper Warning/Deadband Tolerance)  
 Nominal/Target  
 LWT/LDB (Lower Warning/Deadband Tolerance)  
 LST (Lower Spec Tolerance).

Note: If “Symmetrical Tolerance” is checked, you only need to fill in nominal & the upper limits. If “Use Warning Tolerances” is checked, it enables the yellow Warning/Deadband limits.



The measurements listed in the “Selected Measurements” window will have this spec applied to them. You can also choose any of the measurements in the lower “Available Measurements” window. If you start from a “Template” or by copying an existing known good recipe, the correct measurements are usually already selected and you only need to change the specification limits on the left side of the window.

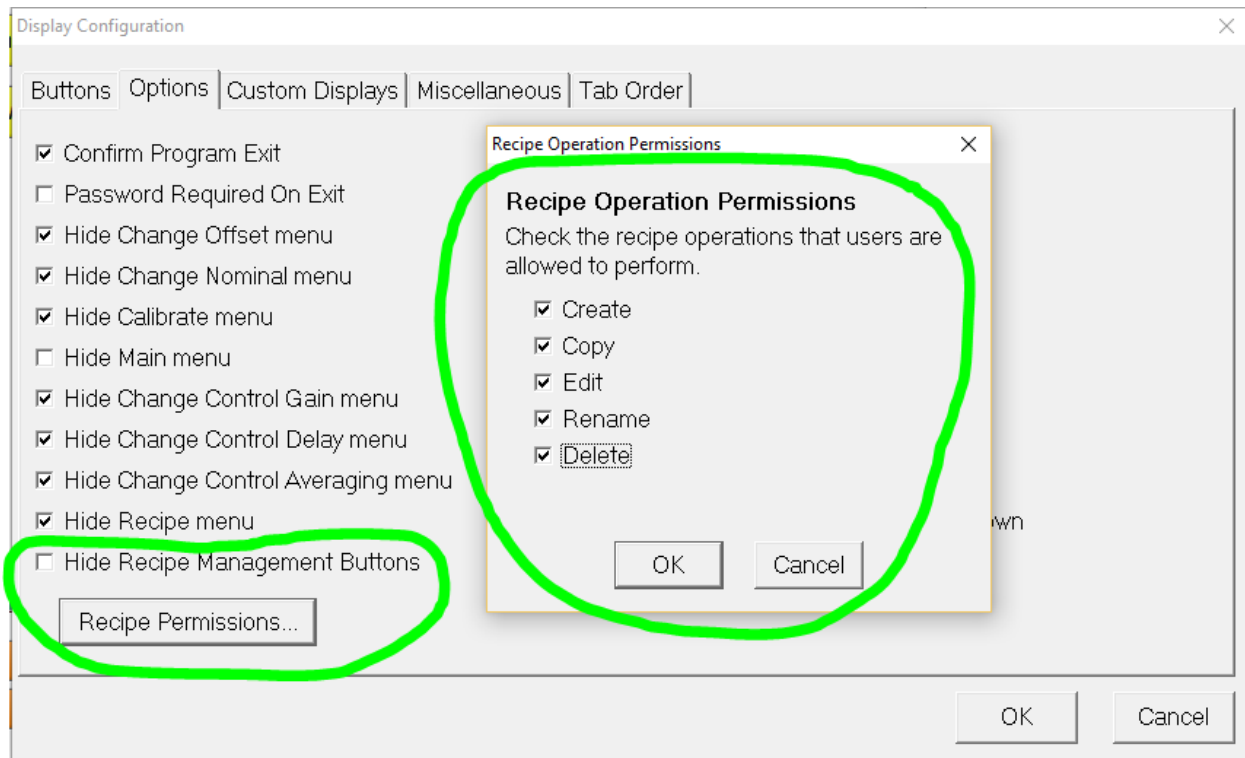
7. Click on OK, then Finish/Save Changes, and then close all configuration windows. The new recipe has been added to the system.

### Working with Recipes via the “Select Recipe” or “Recipe Load” button

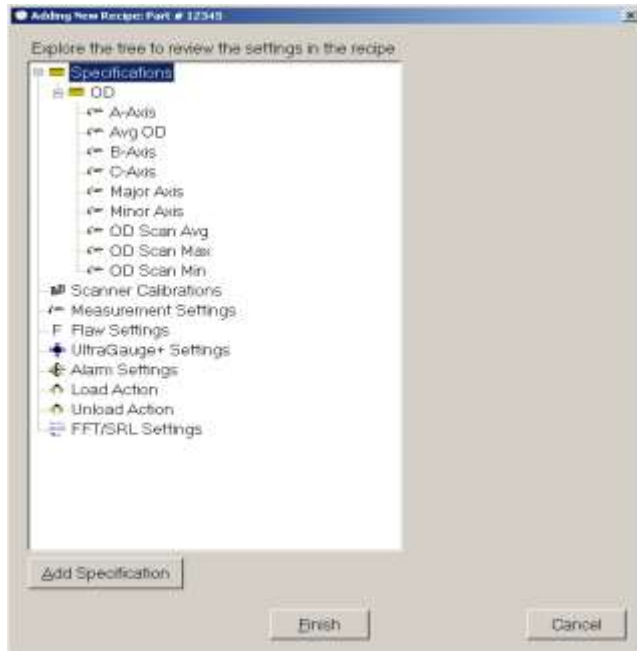
Clicking the “Select Recipe” button on the main display will bring up the “Recipe Management” window. From here you can:

1. Load or Unload recipes
2. Create a New Recipe
3. Copy a Recipe
4. Edit a Recipe
5. Rename a Recipe
6. Delete a Recipe.

The New, Copy, Edit, Rename, and Delete buttons can be made available or hidden via the “Display” icon in “Full Configuration”. Click on the “Options” tab to hide all of the buttons by selecting “Hide Recipe Management Buttons” or leave it unchecked and click the “Recipe Permissions” button to enable/disable specific buttons.



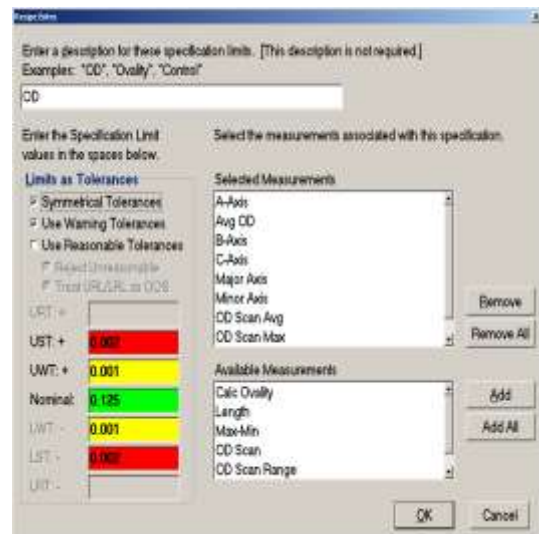
Typically, the “Copy” button is left available to make it easy to quickly create a recipe. Simply highlight an existing known good recipe, click “Copy”, enter a Name for the new Recipe, then edit the specs in the “Edit Specifications” window that comes up.



1. The example recipe to the left shows one specification called OD. The OD specification has been applied to all of the measurements listed below it. To see what the specification is, click once on OD or any of the measurements below it and the specification will show up on the right side of the window. To modify the specification double click on the specification or any of the measurements under it to bring up the spec edit window. For example, double click on “OD” or “A-Axis” in the example window will both bring up the same “Add/Edit Specification” window shown in step 6.

2. Modify the Specification Limits and click on “OK”.  
 UST (Upper Spec Tolerance)  
 UWT/UDT (Upper Warning/Deadband Tolerance)  
 Nominal/Target  
 LWT/LDB (Lower Warning/Deadband Tolerance)  
 LST (Lower Spec Tolerance).

Note: If “Symmetrical Tolerance” is checked, you only need to fill in nominal & the upper limits. If “Use Warning Tolerances” is checked, it enables the yellow Warning/Deadband limits.



The measurements listed in the “Selected Measurements” window will have this spec applied to them. You can also choose any of the measurements in the lower “Available Measurements” window. If you start from a “Template” or by copying an existing known good recipe, the correct measurements are usually already selected and you only need to change the specification limits on the left side of the window.

### Working with Recipes via a “Recipe” tab in the main interface

If your Total Vu software has been set up with a “Custom Window”, you may have Tabs along the top of it. Often, we set up a tab called “Recipe”. It can look something like this:

Basic | Max/Min | Spec Entry/Recipe Creation | Advanced

**Create a NEW Recipe OD Only**      **Create a NEW Recipe OD & Ovality**

Upper Spec Limit **NO SPECS**      Upper Limit **NO SPECS**  
 Upper Warning Limit **NO SPECS**      Warning Limit **NO SPECS**  
 Nominal **NO SPECS**  
 Lower Warning Limit **NO SPECS**  
 Lower Spec Limit **NO SPECS**

**Save as New Recipe**  
**Temporarily Use The New Specs (Recipe will revert back to original specs on Total Vu restart)**  
**Save over Existing Recipe**

**Help with creating a new recipe**

1. Select an "OD Only" or "OD Ovality" template
2. Modify the Specification Limits
3. Select one of the three options to the left

The Recipe Tab allows you to modify currently loaded recipes by changing the specs and then:

1. Temporarily save the specs to the currently loaded recipe until Total Vu restarts.
2. Save the specs permanently to the currently loaded recipe
3. Save the specs to a NEW recipe, leaving the existing recipe you started with alone.

The idea is that when a recipe is loaded, the specification limits will populate. You can start by loading a recipe the usual way, or click one of the buttons to load a master recipe to start with. The recipe must already contain specifications on the measurements you wish the new recipe to apply to, so in this example, if you want a recipe with specs on only OD, start with a recipe that already has specs on ONLY OD. Likewise, if you want the new recipe to contain specs on OD & OVALITY, start with a recipe that contains specs on both OD & Ovality.

Modify the specs, paying attention to how they appear (Absolute or Relative). You must enter the new spec in the same format. For example, if the spec is “Relative” it will show up as .1 Nominal, Upper Spec of .001, Lower Spec of .001. The same spec in “Absolute” mode would show up as .1 Nominal, Upper Spec of .101, Lower Spec of .999.

## Notes on Recipes...

### *The fastest, and easiest way, to create a recipe...*

Copy a known good recipe & edit the specifications OR use the “Recipe” tab if you have one on the main display.

### *Modifying recipe permissions (delete, copy, create, etc...)*

See [“Working with Recipes Via the “Recipe” button on the main display”](#)

### *Templates*

A master template can be created to speed up the recipe creation process. The template can be called upon as a starting point every time a recipe is created. In most cases, once the template is created, all one needs to do is modify the specification limits when a recipe is created. This is very similar to copying a known good recipe and then simply modifying the spec limits.

### *Subfolders*

Subfolders may be created to assist in recipe management. Simply rt. click in the “Recipe Configuration” window in “Full Configuration” and select “New Sub-Folder”. To remove a subfolder, simply empty it of all recipes. The next time Total Vu starts, the folder will be removed.

### *Remote Recipe Storage*

Recipes can be stored on a server and accessed by multiple lines. The only caveat is that the measurement names must be the same across all Total Vu systems accessing the recipes (multiple folders can be set up on the server to accommodate multiple Total Vu configurations with different measurement names). Two basic set up options exist for this type of recipe management.

1. The PC running Total Vu can directly access the remote recipes. Specify the remote folder path in the recipe configuration window in “Full Configuration”. This solution has several inherent problems: 1) Recipe edits on one of the production lines get reflected to all production lines; 2) Recipes are inaccessible when the network is down; and 3) Recipes are inaccessible when the server is down.
2. The safest way to use a network location for recipes is to use the action called *Recipes: Download From Folder*. When executed, the machine’s recipes are backed up and then replaced with those from the designated folder on the server machine. With this setup, recipe edits are confined to the local production machine (but they are over ridden when the network recipes are downloaded again). Additionally, if the network or server is down, the production machine can still use its current, and most recent, set of recipes. At least one PC running Total Vu must communicate directly with the remote directory, as in instance 1 listed above, but this can be an engineer’s PC at a desk. That is the only place a recipe will be able to be created.

Setting up the system for “Recipes: Download from Folder”...

First, “Back up” the system before modifying any settings. See “Backing up a configuration”.

When executed, the “Recipes: Download From Folder” action performs the following steps in the specified order:

1. Verify the specified “download from” folder exists. If not, the action is aborted.
2. A backup of the existing recipes is created and put in a folder called SpecLimitsN, where N is the next available number making the folder name unique.
3. The recipe files from the "download from" folder are copied to the local SpecLimits folder.
4. If currently scanning/measuring, scanning is stopped.
5. Active recipes are noted to be re-loaded (see step #9)
6. All recipes are unloaded.
7. Existing recipes are deleted.
8. The new recipes are created from the downloaded files. Any references to recipes are re-established (attributes, actions, etc.)
9. Previously active recipes (noted in step # 5) are re-loaded if they still exist in the new downloaded set of recipes.
10. Scanning/measurements are started.
11. Total Vu displays are updated to reflect the new recipes.

Typically, an installation of Total Vu on an engineer’s desktop/laptop PC is set up for recipe creation.

Items to keep in mind regarding the “Recipes: Download from Folder” action:

For each unique Total Vu set up, a unique remote folder will be required. For example, there may be 10 extrusion lines using three axis micrometers and 4 using dual axis micrometers. This will require 2 remote recipe folders. The reason is that the measurement names must be the same on the Total Vu system and in the remote recipes. A line running with a 3 axis gauge may have an “A”, “B”, and “C” measurement, where the lines with a dual axis gauge will have a “X” and “Y” measurement.

For each unique Total Vu set up, a unique Total Vu installation will be required on the PC dedicated to recipe creation. If a recipe for a 3 axis gauge system is to be created, than a 3 axis configuration must be used to create it. This can be done in one of two ways:

1. Install Total Vu twice, each installation in its own directory. Each installation runs a particular set up for recipe creation.
2. Install Total Vu once, and have multiple “restore” files. Restore the configuration for which you want to create the recipe.

In any case, the installation being used to create, modify, delete, or copy recipes in the remote folder must be set up to access the remote folder directly via the recipe configuration window in “Full Configuration”. Follow these steps to get the Recipe modification system up and running:

1. Back up the system that is on line and running



2. Install Total Vu on the engineer's PC and Restore the on line configuration.
3. Delete the "Recipe: Download from folder" action.
4. Delete all recipes.
5. After deleting the local recipes that were downloaded when Total Vu started, Go to the "File" drop down menu in the "Recipe" configuration window in "Full Configuration" and select Remote Folder. Specify the location of the remote folder.
6. Restart Total Vu.
7. Verify that you can modify the recipes in the remote folder.
8. "Back Up" the configuration and put it in a safe place. This is the configuration to restore on any PC that will be used to create recipes for this type of line.

## Backing Up and Restoring Configurations

Just like Windows, “Restore Points” are created every time you exit “full Configuration” and are stored in the “restore points” folder where Total Vu is installed. These are, for all practical purposes, the same as a “Back Up” file described below. See “[Restoring a Configuration](#)” for an explanation on how to use the “Restore Point” to revert back to a previous configuration.

### Overview

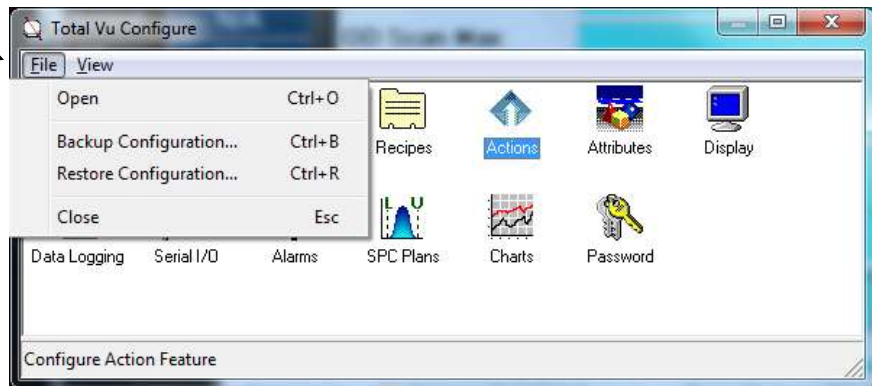
There are several ways to access the “Back Up” and “Restore” features in Total Vu.

1. In the main program window, under the “Configuration” or “Total Vu” drop down menu, you can select “Backup” or “Restore Configuration”.



*(If the Configure drop down menu is not available, you may need to go into “Full Configuration”, Double Click on the “Display icon”, under the “Options” tab, uncheck “Hide Main Menu”, then exit out of full configuration.)*

2. In the “Full Configuration” window, under the “File” drop down menu, select Backup or Restore configuration.
3. With the Full Configuration window open & active press Ctrl+B or Ctrl+R.



### Backing Up a Configuration

When a configuration is backed up, a zipped file is created with all the pertinent files to recreate the particular set up. You will be prompted to save the .zip file to a location of your choosing. Since Total Vu creates “Restore Points”, which in essence are backup files, it is not necessary to back up your configuration before attempting to modify several settings unless you want to give the back up a specific file name to make it easy to locate the correct file at a later time. In this fashion, you can return to the original configuration quickly and easily if the system does not perform as desired after modifying the configuration.

