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Webviews Guide: Foreseer 6.3



Webviews User's Guide

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1. Introduction to Webviews

The Foreseer Enterprise Monitoring System is designed to manage your critical site by monitoring power and environmental inputs from equipment, sensors and other systems. Monitored points include analog, digital and derived inputs which open a detailed window into the past, present and future performance of your mission-critical equipment. The unique networked architecture and modular design make the Foreseer system a cost-effective approach to managing your site while maintaining unique analysis and multi-vendor connectivity capabilities. It furnishes a single integrated system which provides real-time and historical views into the operation of the power and environmental conditions that support your critical operation.

The WebViews component of the Foreseer Enterprise Management System is a collection of web pages viewed through Microsoft's Internet Explorer browser. A WebViews-Enabled Foreseer Server (the "Web Server") functions as a centralized storage location for archived channel information while WebViews pages provide a graphical display of the site. WebViews allow authenticated users to observe real-time data collection, respond to alarms, generate reports and view historical data for every input.

Note: Refer to the Foreseer Server Guide for more information on the operation of that software program.

The Web Server has been pre-configured with critical data points and representative views specific to your operation. Clients can access the Server IP address and view its resident data. Security functions control who has access privileges to particular program features, thereby protecting the configuration from unauthorized alteration.

A few of the program features that offer comprehensive management of your site are:

WebViews Navigation: WebViews are graphical representations of your site that allow you to monitor multiple locations and conditions simultaneously. A WebView could be a floor plan, a piece of equipment, an electrical schematic or a list of monitored points. It contains associations with icons and objects that change dynamically by displaying values, conditions and colors to indicate different operational states. Navigating WebViews gives you the ability to expand your perspective from a single input to a system-wide outlook.

Figure 1.1 A Typical Webview



WebViews Reports: You can produce text files that furnish important insights into system performance. WebViews Reports provide pre-defined Server information that is displayed on request. These reports can be printed to provide a hardcopy of the information.

Figure 1.2 A Portion of a Channel Report.

```

Local
Channel Report
Report Time 01/14/09 10:27:54

Device Name: Derived Channels, UID: 2

Device Name: System Channels, UID: 3

Name: "Active Client Connections", Type: Analog (Read Only), UID: 4
Description: Number of incoming client connections.
Units: "", Archive Type: Maximum
Latched Alarm: No, Ack Holdoff: 60 minutes, Re-Arm: 60 minutes
Delay Alarm: disabled, Alarm Priority: 9999, Hysterisis Enabled: No, Value: 0.000000
Hi Critical Enabled: No, Limit: 0.000000
Hi Critical Message:
Lo Critical Enabled: No, Limit: 0.000000
Lo Critical Message:
Hi Caution Enabled: No, Limit: 0.000000
Hi Caution Message:
Lo Caution Enabled: No, Limit: 0.000000
Lo Caution Message:

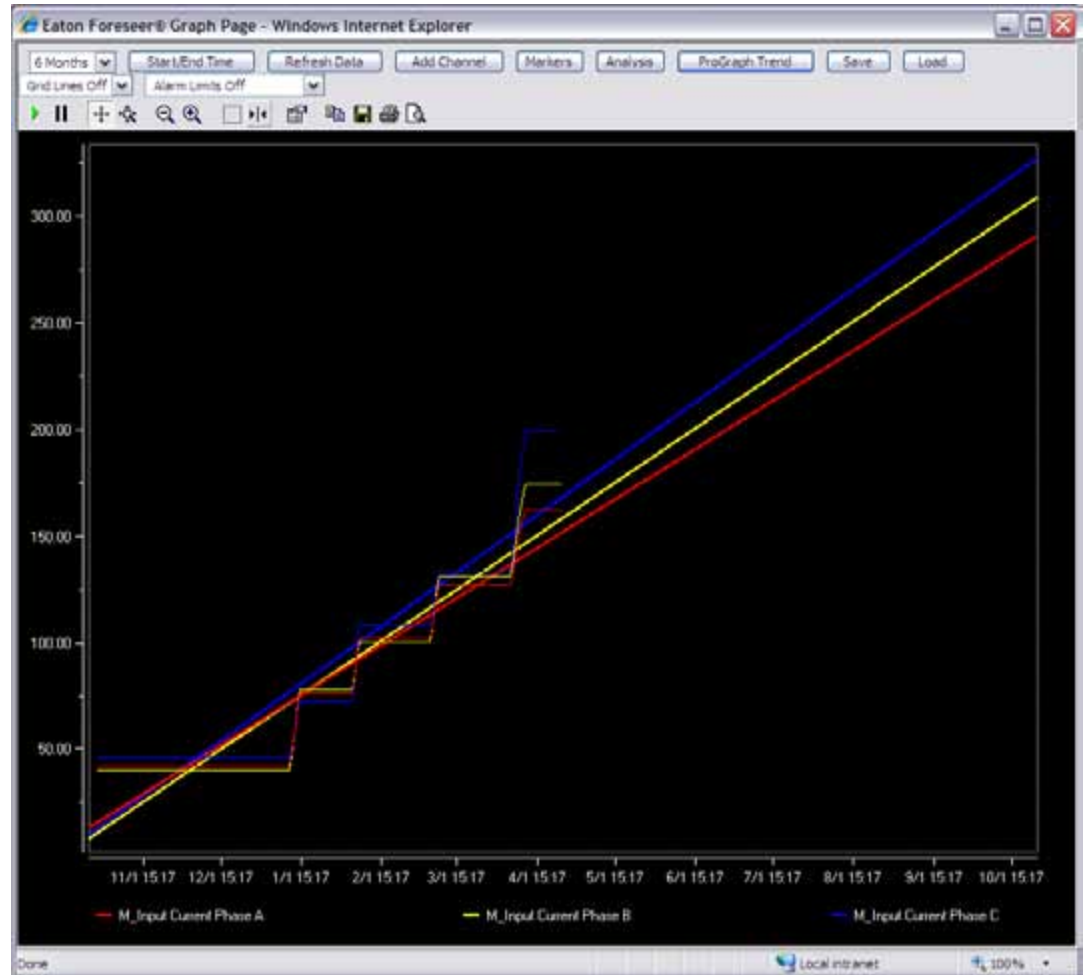
Name: "Configuration Backup", Type: Digital (Read Only), UID: 5
Description: Configuration backup status.
TRUE String: "OK", FALSE String: "Outdated"
Latched Alarm: No, Ack Holdoff: 60 minutes, Re-Arm: 60 minutes
Delay Alarm: disabled, Alarm Priority: 9999
Alarm Enabled: No, Type: Caution, Alarm On: FALSE
Alarm Message: The configuration backup is out of date with the current

Name: "Disk Free Space", Type: Analog (Read Only), UID: 6

```

WebViews Graphs The Foreseer Enterprise Management System allows users to be proactive, rather than reactive, in the management of their site. With its extensive data graphing capabilities, you can understand problems and take corrective action to prevent potential failures. Archived historical or real-time burst statistics are available online to ensure that you always have complete decision-making information at your fingertips. An extensive selection of options gives you the necessary tools to display the plotted data as desired. Customized WebViews graphs make it easy to analyze cause-and-effect relationships and anticipate events before they occur.

Figure 1.3 A Graph Window, Showing Projection Lines.



1. WebViews Alarms: Foreseer arms you with some of the most advanced alarm management capabilities currently available.

By allowing you to specify a series of actions to be taken under certain conditions, timely and effective response to an escalating situation is assured. An Active Alarms window summarizes current alarms on a single screen. This approach allows simultaneous response to multiple alarm conditions while minimizing the possibility that additional problems will go undetected.

In addition to displaying information about the nature of the specific alarm, the Active Details window includes the ability to acknowledge and/or rearm reported alarms. A note facility is available for entering relevant comments regarding the alarm situation. All information is logged at the Foreseer Server and available through WebViews Alarm Reports.

Figure 1.4 Active Alarms

The screenshot shows a web browser window titled "Eaton Foreseer® Alarm Management - Webpage Dialog". The address bar shows "http://127.0.0.1". The main content is a table with the following columns: State, Server, Device, Channel, Priority, Date/Time, Alarm Value, and Current Value. The table contains seven rows of data, all with a "State" of "Offline".

| State | Server | Device | Channel | Priority | Date/Time | Alarm Value | Current Value |
|---------|---------|---------------|-------------------------|----------|-------------------|-------------|---------------|
| Offline | Sandbox | PW 9318 UPS 1 | S_Device Communications | 9999 | 04/11/12 09:29:56 | Offline | Offline |
| Offline | Sandbox | PW 9318 UPS 2 | S_Device Communications | 9999 | 04/11/12 09:29:57 | Offline | Offline |
| Offline | Sandbox | SV80 Meter 1 | S_Device Communications | 9999 | 04/11/12 09:26:16 | Offline | Offline |
| Offline | Sandbox | SV80 Meter 2 | S_Device Communications | 9999 | 04/11/12 09:26:16 | Offline | Offline |
| Offline | Sandbox | SV80 Meter 3 | S_Device Communications | 9999 | 04/11/12 09:26:16 | Offline | Offline |
| Offline | Sandbox | SV80 Meter 4 | S_Device Communications | 9999 | 04/11/12 09:26:16 | Offline | Offline |
| Offline | Sandbox | SV80 Meter 5 | S_Device Communications | 9999 | 04/11/12 09:26:15 | Offline | Offline |
| Offline | Sandbox | SES-351-71 | S_Device Communications | 9999 | 04/11/12 09:29:56 | Offline | Offline |

2. Getting Started

2.1 Hardware/Software Requirements

WebViews has certain hardware requirements; exceeding these prerequisites will enhance the performance of the application. The following minimum system configuration is required in order to be able to run WebViews:

Operating System: Microsoft® Windows 2003/2008/XP/7

Processor: 1 GHz Pentium Processor (Recommended: 1.5 GHz Processor)

Graphics: 1440 x 900, 17" SuperVGA Monitor with a 64 Mb video card

Memory: 512 Mb of RAM (Recommended: 1 GB)

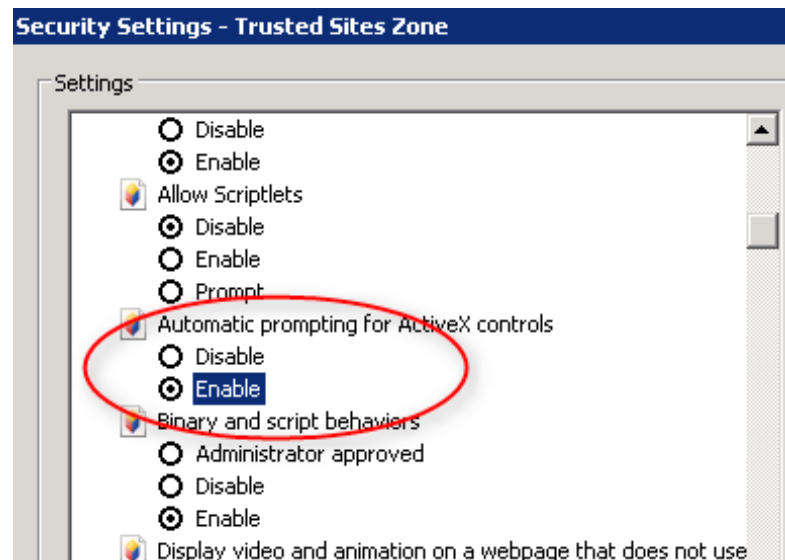
Peripherals: Keyboard, Mouse, and Local printer for hard copy outputs

Required Browser: Microsoft Internet Explorer version 9 and 10 (desktop version only)

Accessing WebViews is like displaying any other web site in Internet Explorer. However, the Foreseer Server must be running and WebViews must be enabled in order to interface with WebViews.

Note: To install the Active-X controls (required for Control Objects on Webviews pages), you must set Internet Explorer to enable automatic prompting for Active-X controls. This setting is found in the Security tab in the Internet Options dialog box. Click the Custom Level button and scroll down to the ActiveX controls and plug-ins section. Also, the WebViews site should be added to the Trusted Sites zone.

Figure 2.1 Automatic Prompting Setting



2.2 Accessing WebViews

To access WebViews:

1. Open Microsoft Internet Explorer on your PC.
2. Enter the Internet Protocol (IP) Address of the Web Server in the address window as:

`http://IP_Address/webviews`

where: *IP_Address* is the Internet Protocol Address of the Web Server.

Figure 2.2 A Top Level Webviews Page



Depending on the size of the server configuration, it may take a few moments for the home page to load. Once the Web Server connection is established, the data and current status of the monitored channels are reported.

WebViews users must have authorization to be able to navigate and perform remote functions if login and password requirements are specified at the Web Server. Authentication privileges are assigned on the Web Server by the System Administrator.

2.3 Webviews Capabilities

A basic home page display scheme can show the entire enterprise as a collection of labeled icons. In the following WebViews, the data center is represented by a rectangular block, the color reflecting its current alarm status:

Green — all of the Server's monitored data points are operating within their set Alarm Limits.

Yellow — one or more of the monitored data points has exceeded a Cautionary Alarm Limit.

Red — one or more of the monitored data points has exceeded a Critical Alarm Limit.

Blue — indicates one or more reported alarms has been acknowledged.

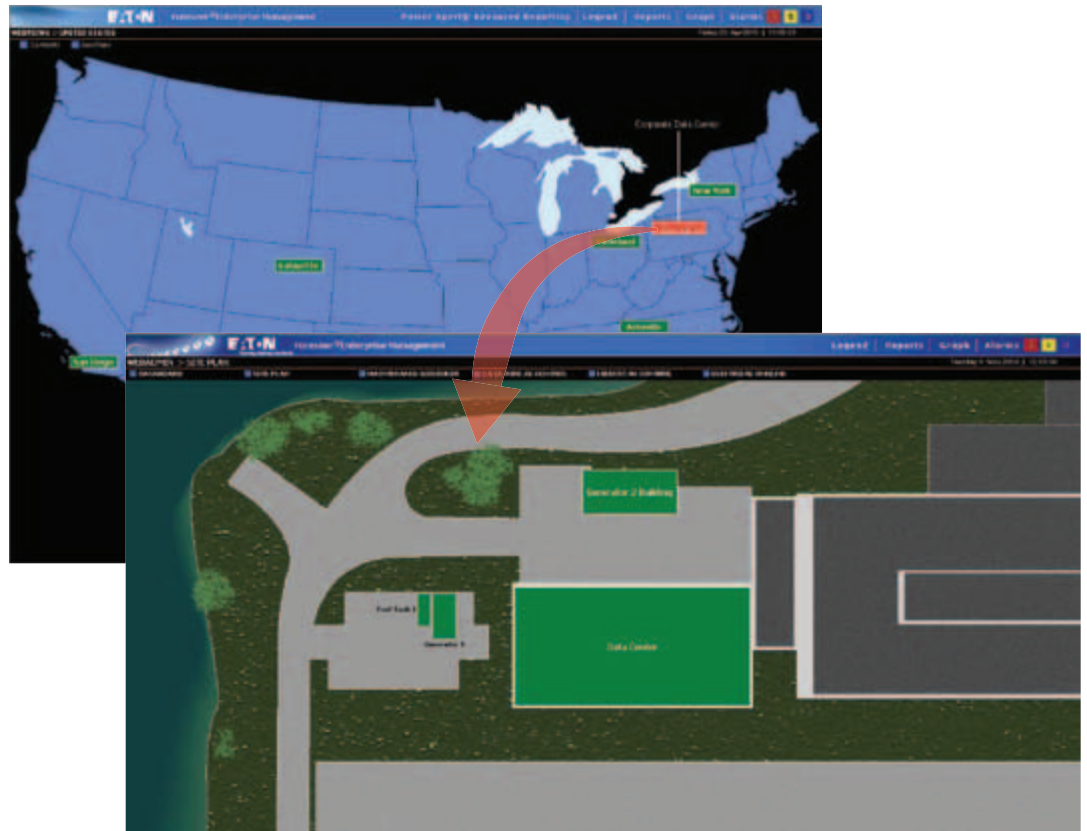
Gray — data is not being gathered by this Server.

Cyan — means alarm monitoring has been disarmed for the channel or Device.

Purple — indicates the channel or Device has been manually disabled.

The following examples are based on a fictitious site. The actual layout and functionality of pages are determined at the Web Server. Refer to the WebViews Editor Guide for complete information on setting up the Web Server configuration for display.

Figure 2.3 Opening a Subordinate Webviews Page from the Top Level Page



You can navigate from the home page display to the various other WebViews simply by clicking on the desired icon. Subordinate views typically include pages that reflect the actual floor plans of the site.

Figure 2.4 Channel Properties

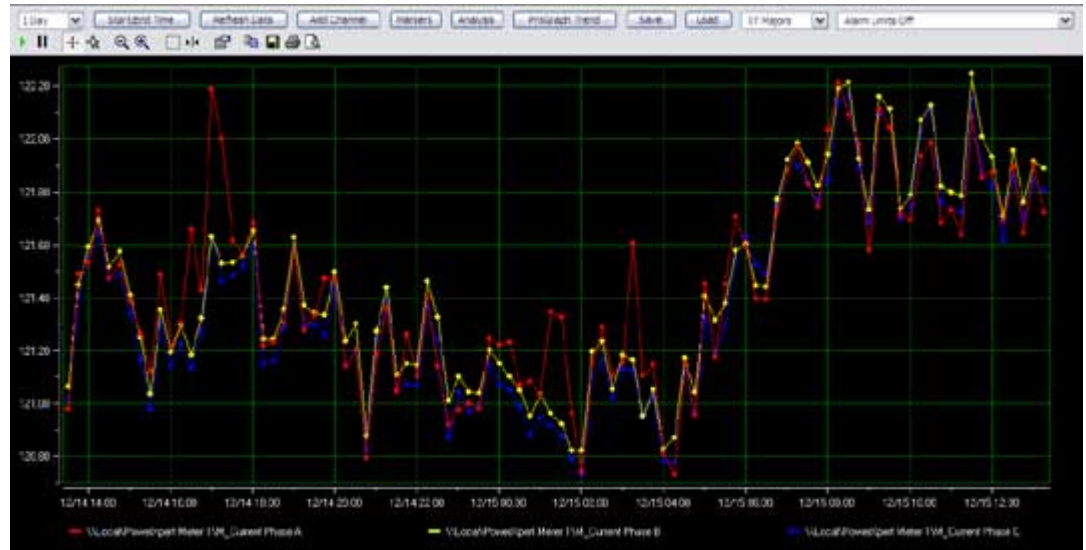


Individual channel inputs are presented on the bottom-level Device page where their reported data are displayed. The Device page furnishes current values and access to individual channel properties.

2.4 Graphs

It also provides access to archived historical data through the graphing function. Just check the box next to the desired channel(s) value(s) and click the Graph link to plot the corresponding data points.

Figure 2.5 A Foreseer Graph showing three channels.



You may wish to view the graph in closer detail and the Graph toolbar offers a number of potential display formats. You can Zoom In and Out on axes and data points, or fine-tune the span by specifying a fixed time frame. You also can examine specific data points using the Zoom Box or Cursor button, or choose to graph the channels' values in real-time as they are reported.

The WebViews graph display can be customized to meet virtually any display need. Clicking on the Properties button in the Graph toolbar presents an extensive variety of display options, a feature that is particularly helpful in multichannel graph displays.

An image of the graph can be printed, saved or copied to the clipboard for insertion into reports or other applications.

2.5 Alarms

Active alarm counts are reported in the menu bar and summarized on the Active Alarms page that is displayed by clicking the Alarms link. The page can be sorted to address response needs by clicking on any of the column headings.

Clicking on a Channel name opens the Alarm Details window, which presents information specific to that input. It also permits WebViews users to respond to the condition. You can Acknowledge and/or Rearm the Channel, as well as enter a Note documenting additional details about the alarm. All reported alarms, and responses, are logged at the server and available in a WebViews Report.

Figure 2.6 Alarms link



Figure 2.7 Alarm Management Window

| State | Server | Device | Channel | Priority | Date/Time | Alarm Value | Current Value |
|-------|--------|-----------------|-----------------|----------|----------------------|-------------|---------------|
| ■ | Local | System Channels | System Alarm | 9999 | 12/23/08 10:00:43 | Alarm | OK |
| ■ | Local | System Channels | Disk Free Space | 9999 | 12/22/08 14:43:58 | 14992.00 | 14991.00 |

2.6 Reports

WebViews Reports are always available from the Reports link. Report formats are pre-defined to contain site information of interest. For more information about reports, see chapter "7. WebViews Reports" on page 45.

Figure 2.8 Example of a Webviews Report

```

Local
Channel Data Report
Report Interval: -12 day -10 hour
From 01/13/09 10:37:39
To 01/01/09 00:00:00

Device: PowerXpert Meter 1 (9618 records) from 01/01/09 00:00:00 to 01/13/09 10:37:39

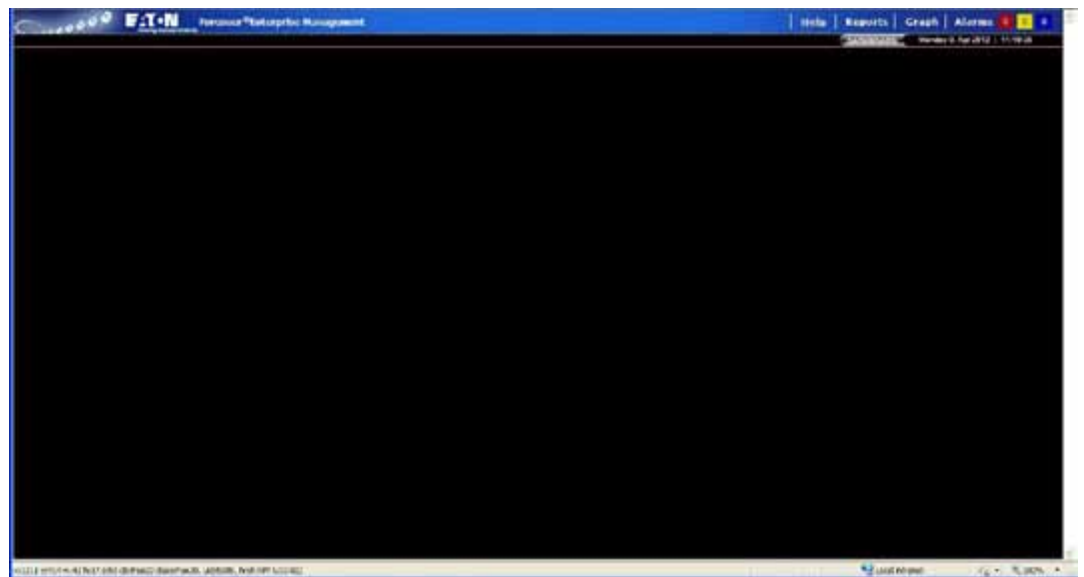
```

| Channel | Min | Max | Avg |
|-----------------------|--------|--------|--------|
| M_Current Phase A | 121.07 | 125.38 | 122.36 |
| M_Current Phase B | 121.20 | 125.55 | 122.32 |
| M_Current Phase C | 121.13 | 125.49 | 122.31 |
| M_Current Ground | 0.12 | 0.13 | 0.12 |
| M_Current Neutral | 121.49 | 125.93 | 122.60 |
| M_Current Average | 121.21 | 125.42 | 122.33 |
| M_Voltage Phase A-B | 0.18 | 0.19 | 0.18 |
| M_Voltage Phase B-C | 0.17 | 0.18 | 0.17 |
| M_Voltage Phase C-A | 0.17 | 0.19 | 0.18 |
| M_Voltage Average L-L | 0.17 | 0.18 | 0.18 |
| M_Voltage Phase A-N | 118.48 | 123.84 | 120.97 |
| M_Voltage Phase B-N | 118.48 | 123.84 | 120.97 |

3. WebViews Basics

WebViews make it easy to monitor graphical representations that accurately depict each aspect of your enterprise. The browser-based Foreseer module presents all users with a consistent look at the site based on a collection of customized views. WebViews are designed to be practical in the presentation of server details within Microsoft Internet Explorer. Information is displayed clearly and program navigation is intuitive. This chapter describes the basic WebViews window and its component elements.

Figure 3.1 Foreseer Webview

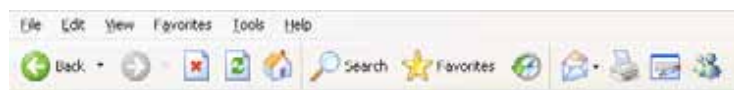


3.1 The WebViews Window

Note: Some WebViews functions may require User Authorization. The browser window, shown on the next page, is a basic WebViews display. It is comprised of several key elements that are presented consistently throughout program operation:

Menu Bar furnishes the standard Windows Internet Explorer File, Edit, View, Favorites, Tools and Help menus. The contents and look-and-feel will vary depending on which version of Internet Explorer you're using.

Figure 3.2 Menu Bar



Breadcrumbs display the navigational path to the currently displayed screen. Clicking on any of the titles in the text string displays that screen.

Figure 3.3 Breadcrumbs



Status Bar displays context-sensitive messages which report real-time program activity and describe the action resulting from selecting a particular item, such as a menu command.



Links jump directly to WebViews windows from which key program functions are performed. Refer to the following chapters : WebViews Reports, WebViews Graphs, and WebViews Alarms for information on these WebViews operations.

Figure 3.4 Links



WebViews Window shows system Views, dialog boxes and other program displays. Clicking on the right mouse button presents a context-sensitive menu containing commands associated with the active window.

Figure 3.5 Webviews Window



Alarm Totals report the number of active alarms, divided into Cautionary (yellow), Critical (red) and Acknowledged (blue) counts.

Figure 3.6 Alarm Totals



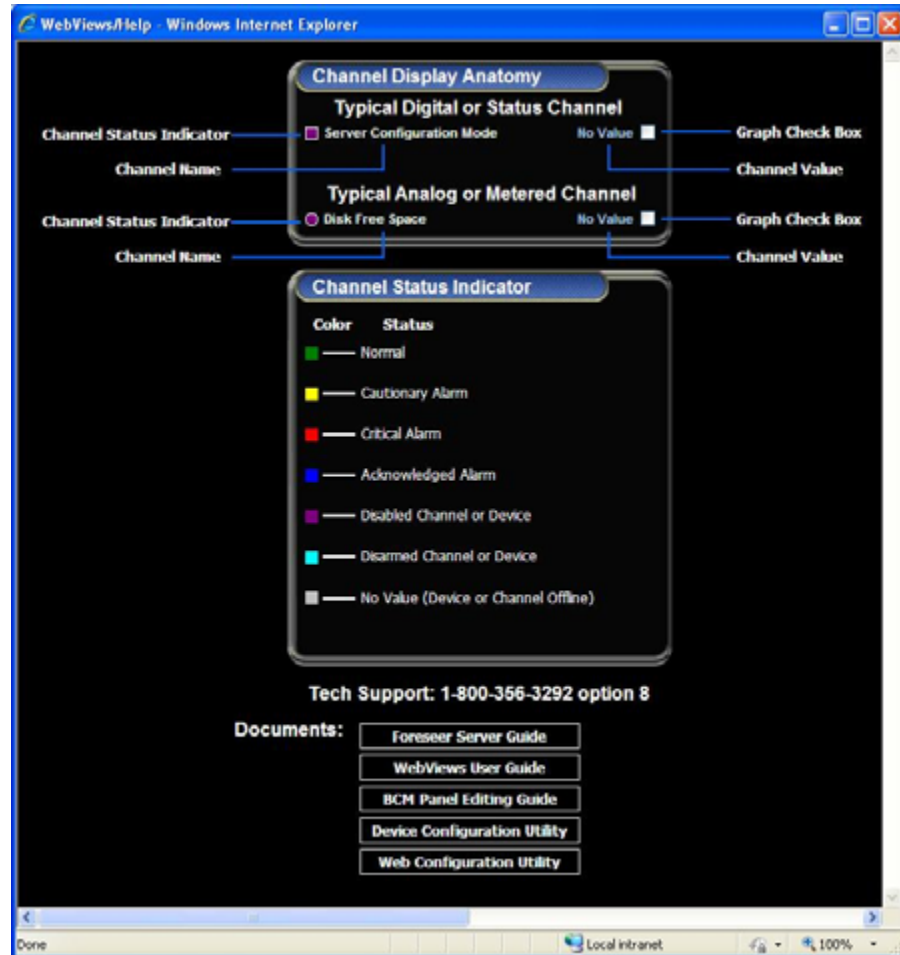
Date and Time is the current local date and time, updated every second.

Figure 3.7 Date and Time



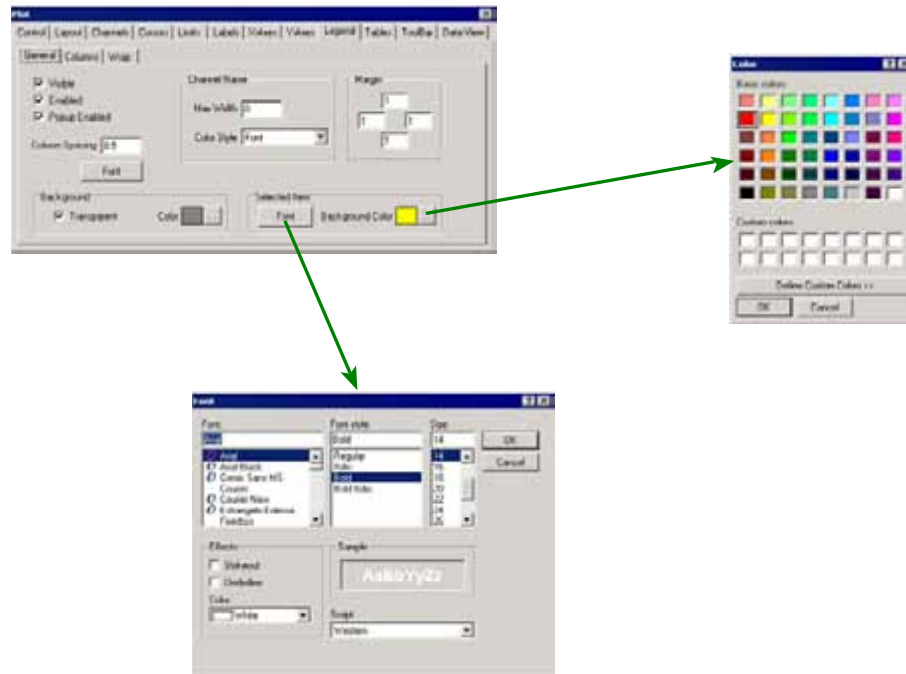
Incorporating a Help link as part of the basic WebView display provides a quick reference to Device page components and the meanings of their corresponding color indications.

Figure 3.8 A Webviews Help



WebViews employ dialog boxes to enter program information such as the properties which govern its various operations. Consistent with Windows displays, the information in some dialog boxes is grouped in categories under tabbed headings. Clicking on a tab selects that category and brings its parameters to the front of the dialog box where the settings can be specified. Clicking on an arrow associated with a particular field displays additional selections. Scroll bars are automatically enabled whenever a dialog box selection list exceeds the available display area.

Figure 3.9 Webviews Dialog Boxes



3.2 Accessing WebViews

WebViews pages are displayed through Internet Explorer much like any other web page. To display the WebViews home page, simply enter its address:

`http://IP Address/webviews`

where: *IP Address* is the Internet Protocol Address of the Web Server.

The Home page is identified by the Breadcrumbs name specified in the WebViews Folder Properties dialog box at the Server. This main page is populated with icons that represent the various components of the monitored site. The color of the icons makes it easy to determine the status of critical operations because alarm status propagates to this highest level display (see "6.1 Alarm Reporting" on page 37).

Using the Shortcut Menu

You can right-click on any Webviews page to launch the shortcut menu. From there you can:

- Resize the page.
- Launch the Alarm Management window.
- Launch a Graph Window (if one or more channel check-boxes on the page is selected).
- Launch a control point dialog box (if one or more selected channel check-boxes on the page is selected and if the selected channel is a valid control point).

Figure 3.10 The Shortcut Menu

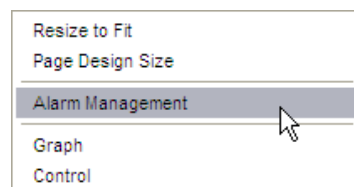


Figure 3.11 Webviews Homepage Showing Breadcrumbs Location

3.3 WebViews Navigation

Note: Navigating WebViews may require you to enter a user name and password.

As with initial access, navigating WebViews is no different than maneuvering through any other web site. Clicking on a linked icon (indicated by the hand cursor) displays the down level depiction of that component, in this case a data center floor plan.

A breadcrumbs trail is created by each of the WebViews pages visited. The trail of page names provides easy and direct access to pages in the display hierarchy by clicking on them.

Figure 3.12 The Breadcrumbs Extend as You Drill Down

WEBVIEWS > UNITED STATES > COMPANY ABC
WEBVIEWS > UNITED STATES > COMPANY ABC > DATA CENTER
WEBVIEWS > UNITED STATES > COMPANY ABC > DATA CENTER > EATON PDU 1

Each WebView can oversee as many related pages as desired. You can continue to step through these subordinate WebViews by clicking on the corresponding icons. The next level down typically depicts the equipment specific to the display. The individual Device icons reflect the current status of the equipment being monitored based on actual data point inputs. Clicking presents those data points.

Device pages reflect the equipment's analog and digital inputs by displaying each channel's current value and alarm state. A Device page also can incorporate derived channels based on the inputs from one or more analog or digital channels. The data for each channel shown are updated as they are reported by the Web Server.

Figure 3.13 A Device Page



The Primary Information Device page groups channels logically depending on their functions.

Each channel is preceded by an icon which displays its current alarm state and is followed by its current value. The check boxes associated with the channels allow you to Graph them (see chapter "4. WebViews Graphs" on page 23).

The bottom of the page displays an image and summary information about the Device. In some instances, a supplemental page is available which furnishes additional information on the equipment simply by clicking on that button.

Figure 3.14 Supplemental Device Page Button



3.4 Channel Properties

Note: Accessing WebViews Channel Properties may require User Authorization.

While not WebViews in the graphical sense, channel properties are the underlying settings which determine the display of each of the inputs. If a channel exceeds its alarm limit, for instance, the excursion is reported visually by turning the associated icons the appropriate color on all of the WebViews with which it is linked. To display the Properties dialog box for a particular channel, just double-click on it.

The tabbed Properties dialog box defines its operational parameters and is specific to the Device being monitored. These characteristics vary somewhat depending on whether the channel is analog or digital, but they are grouped similarly:

- General Channel Properties identify the individual input, its display and archiving characteristics.
- Basic Channel Properties define the situations under which the channel reports an alarm, as well as the text Messages corresponding to the particular condition. A setting also assigns a relative level of importance to the channel for Priority sorting in the Active Alarms window.
- Advanced Channel Properties specify various automatic responses to a detected alarm.

Although residing at the Web Server, Channel Properties can be modified by an authorized WebViews user. Changing these attributes updates the settings on the server.

3.4.1 General Channel Properties

General Properties are nearly identical for analog and digital channels, the only difference being the value display characteristics.

3.5 General Analog Channel Properties

State is a fixed entry reporting the current alarm status of the input as Normal, Cautionary, Critical or Acknowledged.

- Current Value is a fixed entry showing the channel's reported reading when the channel properties was accessed.

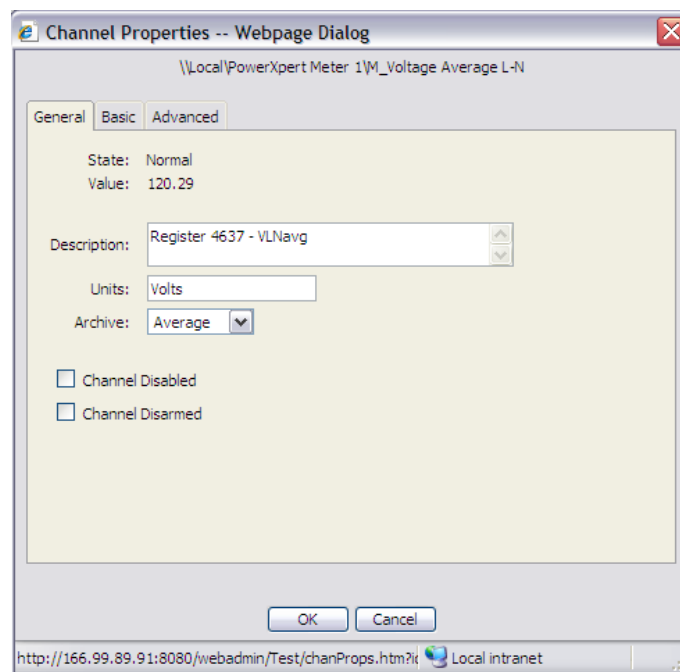
- Description is a user-entered comment (up to 255 characters) identifying the channel input.
- Units are the measurement units in which the channel's data are reported.

Archive specifies the Channel Value that is archived to the Web Server database. It may be the Average reading or the Minimum, Maximum, First, Last, Null or None over the archive interval. The default (and recommended) selection is Average.

Channel Disabled does not report detected alarms when checked, nor are data archived for this channel. Disabling a channel is useful when performing maintenance or making equipment repairs in order to avoid archiving inappropriate readings.

Channel Disarmed suspends alarm reporting for the channel when checked. Data, however, continue to be archived. Disarming a channel is useful when performing maintenance or making repairs to avoid reporting nuisance alarms.

Figure 3.15 Analog Properties: General Tab



3.6 General Digital Channel Properties

Channel State is a fixed entry reporting the current alarm status of the input as Normal, Cautionary, Critical or Acknowledged.

Current Value is a fixed entry showing the channel's reported reading at the time properties were accessed.

Description is a user-entered comment identifying the channel input.

True String is the operational state that is reported for this channel when its Current Value is True.

False String is the operational state that is reported for this channel when its Current Value is False.

Channel Disabled does not report detected alarms when checked, nor are data archived for this channel.

Disabling a channel is useful when performing maintenance or making equipment repairs in order to avoid archiving inappropriate readings.

Channel Disarmed suspends alarm reporting for the channel when checked. Data, however, continue to be archived. Disarming a channel is useful when performing Device maintenance or making repairs to avoid reporting nuisance alarms.

Figure 3.16 Digital Properties: General Tab



3.7 Basic Analog Channel Properties

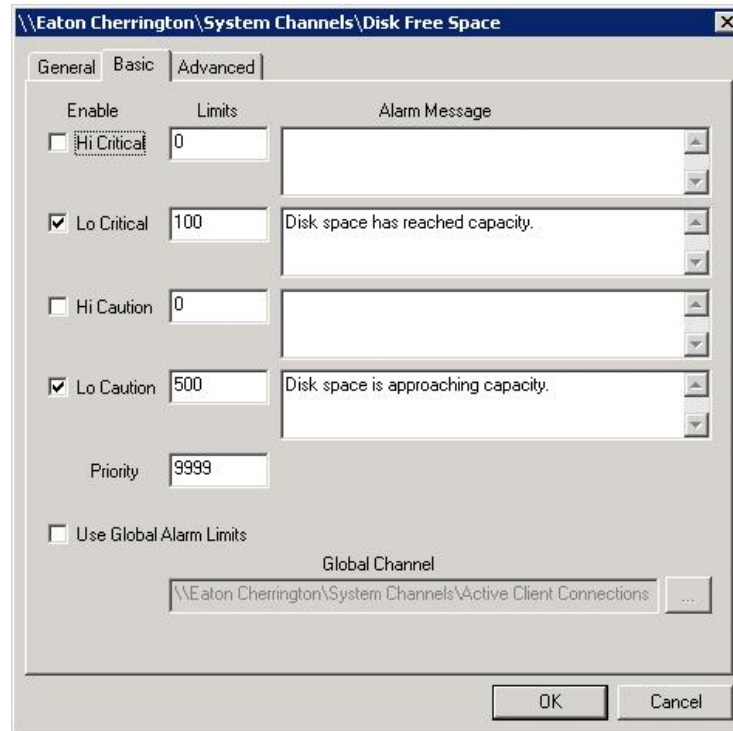
Enabled when checked activates monitoring of the channel's Cautionary (yellow) and Critical (red) Alarm Limits. Alarm monitoring for all of a channel's thresholds can be temporarily suspended by checking Channel Disarmed in its General Properties dialog box.

