Foreseer WebViews Guide

Foreseer

E·T·N
Powering Business Worldwide

Table of contents

Introduction

Foreseer WebViews provides browser-based view of your system consisting of:

- o Map or floor plan based diagrams showing the location of sites, buildings, and equipment.
- o One-line electrical diagrams that provide real-time views of critical energy data from your equipment.
- o Location diagrams, showing the physical location of equipment in electrical panels as well as real-time data from that equipment.
- o Detailed dashboard views of the most popular real-time data from each piece of equipment.

- Welcome
- WebViews Navigation
- WebViews Reports
- WebViews Graphs

Welcome

Foreseer is a vital part of an enterprise operations center, monitoring power and environmental inputs from equipment, sensors and other systems. It furnishes a single integrated system that provides real-time and historical views into the operation of the power and environmental conditions that support your operation, whether that operation is a health care facility, large data center, or campus. Operators interact with Foreseer through WebViews.

Foreseer security privileges combine to define what each account allows an operator to see and do. Foreseer accounts can be integrated with Microsoft Active Directory to leverage your existing account directory service. Foreseer logging provides a record of what actions each operator performs.

Floor plan page
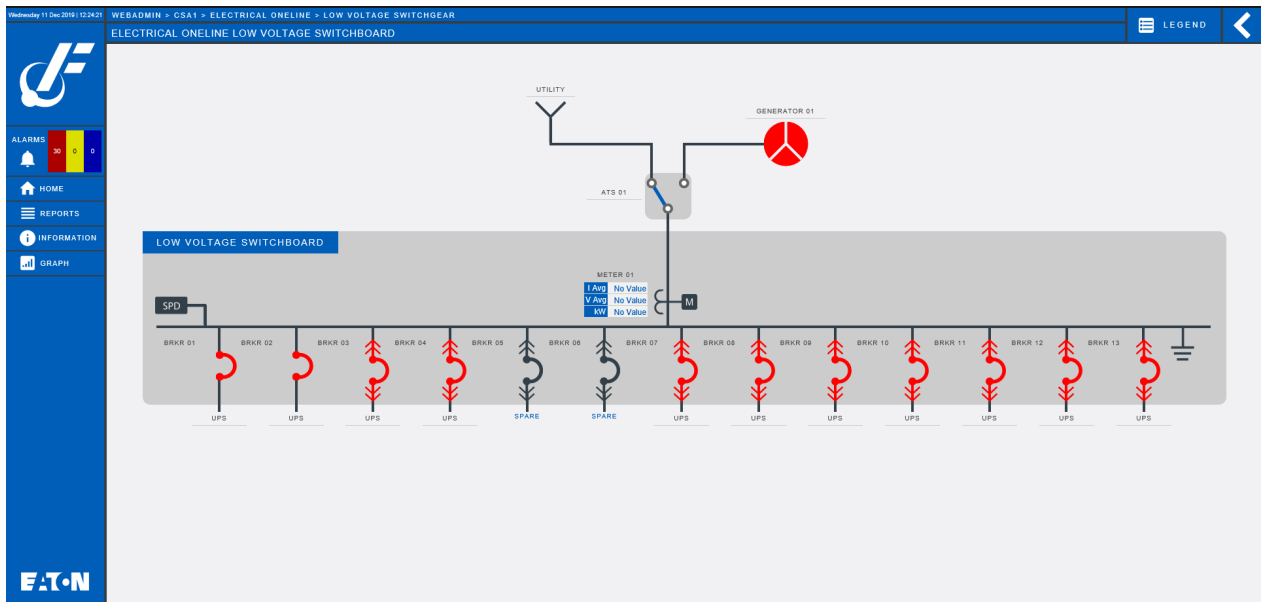
One line page

Dashboard for enterprise operation

WebViews Navigation

WebViews are generally organized into a hierarchical view of your power system. Operators can "drill down" though the hierarchy to see as much detail was they wish. WebViews pages include real-time values from devices, as well as a variety of gauge-type displays and "indicator lights." Electrical one-lines can include electrical symbols that change color or "open" and "close" based on real-world conditions. For example, breaker symbols will open or close based on the actual state of the breakers. Device symbols and displays will also change color to indicate alarm conditions.

Operators can move through the web of pages using hyperlinks. Current position in the set of WebViews is shown through "navigational breadcrumbs" at the top of each WebViews page. The breadcrumbs are live links operators can use to "backtrack" up through the WebViews hierarchy.

WebViews Reports

Each WebViews page has a link to the report generator/manager. Operators can generate and review reports about alarms, channels, system configuration, and server up time. Some WebViews Reports are available in two formats: standard and tab-delimited data. All reports can be exported as text files to the operator's local computer.

Reports			
Report Type	**Available Reports**		
Alarm History [1 Day]	10/16/19 11:37:02 [2538 bytes]		
Alarm History [30 Day]			
Alarm History [7 Day]			
Alarm History [Custom]			
Audit History			
Channel Data			
Channel	10/04/19 09:35:23 [322943 bytes]		
Driver Log File	10/04/19 09:34:17 [1244 bytes]		
Interval Data Report	10/04/19 09:38:14 [887 bytes]		
Log File	10/24/19 10:14:09 [4779 bytes]	10/23/19 11:06:42 [4392 bytes]	10/23/19 11:06:42 [4392 bytes]
Notes History [1 Day]	10/04/19 09:38:45 [390 bytes]		
Notes History [30 Day]			
Notes History [7 Day]			
Notes History [Custom]			
Previous Driver Log File			
Previous Log File			
Sequence of Events			
System Configuration	11/06/19 11:13:32 [1982 bytes]	11/06/19 11:10:33 [1939 bytes]	11/06/19 11:07:29 [3853 bytes]
System Up-Down			

WebViews Graphs

Operators can view data from up to 20 device channels in an interactive graph. Plots can provide a historical view of up to six months of data or can be used to watch data in real time. Plots can be printed or exported as .jpg or .png graphics files. Operators can also access a data analysis window that provides a variety of statistical calculations regarding data from selected channels.

Graph also provides a proactive feature: ProGraph. ProGraph is a linear projection to help determine where channel values may be in the future.
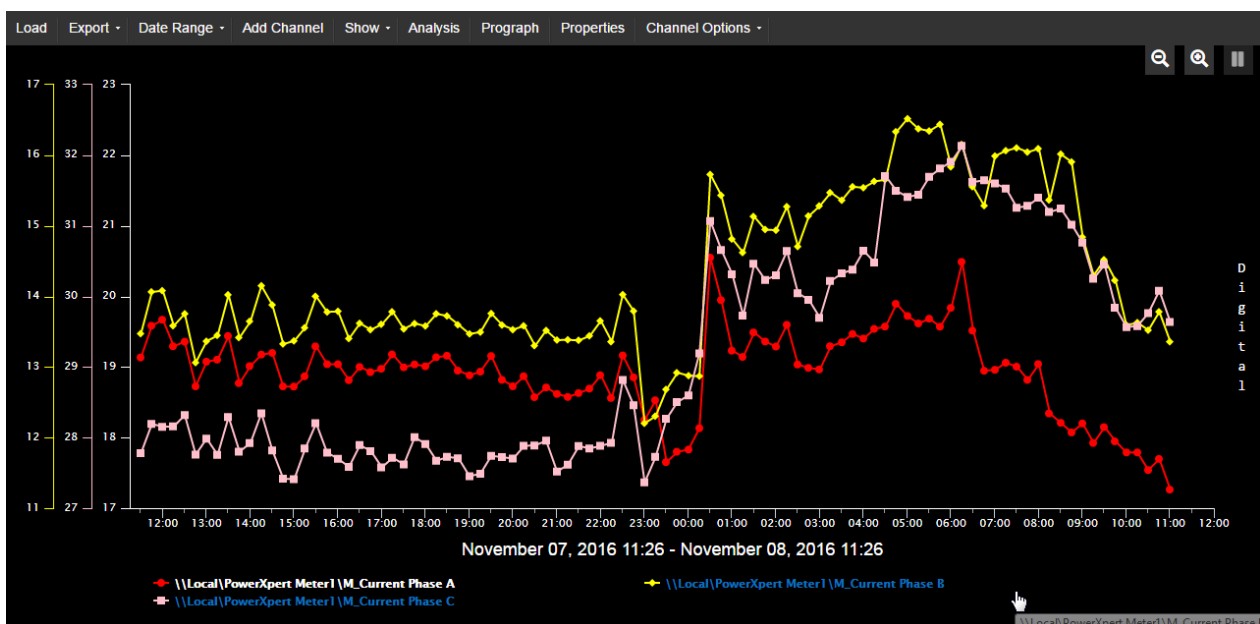
WebViews Basics

This section will describe basic functionality for accessing and navigating the Foreseer WebViews environment.

- Accessing WebViews
- Breadcrumbs
- Channel Displays
- Gauges and Other Indicators
- Folder and Links
- Drop-Down Menus
  - Folders and Links

Accessing WebViews

To access WebViews, please check the Foreseer Release Notes for supported browser information.

The URL for WebViews is:

> ***http://foreseer_server/WebViews***

or, if HTTPS is active on the Foreseer Server:

> ***https://foreseer_server/WebViews***

where foreseer_server is the domain name or IP Address of the Foreseer Server website. If security is active, operators may be asked to enter a name and password.

> ✓ Your browser may need to be configured to accept cookies from Foreseer. Please consult documentation for your browser or contact your organization's IT department for assistance.

Breadcrumbs

Breadcrumbs tell operators where they are in the folder tree. WebViews pages are organized like file folders in your computer file system, which each folder representing a WebViews page. The following shows a simple structure with the "branch" of the "tree" leading from WebViews to an Eaton Meter PXM8000 view.
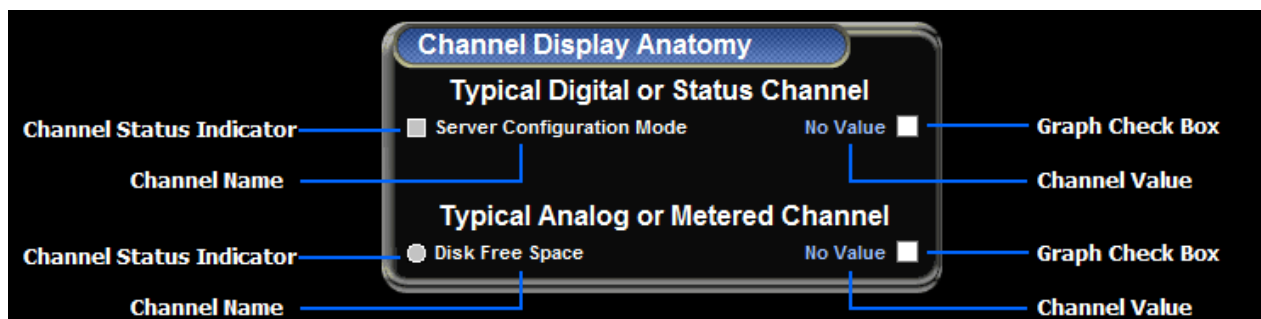
If an operator had navigated to the Eaton Meter PXM8000 page, the Breadcrumb would look like this:

WEBVIEWS > CSA1 > EATON METER PXM8000 WAVEFORM TCP

In addition to providing a signpost for navigation, breadcrumbs also help operators in navigating through the system. All the pages listed in the breadcrumb are hyperlinks, so clicking anything between WEBVIEWS and Eaton Meter PXM8000 will jump to that page.

Channel Displays

Channels are usually shown in a display box along with a value, status indicator, and sometimes with a check box that operators can use to select channels for the Graph pop-out.

Guide to a typical channel display

Example data channel display

Channel indicators are color coded as follows:

Channel indicator colors

Channel icons change color based on their particular properties settings. The default channel settings employ a "traffic light" color scheme to indicate the following conditions:

- Green: no error has been detected, data is being acquired, and the channel is operating and within its user-defined alarm limits. This is the "normal" state.
- Yellow: the channel value has exceeded either a Hi or Lo Caution alarm setting.
- Red: the channel value has exceeded a Hi or Lo Critical alarm setting.

Additional colors indicate other status conditions:

- Blue: the alarm was acknowledged.
- Gray: Foreseer lost communication with the Device.
- Cyan: alarm monitoring for the channel, or device, was manually disarmed.
- Purple: the channel, or device, was manually disabled.

