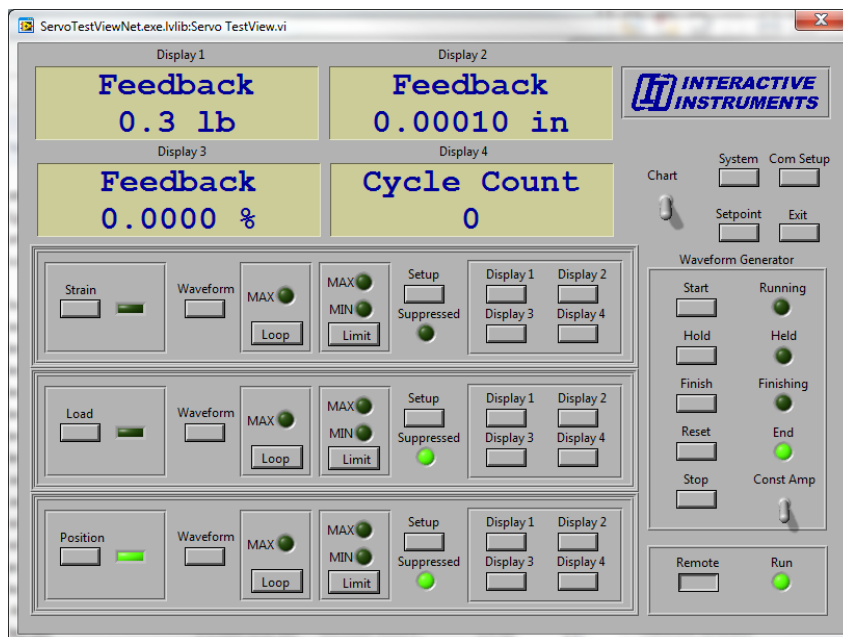




INTERACTIVE INSTRUMENTS



Servo TestView Windows™ Edition Instruction Manual

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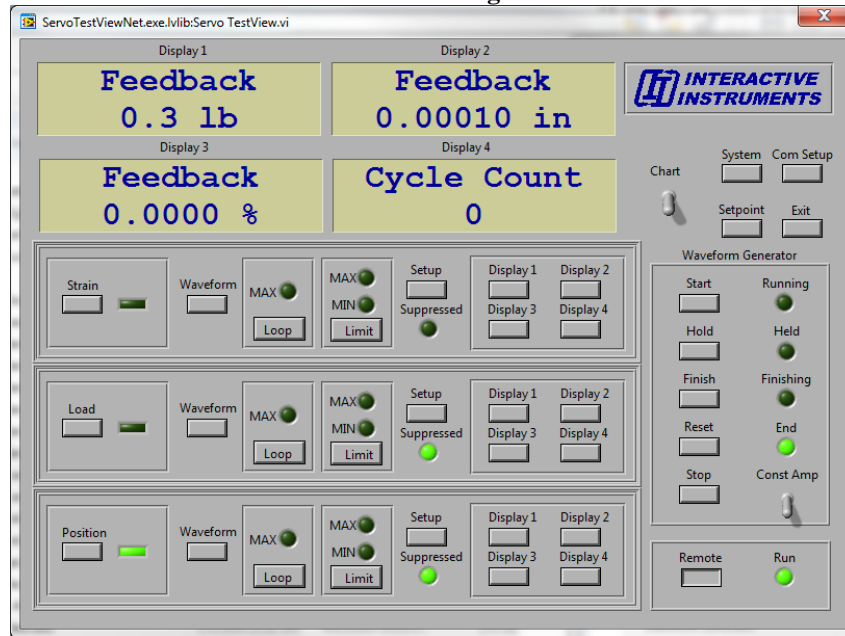
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Welcome

The Servo TestView program is an easy to use application program allowing full functional control of the Servo load frame controller. The software, developed for Microsoft Windows™ systems, allows you to quickly master the features of the controller (*see Figure 1* below). The main panel allows the operator to select the mode of control, waveform parameters and status, limit values and actions along with the channel and system setup parameters. The output of the 24 data channels can be configured to display on the four alphanumeric displays at the top of the panel.