Limit Value specifies the channel's monitored Cautionary (yellow) and Critical (red) Alarm Limits. Independent Hi and Lo Limits can be set for both event levels.

Alarm Message is the display text corresponding to the channel's Cautionary (yellow) and Critical (red) Alarm Limits. Messages can be independently assigned to the Hi and Lo Limits for each channel level event.

Priority is a number from 1 (highest) to 9999 (lowest) which assigns a level of importance to an alarm detected on this channel.

Figure 3.17 Analog Properties: Basic Tab



3.8 Basic Digital Channel Properties

Enable Alarming when checked activates monitoring of the channel for state transitions. Alarm monitoring can be temporarily suspended by checking Channel Disarmed in its General Properties dialog box. You can specify if the channel should alarm either on "false" or "true" and the alarm message. You can also select if the alarm is Critical or Cautionary.

Alarm Message is the display text corresponding to an alarm on this channel.

Alarm Priority is a number from 1 (highest) to 9999 (lowest) which assigns a level of importance to an alarm detected on this channel.

Figure 3.18 Digital Properties: Basic Tab



3.9 Advanced Properties

Advanced Properties are identical for analog and digital channels with the exception of Scaling factor analog settings.

3.9.1 Advanced Analog & Digital Channel Properties

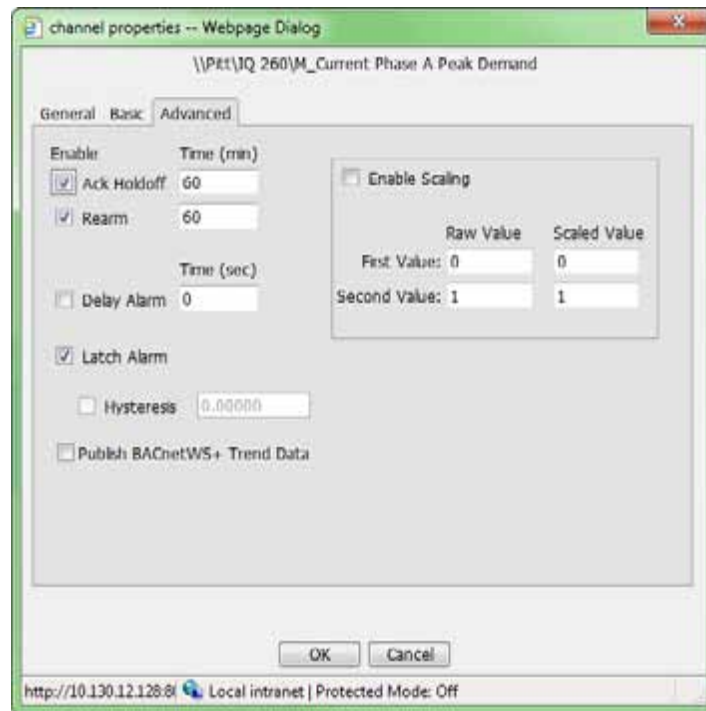
Ack Holdoff defines (in minutes) the delay interval after a channel alarm has been acknowledged before it is automatically rearmed. Acquired data continue to be displayed and archived, but the channel's Current Value is no longer compared to its defined Alarm Limits. The default Holdoff period of one hour may be manually overridden at any time using the Rearm button, or when the alarm is acknowledged (see page 34).

Check the box preceding this field to Enable the setting.

Re-Arm is the period of time (in minutes) before alarm monitoring is automatically restored to a disarmed channel. Rearming manually resumes testing of a channel's Current Value against its specified Alarm Limits. Check the box preceding this field to Enable the setting.

Delay Alarm is the period of time (in seconds) before an alarm detected on this channel is reported. The default is to report alarms immediately. Check the box preceding this field and enter a value (in seconds) to Enable the setting.

Figure 3.19 Analog Properties: Advanced Tab



Latch Alarm is a toggle state which determines whether an alarm condition continues to be reported if the channel's Current Value returns to within its assigned Critical or Cautionary Alarm Limit. When Enabled, the channel's highest alarm state is reported regardless of its Current Value. Note that the alarms must be Enabled and Limits assigned under the channel's Basic Analog Properties or Basic Digital Properties tab.

You can also publish trend data via BACnetWS+.

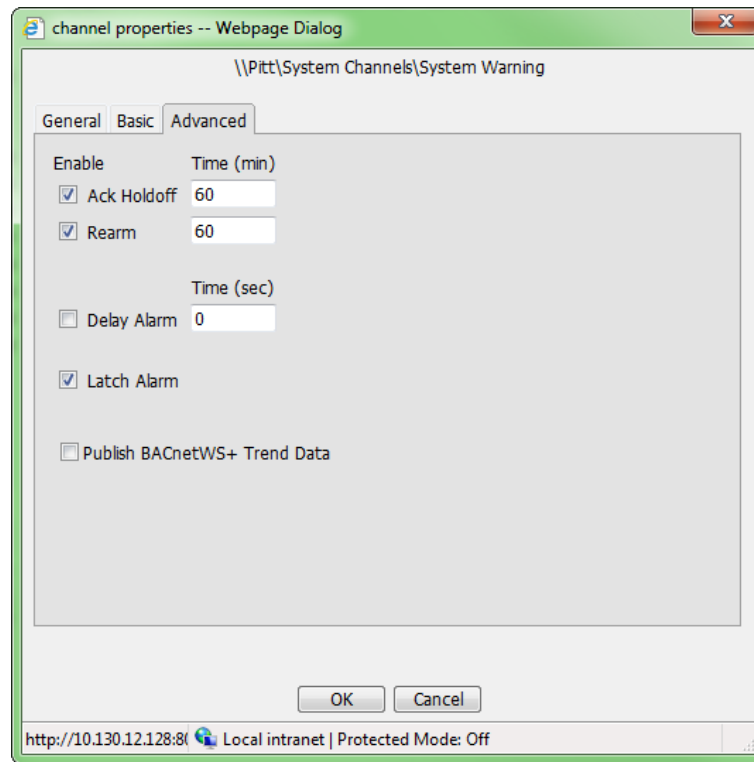
3.9.2 Analog Channels Only

Hysteresis determines the threshold Value before a new alarm is reported for an analog channel. Hysteresis is used to eliminate nuisance alarms when the channel's input fluctuates near its Alarm Limit. Once an alarm occurs, the input level must drop below, or rise above, the threshold Value then exceed the Limit once again before a new alarm is reported. The particular threshold Value is specified in the channel's display Units (i.e., volts, amps, hz, kVA, kw, etc.). This attribute is only available for non-Latching alarms.

Enable Scaling allows you to apply a linear scaling factor to the channel's Minimum and Maximum Raw and Scaled Values. Only integer Values are acceptable entries and these settings should only be altered at the direction of Eaton personnel.

You can also publish trend data via BACnetWS+.

Figure 3.20 Digital Properties: Advanced Tab



3.10 User-Defined Equations

For more information about User Defined Equations, you can request training as well as a Technical Support Bulletin from Eaton's Foreseer Customer Service group.

3.11 Predicting Alarms Using the Foreseer SightLine Feature

Foreseer has the unique ability to project when a channel may cross an alarm threshold. To do this, you must create a user-defined equation that references the channel whose values you wish to project, along with a time period for the trended data to use in the projection and the time to project forward. You can set alarms on this channel as well, which can provide a "heads up" that a problem may occur in the future.

3.12 Exiting Properties

You can either save changes or exit with no change to any of the properties. To exit without saving, click Cancel. To save your changes, click OK.

4. WebViews Graphs

The extensive data analysis capabilities of WebViews provides both historical and real-time information for the equipment you monitor.

WebViews graphs display critical data so you can be proactive rather than reactive in the management of your enterprise. Accurate data analysis can help you understand potential problems so you are able take the necessary corrective action to prevent future failures. This chapter describes how to graph WebViews data.

The WebViews graph function furnishes access to all of a channel's values. Statistical information for the graph can be displayed in either a historical or a real-time format. A historical graph can show as much as six months of archived data while a real-time graph dynamically scrolls to display data values as they are reported. Both graph displays can be customized by the individual WebViews user to meet a variety of needs. Multiple channel traces (up to 20 channels) can be viewed, a feature which can be extremely helpful in researching cause-and-effect relationships.

Plotted graphs can be printed or saved as a file for future reference. The graph image, trace data can also be copied to the clipboard and inserted into other applications to create reports, if desired.

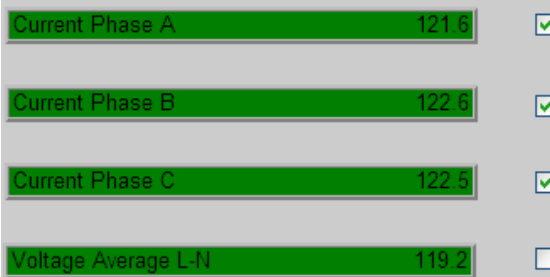
4.1 Graphing Channels

Archived data is easily plotted in WebViews:

Note: More channels may be added after the original data analysis window is plotted.

1. Navigate to the Device containing the channel(s) to be graphed.
2. Check the box(es) to the right of the value(s) displayed for the desired channel(s). In the example shown in Figure 4.1, three current values from an Eaton Power Xpert meter are being graphed.

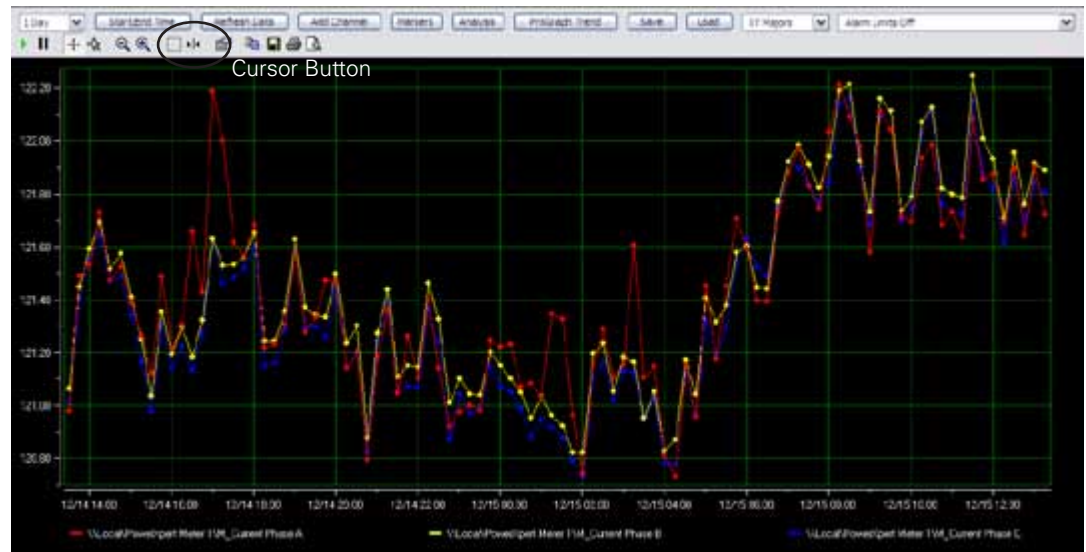
Figure 4.1 Three channels selected



| | | |
|---------------------|-------|-------------------------------------|
| Current Phase A | 121.6 | <input checked="" type="checkbox"/> |
| Current Phase B | 122.6 | <input checked="" type="checkbox"/> |
| Current Phase C | 122.5 | <input checked="" type="checkbox"/> |
| Voltage Average L-N | 119.2 | <input type="checkbox"/> |

3. Click the **Graph** link. The data archived over the past 24 hours are plotted for the chosen channel(s) and the Graph toolbar is enabled (see Figure 4.2)

Figure 4.2 The Graph window, showing plots of three current channels from an Eaton Power Xpert Meter.



- To examine the data at any point along the plot(s), click on the Cursor button (see Figure 4.2) in the Graph toolbar. A vertical cursor line appears on the graph and the current value from the channel appears in a tooltip beside the cursor.

Note: If there is more than one channel on the plot, right-click the cursor and select the appropriate channel from the list. You can also select what data you'd like to view in the cursor tooltip under **Style**.

- Move the cursor line along the plot to display the date, time and value of individual data points.

A variety of other functions can be accessed through the graph toolbars.

4.2 The Graph Toolbars

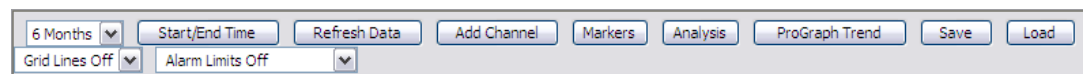
The Graph Toolbars are enabled when a WebViews Graph is the active window. The controls consist of upper and lower button bars. The contents of the upper toolbar is fixed; however, you can change the contents of the lower toolbar through the **Toolbar** tab in the **Plot** dialog box. To access the **Plot** dialog box, right-click within the graph and select **Plot**.

The following sections define the functions of the various tools bars.

4.2.1 The Top Toolbar

Figure 4.4 shows the placement of the various buttons on the toolbar. The following paragraphs detail the function of each button.

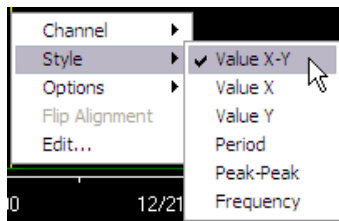
Figure 4.4 The Top Toolbar Buttons



Time Period This drop-down list selects the time span shown in the graph, and ranges from one hour to six months. Real-time graphing plots channel values as they are reported. Like a historical graph (with a selected time range), multiple channels can be monitored simultaneously. Real-time graphing is especially useful in conjunction with alarm conditions, allowing limit excursions and their subsequent effects to be observed as they happen.

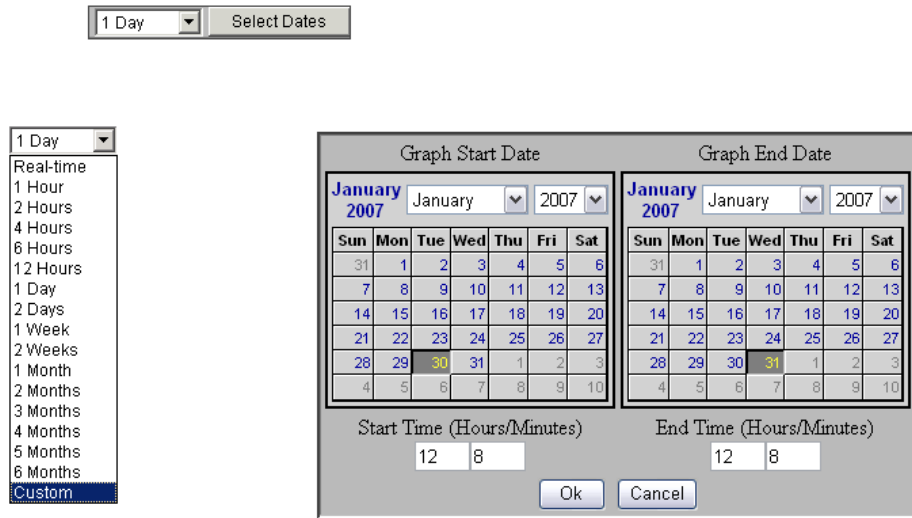
Choosing **Custom** in the drop-down list presents the same dialog box as clicking the **Start/End Time** button; both approaches allow you to specify your own interval. Select

Figure 4.3 Cursor Data Display Options



the month, year, day and, if desired, the specific time for the Graph start and end date/time. Click **OK** to replot the graph.

Figure 4.5 The Custom or Start/End Time controls

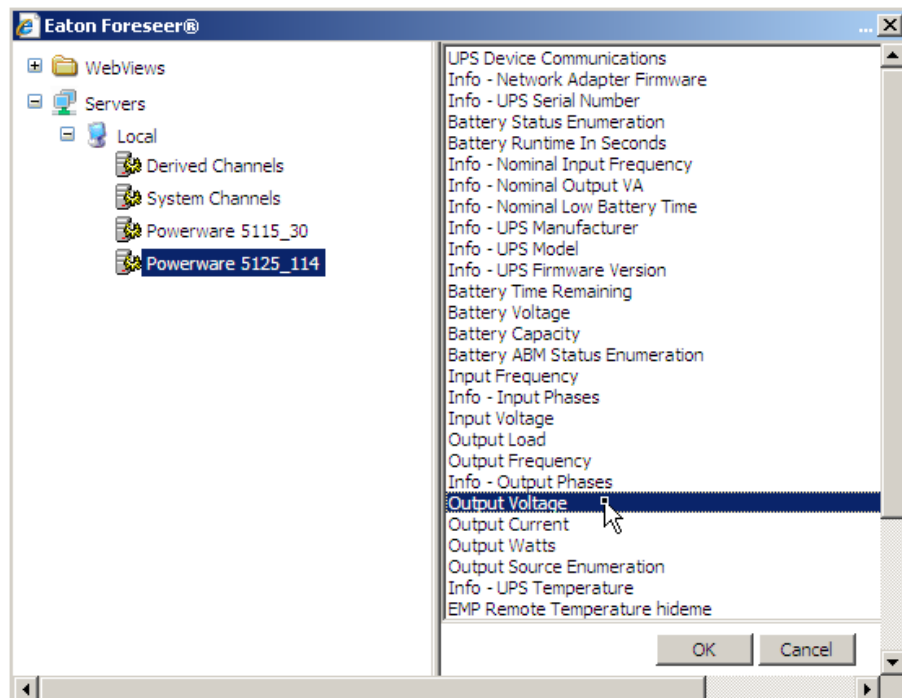


Start/End Time Launches two calendar controls (see above) that you can use to select the starting and ending date and time for the graph range. This is the same as the **Custom** selection under the **Time Period** drop-down list.

Refresh Data Updates the data in the displayed graph. This is useful only for historical (not **Real-time**) graphs after zooming or scrolling. Zoom and Scroll are described in "4.2.2 The Bottom Toolbar" on page 29.

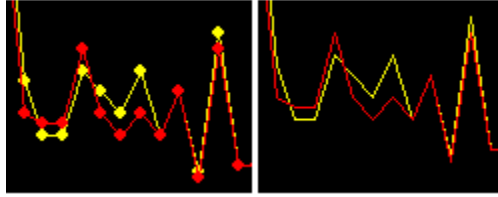
Add Channel Adds an additional channel to the graph. This launches a tree control from which you can select any device channel.

Figure 4.6 Adding a Channel



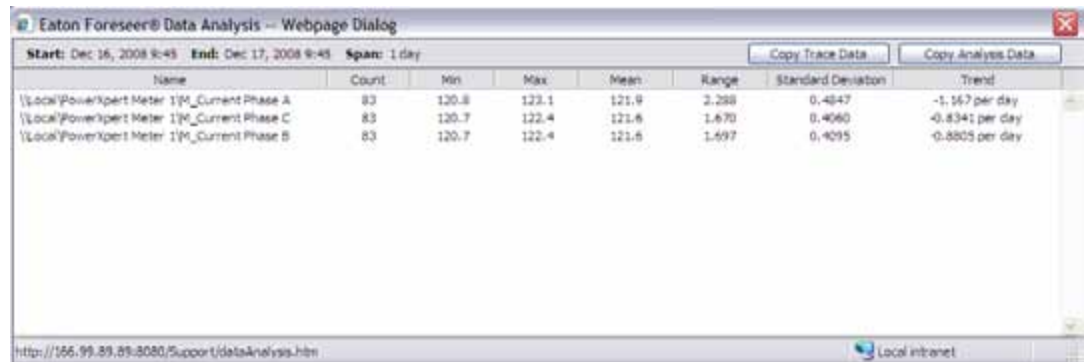
Markers Toggles graph points indicating actual (not interpolated) channel values on and off.

Figure 4.7 Graph Markers On (left) and Off (right)



Analysis Launches the **Data Analysis** dialog box, in which you can view information about the channel data in a tabular format (see Figure 4.8). You can also copy either the data points for the various channels (**Copy Trace Data** button) or the current data shown in the **Data Analysis** dialog (**Copy Analysis Data**) to the Windows clipboard. See "4.5 Exporting Data" on page 32 for more information.

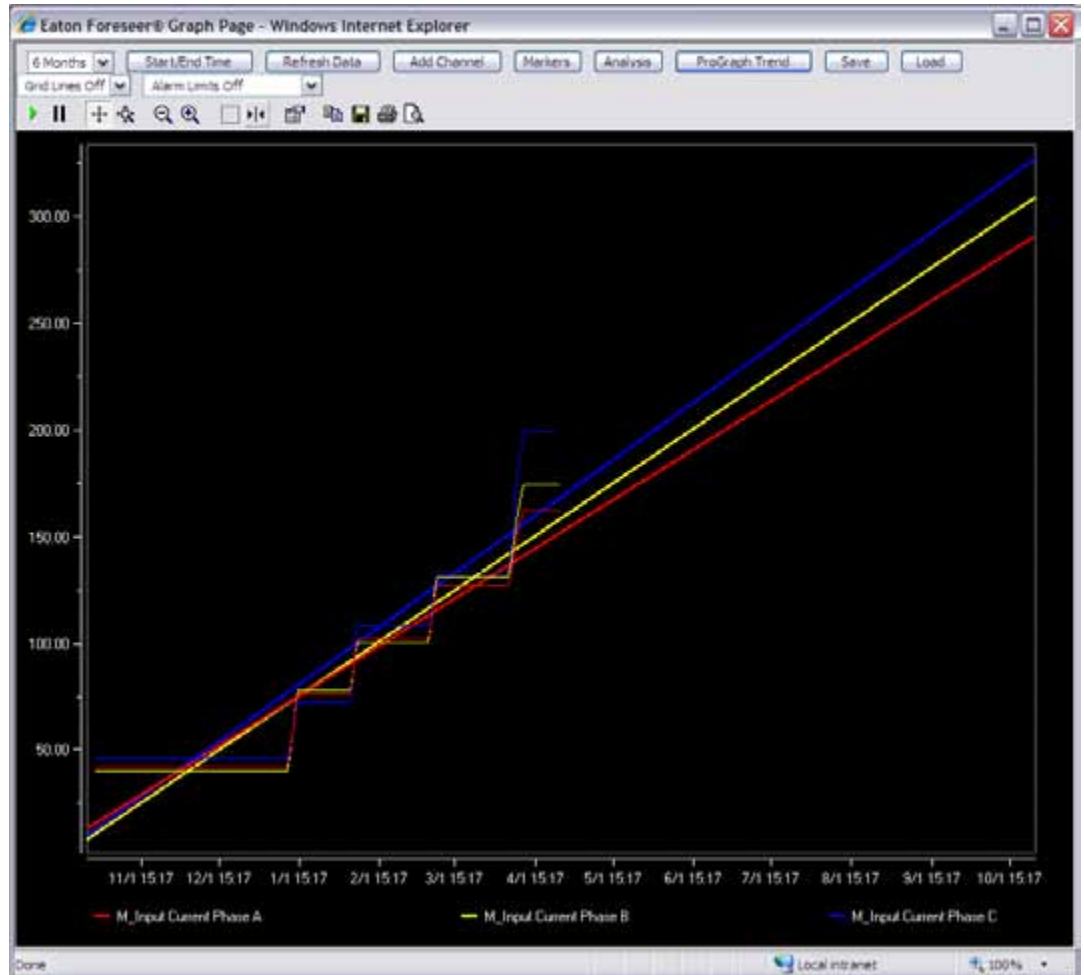
Figure 4.8 Analysis Dialog Box



Prograph Trend Adds a linear projection line for each channel, based on a sum of least squares linear regression, that projects values for a period equal to the graph range. For example, if the range is one week the line will project values one week forward. If the range is two weeks, the line will project future values two weeks forward, and so on.

Foreseer SightLine You can also use a Prograph Trend to provide an estimate when an alarm may occur. To take advantage of this feature you'll need to create a use-defined Channel and add a user-defined equation with the TrendChannel function. For more information about User Defined Equations, you can request training as well as a Technical Support Bulletin from Eaton's Foreseer Customer Service group. With Foreseer Sightline, you can set an alarm based on a value projected into the future, providing a powerful tool that can help you react before an actual alarm condition is reached.

Figure 4.9 Prograph Projection Lines

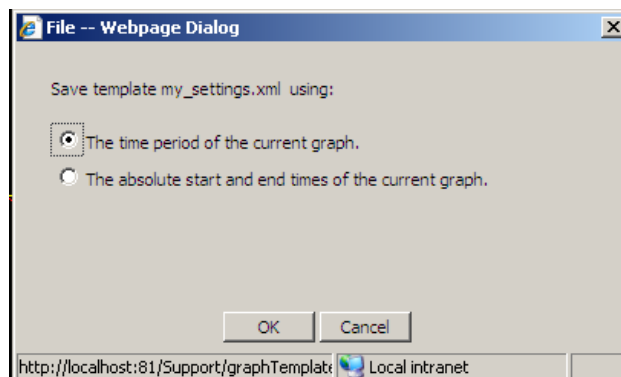


Note: You can impose a cursor on the graph and read individual values along the projection line.

Important! When you save the settings file, you must specify the .xml extension. If you don't, you won't be able to reload the file.

Save Saves the current graph settings, including scale, channels, etc. as a template file which you can load at a later time. The file is saved in XML format in the **\Program Files (x86)\Eaton Corporation\Foreseer\www\Support\UserFiles\GraphTemplates** folder. You can select to save either the current time period for the graph or the absolute start and end times.

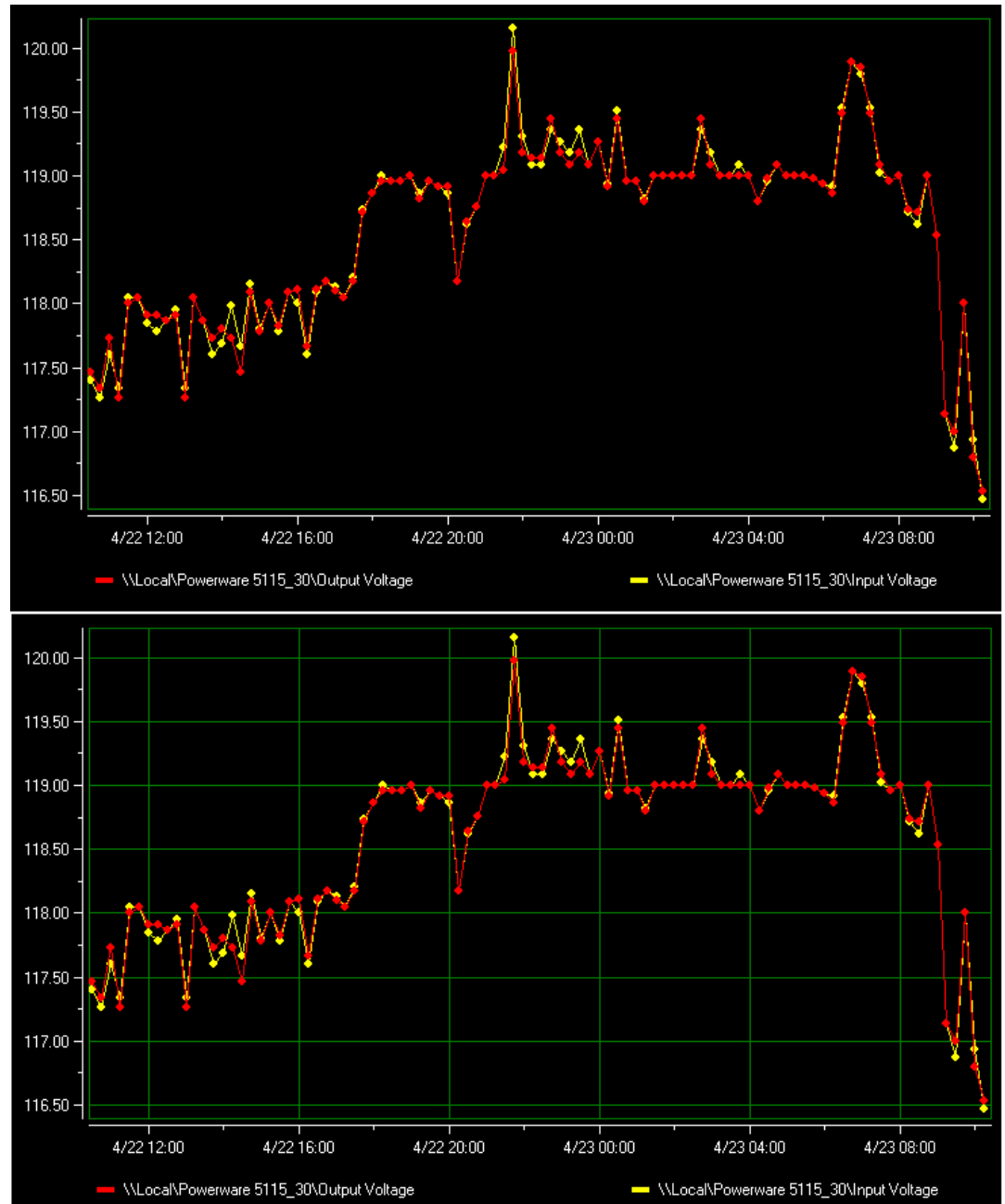
Figure 4.10 Time Range Selection Dialog Box



Load Launches a file browser you can use to select and load previously saved template files. Loading a template file overrides all current settings in the graph, including channels and the time period.

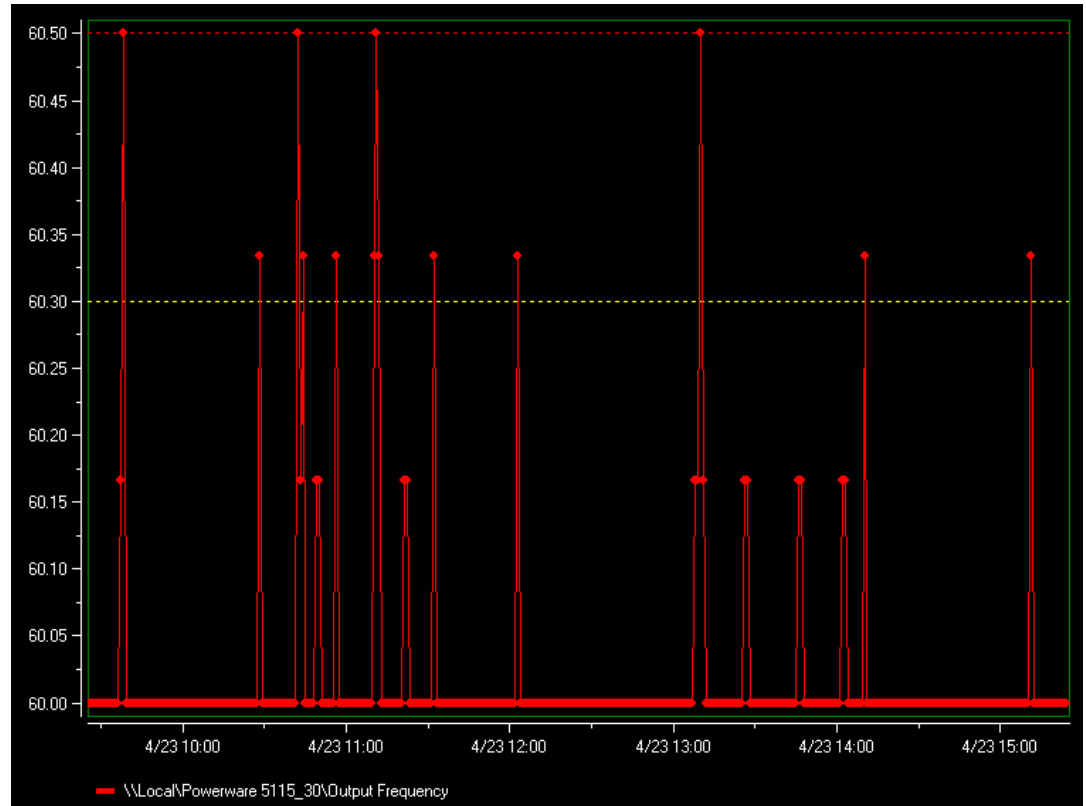
Grid Lines Selects whether to display the graph with or without grid lines. You can select from X axis lines, Y axis lines, both, or no lines.

Figure 4.11 Graph with Full Grid Off (Top) and On (Bottom)



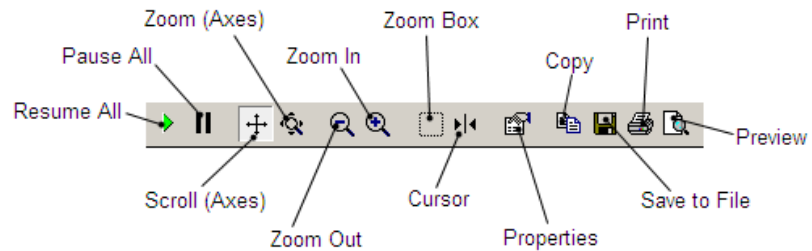
Alarm Limits Selects whether to impose lines showing the alarm limit values for the selected channels (if they exist) or to show no alarm limit lines)

Figure 4.12 Graph Showing Alarm Limit Lines



4.2.2 The Bottom Toolbar

Figure 4.13 The Bottom Toolbar



Resume All enables continuous tracking of real-time graph data values on all axes and hides active cursors. The minimum and span values are adjusted automatically based on the specified X-Axis tracking and Y-Axis tracking styles.

Pause All suspends continuous tracking of real-time data on all axes. The axes remain stationary while data continues to be plotted.

Scroll (Axes) allows the X- and Y-axes to be changed manually. Clicking on either axis and dragging permits its scale to be scrolled in the desired direction. Selecting this function disables the **Zoom** button.

Zoom (Axes) allows the chosen axis to be zoomed manually by dragged it. Selecting this function disables the **Scroll** button. Note that for all zoom functions the resolution of the data does not update, press the "Refresh Data" button after zooming to update the resolution.

Zoom Out provides a wider view of the graph and disables tracking to pause the display. Both axes are divided by the **Factor** specified in the ToolBar properties each time this button is pressed. A Factor of "2" is the default.

Zoom In provides a narrower view of the graph and disables tracking to pause the display. Both axes are multiplied by the **Factor** specified in the ToolBar properties each time this button is pressed. A Factor of "2" is the default.

Zoom Box enlarges the marquee area of the graph for closer examination. Simply drag the cursor over the portion of the graph you wish to enlarge then release the mouse button. The action affects all axes. If real-time is selected, tracking is suspended once the mouse button is released.

Cursor is a toggle that alternately shows and hides all data cursors. Grabbing a vertical cursor and sliding it back and forth across the X-Axis displays its individual data point values. When multiple channels are selected from the Cursor menu then the individual channel updates at the bottom of the graph window reflect the values at the point of the cursor.

Figure 4.14 Cursor Line and Value Display



Properties displays the Plot dialog box containing a number of tabs for modifying the graph's display properties. Refer to "**8. Graph Properties Reference**" on page 51 for a complete listing of these attributes.

Copy copies a bitmap image of the plot to the Clipboard. The image can then be pasted into other documents such as reports.

Save to File presents the Windows Save As dialog box, allowing the graph to be saved to the local computer as a bitmap file.

Print presents a dialog box from which a hard copy output of the graph is generated.

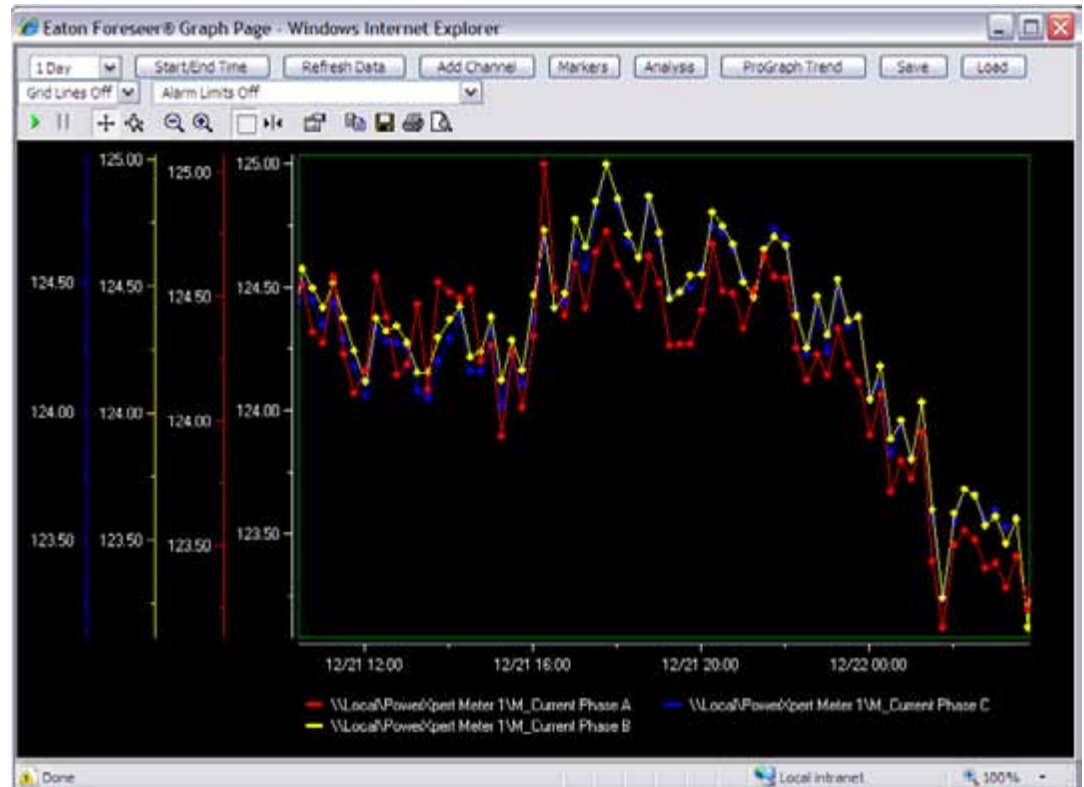
Preview presents a dialog box displaying a print preview of the current graph. The graph can be printed directly from this dialog box, or the **Settings** dialog box can be displayed to further define its hardcopy output parameters.

Note: The span of any single graph is limited to a six-month interval over the range of the Web Server database.

4.2.3 Advanced User Controls

You can add a Y-axis to the graph for each channel by clicking that channel's legend at the bottom of the graph window. This is especially useful for superimposing graphs over each other for comparison purposes. Click the channel's legend again to remove its Y-axis.

Figure 4.15 Multiple Y-Axes



Note: You cannot add additional Y-axes if the line cursor is currently displayed in the graph. If you wish to display both multiple Y-axes and the line cursor, add the additional axes before activating the cursor.

4.3 Editing Graph Properties

You can modify any WebViews graph to suit your viewing needs by clicking on the Properties button to display the **Plot** dialog box. This dialog box is divided into a dozen main categories comprised of over 50 subcategories offering thousands of display options. Any changes to graph properties take effect immediately.