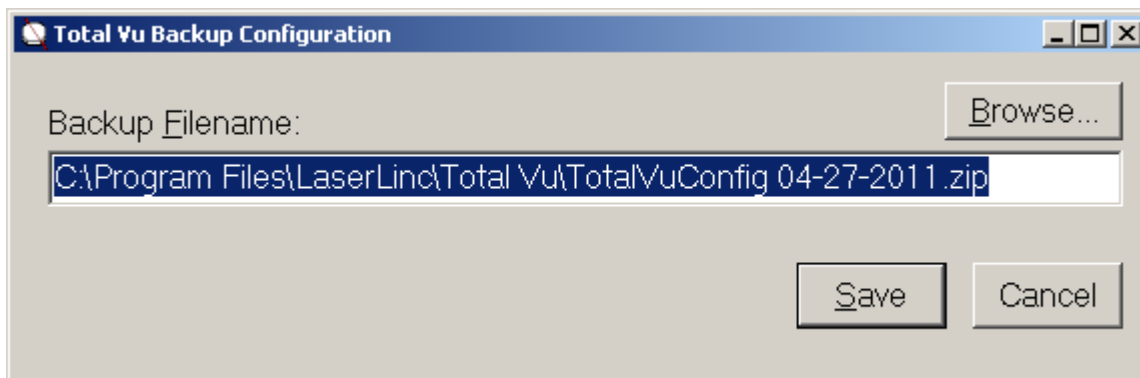
The backup .zip file contains the current:

1. Recipes
2. Calibrations
3. Windows, interface, data logging, reporting, SPC, etc... configurations
4. Any other files pertinent to the current set up.

**NOTE:** Any saved data is NOT backed up, such as SPC reports, Raw Data, Flaw Reports, etc...

In essence, you can load Total Vu on any PC, then “Restore” one of the .zip back up files and the system will look and act exactly like the system that the back up was created on.

To create the Backup, select “Backup Configuration” from the “Configure” or “Total Vu” drop down menu. The following window will appear.



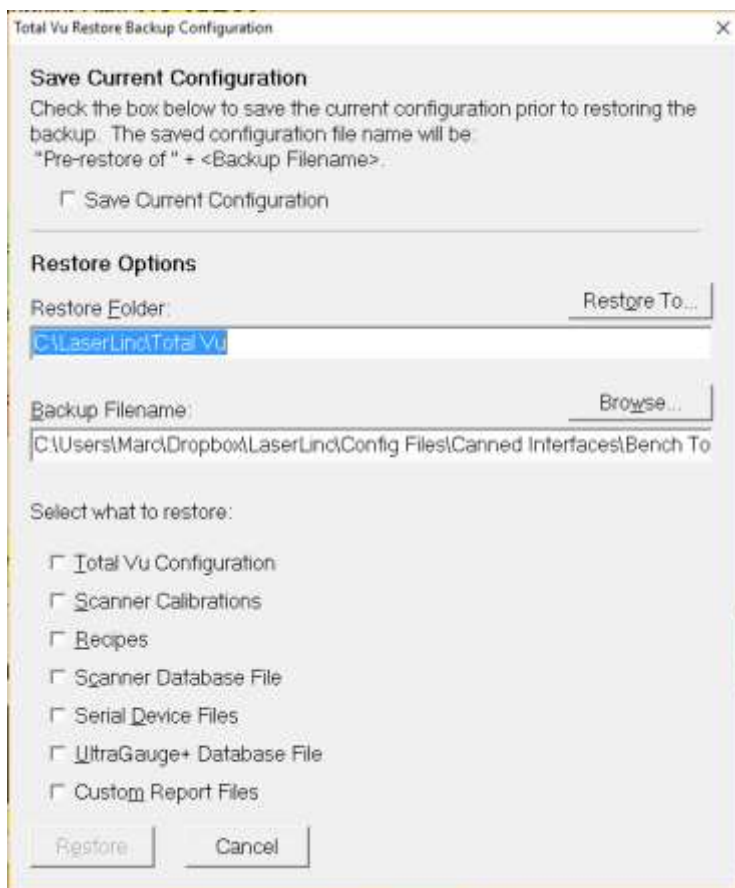
You can select “Browse” to tell the system where to put the backup file. You can type in any file name you like for the file. When you’re ready, click on “Save” to create the backup file.

## Restoring a Configuration

Once a backup file has been created, you can use it to restore the same configuration on other PC's at a later date, or on the same PC if the software gets corrupted or modified. If you are restoring a configuration from one system onto a new or different system, you'll need to make sure the gauges are similar enough to work in the same configuration. For example, both gauges should be 2 axis, or both should be 3 axis. It will take a bit of work to convert a 3 axis gauge set up to work with a 2 axis gauge, although it can be done.

To restore the configuration, Start Total Vu and select "Restore Configuration".

The following screen will appear.



Check the box at the top to save the existing configuration in case something goes wrong or you want to revert back to what is currently in place.

The “Restore Folder” is where Total Vu is installed on the system being restored. If the software was installed in the default directory, which it usually is, then the path will already be filled in correctly. To change the path, click on the “Restore To” button.

The “Backup Filename:” field is the path to the .zip file that was created using the Backup function. Use the “Browse” button to point Total Vu to the backup .zip file you wish to restore.

Under “Select what to restore” you may or may not want all items checked, and you may or may not see all the same items as above depending on what options are available in your system. To simply restore the software to a previous state, it is likely the only option you will need to check is “Total Vu Configuration”

1. **Total Vu Configuration** – Restores the main configuration/framework/displays/settings etc... Buttons, Windows, Scanners, measurements, SPC and data collection set up, Control and I/O set up, etc... The new system will look just like the system that was backed up after restoring the “Total Vu Configuration”
2. **Scanner Calibrations** – Deletes any current scanner calibrations from the system and restores any scanner calibration files that were in place at the time of the backup. These files are specific to the micrometer. If it has been a long time since the backup was created, or if a new gauge is in place, you do not need to restore the scanner calibrations as you’ll need to recalibrate anyway.
3. **Recipes** – If the recipes are stored locally, this will erase any existing recipes on the system being restored and replace them with any recipes that were in place at the time the backup was created. If many recipes have been added on the system that the restore is taking place on, you may not want to restore the recipes, rather, leave the existing recipes alone and intact. If the system is set up to download recipes from a network location on start up, you do not need to restore the recipes, as the system will download them on start up...
4. **Scanner Database file** – Not usually required. *DO NOT REPLACE THE SCANNER DATABASE FILE IF THE GAUGE WAS PURCHASED OR SERVICED AFTER THE ORIGINAL SYSTEM WAS BACKED UP.* This file contains information on gauges to improve accuracy. If your gauge was manufactured after this file was created, the necessary information will not be in the file. You can contact LaserLinc for the most recent version of this file.
5. **Serial Device Files** – Not usually required unless there are components on the system that communicate via RS232, or if you are using the Profile Vu-Linear or Profile Vu-Rotational (PVL or PVR) systems.

6. **Ultragauged+ Database file** – If you are working with a newer system than that which the backup was created on, there is no need to restore this file.
7. **Custom Report Files** –if you are utilizing customized reports to bring several different sources of data into one excel file, than you may want to restore this file as well.

Click on the “Restore” Button to finish the process. Total Vu will shut down. You will need to restart Total Vu. See next page...

### IMPORTANT: after the restore process...

1. Make sure you have the correct serial numbers of the micrometer and/or Netlinc devices under “Scanners” in “Full Configuration” (if required, see [“my scanner serial number is not recognized”](#) in the FAQ section)
2. Calibrate the micrometer, or make a calibration active.
3. Under the Options tab in the Display icon in full configuration:
  - a. Lock Display Sizes, Positions, Etc... if desired.
  - b. Check “Hide Main Menu Items” if desired.
  - c. Make sure the password is still in place if desired.
4. If the new system is running a different type of laser micrometer scanning at different scan rates, adjust the measurement averaging appropriately.

## Maintenance

### Keeping the Windows Clean

Laser scanning micrometers are optical measurement devices. Any debris on the windows of the gauge will affect the measurements. A simple visual inspection of the windows is all that is required to determine if cleaning is necessary. If red light is seen on the window, it is the laser lighting up dust or debris on the glass. Little or no red light should be seen on the windows after cleaning. Compressed air, isopropyl or ethyl alcohol, Windex, Acetone (use Q-tip as the Acetone will degrade the gaskets), lens cleaners, etc., can be used to clean the windows. Be extremely careful not to scratch the window. If wiping, always wipe along the length of the window, not back and forth the short way across the glass as this could cause a scratch which would appear to the gauge as a part in the field. Wipe once, and then turn the swab. Never "scrub". If the windows are scratched or permanently coated, they need to be replaced. Contact LaserLinc in this case.

### Calibration Verification

Verifying the calibration could be considered maintenance. See "[Calibration vs. Calibration Verification](#)" earlier in this guide.

### Calibration

Calibration may be considered a maintenance item. See "[Calibration](#)" earlier in this guide.

### Putting a different, new or serviced scanner back on line

LaserLinc carefully aligns the optics of each micrometer when it is first manufactured and when the gauge comes in for service. Once aligned, the field of view is mapped out, creating a unique set of linearization coefficients for each micrometer. Total Vu software knows which set of coefficients to use based on the serial number of the gauge which is entered under "Scanners" in "Full Configuration". The correct serial number MUST be in place or significant losses in accuracy could result. The links below will download the latest files which contain the linearization coefficients for your scanner. These files MUST replace the old files on your system and Total Vu software must be re-started. The new or reinstalled scanner must then be re-calibrated to obtain accurate measurements.

Get the updated files here:

<http://public.laserlinc.com/TLAserX22.ini>

<http://public.laserlinc.com/TLAserX22AF.zip>

Do not unzip the TLAserX22.AF file, simply copy the downloaded files into the Total Vu installation directory typically found in one of three locations:

For 32 or 64 bit systems: C:\LaserLinc\Total Vu

For 32 bit systems: C:\Program Files\LaserLinc\Total Vu

For 64 bit systems: C:\Program Files (X86)\LaserLinc\Total Vu

### *Installing a replacement/temporary scanner:*

1. Exit Total Vu software & POWER DOWN the PC (LaserLinc micrometers are hot swappable, but care must be taken if the PC is not powered down).
2. Install the replacement scanner & reboot the PC.
3. Download & Copy the new TLAserX22.ini and TLAserX22AF.zip files over the existing files which should reside in the Total Vu program folder.
4. Start Total Vu software.
5. In Total Vu, go to "Full Configuration" and double click on the "Scanners" icon. Double click on the icon for your scanner and click on the "Manufacturer/Type" tab. Enter the correct serial number for the gauge now attached to the system. Answer "Yes" when asked if you are sure you want to put the new serial number into effect.
6. Calibrate the scanner. See "[Calibration](#)".

### *Reinstalling a repaired scanner*

1. Exit Total Vu software & POWER DOWN the PC.
2. Install the repaired scanner & reboot the PC.
3. Download and copy the new TLAserX22.ini and TLAserX22AF.zip files over the existing files which should reside in the Total Vu program folder (Usually 'C:\Program Files\LaserLinc\Total Vu')
4. Start Total Vu software.
5. In Total Vu, go to "Full Configuration" and double click on the "Scanners" icon. Double click on the icon for your scanner and click on the "Manufacturer/Type" tab. Enter the correct serial number for the gauge now attached to the system. Answer "Yes" when asked if you are sure you want to put the new serial number into effect.
6. Calibrate the scanner. See "[Calibration](#)".

### *Adding an additional Scanner*

1. Exit Total Vu software, POWER DOWN & UNPLUG the PC.
2. Install the scanner and related components & reboot. (Cable, PCI card, etc.)
3. Copy the new TLAserX22.ini and TLAserX22AF.zip files over the existing files which should reside in the Total Vu program folder (Usually 'C:\Program Files\LaserLinc\Total Vu')
4. Start Total Vu software.
5. In Total Vu, go to "Full Configuration" and double click on the "Scanners" icon. Double click on the "Add Scanner" icon and follow through with the wizard.
6. Calibrate the scanner. See "[Calibration](#)".
7. Your new scanner is now ready to use. Create Measurements, etc. as needed using the wizards in Total Vu.



## Troubleshooting and Problem Resolution

### First Steps...

1. Make sure the windows of the gauge are clean! If you can see red light on the window, that's usually the laser beam reflecting off debris on the window.
2. Make sure there is nothing but the part in the path of the laser scan (this includes "hairs" from q-tips, etc...)
3. Make sure all cables are securely plugged in.
4. Restart Total Vu software.
5. Restart the PC.

### What next...

1. Place a business card very close to and in front of each of the windows on the gauge, you should see a red line. If not, the motor may not be spinning, the laser diode may have failed, or power may not be making it to the gauge. Check the cables, and then call LaserLinc.
2. Check the "Status" window by clicking on the "Status" button. If there is no status button, you'll have to turn it on. Go into "[Full Configuration](#)" and double click on the "Display" icon. Scroll through the list of buttons on the left until you find the "Status (System)" and check the box next to it. Click "Apply Changes" and OK. You may not be able to see the button and that's OK. Exit out of the configuration windows and press "F4" on the keyboard (this is the same as clicking the "Status" button).
  - a. By selecting a gauge in the drop down list, you can choose which gauge the status window pertains to.
  - b. For a Dual Axis micrometer, the display should read "EDGES: 2,2" with nothing in the gauge and a scan rate (75, 100, 150, 300, 400, 600, 1600, or 4000 all +/-10 scans, but consistent). When a part is placed in the gauge, edges should change to 4,4. These values should be relatively stable. If they are not, or if you see values other than 2 or 4 after Edges, this could indicate a problem. For a 3 axis micrometer, edges will read 2,2,2 or 4,4,4. Each number corresponds to a single axis on the gauge. If there is no part in the gauge and edges read 2,2,4, that indicates that one axis sees more edges than it is supposed to, maybe there is a water spot on the window?
3. Call LaserLinc at 888-707-4852 for Technical Support between the hours of 8 and 5 Eastern Time.
4. You can try replacing the micrometer with a different one to see if the system works with the new micrometer. See "[Installing a temporary micrometer](#)" in the maintenance section.

## Frequently Asked Questions...

### Installation, Restoring, & Backing Up

#### *How do I set or change the IP addresses for my PC or LaserLinc devices that connect via the network port?*

We recommend setting your PC (Host) IP address for the port the LaserLinc gear will use to 10.10.10.1. Then set the address for all of the LaserLinc devices to 10.10.10.XXX where XXX is a number between 1 and 250. Each device must have its own unique IP address.

1. **PC IP Address** is changed under "Network & Sharing" in Windows. Click on the "Local Area Connection" for the port the LaserLinc gear will use. Select Properties & double click on the "Internet Protocol Version 4 (TCP/IPv4)". Select "Use the following IP address". Enter 10.10.10.1 for the IP address and 255.255.255.0 for the Subnet Mask.
2. **For the LaserMicrometer/NetLinc:** Go into "System Configuration", double click "Scanners", double click your scanner (Triton312n usually), click on the "NetLinc" tab, make sure the NetLinc Serial Number is correct (it should match the serial number on the bottom of the NetLinc box that the gauge is plugged into) select the PC/Host IP address in the drop down menu (10.10.10.1, click refresh if you do not see it), enter 10.10.10.50 in the "Device IP Address".
3. **For the NetI/O:** Go into "System Configuration", double click "NetIO", double click your NetIO device (NetIOCTR12-1 usually), click on the "Properties" tab, make sure the NetIO serial Number is correct (it should match the serial number on the bottom of the NetIO breakout box) select the PC/Host IP address in the drop down menu (10.10.10.1, click refresh if you do not see it), enter 10.10.10.100 in the "Device IP Address".
4. **For the DSP (Ultrasonics):** The DSP comes with a factory assigned IP address (10.10.10.10). You can change it in the field or let us know ahead of time and we'll deliver it with your chosen IP address. To use the default IP address, go into "Engineering" or "System Configuration", double click "UltraGauge DSPs", Double Click "UG+ DSP", Click on the "Network" tab, select the PC/Host IP address in the drop down menu (10.10.10.1, click refresh if you do not see it), enter 10.10.10.10 in the "Device IP Address". **To use a different IP address for the DSP,** first make sure the current PC IP Address is appropriate for the DSP (PC/host: 10.10.10.1, DSP 10.10.10.10). Go into "System/Full Configuration", double click "UltraGauge DSPs", Double Click "UG+ DSP", Click on the "DSP Configuration" tab, click "Get Configuration" and modify the "DSP IP Address" field to be your chosen IP address. Click Store Configuration. Reboot the DSP (With the button on the screen or simply unplug it for a moment). You'll then need to go back and set the PC/Host IP address to the same range, along with any other LaserLinc devices on the system, including the DSP. It's also a good idea to make note of the new IP address on the DSP itself.

### *How do I put a new PC in place of an existing PC running Total Vu?*

1. Back up your existing configuration (See "[Backing up your Configuration](#)"), or find the last back up you created with your configuration. There is also a "Restore Points" folder in more recent versions of Total Vu. You can use one of these "Restore Points" for the new installation.
2. See "[An Installation Overview](#)" for instructions on installing the software on a new PC.
3. Start Total Vu
4. Restore your back up configuration. See "[Restoring a Configuration](#)"

### *Where is the Total Vu installation directory?*

If the software was installed using all the default settings, Total Vu is installed in one of two locations:

Either operating system: C:\LaserLinc\Total Vu.

For older versions/installations:

32 bit operating systems: C:\Program Files\LaserLinc\Total Vu.

64 bit operating systems: C:\Program Files (x86)\LaserLinc\Total Vu.

### *How can I save all my settings, in case something happens to the system?*

See "[Backing up and Restoring configurations](#)"

### *Something happened to my system and it's all screwed up...*

No problem. Restore your most recent back up. See "[Backing up and Restoring Configurations](#)" This can be either a backup you intentionally created when the system was set up and working the way you like, or it can be one of the backups/restore points that are automatically created every time you exit "Full Configuration". These restore points can be found in the "Restore Points" folder in the Total Vu installation directory.

### *Can I use my existing system to help get a second system up and running quickly?*

Yes!

1. Back up your existing good configuration (See "[Backing up your Configuration](#)")
2. See "[An Installation Overview](#)" for instructions on installing the software on a new PC.
3. Start Total Vu
4. Restore your back up configuration. See "[Restoring a Configuration](#)"

See "[Putting a different, new or serviced scanner back on line](#)".

### *How do I upgrade my version of Total Vu software?*

Contact LaserLinc. We will need to know your current version of software, enabled options, and operating system to assist you in upgrading to a more recent version.