Windows Control Program Screen



Pressing the "Chart On" button displays a graphical X-Y chart of any controller data value plotted with respect to any other value. Simple load vs. time or load vs. strain graphs are updated in real time as the results are received from the controller (see **Figure 2** below). At any time the graphical data can be printed or stored to disk for further comparison.

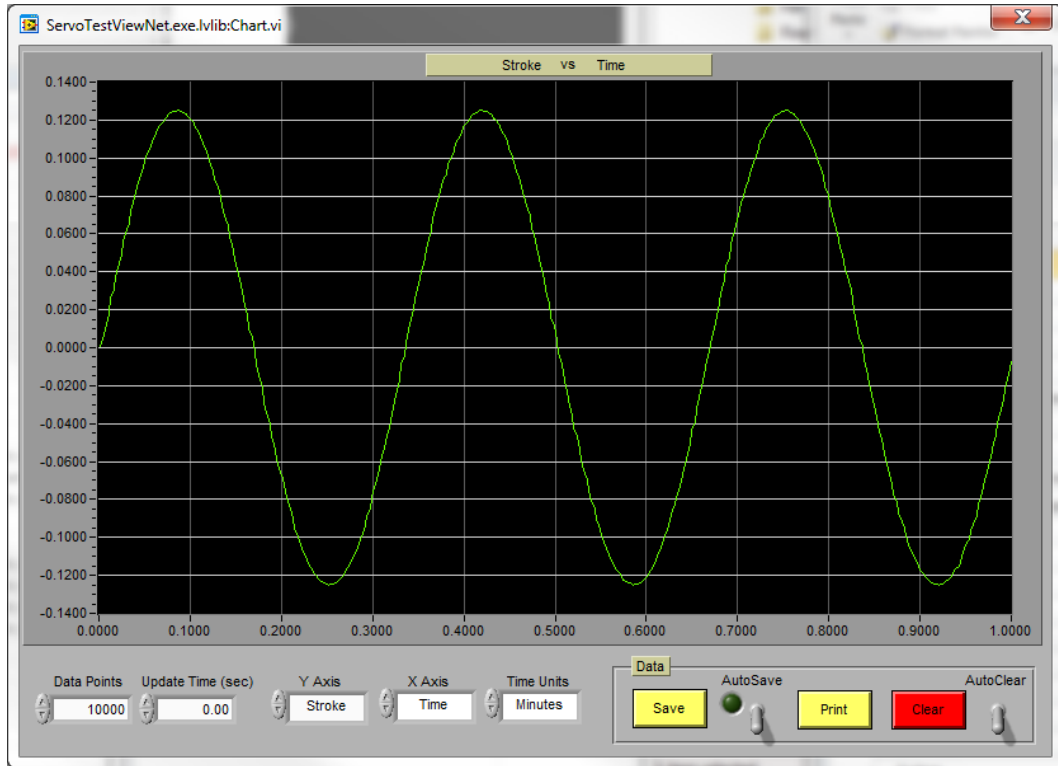


Figure 2

System Requirements

Be sure your PC is 100% IBM or compatible and has at least:

- Windows XP or newer
- CD ROM Drive.
- 1 serial port (COM1 to COM8) or a network connector (if the controller is equipped)

Optional Requirements

The following requirements enhance the use of the program:

- Windows based printer (for graphical output)

Getting Started

Installation

Connecting the Computer to the Controller

- Locate the 9 pin serial cable supplied with this software package. Plug the male end of the 9 pin serial cable into the bottom of the servo control panel, and the female end into the 9 pin connector on the rear of the computer. Secure both ends of the cables with screws.
- Be sure that both the computer and the servo controller are plugged into the same wall outlet so they share the same power ground.
- Turn on the Servo controller using the power switch and prepare the controller for communications.

Installing the Software

- Set the computer screen resolution to 1024 X 768 or higher. This will allow the software the best graphical detail.
- Insert the Servo TestView installation CD in the computer.
- The setup program will automatically run when the CD is inserted in the system. If not then run the **SETUP** program and follow directions on the screen.
- After the Servo TestView program is installed the program will run automatically.

