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In Line OD Configuration

User's Guide

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Introduction

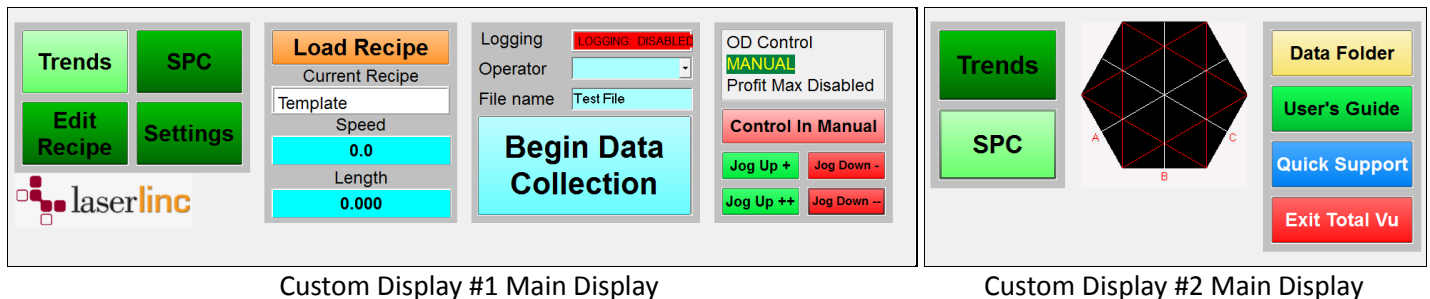
This document is a supplement to the Total Vu User’s Guide & Total Vu Manual. It contains information regarding a specific configuration for an In Line OD configuration using a single, dual, or triple axis gauge. Total Vu is a highly customizable software. Obviously, any changes made to the system after the initial setup will not be reflected in this document.

The Total Vu backup feature can be used to save any changes made to the initial configuration. Press “Ctrl + B” and name the backup. This backup can be restored at any time by pressing “Ctrl + R” and browsing for the correct file. In most cases, only the “Total Vu Configuration” should be restored. If unwanted changes have been made to the recipes, they can also be restored.

The In Line OD configuration contains two custom displays, each with two main utility tabs. Custom Display #1 is displayed on the left side of the monitor and Custom Display #2 is displayed on the right side of the monitor. On Custom Display #1, the trends tab will contain options to display 5 minute, 1 hour, and 3 hour trends of the average OD and control OD measurements. The trends tab will also contain a live average OD measurements and the live OD values for each axis of the gauge in use. The SPC tab contains the live average OD measurement, as well as SPC data for the average OD, flaws, and out of spec measurements.

The trends tab on Custom Display # 2 contains live ovality measurements and a tend chart displaying ovality over a 5 minute, 1 hour, or 3 hour period. Ovality is replaced by the absolute value of the difference between the X and Y OD measurements for a two axis gauge and the OD measurement in a 1-axis gauge. The SPC tab on Custom Display # 2 contains SPC data for average OD, flaws, out of spec measurements, and the current loaded recipe.

Main Display



Custom Display #1 Main Display

Custom Display #2 Main Display

The main display is located at the bottom of each display screen and is always visible. Green buttons on the left of each display are used to navigate between the tabs. The light green tab button indicates which tab is currently visible.

To the right of the tab buttons on Custom Display # 1 is a recipe and encoder panel. At the top of this panel is the “Load Recipe” button. Once pressed, a list of available recipes will be displayed for the user to load. Below this button is a status window containing the current loaded recipe. Below this are live speed and length measurements.