### *How do I upgrade my version of Instacal software?*

Instacal software is the software needed to make the I/O portion of your LaserLinc system work correctly. If your current version works, there is no need to upgrade as it will have no effect on how Total Vu performs. However, in some cases, you may need a newer version of Instacal. For example, with a new operating system, or if any options are added to the existing system such as Analog Input, Analog Output, Control or Digital I/O.

1. When upgrading any systems with these options, you must do the following:
2. Uninstall “InstaCal” or “Measurement Computing InstaCal” via “Add/Remove Programs” in Windows Control Panel.
3. Use Windows Search to find and remove any instances of the file cbw32.dll.
4. Download and install the most recent version of Instacal from:  
<http://public.laserlinc.com/InstaCalSetupCD.exe>.
5. This is a self-extracting executable. Run it to extract the files that comprise the InstaCal installation program.
6. Run the extracted Setup.exe
7. Reboot if requested
8. Run InstaCal and let it identify all of the installed USB and PCI hardware. **IMPORTANT:** never use the Add Board... menu item - all of the I/O cards are Plug-and-Play. If it’s not playing, there’s something else wrong like it isn’t plugged in.
9. Now you can install the new version of the Total Vu software.

## Reports and Data

### *Where’s my saved data?*

1. If you are having problems logging to a network drive with Win7 systems, try turning off the UAC or User Account Controls.
2. What data are you looking for? Total Vu can generate the following reports:
  - a. **Raw Data** (See Data Logging, TV Manual Page 138) For example, one measurement every time a button is pressed, or every foot, or every second... The file path for the raw data being collected can be found at:  
Full Configuration → Data Logging → double click on the logging configuration icon of interest → File tab.  
If no specific file path is in place the data will go to the “Data Logging” folder in the Total Vu installation folder typically found at:

For 32 or 64 bit systems: C:\LaserLinc\Total Vu

For 32 bit systems: C:\Program Files\LaserLinc\Total Vu

For 64 bit systems: C:\Program Files (X86)\LaserLinc\Total Vu

To change where the data is going simply change the “Base File Name”

- If “Auto File Naming” is being used to generate file names, click on the “Advanced” button under the File tab and select the “File Naming” tab. Insert the path at the beginning of the auto file name.
- b. **SPC** (See SPC in the TV Manual Page 195). SPC data is stored where the “Generate SPC Report” action tells it to go. The action may be named SPC Report, SPC: Generate Report, etc... Look in the “Actions” icon in Full Configuration, double click on the Action to generate the SPC report, click on the “Auto File Name” tab to see the path.
  - c. **Flaw Report** – The “Generate Flaw Report” action will point to the file saving location. The action may be named “Flaw Report”, “Flaw: Generate Report”, etc... Look in the “Actions” icon in Full Configuration, double click on the Action to generate the Flaw report, click on the “Auto File Name” tab to see the path.
  - d. **Custom Reports** – The “Generate Custom Report” action will point to the file saving location. The action may be named Custom Report, Generate Custom Report, etc... Look in the “Actions” icon in Full Configuration, double click on the Action to generate the Custom Report, click on the “Auto File Name” tab.
3. There are “Actions” to Start a new file, Generate a Report, Clear, Start & Stop taking data for each of these reports. If these Actions are not being executed at the correct times the reports will not generate. Make sure Actions for Start, Stop, and Generate report are all configured and being executed at the correct times.

#### *How do I change how much data I’m collecting?*

Go into Full Configuration, double click on the “Data Logging” icon, Double Click on the Logging Configuration icon (may be named differently), and under the “Measurements” tab you can select exactly what you want logged and at the bottom, how often.

#### *How do I create or modify a Custom Report?*

You can purchase Custom Reports as an optional component of Total Vu. It also comes with the Advanced SPC component. It allows you to open an excel file, type in the labels for the information you want in the report, and then simply map the appropriate data in from Total Vu. Total Vu will then use your excel file as a template to store data when a “Customized Report” is generated.

The steps involved are:

- ✓ Determine what information will be in the report .
- ✓ Make sure the data is available in Total Vu.
- ✓ Open a blank excel file and type in any information that will be on every report and never changed (your company name & logo for example)
- ✓ Type in the labels for data (Nominal, Upper spec, Avg, St. Dev, Date, Operator, etc... )
- ✓ Map the data from Total Vu into the excel file.
- ✓ Create a "Generate Custom Report" action and a button to execute it. (see ["Modifying the appearance & Functionality of your custom interface"](#))

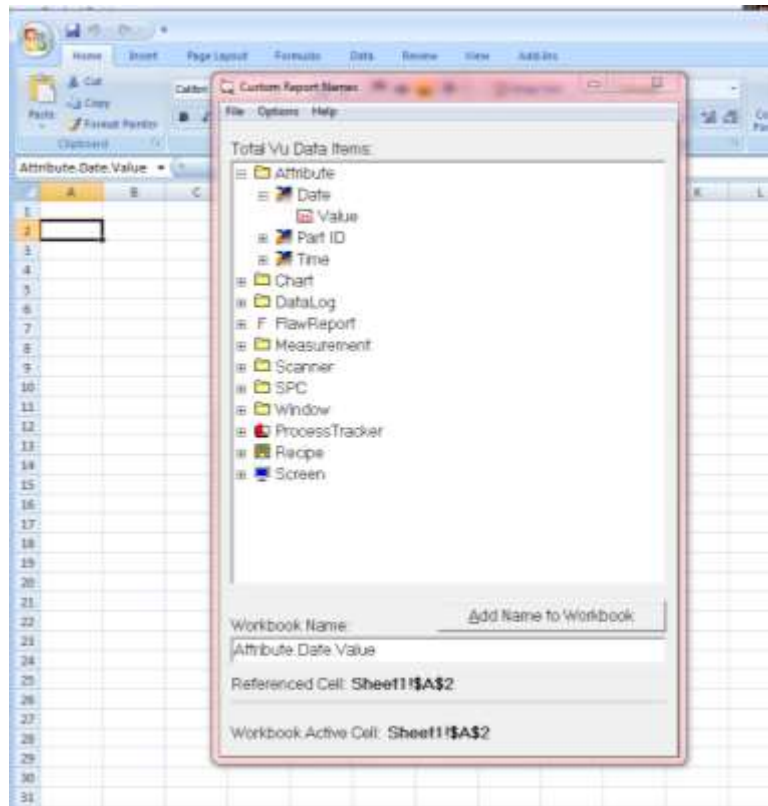
In the "Total Vu", or "Window", drop down menu in the main program window select "Custom Report". A dialog window will ask if you want to open an existing Excel file or start from scratch. (Note: existing files are usually in the directory where TotalVu is installed, but can be placed anywhere, as long as the "Action" to "Generate Custom Report" points to the correct file location) There is nothing special about the excel files, they are not "templates", just regular xls or xlsx files. It is best to use the same version of excel that is on the PC with Total Vu to create the file. If you've already started a file, open it. If not, start from scratch. Once the file is open, simply type in your field labels and other information you want in every report

To map the data from Total Vu to Excel, select an excel cell, then select the item you want to map over from Total Vu in the "Custom Reports" window, and then click add. You can double check that the item has been added by selecting the cell and looking up at the top of the sheet in the "Name Box" (small field to the left of the field that shows what you've typed into the cell, usually says A1 or D5, depending on the cell you have selected).

Cell A2 is selected. (click once on the cell to select it, double click it to add text. Only click ONCE to select it and map the data.)

Attribute.Date.Value appears in the "Name Box".

By selecting the cell, then selecting the "Value" under "Date" in "Attributes", and then clicking on "Add Name to Workbook" the date was mapped into the A2 Cell.



To remove information that has been mapped into Excel, use the "names" feature in excel. You cannot simply delete information that was mapped over. In Word 2007 the "Name Manager" is found under the "Formulas" tab. Open Name Manager, Highlight the Name you want to delete, and then click the Delete button in the window.

Click File, then Exit in the "Custom Report Names" window to close the dialog and save the excel file. Save the template to a location you will remember, typically the Total Vu directory.

## Inputs, Outputs, and Alarms

### *Why isn't the I/O working?*

Digital I/O is a software option that may be purchased with Total Vu. When purchased, LaserLinc supplies an I/O breakout box and enables the I/O option in the Total Vu software. Within the software, "Digital Inputs" now appear in full configuration. You may also assign outputs under "Alarms". The I/O device is manufactured by Measurement & Computing. It comes with a software program called Instacal. Instacal must be installed on the same PC as Total Vu. Once installed, the I/O device can be plugged in. After the I/O device is plugged in, Instacal must be run. Instacal will automatically find the device and ask you if you want to make it active. Click OK and close Instacal. You will not need to run Instacal again unless the I/O device is changed, moved (different USB port), or more are added.

### Troubleshooting I/O

1. In the device manager of windows, under "Universal Serial Bus Controllers", right click on each of the "USB Root Hub" and select "Properties". Under the "Power Management" tab make sure the options "Allow the computer to turn off this device to save power" is NOT checked.
2. Is I/O enabled in the software? Go to the "About" drop down list in the main program window and look to see if I/O is listed as one of the available options. If it is, go to step 2. If not, call LaserLinc to enable this option in the software.
3. Go into "Full Configuration" and see if there is an icon labeled "Digital Inputs". If yes, go to step 3. If not, close Total Vu and run Instacal. Instacal should either find the device or show it in the tree. Close Instacal and Restart Total Vu. The Digital Inputs Icon should now be available.
4. Double click the "Digital Inputs" icon. Are there several icons in the window that opens (input 1, input 2, etc...)? If yes, go to step 4. If not, run Instacal, make sure the device is listed in the tree.
5. If there are inputs listed, than Total Vu recognizes that there is an I/O device attached. If everything in the software is configured correctly, it should work. Try rebooting the PC. If this does not solve the problem, you may need to check the configuration of the inputs and alarms. See the Total Vu manual or call LaserLinc for assistance.

### *Debouncing a foot pedal*

In Instacal, Right Click on the board in the tree and select configure. Enable (check) the "AC Filter Setting" for the corresponding digital Input to be debounced. This turns on the internal debouncing for the selected switch.

### *Triggering a Digital Input with a dry contact relay*

Power must be supplied to the I/O device. Turn on the dip switch for the input to supply 5V. The user supplied dry contact relay needs to connect the rt. Pin to ground, this will trigger the input.

## Modifying the Appearance and Functionality of your Custom Configuration

### *Custom Displays*

Video tutorial located here:

[http://public.laserlinc.com/docs/Tutorial\\_Videos/015\\_Custom\\_Displays.webm](http://public.laserlinc.com/docs/Tutorial_Videos/015_Custom_Displays.webm)

### *Buttons...*

The button's colors, captions, sizes, positions, and actions they execute can all be modified via the "Display" icon in "Full Configuration". Under the "Buttons" tab, Click on "Add Button" or highlight an existing button you wish to modify and then modify the parameters on the right half of the window. By clicking "Apply Changes" you will immediately see the effect of your change. Simply check or uncheck the box next to the button names to show or hide them. The button will execute the action listed in the "Action to Execute" drop down list. All of the actions that have been created will be available in this drop down list.

### *How do I know exactly what a button does?*

Go into "Full Configuration" and double click on the "Display" icon. Under the "Buttons" tab, in the list of buttons, highlight the button in question. The "Action to Execute" field will show what action the button is executing. Now, find this action in the list of actions found in the "Actions" icon in "Full Configuration". By double clicking on the Action, you will see exactly how it is configured and what it is doing.

### *How do I add a button or change what a button does?*

Go into "Full Configuration" and double click on the "Display" icon. Under the "Buttons" tab, in the list of buttons, highlight the button in question or click on "Add Button". The "Action to Execute" field will show what action the button is executing. Either select a new action, or, if the "Action to Execute" is a macro action (an action that contains several user defined actions within it), you can find this action in the list of actions found in the "Actions" icon in "Full Configuration" and add or delete actions to within it.

### *How do I add an Action and associate it to a button?*

In "Full Configuration" double click on the "Actions" icon. Next double click on the "Add Action" icon. In the "Action Name" enter a name for your action, for example, "Reset Encoder 1" or "Start Data Collection", or "Generate Custom Report", etc. In the "New Action" field, select the action you would like. There are many. Take some time to look through the list to see what your options are. Notice that one of the first actions listed is "Action Macro: Execute List of Actions". If required, you can set up several actions, for example, "Reset SPC", "Start New Log File", "Reset Measurements", etc. Then create an "Action Macro" and put all of the previously mentioned actions in it. This allows you to create one button that, when pressed, executes the "Macro Action" that in turn, executes all the actions in the macro action list. This is a very powerful tool!



When an action is selected in the "New Action" field, other tabs or check boxes may appear depending on the action. Pay close attention to these items as they have to do with how the action will react when executed.

Once you've create the Action, see "How do I add a button or change what a button does?".

**Trend charts aren't quite right?**

To add a chart – Select the "Window" drop down menu and click on "New Window", then "trend Chart". If you want to modify an existing trend chart and there is no password on the system, you can Rt. Click on the trend chart to access its properties. If there is a password in place, than you'll have to go into "Full Configuration" and double click on the "Charts" icon.

If you don't see your part being trended on the chart, check the dimensions and scaling of the chart, then check to see what measurement the chart is supposed to be trending.

**How can I add a window?**

A window is added by selecting the "window" drop down menu on the main program window.



Select "New Window".

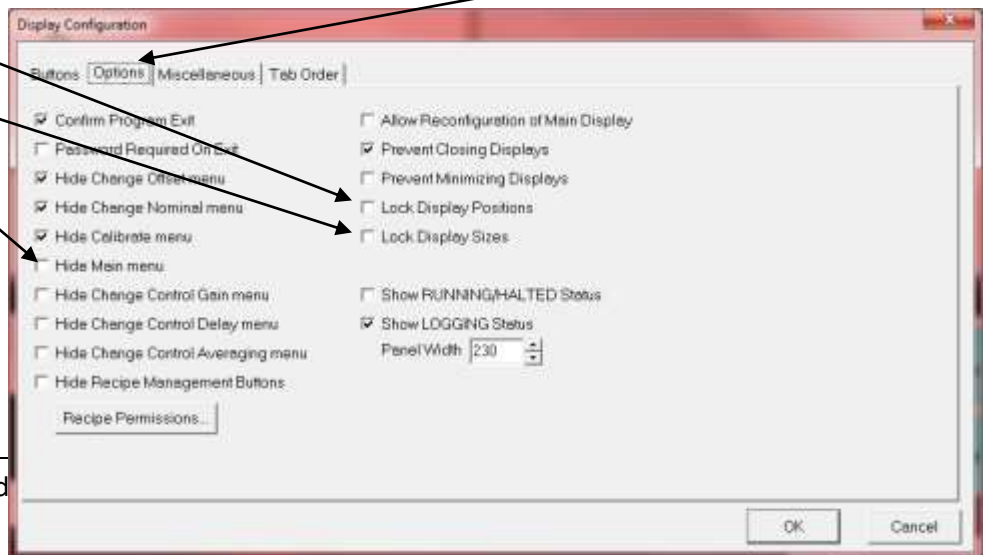
If the "window" drop down list is absent, it has most likely been disabled as a security precaution. You can re-enable it to add a window, then re-disable it when finished. Press "Ctrl-C" or the "Engineering" button to enter "Full Configuration". Double Click on the "Display" icon. Select the "Options" tab.

Uncheck these items:

Lock Display Positions

Lock Display Sizes

Hide Main Menu



Remember to re-check these items when finished!

Press OK and exit back out to the main screen of Total Vu. You'll now see the "Window" drop down list. Select it, then select "New Window". Select the type of window you would like and follow through with the window configuration.

You can place windows on top of other windows if you like. You can Rt. Click on the bar at the top of the window and select "Always On Top".

#### *How can I change the appearance of windows (charts, measurement windows, etc...)*

The appearance of windows and the information within can be locked in place by placing a password on the system and, under the "Display" icon in "Full Configuration", their positions and sizes can be locked and closing or minimizing windows can be prevented. For full access to windows, disable the password on the system and uncheck the items under the "Options" tab in the display settings which lock windows in place.

Windows can be moved simply by dragging them to the appropriate location.

Windows can be resized either by grabbing the edges and resizing the window, or, for windows with measurements, you can Right Click on the window and select "Font Size", "Window Configuration", or "Properties"

For Custom Windows (usually they have tabs along the top), Right click on the window to open the window configuration mode. Contact LaserLinc for a brief tutorial or see the video here:

[http://public.laserlinc.com/docs/Tutorial\\_Videos/015\\_Custom\\_Displays.webm](http://public.laserlinc.com/docs/Tutorial_Videos/015_Custom_Displays.webm)

Some of the windows, like charts (Trend Chart, Histogram, and X-Bar & R), can be configured from within Full Configuration. However, the easiest way to reconfigure (change how they look or add or remove information from them) the windows is to follow these steps:

1. Remove the Password on the system. Go into Full Configuration -> Password -> Enter 400X22 in the Master Password field to remove the password.
2. Unlock the display windows. Go into Full Configuration -> Display -> Options tab. Uncheck Prevent Closing and Minimizing Displays and Lock Display Positions and Sizes.
3. Exit full Configuration and Rt. Click on any of the windows to open up the configuration dialogs for those windows. Notice, in a window which is displaying values, you will get different options available when you Rt. Click on the value vs. in the outside area (usually gray area) of the window.

## Measurements

### *Why aren't the measurements accurate?*

Laser micrometers need to be calibrated with calibration standards (pins) of known sizes. See the "Calibration" section for more on calibration. If the windows have debris of any kind on them, it could be interfering with the measurements, make sure the windows are clean and scratch free.

If you think something is wrong with the micrometer, go through the calibration process and follow these steps:

1. Clean windows (can they see red light on the window - laser reflecting off something...)
2. Clean the calibration pins.
3. If there is a V-Block involved "hairs" from a q-tip stuck on the block can protrude into the field of view... Make sure nothing is in the laser path except the calibration pin.
4. Calibrate the gauge. Make sure it is on a stable surface and the pin is mounted to the gauge so it will not move even .001" from its position. A V-Block works, or a calibration fixture, etc.. After measuring the final calibration pin during the calibration process, leave this last pin in place and see what it reads when the calibration process is finished. Make sure the pin is not moved between the time it was used for calibration and measured after calibration.