Configuring Servo TestView

After the software is installed, run the ServoTestView program. If the program is run for the first time a dialog box is displayed (figure 3). Select the serial port and baud rate that will be used to communicate with the controller from the drop down menu and press Set. The serial port number and baud rate will be saved in a configuration file named ServoTestView.INI on the hard drive preserving the port configuration.

Note: Use the fastest baud rate the controller will allow unless the computer has trouble with faster rates. The fastest rate will give you the best display update rate possible. Be sure the Servo controller is also configured to use the same baud rate as the computer.

If your controller supports network communications, select Network from the drop down menu and enter the IP address of the controller in the dialog box and press Set. No need to enter a BAUD rates or Serial port for network communications. The IP settings will be saved on the hard drive.

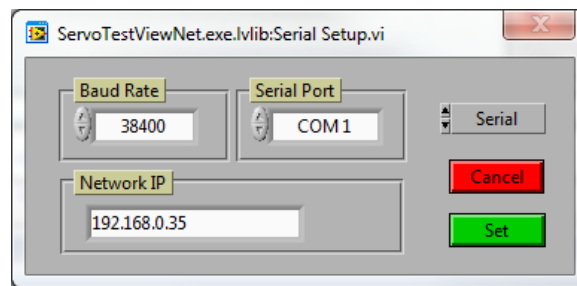


Figure 3

If the computer display prompts with an error after making the selection, the software could not locate the controller. Be sure to check the following:

- Is the computer Network IP or serial port and COM number correct? If not, reconfigure Servo TestView to use the proper values.

If the software recognizes the controller, the display will appear as shown in figure 3.

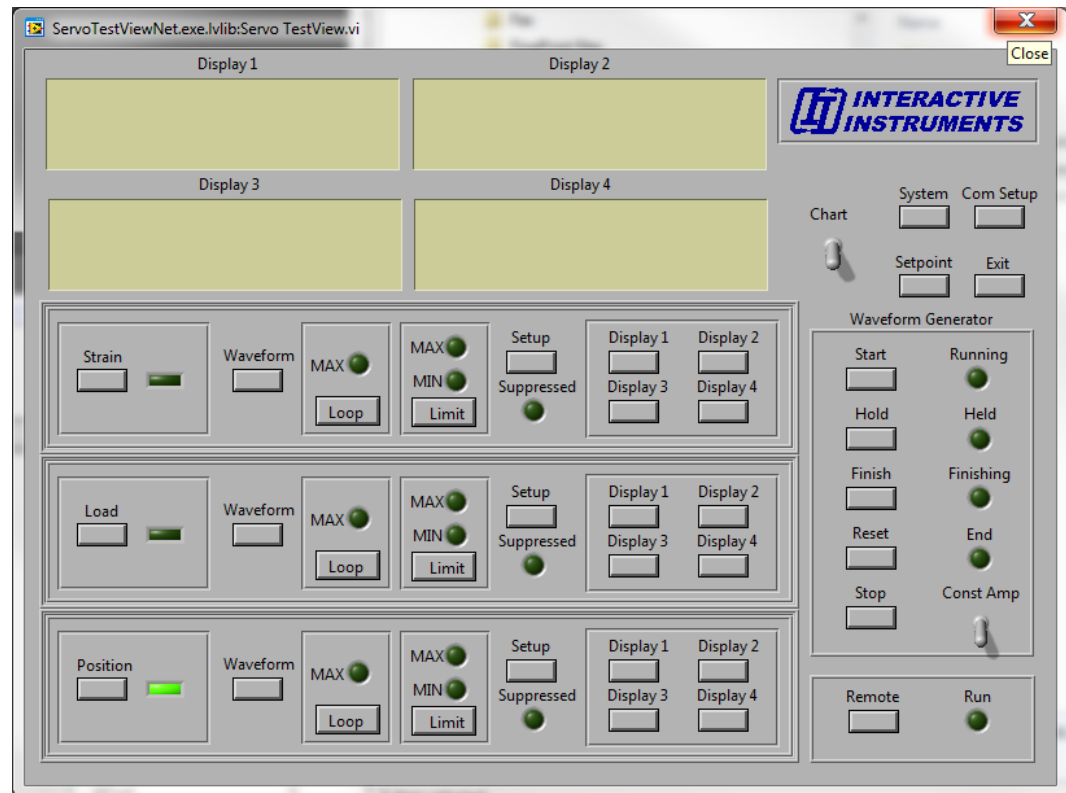


Figure 3

The display is best shown on a monitor with 800 by 600 resolution or better. The Windows fonts should be configured for small fonts. Large fonts will not fit properly on the display panel. Select the Microsoft Windows Control panel "Display" ICON to change screen resolution and font size.