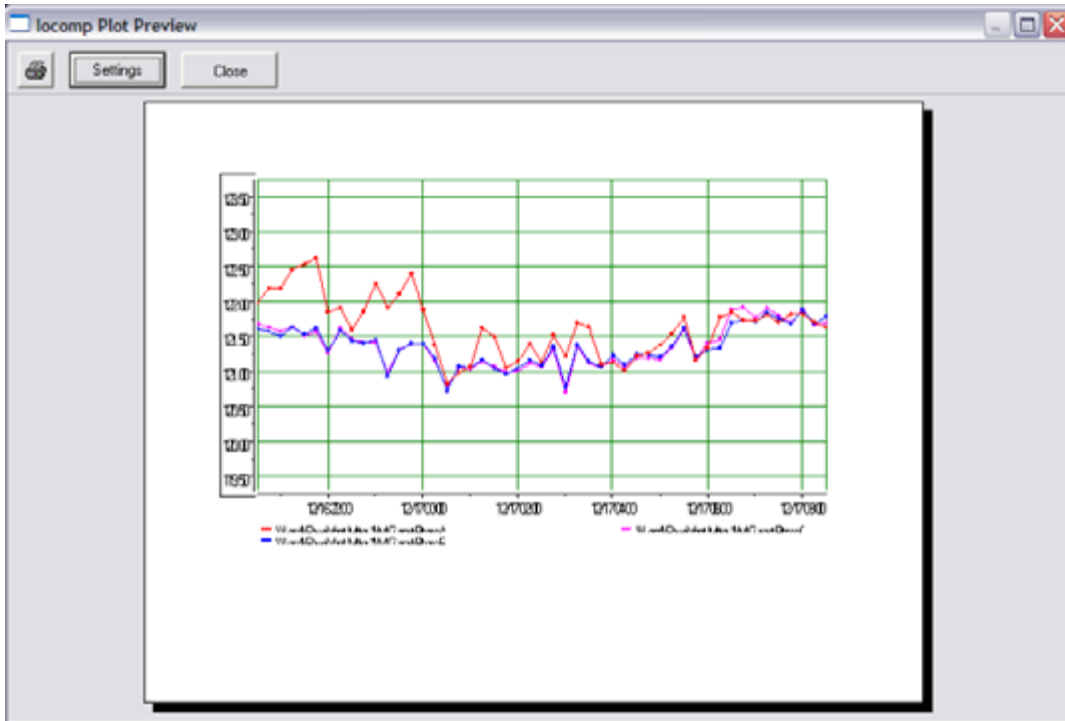
Refer to "**8. Graph Properties Reference**" on page 51 for the complete list of tabbed categories and the field descriptions for each.

4.4 Exporting Graphs

There are a number of ways WebViews graphs can be exported for external use. You can print or save an image of the graph by clicking on the appropriate button. Saving a bitmapped image of the graph requires the output file be named and its destination specified in the Windows **Save As** dialog box. Graphs may be saved in the following graphic file formats: Windows Bitmap (.bmp), Windows Enhanced Metafile (.emf), JPEG (.jpg), and PNG (.png).

The graph can be printed, saved as a file, or copied to the clipboard. The copied image can then be pasted into other applications for incorporation into reports or other company documents.

Clicking the Preview button provides some additional controls for adjusting the image before printing. Through the Settings button on the Preview dialog, you can specify the orientation, margins, and paper size.



4.5 Exporting Data

You can export data via the Windows clipboard through the **Data Analysis** dialog box (click the **Analysis** button). The **Copy Trace Data** button copies all of the data points within the time span selected for the graph to the clipboard. The channel data is in tab-delimited format and includes a date stamp field (column 1) and a time stamp field (column 2). Each channel has its own column and a header row provides the device and channel information for each data column. The following figure shows a typical example of output for three channels.

Figure 4.16 Example Channel Data Copied Via the Copy Trace Data Button

```

\\Local\PowerXpert Meter 1\M_Current Phase A  \\Local\PowerXpert Meter 1\M_Current Phase B  \\Local\PowerXpert Meter 1\M_Current
Phase C
12/16/2008      15:45:33      122.470688      122.096581      122.040977
12/16/2008      16:00:33      122.05336       122.212822      122.09333
12/16/2008      16:15:32      122.506836      122.227943      122.194748
12/16/2008      16:30:33      122.019516      122.131393      122.110756
12/16/2008      16:45:33      122.009605      122.135674      122.090263
12/16/2008      17:00:32      122.673653      122.424934      122.377327
12/16/2008      17:15:33      122.249199      122.057159      122.01088
12/16/2008      17:30:33      123.117416      122.196541      122.159645
12/16/2008      17:45:32      122.900894      122.161171      122.154121
12/16/2008      18:00:33      122.739532      122.021904      121.967514
12/16/2008      18:15:33      122.553551      121.810219      121.807899
12/16/2008      18:30:32      121.953506      121.760399      121.730789
12/17/2008      03:45:33      121.094872      121.061821      121.0588
12/17/2008      04:00:33      121.12664       121.239647      121.174095
12/17/2008      04:15:32      121.009453      121.094292      121.069122
12/17/2008      04:30:33      121.219933      121.243645      121.189926
12/17/2008      04:45:33      121.25576       121.244942      121.190956

```

The **Copy Analysis Data** button places the same information shown in the **Data Analysis** dialog box onto the clipboard. This data is also tab delimited, and has a header row that provides the start and end time information. Because of space limitations, the data shown in the following example "wraps."

Figure 4.17 Example Analysis Data

Start: Dec 16, 2008 15:38 End: Dec 17, 2008 15:38 Span: 1 day

```

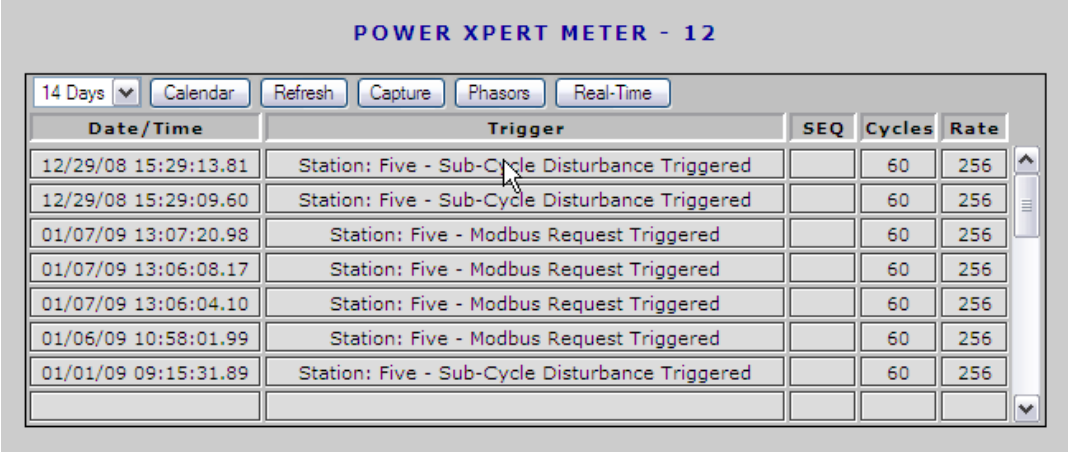
\\Local\PowerXpert Meter 1\M_Current Phase A Point Count: 84 Y Min: 115.0 Y Max: 123.6 Y Mean: 121.8 Y Range:
8.517 Standard Deviation: 0.8912 Trend: -1.213 per day
\\Local\PowerXpert Meter 1\M_Current Phase B Point Count: 84 Y Min: 115.5 Y Max: 123.5 Y Mean: 121.5 Y Range:
8.005 Standard Deviation: 0.7938 Trend: -0.5116 per day

```


5. WebViews Waveforms

Some devices, such as the Power Xpert Meter, can provide Waveform data associated with any power event defined as a waveform at the meter itself. This data can be viewed using a linked Waveform object. Each event is presented as a row in tabular format, and you can access the waveform viewer by clicking the appropriate row.

Figure 5.1 Waveform Object, Showing Various Events from a Power Xpert Meter



The screenshot shows a web interface titled "POWER XPERT METER - 12". At the top, there is a navigation bar with buttons for "14 Days", "Calendar", "Refresh", "Capture", "Phasors", and "Real-Time". Below this is a table with the following columns: "Date/Time", "Trigger", "SEQ", "Cycles", and "Rate". The table contains several rows of event data, including "Station: Five - Sub-Cycle Disturbance Triggered" and "Station: Five - Modbus Request Triggered".

| Date/Time | Trigger | SEQ | Cycles | Rate |
|----------------------|---|-----|--------|------|
| 12/29/08 15:29:13.81 | Station: Five - Sub-Cycle Disturbance Triggered | | 60 | 256 |
| 12/29/08 15:29:09.60 | Station: Five - Sub-Cycle Disturbance Triggered | | 60 | 256 |
| 01/07/09 13:07:20.98 | Station: Five - Modbus Request Triggered | | 60 | 256 |
| 01/07/09 13:06:08.17 | Station: Five - Modbus Request Triggered | | 60 | 256 |
| 01/07/09 13:06:04.10 | Station: Five - Modbus Request Triggered | | 60 | 256 |
| 01/06/09 10:58:01.99 | Station: Five - Modbus Request Triggered | | 60 | 256 |
| 01/01/09 09:15:31.89 | Station: Five - Sub-Cycle Disturbance Triggered | | 60 | 256 |

Figure 5.1 Waveform Object Controls

If an event occurs on the device linked to the Waveform object, the event is logged as a single row. Each row specifies:

- The date and time that each event was captured.
- The condition that triggered the event.
- The sequence in which the events were captured.
- The number of cycles in the waveform.
- The rate at which the event was captured.

You can control what events are displayed in the viewer through the object button bar:

- The date list box provides a range preset time spans. All these time spans consider the current time to the end time.
- The Calendar button launches a pair of calendar controls you can use to select a beginning and end date and time.
- The Refresh button refreshes the event display to pick up any new events that haven't yet been logged.
- The Capture button initiates a manual waveform capture on the meter hardware.
- The Phasor button launches a phasor display window.

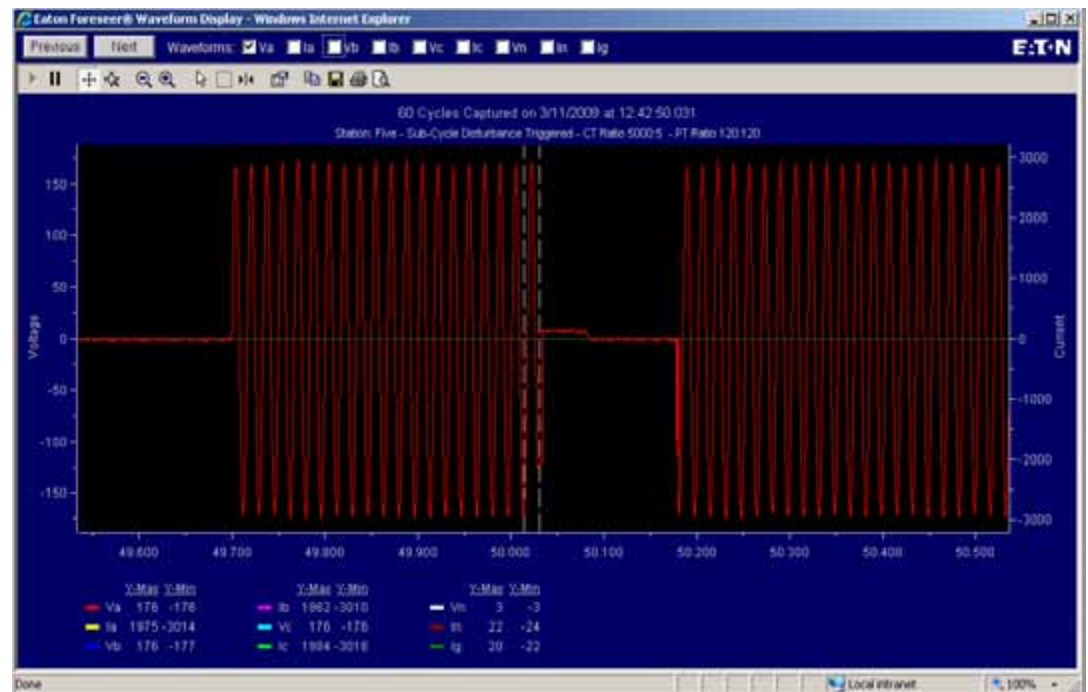
- The Real-time button launches a real-time display of the waveform data. This functions only if the linked device supports real-time data.

You can launch the waveform viewer window to examine a particular event by clicking its corresponding row in the Waveform object. The viewer plots all of the datapoints in the captured waveform, and provides check boxes to add or remove the following data:

- Voltages: Va, Vb, Vc, Vn.
- Currents: Ia, Ib, Ic, In, Ig

You can view the previous and next waveform events in the list by clicking either the **Previous** or **Next** buttons.

Figure 5.1 Waveform Viewer Window



The following describes the various buttons in the toolbar:

Resume All is not used with waveforms.

Pause All is not used with waveforms.

Scroll (Axes) allows the X- and Y-axes to be changed manually. Clicking on either axis and dragging permits its scale to be scrolled in the desired direction. Selecting this function disables the **Zoom** button.

Zoom (Axes) allows the chosen axis to be zoomed manually by dragged it. Selecting this function disables the **Scroll** button.

Zoom Out provides a wider view of the graph and disables tracking to pause the display. Both axes are multiplied by the **Factor** specified in the ToolBar properties each time this button is pressed. A Factor of "2" is the default.

Zoom In provides a narrower view of the graph and disables tracking to pause the display. Both axes are multiplied by the **Factor** specified in the ToolBar properties each time this button is pressed. A Factor of "2" is the default.

Select allows various items in the graph display to be selected. Using this button disables the tracking function.

Zoom Box enlarges the marquee area of the graph for closer examination. Simply drag the cursor over the portion of the graph you wish to enhance then release the mouse button. The action affects all axes and tracking is suspended once the mouse button is released.

Cursor is a toggle that alternately shows and hides all data cursors. Grabbing a vertical cursor and sliding it back and forth across the X-Axis displays its individual data point values.

Properties displays the Plot dialog box containing a number of tabs for modifying the graph's display properties. Refer to **Appendix A: Graph Properties** for a complete listing of these attributes.

Copy copies a bitmap image of the plot to the Clipboard. The image can then be pasted into other documents such as reports.

Save to File presents the Windows Save As dialog box, allowing the graph to be saved to the local computer as a bitmap file. You can save the file as either a Windows Bitmap file, Enhanced Windows Metafile, JPEG, or Portable Networks Graphics file.

Print presents a dialog box from which a hard copy output of the graph is generated.

Preview presents a dialog box displaying a print preview of the current graph. The graph can be printed directly from this dialog box, or the **Settings** dialog box can be displayed to further define its hardcopy output parameters.

6. Webviews Alarms

WebViews provides alarm monitoring and management capabilities for the entire enterprise. You can view a summary of detected alarms and also respond to alarm conditions. This chapter explains the WebViews alarm management tools available to the user.

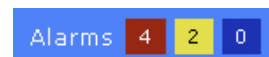
One of the most important functions of the Web Server is to compare individual channel Values to their user-entered **Cautionary** and **Critical Alarm Limits**. The results of this evaluation are continually updated and a monitored channel's alarm state is readily apparent to all connected WebViews users based on its display characteristics. Any detected alarms are reported immediately and may require an authenticated user's acknowledgement to remove them from active status.

All alarm incidents—occurrence, statistics, acknowledgement—are logged at the Web Server to provide a permanent record of each event. You can review a record of alarm events in the Alarm History Reports see "7. WebViews Reports" on page 45.

6.1 Alarm Reporting

Several things occur when an alarm condition is detected at the Web Server. The current alarm count is shown in the upper right corner of the browser display with active alarms divided into Critical (red), Cautionary (yellow) and Acknowledged (blue) totals. This approach allows the simultaneous addressing of multiple alarm conditions while minimizing the possibility that serious problems will go undetected.

Figure 6.1 Alarm Count and Link



The alarm channel's icon changes based on its particular **Properties** settings. The default channel settings employ a "stoplight" color scheme to indicate the following conditions:

- Green indicates that no error has been detected, data are being acquired and the channel is operating and within its user-defined Alarm Limits.
- Yellow is an alert that the channel has exceeded a Cautionary Alarm Limit setting.
- Red is a warning that the channel has exceeded a Critical Alarm Limit setting.
- Additional colors indicate other status conditions:
- Blue indicates that the alarm has been acknowledged.

- Gray reports that WebViews has lost communications with the Web Server or Device.
- Cyan means alarm monitoring for the channel, or Device, has been manually disabled.
- Purple indicates that the **Channel**, or **Device**, has been manually disabled.

Because channels are “nested,” their status is propagated throughout the display structure. Thus, any given WebView reflects the highest alarm status of its constituent channels. In other words, if a critical alarm is detected on a **Device** channel at the bottom of the display hierarchy, the entire **Breadcrumbs** trail containing that **Device** indicates a critical alarm condition all the way up to the Home Page.

The alarm state is latched by default and remains displayed until the condition is acknowledged or the channel rearmed. Additional information about the alarmed channel is available in the **Alarm Management** and **Alarm Details** windows.

6.2 Alarm Management Window

The **Alarm Management** window is displayed by clicking on the **Alarms** link adjacent to the alarm count on any WebViews page. You can also right-click on any WebViews page and select **Alarm Management** in the shortcut menu.

Figure 6.2 Webviews Right-Click Shortcut Menu

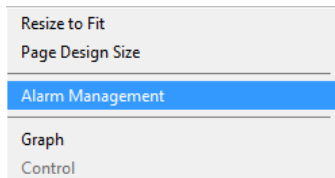
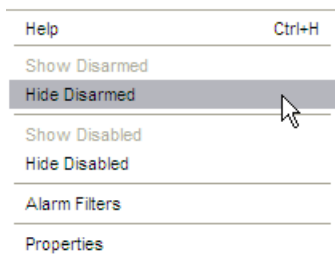


Figure 6.3 Alarm Management Window

| State | Server | Device | Channel | Priority | Date/Time | Alarm Value | Current Value |
|-------|--------|-----------------|-----------------|----------|----------------------|-------------|---------------|
| | Local | System Channels | System Alarm | 9999 | 12/23/08 10:00:43 | Alarm | OK |
| | Local | System Channels | Disk Free Space | 9999 | 12/22/08 14:43:58 | 14992.00 | 14991.00 |

The Alarm Management window provides summary information on all currently reported alarms, allowing problems to be isolated quickly. The channel’s icon (under State) reflects its highest reported alarm state. The alarm list can be sorted alphabetically by **State**, **Server**, **Device**, **Channel**, **Priority**, **Date/Time**, **Alarm Value** or **Current Value** simply by clicking on the desired column header. All alarm information is in a view-only format except for **Channel** names, which serve as links to additional information about the individual alarm (see the Alarm Action dialog box).

Figure 6.4 Alarm Management Shortcut Menu



6.2.1 Alarm Management Shortcut Menu

Right-clicking in the **Alarm Management** window produces a short cut menu you can use to:

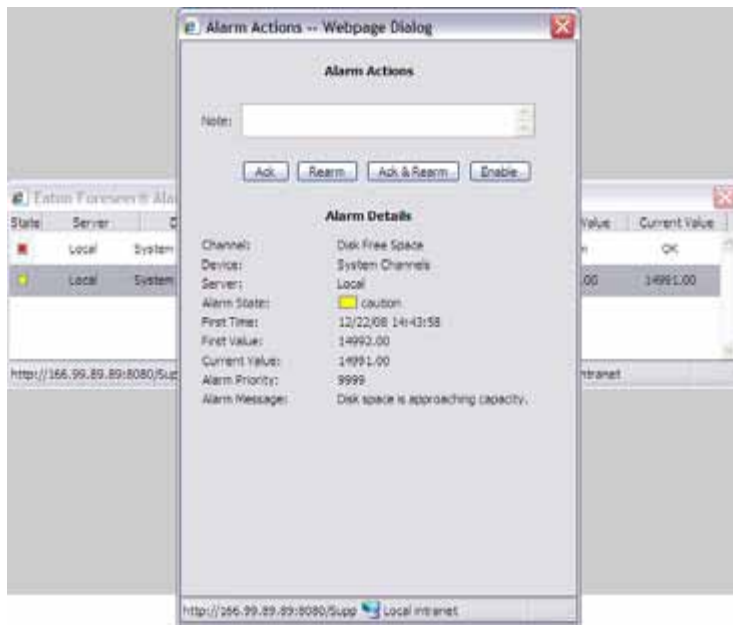
- **Hide or Display Disarmed Channels.**
- **Hide or Display Disabled Channels.**
- Launch the **Alarm Filters** dialog box. You can create filters to restrict what is shown in the **Alarm Management** window
- Launch the **Alarm Action** dialog box (covered in the following section)

You can also save your favorite filter settings to a file and then load them at a later date. This is ideal if you have multiple filter settings, as you can load the one you want on demand.

6.3 Alarm Action Dialog Box

The **Alarm Actions** dialog box is displayed by double-clicking on the name of the desired Channel in the **Alarm Management** window list or by clicking the alarm, then right-clicking and selecting **Properties** in the **Alarm Management** shortcut menu.

Figure 6.5 Alarm Actions Dialog Box



The following describes the summary information for the selected channel's alarm condition:

Channel is the name of the selected channel.

Device is the name of the **Device** (in the **Device** tree) that contains the channel in alarm.

Server is the name of the Foreseer server configured with the channel. Local is a Foreseer server on the local machine.

Alarm State is the highest reported (latched) alarm condition (**Cautionary** or **Critical**) for the channel.

First Time is the time and date when an alarm was initially reported on this channel.

First Value is the reported channel value (analog) or status (digital) which triggered the alarm.

Current Value reports the channel's present analog value or digital status.

Alarm Priority is the relative level of importance assigned to the channel: "1" represents the highest priority, "9999" the lowest.

Alarm Message is the text entered in the channel's Basic tab of the **Properties** dialog box corresponding to the reported alarm state.

Note provides a 256 character comment concerning the information specific to the channel condition. Notes are written to, and maintained on, the Web Server's database, although some are logged automatically through the alarm management feature. In WebViews, a note is entered in conjunction with acknowledging and/or rearming an alarm.

Note: Notes may not be available for viewing until the next archive time period.

The **Alarm Details** window has the following controls:

Ack acknowledges an alarm condition on the displayed channel. The channel's icon turns blue and the response action is automatically logged at the Web Server. The log includes the time, the **Channel** name and, if entered, a user **Note**.

Rearm rearms alarm monitoring for the displayed channel and logs a standard note at the Web Server. This action is only available for channels in an acknowledged state.

Ack and Rearm simultaneously acknowledges the alarm and resets the displayed channel for real-time alarm monitoring.

Enable enables a currently disabled channel. Channels may be disabled either through the Foreseer server interface for through the channel's Properties dialog box.

6.3.1 Notes

While **Notes** provide a 256 character user comment field, the system also automatically logs information about the alarm as part of the **Note** entry. The following information is automatically added to the **Note**:

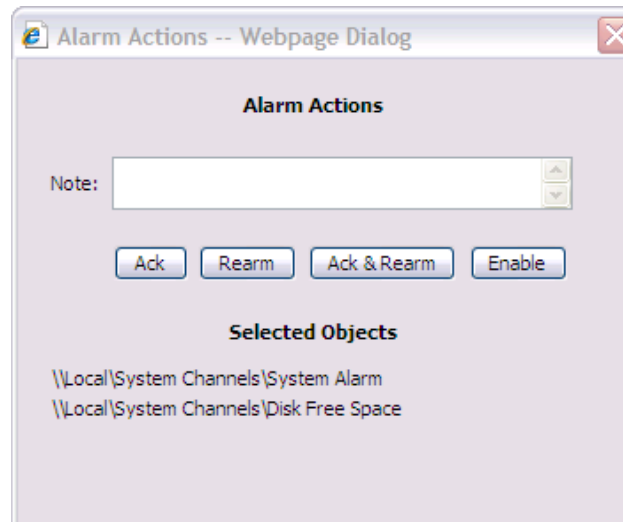
- Channel name
- Action selected (Ack, Rearm, etc.)
- IP address of the computer from which the Action was selected
- Time the Action was taken.

Notes can be reviewed in the Notes report.

6.3.2 Multiselecting Channels

You can multiselect channels in the Alarm Management window using either shift-click to select a range or control-click to select each channel. When you select more than one channel, the Actions dialog shows only the action buttons and the selected channels. If you enter a comment in the **Note** field, it's applied to each of the selected alarms.

Figure 6.6 Actions Dialog With Multiple Channels Selected



6.3.3 Acknowledging Alarms

Alarm acknowledgement suspends limit testing on the suspect channel to allow the source of the problem to be addressed. The channel's value continues to be calculated and archived at the Web Server.

To acknowledge a channel alarm:

1. Click **Alarm** in the upper right corner of the WebViews window to display the **Manage Alarms** window.
2. Locate the affected **Channel** in the alarm list and click on its name to display the **Alarm Actions** dialog box.
3. Click the **Ack** button. To acknowledge the alarm and restore channel monitoring, click the **Ack and Rarm** button.

If security has been enabled at the Web Server, you may be prompted to enter your **User name** and **Password**.

4. If desired, enter a **Note** to document additional information about the alarm condition.

The acknowledgement is logged at the Web Server and includes the time and date it was entered, as well as any associated **Notes**. Once acknowledged, a channel alarm is subtracted from the **Cautionary** or **Critical** alarm count and added to the **Acknowledged** total reported in the WebViews browser window.

As noted, acknowledging temporarily suspends alarm monitoring on the affected channel. Although acquired data continue to be reported, the channel's value is no longer compared to its user-defined alarm limits. This suspension is maintained until the channel's **Ack Holdoff** interval expires.

6.3.4 Rearming Alarms

The **Rarm** period may be manually rearmed at any time by using either the **Rarm** (for acknowledged) or the **Ack and Rarm** button (for unacknowledged). Rearming a channel forces alarm monitoring to resume immediately.

To rearm a channel:

1. Click **Alarm** in the upper right corner of the WebViews window to display the **Alarm Management** window.
2. Locate the affected **Channel** in the alarm list and click on its name to display the **Alarm Actions** dialog box.
3. If the channel's alarm has not already been acknowledged, click the **Ack and Rarm** button.
4. If the alarm is already acknowledged (blue), click the **Rarm** button.
5. If security has been enabled at the Web Server, you may be prompted to enter your **User name** and **Password**.
6. Enter a **Note** to document additional information about the alarm condition.

The action is logged on the Web Server and alarm limit testing is resumed on the channel.

6.3.5 Enabling a Channel

You can also re-enable a disabled alarm from the **Alarm Management** window.

To re-enable a channel:

1. Click **Alarm** in the upper right corner of the WebViews window to display the **Alarm Management** window.
2. Right-click and select **Show Disabled** in the shortcut menu.
3. Locate the affected **Channel** in the alarm list and click on its name to display the **Alarm Actions** dialog box.

4. Click the **Enable** button.
5. If security has been enabled at the Web Server, you may be prompted to enter your **User name** and **Password**.

6.3.6 Alarm Filters

While the **Hide** and **Display Disarmed** or **Disabled** channels provides some of the most commonly used "filters," you can use the **Alarm Filters** window to further refine what's shown in the **Alarm Management** window by excluding device servers, devices, and/or individual channels. The **Alarm Filters** dialog box has seven tabs, six of which are filter settings while the **General** tab enables or disables the various filter settings from the other tabs. The following explains the functions of the various filters:

General Tab Select **Display All Alarms** to turn off filtering, or select **Use Selected Filters** and then choose each filter tab you'd like to use.

Priority Filter Tab Use this tab to suppress alarms that are above, below, or equal to a particular four-digit priority setting.

Server Excludes Use this tab to select device servers from which all alarms will be excluded from the **Alarm Management** window. Click the **Add** button to select device servers from the device tree.

Note: If you wish to exclude most channels from a device server, but include one or more devices or channels from that server, you can use the **Device Includes** or **Channel Includes** tabs.

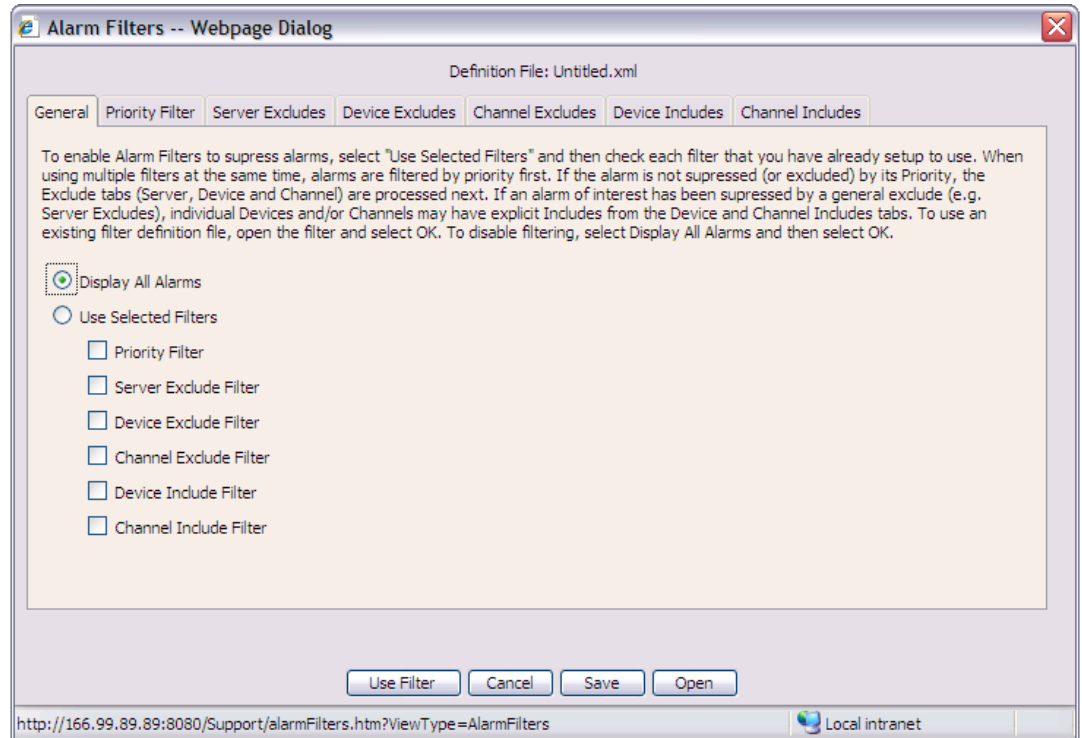
Device Excludes Use this tab to exclude individual devices from the **Alarm Management** window. If you exclude a device, you can include one or more channels from it through the **Channel Includes** tab. Click the **Add** button to select devices to exclude from the device tree.

Channel Excludes Use this tab to select and exclude individual channels. Click the **Add** button to select channels to exclude from the device tree.

Device Includes Use this tab to add devices back into what's shown in the **Alarm Management** window. This is used in conjunction with the **Server Excludes** tab. Click the **Add** button to select devices to include from the device tree.

Channel Includes Use this tab to add channels back into what's shown in the **Alarm Management** window. This is used in conjunction with the **Device Excludes** tab. Click the **Add** button to select channels to include from the device tree.

Figure 6.7 Alarm Filters Dialog Box



To save a set of filter settings:

6. On the **Alarm Filters** dialog box, click the **Save** button.
7. Give the filter settings file a name (it will automatically have an extension of **.xml**).
8. Click the **Save** button.

To load a set of filter settings:

1. On the **Alarm Filters** dialog box, click the **Open** button.
2. Select the filter settings file.
3. Click the **Open** button.

To apply filter settings:

- On the **Alarm Filters** dialog box, click the **User Filter** button.

7. WebViews Reports

WebViews Reports furnish important insights into system performance by providing predefined Server information. All of the archived information required to produce a report already resides at the Web Server and is downloaded to the WebViews browser on request where it can be viewed and/or printed locally.

Some Webviews Reports are available in two formats: standard and tab-delimited data. The tab-delimited format is especially useful for importing into Microsoft Excel, Microsoft Word, and other applications.

Figure 7.1 An Example Report: Part of a Tab-Delimited Channel Values Report

```
Local
Channel Data Report
Report Interval: -12 day -10 hour
From 01/13/09 10:37:39
To 01/01/09 00:00:00

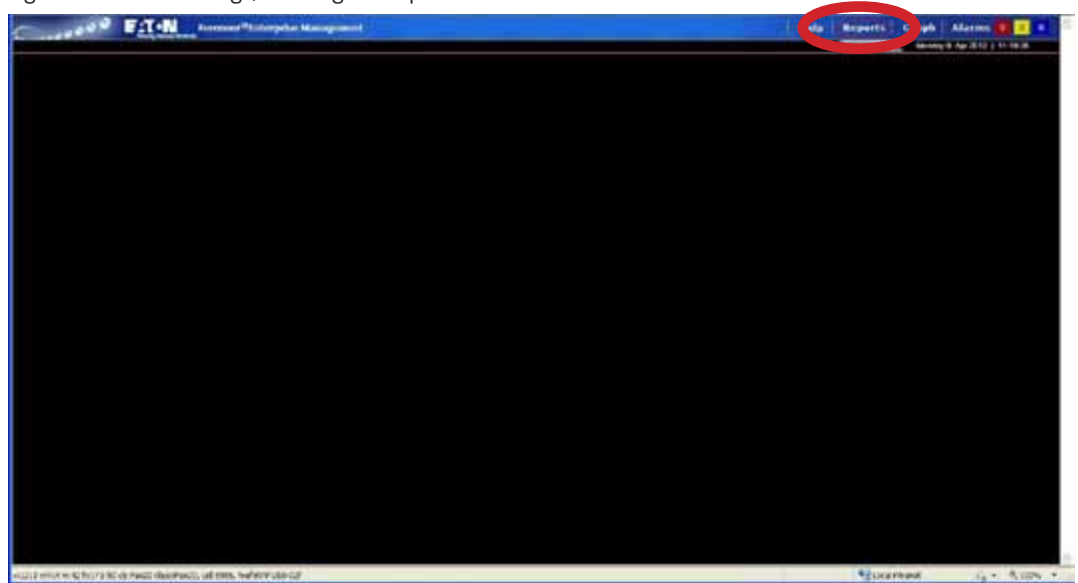
Device: PowerXpert Meter 1 (9618 records) from 01/01/09 00:00:00 to 01/13/09 10:37:39
```

| Channel | Min | Max | Avg |
|-----------------------|--------|--------|--------|
| M_Current Phase A | 121.07 | 125.38 | 122.36 |
| M_Current Phase B | 121.20 | 125.55 | 122.32 |
| M_Current Phase C | 121.13 | 125.49 | 122.31 |
| M_Current Ground | 0.12 | 0.13 | 0.12 |
| M_Current Neutral | 121.49 | 125.93 | 122.60 |
| M_Current Average | 121.21 | 125.42 | 122.33 |
| M_Voltage Phase A-B | 0.18 | 0.19 | 0.18 |
| M_Voltage Phase B-C | 0.17 | 0.18 | 0.17 |
| M_Voltage Phase C-A | 0.17 | 0.19 | 0.18 |
| M_Voltage Average L-L | 0.17 | 0.18 | 0.18 |
| M_Voltage Phase A-N | 118.48 | 123.84 | 120.97 |
| M_Voltage Phase B-N | 118.48 | 123.84 | 120.97 |

This chapter explains how to obtain reports from the Web Server.

Note: Foreseer Reports provide information about Foreseer system status; however, Power Xpert Reporting provides detailed information you can use to analyze and improve your power system. If you're interested in adding advanced capability to your Foreseer system, contact your Eaton sales representative.

Figure 7.2 Webviews Page, Showing the Reports Link



6.4 Generating Reports

Click on the **Reports** link on any WebViews page to display the Reports window. The window lists the following available Reports:

Alarm History (1 Day, 7 Days, 30 Day, or Custom) is a series of reports listing all alarms detected over the past day, week, month or specified time period. These four report formats consist of all alarm times, Devices and text recorded within the respective interval. If no alarms were detected during the period, that report will be blank. These are available in tabbed format.

Audit History (Custom) provides a history of configuration changes to the ForeSeer System. This is *not* available as a tabbed report.

Channel Data Report (30, 60, or 90 Day) Provides minimum, maximum, and average values for each channel from the selected device over the selected time period. The default format is tab-delimited.

Channel Report provides detailed information about each channel from each device installed in the "local" server. You can select an individual device if you wish. This report is available in tabbed format.

Log File reports all recorded events since the last Foreseer Server system reset. This report is *not* available in tabbed format.

Previous Log File reports all events recorded in the previous Foreseer Server session. This report is *not* available in tabbed format.

Sequence of Events (custom) provides events logged by sequence of events recorders. This report provides a series of high-resolution (in time) events in time stamp order. The standard format is tab-delimited. For information about support for additional recording devices, contact the Power Systems Automation group at Eaton.

Figure 7.3 Example Sequence of Events Report

```
TestLab
Sequence of Events Report
Report Interval: 1 day
From 04/04/12 15:31:05
To 04/05/12 15:31:05

Input: \\DAE\Ametek SERnet DAE\S_Input 01 Opened at 04/05/12 15:17:34.277
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Closed at 04/05/12 15:17:33.648
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Opened at 04/05/12 15:17:32.068
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Closed at 04/05/12 15:17:31.644
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Opened at 04/05/12 15:17:30.347
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Closed at 04/05/12 15:17:29.745
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Opened at 04/05/12 15:17:28.659
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Closed at 04/05/12 15:17:27.573
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Opened at 04/05/12 15:17:26.876
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Closed at 04/05/12 15:17:25.745
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Opened at 04/05/12 15:17:24.998
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Closed at 04/05/12 15:17:23.784
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Opened at 04/05/12 15:17:22.593
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Closed at 04/05/12 15:17:21.503
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Opened at 04/05/12 15:17:20.662
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Closed at 04/05/12 15:17:19.718
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Opened at 04/05/12 14:50:59.108
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Closed at 04/05/12 14:50:57.970
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Opened at 04/05/12 14:50:56.653
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Closed at 04/05/12 14:50:55.469
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Opened at 04/05/12 14:50:53.216
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Closed at 04/05/12 14:50:52.712
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Opened at 04/05/12 14:50:51.537
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Closed at 04/05/12 14:50:50.133
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Opened at 04/05/12 14:50:48.921
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Closed at 04/05/12 14:50:48.386
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Opened at 04/05/12 14:50:46.702
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Closed at 04/05/12 14:50:45.914
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Opened at 04/05/12 14:50:44.593
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Closed at 04/05/12 14:50:43.721
Input: \\DAE\Ametek SERnet DAE\S_Input 01 Opened at 04/05/12 14:50:41.903
```

Notes History (1 Day, 7 Days, 30 Days, or Custom) reports notes logged over the last day, week, month, or specified time period. This report is available in tabbed format.

System Configuration lists all configured devices, their operational parameters, and current device driver software version. The standard format is tab-delimited.