Gauges and Other Indicators

Channel boxes can also contain other types of value indicators, including gauges and "thermometer" displays. These can also be outside of a channel display box.
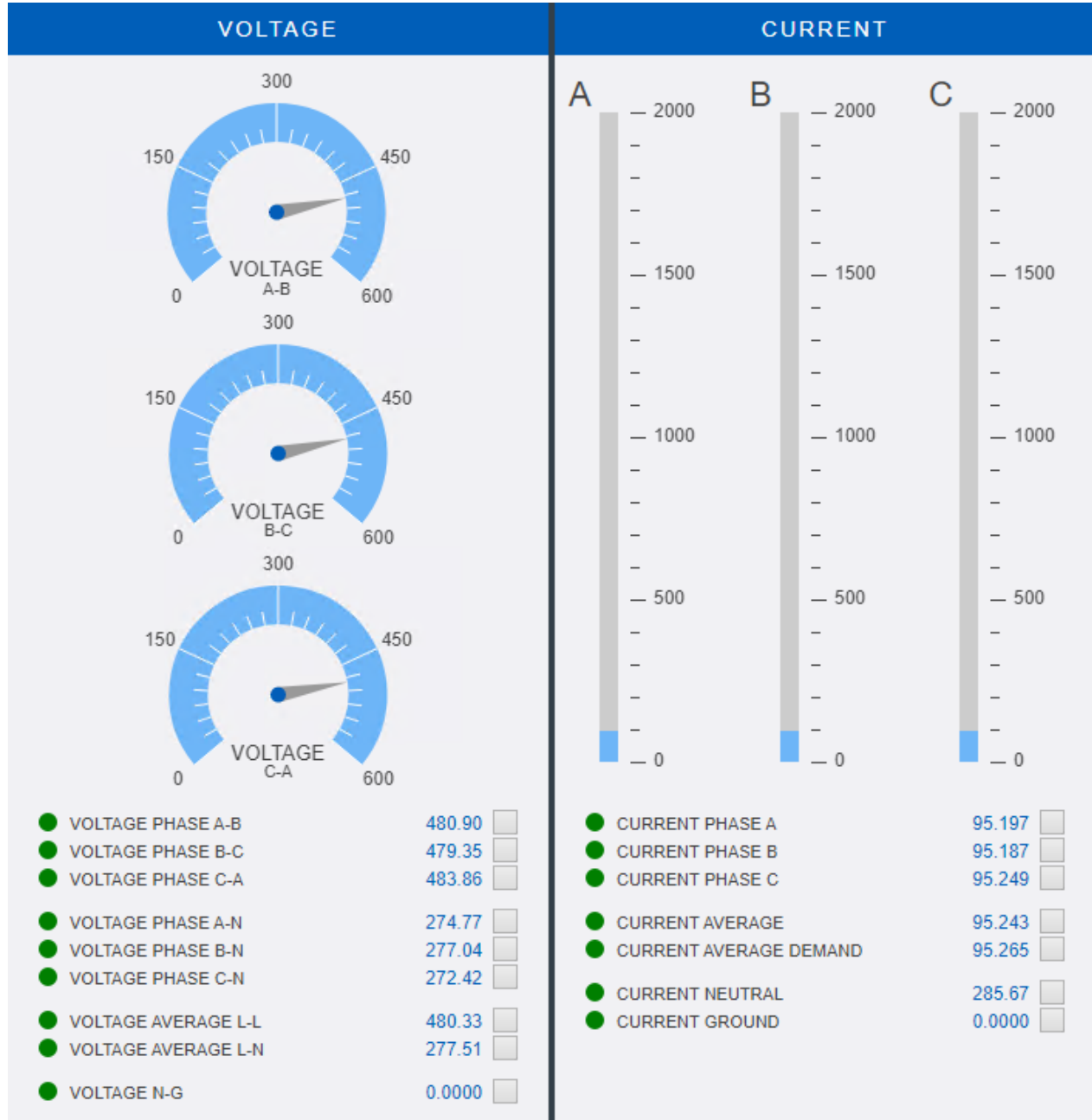
A channel display box with an angular gauge (left) and sliding scale (right)

Drop-Down Menus

Hover the mouse cursor over top left of the WebViews page to view the drop-down menus. The View switches the scaling for the display: Page Design Size shows the page as it was originally designed while Resize to Fit scales the page to fit the current browser size.
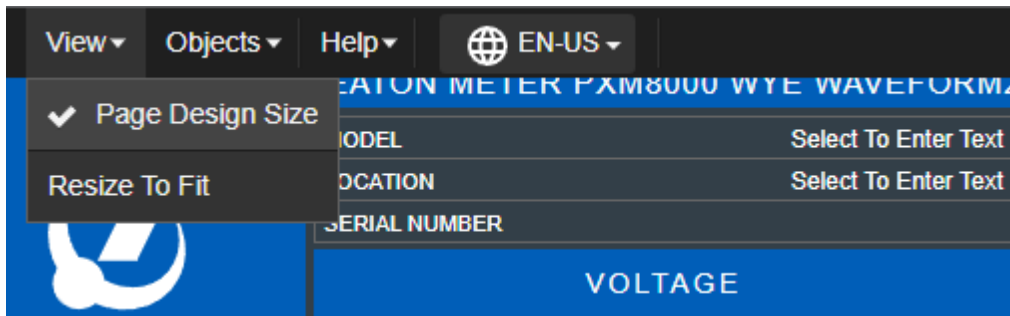
The Object menu commands launch either the Graph or Controls pop-out for the selected channels. For a single selected channel, you can view the Channel Properties (you can also double-click a Channel to view these). Operators select channels through their check boxes.

Foreseer has the ability to select from multiple languages if the supporting language packs have been installed. To access the available languages on your Foreseer system, click on the down-arrow t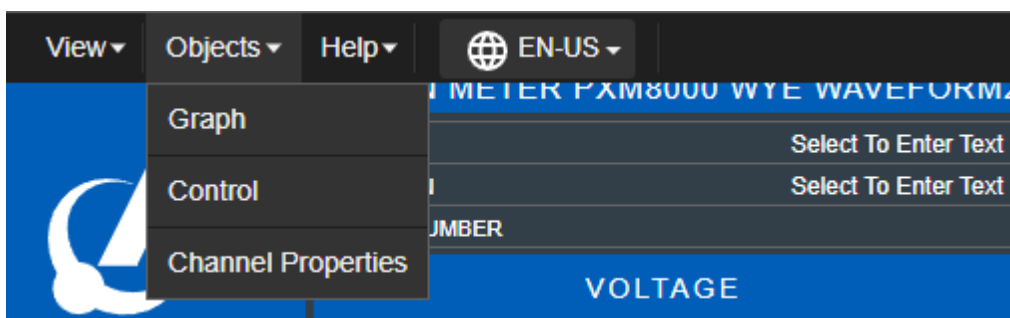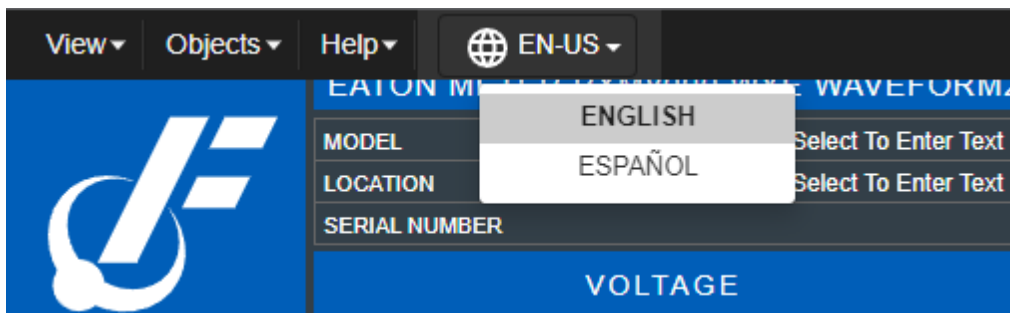o display a list of available languages to you. Once you select the language of your choice, Foreseer will display all of the interface in that chosen language.

Folders and Links

Folders are buttons that provide a path to child pages of the current WebViews page. In the following figure, clicking any of the colored buttons (Folders) leads to the respective child WebViews page. Folder colors reflect the highest alarm state of channels and sub-folders contained by that folder.
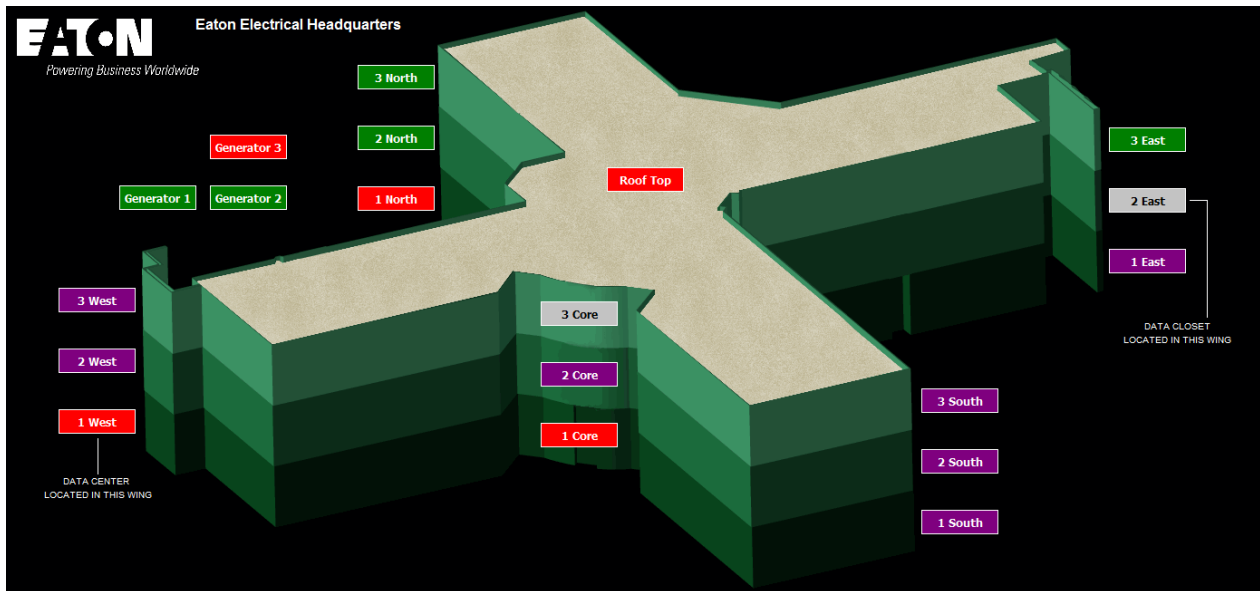
Hyperlinks can lead to any WebViews page in the Foreseer system. They can look like traditional hyperlinks on a web page.
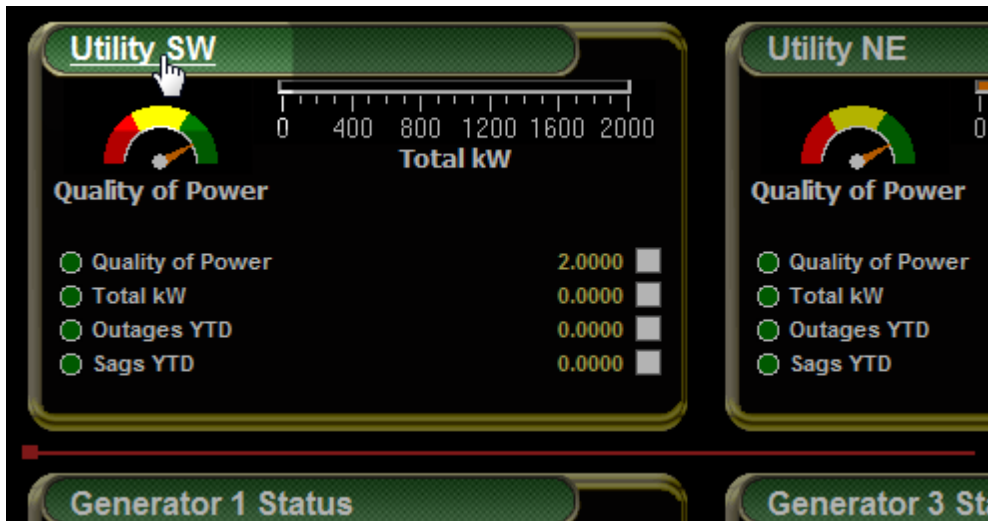
A channel box label that's also a hyperlink

Using WebViews Graph

The Graph pop-out lets you graph data from up 20 channels (10 analog and 10 digital). 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. You can also:

- Print the current plot.
- Save a .png or .jpg image file of the plot.
- Save the configuration so that you can recreate the plot. You can either save the time range or the absolute start and end times.
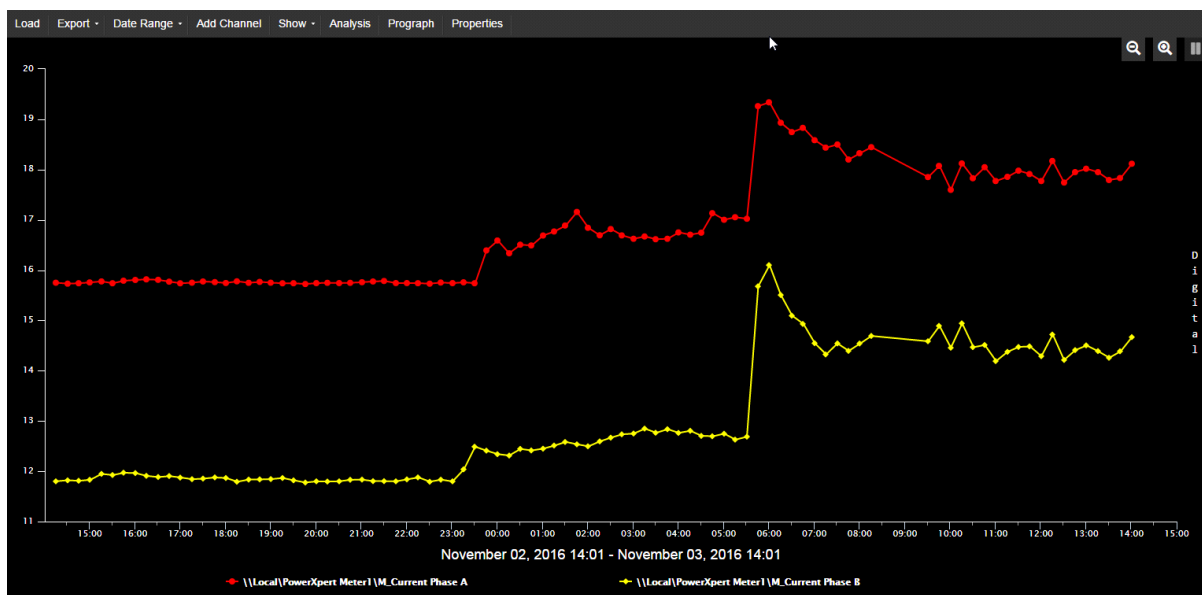
A historical graph, showing two channels

- Loading Channels into the Graph
- Reviewing Data by Date Range
- Removing Plots
- Comparing Values
- Properties
- Exporting Graphs and Graph Data
- Saving and Loading the Graph Configuration
- Projecting Values with Prograph and Sightline

Loading Channels into the Graph

The channel picker appears whenever you click Add Channel in the Graph pop-out. Use the left side to select a channel. Aside from servers, you'll notice a couple of extra choices:

- WebViews channels are only those channels that are already in use, so it's generally a much smaller and more useful list.
- All channels is just what the name implies, a list of all channels from all servers and devices.