Press the "Remote" button in the lower right corner of the display initiates communication between the Servo TestView program and the controller. If Servo TestView can properly communicate with the controller the display will begin to update with the load, stroke, strain and cycle count values. If after a minute the display prompts with a communications error message, the Servo TestView can't properly communicate with the controller. Check the following.

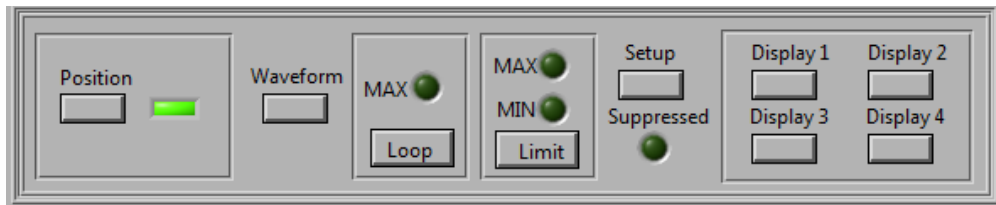
- Is the serial or network cable securely connected to the control panel? If not, secure the cables and try again.
- Check that the controller is powered up and ready. If not, power up the unit before starting the program.
- Is the computer network IP or serial port and COM number correct? If not, reconfigure Servo TestView to use the proper settings.

Working with the Control Program

Main Panel

Looking at the Servo TestView program window you will see the panel divided into sections. The top of the panel has 4 alphanumeric display areas. Each display can be configured to display any one of the control values. These values are the feedback, cycle-max/min, overall-max/min, mean and amplitude for each of the load, stroke and strain channel. System parameters such as cycle count, command value and command error are also available for display as well.

The 3 groups of buttons below the alphanumeric displays represent the load, stroke and strain load frame controller channels. Below is a panel representing the position channel.



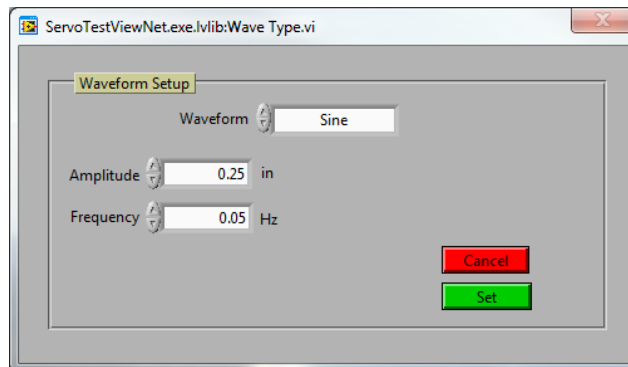
Position control panel

Control Mode

The button on the far left next to the red indicator light is used to select the control channel. Pressing the load, stroke or strain button places the load frame controller into the appropriate mode of control. Be sure the load frame is properly configured to support such a control before enabling. Once the mode is selected the light next to the button will light indicating the current mode of control. Pressing one of these buttons will immediately change the controller's setpoint to match the new control mode feedback. This is to insure the mode transition is as seamless as possible.

Waveform

The Waveform button displays the waveform dialog box for the selected control channel as shown below.



Depending upon the waveform selected the parameter lists adapts as needed. Each channel maintains individual waveform parameters, which is why there is a waveform button for each channel.