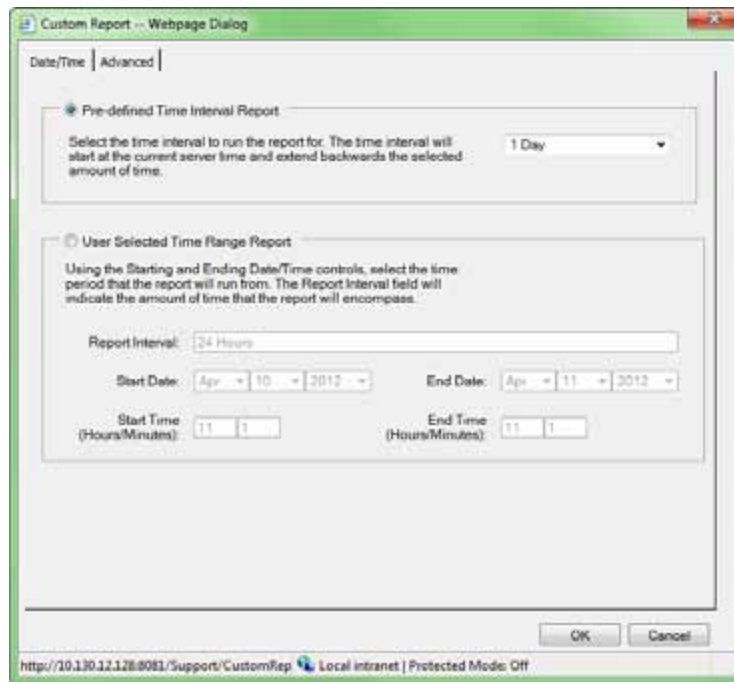
System Up-Down reports each time the Web Server program was launched and terminated. The default format is tab-delimited.

6.5 Custom Report Setup

Custom Reports launch a filtering dialog box through which you can use to:

- Filter by either pre-defined time periods or time periods with specified start and end dates/times as well as report intervals.
- Filter by device, channel or string.

Figure 7.4 Custom Reports Filter Dialog Box



To view a report:

1. Either click the report button to create a new standard report or right-click it to create a new tabbed report.
2. Click the link that appears to the right of the button to launch the report in a browser window.

Figure 7.5 Reports Window, Showing Links to Previously Created Reports.

| Report Type | Available Report Files | | |
|----------------------|--------------------------------------|--------------------------------|--------------------------------|
| Alarm History 1 Day | 04/02/12 13:33:41 (13347 bytes) | | |
| Alarm History 30 Day | | | |
| Alarm History 7 Day | | | |
| Alarm History Custom | | | |
| Audit History Custom | | | |
| Channel Data Report | | | |
| Channel Report | | | |
| Log File | | | |
| Notes History 1 Day | 04/05/12 14:48:42 (2925 bytes) | 04/05/12 14:42:49 (2925 bytes) | |
| Notes History 30 Day | | | |
| Notes History 7 Day | | | |
| Notes History Custom | | | |
| Previous Log File | | | |
| Sequence of Events | 04/05/12 15:31:16 (244 bytes) | 04/05/12 15:31:05 (2569 bytes) | 04/05/12 15:27:33 (8359 bytes) |
| System Configuration | Click to view report | | |
| System Up-Down | | | |

Click on a Report Type to run a new report or click on an Available Report to view the report.
Right-click on a Report Type to run a new tab-delimited report.

Once generated, each report becomes a link to the right of the report button. Click the link at any time to review that particular report. As reports are generated, older links move to the right. Only the three most recent reports are retained. See Exporting Report Data for more information.

6.6 Exporting Report Data

You can export data from either regular or tabbed reports to a file on your local computer, which you can then import into a third-party application (such as a spreadsheet, database, etc.). Tab-delimited reports are more suited for this as most third-party applications provide filters to create tabular data from tab-delimited ASCII files.

To save a report as an ASCII file:

1. In the report browser window, click the **File** menu and choose **Save As...**
2. In the **Save Webpage** dialog box, select a folder and filename for the file.
3. In the **Save as Type** list, select **Text File (*.txt)**.
4. Click the **Save** button.

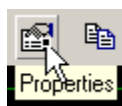
The saved file can be opened from any text viewing application or imported into a spreadsheet application such as Microsoft Excel.

Figure 7.6 An Example Tab-Delimited Report, Imported into Microsoft Excel

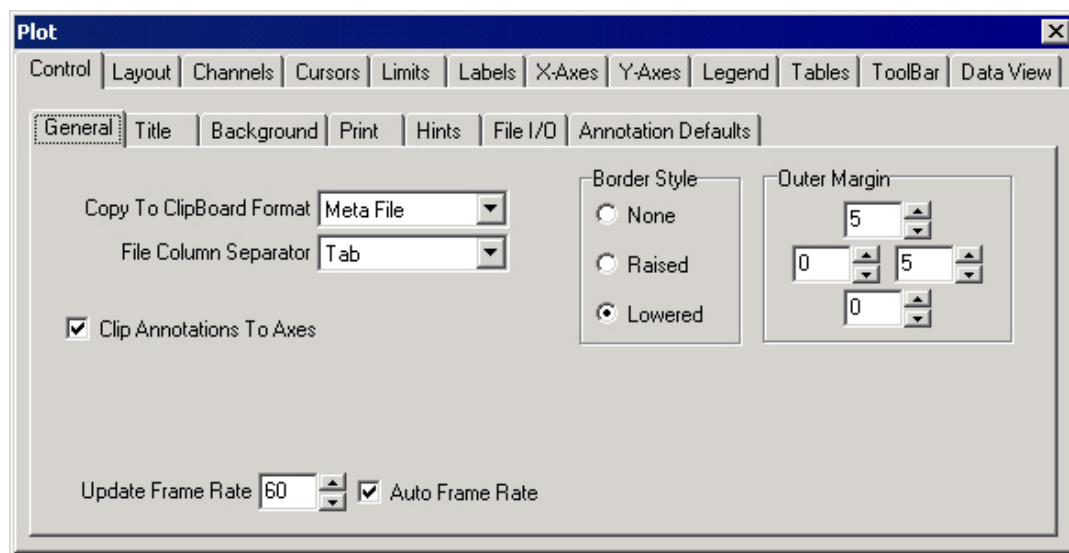
| | A | B | C | D | E | F | G | H |
|----|--------------------------|-------------|----------------|------------------|--------------|-----------------|-----------------|------------------|
| 1 | Eaton Foreseer Report | Local | | | | | | |
| 2 | Alarm History Report | | | | | | | |
| 3 | Report Interval: 30 days | | | | | | | |
| 4 | From: 12/13/08 13:27:54 | | | | | | | |
| 5 | To: 01/12/09 13:27:54 | | | | | | | |
| 6 | | | | | | | | |
| 7 | First Alarm Time | Server Name | Device Name | Channel Name | Why Normal | Time Normal | Time Critical | Critical Value |
| 8 | 1/12/2009 10:17 | Local | System Chanr | Database Archi | Database Shu | 1/12/2009 10:17 | 1/12/2009 10:17 | Disabled (FALSE) |
| 9 | 1/12/2009 10:08 | Local | System Chanr | Database Archi | Database Shu | 1/12/2009 10:08 | 1/12/2009 10:08 | Disabled (FALSE) |
| 10 | 1/9/2009 12:41 | Local | PowerXpert MeS | New Wavefon | Database Shu | 1/12/2009 10:08 | | |
| 11 | 1/8/2009 7:52 | Local | System Chanr | Database Archi | Database Shu | 1/8/2009 7:52 | 1/8/2009 7:52 | Disabled (FALSE) |
| 12 | 1/7/2009 11:27 | Local | PowerXpert MeS | New Wavefon | Database Shu | 1/8/2009 7:52 | | |
| 13 | 1/7/2009 11:27 | Local | System Chanr | Database Archi | Database Shu | 1/7/2009 11:27 | 1/7/2009 11:27 | Disabled (FALSE) |
| 14 | 1/7/2009 11:04 | Local | System Chanr | Server Configura | Channel Drop | 1/7/2009 11:27 | | |
| 15 | 1/7/2009 11:04 | Local | System Chanr | Server Configura | Database Shu | 1/7/2009 11:27 | | |
| 16 | 1/7/2009 10:41 | Local | System Chanr | Server Configura | Channel Drop | 1/7/2009 10:46 | | |
| 17 | 1/7/2009 9:27 | Local | System Chanr | Database Archi | Database Shu | 1/7/2009 9:27 | 1/7/2009 9:27 | Disabled (FALSE) |
| 18 | 1/7/2009 9:17 | Local | System Chanr | Server Configura | Database Shu | 1/7/2009 9:27 | | |
| 19 | 1/7/2009 9:07 | Local | System Chanr | Server Configura | Channel Drop | 1/7/2009 9:15 | | |
| 20 | 1/7/2009 9:03 | Local | System Chanr | Database Archi | Database Shu | 1/7/2009 9:03 | 1/7/2009 9:03 | Disabled (FALSE) |
| 21 | 1/7/2009 9:02 | Local | System Chanr | Server Configura | Database Shu | 1/7/2009 9:03 | | |
| 22 | 1/7/2009 9:02 | Local | System Chanr | Database Archi | Database Shu | 1/7/2009 9:02 | 1/7/2009 9:02 | Disabled (FALSE) |
| 23 | 1/7/2009 8:49 | Local | System Chanr | Server Configura | Database Shu | 1/7/2009 9:02 | | |
| 24 | 1/7/2009 8:37 | Local | System Chanr | Database Archi | Database Shu | 1/7/2009 8:37 | 1/7/2009 8:37 | Disabled (FALSE) |
| 25 | 1/7/2009 7:55 | Local | System Chanr | Server Configura | Channel Drop | 1/7/2009 7:57 | | |
| 26 | 1/6/2009 14:52 | Local | System Chanr | Server Configura | Channel Drop | 1/7/2009 7:54 | | |
| 27 | 1/6/2009 14:41 | Local | System Chanr | Database Archi | Database Shu | 1/6/2009 14:41 | 1/6/2009 14:41 | Disabled (FALSE) |
| 28 | 1/6/2009 14:40 | Local | System Chanr | Server Configura | Database Shu | 1/6/2009 14:41 | | |
| 29 | 1/6/2009 14:37 | Local | System Chanr | Database Archi | Database Shu | 1/6/2009 14:37 | 1/6/2009 14:37 | Disabled (FALSE) |
| 30 | 1/6/2009 14:26 | Local | System Chanr | Database Archi | Database Shu | 1/6/2009 14:26 | 1/6/2009 14:26 | Disabled (FALSE) |
| 31 | 1/6/2009 14:22 | Local | System Chanr | System Warning | Database Shu | 1/6/2009 14:26 | | |
| 32 | | | | | | | | |

8. Graph Properties Reference

A wide range of options are available for displaying WebViews graphs. Refer to Chapter "4. WebViews Graphs" on page 23 for more information on graphing functions.



Graph attributes, as well as those of individual channel plots, are accessed by clicking on the Properties button. The properties are contained in the Plot dialog box and changes take effect upon exit. The tabbed Plot dialog box is organized as follows:



8.1 Control > General

Copy to Clipboard Format specifies the format in which the graph image is copied to the clipboard. You can choose between Meta File, Bitmap and JPEG formats, depending on how the image will be used.

MetaFile Windows Enhanced Metafile Image

Bitmap Windows Bitmap Image

JPEG JPEG Compressed Image (100% quality, Non-Interlaced)

File Column Separator specifies how the graph data will be output to a file:

Tab separates data columns with a tab.

Comma separates data columns with a comma.

Note: Using Tab is recommended to avoid potential issues in instances where a

decimal separator is defined as a comma.

Clip Annotations To Axes when checked, annotations drawn outside of overlapping axes are limited to that region. This precaution keeps annotations within their associated X- and Y-Axis area and prevents them from drawing over other channels.

Note: This setting only affects charts utilizing stacked axes (see the X-Axis Scale and Y-Axis Scale properties). The X- and Y-Axes take up the entire DataView area in non-stacked axis charts.

Border Style specifies the appearance of the outer border of the gauge:

None no border.

Raised the outer border is raised to provide a beveled 3D look.

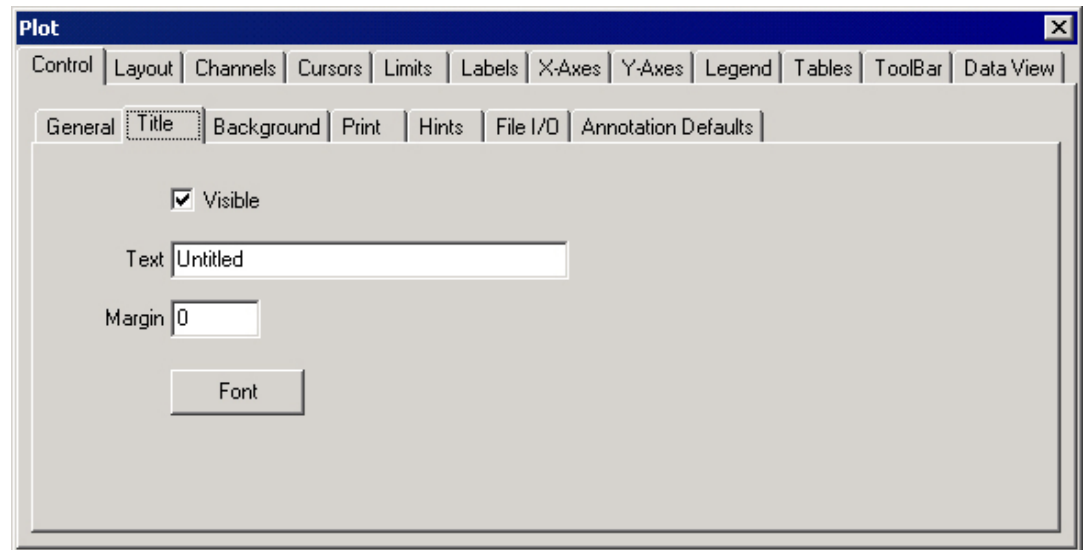
Lowered the outer border is lowered to provide a beveled 3D look.

Outer Margin specifies the distance (in pixels) between the top/bottom/left and right borders of the object and its internal elements. If the Toolbar is visible, the Outer Margin is with respect to the bottom edge of the toolbar.

Update Frame Rate specifies how often the plot is redrawn per second following a change. The rate of change per second must be greater than the Update Frame Rate for the desired frame rate to be achieved. The actual number of repaints per second depends on the system hardware, system activity and the number of requests to refresh the plot.

Auto Frame Rate when checked, automatically controls the frame refresh rate and can only be activated if the Update Frame Rate is a non-zero number. There must be a steady stream of changes to the gauge that require redrawing for Auto Frame Rate to function correctly.

8.2 Control > Title



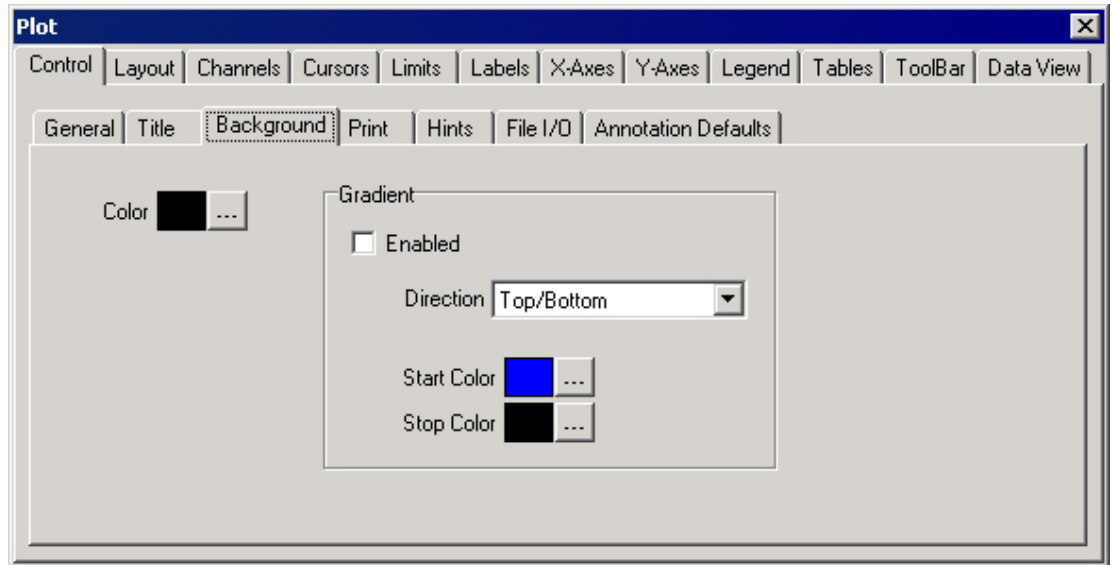
Visible checked, displays the graph's title above the X-Axis scale.

Text is the name of the graph.

Margin specifies the distance between the graph title and the top of the DataView, defined as a percentage of the title Font height.

Font clicking this button displays the Windows Font dialog box, allowing the type attributes of the title Text to be defined.

8.3 Control > Background



Background Color specifies the plot's background color. Clicking on the associated ellipsis (...) button allows you to choose a color from the Windows Color palette.

Gradient Enabled when checked, presents a blended background for the graph display.

Direction specifies the direction of the blend using the specified Start Color and Stop Color:

Top Bottom the fill starts at the Top and stops at the Bottom.

Bottom Top the fill starts at the Bottom and stops at the Top.

Left Right the fill starts at the Left and stops at the Right.

Right Left the fill starts at the Right and stops at the Left.

Top Left Bottom Right the fill starts at the TopLeft and stops at the BottomRight.

Bottom Right Top Left the fill starts at the BottomRight and stops at the TopLeft.

Bottom Left Top Right the fill starts at the BottomLeft and stops at the TopRight.

Top Right Bottom Left the fill starts at the TopRight and stops at the BottomLeft.

Rectangle Out fills a Rectangle starting at the center and stopping at the outer edge.

Rectangle In fill a Rectangle starting at the outer edge and stopping at the center.

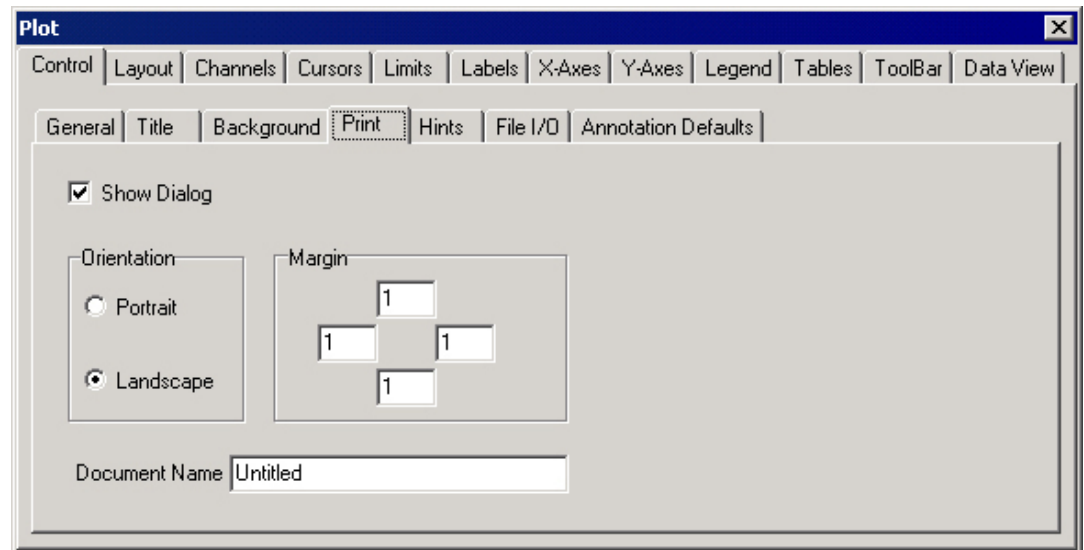
Circle Out fills a Circle starting at the center and stopping at the Outer edge.

Circle In fills a Circle starting at the outer edge and stopping In the center.

Start Color is the beginning color for the graph's background gradient fill. Clicking on the associated ellipsis (...) button allows you to choose a color from the Windows Color palette.

Stop Color is the ending color for the graph's background gradient fill. Clicking on the associated ellipsis (...) button allows you to choose a color from the Windows Color palette.

8.4 Control > Print



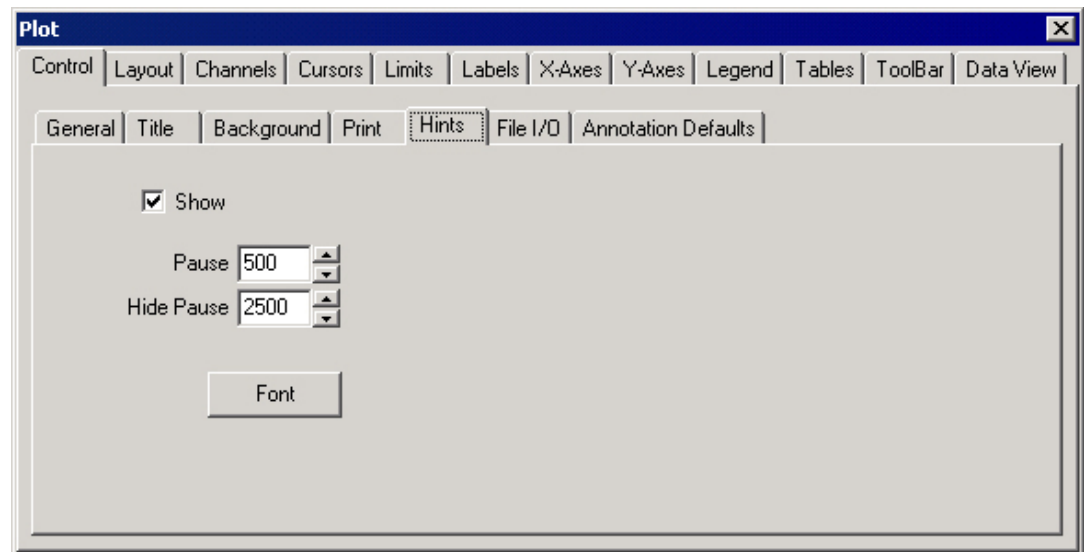
Show Dialog checked, displays the Windows Print dialog box when the Print button is clicked in the graph toolbar. The dialog box allows the printer, paper orientation, number of copies, and other output options to be specified prior to printing the graph.

Orientation specifies whether the printed graph will have a Portrait or Landscape orientation.

Margin establishes the borders for the printed graph, measured in inches.

Document Name is the title to be printed at the top of the graph.

8.5 Control > Hints



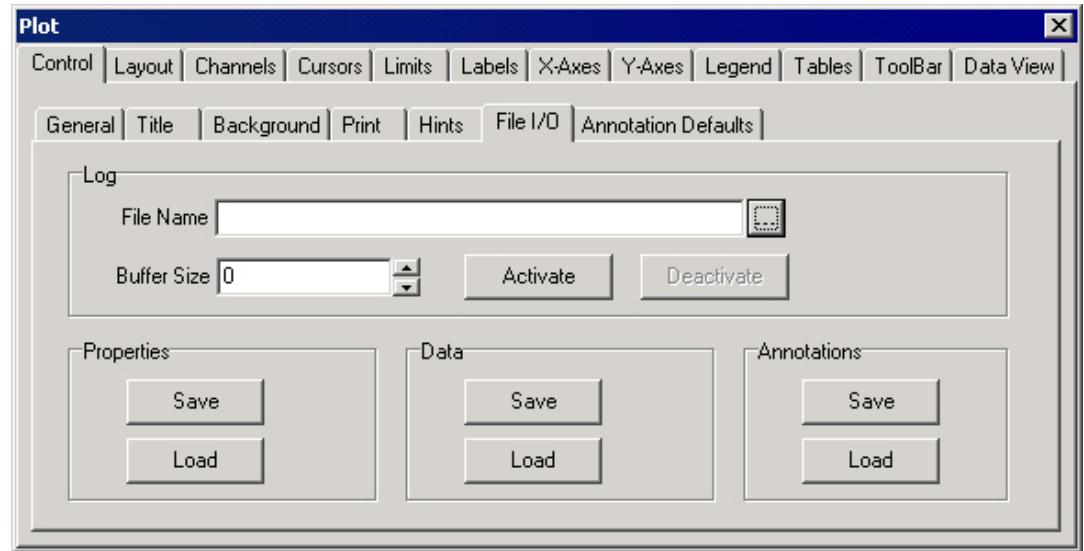
Show when checked, identifies graph components by their function when the cursor hovers over them.

Pause is the delay (in milliseconds) before the hint is displayed once the cursor is held over the graph element.

Hide Pause is the duration (in milliseconds) the hint is displayed if the mouse is not moved.

Font clicking this button displays the Windows Font dialog box, allowing the type attributes of hints to be defined.

8.6 Control > File I/O



Log File Name is the name (including path) of the log file for all axes.

Buffer Size specifies the size of the log buffer used by the main plot interface and determines how often data are written to the log file. Data flow into the buffer when logging is active. Once the buffer is filled, data are written to the log file and the buffer cleared. If you have five channels and set the Buffer Size to "10," the data are written to the log and the buffer cleared after 50 data points have been accumulated. To write data to the log as each data point is reported on the graph, set this value to "0."

Activate/Deactivate determine whether logging is enabled or disabled for the channel associated with the log File Name. Clicking Activate initiates logging of all data for the associated channel. Data are logged in a tab-separated format with the first column representing the X-Axis information and the second column the Y-Axis information.

8.6.1 Properties

Save displays the Windows Save As dialog box, allowing associated channel properties to be output as a file which can then be loaded and applied to other channels.

Load displays the Windows Open dialog box, allowing saved properties to be applied to the current channel.

8.6.2 Data

Save displays the Windows Save As dialog box, allowing associated channel data to be output as a tab-delimited file in which the raw X-Axis data are represented by the first column and the raw Y-Axis data by the second. Only raw data are saved.

Load displays the Windows Open dialog box, allowing saved data to be applied to the current channel.

8.6.3 Annotations

Save displays the Windows Save As dialog box, allowing annotations to be output as a proprietary text file which can then be loaded and applied to other channels.

Load displays the Windows Open dialog box, allowing saved annotations to be applied to the current channel.

Note: Loading a file deletes any existing annotations.

8.7 Control > Annotation Defaults

Font clicking on this button displays the Windows Font dialog box, allowing the annotation's type attributes to be specified.

8.7.1 Pen

Color is the default stroke color of the annotation added to the graph. Clicking on the associated ellipsis (...) button allows you to choose a pen color from the Windows Color palette.

Style specifies the default pen style used to create an annotation. Click on the associated arrow to display a drop list of available styles:

Solid draws a solid line.

Dash draws a line made up of a series of dashes.

Dash Dot draws a line made up of alternating dashes and dots.

Clear does not draw a line. This setting is used to omit the line around shapes that draw an outline by default using the current pen.

Inside Frame draws a solid line, but but color may be dithered if the Width setting is greater than "1."

Width is the default thickness (in pixels) of the pen stroke used to create annotations.

8.7.2 Brush

Color is the default fill color of the annotation added to the graph. Clicking on the associated ellipsis (...) button allows you to choose a brush color from the Windows Color palette.

Style specifies the default brush style used to create an annotation. Click on the associated arrow to display a drop list of available styles: Solid creates a solid fill.

Clear creates a clear fill.

Horizontal creates a horizontal line fill.

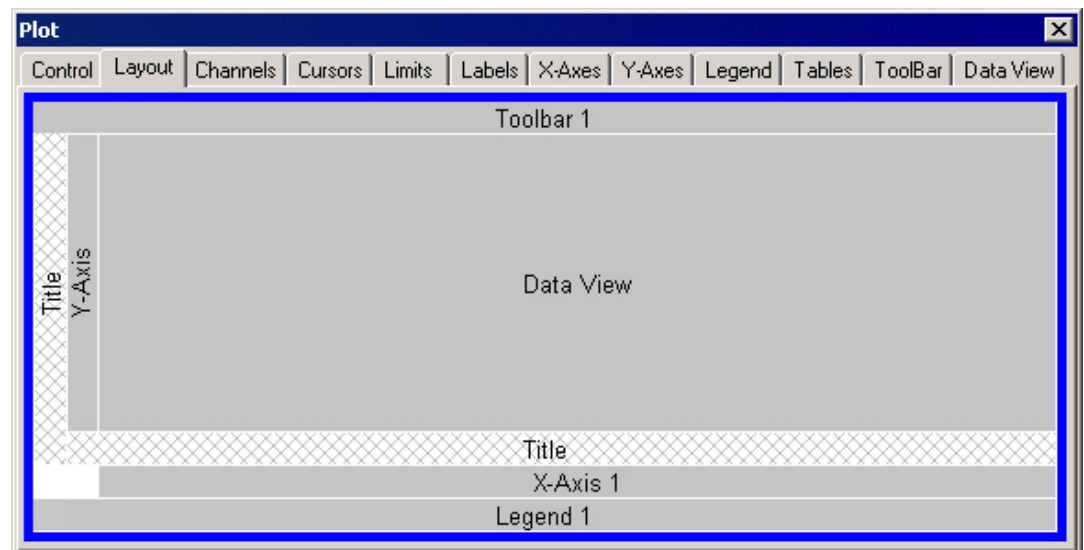
Vertical creates a vertical line fill.

FDiagonal creates a bottom-left to top-right diagonal line fill.

BDiagonal creates a top-left to bottom-right diagonal line fill.

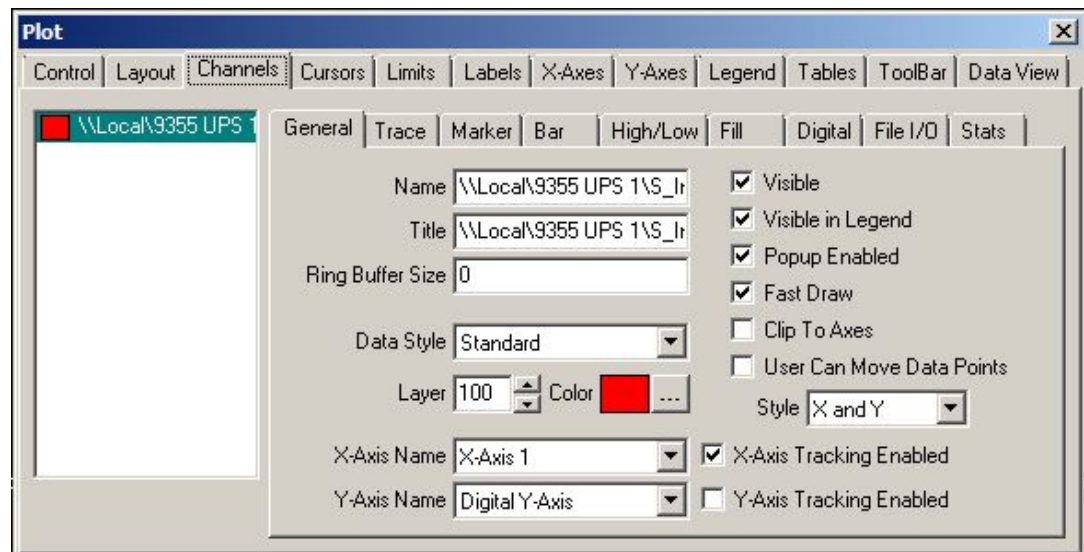
Cross creates a crosshatch fill using Horizontal and Vertical lines.

8.8 Layout



This dialog box identifies the various components of the graph display and determines how they are presented. The components are generated based on the elements created, such as the Title, Legend, X- and Y-Axes and multiple Channels. Each of these variable graph component can be selected and dragged to the desired display location. The Toolbar and Data View positions are fixed and cannot be changed.

8.9 Channels > General



Channel Pane lists the data inputs currently comprising the graph. All General Properties are applied to the selected channel.

Name is the name identifying the channel highlighted in the list. By default, the Name is the path to the channel's input source.

Title is the corresponding channel Name that is displayed on the graph.

Ring Buffer Size specifies the size of the data buffer in which the channel data are stored in kilobytes (Kb). The first-in, first-out (FIFO) buffer remains a constant size no matter how many data points are added to the channel. A setting of "0" disables this feature.

Data Style specifies the data storage format for the channel:

Standard is an archive of all of the channel's logged data points.

Compact archives all of the channel's data except empty data points, null data points and marker styles.

Compact Interval is a low-resolution archive of all of the channel's data except empty data points, null data points marker styles and interpolated X values. In this format, the difference between the first and second data point is used to determine the fixed interval that is applied to the entire data set. For example, if the channel's first data point is "1," and the second data point is "6," the X-value interval is fixed at "5."

Full Feature is a high-resolution archive that records all channel data including its style and data marker settings.

Note: This Data Style should not be used with extremely large data sets due to the amount of memory required for each data point.

Layer the layer the channel occupies on the graph. All plot objects are given a default layer of "100." The higher the number, the closer the object is to the viewer; the lower the number, the further from the viewer. For example, an object with a layer of "200" will be displayed on top of an object with a layer of "100" in areas where the two overlap. If two objects have the same Layer value, their layering is determined as follows (from highest priority to lowest):

- Annotations
- Channel Data

- X-Axes (Cartesian Only)
- Y-Axes (Cartesian Only)
- Non-Filled Limit Lines
- DataView Grid Lines
- Filled Limit Lines

Visible when checked, shows the selected channel in the plot.

Visible in Legend when checked, includes the chosen channel in the graph's legend display.

Popup Enabled when checked, enables the context-sensitive right-click menu.

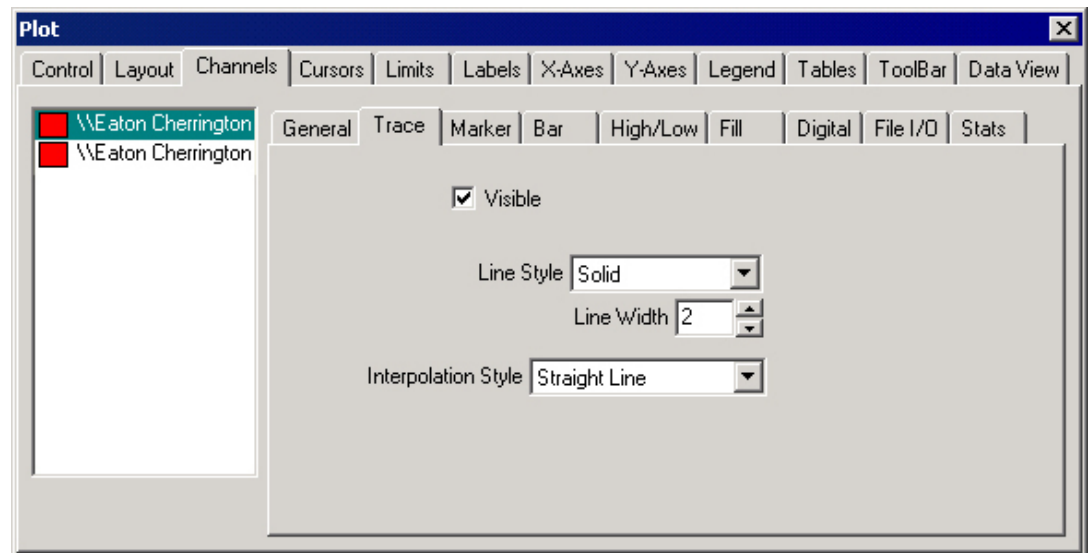
Fast Draw when checked, improves system performance when a large number of data points are being displayed in the visible Data View by minimizing the number of line segments drawn between consecutive data points with the same value.

Color is the color of the channel's trace. Clicking on the associated ellipsis (...) button allows you to choose the default marker and fill color for the trace from the Windows Color palette.

X-Axis Name the name of the X-Axis to which the channel's trace is referenced. Clicking on the associated arrow presents a drop list of available names which were created under the X-Axes tab. Checking X-Axis Tracking Enabled displays the channel's tracking data on the named X-Axis.

Y-Axis Name the name of the Y-Axis to which the channel's trace is referenced. Clicking on the associated arrow presents a drop list of available names which were created under the Y-Axes tab. Checking Y-Axis Tracking Enabled displays the channel's tracking data on the named Y-Axis.

8.10 Channels > Trace



Channel Pane lists the data inputs currently comprising the graph. All Trace properties are applied to the selected channel.

Visible checked, displays the channel's trace.

Line Style specifies chosen channel's trace style:

Solid displays solid line.

Dash displays a line consisting of a series of dashes.

Dot displays a line consisting of a series of dots.

Dash Dot displays a line of alternating dashes and dots.

Dash Dot Dot displays a line of a dash-dot-dot combinations.

Using varying Line Styles makes channel traces easier to distinguish in multichannel plots.

Line Width determines the thickness (in pixels) of the chosen channel's trace.

Interpolation Style specifies the interpolation method used to draw the channel's trace between data points:

Straight Line draws a straight line between each data point.

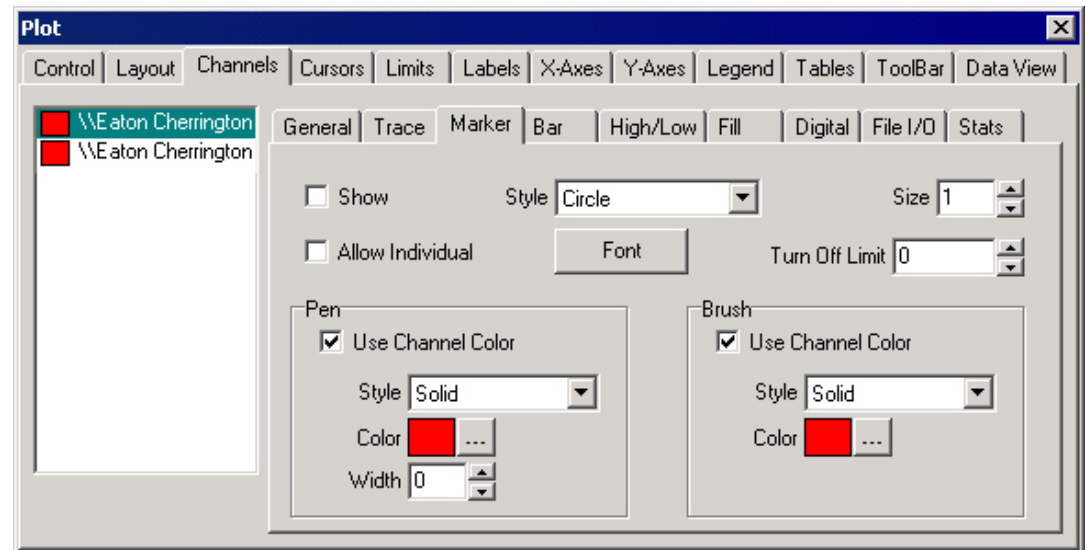
Cubic Spline draws a curve based on cubic spline curve-fitting equations.

Polynomial draws a curve based on polynomial curve-fitting equations. This method is appropriate for small data sets of less than 100 data points. The polynomial degree is fixed at $[n - 1]$ or $[n = \text{number of data points}]$.

Rational draws a curve based on rational curve-fitting equations. This alternative to the Polynomial interpolation is appropriate for channels that have pole functions and consist of small- to medium-sized data sets.

Differential draws a curve based on differential calculations.

8.1.1 Channels > Marker



Channel Pane lists the data inputs currently comprising the graph. All Marker properties are applied to the selected channel.

Show when checked, displays the highlighted channel's data markers.

Allow Individual when checked, the channel's data markers are drawn based on the marker Show and Style settings. Unchecked, the data markers are drawn based on the channel Style.

Style specifies the format of the channel's data markers:

Circle draws a circle to mark the channel's data points.

Square draws a square to mark the channel's data points.

Diamond draws a diamond to mark the channel's data points.