You can expand the list under servers (in this case, just the server named Local) to show all of its devices, system channels, and derived channels.

The channel picker also permits you to search through a list of servers, devices, channels, and types that are displayed. To enable search capabilities, click the Search icon.

You can search through a list by first clicking the column of interest. Then, click the search icon and enter a particular string of text you wish to find. For example, if you wish to find

a channel with the string "Current" listed, start by clicking the Channel column label. Then, click the search icon and enter the text you wish to search by.   You can use the arrows to move back and forth between multiple result hits. To close the search feature, simply click the 'X' icon.
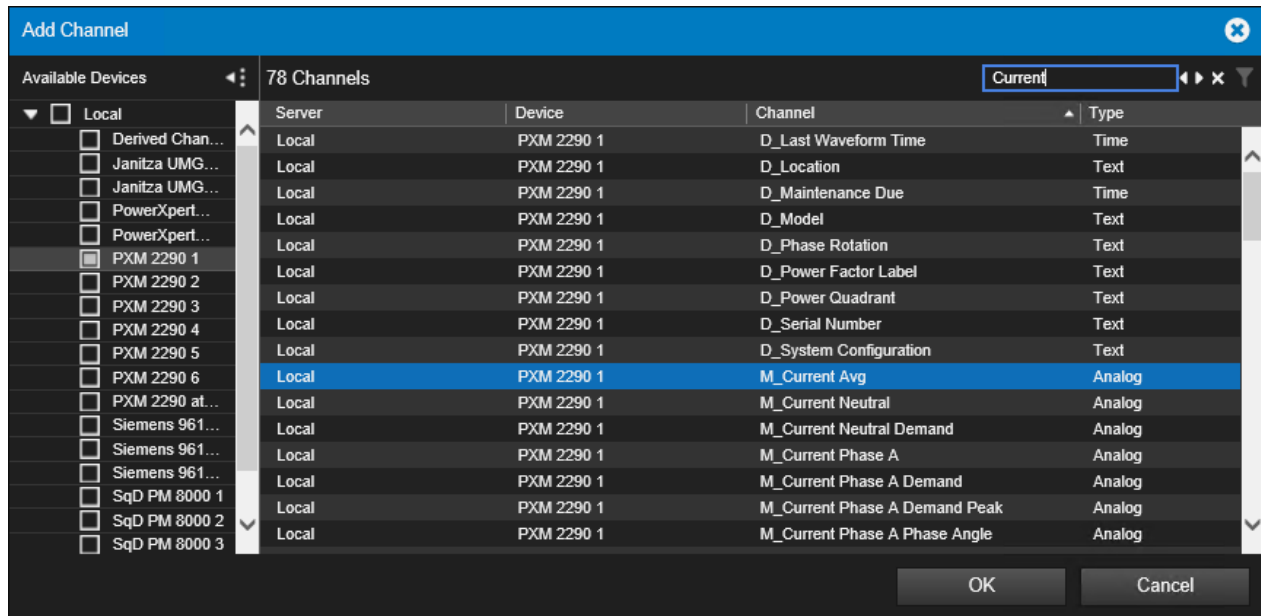
The channel picker also permits you to filter one or more columns to assist with easier selection criteria for one or more channels. To enable the filter, click the Filter icon.

You can filter any column by selecting the filter icon listed next to each column label in the channel picker.

After clicking the filter icon, you will be presented with a list of all items within the column. You can use the search and check-boxes to include or omit desired selections.
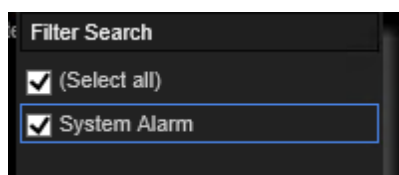
Once you have made your appropriate selections, click OK.
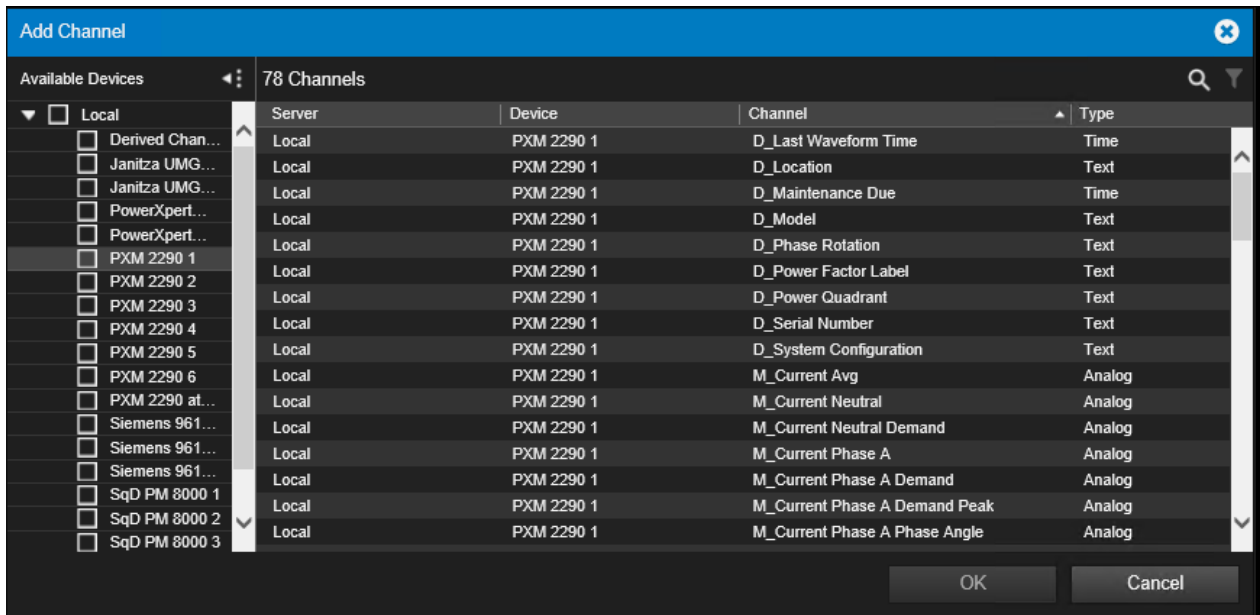
Reviewing Data by Date Range

The WebViews Graph menu provides a Date Range drop down menu. This menu provides an easy way to review different ranges of historic data for the channels you have selected and loaded into the Graph. A graph can load a maximum of six (6) months of historic data for review.

The Date Range menu provides a number of common time periods for reviewing historic

data. Options include the following:

- Real-time - this option will graph real-time channel values as they are actively acquired by Foreseer.
- Hourly - includes one (1), two (2), four (4), six (6), and twelve (12) hours options.
- Daily - includes one (1) and two (2) day options.
- Weekly - includes one (1) and two (2) week options.
- Monthly - includes one (1), two (2), three (3), four (4), five (5) and six (6) month options.

Custom Time Range

For situations where a more definitive period of time beyond the provided pre-canned options, you can use the Custom option. This will involve the Custom Time Range selector.

The Custom Time Range selector provides a calendar view that allows you to select a particular date and entered time. By default, the Custom Time Range window will focus upon the most current 24-hours of data. Using the editors, you can select up to a six (6) month window of time.

The left and right arrows displayed within the header of each calendar view allow you to page backwards and forwards by one month at a time.

For situations where you need to span back several months or years at a time, simply click the Month and Year label in the header of the calendar view. This provides a collapsed view of the calendar by months of the year rather than days of the month. The left and right arrows will then allow you to page back and forth by calendar year with the ability to select a specific month. One a month has been selected, you can then select a particular day.

Archived Data Range Spans

Dependent on the range of time you wish to view data from, the Graph will provide data of an appropriate resolution. When viewing specific ranges of time, the Graph will display sample data in the following intervals as shown in the table below.

Date Range (span)	Sample Interval
Less than 24 hours	1 Minute Interval
1 - 4 Days	15 Minute Interval
4-14 Days	1 Hour Interval
14-31 Days	4 Hour Interval
31-62 Days	8 Hour Interval
62-93 Days	12 Hour Interval
Greater than 93 days	24 Hour Interval

Removing Plots

1. Select the plots you wish to remove in the legend.
2. Under Channel Options, select Remove Channels.

> ✓ You cannot remove plots in Real-time mode.

Comparing Values

To see the time stamp, channel network path, and value for any data point along a plot, place the mouse pointer over that point.

Using the Cursor

You can use the cursor to compare values on multiple plots. You activate the cursor via the Show menu. The cursor has three modes:

- All channels selected: Channel values appear in the legend at the bottom of the screen. The time stamp beside the cursor marks the cursor's current position on the time line.
- A single channel selected: the channel values appear beside the cursor.
- None: no cursor is shown on the graph.

When one or all channels are selected, the vertical cursor appears as a solid line over the plots. You can change the appearance of the cursor by clicking Properties. Cursor settings are on the General tab. To move the cursor, either drag it or use the left and right arrow keys. 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.

Graph Control Buttons

Control	Action
▶	Re-enables continuous tracking of Real-time graph data values on all axes.
❚❚	Suspends continuous tracking of Real-time data on all axes.
◀ ▶	Shifts the plot to the left or right along the timeline.
🔍⁻	Provides a wider view of the graph and disables tracking to pause the display.
🔍⁺	Provides a narrower view of the graph and disables tracking to pause the display.
⬚	Enlarges the selected 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.

Properties

The Properties dialog box has three of tabs:

- General Properties - Settings that affect the appearance of the graph as a whole.
- Channel Properties - Settings that affect the appearance of the plot for each selected channel.
- Axis Properties - Settings that affect the appearance of the axes.

Overlaying Plots

You can overlay the plots by adding additional x-axes to the graph. To add an axis for one or more plots:

1. Select each plot in the legend at the bottom of the graph (it will highlight when selected).
2. Under Channel Options, select Add Axes.
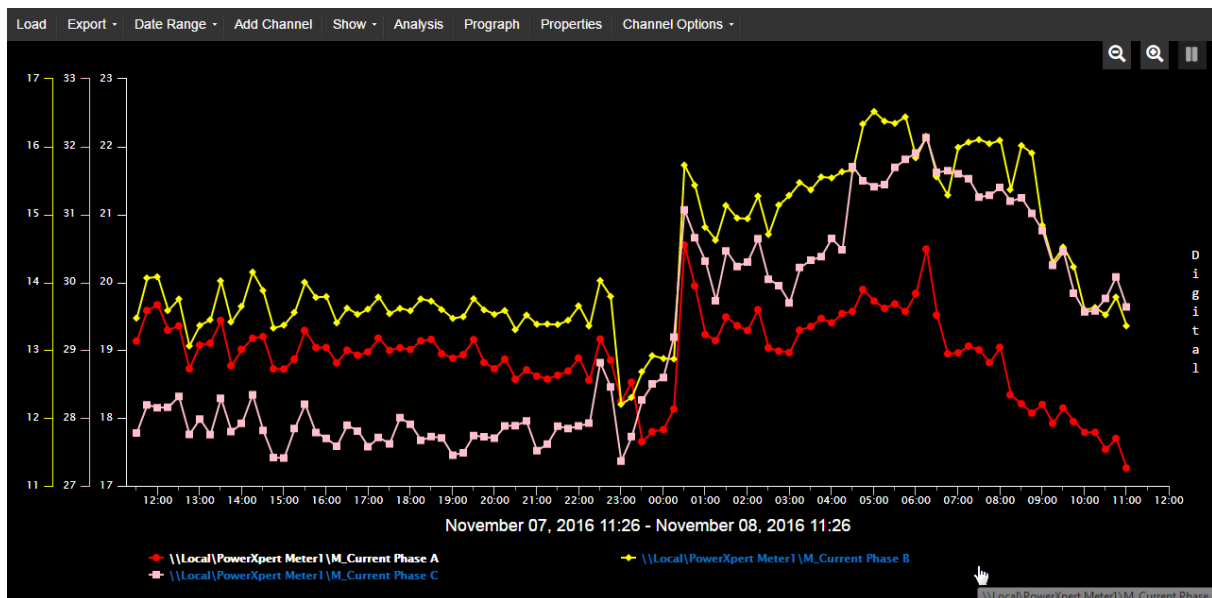
Removing Axes

To remove axes selected in the legend, choose Remove Axes under Channel Options.

Looking at Values Side-by-Side

Click Analysis to compare a number of statistics calculated from the specified range for all of the plots.

Data Analysis							
Start: Nov 09, 2016 10:08	End: Nov 10, 2016 10:08		Span: 1 day				
Channel	Count	Min	Max	Mean	Range	Std.Dev.	Trend
\\Local\PowerXpert Meter1\M_Current Phase A	92	16.98	20.51	18.27	3.531	0.6190	0.3435
\\Local\PowerXpert Meter1\M_Current Phase B	92	13.30	15.74	14.28	2.439	0.5250	1.142
\\Local\PowerXpert Meter1\M_Current Phase C	92	28.89	31.91	30.17	3.026	0.8948	1.876

Save Data   Close

> ✓ You can download the contents of the Data Analysis window as a .csv file by clicking Save Data.

Exporting Graphs and Graph Data

Through the Export menu, you can:

- Export the graph data as a .CSV file.
- Save a .PNG graphics file of the graph.
- Print the graph.