### *How accurate are the measurements?*

A measurement may be as accurate as  $\pm 0.00002$  or  $\pm 0.005$ , depending on the size of the micrometer and how well each of the sources of error have been dealt with. It is probably more appropriate to speak of the "accuracy of your system" rather than the "accuracy of the micrometer". Larger micrometers are inherently less accurate. A micrometer with a 1" field of view is typically twice as accurate as a micrometer with a 2" field of view.

Accuracy is the sum total of several parameters including repeatability, linearity, positional error, resolution, cleanliness, temperature, part presentation, calibration standard accuracy, and how gently the micrometer is treated in general. Many of the specification for your particular gauge can be found on line at [www.laserlinc.com](http://www.laserlinc.com).

#### ➤ Repeatability:

If an unchanging standard is placed in the micrometer and measured over and over, how repeatable will the measurements be?

This is largely a function of how many scans are averaged together for the measurement. We put two spec's in print. One is for a single scan measurement, or no averaging, and is  $\pm 0.0001$  for the 330 & 312 micrometers. The second spec is for a 2 second average (600 scans from the 330, 1200 scans from the 312) and is  $\pm 0.000005$ .

There are many possibilities in between. The repeatability will get much better very fast as you start averaging more than one scan, but the returns diminish as you continue to increase the number of scans averaged together. In other words, 1 scan gives you  $\pm 0.0001$ , 5 scans may give you  $\pm 0.00006$ , 25 scans may give you  $\pm 0.00003$  and so on...

➤ Linearity:

If you calibrate the micrometer with a .1" standard and a 1" standard, how accurate will it be at .5"? This is linearity. Total Vu software allows you to all but eliminate the linearity specification by calibrating with multiple calibration standards. Any micrometer is most accurate at the size it was calibrated at, so calibrate the micrometer with standards that are the same size as nominal for you parts and you'll eliminate this source of error.

➤ Positional Error:

If you calibrate the micrometer in one area of the field of view and measure your part in another area, you will encounter positional error. It is important to remember that positional error does not have a linear relationship with distance moved from calibration point. Defects in the optics may give you a "hotspot" in the gauge where the positional error is more pronounced. By using roller guides to adjust the position of the product to match that of the calibration standards, or by using a V-block off line to calibrate and measure your parts, you can all but eliminate this source of error. Also, as you get closer to the edges of the field of view, this error can become more pronounced. The "positional Error" specification applies, for example, within the center 1" of a micrometer with a field of view slightly larger than 1"

➤ Calibration Standard Error:

Obviously, the accuracy of the calibration standards needs to be taken into consideration. How well the calibration standards are positioned in the gauge during calibration will also affect the accuracy. For calibration with a bench top system and a V-Block, simply lay the calibration standards in the V-block. For systems without V-blocks, use the LaserLinc supplied calibration fixture for best results.

➤ Cleanliness:

Dirty calibration standards or dust, debris, watermarks, grease, etc... on the windows during calibration or measurement will adversely affect the measurement accuracy.

➤ Temperature:

Run the gauge for 45 minutes before calibration and before measuring parts to bring the internal electronics up to a consistent temperature for best results.

➤ Part Presentation:

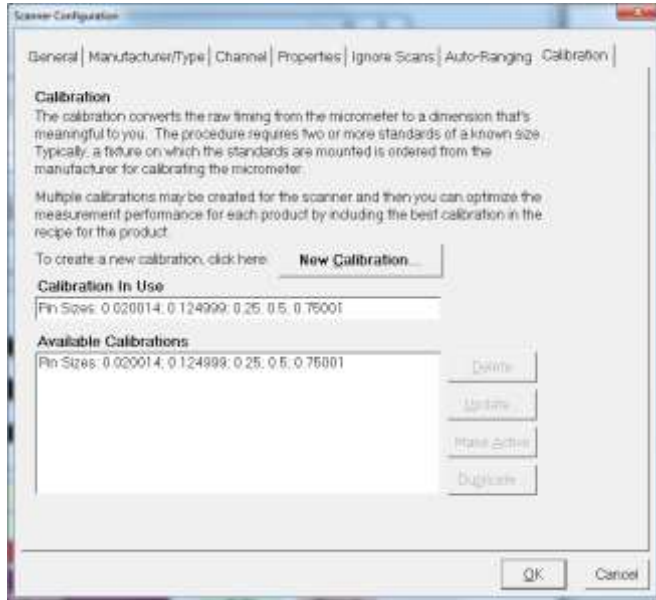
The part must be at the same angle the calibration standards were at when the gauge was calibrated. This is usually a right angle to the laser field.

All of the above items will play into the accuracy of a "System". Some of the above factors will improve accuracy significantly, some only a little. For the best possible accuracy, you can deal with each source of error to reduce its overall effect on the system. Also remember that in a moving application, like an extrusion line, measurements are based on a number of scans averaged together, all of which will be taken at different locations on the moving part.

*How can I measure in both Metric and English units?*

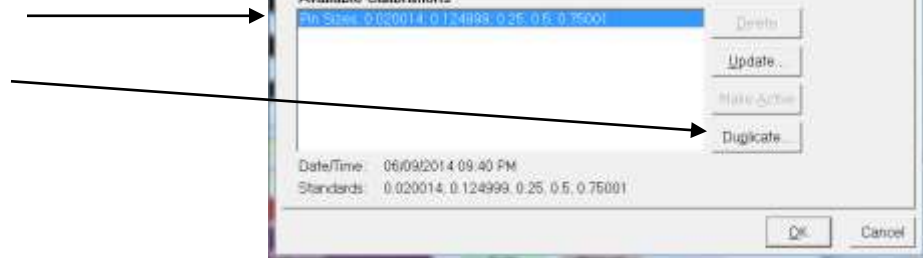
Go through the calibration process (see “[Calibration](#)” in this guide) once using English units of measure, then "Duplicate" the calibration via the “Duplicate” button into Metric units. Now create actions that load the calibration you desire. Then create the buttons to execute those actions. Follow these steps

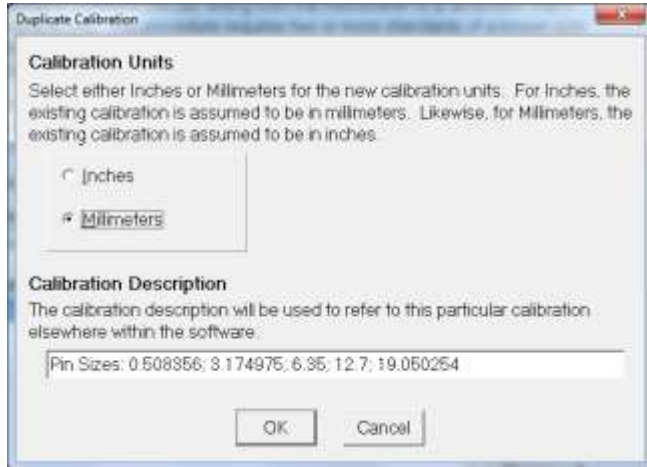
1. Calibrate the micrometer in inches.



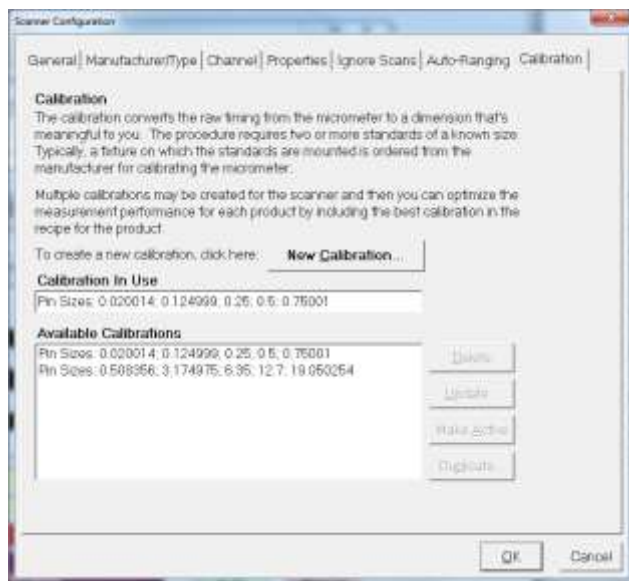
2. Duplicate the inches calibration or Calibrate the micrometer in mm.

To Duplicate the calibration, highlight it in the list of "Available Calibrations", then click "Duplicate"





Click the units of measure for the duplicate calibration and "OK"



You will end up with two calibrations in the list of calibrations.

3. Create an "Action" called "Measurement: Metric". If this Action is already in place, simply double click it and skip steps a-c.
  - a. Full Configuration -> Actions -> Double click on "Add Action"
  - b. Type in "Measurement: Metric" in the "Action Name" field
  - c. Select "Scanner: Load Calibration" in the "New Action" field.
  - d. Under the "Scanner" tab that appears, select your scanner on the left, and the metric calibration on the right. click OK to finish up.
4. Create an "Action" called "Measurement: Inches". If this Action is already in place, simply double click it and skip steps a-c.
  - a. Full Configuration -> Actions -> Double click on "Add Action"
  - b. Type in "Measurement: Inches" in the "Action Name" field
  - c. Select "Scanner: Load Calibration" in the "New Action" field.
  - d. Under the "Scanner" tab that appears, select your scanner on the left, and the Inches calibration on the right.

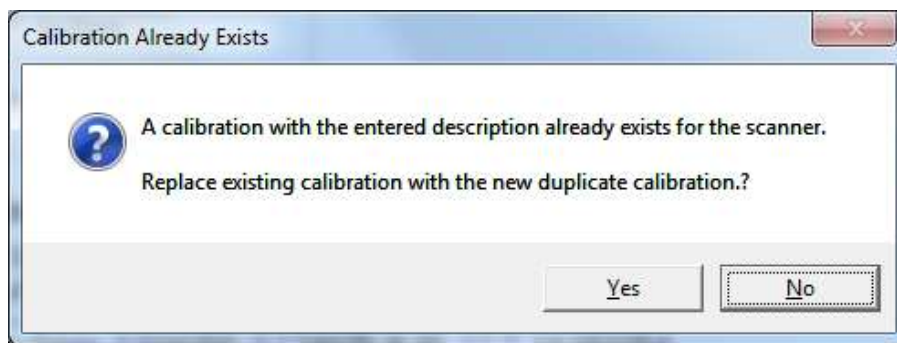
5. Create a button on the display called "MM", associate the "Measurement: Metric" action to it. (See FAQ "[Buttons](#)") – Skip this step if there is already a "Metric" button on the display.
6. Create a button on the display called "Inches", associate the "Calibration: Load Inches" action to it. – Skip this step if there is already a "Inches" button on the display.

In addition, if you like, you can create two "set resolution" actions. "Resolution: Metric Units" set's the resolution to X.XX to be used with the Metric Calibration, "Resolution: English Units" sets the resolution to X.XXXX to be used with the inches calibration. Once in place, Double clicking these actions will allow you to change the default resolution.

Finally, create two "Macro: Execute a List of Actions" actions. One called "B: Metric" which contains both the "Calibration: Metric" and the "Resolution: Metric Units" actions. The other called Inches... Associate these actions to the buttons on the main interface.

**When "Recalibrating", highlight the calibration in the list of available calibrations and click on "Update".** Update either one of the calibrations, then "Duplicate it" to the other unit of measure. You will be

asked the following, click Yes.



**IF you make a new calibration, you will need to change the calibrations the "Load Calibration" actions point to.**

Go to Full Configuration -> Actions. Find the Actions called "Measurement: inches" and "Measurement: Metric". One at a time, double click on them and make sure that the second tab points to the correct calibration.

#### *How can I change the resolution of my measurements?*

To change the resolution of your measurements, double click on the "Measurements" icon in "Full Configuration".

1. Double click on the measurement whose resolution you want to change, click on the "Properties" tab, and then select the desired resolution in the drop down list.
2. OR... Hold down the CTL key and click on several measurements to highlight multiple measurements. Right click on any one of them. A menu will appear, select "General Properties". Select your desired resolution in the drop down list



3. OR... if you'll be switching back and forth often, create an Action for "Measurement: Set Resolution" and choose the resolution you desire. Then create a button to execute the action.

#### *How can I change the scan averaging for my measurements?*

To change the scan averaging of your measurements, double click on the "Measurements" icon in "Full Configuration".

1. Double click on the measurement whose averaging you want to change, click on the "Averaging" tab, and then enter the desired number of scans to average.
2. OR... Hold down the CTL key and click on several measurements to highlight multiple measurements. Right click on any one of them. A menu will appear, select "General Properties". Enter the desired number of scans to average.

You can affect the measurement update rate by changing the scan rate. If the micrometer scans at 300 scans per second and the "Scans to Average" is set to 10, you will get 30 measurements per second. HOWEVER, if the "Use Running Average" is checked next to the scan rate in the measurement settings, you will get 300 measurements per second no matter what the scan average is set to. In the example of a "scans to average" being set to 10 with a micrometer that scans at 300 scans per second, you will get 300 measurements per second, each one will be an average of the most recent scan plus the last 9 scans averaged into it. Increasing the number of scans you average together will improve the repeatability of the gauge, but also extend the length of time for each measurement. Contact LaserLinc for further clarification and estimates of repeatability at varying scan rates. Also see [How accurate are the measurements?](#)

#### *Micrometer Scan Rates:*

Scan rates listed are per axis, so a Triton330 scans 300 times per second in the A Axis, 300 times per second in the B Axis, and 300 times per second in the C Axis for a grand total of 900 scans per second, but we list it as 300 per second.

#### Prism Technology Micrometers:

TLAser122/TLAser222: 400 scans/second

TLAser122LE/TLAser222LE: 100 scans/second

Triton330: 300 scans/second

Triton330LE: 75 scans/second

Triton312: 600 scans/second

Triton312LE: 150 scans/second

#### Mirror Technology Micrometers:

Mirror based micrometers (130, 160, 1120, 230, 260, 2120, 331, 360) all scan at either 1600 or, if the high speed option is purchased with the micrometer, 4000 scans per second.



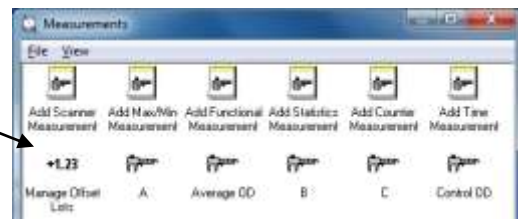
### How do I put an offset on the measurements?

Offsets can be placed on a measurement in the following ways, each of which is described below:

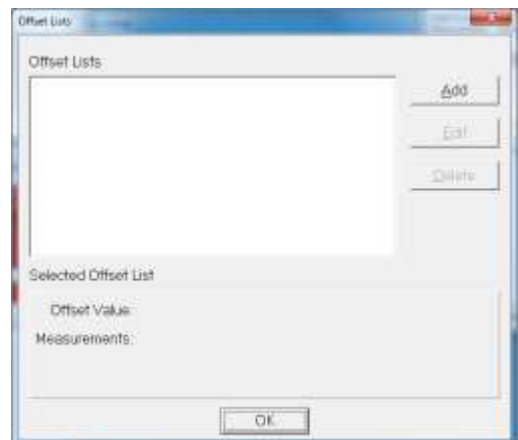
1. Rt. Click on the diameter in the measurement window and select "Change Offset".
2. Create a button that allows you to change the offset.
3. Place the offset in the recipe so every time the recipe is loaded the offset takes effect.

In most cases, when an offset is changed, the desired result is to change the offset on several measurements at once. For example, if you change the offset for the "Average OD" on a dual or three axis micrometer, you will probably want the individual axis to also show this offset. This can be automatically done by creating an "Offset List". If any of the measurements in the offset list are affected by an offset, they will all be set to the same offset. Follow these steps to create the offset list:

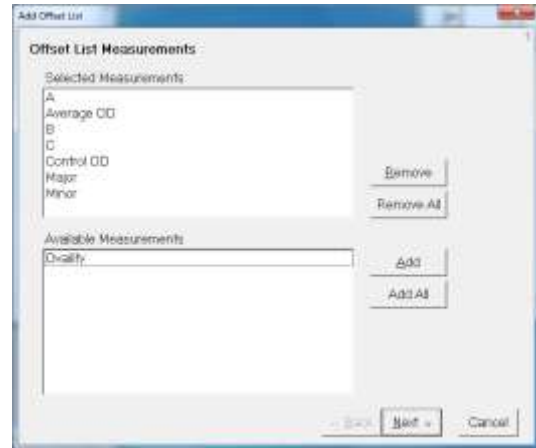
1. Go into "[Full Configuration](#)" and double click on the "Measurements" icon.
2. Double Click on the "Manage Offset Lists" icon



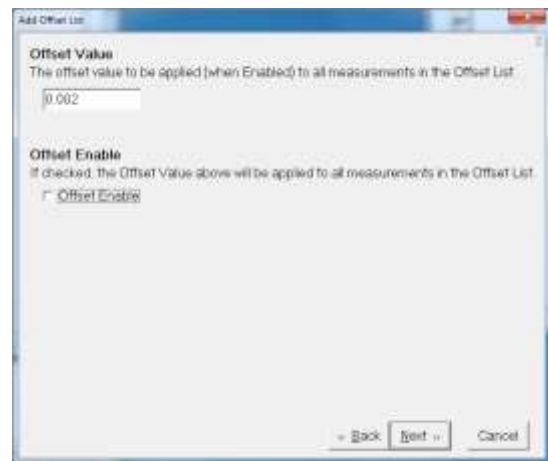
3. If Click on the "Add" button if there is nothing in the list. If there is something in the "Lists" field, click on "Edit" to double check which measurement are included in the list.



4. Select all of the "Diameter" measurements and click the "Add" button to add them to the list of "Selected Measurements" and click "Next".