Cross draws a cross to mark the channel's data points.

Plus draws a diamond to mark the channel's data points.

Triangle Up draws an upward-pointing triangle to mark the channel's data points.

Triangle Down draws a downward-pointing triangle to mark the channel's data points.

Triangle Left draws a left-pointing triangle to mark the channel's data points.

Triangle Right draws a right-pointing triangle to mark the channel's data points.

Character uses a character to mark the channel's data points.

Font clicking on this button displays the Windows Font dialog box, allowing the marker's type attributes to be specified.

Size is the thickness of the channel markers in pixels.

Turn Off Limit specifies the maximum number of viewable data markers for the chosen channel. If the number of data markers exceeds this limit, all data markers for the channel are hidden. This setting is useful in preventing the channel from using too many resources to draw numerous data markers. The default setting of "0" disables this feature.

8.11.1 Pen

This specifies the stroke attributes applied to the channel's data markers.

Use Channel Color when checked, applies the channel Color defined under the General tab to its associated data markers. Unchecked applies the Pen Color setting for the channel markers.

Style specifies the default pen style used to create the channel's data markers. Click on the associated arrow to display a drop list of available styles:

Solid draws a solid line.

Dash draws a line made up of a series of dashes.

Dash Dot draws a line made up of alternating dashes and dots.

Clear does not draw a line. This setting is used to omit the line around shapes that draw an outline by default using the current pen.

Inside Frame draws a solid line, but but color may be dithered if the Width setting is greater than "1."

Color is the default stroke color of the channel's data markers. Clicking on the associated ellipsis (...) button allows you to choose a pen color from the Windows Color palette. This setting is inactive if Use Channel Color is enabled.

Width is the default thickness (in pixels) of the pen stroke used to create the channel markers.

8.11.2 Brush

This specifies the fill attributes applied to the channel's data markers.

Use Channel Color when checked, applies the channel Color defined under the General tab to fill its associated data markers. Unchecked applies the Brush Color setting for the channel marker fill.

Style specifies the default brush style used to create the channel's markers. Click on the associated arrow to display a drop list of available styles:

Solid creates a solid fill.

Clear creates a clear fill.

Horizontal creates a horizontal line fill.

Vertical creates a vertical line fill.

FDiagonal creates a bottom-left to top-right diagonal line fill.

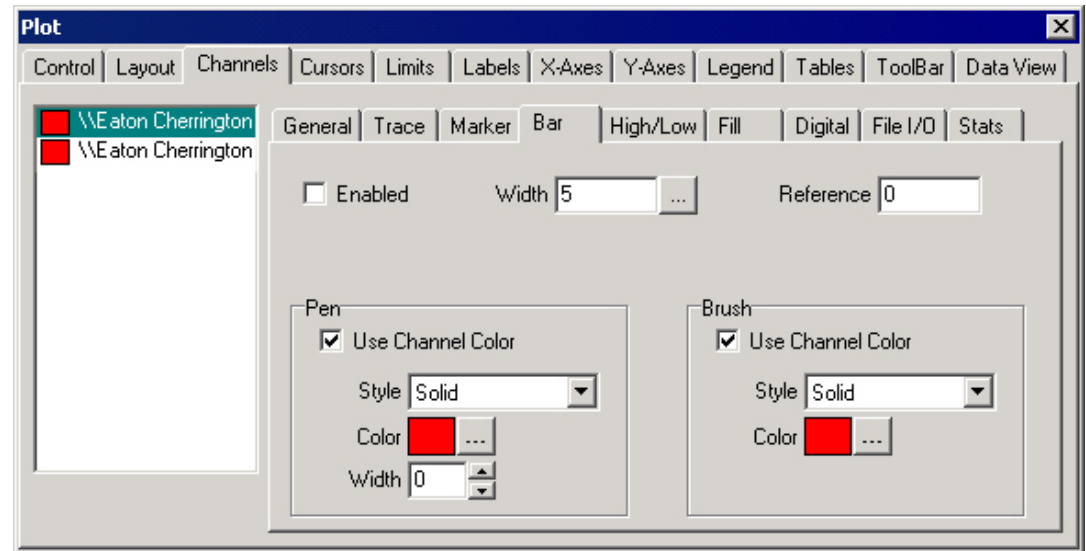
BDiagonal creates a top-left to bottom-right diagonal line fill.

Cross creates a crosshatch fill using Horizontal and Vertical lines.

Diag Cross creates a crosshatch fill using the two Diagonal lines.

Color is the default fill color of the channel's data markers. Clicking on the associated ellipsis (...) button allows you to choose a pen color from the Windows Color palette. This setting is inactive if Use Channel Color is enabled.

8.1.2 Channels > Bar



Channel Pane lists the data inputs currently comprising the graph. All Bar properties are applied to the selected channel.

Enabled when checked, inserts a bar indicator into the graph for each of the channel's reported data points drawn from the Reference position.

Width is the display interval for the chosen channel's bars specified in X-Axis unit. For example, if you specify a width of "5," the width of the bar is the distance between the "0" and "5" major ticks on the X-Axis scale. Clicking on the associated ellipsis (...) button displays the Value Converter dialog box, allowing the interval for these bars to be specified precisely.

Reference is the reference from which the data bar is drawn specified in X-Axis units. If you specify a reference of "5," for instance, the channel bar is drawn vertically from that point on the Y-Axis to the Y-coordinate of the data point.

8.1.2.1 Pen

This specifies the stroke attributes applied to the channel's data point bars.

Use Channel Color when checked, applies the channel Color defined under the General tab to its associated data bars. Unchecked applies the Pen Color setting for the channel markers.

Style specifies the default pen style used to create the channel's data bars. Click on the associated arrow to display a drop list of available styles:

Solid draws a solid line.

Dash draws a line made up of a series of dashes.

Dash Dot draws a line made up of alternating dashes and dots.

Clear does not draw a line. This setting is used to omit the line around shapes that draw an outline by default using the current pen.

Inside Frame draws a solid line, but but color may be dithered if the Width setting is greater than "1."

Color is the default stroke color of the channel's data bars. Clicking on the associated ellipsis (...) button allows you to choose a pen color from the Windows Color palette. This setting is inactive if Use Channel Color is enabled.

Width is the default thickness (in pixels) of the pen stroke used to create the channel's data bars.

8.12.2 Brush

This specifies the fill attributes applied to the channel's data point bars.

Use Channel Color when checked, applies the channel Color defined under the General tab to fill its associated data bars. Unchecked, the Brush Color setting is used for the channel marker fill.

Style specifies the default brush style used to create the channel's data bars. Click on the associated arrow to display a drop list of available styles:

Solid creates a solid fill.

Clear creates a clear fill.

Horizontal creates a horizontal line fill.

Vertical creates a vertical line fill.

FDiagonal creates a bottom-left to top-right diagonal line fill.

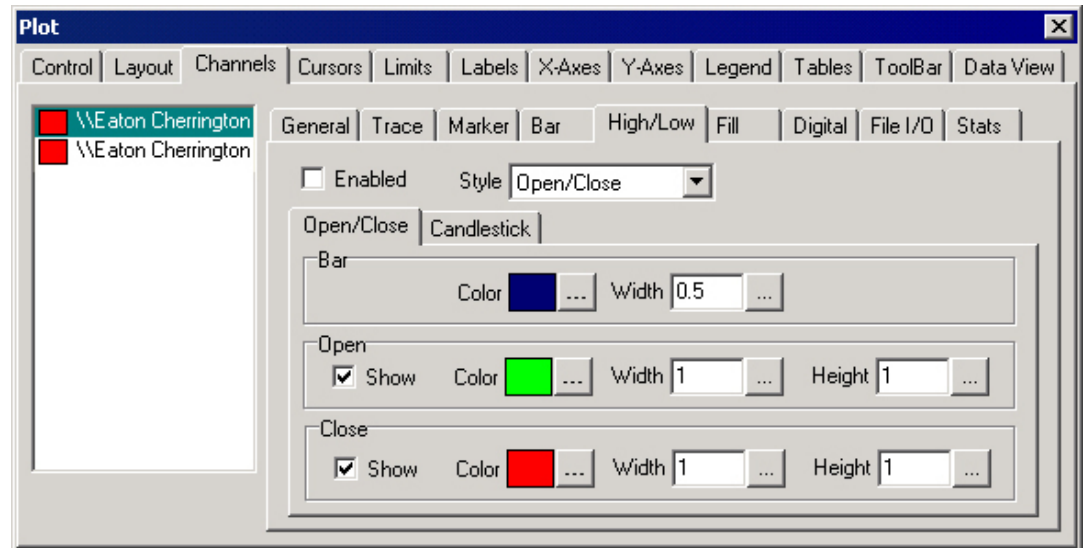
BDiagonal creates a top-left to bottom-right diagonal line fill.

Cross creates a crosshatch fill using Horizontal and Vertical lines.

Diag Cross creates a crosshatch fill using the two Diagonal lines.

Color is the default fill color of the channel's data bars. Clicking on the associated ellipsis (...) button allows you to choose a pen color from the Windows Color palette. This setting is inactive if Use Channel Color is enabled.

8.13 Channels > High/Low > Open/Close



Channel Pane lists the data inputs currently comprising the graph. All High/Low properties are applied to the selected channel.

Enabled when checked, displays the high and low limit bars for the chosen channel's data points. This setting is only active for channels with the FullFeature is the Data Style specified under the General tab.

Style specifies the style used to draw the channel's High/Low data points:

Open/Close displays two horizontal bars that represent the open and close points.

Candle Stick displays a vertical line bisecting the bar that represents the high and low points.

8.13.1 Bar

Color specifies the color of the High/Low bar. Clicking on the associated ellipsis (...) button allows you to choose a different color from the Windows Color palette.

Width specifies the thickness of the High/Low bar in X-Axis units. In this High/Low example, the Bar Color is blue, the Open Color is green and the Close Color is red.

8.13.2 Open

Show when checked, displays the High/Low Open bar for the chosen channel.

Color specifies the color of the High/Low Open bar. By default the Open bar is green and points left.

Width specifies the width of the High-Low Open bar in X-Axis units.

Height establishes the height of the High-Low Open bar in X-Axis units.

8.13.3 Close

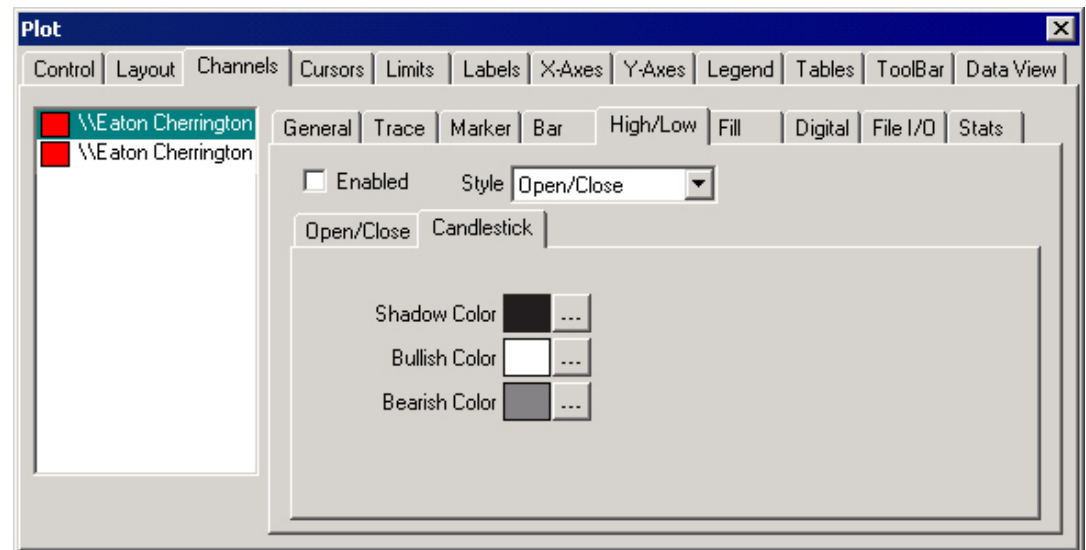
Show when checked, displays the High/Low Close bar for the chosen channel.

Color specifies the color of the High/Low Close bar. By default the Close bar is red and points right.

Width specifies the width of the High-Low Close bar in X-Axis units.

Height establishes the height of the High-Low Close bar in X-Axis units.

8.14 Channels > High/Low > Candlestick



Channel Pane lists the data inputs currently comprising the graph. All High/Low properties are applied to the selected channel.

Enabled when checked, displays the high and low limit bars for the chosen channel's data points. This setting is only active for channels with the FullFeature as the Data Style specified under the General tab.

Style specifies the style used to draw the channel's High/Low data points:

Open/Close displays two horizontal bars that represent the open and close points.

Candle Stick displays a vertical line bisecting the bar that represents the high and low points.



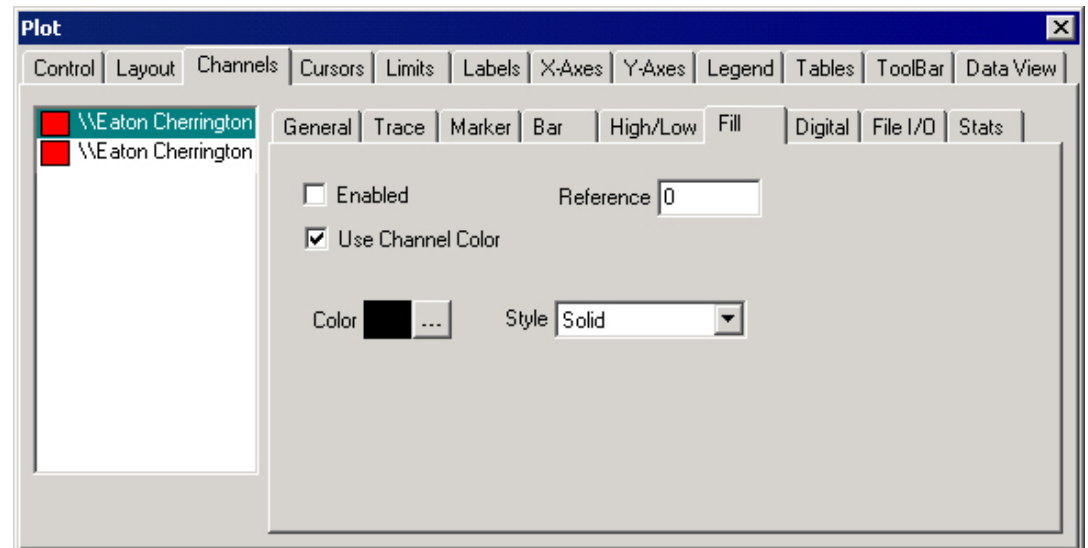
In this High/Low example, the Shadow Color is black, the Bullish Color is white and the Bearish Color is gray.

Shadow Color specifies the color of the High/Low candlestick shadow. Clicking on the associated ellipsis (...) button allows you to choose a different color from the Windows Color palette.

Bullish Color specifies the color of the High/Low candlestick bar when the close value is greater than the open value for the data point. Clicking on the associated ellipsis (...) button allows you to choose a different color from the Windows Color palette.

Bearish Color specifies the color of the High/Low candlestick bar when the close value is less than the open value for the data point. Clicking on the associated ellipsis (...) button allows you to choose a different color from the Windows Color palette.

8.1.5 Channels > Fill



Channel Pane lists the data inputs currently comprising the graph. All Fill properties are applied to the selected channel.

Enabled when checked, fills the area beneath the channel's trace.

Reference is the reference from which the fill is drawn on the Y-Axis.

Use Channel Color when checked, applies the Color defined under the General tab to the fill. Unchecked applies the Color setting for the channel markers.

Color is the default fill color used below the channel's trace. Clicking on the associated ellipsis (...) button allows you to choose a color from the Windows Color palette. This setting is inactive if Use Channel Color is enabled.

Style specifies the fill applied to the channel's trace. Click on the associated arrow to display a drop list of available styles:

Solid creates a solid fill.

Clear creates a clear fill.

Horizontal creates a horizontal line fill.

Vertical creates a vertical line fill.

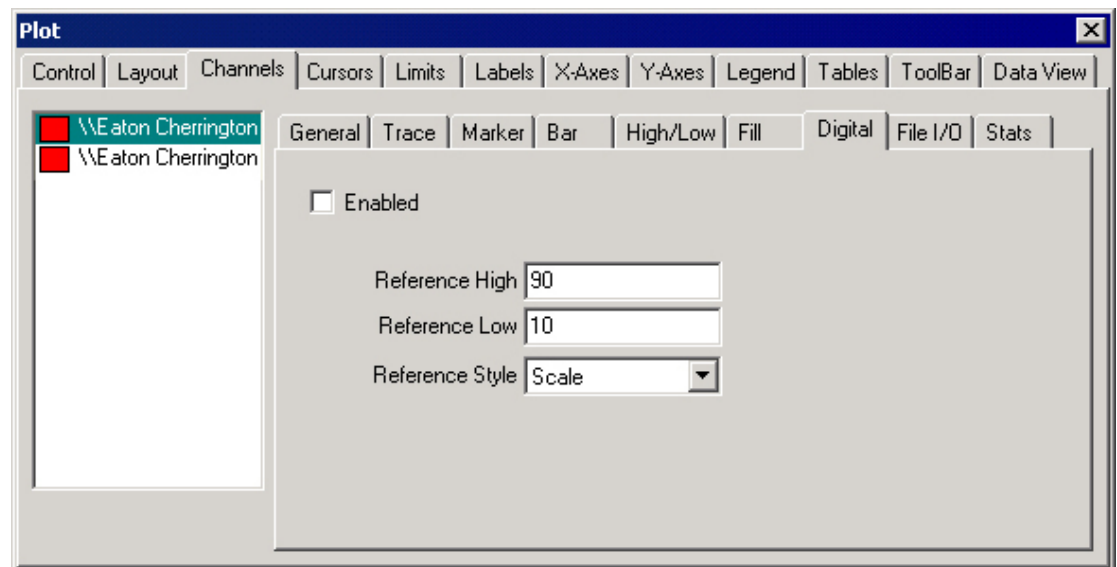
FDiagonal creates a bottom-left to top-right diagonal line fill.

BDiagonal creates a top-left to bottom-right diagonal line fill.

Cross creates a crosshatch fill using Horizontal and Vertical lines.

Diag Cross creates a crosshatch fill using the two Diagonal lines.

8.16 Channels > Digital



Channel Pane lists the data inputs currently comprising the graph. All Digital properties are applied to the selected channel.

Enabled when checked, interprets the selected channel's data inputs as digital. A value of "0" is plotted against the Reference Low and a value of "1" is plotted against the Reference High.

Reference High specifies the Y coordinate for the channel when its digital values are not equal to "0."

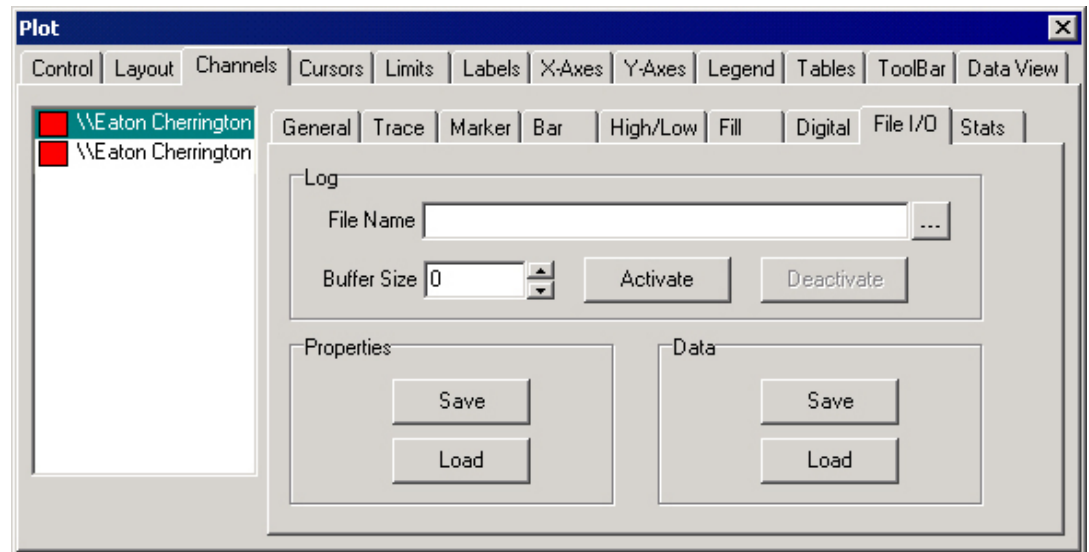
Reference Low specifies the Y coordinate for the channel when its digital value is "0."

Reference Style specifies the formatting style for the chosen digital channel:

Scale interprets the Reference Low and Reference High properties as actual values on the associated Y-Axis scale.

Percent interprets the Reference Low and Reference High properties as a percentage of the distance from the bottom (0%) and the top (100%) of the Data View. Acceptable values are between these two percentages.

8.17 Channels > File I/O



Channel Pane lists the data inputs currently comprising the graph. All File I/O properties are applied to the selected channel.

8.17.1 Log

This allows a log file to be appended to the graph image.

File Name is the name (including path) of the log file to be output with the channel's graph file.

Buffer Size specifies the size of the log buffer used by the main plot interface and determines how often data are written to the log file. Data flow into the buffer when logging is active. Once the buffer is filled, data are written to the log file and the buffer cleared. To write data to the log as each data point is reported on the graph, set this value to "0." If you are only monitoring synchronous data, you can use the Buffer Size setting under the Control>File I/O dialog box to save all channel data to a single log file. If the log is deactivated, the buffer is automatically flushed to the log file and cleared.

Activate/Deactivate determine whether logging is enabled or disabled for the channel associated with the log File Name. Clicking Activate initiates logging of all data for the associated channel. Data are logged in a tab-separated format with the first column representing the X-Axis information and the second column the Y-Axis information.

8.17.2 Properties

Save displays the Windows Save As dialog box, allowing associated channel properties to be output as a file which can then be loaded and applied to other channels.

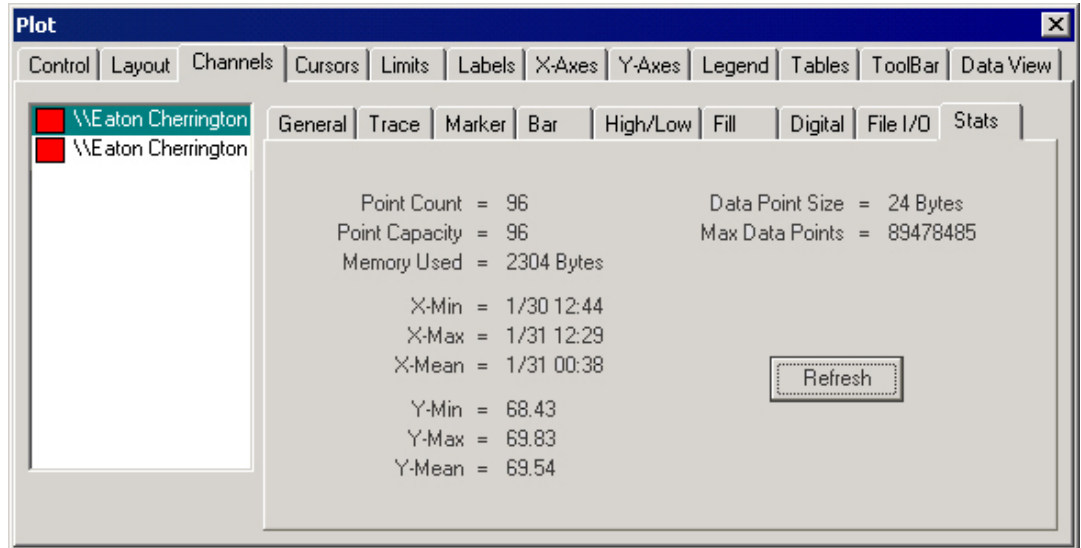
Load displays the Windows Open dialog box, allowing saved properties to be applied to the current channel.

8.17.3 Data

Save displays the Windows Save As dialog box, allowing associated channel data to be output as a tab-delimited file in which the raw X-Axis data are represented by the first column and the raw Y-Axis data by the second. Only raw data are saved.

Load displays the Windows Open dialog box, allowing saved data to be applied to the current channel.

8.1.7.4 Channels > Stats



Channel Pane lists the data inputs currently comprising the graph. All reported Stats properties refer to the selected channel.

Point Count is the current number of data points reported for the channel.

Point Capacity is the currently allocated number of data points in the channel.

Memory Used is the amount of memory currently used to store the data reported for the channel.

Data Point Size is the amount of memory used by a single data point for the chosen channel based on the Data Style specified under the General tab.

Max Data Points is the maximum number of data points that can be reported for the channel based on the amount of hard disk memory available.

X-Min is the minimum X-axis value recorded for the channel over the span of the graph.

X-Max is the maximum X-axis value recorded for the channel over the span of the graph.

X-Mean is the mean (average) X-axis value recorded for the channel over the span of the graph.

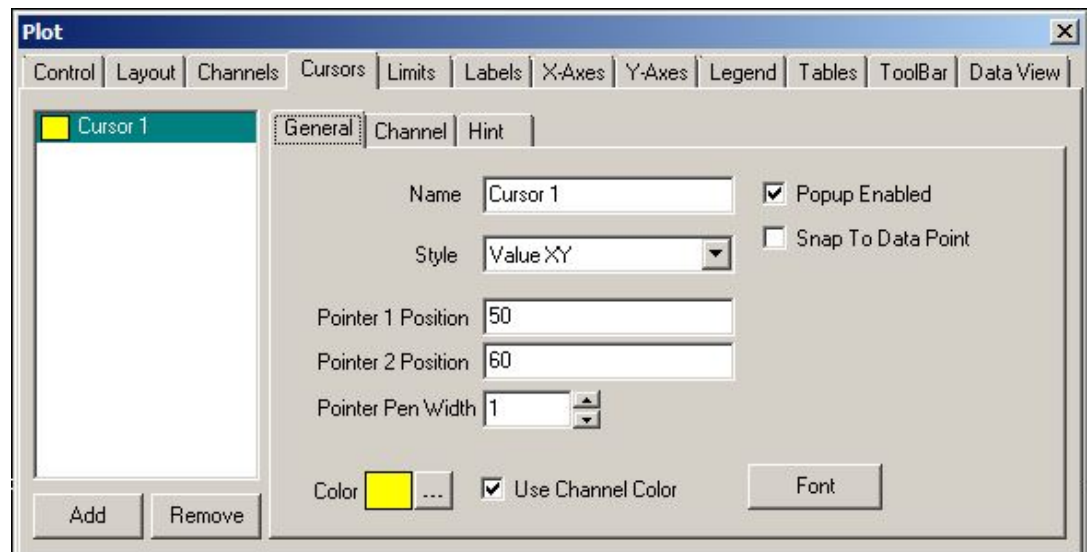
Y-Min is the minimum Y-axis value recorded for the channel over the span of the graph.

Y-Max is the maximum Y-axis value recorded for the channel over the span of the graph.

Y-Mean is the mean (average) Y-axis value recorded for the channel over the span of the graph.

Refresh clicking this button updates the values reported for the selected channel.

8.18 Cursors > General



Cursor Pane lists the cursors defined for this graph. You can Add a cursor or Remove one from the list by clicking the appropriate button. All General properties apply to the selected cursor.

Name is the name given to the cursor line.

Popup Enabled when checked, enables the context-sensitive right-click menu.

Style determines the cursor display:

ValueXY shows the X and Y value of the data point.

ValueX shows the X value of the data point.

ValueY shows the Y value of the data point.

DeltaX shows the X span between the pointer lines.

DeltaY shows the Y span between the pointer lines.

Inverse DeltaX shows the frequency between two pointer lines.

Pointer 1 Position is the position of the first cursor pointer as a percentage (0–100) of the Data View area. If the data cursor is horizontal, the position is in reference to the Y-Axis and if the data cursor is vertical, the position is in reference to the X-Axis. For ValueXY, ValueX and ValueY data cursors, this property sets the position of the single cursor line that references the X-Axis size of the Data View.

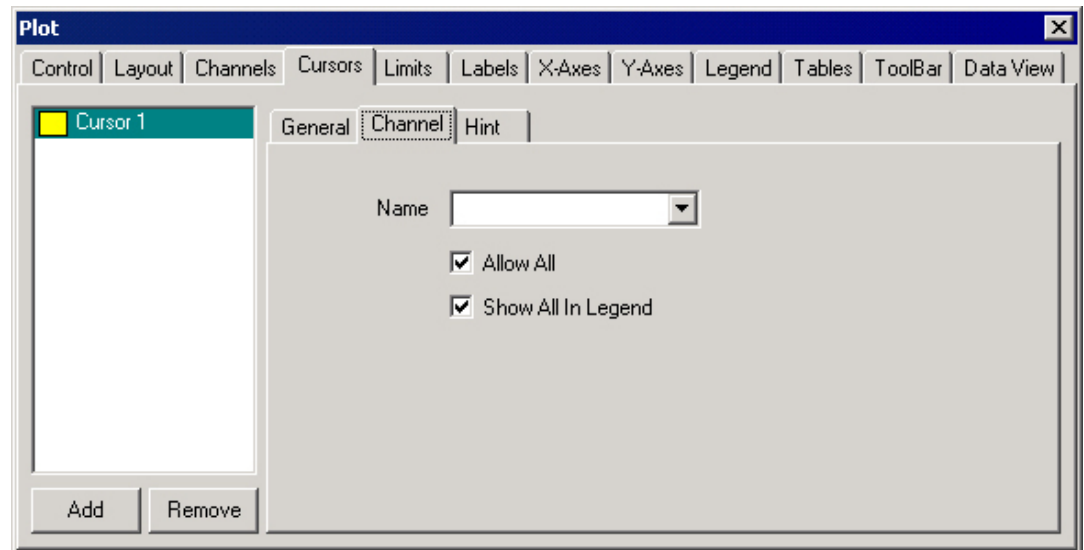
Pointer 2 Position is the position of the second cursor pointer as a percentage (0–100) of the Data View area. If the data cursor is horizontal, the position is in reference to the Y-Axis and if the data cursor is vertical, the position is in reference to the X-Axis. For ValueXY, ValueX and ValueY data cursors, this property is ignored.

Pointer Pen Width is the thickness of the cursor pointer in pixels. Specifying an odd-number for this setting ensures the pointer is centered around the data cursor; even values are offset by one pixel.

Color is the default fill color of the data cursor line(s). Clicking on the associated ellipsis (...) button allows you to choose a pen color from the Windows Color palette. This setting is inactive if Use Channel Color is enabled.

Font clicking on this button displays the Windows Font dialog box, allowing the data cursor hint attributes to be specified.

8.19 Cursors > Channel



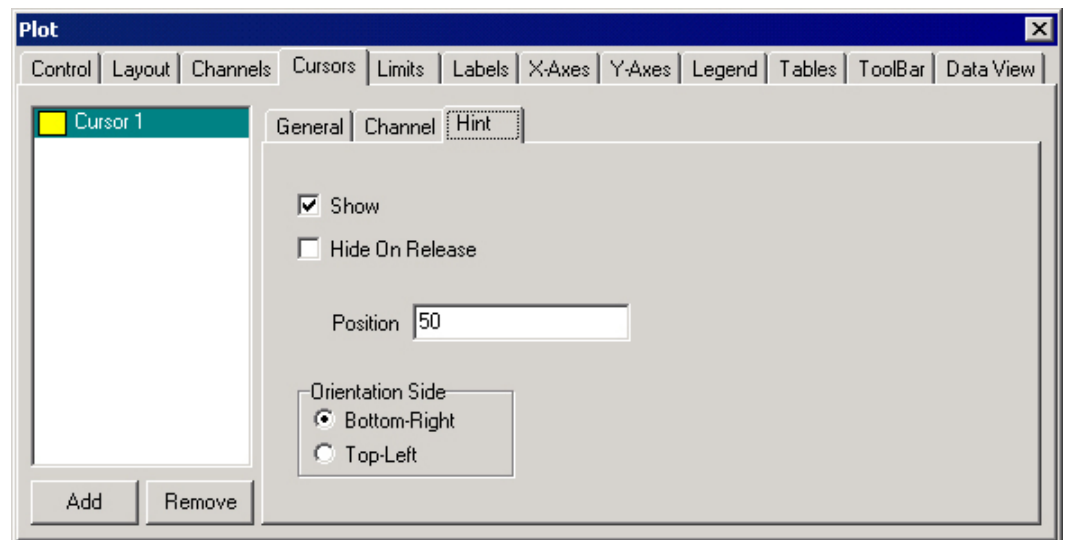
Cursor Pane lists the cursors defined for this graph. You can Add a cursor or Remove one from the list by clicking the appropriate button. All Cursor properties apply to the selected cursor.

Name the name of the channel with which the cursor is associated. A list of available channels (including (<All>)) is presented when you click on the arrow button. Data from the channel are used to display individual data points, ranges and other cursor calculated values at the cursor.

Allow All when checked, enables the <All> option in the context-sensitive menu when specifying the channel associated with the selected data cursor.

Show All in Legend when enabled, displays the cursor information for the associated channel in its legend description. The Name property must be set to <All> for the cursor's X/Y coordinates to be displayed in the legend.

8.20 Cursors > Hint



Cursor Pane lists the cursors defined for this graph. You can Add a cursor or Remove one from the list by clicking the appropriate button. All Hint properties apply to the selected cursor.

Show displays a hints box showing channel information when its cursor is selected or moved. Hint content and font attributes are defined under the General tab.

Hide on Release hides the channel hints box when the mouse is released.

Position specifies the hint position with respect to the data cursor as a

percentage of the horizontal or vertical range of the Data View. For instance, if the cursor is horizontal and its Position setting is "25," the left side of the hint will be 1/4 of the distance from the left side of the Data View area. If the Position is set to "60" and the cursor is vertical, the top side of the hint will be displayed 60% of the distance from the top of the Data View area.

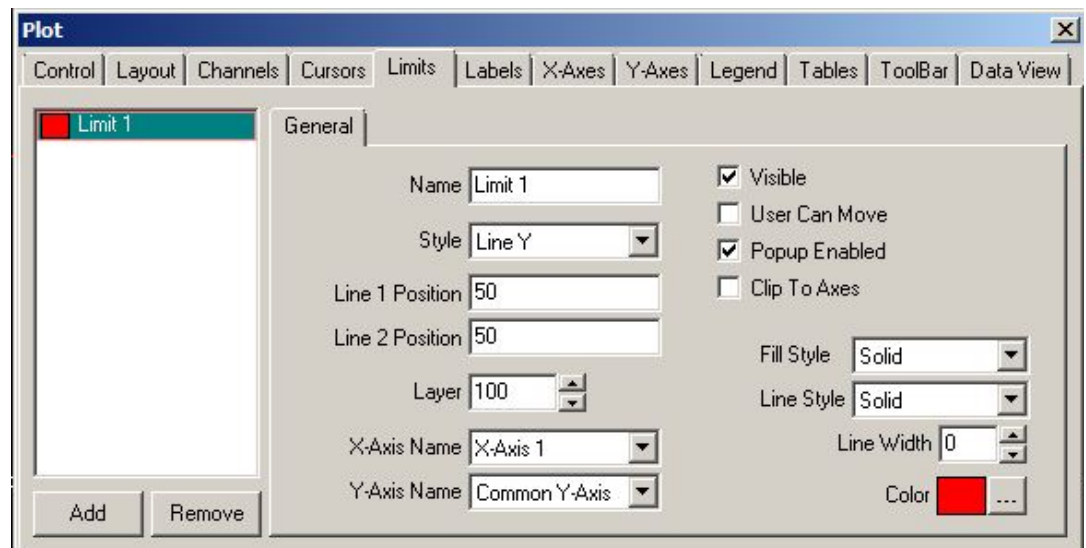
Orientation Side fixes the position of the hints box relative to the cursor:

BottomRight displays the hint to the right of a vertical cursor and below a horizontal cursor.

TopLeft displays the hint to the left of a vertical cursor and above a horizontal cursor.

Note: The orientation is reflected if a cursor hint is moved outside the Data View area.

8.2.1 Limits > General



Limits Pane lists the channels currently assigned alarm limits. You can Add a channel or Remove one from the list by clicking the appropriate button. All General properties apply to the selected channel.

Name is the name of the channel for which to display alarm limits. By default, the Name is the input selected in the Channel List.

Note: Changing the Name may affect other plot properties that reference it, such as the X-Axis Name under the Data View General tab.

Style specifies the display for the alarm limit:

LineX shows a line that is perpendicular to the X-Axis at the location specified by Line 1 Position.

LineY shows a line that is perpendicular to the Y-Axis at the location specified by Line 1 Position.

BandX shows a filled, or two-line, band perpendicular to the X-Axis at the location specified by Line 1 Position and Line 2 Position.

BandY shows a filled, or two-line, band perpendicular to the Y-Axis at the location specified by Line 1 Position and Line 2 Position.

PolyBandX shows a filled, or two-line, band using upper and lower limit values for the specified X-Axis position.

PolyBandY shows a filled, or two-line, band using upper and lower limit values for the specified Y-Axis position.

Visible when checked, displays the named channel's set alarm limits.

User Can Move determines whether the user can use the graph Select tool to move the minimum and maximum limits manually with the mouse.

Popup Enabled when checked, enables the context-sensitive right-click menu.

Line 1 Position sets the Cautionary limit line based on the chosen style:

LineX references the scale corresponding to the X-Axis Name.

LineY references the scale corresponding to the Y-Axis Name.

BandX references the cursor line corresponding to the X-Axis Name.

BandY references the cursor line corresponding to the Y-Axis Name.

Line 2 Position sets the Critical limit line based on the chosen style:

BandX references the cursor line corresponding to the X-Axis Name.

BandY references the cursor line corresponding to the Y-Axis Name.

Layer the layer the alarm limit occupies on the graph with respect to the other plot objects. All plot objects are given a default layer of "100." The higher the number, the closer the object is to the screen; the lower the number, the further from the screen. If two objects have the same Layer value, filled limit lines (Band and Poly-Band) have the lowest priority while non-filled limits (Line) have a slightly higher priority.

X-Axis Name the name of the X-Axis to which the channel's alarm limits are referenced. Clicking on the associated arrow presents a drop list of available names that were created under the X-Axis tab.

Y-Axis Name the name of the Y-Axis to which the channel's alarm limits are referenced. Clicking on the associated arrow presents a drop list of available names which were created under the Y-Axis tab.

Fill Style specifies the default fill area format between Line 1 Position and Line 2 Position for Band and PolyBand limits. Click on the associated arrow to display a drop list of available styles:

Solid creates a solid fill.

Clear creates a clear fill.

Horizontal creates a horizontal line fill.

Vertical creates a vertical line fill.

FDiagonal creates a bottom-left to top-right diagonal line fill.

BDiagonal creates a top-left to bottom-right diagonal line fill.

Cross creates a crosshatch fill using Horizontal and Vertical lines.

Diag Cross creates a crosshatch fill using the two Diagonal lines.

Line Style specifies the line format for Line limits. Click on the associated arrow to display a drop list of available styles:

Solid draws a solid line.

Dash draws a line made up of a series of dashes.

Dash Dot draws a line made up of alternating dashes and dots.

Clear does not draw a line. This setting is used to omit the line around shapes that draw an outline by default using the current pen.