Saving and Loading the Graph Configuration

You can save the current graph settings, including channels, additional axes, and time range, through Save Configuration on the Export menu. You can select to either have the time period considered relative to the current time that the configuration is loaded or as an absolute time period (in other words, a snapshot of the specified time range). The configuration template file is automatically saved with .json extension. Files are saved in the \Eaton Corporation\Foreseer\WWW\Support\UserFiles\GraphTemplates folder.
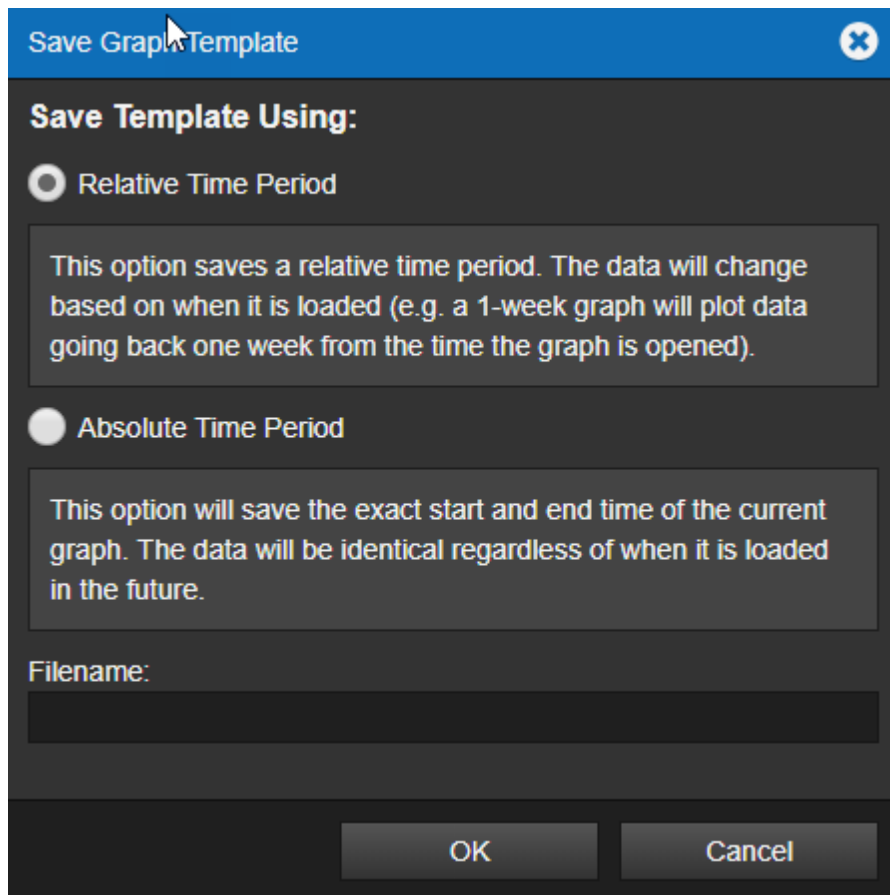
Loading a Graph Configuration File

You load a configuration template file by clicking Load. The configuration file must be in the \Eaton Corporation\Foreseer\WWW\Support\UserFiles\GraphTemplate folder and have a .json extension (for configuration files created in version 7 of Foreseer) or XML for legacy configuration files. When you load a legacy file, it's converted into the current JSON format and the original file is given a .xml.bak extension.

Projecting Values with Prograph and Sightline

Prograph 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. Longer ranges (six months or more) provide better projections.

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 user-defined Channel and add a user-defined equation with the TrendChannel function. 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.

WebViews Waveforms

This section will describe basic functionality for accessing and navigating the Foreseer WebViews Waveforms.
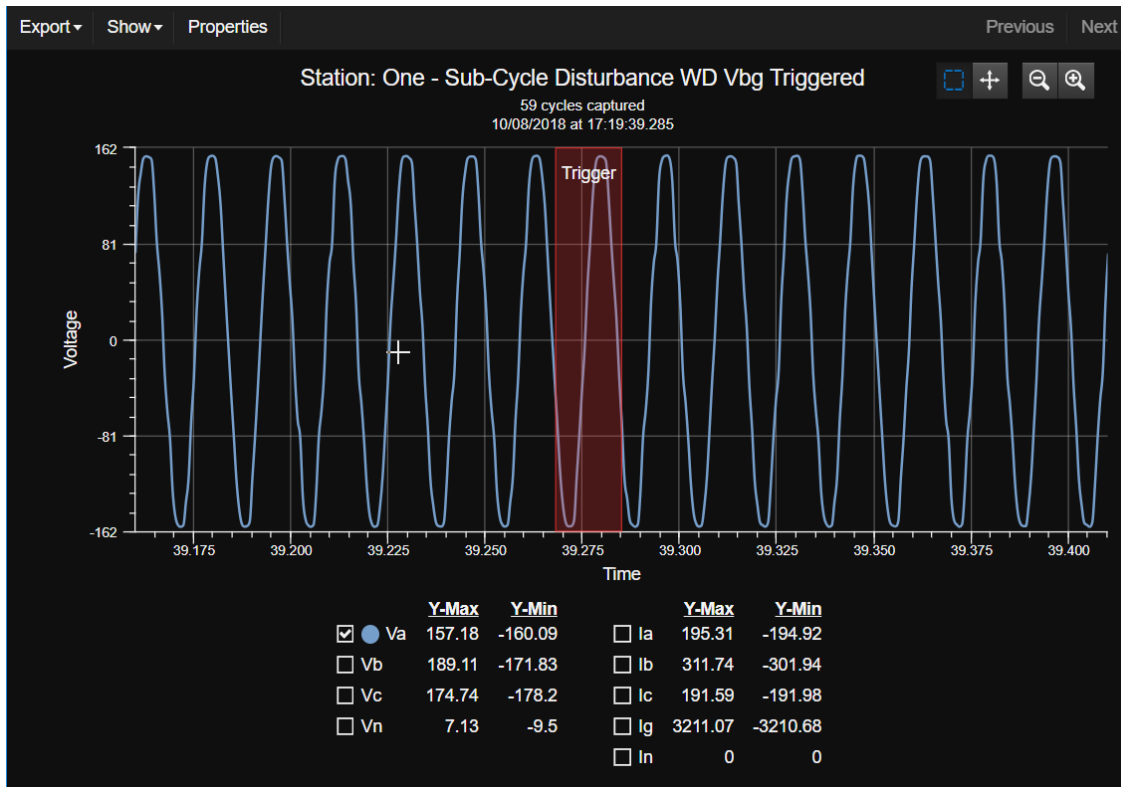
- Using the Waveform Control
- Using the Waveform Viewer Pop-out
    - Zooming and Scrolling
    - Customizing Plots with the Show Menu
    - Export
    - Properties

Using the Waveform Control

Some devices, such as the Eaton PowerXpert Meter, can provide Waveform data associated with a power event. This event must be defined as a waveform at the device. Waveform data can be viewed using a linked Waveform object. where each event is presented as a row in a table.

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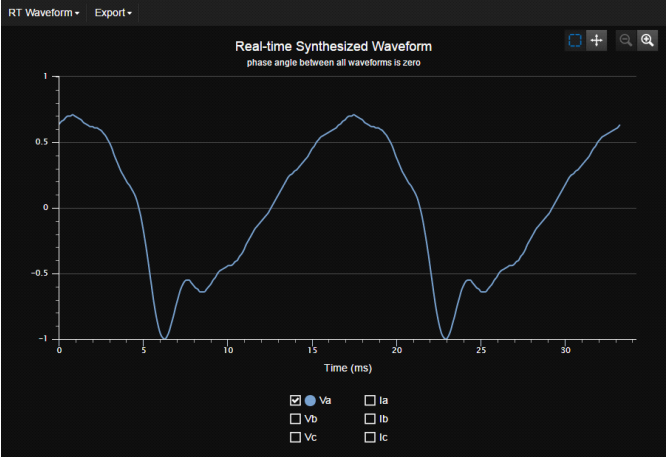
If an event occurs on the device linked to the Waveform object, the event is logged as a single row. Each row specifies:

- 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.

Upon initial navigation, the Waveform Viewer will display waveform records collected by Foreseer within the last 14 days. Using the available controls, you may select from pre-defined look-back periods or a custom time range. If no waveform records were collected within any pre-defined look-back period, the Waveform Viewer will show the most recent waveform record collected (regardless of date).

You can control what events are displayed in the viewer through the viewer toolbar:

Control	Action
	The date list provides a range preset time spans. All these time spans consider the current time as the end time. Custom launches a pair of calendar controls you can use to select a beginning and end date and time.

Refresh	The Refresh button adds any new events that haven't yet been logged to the list.
Capture	The Capture button initiates a manual waveform capture on the device hardware. This functions only if the linked device supports manual, on-demand waveform snapshots.
Real-Time 	The Real-time button launches a real-time display of the waveform data. This functions only if the linked device supports real-time data.
Phasors	The Phasors button launches a phasor display window. This functions only if the linked device supports the appropriate data necessary to render a phasor diagram.

Hookup: Wye A-B-C
Frequency: 60.000Hz
Phasor Rotation: CCW
Angles Increasing: CCW

Phase	Angle V	Angle I	Angle VI	Vn	Amps	kVA	kW	%PF
A	0.00°	0.00°	0.00°	61.00	0.00	0.00	0.00	100.00
B	153.00°	153.00°	0.00°	64.00	39.00	2.50	2.50	100.00
C	260.00°	262.00°	lead 2.00°	74.00	57.00	4.22	4.22	99.94
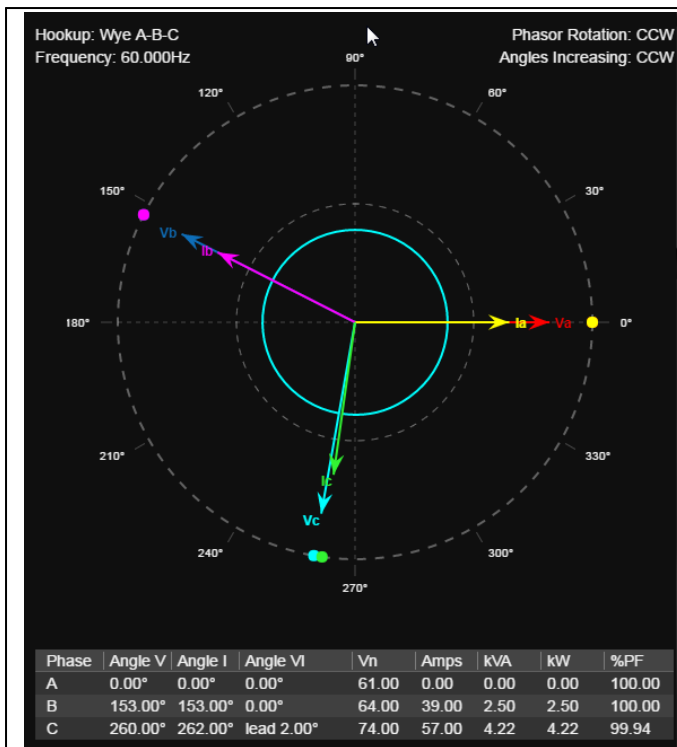
Download All

The Download All button allows provides a convenient way to download the entire history of all COMTRADE waveform files currently stored in the Foreseer server for the linked device (regardless of selected look-back period or date range selected).

The download is provided as a single ZIP compliant archive that can be opened within most operating systems (Windows, macOS), as well as third-party compression/decompression tools.

	This functions only if the linked device and it's virtual interface module supports the ability to retain such files.

Using the Waveform Viewer Pop-out

This section will describe basic functionality for accessing and navigating the Foreseer WebViews Waveform Viewer.

- Zooming and Scrolling
- Customize Plots with the Show Menu
- Export
- Properties
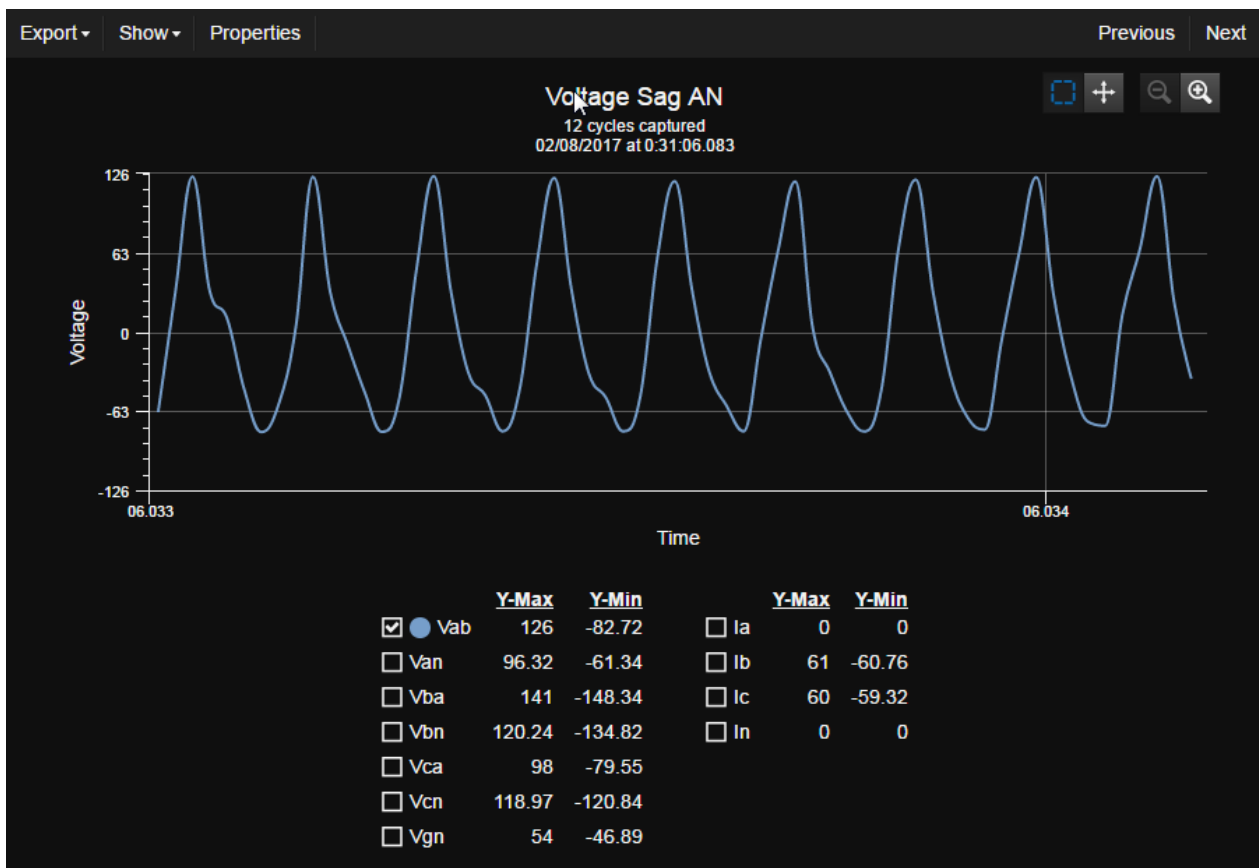
You can launch the waveform viewer pop-out to examine a particular event by clicking its corresponding row in the Waveform object. The viewer plots all of the data points in the captured waveform, and provides check boxes to add or remove plots from various voltage and current channels. Which channels are included is device dependent.