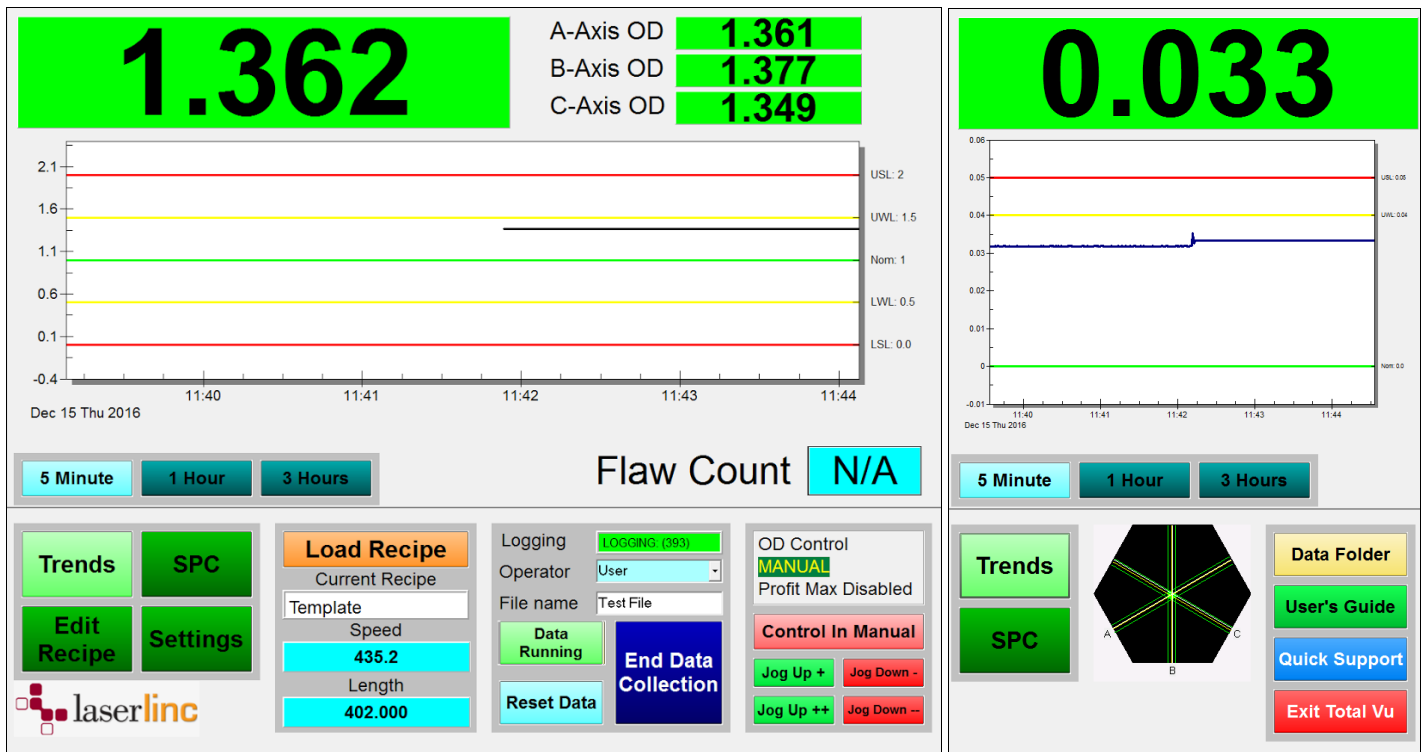
To the right of the recipe and encoder panel is the data collection panel. The data collection panel contains a logging status window, operator name input, file name entry for logging files, and a begin data button. In order to log data, an operator name must either be manually entered or selected from saved operator names in the drop down/edit box next to “Operator”. Next a file name must be entered in the edit box next to “File Name”. Once an operator and file name has been chosen, click the “Begin Data Collection” button to begin data collection. Once data collection has begun, it may be paused by clicking the button “Data Running”. To resume data collection click the button “Data Paused”. Data may be reset at any time during data collection by clicking “Reset Data”. To end data collection click the button “End Data Collection”.

To the right of the data logging panel is the control panel. The top of this panel contains the control status window, displaying the current state of the control loop. Below this status window is a button to toggle manual and auto control. While control is in manual mode the button "Control In Manual" will be visible. While in manual control, four jog buttons will be visible in the lower half of the panel. The button "Jog Up +" will increase the control measurement, making a control move lasting 0.2 seconds. The button "Jog Up ++" makes a control move lasting 0.5 seconds. Both Jog Down buttons will make same corresponding moves, decreasing the control measurement. To switch control to auto, click the button "Control In Manual". The button will now display "Control In Auto" and the control status window will now show the control loop is in auto.

Custom Display #2 contains the position window to the right of the tab buttons. This window will look different depending on the number of axes on the gauge being used.

On the right side of Custom Display #2 are four main buttons used to open the folder where all data is stored, open this user's guide, open LaserLinc's quick support application, and to shut down the software. Note that the quick support software can only be used with internet access to the PC.

Trends



Overview

The trend tabs are used to display live OD and/or ovality measurements, as well as trends of OD and ovality. Custom Display #1 contains a live average OD measurement in the upper left corner. To the right of this are

live OD measurements for individual axes. Below these live OD measurements is a trend chart displaying a 5 minute, 1 hour, or 3 hour trend of the average OD measurements. To switch between trend chart display times, click the corresponding blue button directly beneath the trend chart. Custom display #2 contains live ovality measurements and trend charts. To switch between trend chart display times, click the corresponding blue button beneath the ovality trend chart. Custom display #2 will look different depending on the number of axes used with this configuration. A two axis gauge will display the absolute value of the difference between the X and Y axis, while a one axis gauge will display the OD.