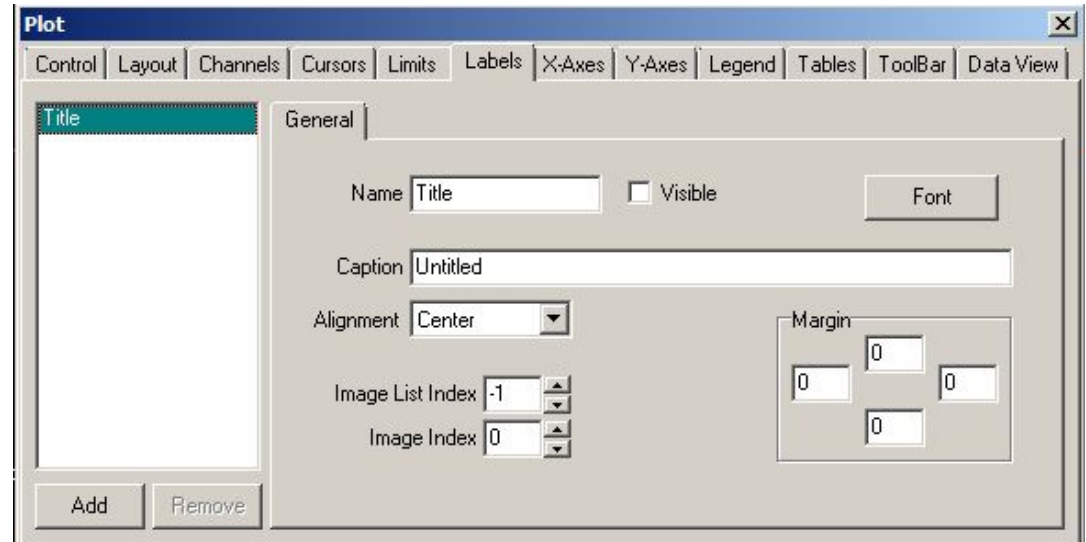
Inside Frame draws a solid line, but but color may be dithered if the Line Width setting is greater than "1."

Note: Dotted and dashed Line Styles cannot be selected unless the specified Line Width is "1" or "0."

Line Width the thickness of the Line used to draw the channel's alarm limits. This setting is ignored if the Limit Style property is Band or PolyBand.

Color is the default color of the alarm limit line(s). Clicking on the associated ellipsis (...) button allows you to choose a pen color from the Windows Color palette.

8.22 Labels > General



Labels Pane lists the labels currently available for display in the graph. You can Add a label or Remove one from the list by clicking the appropriate button. All General properties apply to the selected label.

Name is the name of the selected graph label.

Visible when checked, displays the graph label.

Font clicking this button displays the Windows Font dialog box, allowing the type attributes of the label to be defined.

Caption is the label that is shown in the graph.

Alignment specifies the alignment of the Caption:

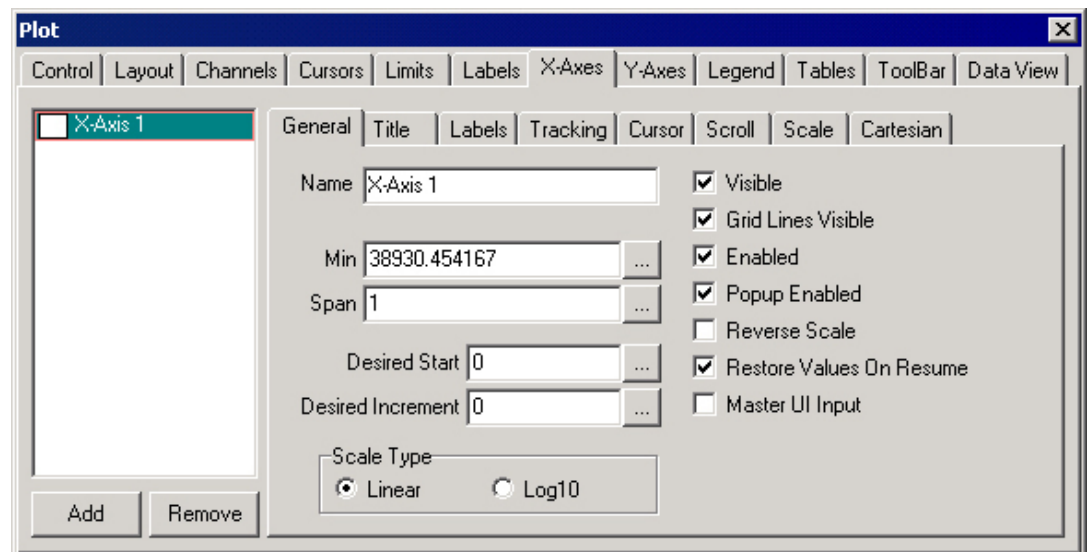
Center the text is centered in the X-Axis.

Left the text is left-justified beginning at the left edge of the X-Axis.

Right the text is right-justified ending at the right edge of the X-Axis.

Margin specifies the distance between the Caption and each of the label borders in pixels.

8.23 X-Axes > General



X-Axes Pane lists the X-Axes currently available for display in the graph. You can Add an X-Axis or Remove one from the list by clicking the appropriate button. All General properties apply to the selected X-Axis.

Name identifies the X-Axis.

Note: There are no restrictions on the characters used or the length of the name, but changing the Name may affect other graph properties that depend on it.

Min specifies the minimum value that will be displayed on the X-Axis. Clicking on the associated ellipsis (...) button displays the Value Converter, allowing the appropriate entry to be calculated.

Span is the range of the X-Axis display. Clicking on the associated ellipsis (...) button displays the Value Converter, allowing the appropriate range to be calculated.

Desired Start specifies the beginning point of the X-Axis scale and determines the value of its first major tick. Setting this field to "9," for instance, means that the value of the first major tick will be "9." Subsequent ticks will be based on the Desired Increment setting. A value of "0" disables this setting. Clicking on the associated ellipsis (...) button displays the Value Converter, allowing the appropriate entry to be calculated.

Note: This setting only applies to static (non-scrolling) graphs and must be equal to, or between, the X-Axis minimum and maximum values.

Desired Increment defines the divisions displayed along the X-Axis. A value of "0" automatically adjusts scaling to display whole numbers depending on the Min and Span settings. If all of the labels do not fit within the specified range, WebViews will display as many as possible. Clicking on the associated ellipsis (...) button displays the Value Converter, allowing the appropriate entry to be calculated.

Scale Type specifies how scaling of the X-Axis is calculated:

Linear linearly based on the reported values.

Log10 Logarithmic Base 10 based on the reported values (the Min and Span settings must be greater than "0")

Visible when checked, displays the X-Axis in the graph display.

Grid Lines Visible when checked, shows grid lines for the X-Axis.

Enabled when checked, enables the X-Axis user interface.

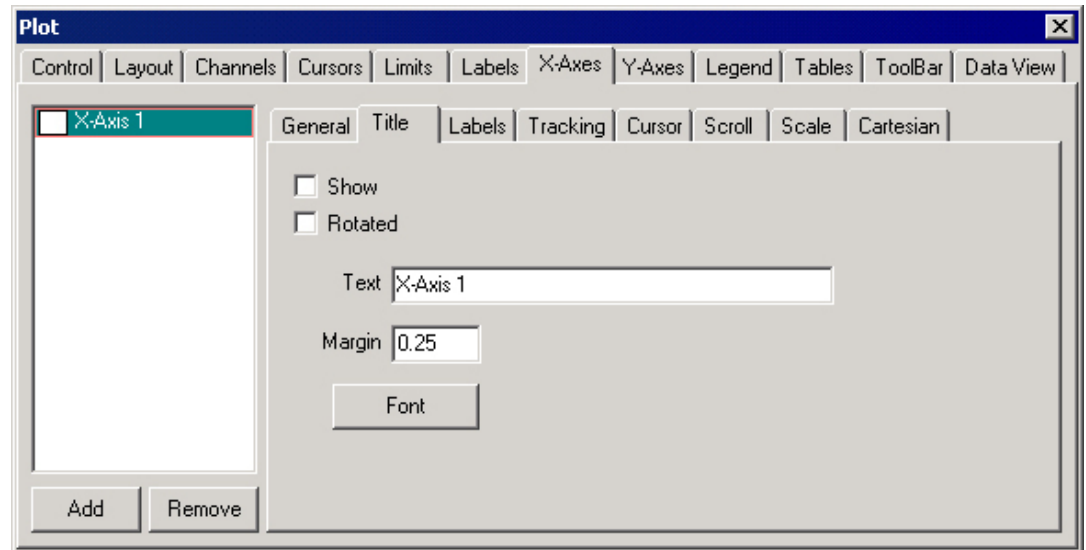
Popup Enabled when checked, enables the context-sensitive right-click menu.

Reverse Scale when checked, reflects the X-Axis such that the scale progresses from right to left. Unchecked, the X-Axis scale progresses from left to right.

Restore Values on Resume when checked, restores the original X-Axis values and parameters (such as Min and Span) when the Resume All (Tracking) button is clicked in the graph toolbar.

Master UI Input when checked, designates the selected X-Axis as the Master User Interface for all X-Axes. Any mouse or keyboard inputs on the Master X-Axis are applied to all X-Axes. This function is useful if you want all X-Axes to be synchronized to the Master, but leave this setting unchecked for all X-Axes if you want them to be manipulated independently.

8.24 X-Axes > Title



X-Axes Pane lists the X-Axis titles currently available for display in the graph. You can Add an X-Axis or Remove one from the list by clicking the appropriate button. All Title properties apply to the selected X-Axis.

Show when checked, displays the X-Axis title entered in the Text field.

Rotated when checked, displays the X-Axis title vertically.

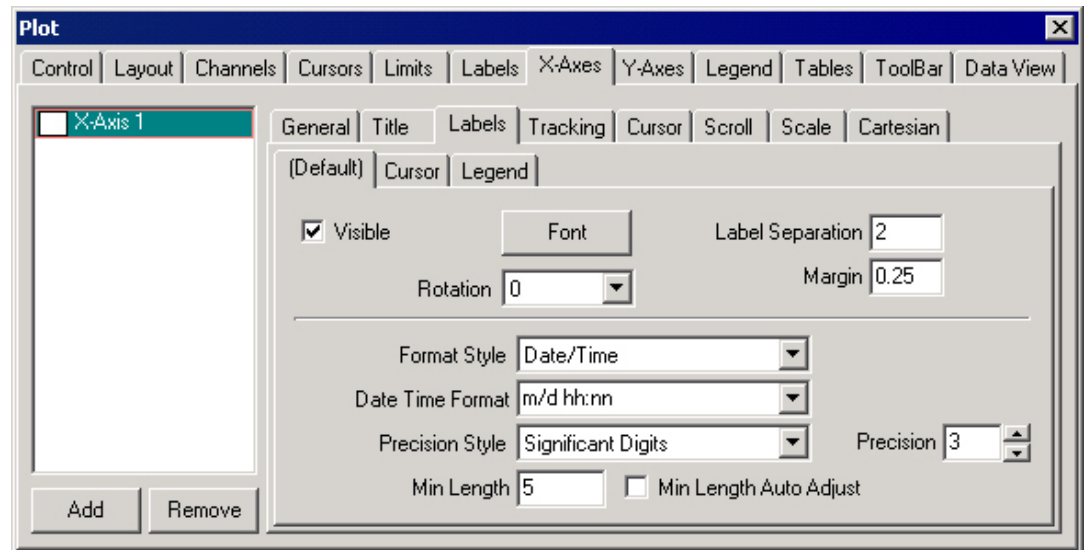
Note: A TrueType Font must be used for the X-Axis title to display properly when it is rotated.

Text is the X-Axis title that is displayed in the graph.

Margin specifies the distance between the X-Axis title and the scale labels. The distance is determined as the percentage of a character based on the Font used. A value of "0.5," for instance, is equal to half the width of a character.

Font clicking this button displays the Windows Font dialog box, allowing the type attributes of the X-Axis title to be defined.

8.25 X-Axes > Labels > (Default)



X-Axes Pane lists the X-Axis labels currently available for display in the graph. You can Add an X-Axis or Remove one from the list by clicking the appropriate button. All Default properties apply to the selected X-Axis.

Visible when checked, displays the labels for the selected X-Axis.

Font clicking this button displays the Windows Font dialog box, allowing the default type attributes of the X-Axis labels to be defined.

Rotation allows the X-Axis labels to be rotated in 90° increments:

- 000 displays the labels horizontally.
- 090 rotates the labels 90 degrees
- 180 rotates the labels 180 degrees
- 270 rotates the labels 270 degrees

Note: A TrueType Font must be used for the X-Axis labels to display properly when rotated. The default label font is not a TrueType font.

Label Separation specifies the minimum display distance between scale labels. The distance is determined as the percentage of a character based on the Font used. A value of "0.5," for instance, is equal to half the width of a character. The actual separation maybe greater due to the AutoScale feature reducing the number of major ticks to keep the scale labels readable.

Margin specifies the distance between the major ticks and their corresponding labels. The distance is determined as the percentage of a character based on the Font used. A value of "0.5," for instance, is equal to half the width of a character.

Format Style specifies the information displayed in the X-Axis labels:

- Value** displays the basic value (198678.567).
- Exponent** displays the exponential value (2.35E+002).
- Prefix** displays a prefix (2.2K).
- DateTime** displays the date and time (ex. 3 Jan 01 5:23:44)
- Price 32nds** is used in the Bond and Securities Market where 23 is in 32nds and 1 is in 256ths.
- Thousands** displays large values using thousands separators (100,231,456.00).

Date Time Format specifies the DateTime display for the X-Axis labels when it is

the chosen Format Style. Clicking on the associated arrow displays the Value Converter dialog box, allowing the desired format to be selected.

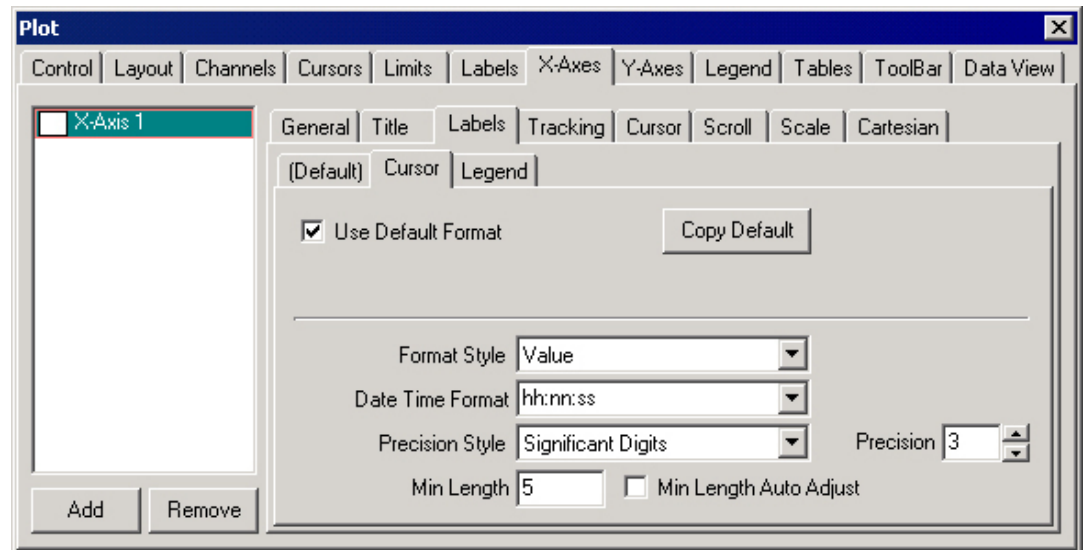
Precision Style determines resolution when formatting the X-Axis major tick labels. Significant Digits calculates the number of digits to the right of the decimal point automatically to ensure that the span of the values will show enough significant digits. Fixed Decimal Points displays a fixed number of digits to the right of the decimal point.

Precision specifies the resolution of the tick labels. The actual number of decimal places shown depends on the Precision Style setting. Enter a zero ("0") to show integers only.

Min Length specifies the minimum length used in calculating the number of major ticks. Autoscaling automatically calculates the number of labels based on the Font, Label Separation and Min Length settings to ensure readable labels. This setting has no effect if the X-Axis is rotated.

Min Length Auto Adjust when checked, automatically adjusts the Min Length setting to accommodate changes in the X-Axis display.

8.26 X-Axes > Labels > Cursor



X-Axes Pane lists the X-Axis cursors currently available for display in the graph. You can Add an X-Axis or Remove one from the list by clicking the appropriate button. All Cursor properties apply to the selected X-Axis.

Use Default Format when checked, overrides the Style and Format settings below and applies the formatting specified under the labels Default tab to the data cursors. By default, all data cursors use the same formatting as that applied to the X-Axis. For example, if the X-Axis is set to display Date/Time data formatted as "hh:nn:ss," the data cursor displays its X-Axis data in the same format. Unchecked, the data cursor can be displayed in the format specified in this dialog box.

Copy Default when clicked, copies the Style and Format settings from the Default tab and applies them to this dialog box.

Format Style specifies the information displayed in the X-Axis cursor labels:

Value displays the basic value (198678.567).

Exponent displays the exponential value (2.35E+002).

Prefix displays a prefix (2.2K).

DateTime displays the date and time (ex. 3 Jan 01 5:23:44)

Price32nds is used in the Bond and Securities Market where 23 is in 32nds and 1 is in 256ths.

Date Time Format specifies the DateTime display for the X-Axis cursor labels when it is the chosen Format Style. Clicking on the associated arrow displays the Value Converter dialog box, allowing the desired style to be selected. This setting only applies if the Use Default Format setting is disabled, and only affects X-Axis cursor values.

Precision Style determines resolution when formatting the X-Axis cursor labels. Significant Digits calculates the number of digits to the right of the decimal point automatically to ensure that the span of the values will show enough significant digits. Fixed Decimal Points displays a fixed number of digits to the right of the decimal point. This setting only applies if the Use Default Format setting is disabled, and only affects X-Axis cursor values.

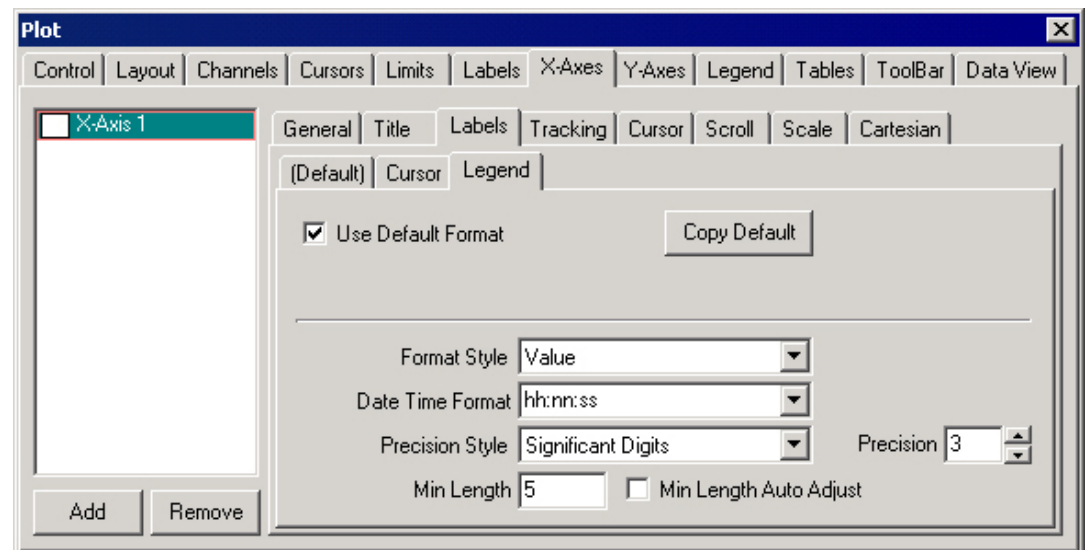
Precision specifies the resolution of the cursor labels. The actual number of decimal places shown depends on the Precision Style setting. Enter a zero ("0") to show integers only.

Note: When the Use Default Format setting is enabled, this property is a function of the X-Axis setting because that default determines the precision of the information displayed.

Min Length specifies the minimum length used in calculating the cursor label. Autoscaling automatically calculates the number of scale labels based on the Font, Label Separation and Min Length settings to ensure readable labels. This setting has no effect if the Use Default Format setting is enabled.

Min Length Auto Adjust when checked, automatically adjusts the Min Length setting to accommodate changes in the X-Axis display. This setting has no effect if the Use Default Format setting is enabled and is retained

8.27 X-Axes > Labels > Legend



X-Axes Pane lists the X-Axis labels currently available for display in the graph. You can Add an X-Axis or Remove one from the list by clicking the appropriate button. All Legend properties apply to the selected X-Axis.

Use Default Format when checked, overrides the Style and Format settings below and applies the formatting specified under the labels Default tab to the legend. By default, all assigned legends use the same formatting as that applied to the X-Axis. For example, if the X-Axis is set to display Date/Time data formatted as "hh:nn:ss," the legend displays its X-Axis data in the same format. Unchecked, the legend can be displayed in the format specified in this dialog box.

Copy Default when clicked, copies the Style and Format settings from the Default tab and applies them to this dialog box.

Format Style specifies the information displayed in the X-Axis legend:

Value displays the basic value (198678.567).

Exponent displays the exponential value (2.35E+002).

Prefix displays a prefix (2.2K).

DateTime displays the date and time (ex. 3 Jan 01 5:23:44)

Price32nds is used in the Bond and Securities Market where 23 is in 32nds and 1 is in 256ths.

Date Time Format specifies the DateTime display for the X-Axis legend when it is the chosen Format Style. Clicking on the associated arrow displays the Value Converter dialog box, allowing the desired style to be selected. This setting only applies if the Use Default Format setting is disabled, and only affects X-Axis values displayed in the legend.

Precision Style determines resolution when formatting the X-Axis legend. Significant Digits calculates the number of digits to the right of the decimal point automatically to ensure that the span of the values will show enough significant digits. Fixed Decimal Points displays a fixed number of digits to the right of the decimal point. This setting only applies if the Use Default Format setting is disabled, and only affects X-Axis legend values.

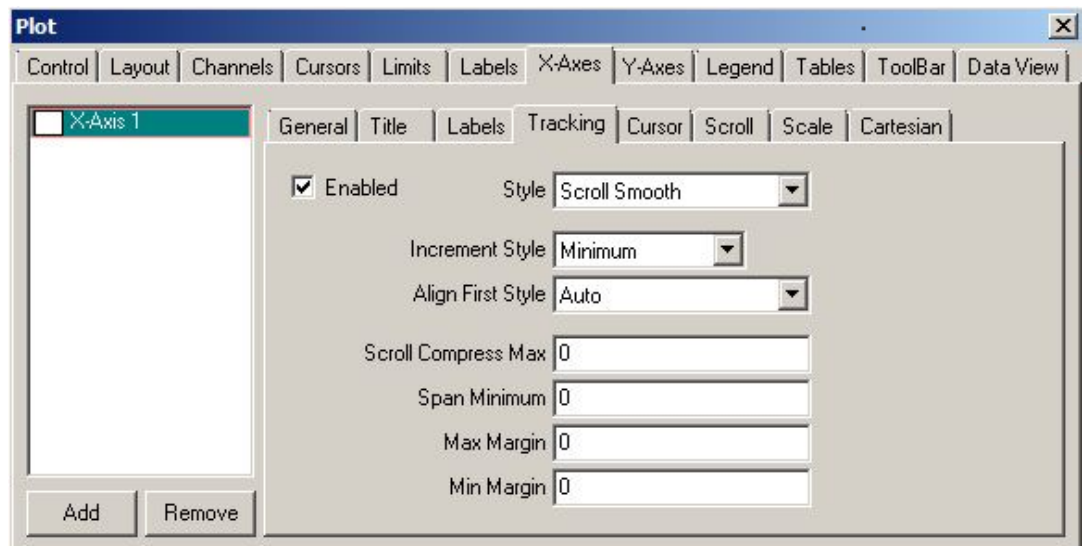
Precision specifies the resolution of the legend hints. The actual number of decimal places shown depends on the Precision Style setting. Enter a zero ("0") to show integers only.

Note: When the Use Default Format setting is enabled, this property is a function of the X-Axis setting because that default determines the precision of the information displayed.

Min Length specifies the minimum length used in calculating the legend hints. Auto-scaling automatically calculates the number of scale labels based on the Font, Label Separation and Min Length settings to ensure readable labels. This setting has no effect if the Use Default Format setting is enabled.

Min Length Auto Adjust when checked, automatically adjusts the Min Length setting to accommodate changes in the X-Axis display. This setting has no effect if the Use Default Format setting is enabled and is retained

8.28 X-Axes > Tracking



X-Axes Pane lists the X-Axis labels currently available for display in the graph. You can Add an X-Axis or Remove one from the list by clicking the appropriate button. All Tracking properties apply to the selected X-Axis.

Enabled checked, the X-Axis automatically adjusts to accommodate newly reported data based on the chosen Style.

Style specifies the tracking method used in response to new tracking data:

ScaleMinMax adjusts the minimum or maximum setting as necessary.

ScaleMax adjusts the maximum setting.

ScaleMin adjusts the minimum setting.

ScrollSmooth adjusts to show the data at the end of the scale when it exists outside the Data View.

ScrollPage adjusts to show the data at the beginning of the scale when it exists outside the Data View.

ExpandCollapse expands and collapses the scale to keep all data and markers within the Data View.

ExpandCollapseFast expands and collapses the scale to keep all data and markers within the total area of the Data View and is useful in speeding up the adjustment for large data sets.

Align First Style specifies how the X-Axis is aligned when it receives the initial data point:

Min adjusts to show the first data point at the beginning of the scale.

Max adjusts to show the first data point at the end of the scale.

Auto remains unchanged if the first data point is within the Data View. Otherwise, the X-Axis is adjusted to show the first data point at the beginning of the scale.

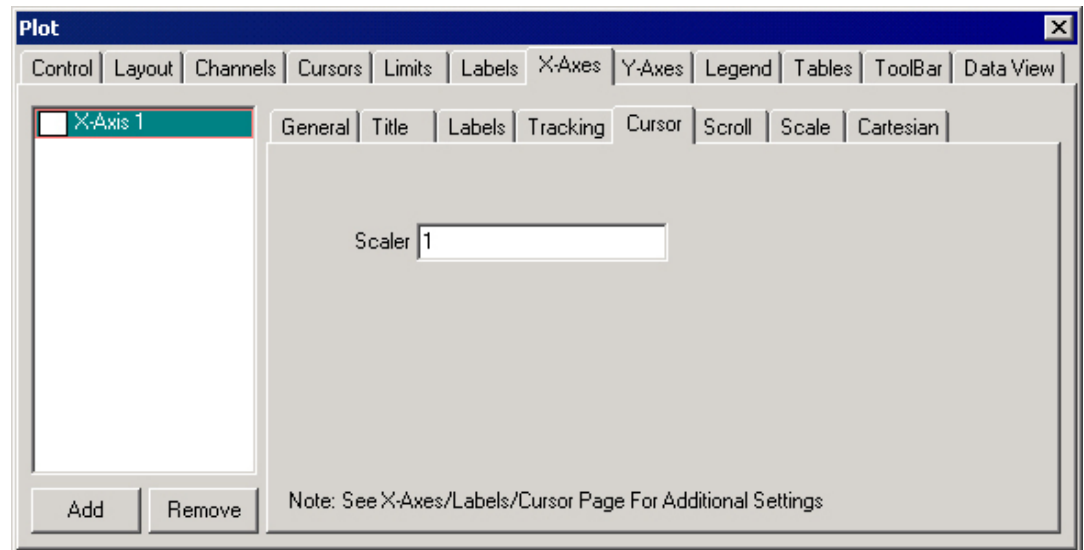
None does not adjust the X-Axis to the first data point.

Note: If there is more than one channel sending tracking data, only the data from the first channel are used to establish this setting.

Scroll Compress Max specifies the maximum value used when compressing the

X-Axis. When tracking is Enabled, only new data below this setting are used to adjust the X-Axis. Enter a zero ("0") to disable this feature.

8.29 X-Axes > Cursor

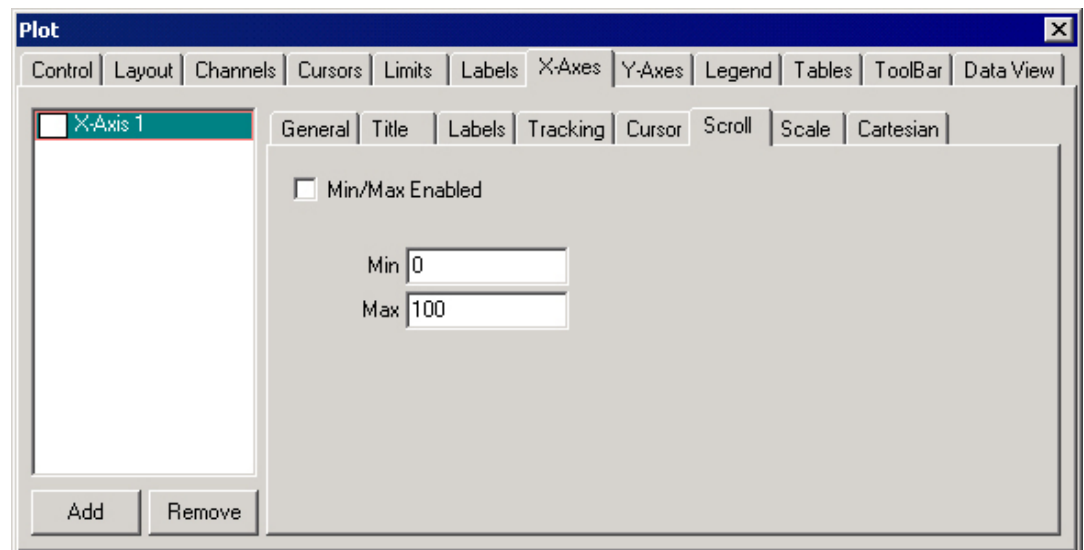


X-Axes Pane lists the X-Axis labels currently available for display in the graph. You can Add an X-Axis or Remove one from the list by clicking the appropriate button. All Cursor properties apply to the selected X-Axis.

Scaler is the scaling factor associated with the chosen X-Axis. This setting is only used with cursors that have an InverseDeltaX Style property defined under the cursor General tab. Typically used for frequency calculations, this multiplier converts the X-Axis display units to seconds so the frequency can be displayed properly. For example, if the X-Axis units are in milliseconds (1/1,000th of a second), you would have to set the Scaler to "1,000" to convert the display units to seconds. If the X-Axis already displays seconds, this setting should be "1."

As noted, additional settings are available under the Labels>Cursor tab.

8.30 X-Axes > Scroll



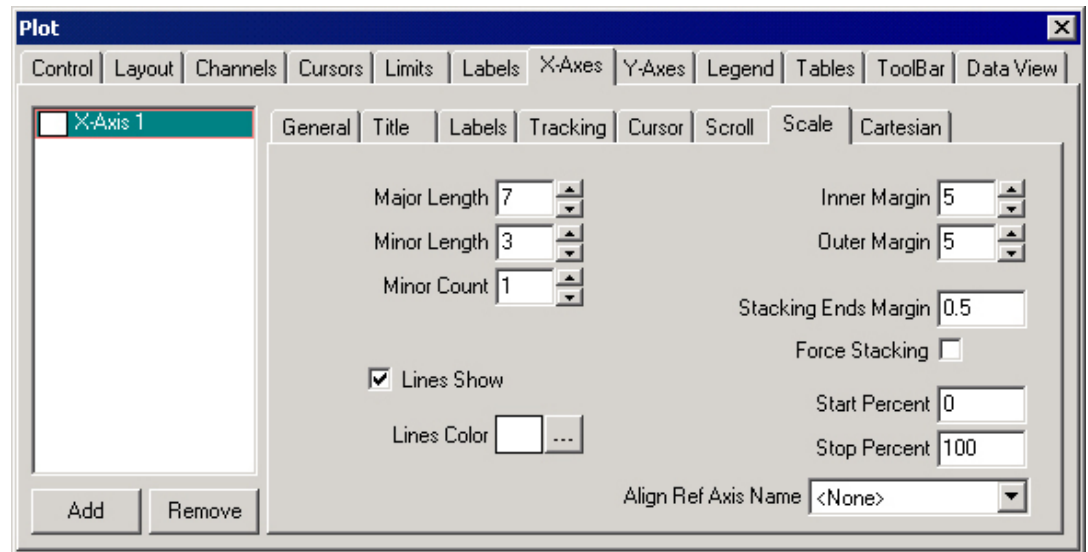
X-Axes Pane lists the X-Axis labels currently available for display in the graph. You can Add an X-Axis or Remove one from the list by clicking the appropriate button. All Scroll properties apply to the selected X-Axis.

Min/Max Enabled when checked, enforces the specified Min and Max limits such that the X-Axis will stop scrolling if either value is received.

Min is the minimum value that can be displayed on a scrolling X-Axis when the Min/Max Enabled setting is checked.

Max is the maximum value that can be displayed on a scrolling X-Axis when the Min/Max Enabled setting is checked.

8.31 X-Axes > Scale



X-Axes Pane lists the X-Axis labels currently available for display in the graph. You can Add an X-Axis or Remove one from the list by clicking the appropriate button. All Scale properties apply to the selected X-Axis.

Major Length establishes the length of the X-Axis major ticks.

Minor Length establishes the length of the X-Axis minor ticks.

Minor Count determines the number of minor ticks displayed. The Count should be one less than the desired number of minor sections. For example, to show five minor sections, set this field to "4."

Lines Show when checked, draws grid lines corresponding to the major and minor ticks on the X-Axis. This is a useful tool when the Data View is configured to draw grid lines, but you want to exclude a particular axis. Unchecked, the X-Axis grid lines are not displayed.

Lines Color specifies the color of the lines demarcating the X-Axis, as well as its major and minor ticks. Clicking on the associated ellipsis (...) button allows you to choose a pen color from the Windows Color palette.

Inner Margin is the distance (in pixels) between the X-Axis line and the Data View.

Outer Margin is the distance (in pixels) between the X-Axis title or labels and the Layout area.

Stacking Ends Margin specifies the area at the end of the X-Axis when stacked. The Margin is a percentage of a character size based on the Font used for the axis labels. Thus, a value of "0.5" is equal to half the width of a character.

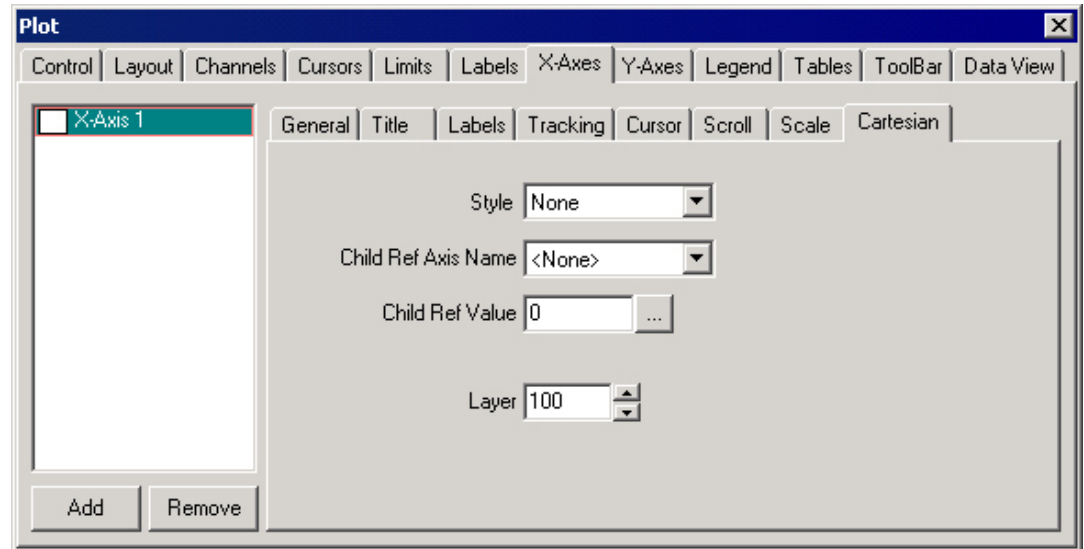
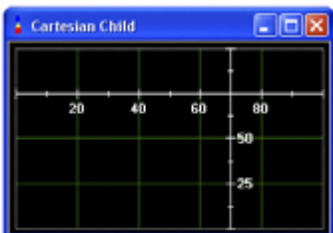
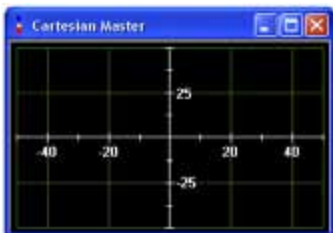
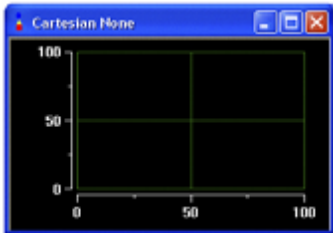
Force Stacking when checked, forces the X-Axis to respond to property changes as if it was stacked.

Start Percent defines the starting position of the Data View. Typically, the bottom or left of the Data View is the reference for 0% and the top or right is the reference for 100%.

Stop Percent defines the stopping position of the Data View. Typically, the bottom or left of the Data View is the reference for 0% and the top or right is the reference for 100%.

Align Ref Axis Name identifies the X-Axis to which the labels and tick marks are referenced. If <None> is selected, the X-Axis aligns automatically.

8.32 X-Axes > Cartesian



X-Axes Pane lists the X-Axis labels currently available for display in

the graph. You can Add an X-Axis or Remove one from the list by clicking the appropriate button. All Cartesian properties apply to the selected X-Axis.

Style specifies the Cartesian style of the X-Axis:

None formats the X-Axis as non-Cartesian and places it along the edge of the Data View.

Master formats the X-Axis as a master Cartesian axis and is centered between the sides of the Data View.

Child formats the X-Axis as a child Cartesian axis and is perpendicular to the opposite axis type specified by the Child Ref Axis Name setting. Its setting is specified by the Child Ref Value property.

Child Ref Axis Name identifies the perpendicular X-Axis scale used to position this Child Cartesian axis when using the Child Ref Value property.

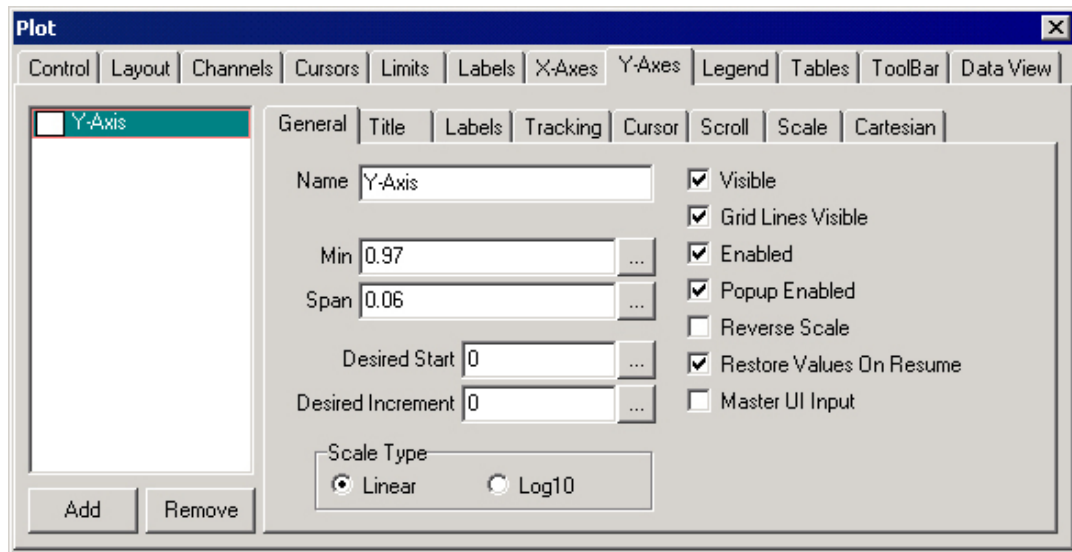
Child Ref Value specifies the position of a Child Cartesian axis along the Child Ref Axis Name. This setting is specified in units of the Child Ref Axis Name.