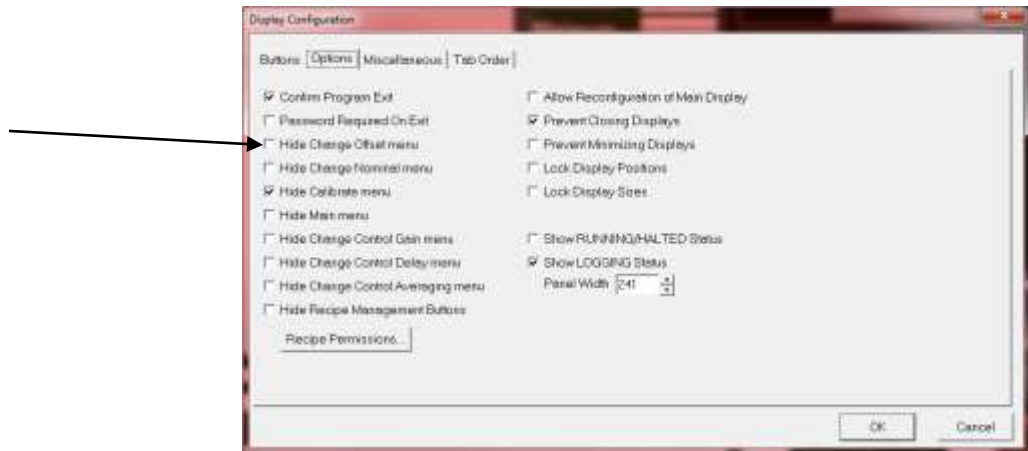
5. Enter a value for the offset (this can be anything at this point as it will not be used) and then UNCHECK "Offset Enable".



6. Enter a name for the Offset List and click "Finish".



In order for method 1 (Rt. click on the measurement) to work the "Hide Change Offset Menu" must NOT be checked. This option is found in "[Full Configuration](#)" -> "Display" -> "Options tab".

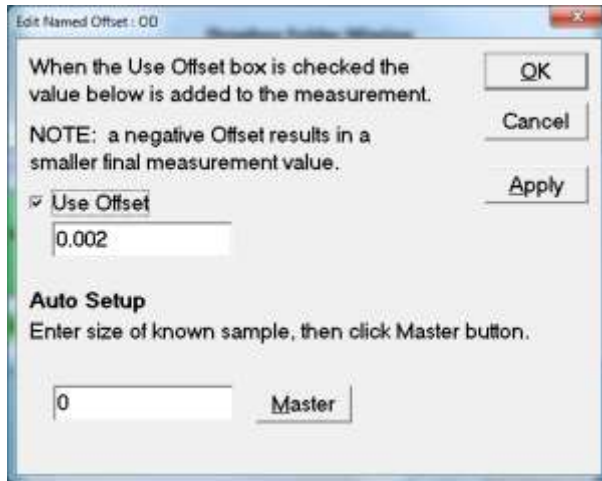


If this is unchecked, simply Rt. Click on the measurement of concern (anywhere in the field where the number is or on the number itself) and select "Change Offset"

To create a button that changes the offset do the following:

1. go to "Full Configuration" -> "Actions" -> double click on "Add Action".
2. Name the action "Measurement: Change Offset"
3. Select the "Measurement: Change Offset" action in the list
4. A second tab will show up. Click on it and select any one of the measurements in your "Measurement Offset List". Typically, select "Average OD".
5. Click OK and exit to Full Configuration.
6. Double Click on the "Display" icon.
7. Select "New Button" and name it. (typically "Change Offset")
8. In the "Action To Execute" drop down list select the "Measurement: Change Offset" action created earlier.
9. You should be able to see your button on the screen at this point. It will appear in the top left corner of the main program window. You can move it by changing the location values. You can name the button in the field on the right. You can change the color. Click Apply

The "Edit Offset" window will appear when the "Change Offset" button is pressed or when you right click on the measurement.



Check the "Use Offset" check box and enter the desired offset and then click Apply & OK.

If the "Master" button is used, the gauge will read what is currently in the field of view of the gauge and set the dimension to read whatever the field to the left of the "Master" button says.

To save offset values in the recipe, simply edit the recipe (See "[Working with Recipes](#)") and double click on "Measurement Settings", then on the measurement you would like to save the offset to. You will have to do this for each measurement you would like the offset applied to. The offset will be automatically removed when the recipe is unloaded.

## General FAQ's

### *My scanner serial number is not recognized by Total Vu.*

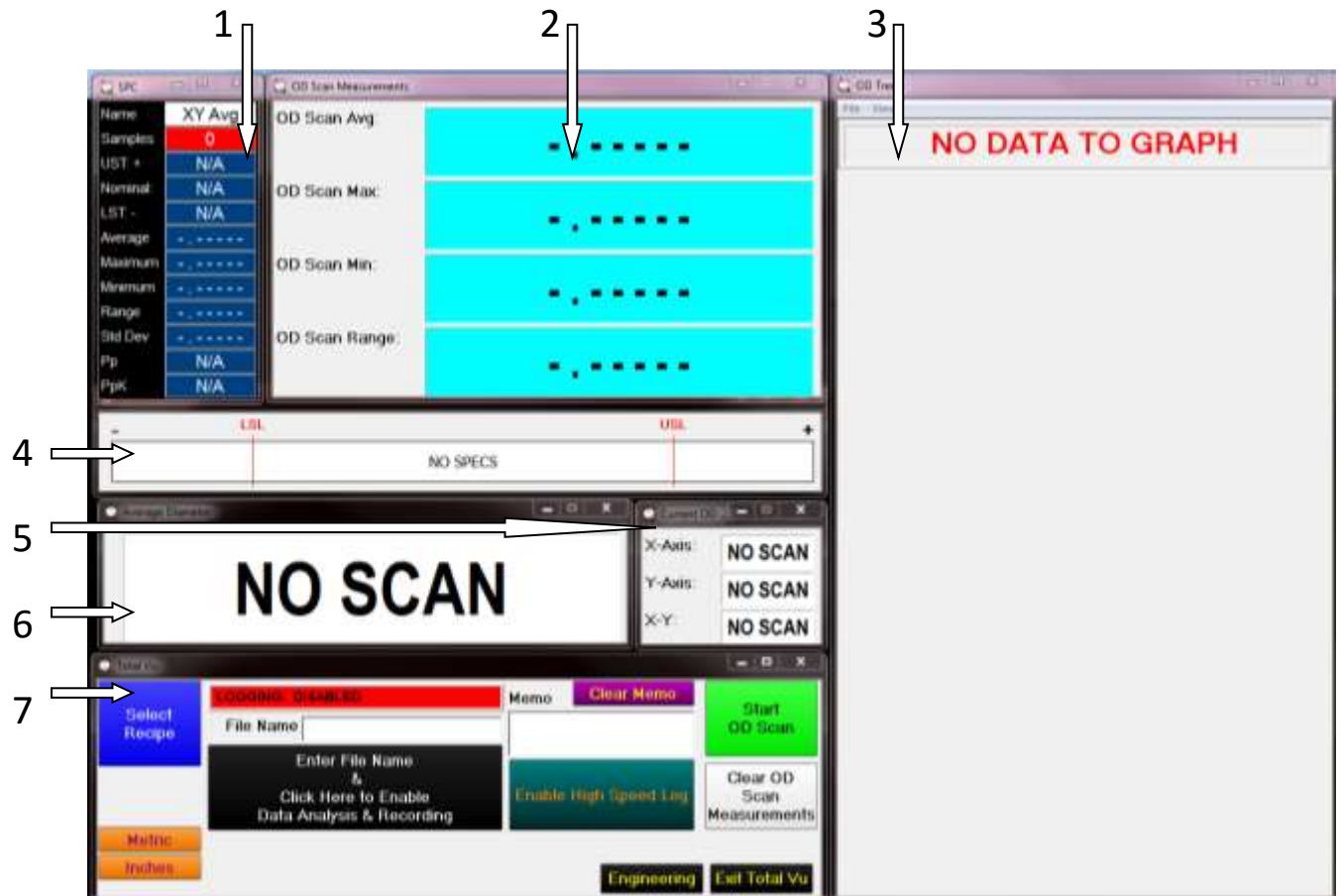
Did you enter the number correctly, with all 6 digits?

If so, get the latest TLAserX22.ini and TLAserX22AF.zip files. See "[Putting a different, new, or serviced scanner back on line](#)"

### *Why are my Speed and Length values wrong?*

If you've purchase the encoder option, you'll have an icon in "Full Configuration" called "Encoder". Double click on the "Encoder" icon to set the number of pulses per unit of measure. For example, it could be set to 1000 pulses per foot, or, if you want your encoder information in inches, it may be 85 or so pulses per inch... Increase or decrease the "Pulse" value to calibrate your encoder.

## A Typical Bench Top Measurement Interface without a Custom Window



The Total Vu interface consists of the “Main Program Window” (7), and any number of other windows which contain specific information in a desired format (1, 2, 3, 4, 5, & 6). When the main program window (7) is closed, the program closes. If the other windows are closed, they will have to be recreated next time Total Vu Starts. You can lock the display, see "[Security](#)"

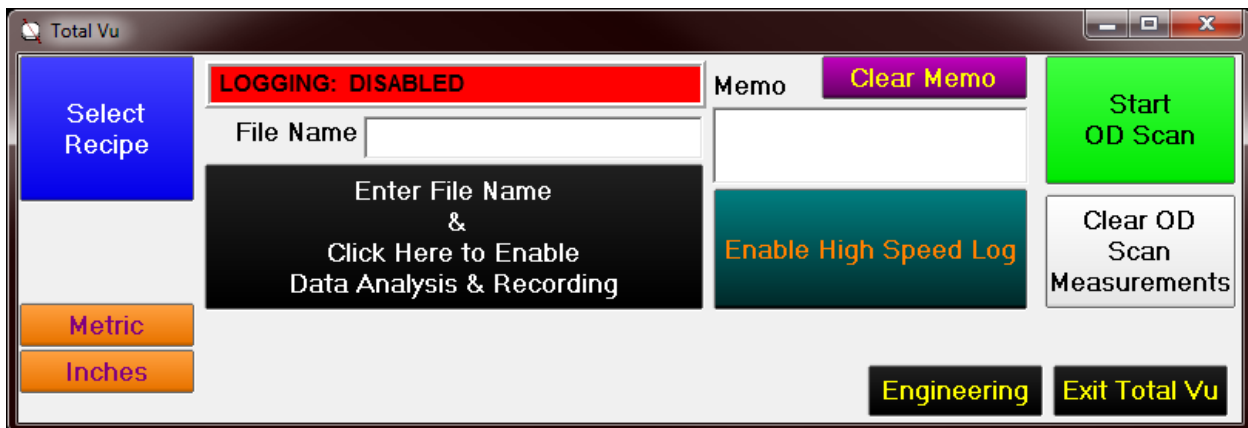
1. SPC window: Updates when a recipe is loaded and “Data Collection and Analysis” has been started. The “Samples” field indicates the on/off state of SPC by appearing Red or Green. Add samples to the SPC plan by pressing the “Record Values” button.
2. Measurement Window showing OD information over a “Scan” interval. Press “Start OD Scan” and “Stop OD Scan” to update these values. Press “Clear OD Scan Measurements” to clear the values.
3. Trend chart. The trend chart will automatically start updating when a part is in the gauge. It will auto scale itself unless a recipe is loaded. If a recipe is loaded, it will use the specification limits in the recipe to set the scale. The software has also been set up to clear and start the trend



chart when “Start OD Scan” is pressed. The trend chart will freeze when “Stop OD Scan” is pressed. It will resume on system restart, when the next part is placed in the gauge, or when “Clear OD Scan Measurements” is pressed.

4. Column Gauge. Not very useful unless a recipe is loaded... It is a quick visual indication as to which side of the specification the diameter falls on.
5. Measurement Window showing other available measurements.
6. Measurement Window showing the average diameter (=all axis added together/# of axis). When a part is in the gauge, this measurement will automatically start updating.
7. Main Program Window. Press the “Exit” button or close this window to close the program. When creating a program buttons can only be placed in this window. It can be maximized to fill the entire screen and other windows can be set to “Always on top” to make it appear that the entire screen is being used by Total Vu.

## The Main Program Window



Buttons can be placed in the main program window; they execute specific actions. For example, by pressing the “Exit Total Vu” button, you are executing the “Exit Total Vu” action. The “Enter File Name & Click Here to Enable Data Analysis & Recording” button executes a “Macro” action containing several actions. By creating multiple actions and associating them to buttons, you can design the main program window and create your custom interface. Adding windows with the appropriate information finishes off the interface.

Refer to the Total Vu manual or call us for more direction on setting up or modifying the interface.

### What the Buttons Do

**Select Recipe:** Executes the “B: Recipe - Load” action which opens the Recipe Selection Window. Allows the operator to load, create, copy, or delete a set of specifications associated to a product. Permissions

to edit the recipe can be set in “Full Configuration”. See the section of Recipes in this guide for more on this.

**Change Nominal:** Executes the “Change Nominal” Action. Shows up on the screen when a generic recipe is loaded (A +/- .005 for example). Executes the “Change Nominal” action associated to the OD measurements which brings up a window that allows you to change the nominal value for the currently loaded recipe. Helpful when trying to quickly resize the trend scale to get a product on screen. You will be prompted when exiting total Vu to save these changes, you may choose to or not to save them in the recipe.

**Exit Total Vu:** Executes the “B: Exit Total Vu” action which ends/closes the Total Vu program. Exit Total Vu with this button or by clicking on the "X" in the upper right corner of the main program window.

**Engineering:** Executes the “B: Engineering” action which opens the Full Configuration window. It is wise to put a password in place for this button. See "[Security](#)"

**Inches:** Executes the “B: Inches” action which changes the resolution of the measurements and show the measurements in Inches.

**Metric:** Executes the “B: Metric” action which changes the resolution of the measurements and show the measurements in MM.

**Enter File Name & Click Here...:** Executes the “B: Enable Data Analysis” macro action which in turn executes several actions. Ultimately, this button shows other buttons, accepts the file name input, opens a file to dump the raw data into (data logging), and then starts spc & data collection. SPC information is buffered until the “End Data Analysis & Generate Reports” button is pressed, at which time the buffered information is put in files and saved. See "[Where is my saved data](#)".

**Record Value:** Executes the “B: Record Values” macro action which ultimately adds any current values to SPC and the data log file.

**Clear All Data:** Executes the “B: Clear All Data” macro action which erases/clears out the currently open data logging file where data is being dumped and clears and resets SPC. You may use this if you’ve been collecting data for 5 minutes and realize you had made some sort of mistake; you could basically clear and restart the Data Analysis and Collection without reentering a new file name, generating bogus reports, etc...

**End Data Analysis & Generate Reports:** Executes the “B:End Data Analysis & Report” macro action which stops Raw Data collection and SPC as well as closes the data logging file, generates the SPC report, and, if you have the Advanced SPC or Customizable Reports option, an Excel file is also created with all of the above information within in a customizable report format.

**Start OD Scan:** Starts scanning and updating of the OD Scan Avg, Max, Min & Range. Trend Chart also clears and starts.

**Stop OD Scan:** Stops the OD Scan Avg measurement from updating, freezes the OD Scan Max, Min, & Range as well as the trend chart

**Clear OD Scan Measurements:** Clears the OD Scan measurements from the window.

**Enable High Speed Log:** Enables the “High Speed Logging Configuration”. When enabled, diameter is automatically and rapidly logged whenever a part enters the field of view. If a part is already in the field of view, press “Start” and “Stop” to take many diameter measurements within a given area on the part of interest. Disable the high speed log to prevent it from logging every time a part is placed in the micrometer. To change the logging rate see “[Reports & Data](#)”

### Operator Sequence of Events:

1. Press the “Recipe Selection” button to load a recipe containing spec limits for the product. Once loaded, numbers on the screen will show color based on in or out of spec conditions and the trend chart will be appropriately scaled for the part being run. If a recipe is not available you will need to create one. See “[Working with Recipes](#)”.
2. If data is to be collected, fill in the “File Name” field. This can be done manually or with a bar code scanner.
3. Parts are placed in the gauge. “Start & Stop OD Scan” can be used to scan areas or determine exact out of round conditions. Press “Record Values” to store the data in a CSV or Excel file, and to add the current values to SPC.

After the “Begin Data Analysis” button has been pressed, it will disappear and other buttons show up...



## Specifics

### *Memo*

Enter text in the “Memo Field” and it will be inserted in the logging file every time the “Record Values” button is pressed. The same text will continue to be inserted until it is changed or the “Clear Memo” button is pressed.

### *Scan Rates*

Laser Micrometers scan parts at a specific frequency. The 330 micrometer, for example, scans at 75 or 300 scans per second, depending on the model. Other scanners scan at different rates. The scan rate is fixed. However, you can change how many scans you average together for your measurements. The more scans you average together, the more repeatable they will be. See “How can I change the scan averaging for my measurements?” for more information regarding changing the scan rate. Talk to your friendly LaserLinc contact for more information on how scan averaging affects your application.

### *Measurements*

The measurements have been set up to be a running average of 25 scans. By using a “running average” the scan rate will determine the number of measurements per second; e.g. if the micrometer scans at 300 scans per second, you’ll get 300 measurements per second, each measurement is the current scan, plus the last 24 averaged into it.

The “OD Scan” and “Avg OD” measurements are exactly the same (in some cases, the OD Scan Avg may be set to fewer scans averaged). It’s the same measurement with two different names so we can use them each in different ways. If you were to display both measurements side by side, they will not be different unless you change the properties for either of the measurements.

The “OD Scan Avg” is the average of all “OD Scan” measurements from the time the “Start OD Scan” button is pressed until the “Stop OD Scan” button is pressed.

The “OD Scan Max” is the largest “OD Scan” measurement taken between the “Start OD Scan” and “Stop OD Scan” button presses.

The “OD Scan Min” is the smallest “OD Scan” measurement taken between the “Start OD Scan” and “Stop OD Scan” button presses.

The “OD Scan Range” is the difference between the “OD Scan Max” and “OD Scan Min” measurements.