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

Zooming and Scrolling

Control	Action
⬚	Use the Zoom box to define a custom time range by dragging a selection over the plot. Selecting this function disables the Scroll button. Note that the resolution of the data does not update, press the "Refresh Data" button after zooming to update the resolution. This control doesn't work on the Apple iPad or other touch interfaces.
🔍+	Zoom In provides a narrower view of the waveform. Each time you zoom the time range is reduced by a f actor of 2.
🔍-	Zoom Out provides a wider view of the graph. Each time you zoom the time range is expanded by a f actor of 2.
✛	Use Scroll drag the plot forward or backward along the time line. Selecting this function disables the Zoom button.

Export

The WebViews Waveform Viewer provides several export options. These options include the following:

- Trace Data - exports all selected waveform traces to a CSV file.
- Image - exports the current waveform graph view to a PNG image file.
- COMTRADE Config - exports the waveform record's corresponding COMTRADE .CFG file if available.
- COMTRADE Data - exports the waveform record's corresponding COMTRADE .DAT file if available.
- Print - exports the current waveform graphs, legend, and selected traces to your printer.
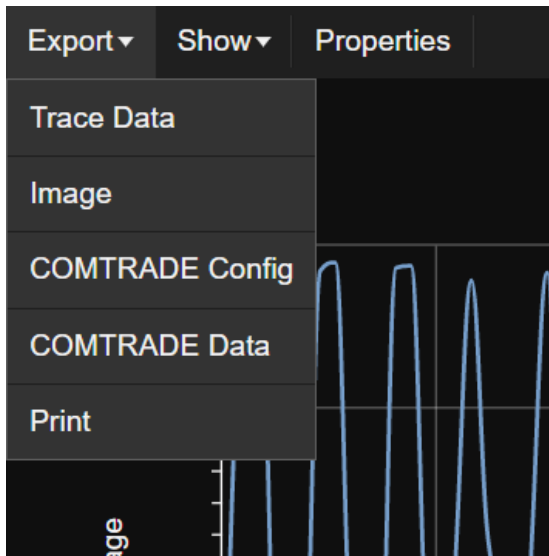
Trace Data

The Trace Data export option will generate a Comma Separated Value (CSV) file representation of all waveform samples shown within the WebViews Waveform Viewer. When you select this option, a file will automatically be downloaded by your browser.

A	B	C	D	E	F	G
11/05/2020 at 15:05:41.302	Van	Vbn	Vcn	Ia	Ib	Ic
41.302	-134.39	-18.97	149.32	290.38	-14.54	-358.68
41.302261	-123.11	-37.72	150.28	273.91	-8.2	-376.15
41.302521	-113.86	-51.61	152.7	249.96	-7.63	-389.7
41.302782	-94.25	-66.61	155.83	218.02	-3.64	-394.26
41.303042	-83.85	-84.91	158.68	187.58	-4.92	-401.03
41.303303	-66.93	-98.32	161.16	159.84	-2.78	-404.53
41.303564	-52.57	-112.87	162.06	128.69	-2.92	-407.95
41.303824	-31.71	-111.94	167.25	94.18	-1.35	-396.33
41.304085	-15.3	-128.33	155.28	60.03	-2.57	-381.71
41.304346	-7.45	-139.39	146.74	35.5	54.11	-363.82
41.304606	6.84	-147.48	137.72	14.97	288.39	-345
41.304867	20.75	-151.95	127.29	6.99	311.2	-320.18
41.305127	32.56	-158.12	116.09	0.93	320.9	-293.81
41.305388	47.72	-163.02	102.05	0.71	332.88	-269.92

Image

The Image export option will generate a Portable Network Graphic (PNG) file representation of the current waveform graph view. When you select this option, a file will be automatically downloaded by your browser.

COMTRADE Config and COMTRADE Data

The COMTRADE Config and Data export options can be used to download a copy of the COMTRADE configuration and data files corresponding to a particular event. These files are referenced by Foreseer to provide a web-friendly rendering of power quality data within WebViews. You can download these files for situations where their data may be needed for offline research and analysis using third-party tools that support the IEEE C37-111 standard.

The structure and contents of these files are determined by the device manufacturer and are simply retained by Foreseer. Most COMTRADE configuration files are human readable. Their contents typically provide information on how to properly render waveform data stored in an associated COMTRADE data file and may even contain data regarding device configuration, line frequency, and other parameters. COMTRADE Data files can be structured in ASCII, Binary, or even XML format. As such, they may not be easy to interpret without a utility capable of decoding and visualizing such information.

> ✓ The COMTRADE Config and COMTRADE Data export options will be disabled if the waveform was generated by the device in a non-COMTRADE format. In addition, if you are viewing a historic waveform capture that was imported prior to a device driver providing support for COMTRADE file retention, these export options will be disabled.

Print

The Print export option will spool a copy of the current waveform graph view to your device's printer. Prior to printing, you will be presented with a Print Preview screen. You can use the Print Preview screen to change the printing destination, layout, and color options. Depending on the printer driver, additional printing options may be available using the *More settings* drop-down.
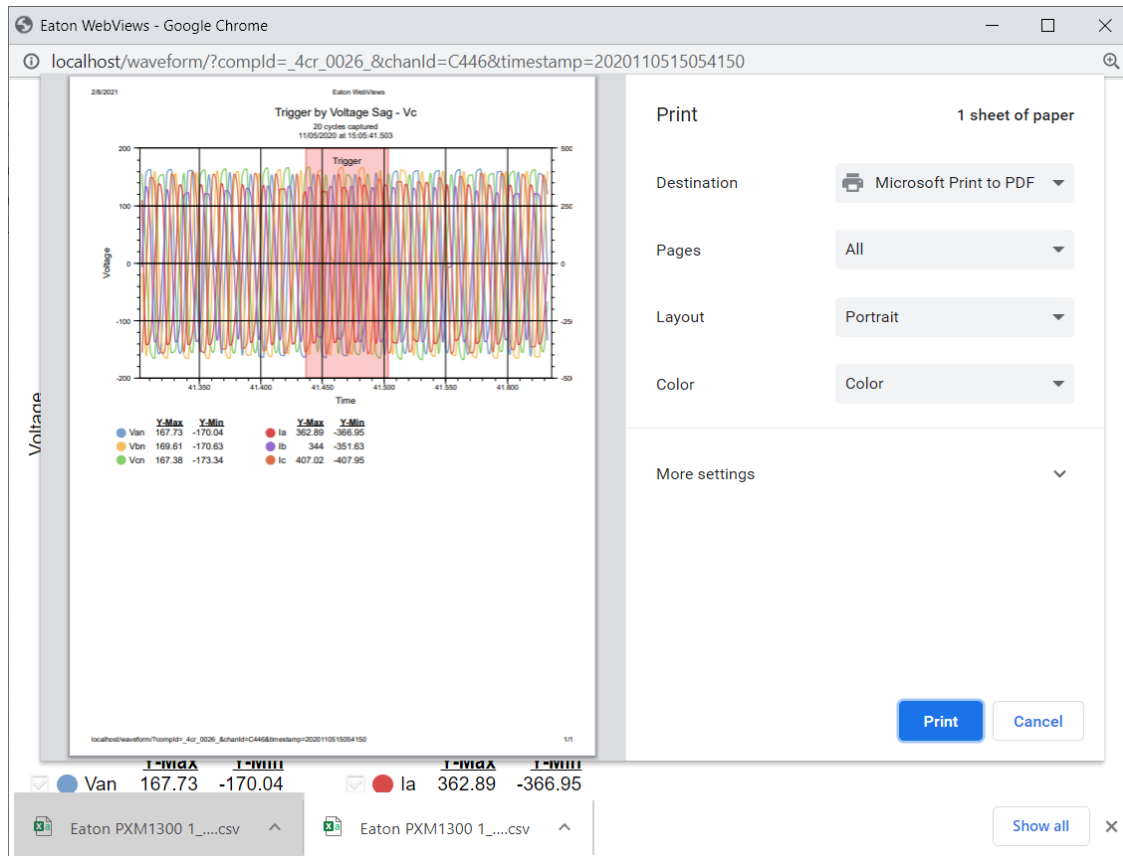

Customizing Plots with the Show Menu

The Show menu commands add or remove the:

- Markers, which highlight each recorded datapoint.
- Cursor, which provides a vertical line that you can use to examine data at each time increment. What you can use the cursor to show is (mostly) a combination of which channels are selected and the options you select in the Cursor fly out menu:
    - o Value X-Y shows the X and Y axis values at the cursor location for either the selected channel in the plot or all channels. The All Channels selection behaves a little differently: instead of showing the X and Y axis values near the cursor, the values are shown in the list of channels below the plot. Moreover, the value at Y-value at the cursor position is shown for all channels, even if they aren't currently displayed in the plot. You can remove the cursor by selecting None.
    - o Peak-Peak places two cursors on the plot, with the value showing the difference

between their positions. Simply position one at the positive peak and the other at the negative peak and the value is the difference between them. If more than one type of units is in the plot, you can select the one to measure through the Peak- Peak fly out.

- o Period shows the time difference between the two cursors.
- o Frequency shows the frequency difference between the two cursors.
- o None removes whatever cursor is active.
- X and Y Grid Lines toggles lines marking major tick marks on the X and Y axes.
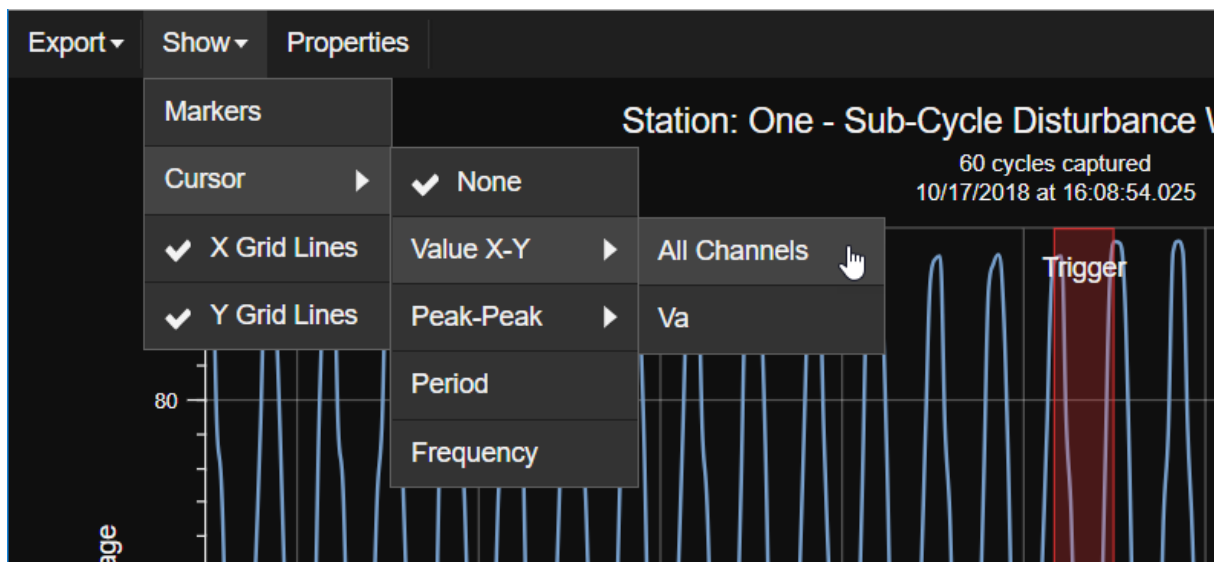
Example Show menu

Properties

Use the Properties menu to fine tune the look-and-feel of a waveform. With it, you can change the colors, fonts, line styles and visibility of the Waveform Viewer, channels, and plots.