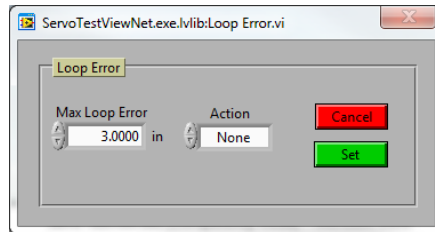
Waveform Generator

The waveform control and status indicators on the right of the panel control the state of the waveform of the current control channel. Pressing the Start button starts the waveform using the current control mode waveform parameters. The status lights also update to reflect the state of the output. If your controller supports constant amplitude control, the switch can enable or disable the mode at any time. Refer to the controller manual for more information on the waveform generator.



Control Loop Error

The Control Loop error button is used to configure the maximum allowed loop error for each channel. The control channel is monitored for excessive error while independent channels are ignored. This feature is helpful to terminate a test if the specimen fractures or breaks preventing the programmed control channel from maintaining control. Selecting the Loop button displays the dialog as shown below.

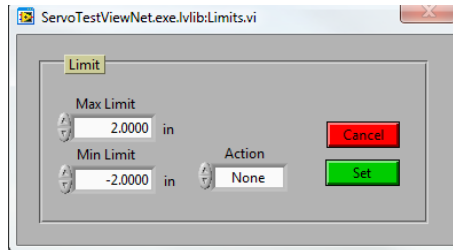


Once the loop error of the control channel exceeds the selected limit the light on the main display panel will indicate the error. If an action is selected then as soon as the loop error occurs the action takes place. Refer to the controller manual for more information on the limit actions.

Note: To clear the loop error light, enter the dialog and press Set.

Limit Error

The Limit button is used to configure the limits for each channel. This feature is useful to monitor the control and independent channels for values outside the normal test range. If the load, stroke or strain channels exceed the programmed limits the test can properly terminate. Selecting the Limit button displays the dialog as shown below.

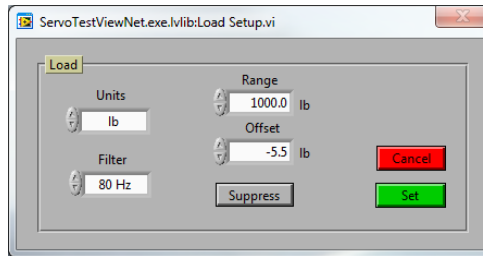


As soon as a control or non-control channel exceeds the maximum or minimum limit as programmed, the light will indicate the appropriate limit error. If an action is selected then as soon as the maximum or minimum error occurs the action takes place. Refer to the controller manual for more information on the limit actions.

Note: Setting the limit action also resets the error lights.

Setup

The setup button is used to configure the appropriate parameters for the selected channel. The two analog channels (load and strain) can be programmed to filter the feedback data to minimize control and feedback output noise. The channels range and offset can also be programmed along with the desired display units to suit the sensor. The suppress button programs the channels offset so the current feedback is zero. The suppress button first reads the selected channels feedback value and programs an offset that would return a feedback of zero. Suppression is helpful at times to remove a stroke offset at the start of a test or to remove the load generated by a grip or fixture. It is important to remember to limit the build up an excessive digital offset because it may reduce the effective range of the channel.



Load Setup Dialog

The position channel has a unique setup because the only parameters that can be changed are the display units and offset. Since the position is controlled digitally, stroke range and filtering are not possible. The maximum actuator rate is programmable and is very helpful for managing how fast the actuator can move to close the loop in any control mode. Faster actuator rates can quickly obtain the desired control point sacrificing control accuracy and possible control overshoot. Slower rates improve the control accuracy but can be slow reacting to command errors.

Note: Modifying the range of an analog channel only changes how the data is displayed and does not modify the gain or calibration of the analog channels. Refer to the controller manual for information about modifying display units and calibration range.

Display 1 to Display 4

The display buttons are used to maintain what information is placed on which display window. Pressing the "Display 1" key in the Load group will allow selection of one of the load parameters to be displayed on display 1. At the same time pressing "Display 2" in the Position group will allow selection of one of the position parameters to be displayed on display 2. All four displays can be programmed to display any channels parameter on any display allowing hundreds of possible display formats. System related controller values can also be displayed such as the command signal, control error and cycle count. These values are identical between the load, stroke and strain channels because they are system related.