Layer the layer the selected X-Axis occupies on the graph. All plot objects are given a default layer of "100." The higher the number, the closer the object is to the screen; the lower the number, the further from the screen. For example, an object with a layer of "200" will be displayed on top of an object with a layer of "100" in areas where the two overlap. If two objects have the same Layer value, their layering is determined as follows (from highest priority to lowest):

- Annotations
- Channel Data
- X-Axes (Cartesian Only)
- Y-Axes (Cartesian Only)
- Non-Filled Limit Lines

- Data View Grid Lines
- Filled Limit Lines

8.33 Y-Axes > General



Y-Axes Pane lists the Y-Axes currently available for display in the graph. You can Add a Y-Axis or Remove one from the list by clicking the appropriate button. All General properties apply to the selected Y-Axis.

Name identifies the Y-Axis.

Note: There are no restrictions on the characters used or the length of the name, but changing the Name may affect other graph properties that depend on it.

Min specifies the minimum value that will be displayed on the Y-Axis. Clicking on the associated ellipsis (...) button displays the Value Converter, allowing the appropriate entry to be calculated.

Span is the range of the Y-Axis display. Clicking on the associated ellipsis (...) button displays the Value Converter, allowing the appropriate range to be calculated.

Desired Start specifies the beginning point of the Y-Axis scale and determines the value of its first major tick. Setting this field to "9," for instance, means that the value of the first major tick will be "9." Subsequent ticks will be based on the Desired Increment setting. A value of "0" disables this setting. Clicking on the associated ellipsis (...) button displays the Value Converter, allowing the appropriate entry to be calculated.

Note: This setting only applies to static (non-scrolling) graphs and must be equal to, or between, the Y-Axis minimum and maximum values.

Desired Increment defines the divisions displayed along the Y-Axis. A value of "0" automatically adjusts scaling to display whole numbers depending on the Min and Span settings. If all of the labels do not fit within the specified range, WebViews will display as many as possible. Clicking on the associated ellipsis (...) button displays the Value Converter, allowing the appropriate entry to be calculated.

Scale Type specifies how scaling of the Y-Axis is calculated:

Linear linearly based on the reported values.

Log10 Logarithmic Base 10 based on the reported values (the Min and Span settings must be greater than "0").

Visible when checked, displays the Y-Axis in the graph display.

Grid Lines Visible when checked, shows grid lines for the Y-Axis.

Enabled when checked, enables the Y-Axis user interface.

Popup Enabled when checked, enables the context-sensitive right-click menu.

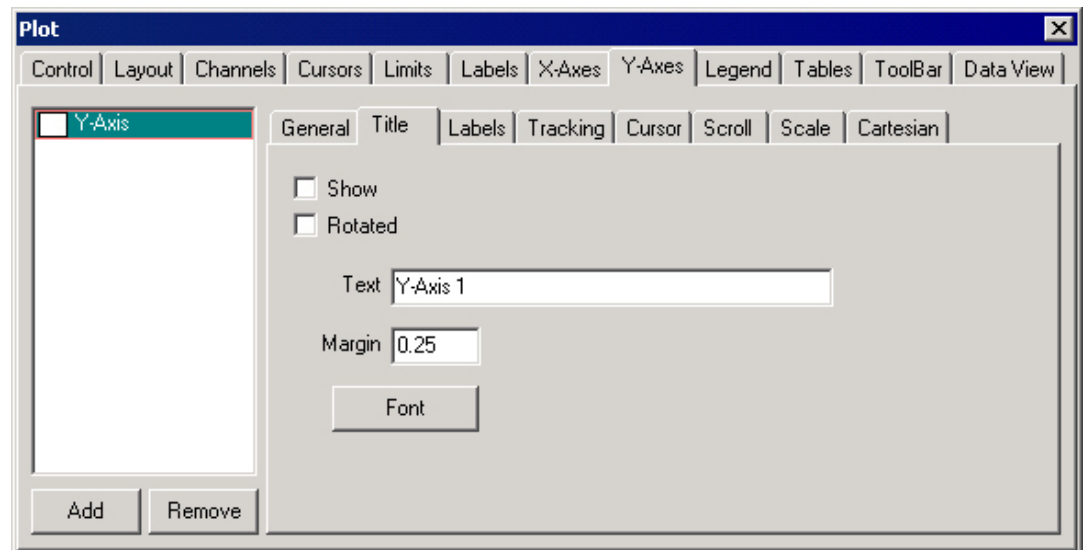
Reverse Scale when checked, reflects the Y-Axis such that the scale progresses from right to left. Unchecked, the Y-Axis scale progresses from left to right.

Restore Values on Resume when checked, restores the original Y-Axis values and parameters (such as Min and Span) when the Resume All (Tracking) button is clicked in the graph toolbar.

Master UI Input when checked, designates the selected Y-Axis as the Master

User Interface for all Y-Axes. Any mouse or keyboard inputs on the Master Y-Axis are applied to all Y-Axes. This function is useful if you want all Y-Axes to be synchronized to the Master, but leave this setting unchecked for all Y-Axes if you want them to be manipulated independently.

Y-Axes > Title



Y-Axes Pane lists the Y-Axis titles currently available for display in the graph. You can Add a Y-Axis or Remove one from the list by clicking the appropriate button. All Title properties apply to the selected Y-Axis.

Show when checked, displays the Y-Axis title entered in the Text field.

Rotated when checked, displays the Y-Axis title vertically.

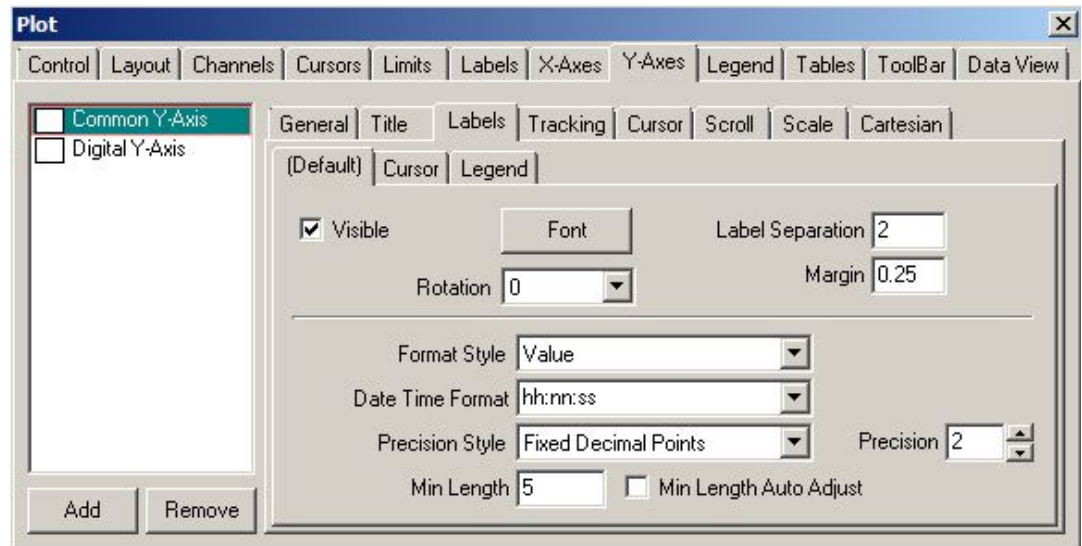
Note: A TrueType Font must be used for the Y-Axis title to display properly when it is rotated.

Text is the Y-Axis title that is displayed in the graph.

Margin specifies the distance between the Y-Axis title and the scale labels. The distance is determined as the percentage of a character based on the Font used. A value of "0.5," for instance, is equal to half the width of a character.

Font clicking this button displays the Windows Font dialog box, allowing the type attributes of the Y-Axis title to be defined.

8.34 Y-Axes > Labels > (Default)



Y-Axes Pane lists the Y-Axis labels currently available for display in the graph. You can Add a Y-Axis or Remove one from the list by clicking the appropriate button. All Default properties apply to the selected Y-Axis.

Visible when checked, displays the labels for the selected Y-Axis.

Font clicking this button displays the Windows Font dialog box, allowing the default type attributes of the Y-Axis labels to be defined.

Rotation allows the Y-Axis labels to be rotated in 90° increments:

- 000 displays the labels horizontally.
- 090 rotates the labels 90 degrees
- 180 rotates the labels 180 degrees
- 270 rotates the labels 270 degrees

Note: A TrueType Font must be used for the Y-Axis labels to display properly when rotated. The default label font is not a TrueType font.

Label Separation specifies the minimum display distance between scale labels. The distance is determined as the percentage of a character based on the Font used. A value of "0.5," for instance, is equal to half the width of a character. The actual separation maybe greater due to the AutoScale feature reducing the number of major ticks to keep the scale labels readable.

Margin specifies the distance between the major ticks and their corresponding labels. The distance is determined as the percentage of a character based on the Font used. A value of "0.5," for instance, is equal to half the width of a character.

Format Style specifies the information displayed in the Y-Axis labels:

Value displays the basic value (198678.567).

Exponent displays the exponential value (2.35E+002).

Prefix displays a prefix (2.2K).

DateTime displays the date and time (ex. 3 Jan 01 5:23:44)

Price32nds is used in the Bond and Securities Market where 23 is in 32nds and 1 is in 256ths.

Thousands displays large values using thousands separators (100,231,456.00).

Date Time Format specifies the DateTime display for the Y-Axis labels when it is the chosen Format Style. Clicking on the associated arrow displays the Value Converter dialog box, allowing the desired format to be selected.

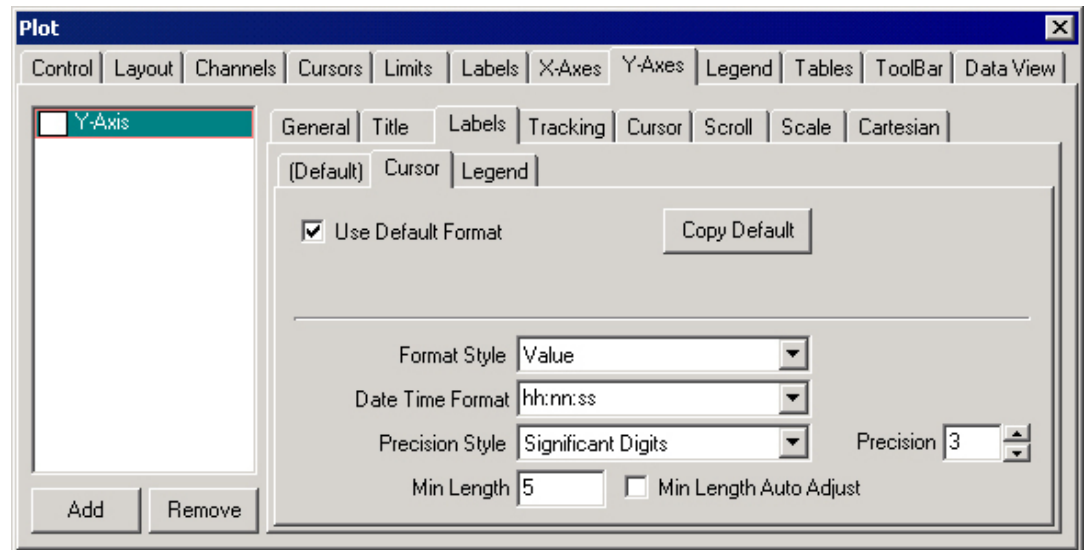
Precision Style determines resolution when formatting the Y-Axis major tick labels. Significant Digits calculates the number of digits to the right of the decimal point automatically to ensure that the span of the values will show enough significant digits. Fixed Decimal Points displays a fixed number of digits to the right of the decimal point.

Precision specifies the resolution of the tick labels. The actual number of decimal places shown depends on the Precision Style setting. Enter a zero ("0") to show integers only.

Min Length specifies the minimum length used in calculating the number of major ticks. Autoscaling automatically calculates the number of labels based on the Font, Label Separation and Min Length settings to ensure readable labels. This setting has no effect if the Y-Axis is rotated.

Min Length Auto Adjust when checked, automatically adjusts the Min Length setting to accommodate changes in the Y-Axis display.

8.35 Y-Axes > Labels > Cursor



Y-Axes Pane lists the Y-Axis cursors currently available for display in the graph. You can Add a Y-Axis or Remove one from the list by clicking the appropriate button. All Cursor properties apply to the selected Y-Axis.

Use Default Format when checked, overrides the Style and Format settings below and applies the formatting specified under the labels Default tab to the data cursors. By default, all data cursors use the same formatting as that applied to the Y-Axis. For example, if the Y-Axis is set to display Date/Time data formatted as "hh:nn:ss," the data cursor displays its Y-Axis data in the same format. Unchecked, the data cursor can be displayed in the format specified in this dialog box.

Copy Default when clicked, copies the Style and Format settings from the Default tab and applies them to this dialog box.

Format Style specifies the information displayed in the Y-Axis cursor labels:

Value displays the basic value (198678.567).

Exponent displays the exponential value (2.35E+002).

Prefix displays a prefix (2.2K).

DateTime displays the date and time (ex. 3 Jan 01 5:23:44)

Price32nds is used in the Bond and Securities Market where 23 is in 32nds and 1 is in 256ths.

Date Time Format specifies the DateTime display for the Y-Axis cursor labels when it is the chosen Format Style. Clicking on the associated arrow displays the Value Converter dialog box, allowing the desired style to be selected. This setting only applies if the Use Default Format setting is disabled, and only affects Y-Axis cursor values.

Precision Style determines resolution when formatting the Y-Axis cursor labels. Significant Digits calculates the number of digits to the right of the decimal point automatically to ensure that the span of the values will show enough significant digits. Fixed Decimal Points displays a fixed number of digits to the right of the decimal point. This setting only applies if the Use Default Format setting is disabled, and only affects Y-Axis cursor values.

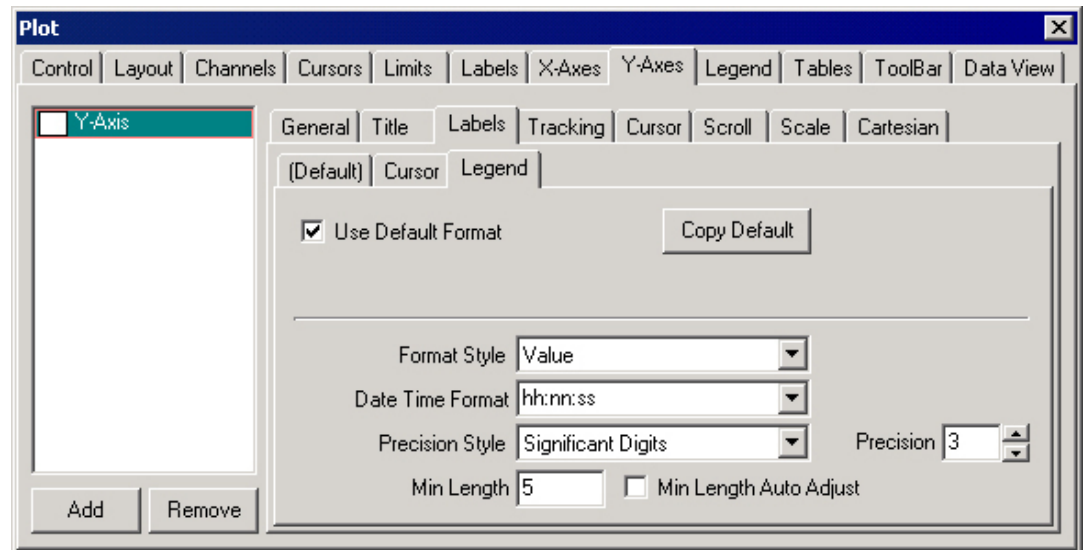
Precision specifies the resolution of the cursor labels. The actual number of decimal places shown depends on the Precision Style setting. Enter a zero ("0") to show integers only.

Note: When the Use Default Format setting is enabled, this property is a function of the Y-Axis setting because that default determines the precision of the information displayed.

Min Length specifies the minimum length used in calculating the cursor label. Autoscaling automatically calculates the number of labels based on the Font, Label Separation and Min Length settings to ensure readable labels. This setting has no effect if the Use Default Format setting is enabled.

Min Length Auto Adjust when checked, automatically adjusts the Min Length setting to accommodate changes in the Y-Axis display. This setting has no effect if the Use Default Format setting is enabled and is retained

8.36 Y-Axes > Labels > Legend



Y-Axes Pane lists the Y-Axis labels currently available for display in the graph. You can Add a Y-Axis or Remove one from the list by clicking the appropriate button. All Legend properties apply to the selected Y-Axis.

Use Default Format when checked, overrides the Style and Format settings below and applies the formatting specified under the labels Default tab to the legend. By default, all assigned legends use the same formatting as that applied to the Y-Axis. For example, if the Y-Axis is set to display Date/Time data formatted as "hh:nn:ss," the legend

displays its Y-Axis data in the same format. Unchecked, the legend can be displayed in the format specified in this dialog box.

Copy Default when clicked, copies the Style and Format settings from the Default tab and applies them to this dialog box.

Format Style specifies the information displayed in the Y-Axis legend:

Value displays the basic value (198678.567).

Exponent displays the exponential value (2.35E+002).

Prefix displays a prefix (2.2K).

DateTime displays the date and time (ex. 3 Jan 01 5:23:44)

Price32nds is used in the Bond and Securities Market where 23 is in 32nds and 1 is in 256ths.

Date Time Format specifies the DateTime display for the Y-Axis legend when it is the chosen Format Style. Clicking on the associated arrow displays the Value Converter dialog box, allowing the desired style to be selected. This setting only applies if the Use Default Format setting is disabled, and only affects Y-Axis values displayed in the legend.

Precision Style determines resolution when formatting the Y-Axis legend. Significant Digits calculates the number of digits to the right of the decimal point automatically to ensure that the span of the values will show enough significant digits. Fixed Decimal Points displays a fixed number of digits to the right of the decimal point. This setting only applies if the Use Default Format setting is disabled, and only affects Y-Axis legend values.

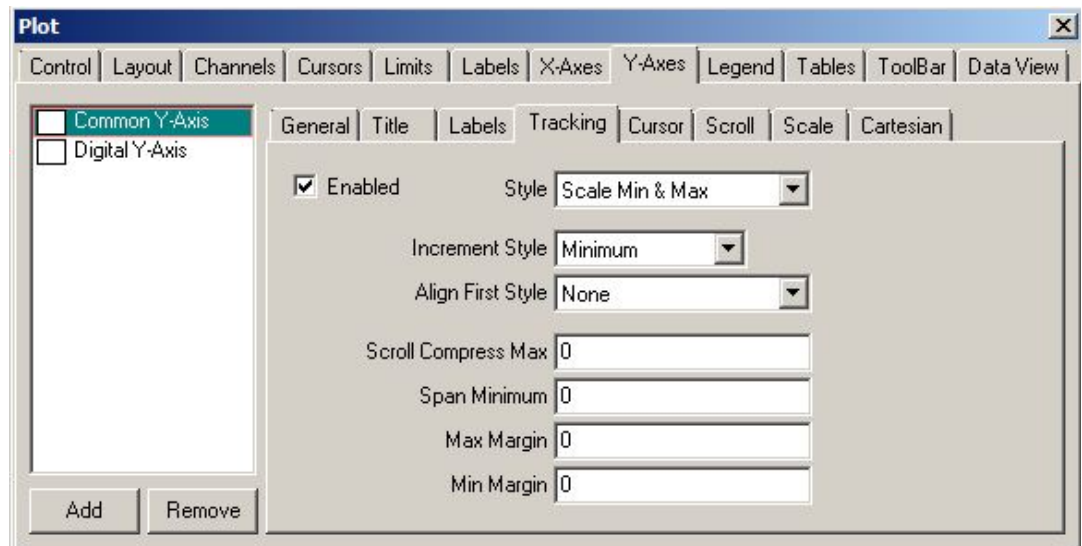
Precision specifies the resolution of the legend hints. The actual number of decimal places shown depends on the Precision Style setting. Enter a zero ("0") to show integers only.

Note: When the Use Default Format setting is enabled, this property is a function of the Y-Axis setting because that default determines the precision of the information displayed.

Min Length specifies the minimum length used in calculating the legend hints. Auto-scaling automatically calculates the number of scale labels based on the Font, Label Separation and Min Length settings to ensure readable labels. This setting has no effect if the Use Default Format setting is enabled.

Min Length Auto Adjust when checked, automatically adjusts the Min Length setting to accommodate changes in the Y-Axis display. This setting has no effect if the Use Default Format setting is enabled.

8.37 Y-Axes > Tracking



Y-Axes Pane lists the Y-Axis labels currently available for display in the graph. You can Add a Y-Axis or Remove one from the list by clicking the appropriate button. All Tracking properties apply to the selected Y-Axis.

Enabled checked, the Y-Axis automatically scrolls to accommodate newly reported data based on the chosen Style.

Style specifies the tracking method used in response to new tracking data:

ScaleMinMax adjusts the minimum or maximum setting as necessary.

ScaleMax adjusts the maximum setting.

ScaleMin adjusts the minimum setting.

ScrollSmooth adjusts to show the data at the end of the scale when it exists outside the Data View.

ScrollPage adjusts to show the data at the beginning of the scale when it exists outside the Data View.

ExpandCollapse expands and collapses the scale to keep all data and markers within the Data View.

ExpandCollapseFast expands and collapses the scale to keep all data and markers within the total area of the Data View and is useful in speeding up the adjustment for large data sets.

Align First Style specifies how the Y-Axis is aligned when it receives the initial data point:

Min adjusts to show the first data point at the beginning of the scale.

Max adjusts to show the first data point at the end of the scale.

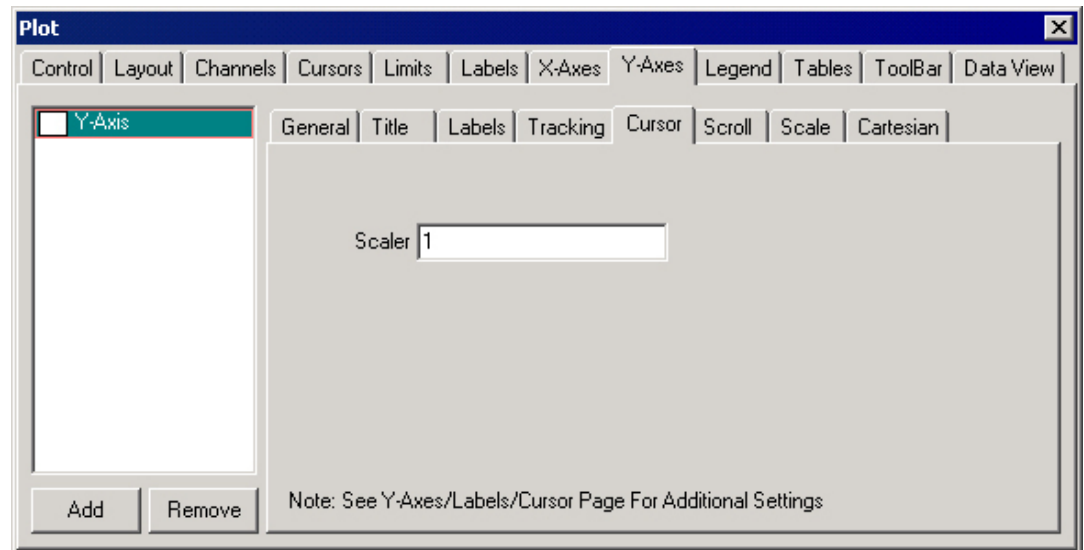
Auto remains unchanged if the first data point is within the Data View. Otherwise, the Y-Axis is adjusted to show the first data point at the beginning of the scale.

None does not adjust the Y-Axis to the first data point.

Note: If there is more than one channel sending tracking data, only the data from the first channel are used to establish this setting.

Scroll Compress Max specifies the maximum value used when compressing the Y-Axis. When tracking is Enabled, only new data below this setting are used to adjust the Y-Axis. Enter a zero ("0") to disable this feature.

8.38 Y-Axes > Cursor

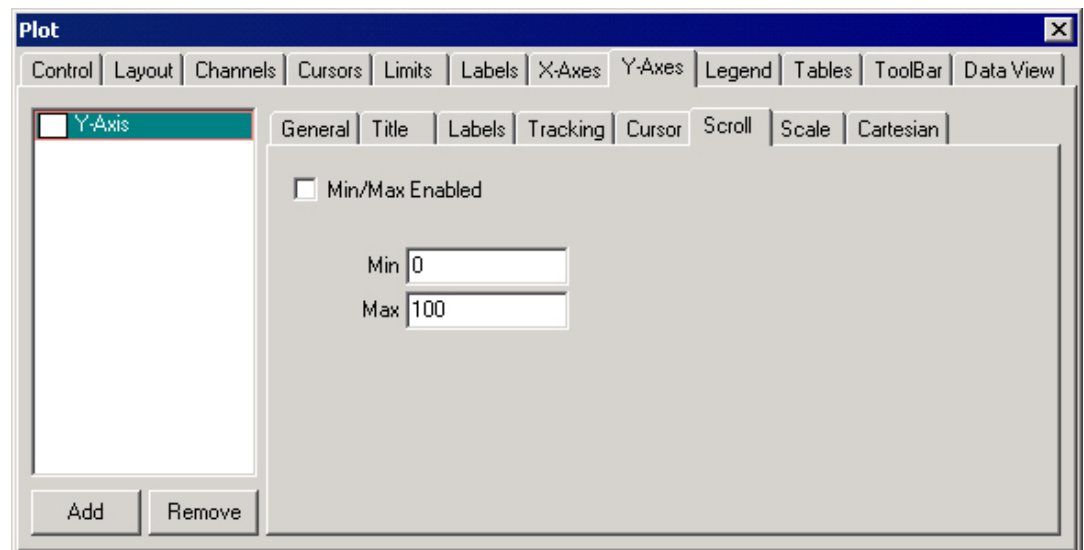


Y-Axes Pane lists the Y-Axis labels currently available for display in the graph. You can Add a Y-Axis or Remove one from the list by clicking the appropriate button. All Cursor properties apply to the selected Y-Axis.

Scaler is the scaling factor associated with the chosen Y-Axis. This setting is only used with cursors that have an InverseDeltaX Style property defined under the cursor General tab. Typically used for frequency calculations, this multiplier converts the Y-Axis display units to seconds so the frequency can be displayed properly. For example, if the Y-Axis units are in milliseconds (1/1,000th of a second), you would have to set the Scaler to "1,000" to convert the display units to seconds. If the Y-Axis already displays seconds, this setting should be "1."

As noted, additional settings are available under the Labels>Cursor tab.

8.39 Y-Axes > Scroll



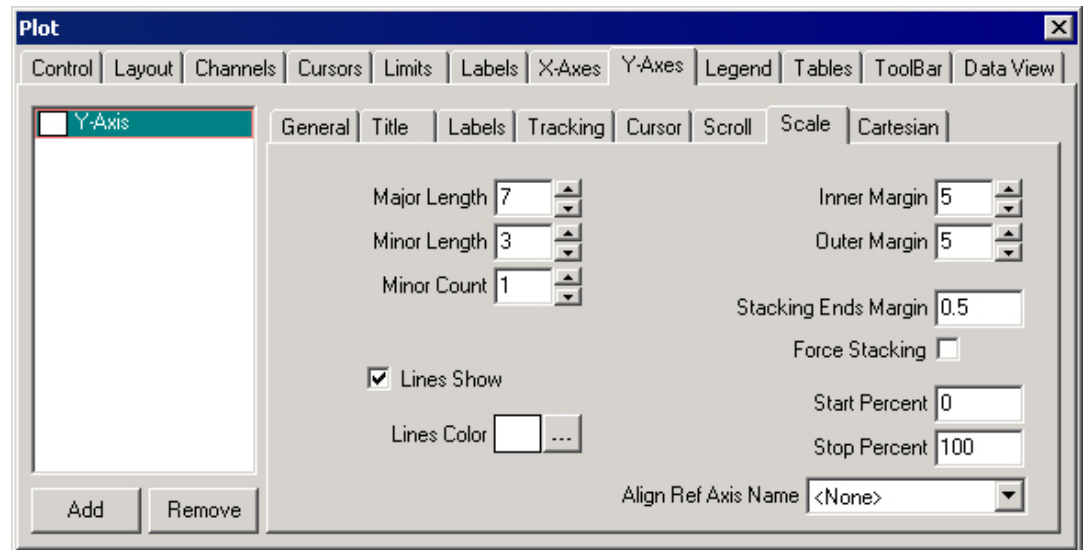
Y-Axes Pane lists the Y-Axis labels currently available for display in the graph. You can Add a Y-Axis or Remove one from the list by clicking the appropriate button. All Scroll properties apply to the selected Y-Axis.

Min/Max Enabled when checked, enforces the specified Min and Max limits such that the Y-Axis will stop scrolling if either value is received.

Min is the minimum value that can be displayed on a scrolling Y-Axis when the Min/Max Enabled setting is checked.

Max is the maximum value that can be displayed on a scrolling Y-Axis when the Min/Max Enabled setting is checked.

8.40 Y-Axes > Scale



Y-Axes Pane lists the Y-Axis labels currently available for display in the graph. You can Add a Y-Axis or Remove one from the list by clicking the appropriate button. All Scale properties apply to the selected Y-Axis.

Major Length establishes the length of the Y-Axis major ticks.

Minor Length establishes the length of the Y-Axis minor ticks.

Minor Count determines the number of minor ticks displayed. The Count should be one less than the desired number of minor sections. For example, to show five minor sections, set this field to "4."

Lines Show when checked, draws grid lines corresponding to the major and minor ticks on the Y-Axis. This is a useful tool when the Data View is configured to draw grid lines, but you want to exclude a particular axis. Unchecked, the Y-Axis grid lines are not displayed.

Lines Color specifies the color of the lines demarcating the Y-Axis, as well as its major and minor ticks. Clicking on the associated ellipsis (...) button allows you to choose a pen color from the Windows Color palette.

Inner Margin is the distance (in pixels) between the Y-Axis line and the Data View.

Outer Margin is the distance (in pixels) between the Y-Axis title or labels and the Layout area.

Stacking Ends Margin specifies the area at the end of the Y-Axis when stacked. The Margin is a percentage of a character size based on the Font used for the axis labels. Thus, a value of "0.5" is equal to half the width of a character.

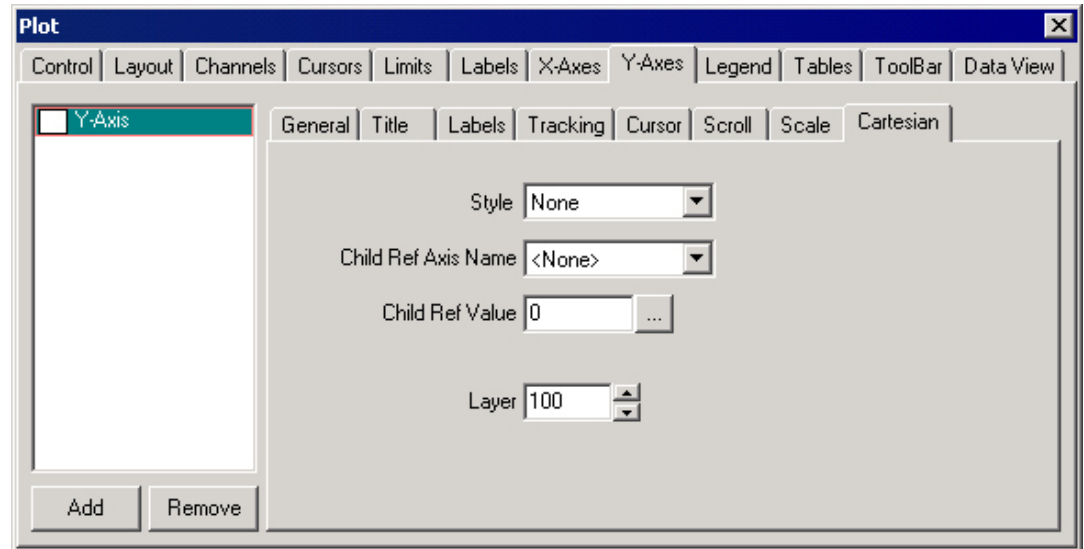
Force Stacking when checked, forces the Y-Axis to respond to property changes as if it was stacked.

Start Percent defines the starting position of the Data View. Typically, the bottom or left of the Data View is the reference for 0% and the top or right is the reference for 100%.

Stop Percent defines the stopping position of the Data View. Typically, the bottom or left of the Data View is the reference for 0% and the top or right is the reference for 100%.

Align Ref Axis Name identifies the Y-Axis to which the labels and tick marks are referenced. If <None> is selected, the Y-Axis aligns automatically.

8.41 Y-Axes > Cartesian



Y-Axes Pane lists the Y-Axis labels currently available for display in the graph. You can Add a Y-Axis or Remove one from the list by clicking the appropriate button. All Cartesian properties apply to the selected Y-Axis.

Style specifies the Cartesian style of the Y-Axis:

None formats the Y-Axis as non-Cartesian and places it along the edge of the Data View.

Master formats the Y-Axis as a master Cartesian axis and is centered between the sides of the Data View.

Child formats the Y-Axis as a child Cartesian axis and is perpendicular to the opposite axis type specified by the Child Ref Axis Name setting. Its setting is specified by the Child Ref Value property.

Child Ref Axis Name identifies the perpendicular Y-Axis scale used to position this Child Cartesian axis when using the Child Ref Value property.

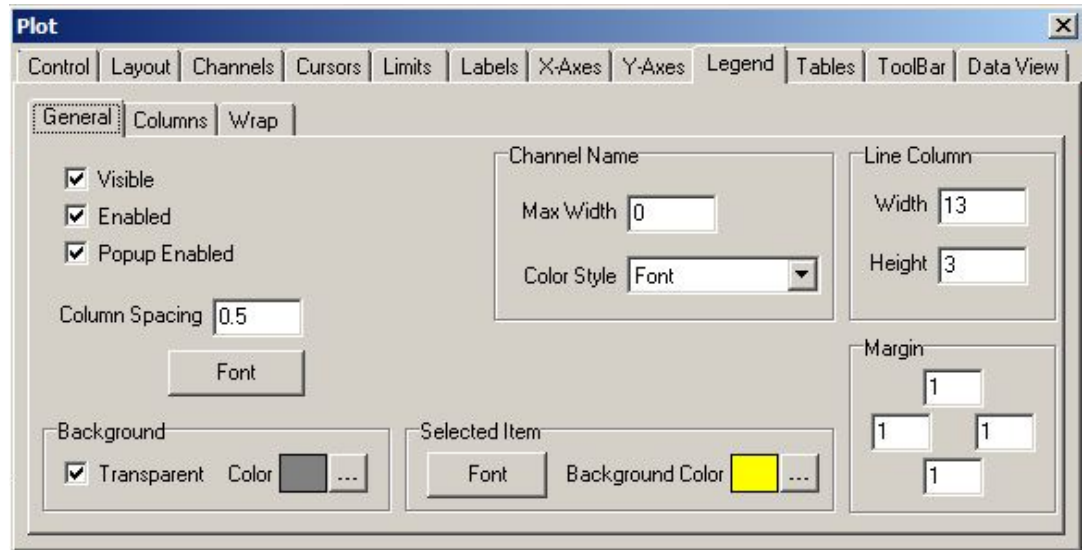
Child Ref Value specifies the position of a Child Cartesian axis along the Child Ref Axis Name. This setting is specified in units of the Child Ref Axis Name.

Layer the layer the selected Y-Axis occupies on the graph. All plot objects are given a default layer of "100." The higher the number, the closer the object is to the screen; the lower the number, the further from the screen. For example, an object with a layer of "200" will be displayed on top of an object with a layer of "100" in areas where the two overlap. If two objects have the same Layer value, their layering is determined as follows (from highest priority to lowest):

- Annotations
- Channel Data
- X-Axes (Cartesian Only)
- Y-Axes (Cartesian Only)
- Non-Filled Limit Lines

- Data View Grid Lines
- Filled Limit Lines

8.42 Legend > General



Visible when checked, displays the graph's legend.

Enabled when checked, activates the user interface for the legend.

Popup Enabled when checked, enables the context-sensitive right-click menu.

Column Spacing specifies the the distance between legend columns. The distance is determined as the percentage of a character based on the Font used. A value of "0.5," for instance, is equal to half the width of a character.

Font displays the Windows Font dialog box, allowing the type attributes of the legend columns to be defined.

8.42.1 Channel Name

Max Width is the maximum distance (in characters) allowed for the channel name display before it wraps to the next line.

Color Style specifies the color source for the Channel Name:

Font uses the specified legend Font color.

ChannelColor uses the corresponding channel's color.

XAxisFontColor uses the color defined for the X-Axis associated with the channel.

YAxisFontColor uses the color defined for the Y-Axis associated with the channel.

Margin designates the distance between each of the legend's four borders and its contents. The distance is determined as the percentage of a character based on the Font used. A value of "0.5," for instance, is equal to half the width of a character.

8.42.2 Background

Transparent when checked, the graph background serves as the legend's background. Alternatively, you can specify another Color.

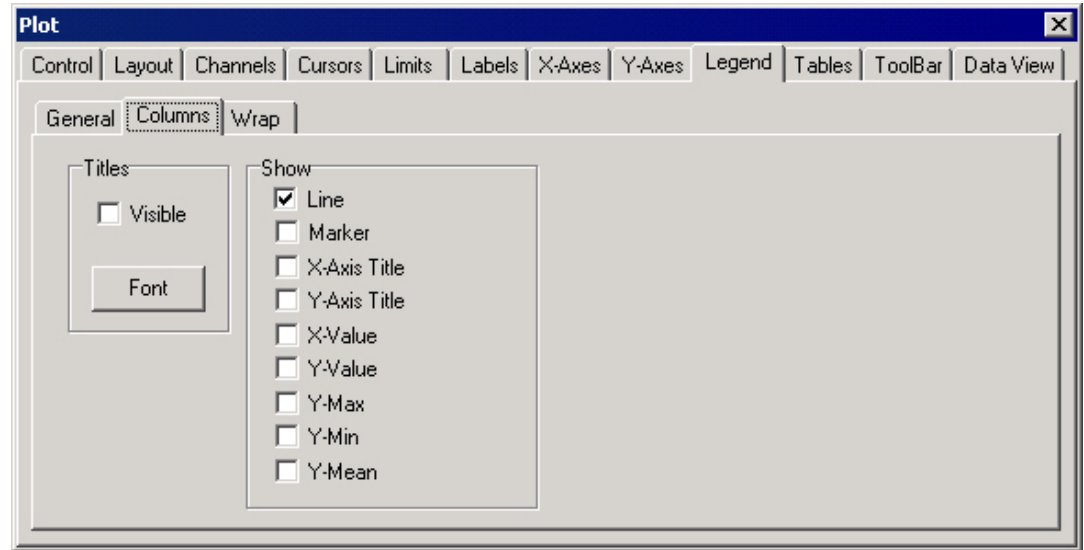
Color specifies the background color of the legend. Clicking on the associated ellipsis (...) button allows you to choose a different color from the Windows Color palette.