Waveform Properties

General Properties

Custom Title: **OFF** ⬤

Title Font: Arial ▾   18px ▾   #F3F3F3 ☐

Background: #0F0F0F ☐

Cursor: Solid ▾   3px ▾   #F33333 ◼

☑ Match Selected Chanel Color (Value X-Y only)

Grid Lines X: ☑ Major   ☐ Minor   #FFFFFF ☐   **ON** ⬤

Grid Lines Y: ☑ Major   ☐ Minor   #FFFFFF ☐   **ON** ⬤

OK   Cancel
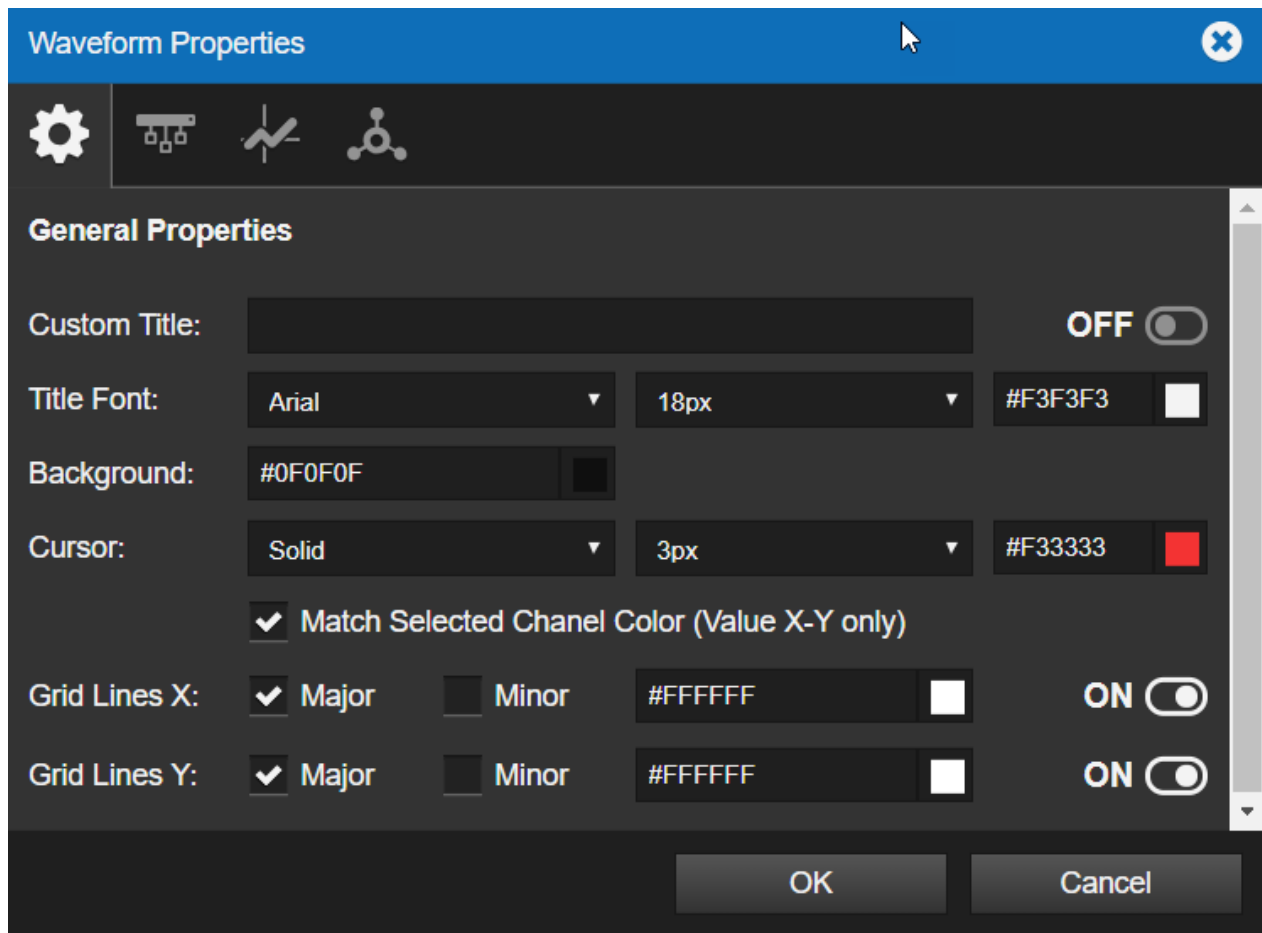
Waveform Properties showing the General Properties options
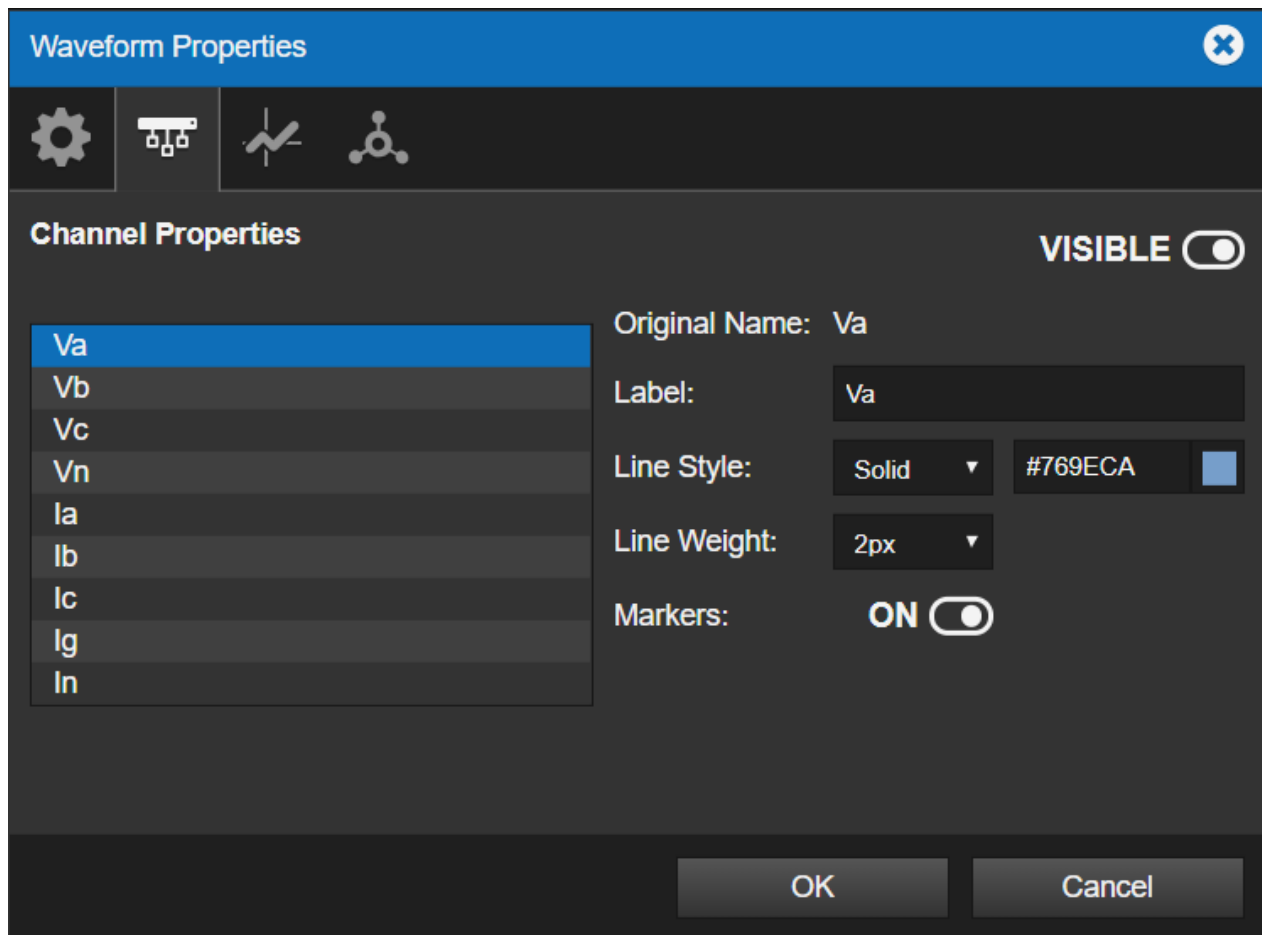
Waveform Properties showing the Channel Properties options

Waveform Properties

Axis Properties

Custom X-Axis Label:			OFF ⬤
X-Axis Label Font:	Arial ▾	14px ▾	#F3F3F3 ▢
Voltage Axis Label:			OFF ⬤
Voltage Axis Font:	Arial ▾	14px ▾	#F3F3F3 ▢
Current Axis Label:			OFF ⬤
Current Axis Font:	Arial ▾	14px ▾	#F3F3F3 ▢

OK   Cancel
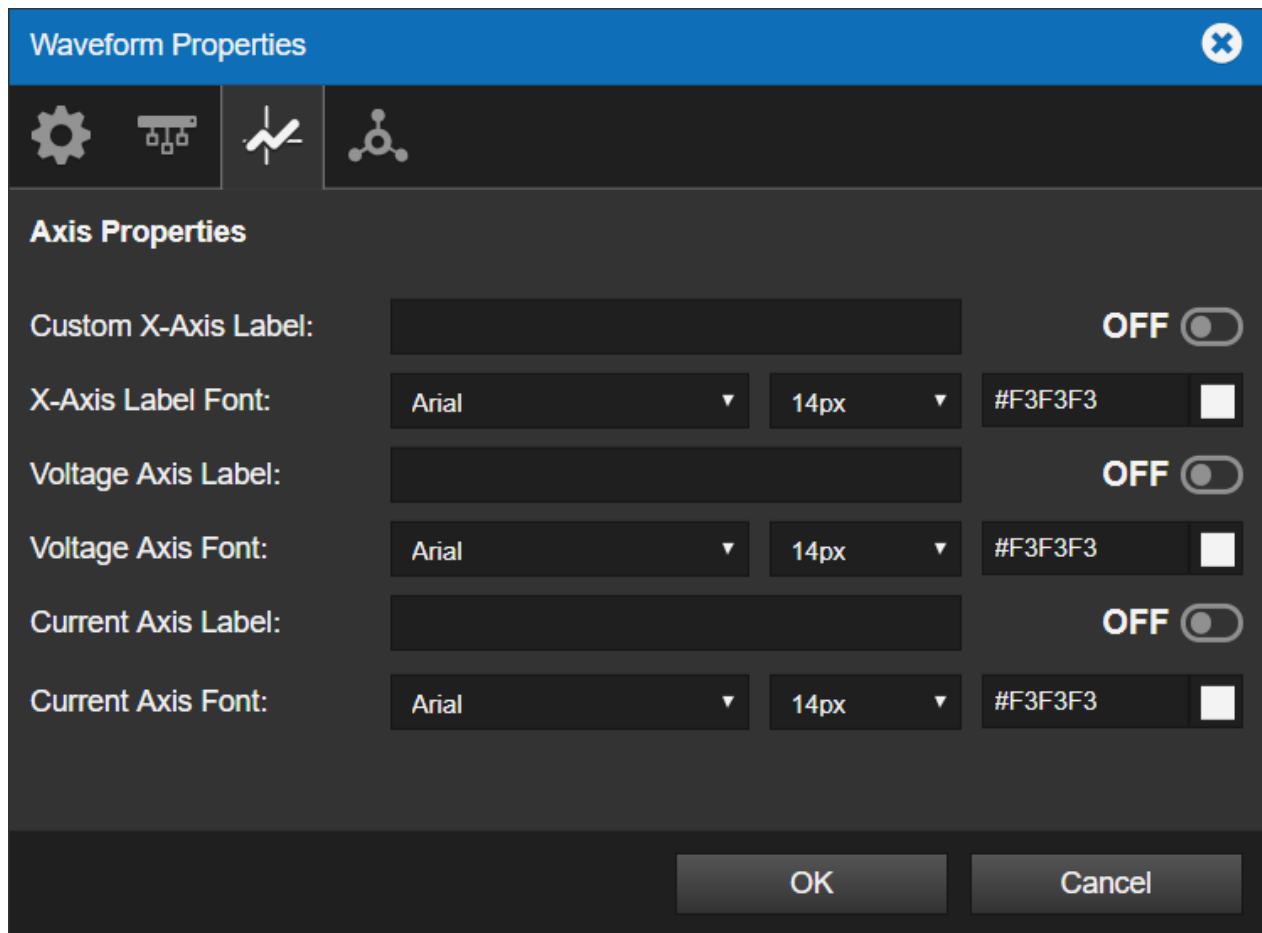
Waveform Properties showing the Axis Properties options
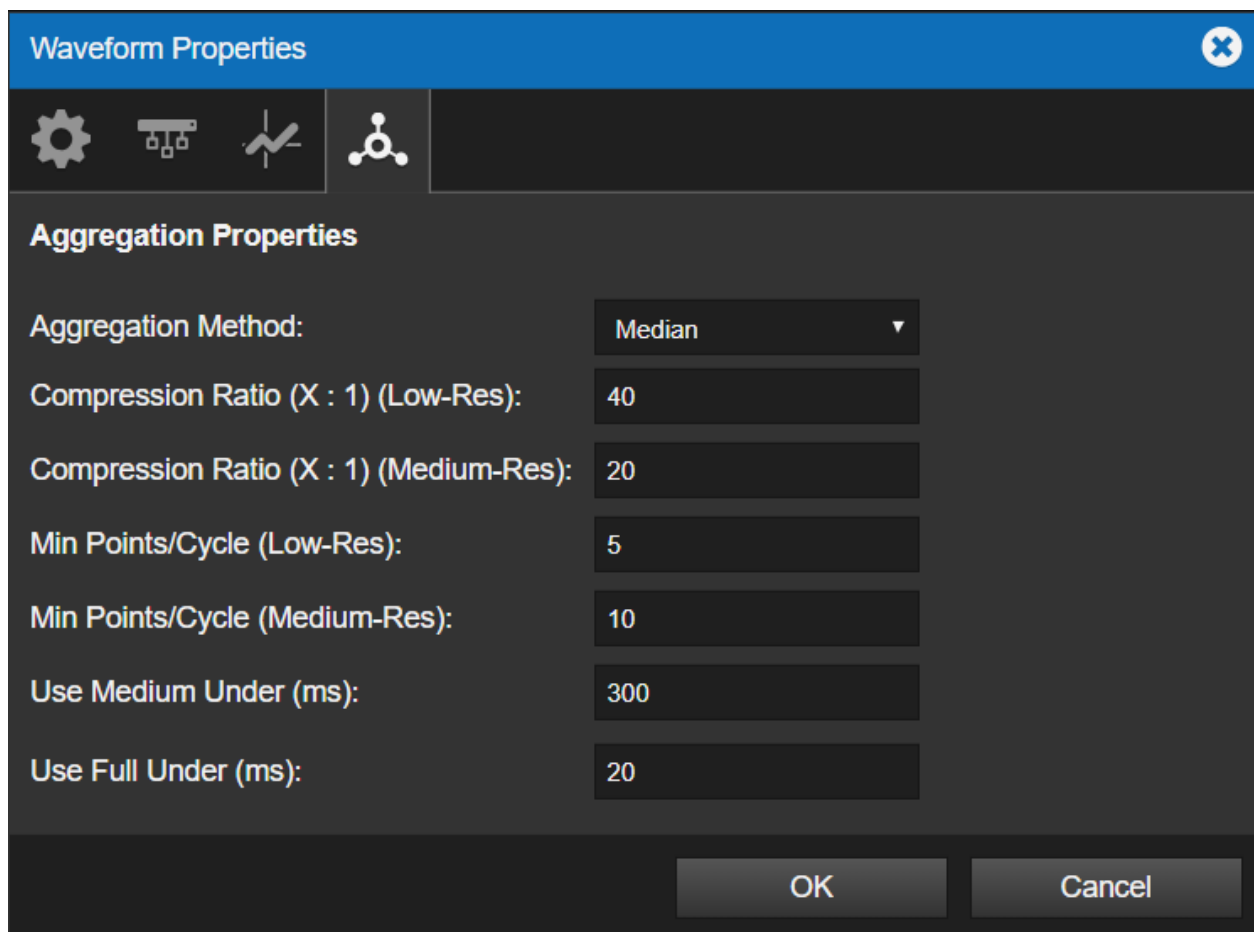
Waveform Properties showing the Waveform Properties options

Understanding Foreseer Alarms

Foreseer has two alarm behaviors:

- Unlatched alarms, which report an alarm only so long as the alarm condition is present.
- Latched alarms, which stay in the alarm state until the alarm is acknowledged by a user.