Chart

Turning on the chart (toggle switch up) displays a real time X-Y chart graphing one control parameter against another. Using various X and Y axis values it is possible to display load vs. time, load vs. strain, stroke vs. strain etc. in real time. Using the Display 1 to 4 values from the main panel can create many more useful graphs such as max load vs. cycle count or control error verses time.

To disable the chart, toggle the switch off. Once disabled the window can then be removed by clicking the Close button in the upper corner of the window.

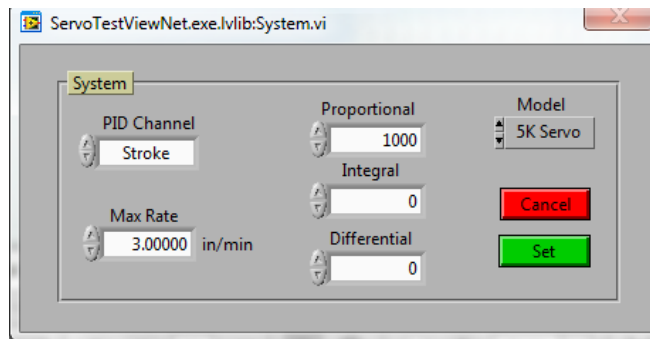
System

The system button is used to modify the system performance parameters. One parameter is the Max Actuator rate (same as on the position setup button), restricts the actuator rate from exceeding this value. Increasing or decreasing this value can greatly impact the system response time to suit the test requirements.

The PID parameters (proportional, integral, differential) are also used to modify the system performance. Each channel has its own PID parameters, which are individually adjustable. Switching control channels, automatically updates the control PID parameters so system tuning is not necessary each time the control channel is selected.

The Model entry is used to select between the 3 controller types. Selecting different models changes the display resolution and the stroke midpoint location as well.

Note: Be careful when modifying the PID parameters because incorrect settings can cause the controller to become unstable. Refer to the controller's manual for information on modifying the PID parameters.



Setpoint

The current control setpoint can be set to any value as the starting point for the waveform. The setpoint automatically takes on the units and resolution of the control channel.

COM Setup

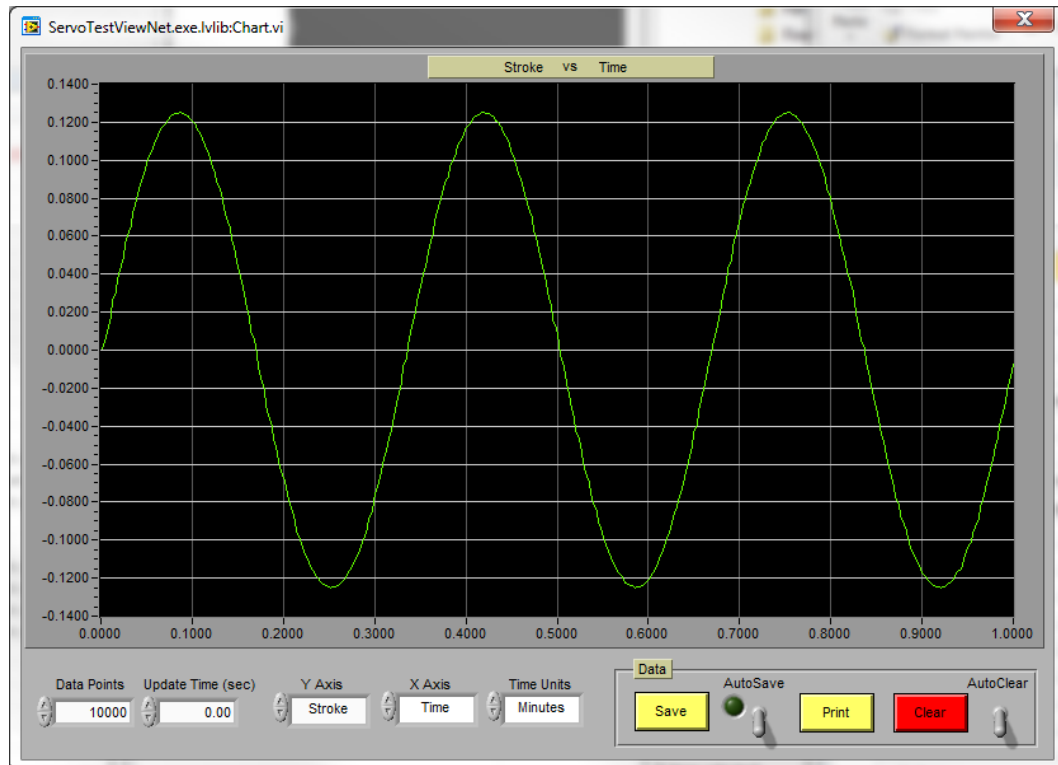
The serial COM port number and baud rate can be adjusted using the serial setup button. This dialog is the same one that is used to initially configure the serial port.