SPC

The screenshot displays the SPC control interface with the following components:

- Large Display:** Shows a large green number **1.362**.
- SPC Statistics Table:**

SPC	
Samples	1422
Average	1.362
Maximum	1.362
Minimum	1.362
Range	0.000
Std Dev	0.000
Pp	37822.36
PpK	24120.95
- Flaws and OOS Table:**

Flaws and OOS	
Flaws	0
Lumps	0
Neckdowns	0
OOS High	0
Out-of-Spec	0
OOS Low	0
- Recipe Table:**

Recipe	
Recipe	Template
UST: +	1.000
UWT: +	0.500
Nominal:	1.000
LWT: -	0.500
LST: -	1.000
- Control Panel:**
 - Buttons: Trends, SPC, Edit Recipe, Settings.
 - Load Recipe: Current Recipe, Template, Speed (474.7), Length (437.000).
 - Logging: LOGGING (1422), Operator, File name (Test File).
 - Data Running: Data Running, End Data Collection, Reset Data.
 - OD Control: MANUAL, Profit Max Disabled, Control In Manual, Jog Up +, Jog Down -, Jog Up ++, Jog Down --.
- Navigation and Status:**
 - Buttons: Trends, SPC, Data Folder, User's Guide, Quick Support, Exit Total Vu.
 - Visuals: A hexagonal gauge with axes labeled A, B, and C.

Overview

The SPC tab is used to view the SPC data for average OD, Flaws, Out of Spec measurements, and Recipe data. On Custom Display #1, the SPC tab contains a live average OD measurement across the top of the display. Below this and to the left is an SPC window displaying average OD statistics. To the right of this window is an SPC window counting flaws and out of spec measurements of the average OD.

The SPC tab on Custom Display #2 displays the same SPC windows for average OD as Custom Display #1 but also includes current recipe tolerances of the average OD.

Recipe

Current Recipe

Template

**Save As New
Recipe**

**Save Over Current
Recipe**

	OD	Deadband (Control)	Ovality
USL	2.000		USL 0.050
UWL	1.500	UDB 1.7200	UWL 0.040
Nominal	1.000		
LWL	0.500	LDB 0.2800	
LSL	0.000		

Trends

SPC

Edit
Recipe

Settings

Load Recipe

Current Recipe

Template

Speed
435.2

Length
778.000

Logging LOGGING: (1764)

Operator

File name Test File

Data
Running

End Data
Collection

Reset Data

OD Control
MANUAL

Profit Max Disabled

Control In Manual

Jog Up +

Jog Down -

Jog Up ++

Jog Down --

Procedure

The Edit Recipe tab is used to create new recipes using the available templates, or to edit an existing recipe.

To create a new recipe, load a recipe by clicking “Load Recipe” on the main display of Custom Display #1. Next, go to the Recipe tab. The specifications are now visible. Edit the specifications for USL, UWL, and Nominal under OD, UDB under Deadband (Control), and UWL and USL under Ovality. The LWL and LSL for OD, and LDB for Deadband will automatically populate based on symmetrical tolerances once the recipe has been saved. Ovality values for Nominal, LWL, and LSL are always set to zero. Click “Save As New Recipe”, and name the new recipe.

To edit an existing recipe, load a recipe by clicking “Load Recipe” on the main display of Custom Display #1. Next, go to the Recipe tab. The specifications are now visible. Edit the specifications for USL, UWL, and Nominal under OD, UDB under Deadband (Control), and UWL and USL under Ovality. The LWL and LSL for OD, and LDB for Deadband will automatically populate based on symmetrical tolerances once the recipe has been saved. Ovality values for Nominal, LWL, and LSL are always set to zero. Click “Save Over Current Recipe” to permanently save the new specifications.

Changing Default Settings

Symmetrical vs. Asymmetrical Tolerances

By default, each template recipe is set to have symmetrical tolerances. This means that only the USL, UWL, and nominal for OD, UDB for Deadband, and UWL and USL for Ovality can be edited. When the recipe is saved, all other required values will automatically populate. The LWL will be set to an equal distance from the nominal as the UWL, and the LSL will be set to an equal distance from the nominal as the USL for OD specifications. The deadband limits will automatically update Nominal, LSL and USL with the same values as the OD Nominal, LSL, and USL respectively.

To allow asymmetrical tolerances, go to the Settings tab and click “System Configuration”. Double click “Recipes”, and find the appropriate recipe. Highlight the specification for “OD”, “OD Control”, or “Ovality” and click “Edit Specification”. Uncheck the box next to “Symmetrical Tolerances” and click “OK”. Click “Save Changes” and exit out of system configuration. This change must be done for each specification you wish to change in a recipe.

Once this change has been made, the operator will need to edit all specifications (i.e. USL, UWL, Nominal, LWL, and LSL for OD, LDB and UDB for Deadband, and UWL and USL for Ovality) to correctly edit or create a new recipe.

Relative vs. Absolute Tolerances

By default, all recipes are displayed as tolerances relative to nominal. This means that the specs are displayed as the nominal +/- the acceptable deviation. For example, if the specifications for a particular recipe are 0.250” +/- 0.001” with warning limits at 80%, the operator will enter a nominal of 0.250”, a USL of 0.001”, and a UWL of 0.0008”.