By default, all alarms in Foreseer are latched except for device communication channels. This requires Foreseer users to acknowledge the alarm and rearm the channel to clear an alarm. It also gives users the ability to enter a note in Foreseer with details about the alarm and what was done. Using latched alarms reduces the chance that your site will miss potential major problems. When alarms are unlatched, they return to a normal state without any human interaction. This makes is possible to miss major problems, especially for short-lived conditions. On the other hand, if you have a large Foreseer system you may find that reacting to multiple, related alarms (which can potentially number in the hundreds or more) can be quite challenging.

However, unlatched alarms provide better data concerning when an alarm condition clears. With unlatched alarms, the time stamp for "return to normal" in the log is the actual time the condition changed in the Foreseer server. Latched alarms only provide the time

that the channel was rearmed as the logged "return to normal" time. So, with a latched alarm you can't tell when the channel value actually returned to normal.
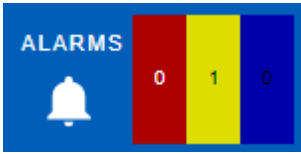
You can both reduce the chances of missing an alarm and get more accurate "return to normal" data if you use the Foreseer Message Manager in conjunction with unlatched alarms. The Message Manager sends alerts to designated personnel about both latched and unlatched alarms.
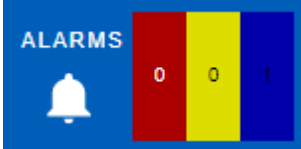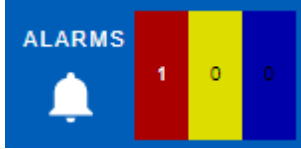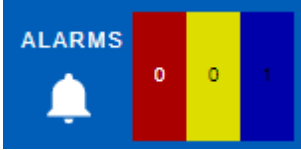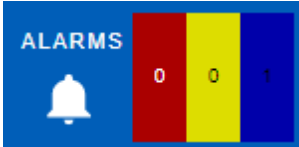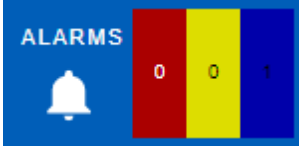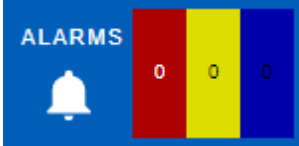
- Latching Example
- Unlatching Example

> ✓ Message Manager requires server-level configuration not available through WebViews. Operators should contact their Foreseer Sever administrator for assistance with Message Manager.

Latching Example
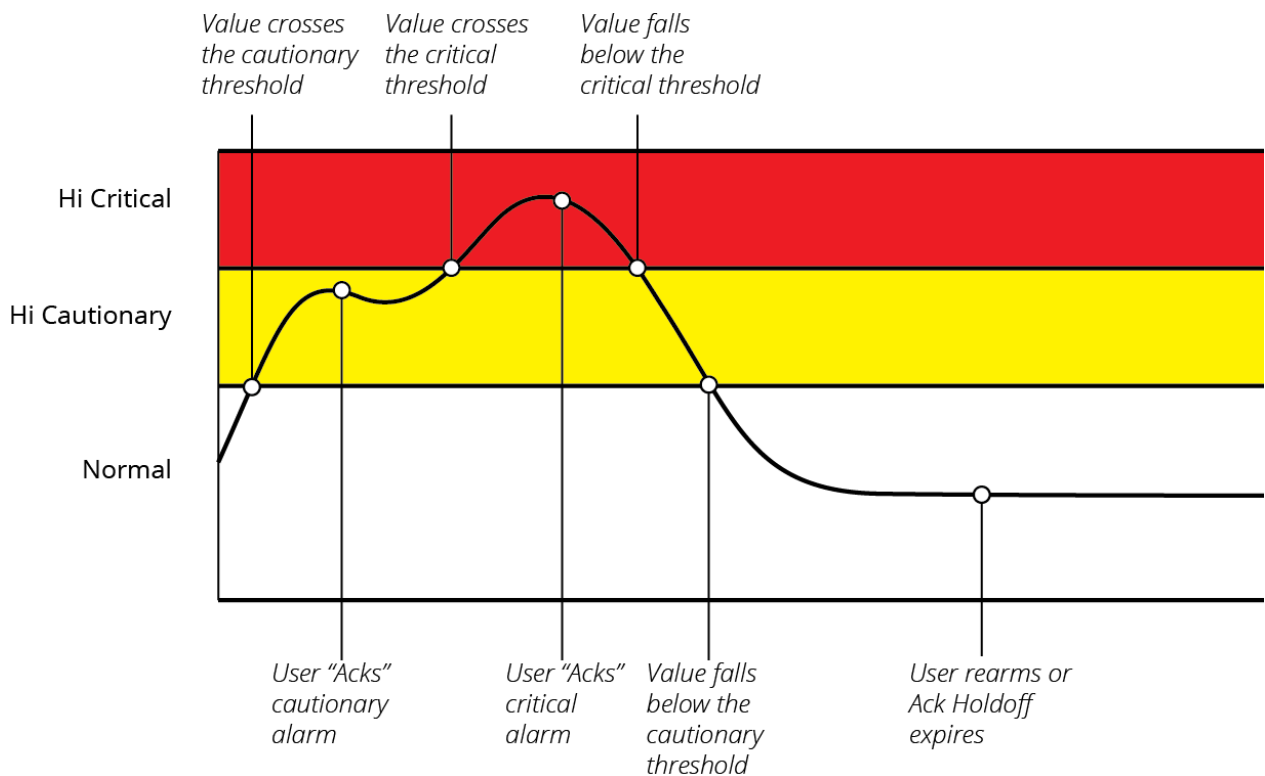
1	The channel value rises above the Hi Cautionary alarm threshold and Foreseer alerts you that an alarm/event	

	has occurred. If you open the Alarms Management window, you'll see a Cautionary alarm (yellow). You'll also see the number for the Cautionary alarm count increment by one. Because the alarm is "latched," even if the value now falls below the Critical threshold it will remain in the Cautionary count.	
2	You acknowledge the alarm. The alarm moves from the Cautionary count (yellow) to acknowledged (blue).	
3	The channel value rises above the Hi Critical alarm threshold and moves to the Critical (red) count. This happens even though the channel wasn't rearmed because higher priority alarms are always declared.	
4	You acknowledge the alarm. The alarm moves from the Critical (red) count to acknowledged (blue).	
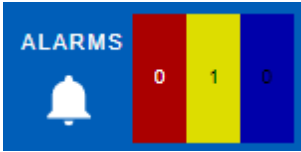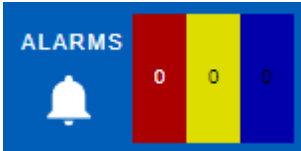
5	The channel value falls below the Critical threshold. The alarm remains in the acknowledged count.	
6	The channel value passes below the Cautionary alarm threshold. The alarm remains in the acknowledged (blue) count.	
7	Either you rearm the channel or the ack holdoff period expires. Because the value is also below the Cautionary alarm level the alarm is removed from the acknowledged (blue) count and no new alarm is declared.	

In the previous scenario, if the channel hadn't been rearmed, it remains in the Acknowledged state until the Ack Holdoff period (which defaults to 60 minutes) runs out. After that the channel is automatically rearmed.

Unlatching Example

Value crosses the cautionary threshold

Value crosses the critical threshold

Value falls below the critical threshold

Hi Critical

Hi Cautionary

Normal

Value falls below the cautionary threshold

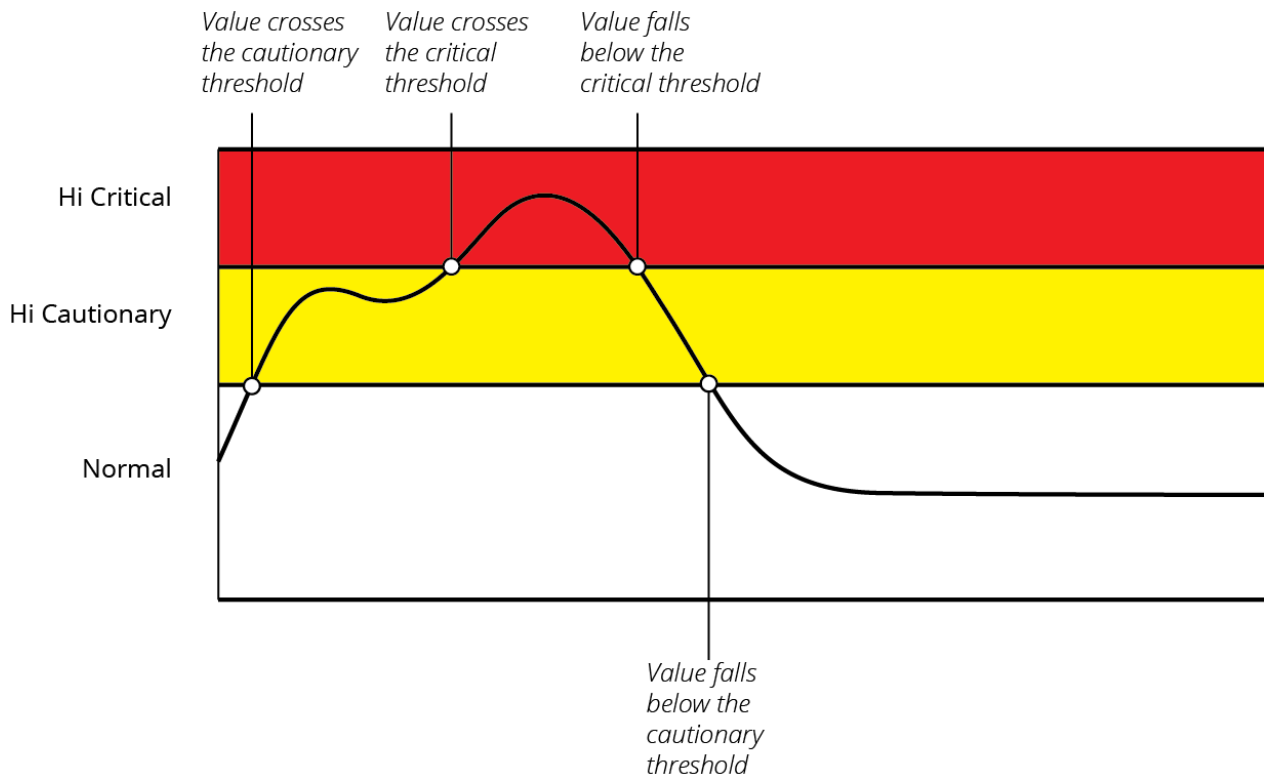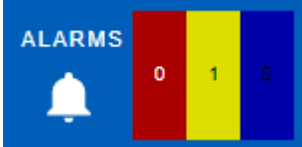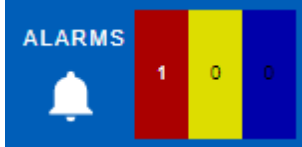| 1	The channel value rises above the Cautionary alarm threshold and Foreseer alerts you that an alarm has occurred. If you open the Alarms Management window, you'll see a Cautionary alarm (yellow). You'll also see the number for the Cautionary alarm count increment by one.	ALARMS 0 1 0
2	The value rises above the Critical alarm threshold and the alarm now shows as red and	ALARMS 1 0 0

	moves to the Critical alarm count.	
3	The value passes below the Critical alarm threshold but remains within the Cautionary (yellow) alarm band. The alarm shows as yellow and moves to the Cautionary (yellow) alarm count.	
4	The value passes below the Cautionary threshold. The alarm is closed and disappears from the alarm count.	

Note that the alarm wasn't acknowledged in the unlatching example but it was still removed when the value dropped below the alarm threshold. There are lots of variations to the scenarios, but the important things to remember are:

- Higher alarms are always declared.
- For unlatching alarms, if the alarm condition disappears the alarm is removed.
- For latching alarms, the alarm conditional won't disappear unless you acknowledge the alarm and either rearm the channel or the ack holdoff period expires.

Configuring Alarm Settings

There are two ways to configure alarm settings:

- From with Foreseer itself, you can access the alarm settings for a channel by double-clicking any channel object linked to it.
- From the WebConfig page, which is discussed in the Web Configuration Administrators Guide.

When you double-click a channel object, the channel properties dialog box appears. Alarm settings are on the Basic and Advanced tabs.