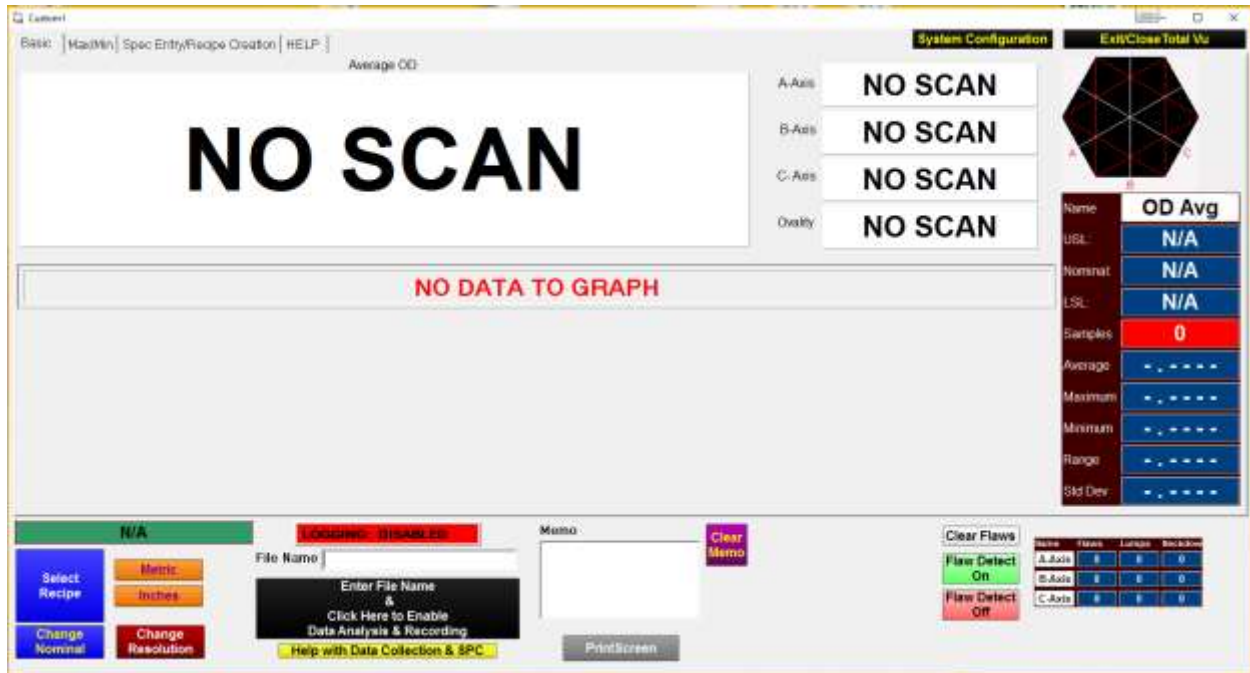
The values reported for the OD Scan measurements will depend on the speed at which the product is moved in the gauge. The slower the part is pulled/moved through the gauge the more likely you are to measure a true maximum or minimum point along the length of the part. Likewise, the lower the number of scans the “OD Scan” measurement is set to average, the less the speed will affect the

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measurement, but also, the less repeatable the measurement will be. These measurements are meant to be used for the following:

1. Scan the length of a part and pick up maximum and minimum diameters.
2. Scan a part that is being rotated in the gauge to pick up the parts true out of round characteristics, e.g., ovality or peak to peak measurements.

## A Typical Bench Top Measurement Interface with a Custom Window



In this case, the “Main Program Window” is minimized and rarely used. The main display consists of a “Custom Window” with tabs along the top. New tabs can be added to accommodate specific setups.

There are 5 areas of interest in the above example:

1. The Main window
  - a. Tabbed Section on the top half
  - b. Buttons on the bottom half
2. The Tabbed portion of the window (upper half) consists of 4 sections
  - a. Basic Tab
  - b. Max/Min Tab
  - c. Spec Entry/Recipe Creation Tab
  - d. Help Tab

### The buttons at the bottom of the window

Depending on the state of the system, some of the buttons may or may not be visible.

#### *Select Recipe*

As the name implies, this button is most commonly used to Load and Unload Recipes.

Potentially it can be used to Add, Copy, Edit, Delete and Rename Recipes (See “[Creating a new Recipe](#)” for more information on this)

The window that comes up will contain all of the recipes available in the system, as well as some Master and/or Generic recipes.

The Master Recipes, typically named, for example, “A Master OD Only Recipe” can be used as a source to create new recipes by copying them. It is not recommended to modify these recipes, only to use them as templates to create new recipes.

The generic recipes, typically named, for example, “A +/- .001” or “A Generic Recipe +/- .001” are special in that, when loaded, show the “Change Nominal” window to allow you to set your target/nominal value and the “Change Nominal” button so you can again change the nominal at any time.

Using one of these recipes as a template to create a new recipe will cause the new recipe to behave in the same manner.

### *Change Nominal*

This button only appears when “A Generic Recipe” is loaded. It allows the user to set the nominal value.

### *Metric & Inches*

Select “Metric” to load the “Metric” calibration.

This button executes the “B: Metric” Action which loads the Metric calibration and changes the resolution of the measurement. In order to work properly, the “Calibration: Metric” action must list the metric calibration. For more information, see [How can I measure in both Metric and English units?](#)

Inches does the same as Metric, but loads the Inches calibration. If new calibrations are put in place the “Calibration: Load English” and “Calibration: Load Metric” actions will need to be updated by double clicking on them and selecting the appropriate calibration to load when the corresponding button is pressed.

### *Change Resolution*

The resolution can be changed by pressing this button.

To set the default resolution to be displayed when Total Vu starts, modify the “Resolution: Startup” action under “Actions” in Full Configuration.

### *File Name*

Enter a name for the file to be created when collecting data.

### *Enter File Name & Click Here to Enable Data Analysis & Recording*

After entering a file name, click this button to enable data collection.

### *Record Value*

Appears after data collection has been started. Click to record any measurements that are currently displayed on the screen. This includes live measurements as well as any measurements currently visible on the Max/Min tab.

### *Clear All Data*

Erases data collected in the current session, allows you to start over.

### *End Data Analysis & Generate Reports*

Ends the current data collection session.

Your files can usually be found in one three places:

1. C:\Laserlinc\TotalVu\DataLogging
2. C:\Program Files\Laserlinc\TotalVu\DataLogging
3. C:\Program Files(x86)\Laserlinc\TotalVu\DataLogging

### *Print Screen*

Screen Capture saves the current window to a BMP file located in one of the three paths listed above.

### *Clear Memo*

Deletes anything in the "Memo" field

### *Clear Flaws*

Clears the current flaw count.

### *Flaw Detect On*

Turns on Flaw Detection

### *Flaw Detect Off*

Turns off Flaw Detection

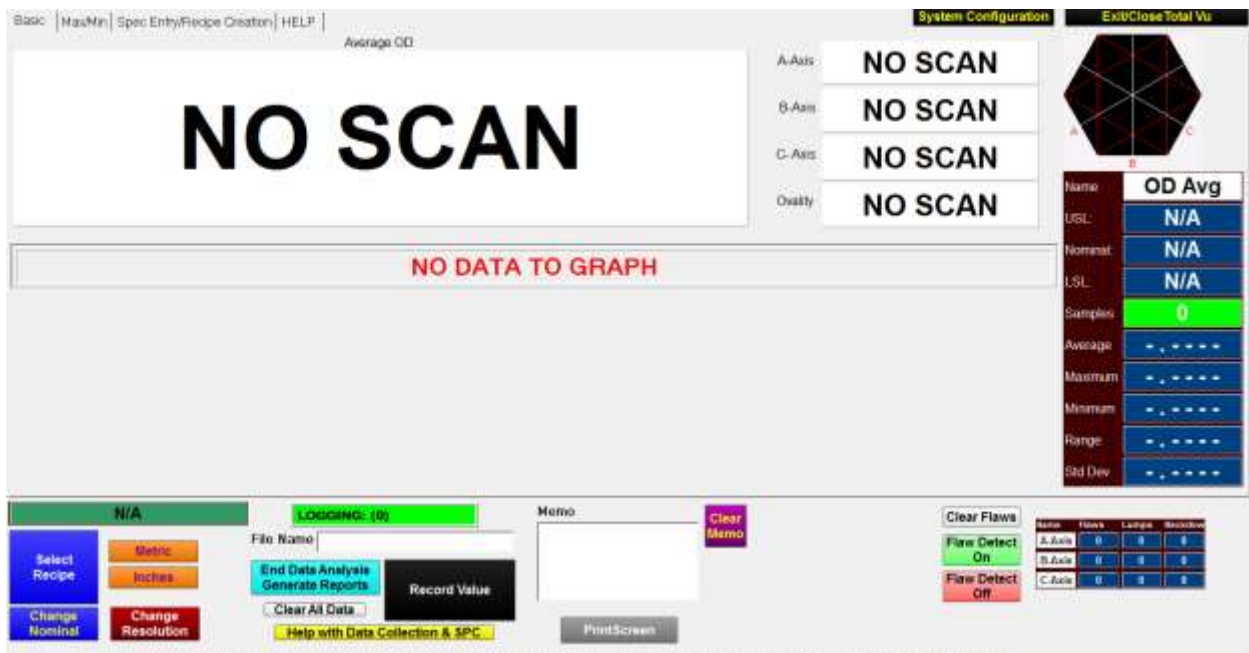
**A note on Flaw Detection:** Flaw detection is automatically enabled at system start up. A flaw is triggered when a specified number of scans in a row (in any one axis) exceed the spec limits, the count increments by one and a red triangle is put on the trend chart. The flaw detection parameters can be changed by going into Full Configuration, Double Clicking on Measurements, hold the Ctrl Key down while Left Clicking on the A-Axis, B-Axis, and C-Axis measurements (X-Axis and Y-Axis for a dual axis micrometer). Once they are all highlighted, Rt. Click on any one of them and select "Flaw Detection". You can change



the number of scans in a row that need to fall out of spec in the bottom left corner of this window under “Flaw Averaging.

### The Basic Tab

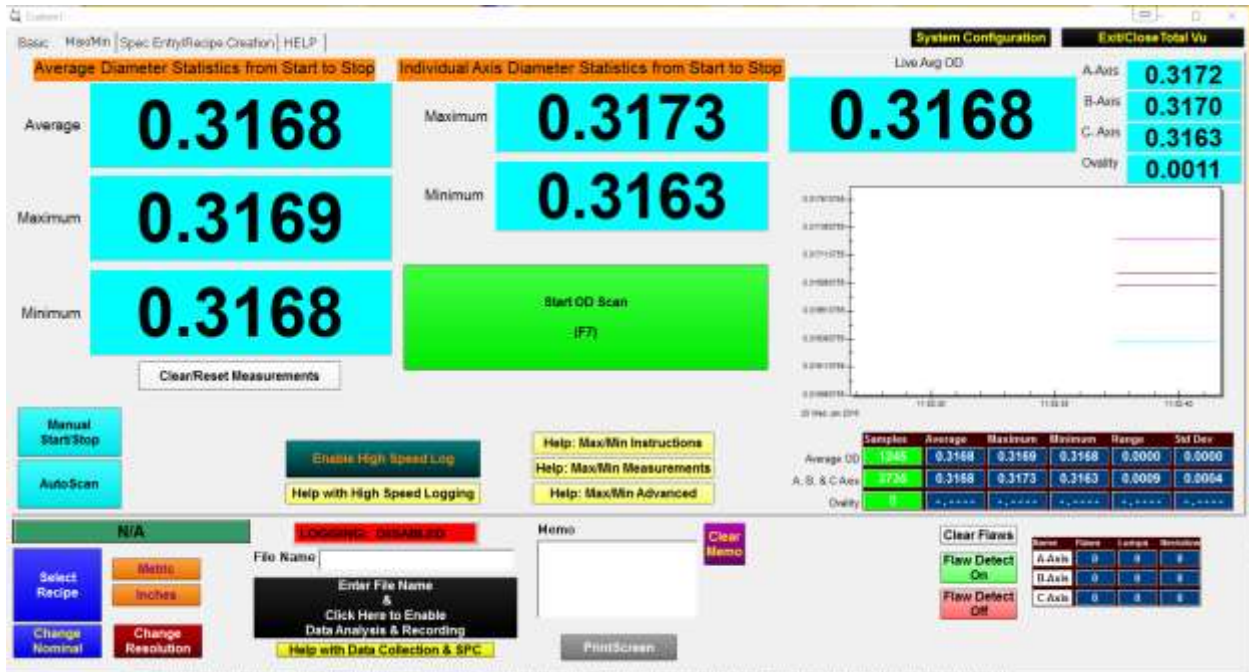
The basic tab appears on startup and is designed to be a simple interface to the gauge to get diameter data. It shows the Average OD at the top, the individual axis and position window at top right, a live trend chart and SPC information for the Average OD that will update when “Data Analysis” is started and the “Record Value” is clicked.



Scan Averaging for these measurements can be modified. See [How can I change the scan averaging for my measurements?](#)

## The Max/Min Tab

The Max/Min tab allows you to run parts through the gauge and find the Maximum and Minimum diameters. During this interval, the SPC will update in the lower right. By clicking Enable High Speed Log, every one of the measurements will be recorded. By entering a file name and clicking "Enter File Name & Click Here to Enable Data Analysis & Recording" you can simply press the "Record Values" to capture the information on the screen into a file. Print Screen allows you to capture what you see into a .bmp file. You can open this file in a program like Microsoft Paint and then save it as a .jpeg if desired.



This tab is designed for capturing Average, Maximum & Minimum dimensions from:

1. Start of Part to End of Part (in "AutoScan" mode)
2. "Start OD Scan" button press to "Stop OD Scan" button press
3. If digital I/O has been purchased with the system a foot pedal can start & stop the interval.

Press the "Manual Start/Stop" and use the "Start OD Scan" and "Stop OD Scan" buttons (or foot pedal) to start & stop looking for Max/Min.

OR

Press the "AutoScan" button, then place the part in the field of view, move it along, then remove it. It is important to get the part into the field of view and oriented correctly quickly.

Press "Clear OD Scan Measurements" to clear the fields.

Press "Enable High Speed Log" to log all of the measurements.

### *About the Measurements*

The measurements being used for the Max/Min search are the "Part Scan" measurements. These measurements typically have a low scan running average (usually 10 or less). Since we use a running average, the measurement updates on every scan, so the update rate is the same as the scan rate of your micrometer. Each measurement is the current scan, plus the average of "X" previous scans, where "X" is the measurements "scans to average" setting. For more information, see [How can I change the scan averaging for my measurements?](#)

Do not change the averaging for the "Part Scan A B & C" Measurement, "Part Scan X & Y" Measurement for Dual Axis, or any measurement with Average, Maximum, Minimum after the name.

#### *"Average Diameter Statistics" (Average, Maximum, and Minimum)*

1. Average: The average of all "Part Scan OD" measurements from start to stop or beginning to end of the part being measured.
2. Maximum: The largest "Part Scan OD" measurement from start to stop or beginning to end of the part being measured.
3. Minimum: The smallest "Part Scan OD" measurements from start to stop or beginning to end of the part being measured.

Note: The "Part Scan OD" measurement is an average diameter = (Part Scan A-Axis + Part Scan B-Axis + Part Scan C-Axis)/3. For Dual Axis micrometers it is the average of the X & Y axis.

#### *"Individual Axis Diameter Statistics" (Maximum & Minimum measurements):*

These measurements are based on the "Part Scan A", "Part Scan B", and "Part Scan C" measurements (Individual axis) (X & Y for Dual Axis gauges)

1. Maximum: The largest "Part Scan" measurement coming from the A, B or C Axis from start to stop or beginning to end of the part being measured.
2. Minimum: The smallest "Part Scan" measurement coming from the A, B or C Axis from start to stop or beginning to end of the part being measured.

In "AutoScan" mode, it is likely that the Maximum & Minimum Diameters will be a result of the leading and trailing edges. We can deal with this by using the "Scans to Ignore". This feature can be found in "Full Configuration" -> "Scanners" -> "your scanner" -> "Ignore Scans" tab. Check the box for "Use Ignore Scans" and enter the required number of scans to ignore at the beginning and end of the part. This will determine how fast a part has to be placed into the gauge and correctly aligned. There will be a delay in the measurement updates equal to the sum of both delays when this feature is used.

Keep in mind the following scan rates when setting the "Scans to Ignore" feature:

TLAser122/TLAser222: 400 scans/second

TLAser122LE/TLAser222LE: 100 scans/second

Triton330: 300 scans/second

Triton330LE: 75 scans/second

Triton312: 600 scans/second

Triton312LE: 150 scans/second

## The Spec Entry/Recipe Creation Tab

This tab allows you to:

1. Save the new specs into the currently loaded recipe
2. Save the new specs as a new recipe
3. Temporarily save these specs into the currently loaded recipe until Total Vu is restarted.
4. Modify an existing recipe

Operator Sequence:

1. Load a recipe to modify if one is not already loaded.
  - Click "Create a NEW Recipe - OD Only" to load the master generic recipe with specs on the OD only, NOT ovality.
  - Click "Create a NEW Recipe - OD & Ovality" to load the master generic recipe with specs on the OD & Ovality.
  - Load any recipe with the "Select Recipe" button.

2. Modify the Specifications.

Pay attention to how the specifications appear.

If they are "Relative", then enter your new specifications in the same format: ex. .1 Nominal, .001 upper, .001 lower

If they are "Absolute", then enter your new specifications in the same format: ex. .1 Nominal, .101 upper, .099 lower

3. Press one of the three following buttons:

"Save as New Recipe" to save the specifications as a new recipe. You will be prompted for a recipe name.

"Temporarily Use the New Specs" to accept & use the new specifications but not save them into a recipe. The recipe will revert back to its original state upon Total Vu restart.

"Save over Existing Recipe" to modify the specifications in the currently loaded recipe.