8.42.3 Selected Item

Font displays the Windows Font dialog box, allowing the type attributes of the selected item to be defined.

Color specifies the background color of the selected item. Clicking on the associated ellipsis (...) button allows you to choose a different color from the Windows Color palette.

8.43 Legend > Columns



8.43.1 Titles

Visible when checked, displays the column titles in the legend.

Font displays the Windows Font dialog box, allowing the type attributes of the column titles to be defined.

Show checking enables the display of each of these column elements.

Line shows the line column.

Marker shows the marker column.

X-Axis Title shows the X-Axis title column.

Y-Axis Title shows the Y-Axis title column.

X-Value shows the X-Axis value column. The value displayed is the last "x" value reported for the channel. The formatting of the text is dictated by the channel's corresponding X-Axis.

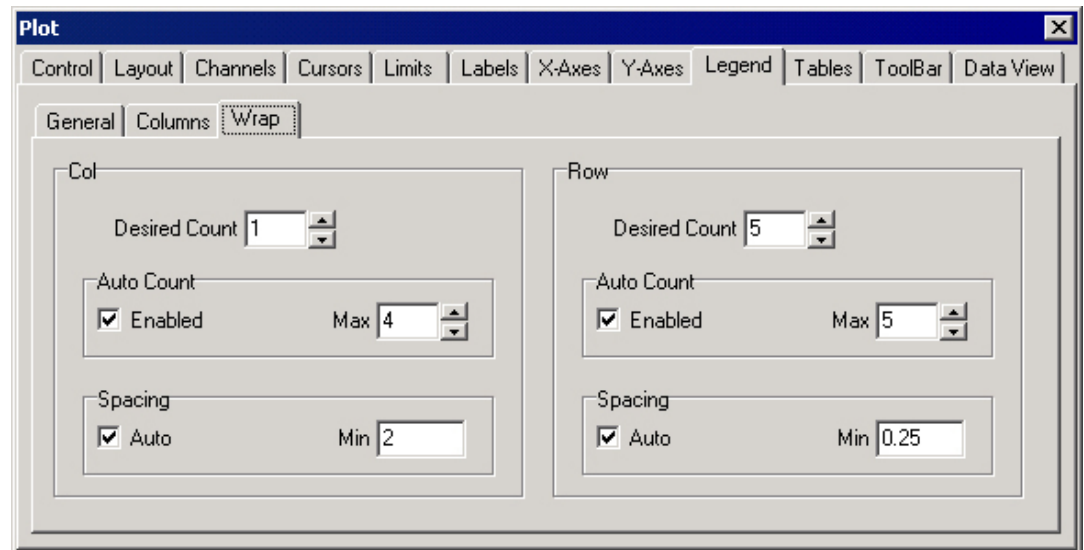
Y-Value shows the Y-Axis value column. The value displayed is the last "y" value reported for the channel. The formatting of the text is dictated by the channel's corresponding Y-Axis.

Y-Max shows the maximum "y" column for each channel.

Y-Min shows the minimum "y" column for each channel.

Y-Mean shows the mean "y" column for each channel.

8.44 Legend > Wrap



8.44.1 Column

Desired Count specifies the number of channel entries to reserve in the legend. If you specify a value of "3," for instance, three columns are reserved even if they are not populated with channels. This approach is useful when the number of channels varies, but you want to fix the legend dimensions at a certain size and column count. The recommended setting is "1."

8.44.2 AutoCount

Enabled when checked, the legend automatically determines the number of columns necessary while minimizing the area it occupies. Unchecked, you can specify a fixed number of columns in the Desired Count. The recommended setting is "Enabled."

Max limits the number of potential columns when AutoCount is disabled. Scroll bars are activated when this number is exceeded. The recommended setting is "3" for vertical legends and "100" for horizontal legends.

8.44.3 Spacing

Auto when checked, the legend automatically adjusts the spacing between channel columns. The spacing is adjusted to justify the entries within the legend boundaries, but the spacing will never be less than the specified Min setting. The recommended setting is "Enabled."

Min specifies the minimum spacing between legend entries when Auto Spacing is disabled. The distance is determined as the percentage of a character based on the Font used. A value of "0.25," the recommended setting, is equal to one-quarter the width of a character.

8.44.4 Row

Desired Count specifies the optimum number of channel rows to list in the legend. If you specify a value of "3," for instance, three columns are reserved even if they are not populated with channels. This approach is useful when the number of channels varies, but you want to fix the legend dimensions at a certain size and row count. The recommended setting is "1."

8.44.5 AutoCount

Enabled when checked, the legend automatically determines the number of rows necessary while minimizing the area it occupies. Unchecked, you can specify a fixed number of rows in the Desired Count. The recommended setting is "Enabled."

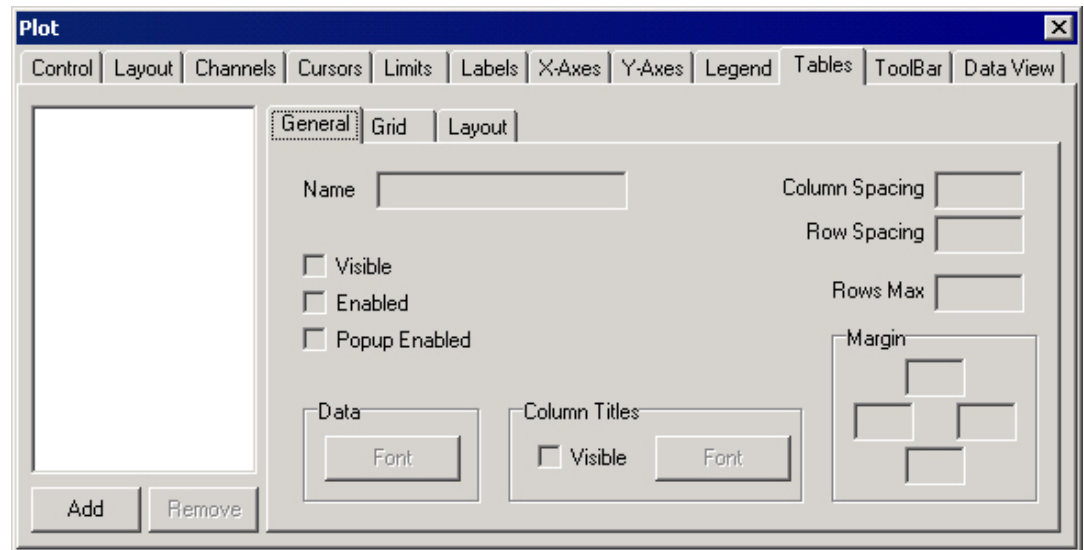
Max limits the number of potential rows when AutoCount is disabled. Scroll bars are activated when this number is exceeded. The recommended setting is "3" for vertical legends and "100" for horizontal legends.

8.44.6 Spacing

Auto when checked, the legend automatically adjusts the spacing between channel rows. The spacing is adjusted to justify the entries within the legend boundaries, but the spacing will never be less than the specified Min setting. The recommended setting is "Enabled."

Min specifies the minimum spacing between legend rows when Auto Spacing is disabled. The distance is determined as the percentage of a character based on the Font used. A value of "0.25," the recommended setting, is equal to one-quarter the width of a character.

8.45 Tables > General



Tables allow collected data to be displayed in a spreadsheet format and support either a filled or transparent background, cell grid lines and column titles. Scroll bars are inserted when the number of rows exceed the maximum height of the table.

Table List enumerates the table formats available for the plot. All General properties are applied to the selected Table. You can Add or Remove a Table format from the list by clicking the appropriate button.

Name identifies the selected table format.

Visible when checked, displays the selected format in the table.

Enabled when checked, updates the table as new data are received.

Popup Enabled when checked, enables the context-sensitive right-click menu.

Data clicking the Font button displays the Windows Font dialog box, allowing the type attributes of the table information to be defined.

8.45.1 Column Titles

Visible checked, includes column titles in the table display. Clicking the Font button displays the Windows Font dialog box, allowing the type attributes of the column titles to be defined.

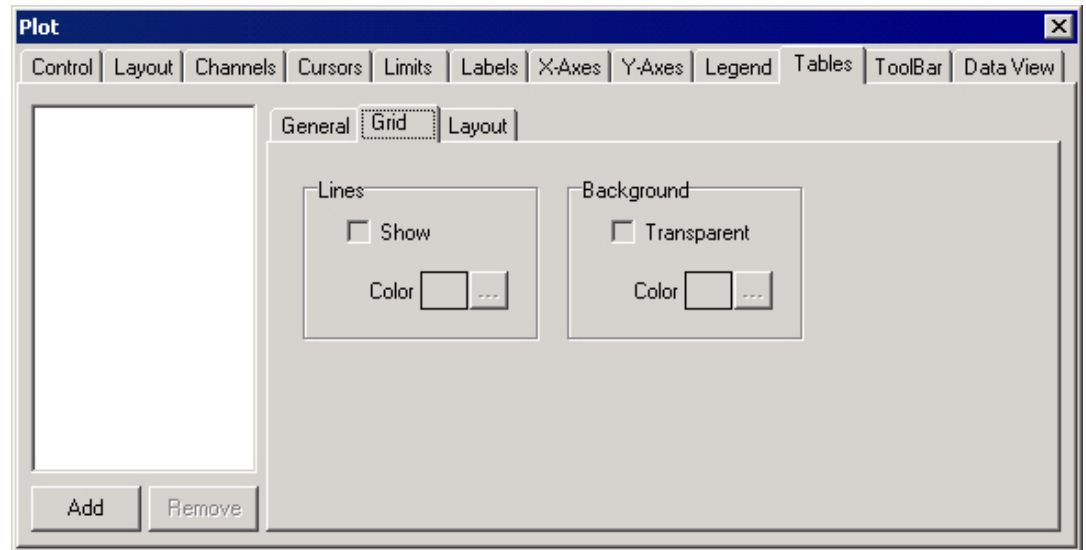
Column Spacing specifies the width of the table's cell columns. The distance is determined as the percentage of a character based on the Font used. A value of "0.5," for instance, is equal to half the width of a character.

Row Spacing specifies the height of the table's cell rows. The distance is determined as the percentage of a character based on the Font used. A value of "0.5," for instance, is equal to half the width of a character.

Rows Max limits the number of rows in the table to the specified number before displaying scroll bars. A setting of "0" automatically enables scroll bars when necessary to accommodate the number of rows.

Margin designates the distance between each of the table's four borders and its contents. The distance is determined as the percentage of a character based on the Font used. A value of "0.5," for instance, is equal to half the width of a character.

8.46 Tables > Grid



Grid properties customize the cell borders of a table.

Table List enumerates the Table formats available in the plot. You can Add or Remove a Table format from the list by clicking the appropriate button.

8.46.1 Lines

Show when checked, displays the grid lines delineating the table's cells.

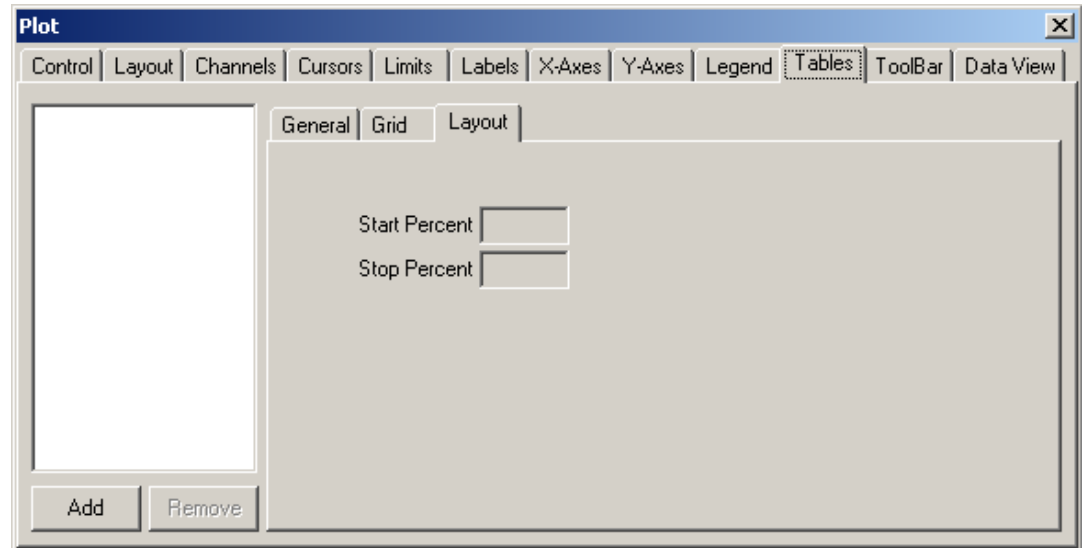
Color specifies the color of the lines delineating the table's cells. Clicking on the associated (...) button allows you to choose a different color from the Windows Color palette.

8.46.2 Background

Transparent when checked, uses the plot background as the table's background.

Color specifies the background color of the table's cells. Clicking on the associated (...) button allows you to choose a different color from the Windows Color palette.

8.47 Tables > Layout



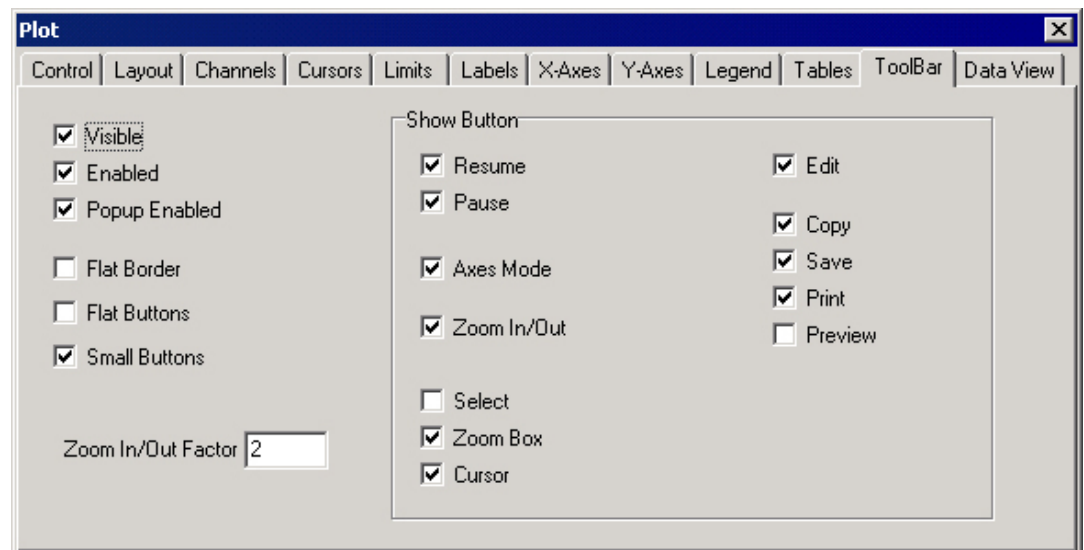
Layout properties determine the position of the table. The Start and Stop Percent values specify how much area the table occupies within the Data View. In the examples below, the table would be positioned in the middle 50% of the Data View, spanning from 25% to 75% of the X-Axis.

Table List: enumerates the table formats available in the plot. You can Add or Remove a Table format from the list by clicking the appropriate button.

Start Percent: specifies the beginning percentage of how much area the table occupies in relation to the Y-Axis. For example, a Start Percent of 25% means that the table begins 25% in from the area reserved for the Y-Axis.

Stop Percent: specifies the ending percentage of how much area the table occupies in relation to the Y-Axis. A Stop Percent of 75% means that the table ends 75% from the end of the area reserved for the Y-Axis.

8.48 ToolBar



The toolbar provides the WebViews user with one-click access to many common graph functions.

Visible when checked, displays the toolbar above the Data View area.

Enabled when checked, activates the buttons in the toolbar. Unchecked, the buttons are disabled for the graphing session.

Popup Enabled when checked, enables the context-sensitive right-click menu.

Flat Border: when checked, removes the three-dimensional effect from the Toolbar by removing its drop shadow.

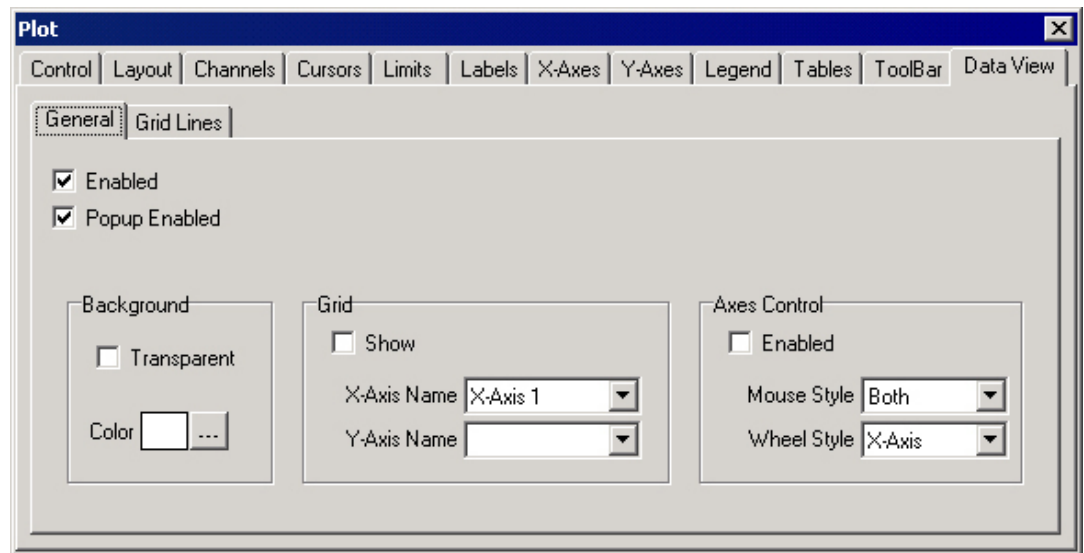
Flat Buttons: when checked, removes the three-dimensional effect from the buttons by removing their drop shadows.

Small Buttons: checked, displays small toolbar buttons to conserve space in the graph display.

Zoom In/Out Factor: specifies the scaling by which the Zoom buttons magnify and reduce the Data View each time they are clicked.

Show Button: Enables it the toolbar. Refer to The Graph Toolbars for an explanation of the function of each button.

8.49 Data View > General



The Data View is located in the center of the plot (see Layout) and is the area where data points, traces, cursors, alarm limits, annotations, grid lines and other plot information are displayed. General settings override all other Grid properties.

Enabled when checked, allows the Data View to be manipulated.

Popup Enabled when checked, enables the context-sensitive right-click menu.

8.49.1 Background

Transparent when checked, the graph background serves as the Data View background. Alternatively, you can specify another Color.

Color specifies the Data View background color. Clicking on the associated ellipsis (...) button allows you to choose a different color from the Windows Color palette.

8.49.2 Grid

Show when checked, displays graph grid lines.

X-Axis Name specifies the X-Axis which is the source for displaying major and minor vertical grid lines.

Y-Axis Name specifies the Y-Axis which is the source for displaying major and minor horizontal grid lines.

8.49.3 Axes Control

Enabled when checked, allows dynamic scrolling and zooming of graph axes using a either a mouse or a mouse wheel.

Mouse Style specifies which axis is enabled for dynamic movement by clicking and dragging a mouse within the Data View:

XAxis scrolls only the X-Axis when the cursor is moved horizontally.

YAxis scrolls only the Y-Axis when the cursor is moved vertically.

Both scrolls both the X- and Y-Axes when the cursor is moved.

The following keyboard modifiers can be used in conjunction with the chosen Mouse Style:

CTRL when held down, zooms rather than scrolls the axes.

SHIFT when held down, fixes the scroll/zoom function in one direction. For example, holding down the SHIFT key while moving the mouse horizontally only scrolls the X-Axis.

Wheel Style specifies which axis is enabled for dynamic axis movement by using a mouse with a wheel: XAxis scrolls only the X-Axis when the wheel is turned.

YAxis scrolls only the Y-Axis when the wheel is turned.

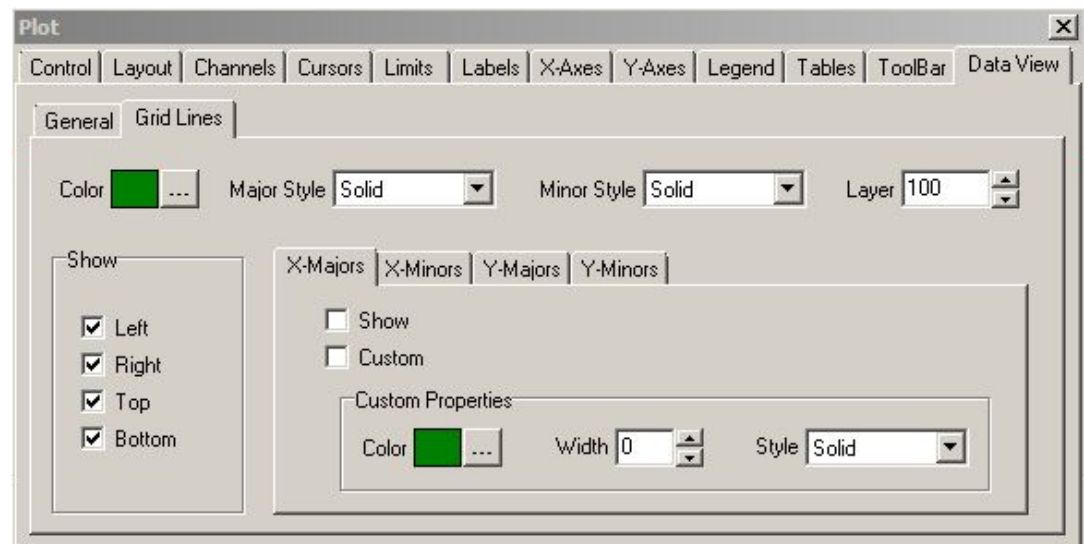
Both scrolls both the X- and Y-Axes when the wheel is turned.

The following keyboard modifiers can be used in conjunction with the chosen Wheel Style:

CTRL when held down, zooms rather than scrolls the axes.

SHIFT when held down, fixes the scroll/zoom function in one direction. For example, holding down the SHIFT key while moving the mouse horizontally only scrolls the X-Axis.

8.50 Data View > Grid Lines



By default, the grid displays outer border lines and Major X- and Y-Axes lines; Minor axes lines are hidden.

Color specifies the color of the grid lines. Clicking on the associated ellipsis (...) button allows you to choose a different color from the Windows Color palette.

Major Style defines the appearance of grid lines drawn from major ticks:

Solid displays a solid line.

Dash displays a line consisting of a series of dashes.

Dot displays a line consisting of a series of dots.

Minor Style defines the appearance of grid lines drawn from minor ticks:

Solid displays a solid line.

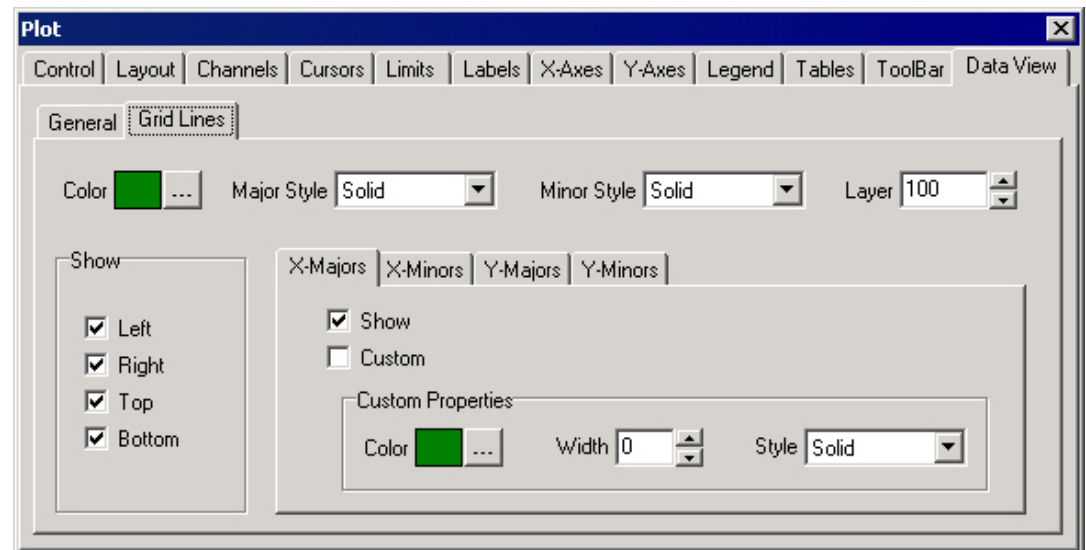
Dash displays a line consisting of a series of dashes.

Dot displays a line consisting of a series of dots.

Layer is the layer the grid lines occupy on the graph. All plot objects are given a default layer of "100." The higher the number, the closer the object is to the screen; the lower the number, the further from the screen. For example, an object with a layer of "200" will be displayed on top of an object with a layer of "100" in areas where the two overlap. Grid lines only have priority over filled limit lines in cases where these two objects have the same Layer value.

Show When checked each of these settings places a border line along that side of the Data View area.

8.51 Data View > Grid Lines > X-Majors



These grid lines make the values of major X-Axis divisions easier to correlate with the plotted points, especially when the graph dynamically tracks new data for multiple channels. They are referenced to the X-Axis named under the General properties tab.

Show when checked, displays grid lines drawn from the X-Axis major ticks.

Custom when checked, applies the specified Custom Properties to the X-Axis grid lines. Unchecked, the default General properties are applied and the grid width is fixed at 1 pixel.

8.51.1 Custom Properties

Color specifies the custom color used to draw the X-Axis major grid lines. Clicking on the associated (...) button allows you to choose a different color from the Windows Color palette.

Width specifies the thickness of the custom grid lines in pixels.

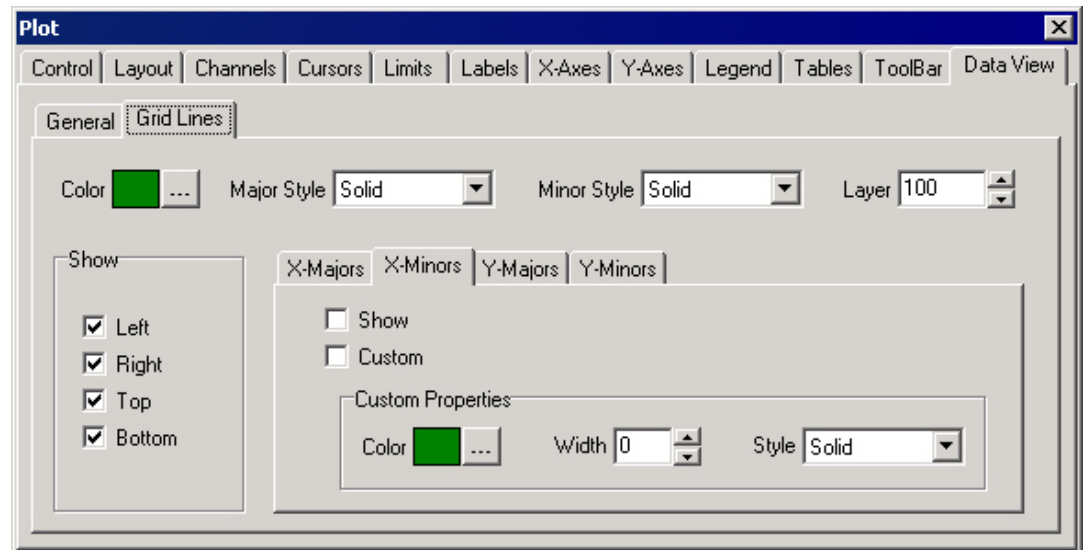
Style specifies the pen style of the custom grid line display:

Solid displays a solid line.

Dash displays a line consisting of a series of dashes.

Dot displays a line consisting of a series of dots.

8.52 Data View > Grid Lines > X-Minors



These grid lines make the values of minor X-Axis divisions easier to correlate with the plotted points, especially when the graph dynamically tracks new data for multiple channels.

Show when checked, displays grid lines drawn from the X-Axis minor ticks.

Custom when checked, applies the specified Custom Properties to the X-Axis grid lines. Unchecked, the default General properties are applied and the grid width is fixed at 1 pixel.

8.52.1 Custom Properties

Color specifies the custom color used to draw the X-Axis minor grid lines.

Clicking on the associated (...) button allows you to choose a different color from the Windows Color palette.

Width specifies the thickness of the custom grid lines in pixels.

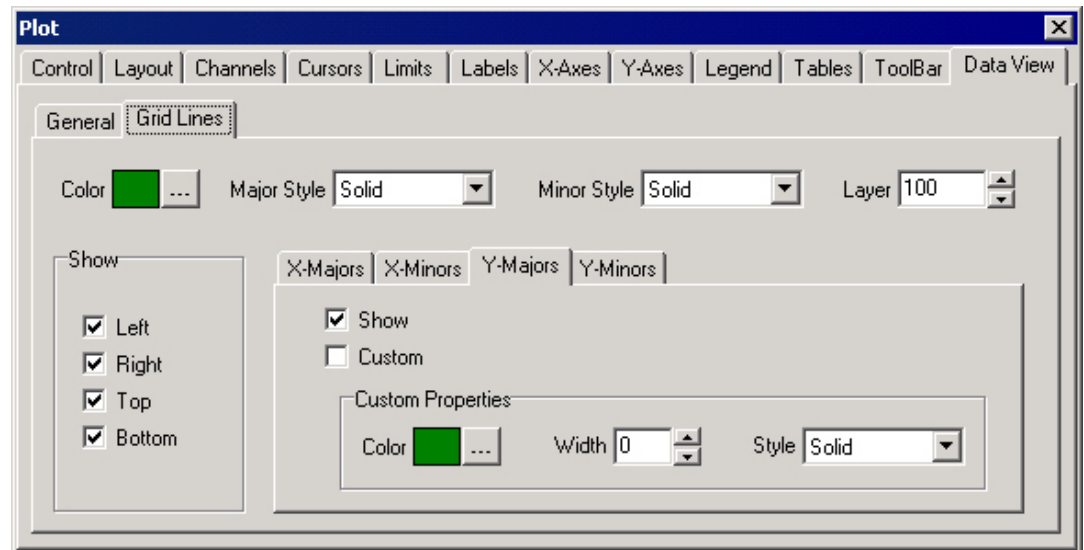
Style specifies the pen style of the custom grid line display:

Solid displays a solid line.

Dash displays a line consisting of a series of dashes.

Dot displays a line consisting of a series of dots.

8.53 Data View > Grid Lines > Y-Majors



These grid lines make the values of major Y-Axis divisions easier to correlate with the plotted points, especially when the graph dynamically tracks new data for multiple channels. They are referenced to the Y-Axis named under the General properties tab.

Show when checked, displays grid lines drawn from the Y-Axis major ticks.

Custom when checked, applies the specified Custom Properties to the Y-Axis grid lines. Unchecked, the default General properties are applied and the grid width is fixed at 1 pixel.

8.54 Custom Properties

Color specifies the custom color used to draw the Y-Axis major grid lines. Clicking on the associated (...) button allows you to choose a different color from the Windows Color palette.

Width specifies the thickness of the custom grid lines in pixels.

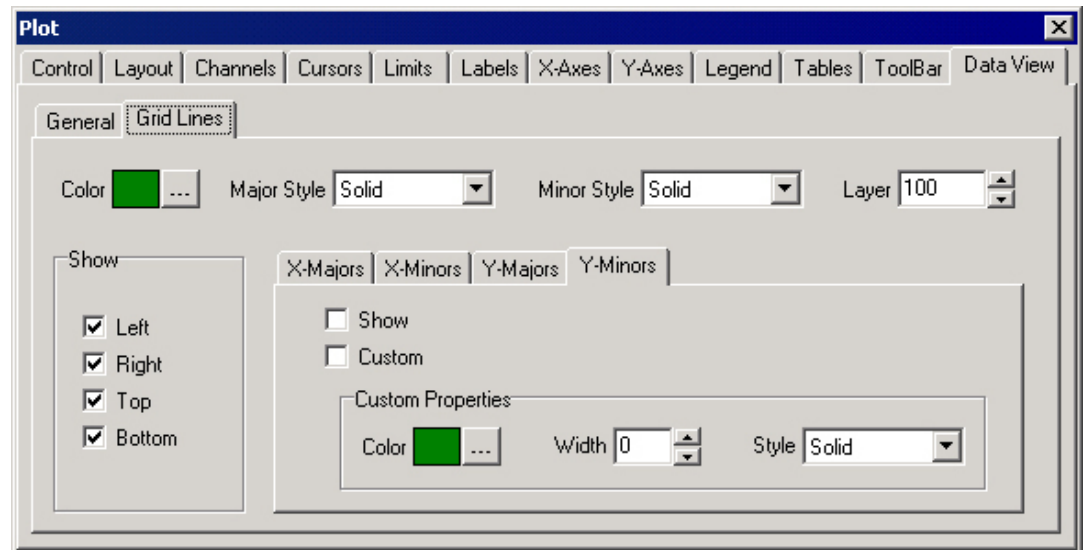
Style specifies the pen style of the custom grid line display:

Solid displays a solid line.

Dash displays a line consisting of a series of dashes.

Dot displays a line consisting of a series of dots.

8.55 Data View > Grid Lines > Y-Minors



These grid lines make the values of minor Y-Axis divisions easier to correlate with the plotted points, especially when the graph dynamically tracks new data for multiple channels.

Show when checked, displays grid lines drawn from the Y-Axis minor ticks.

Custom when checked, applies the specified Custom Properties to the Y-Axis grid lines. Unchecked, the default General properties are applied and the grid width is fixed at 1 pixel.

8.55.1 Custom Properties

Color specifies the custom color used to draw the Y-Axis minor grid lines. Clicking on the associated (...) button allows you to choose a different color from the Windows Color palette.

Width specifies the thickness of the custom grid lines in pixels.

Style specifies the pen style of the custom grid line display:

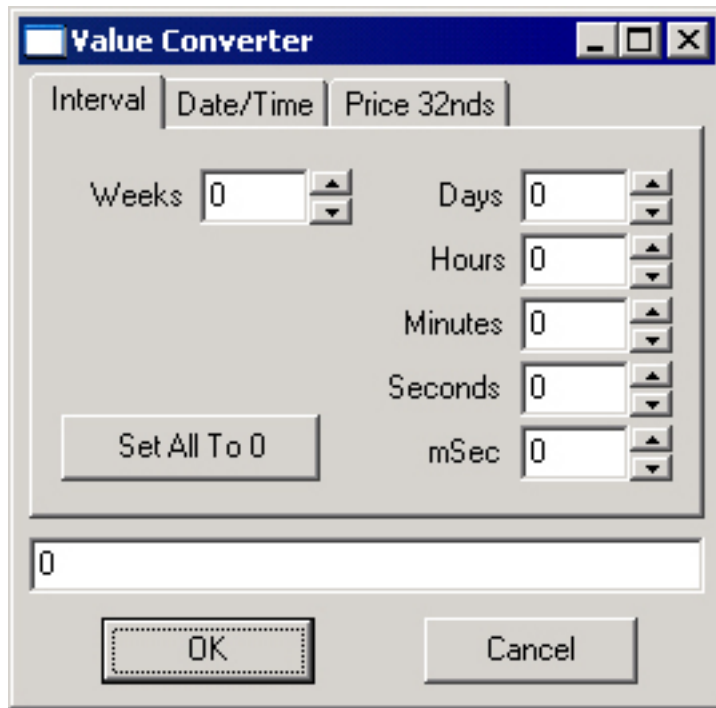
Solid displays a solid line.

Dash displays a line consisting of a series of dashes.

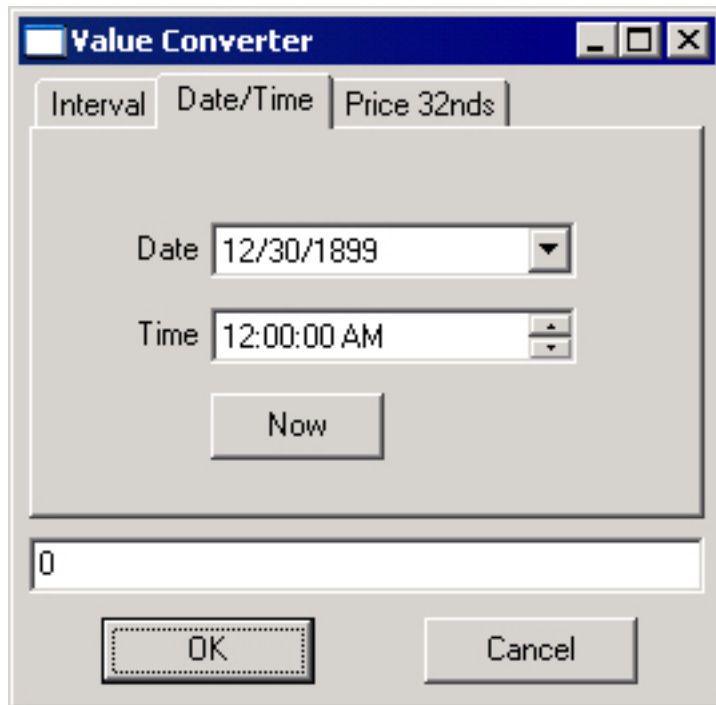
Dot displays a line consisting of a series of dots.

8.56 Value Converter

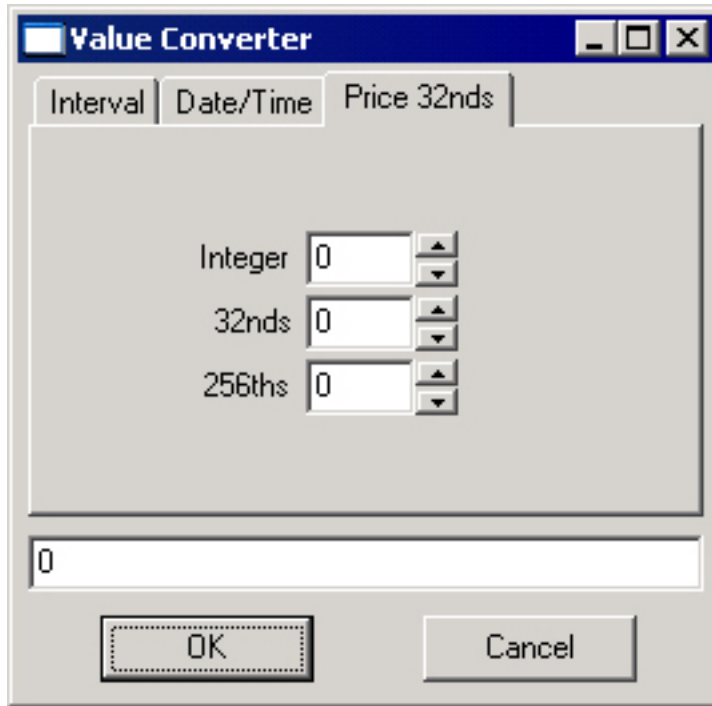
8.56.1 Intervals



8.56.2 Date/Time



8.56.3 Price 32nds



8.57 Windows Dialog Boxes

8.57.1 Color Palette



8.57.2 Font Palette