Exit

Exit from the software.

Chart Display

The chart display is a real time X-Y graph of the data read from the load frame controller. Each of the axis can be modified independently at any time. Since all of the axis data is stored internally, the graph axis can be modified at any time and the data will immediately reflect the change. Once the display is filled, older data is deleted to make room for the new data. The graphs data can be stored to disk for further analysis or printed graphically using the default Windows printer.



Data Points

The Data point window identifies the maximum number of data points the graph will support before data is deleted (oldest data is removed first). The maximum number of data points is 250,000 points.

Update Time

Update time reflects how fast or slow (in seconds) the data is collected from the controller and displayed on the graph. Slowing the data collection will spread the number of samples over a wider time period and faster updates display more detail. When the update time is set to 0 the graph data is updated as fast as the computer and controller communications allow.

Note: This update rate does not affect the main plane display update rate.

Chart Off

To turn the chart off, disable the Chart switch on the main display.

Y Axis

The Y-axis selector manipulates what data is placed on the vertical axis. The possible controller values are load, stroke, strain and time along with display 1 to display 4. Load, stroke and strain are the three feedback channels of the controller. Time is the waveform generator time from the controller. Time can be represented in seconds, hours or days by using the time unit's selector. Stopping or holding the waveform generator will also stop time.

Note: Display 1 to display 4 represent whatever data has been configured for these displays on the main panel. This feature is useful to plot values such as the cycle max or mean values with respect to time or cycle count.

X Axis

The X-axis selector manipulates what data is placed on the horizontal axis. The possible controller values are load, stroke, strain and time along with display 1 to display 4. Load, stroke and strain are the three feedback channels of the controller. Time is the waveform generator time from the controller. Time can be represented in seconds, hours or days by using the time unit's selector. Stopping or holding the waveform generator will also stop time.

Note: Display 1 to display 4 represent whatever data has been configured for these displays on the main panel. This feature is useful to plot values such as the cycle max or mean values with respect to time or cycle count.

Time Units

This selector establishes the time units in seconds, minutes or hours. This selector does not auto scale previous data so after a selection has been made it is best to clear the display so all time units are the same.

Save

Stores the data in ASCII tab delimited format. This format is suitable for importing into most spreadsheets for further analysis. The file will contain eight columns of data with a header identifying the load, stroke, strain, time, display 1, display 2, display 3 and display 4 fields. The range of data stored is the same range of data on the graph. Clearing the graph also clears the data that can be saved to disk. The graph only displays two values (X and Y axis) but the data stored to disk contains all 8 data values.

AutoSave

When activated, the data values are automatically saved into a data file until the switch is turned off. The green indicator is turned on when AutoSaving is activated.

Print

The graph can be printed using any Post Script Windows printer. Using a non-post script printer is not recommended due to difficulties automatically scaling the output to match the printer.

Clear

Clear Data removes all data from the graphing area.

Note: Once data is cleared from the graph it cannot be stored to disk or printed on a printer.

AutoClear

When turned on, the graph area is cleared when the waveform is started giving a nice clean graphical view of the beginning of a test. Once AutoClear is turned on, start the waveform using the Wave Form Generators start button and any pre-test data will be cleared from the graphing area. The AutoClear feature will automatically disable itself once the graph area is cleared.

Note: Be sure the chart is enabled before starting the waveform.