NOTE: Some recipes are meant to be generic recipes, for example "A +/- .001". When a generic recipe is loaded the "Change Nominal" button & dialog will appear. This allows anyone to walk up to the system, load a generic recipe, set the nominal/target OD, and measure parts. If one of these generic recipes is loaded and a new recipe is created from it using the "Save As", the "Change Nominal" dialog and button will appear when the recipe is loaded. This does not happen when using the Master OD, Master OD & Ovality, or any recipe created from one of these master recipes.

ALTERNATIVELY, see [Creating a new Recipe](#) for more ways to create and work with recipes.

## Notes

The background of the measurement fields will be blue if no spec is applied to them (load a recipe to apply specifications).

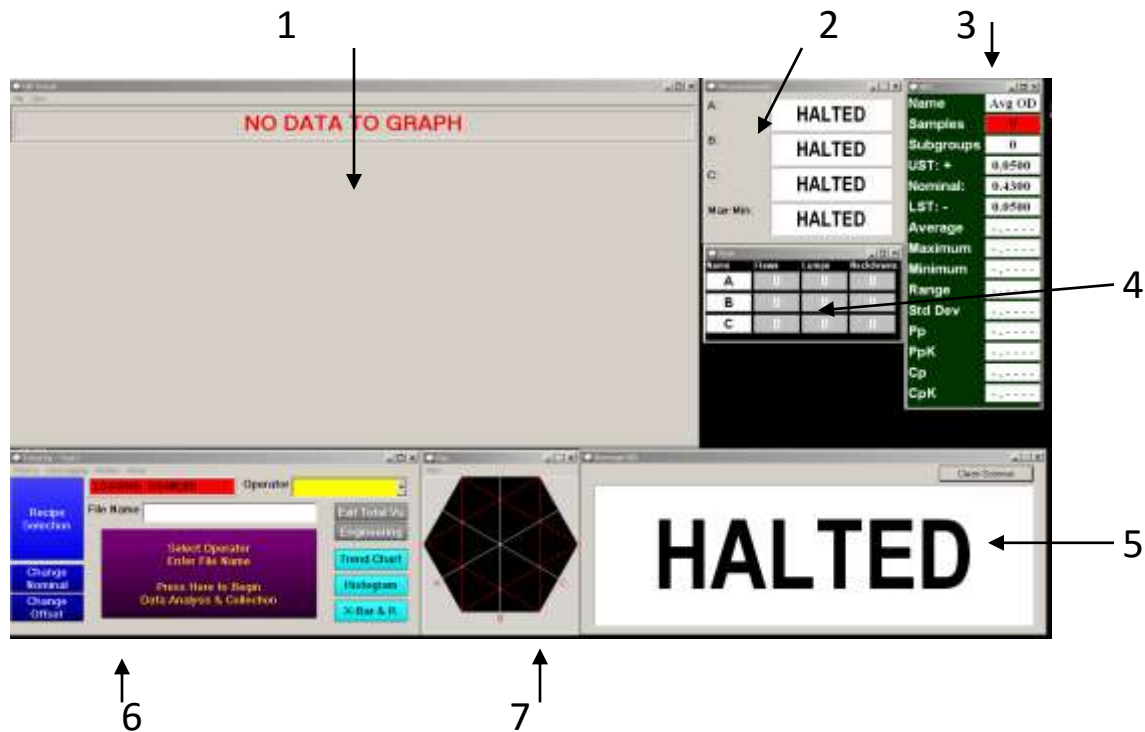
The Trend Chart will auto scale if no recipe is loaded.

A bar code scanner is just a fancy keyboard. Plug one in, place the cursor in the File Name or Memo field, and scan away.

The File Name & Memo Field are used for High Speed Logging in the file name.

The Memo field is logged along with the diameter data when logging one point at a time.

## A Typical Extrusion Line Measurement & Control Interface

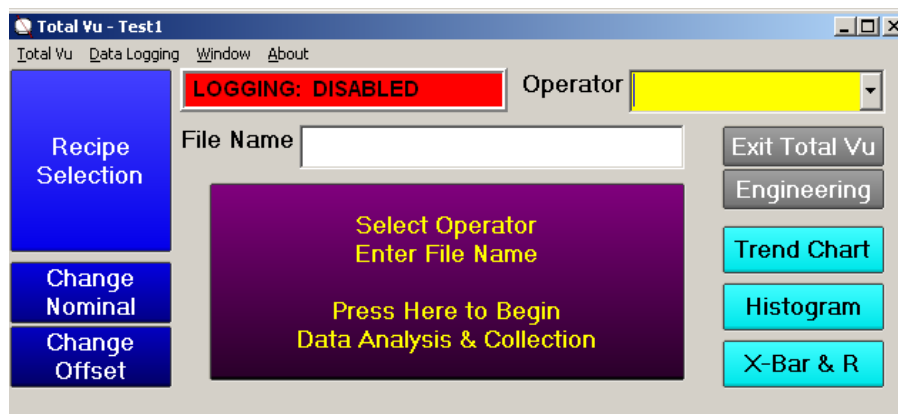


The Total Vu interface consists of the “Main Program Window” (6), and any number of other windows which contain specific information (1, 2, 3, 4, 5, & 7). When the main program window (6) is closed, the program closes. If the other windows are closed, they will have to be recreated next time Total Vu Starts.

8. Trend chart, Histogram, or X-Bar & R chart. The trend chart will automatically start updating when a part is in the gauge. It will auto scale itself, unless a recipe is loaded. If a recipe is loaded, it will use the spec limits to set the scale. The Histogram and X-Bar & R chart will not update unless a recipe is loaded and “Data Collection and Analysis” has been started.
9. Measurement Window showing the A, B, and C axis measurements as well as the difference between the largest and smallest measurement (ovality). When a part is in the gauge, these measurements will automatically start updating.
10. SPC window: Updates when a recipe is loaded and “Data Collection and Analysis” has been started. The “Samples field indicates the on/off state of SPC by appearing Red or Green.
11. Measurement Data window containing information on current Flaw Count. Updates when a recipe is loaded and “Data Collection and Analysis” has been started.
12. Measurement window showing the current Average Diameter.
13. Main Program Window.

14. Position Window: shows the position of the part in the micrometer. Any micrometer will be most accurate when the part is at the same location in the field of view as the calibration pins when the gauge was calibrated. This is usually in the center or the field of view.

## The Main Program Window



Buttons can be placed in the main program window; they execute specific actions. For example, by pressing the “Trend Chart” button, you are executing the “Show Trend Chart” action. The “Press Here to Begin Data Analysis & Collection” button executes a “Macro” action containing several actions. By creating multiple actions and associating them to buttons you create on the main program window, you can build your interface.

Refer to the Total Vu manual or call us for more direction on setting up or modifying the interface.

### *What the Buttons Do*

**Recipe Selection:** Executes the “Recipe” action which opens the Recipe Selection Window. Allows the operator to load, create, copy, or delete a set of specifications associated to a product.

**Change Nominal:** Executes the “Change Nominal” action associated to the OD measurements which brings up a window that allows you to change the nominal value for the currently loaded recipe. Helpful when trying to quickly resize the trend scale to get a product on screen. You will be prompted when exiting total Vu to save these changes, you may choose to or not to save them in the recipe.

**Change Offset:** Executes the “Change Offset” action. Opens a dialog window which allows you to change the offset applied to all diameter measurements (which measurements get the offset applied to them has already been set up in the “offsets” list in the measurements configuration window.)

**Exit Total Vu:** Executes the “Exit Total Vu” action which ends/closes the Total Vu program.

**Engineering:** Executes the “Full Config” action which opens the Full Configuration window.

**Trend Chart:** Executes the “Show Trend Chart” action which brings the Trend Chart window to the front. Which Trend Chart can be specified within the action. The action is currently assigned to the OD Trend Chart.

**Histogram:** Executes the “Show Histogram” action which brings the Histogram window to the front. Which histogram can be specified within the action. The action is currently assigned to the OD Histogram.

**X-Bar & R:** Executes the “Show X-Bar & R” action which brings the X-Bar & R window to the front. Which X-Bar & R can be specified within the action. The action is currently assigned to the OD X-Bar & R.

**Begin Data Analysis and Collection:** Executes the “B: Begin Data Collection” macro action which in turn executes several actions. Ultimately, this button accepts the operator name and file name input, opens a file to dump the raw data into (data logging), and then starts spc, data collection, and flaw detection. SPC and Flaw information is buffered until the “End Run & Generate Reports button is pressed, at which time the buffered information is put in files and saved. See “Where is my data” in the “Frequently asked Questions” section for more on this.

**Pause Data Collection:** Executes the “B: Pause Data Collection” macro action which pauses Raw Data collection, Flaw Detection, and SPC until “Resume Data Collection” is pressed.

**Resume Data Collection:** Executes the “B: Resume Data Collection” macro action which resumes the Raw Data collection, Flaw Detection, and SPC.

**End Run & Generate Reports:** Executes the “B:End Run & Generate Reports” macro action which stops Raw Data collection, Flaw Detection, and SPC as well as closes the data logging file, generates the SPC report, generates the Flaw Detection report, and, if you have the Advanced SPC or Customizable Reports option, an Excel file is also created with all of the above information within in a customizable report format.

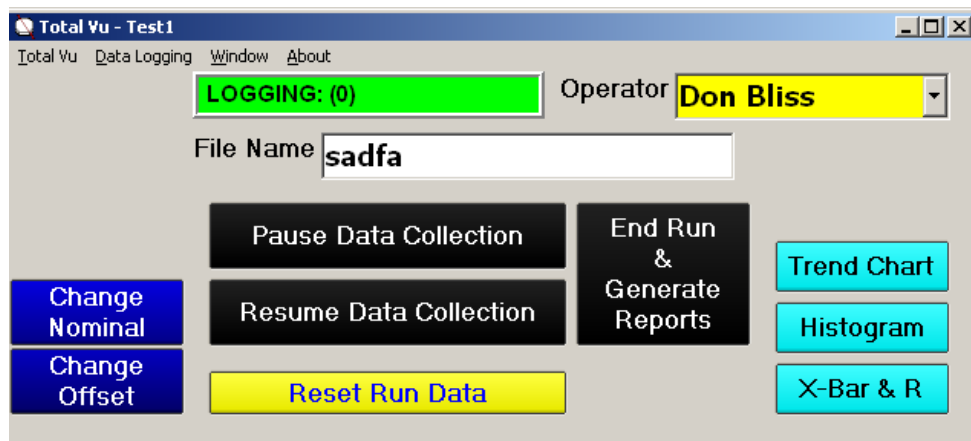
**Reset Run Data:** Executes the “B: Reset Run Data” macro action which erases/clears out the currently open data logging file where data is being dumped, clears and resets SPC, clears and resets Flaw Detection. You may use this if you’ve been collecting data for 5 minutes and realize you had made some sort of mistake; you could basically clear and restart the Data Analysis and Collection without reentering a new file name, etc...



### Operator Sequence of Events:

4. Get the line strung up. Once the product is in the gauge, the trend chart, position window, and measurements will update. All measurements will appear with a blue background and the Trend Chart “Auto Scales” until a recipe is loaded.
5. Press the “Recipe Selection” button to load a recipe containing spec limits for the product. Once loaded, numbers on the screen will show color based on being in or out of spec and the trend chart will be appropriately scaled for the part being run. If a recipe is not available you will need to create one. See “Recipes” in this guide.
6. Once the line is running satisfactorily, an Operator Name can be selected, a File Name can be entered, and the “begin data collection and analysis” can be pressed. New buttons will appear which allow you to control the data collection. You can then pause, resume, reset, or end the run. When the “End Run” button is pressed, data is saved and data analysis and collection stop.
7. The data can be found in the Total Vu directory. See “Where’s my data” in the FAQ for more information regarding changing the location of the saved data.

After the “Begin Data Analysis” button has been pressed, it will disappear and other buttons show up...



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## An Ultrasonic ID/OD/Wall Measurement System with Sorting capabilities

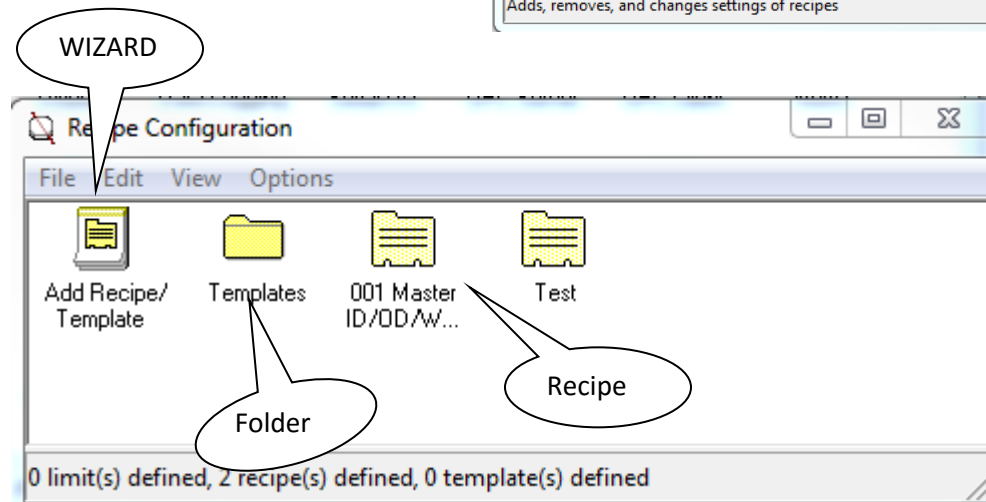
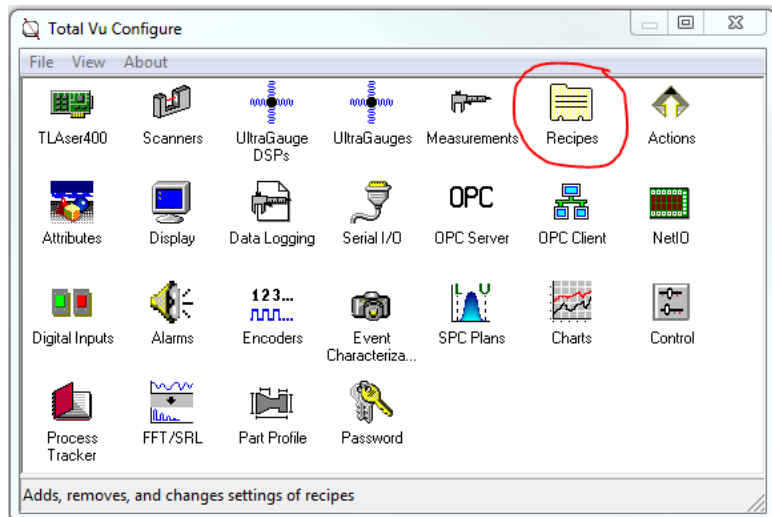
## Creating a Recipe

### Method 1

For a simple OD Only or ID/OD/Wall single layer recipe, first select the “Recipe” tab

### Method 2

Enter full configuration and double click on the “Recipes” icon

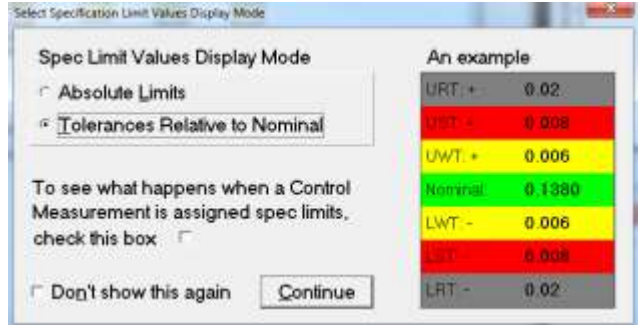


The idea is to start with an existing recipe, copy it, rename it, then modify the specs. There are a number of ways to accomplish this.

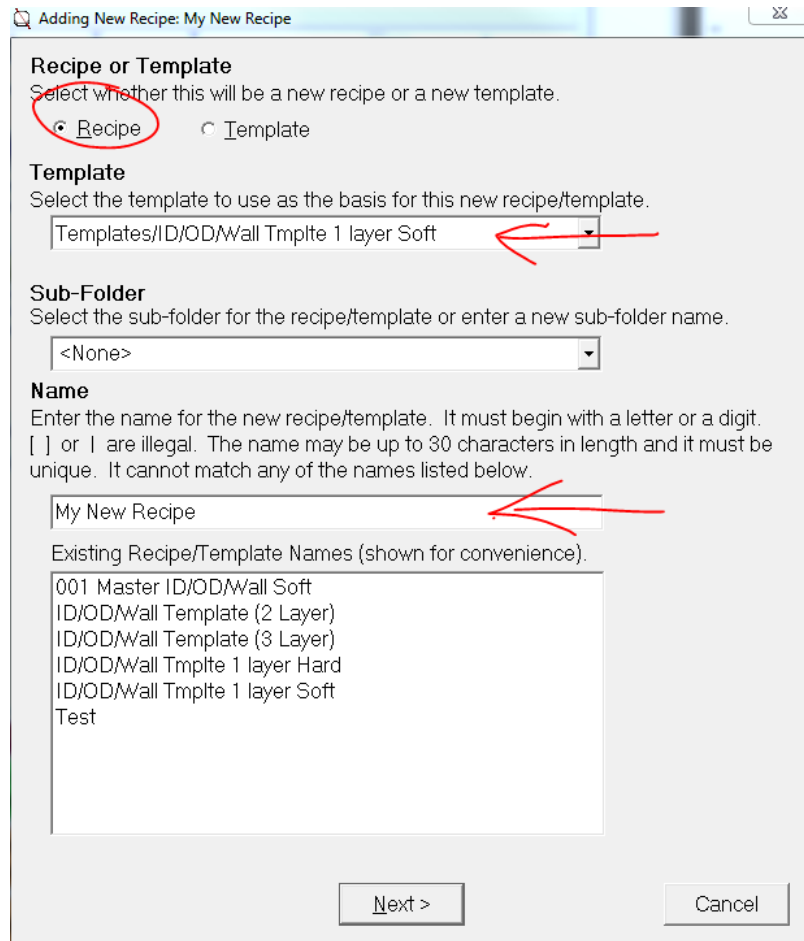
Step one is to start with an existing recipe by:

1. Right Click on a known good recipe or a “Master” recipe (which should be a known good recipe). Click Copy. Enter a name for the new recipe. Another Recipe icon will appear with the name you’ve given it. Double click it to open the new Recipe to allow modification of specifications. See the next section on editing specifications...
2. Double Click the “Add Recipe/Template” wizard and follow these steps:

- a. The first time, and possibly every time the wizard is initiated you will be asked how you would like to enter your specification limits, as absolute or relative. Selecting the radial button to the left will show you an example to the right. Click "Continue" after selecting one or the other, and possibly also checking "Don't show this again", in which case your selection will become the default unless changed in the Recipe Configuration Window under the View menu.