Alternatively, the operator may wish to view and enter specifications as absolute limits. For the above example, the operator would enter a nominal of 0.250”, a USL of 0.251”, and a UWL of 0.2508”. To view and enter specifications in this way, go to the Settings tab and click “System Configuration”. Double click “Recipes”. Click “View” in the menu bar at the top and select “Limits As Absolute”. Exit system configuration. This can be reversed by selecting “Limits As Tolerances”.

Settings

The screenshot displays the LaserLinc Benchtop Configuration interface. It is organized into several functional areas:

- System Settings:** Includes a black 'System Configuration' button and a cyan 'Reset Encoder' button.
- Measurement Settings:** Features buttons for 'Inches', 'mm', 'Microns', and a yellow 'Set Resolution' button.
- Configuration Settings:** Contains a cyan 'Restore Master Configuration' button.
- Auto Sort Settings:** Shows a red 'Auto Sort is Off' button.
- Line Layout:** A central section with 'Set Control Delay', 'Set Sort Delay', and 'Set Data Delay' buttons. Below these are buttons for 'Extruder' (10 ft.), 'Scanner' (3 ft.), 'Cutter', and 'Blower'.
- Flaw Settings:** Includes a red 'Flaw Detection is OFF' button.
- Monitoring and Control:**
 - Trends, SPC, Edit Recipe, Settings:** A group of green buttons for data analysis and recipe management.
 - Load Recipe:** A section showing 'Current Recipe' with a 'Template' dropdown, 'Speed' (465.4), and 'Length' (947.000).
 - Logging, Operator, File name:** Fields for 'LOGGING: (1932)', an operator dropdown, and 'Test File'.
 - Data Running, End Data Collection, Reset Data:** Buttons for managing data collection.
 - OD Control:** Shows 'MANUAL' status and 'Profit Max Disabled'.
 - Control In Manual:** A red button with 'Jog Up +', 'Jog Down -', 'Jog Up ++', and 'Jog Down --' sub-buttons.

The LaserLinc logo is visible in the bottom left corner of the interface.

System

To edit system settings, select “System Configuration”. This page is used to edit the deeper-level settings that control how the system functions. These include settings for scanners, measurements, recipes, actions, attributes, data logging, alarms, and more. This page is often password protected to avoid unwanted changes to the system configuration. For more information on how to change the system settings of a configuration, reference the Total Vu manual in the documents folder in the installation folder, or reference the tutorial videos at the following link.

http://public.laserlinc.com/docs/Tutorial_Videos/

On the bottom of the system panel is the “Reset Encoder” button. Pressing this button will reset the length measurement for the encoder.

Measurement

This panel allows the user to select the units for all measurements in the configuration. The light green button shows the current units. To change the units, simply click on the button with the desired units. This button will also change the resolution of all measurements depending on the units selected.

To change resolution, click “Set Resolution”. Select the desired resolution out of the drop down menu and click “OK”. This will change the resolution for all measurements within the configuration.

Configuration

To restore the configuration to its original setup state, click “Restore Master Configuration”. This button will not change any of the current recipes, but only the Total Vu configuration.

Auto Sort

Auto sort is a feature that allows the system to automatically detect when the measured product goes out of the upper or lower specification limits, and fires an output in order to sort out good product from bad product. To enable auto sort, click the button “Auto Sort is Off”. The button will now read “Auto Sort is On” and will have displayed the button “Bad Data is NOT Included in SPC”. Auto sort is now enabled and data logging will not include out of spec parts. If logging out of spec parts is desired, click the button “Bad Data is NOT Included in SPC”. The button will now read “Bad Data is Included in SPC” and data logging will now log all measurements.

To turn off auto sort click the button “Auto Sort is On”. The button will now read “Auto Sort is off” and the sorting alarm will be turned off. Data logging will log all measurements while auto sort is off.

Line Layout

In the middle of the settings tab is the Line Layout panel. This panel is used to set control delays, sorting alarm delays, and data alarm delays. To set the control delay, enter the appropriate distance between the extruder and the scanner in the edit box under “Set Control Delay”, then click the button “Set Control Delay”. To set the sorting alarm delay, enter the appropriate distance between the scanner and the cutter under “Set Sort Delay”, then click the button “Set Sort Delay”. To set the data alarm delay, enter the appropriate distance between the cutter and the blower under “Set Data Delay”, then click the button “Set Data Delay”.

Flaw

At the bottom of the settings tab is the flaw detection setting. To turn flaw detection on, click the button “Flaw Detection is OFF”. The button will now read “Flaw Detection is ON” and Total Vu will now begin looking for flaws. To turn flaw detection off click the button “Flaw Detection is ON”. The button will now read “Flaw Detection is OFF” and Total Vu will now ignore flaws.