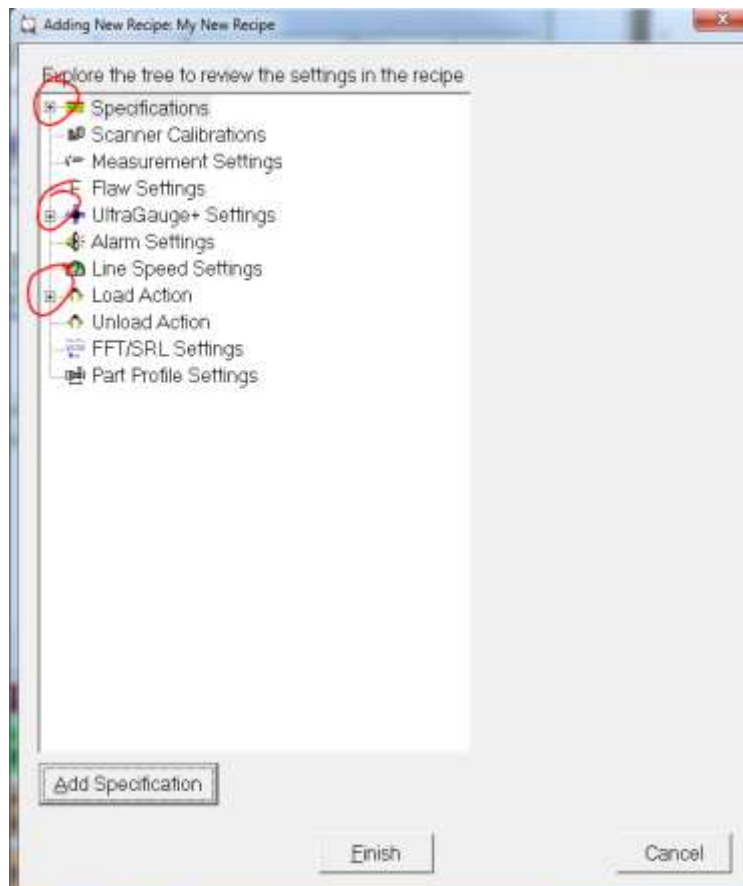
- b. Select "Recipe" at the top, under Template select the correct recipe template, under "Name", enter a new name for your recipe, and click Next. If no templates exist in your system, one will need to be created, or follow the steps mentioned previously to create your new recipe.



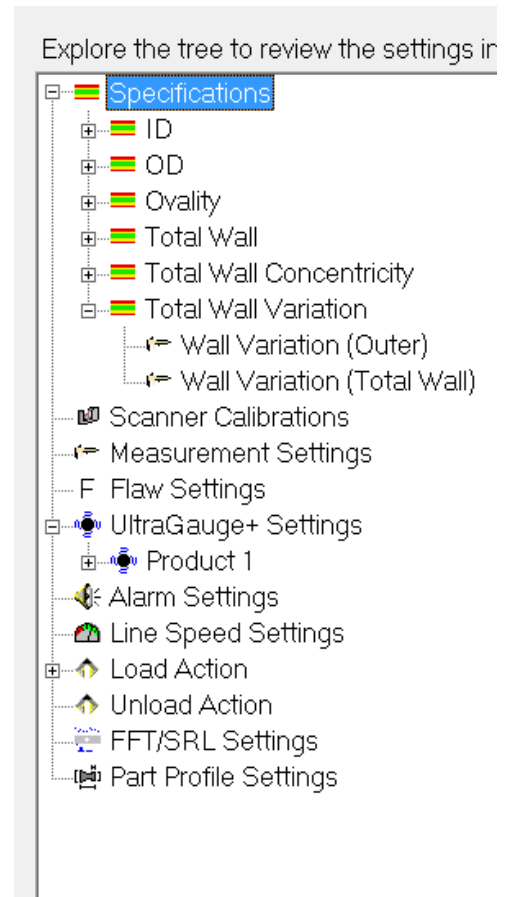
Step two is to edit the recipe to accommodate the new product.

After following either of the two previous steps you'll be looking at the "Recipe Edit" window. Individual items can be set or modified in the recipe here. For an ID/OD/Wall system the two primary areas of interest are the "Specifications" and the "UltraGauge+ Settings". Notice that both of these items have "+" signs next to them indicating that a tree of information exists under the headings. Click the + sign to open the tree. Once opened, the "+" sign turns to a "-" sign, clicking it shrinks the tree.

Tree closed:

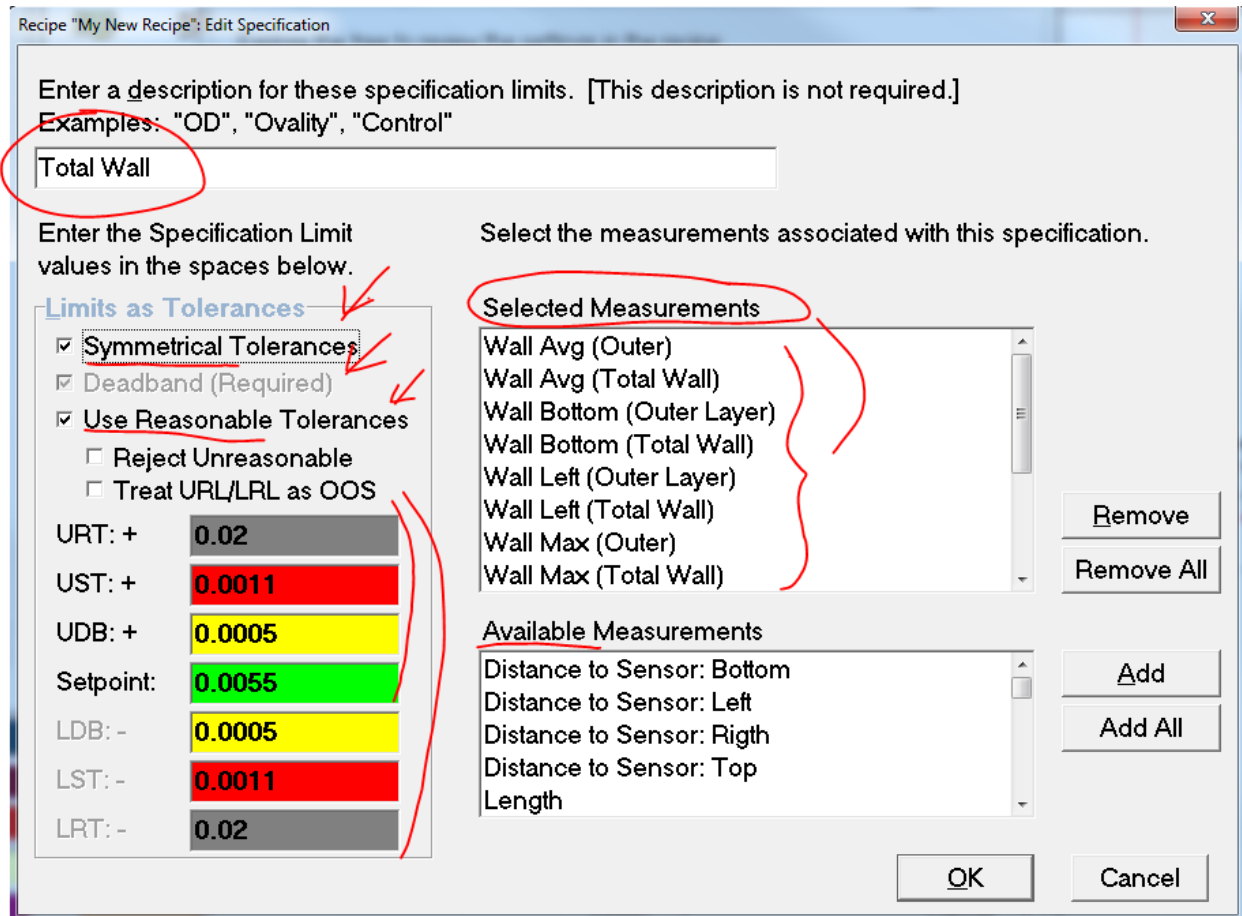


Tree opened:



Clicking once on "ID" will show the specification to the right of the tree. Clicking the "+" sign next to ID will show you what measurements the ID spec has been applied to. Double clicking on "ID" or any of the measurements in the "ID" tree will open the "Edit Spec" window and allow you to modify the specifications and which measurements the spec has been applied to. Multiple measurements can be included under one specification, as long as the spec holds true for the included measurements. For example, a spec on ID may be  $.055 \pm .002$ , we would NOT want to include Ovality, OD, or any Wall measurements under this spec as they will have different specs.

To modify the specification limits double click on any one of the specifications (or measurements within its tree) to get the following window.



To change the spec in this case, simply modify the Setpoint, UDB (Upper Deadband), UST (Upper Spec Tolerance), and URT (Upper Reasonable Tolerance). Then click OK. Do this for all specs that need to be modified. Note that the limits are labeled as “setpoint”, “UDB”, “UST”, and “URT” in this case because one of the measurements this spec has been applied to is also used for auto control. When no auto control measurement is selected the specs are labeled as “Nominal”, “UWT” (Upper Warning Tolerance), “UST” (Upper spec tolerance), and “URT” (Upper reasonable Tolerance). For Control measurement specifications the UDB is the limit within which NO CONTROL MOVE is made, once the UDB is exceeded a control move to bring it back within the UDB is made if “Auto Control” is active.

More:

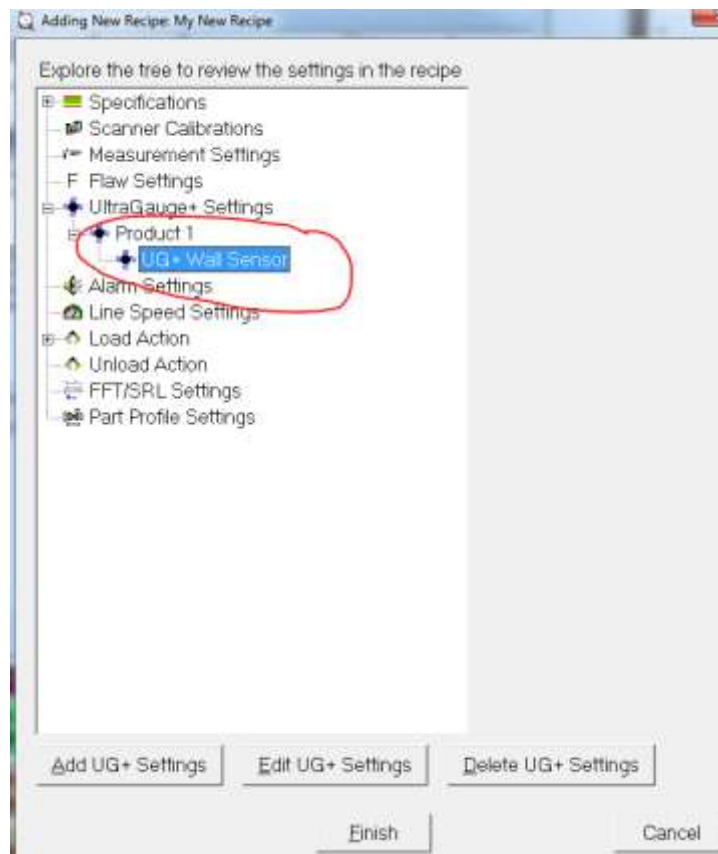
The name of the spec (ID, OD, Wall, Variation, etc...) goes in the top line of the window.

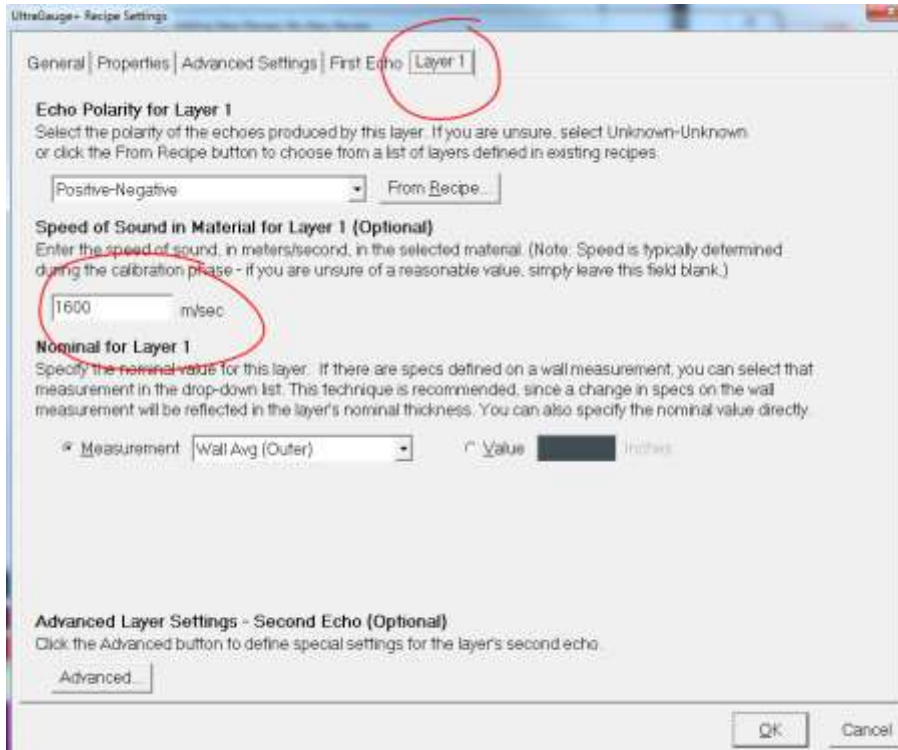
If the spec is symmetrical, simply check the “Symmetrical Tolerances” box and Total Vu will fill in the lower specifications for you. If not, uncheck “Symmetrical Tolerances” and you can enter in the specification limit both above & below the spec.

The “Selected Measurements” are the measurements the specification has been applied to. The “Available Measurements” are all of the measurements that do not yet have a specification applied to them.

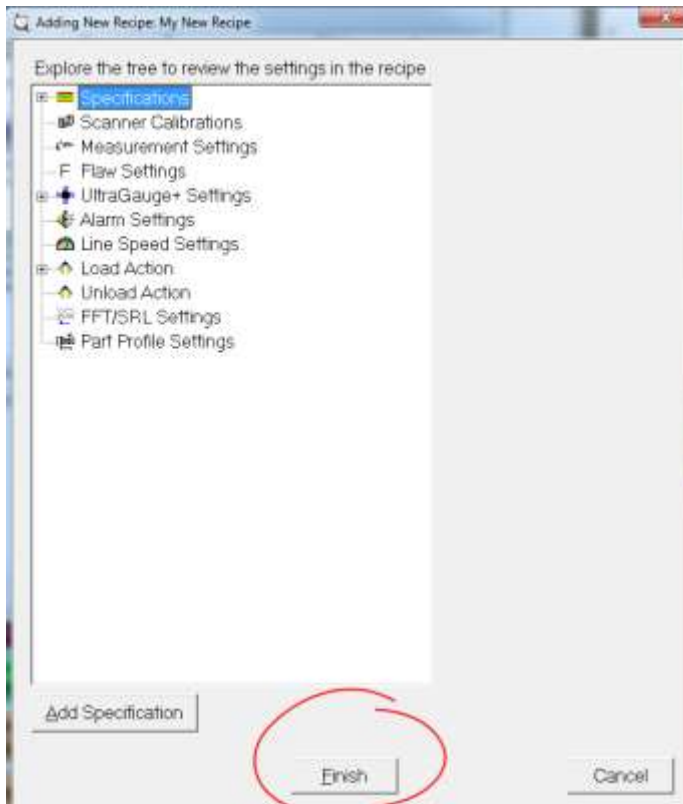
Once finished editing all of the required specifications you can delete any unnecessary specs by highlighting the spec (Total Wall Variation for example) and then click the “Delete Specification” button at the bottom right of the window.

Lastly, for an ID/OD/Wall recipe, you’ll want to make sure the “Speed of Sound” value for the material is somewhat close to what it should be. If you know it, you can enter it directly. If not, you can make your best guess. You may start with a speed of sound value of 1600 for soft materials, 1900 for harder materials, and maybe 2000 to 2100 for crispy very hard materials. This setting is found by clicking on the “UG+ Wall Sensor” in the tree under “UltraGauge+ settings”.





Click on the “Layer 1” tab and enter a speed of sound in the “Speed of sound” field. Don’t worry if you don’t get it exact, we’ll calibrate the measurement to get the correct speed of sound later. Click OK when finished.



Finally, Click “Finish” or “Save Recipe” in the main recipe window to complete the process. Your new recipe will now show up in the list of recipes.





Notes

*Measurements*

Several measurements have been configured in the system. For this reason, copying a known good recipe and editing the specs in that recipe is always a good idea as it may be very difficult to set up a recipe from scratch.

Data Measurements are the measurements that are being used for Data Logging and SPC. These measurements are delayed measurements, typically delayed to the point of the blow off table. When an alarm is activated Data Collection & SPC stop and bad parts go in the garbage. The data updating at the blow off is stopped before the bad measurements get to it, so only the good data is collected. Setting the "Delay" for these measurements to "Zero" will allow you to collect data at the point of the gauges rather than at the sort mechanism.