- Basic Alarm Properties
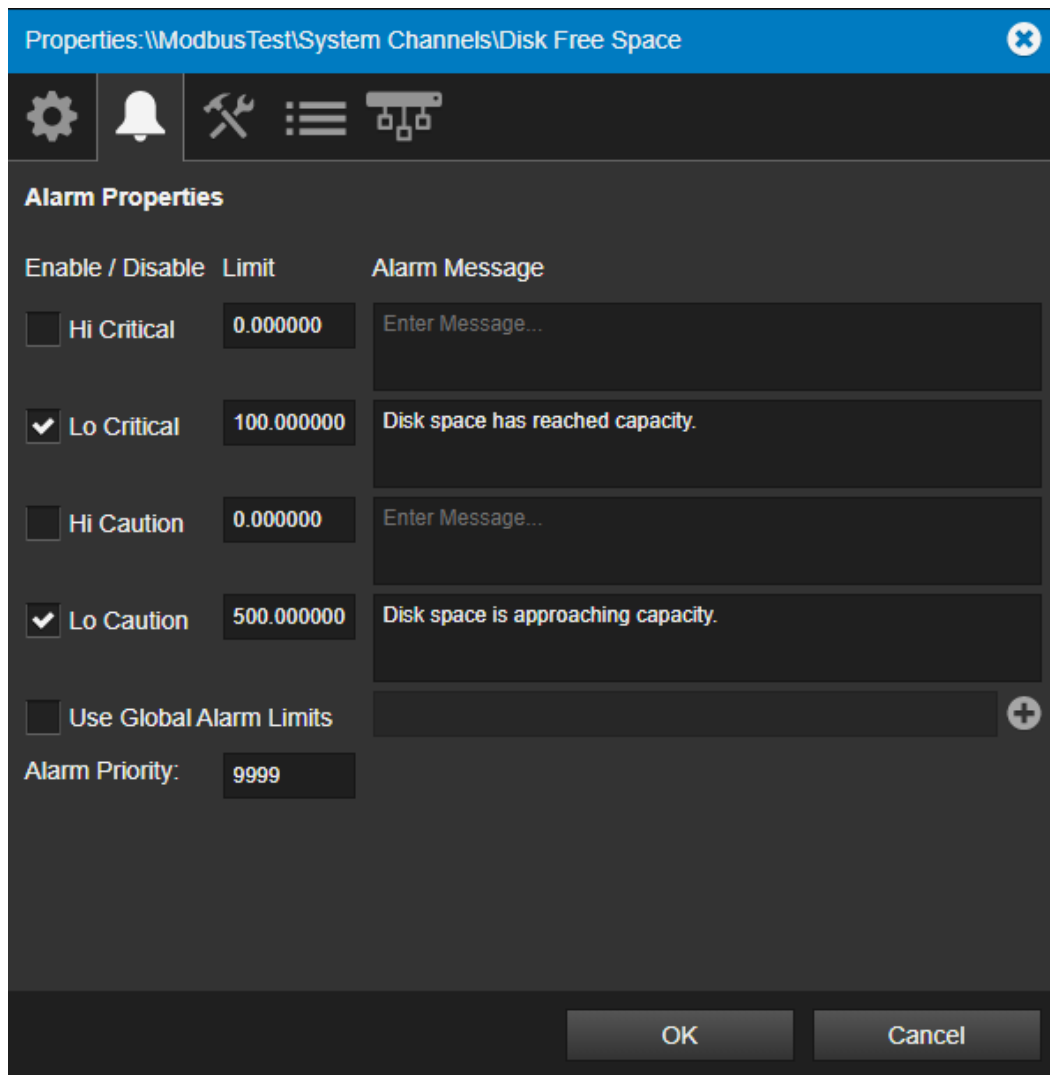- Advanced Alarm Settings

Basic Alarm Properties

Analog Alarm Properties

Foreseer provides both high and low alarms for each analog channel. There are two configurable alarm trigger levels (Limit) for both Hi and Low alarms. Cautionary alarms are color coded yellow and Critical alarms are red in the Foreseer interface. Message defines the text that's shown when that alarm state is declared. Priority is an integer defining an arbitrary level of importance for all alarm states from this channel. Priority can range from 1 (highest) to 9999 (lowest). Keep in mind that you can filter the alarms shown in the Alarm Management Window using Priority.
If you wish to use exactly the same settings as another channel, you can select global alarm limits.

Digital Alarm Properties

When alarms are Enabled, you can specify if the channel should alarm either on "false" or "true." You can also select if the alarm is Critical or Cautionary and the alarm message. The text you enter for Message describes the alarm, and is shown when the alarm is declared. Priority is an integer defining an arbitrary level of importance for all alarm states from this channel. Priority can range from 1 (highest) to 9999 (lowest).
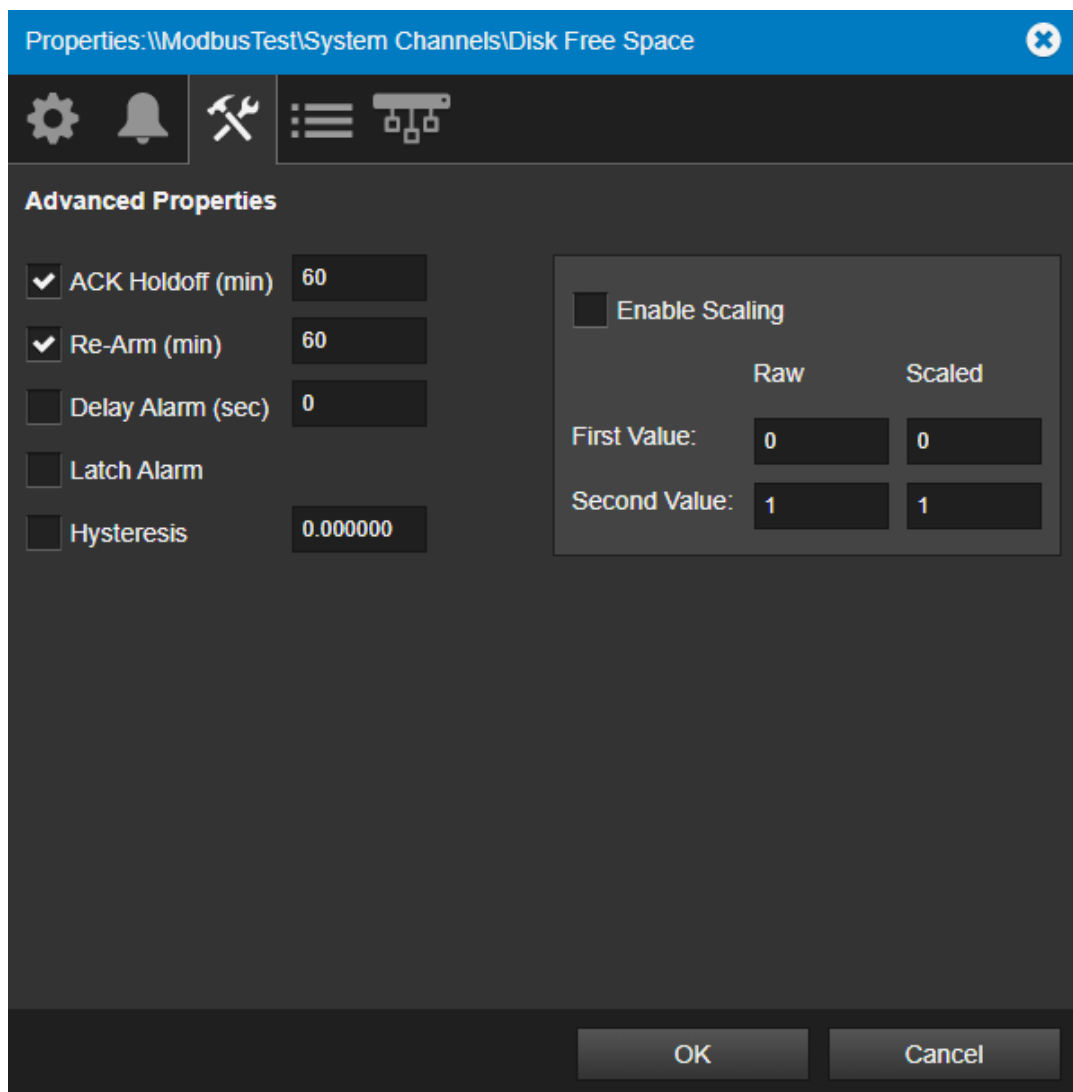
You can set the following on the Basic tab:

- Alarm Limits (trigger values)
- Alarm levels (Cautionary and Critical)
- Alarm Message

> ✓ The Basic tab is different for each channel type.

Advanced Alarm Settings

Advanced settings affect the behavior of alarms.

The following describes each control:

Ack Holdoff (Latched Only)

Ack Holdoff defines the delay interval (in minutes) after the time a latched alarm is acknowledged until it's automatically rearmed. During this period, channel values continue to be displayed and archived; however, the channel's value isn't compared to its defined alarm Limits.

Re-Arm

Re-Arm is the period of time (in minutes) before alarm monitoring is automatically restored from a disarmed channel. Once rearmed, Foreseer resumes testing a channel's current value against its specified alarm Limits.

Delay Alarm

Delay Alarm is the period of time (in seconds) before an alarm is reported. The default for channels is to report alarms immediately. However, for device communications channels

it's set to 30 seconds *and* the alarm behavior is unlatched. This combination provides a sort of "deadband" for digital channels. In this case, if communications comes back before the 30 seconds is up, no alarm is declared. This prevents nuisance alarm trips for occasional communications problems.

Similarly, you can use it to prevent nuisance alarm trips for analog channels such as non-critical voltage channels. For example, in the case of a voltage channel that could be powered by an emergency generator, that generator needs sufficient time to start up, synchronize, and transfer the load. As long as that normal activity happens, voltage will return to acceptable values within just a few seconds and an alarm isn't needed. Setting the delay on such channels to a long enough value, such as 45 seconds, will prevent nuisance alarms when things are operating as they should. If, however, that sequence doesn't happen then a valid alarm will be reported as soon as the delay period expires.

Latch Alarm

Latched and unlatched sets the behavior of alarms for the channel. For unlatched, when the alarm condition goes away, the alarm notification automatically disappears. When latched, the channel's highest alarm state is reported regardless of its current value. For a detailed discussion of these behaviors, see [Understanding Foreseer Alarms](#).

Hysteresis (Analog Channels Only)

Hysteresis determines the threshold value beyond the alarm limit before a new alarm is reported for an analog channel. Hysteresis is used to eliminate nuisance alarms when the channel's input fluctuates near an alarm limit setting. Once an alarm occurs, the input level must drop below, or rise above, the threshold value then exceed the alarm limit again before a new alarm is reported.

> ✅ This attribute is only works for unlatched alarms.

Responding to Alarms

This section will describe basic functionality for accessing and navigating Foreseer Alarms.

- Alarm Reporting
- Alarm Management Window
    - Acknowledging an Alarm
    - Adding a Note
    - Rearming a Channel
- Managing an Alarm Through the Details Window
- Filtering and Sorting Alarms
    - Using Quick Filters from the Menu
    - Sorting Alarms
    - Using the Alarm Toolbar

- o Search Tool
- o Filter Tool
- o Show / Hide Columns
- o Audible Notification Control
- Working with Alarm User Profiles
  - o Saving an Alarm Profile
  - o Loading an Alarm Profile
- Exporting Alarms to CSV

Alarm Reporting

When Foreseer detects an alarm condition it's added to the current alarm count (shown in the upper right corner of the browser display). The Alarm counts show active alarms divided into Critical (red), Cautionary (yellow) and Acknowledged (blue) totals. This lets you address multiple alarm conditions while reducing the possibility that serious problems will go undetected.

Current Alarm Count

Channel icons change color based on their particular properties settings. The default channel settings employ a "traffic light" color scheme to indicate the following conditions:

- Green: no error has been detected, data is being acquired, and the channel is operating and within its user-defined alarm limits. This is the "normal" state.
- Yellow: the channel value has exceeded either a Hi or Lo Caution alarm setting.
- Red: the channel value has exceeded a Hi or Lo Critical alarm setting.

Additional colors indicate other status conditions:

- Blue: the alarm was acknowledged.
- Gray: Foreseer lost communication with the Device.
- Cyan: alarm monitoring for the channel, or device, was manually disarmed.
- Purple: the channel, or device, was manually disabled.

Because folders are "nested," the status of their channels is propagated up through the folder structure. If a Critical alarm is detected on a deeply nested WebViews page, all of the

folders in the path leading to the page become red to show the Critical alarm. The alarm color "bubbles up" through the folder objects all the way to the top level WebViews page. By default, an alarm is latched and continues to show until a user acknowledges the alarm and the
channel is rearmed (either by user action or if the Ack Holdoff period expires).

Alarm Management Window

You can launch the Alarm Management window by clicking the Alarms link next to the alarm count on any WebViews page.

Alarm Link

The Alarm Management window provides summary information on all currently reported alarms. The State Indicator (color bar) at the left reflects the highest reported alarm state. You can sort and filter the alarm list by State, Server, Device, Channel, Priority, Date/Time, Alarm Value, Current Value, Device Type, Location, and Alarm Group.

State	Server	Device	Channel	Priority	Date/Time	Alarm Value	Curren...	Device Type	Location	Alarm Gr...
■	Local	US-PA-PIT-LOC12...	M_Current Phase C	9999	12-09-2019 13:03...	0.00	0.0000	NONE	NONE	NONE
■	Local	US-PA-PIT-LOC12...	M_Current Phase B	9999	12-09-2019 13:03...	0.00	0.0000	NONE	NONE	NONE
■	Local	US-PA-PIT-LOC12...	M_Current Phase A	9999	12-09-2019 13:02...	0.00	0.0000	NONE	NONE	NONE

Alarm Management Window

- Acknowledging an Alarm
- Adding a Note
- Rearming a Channel
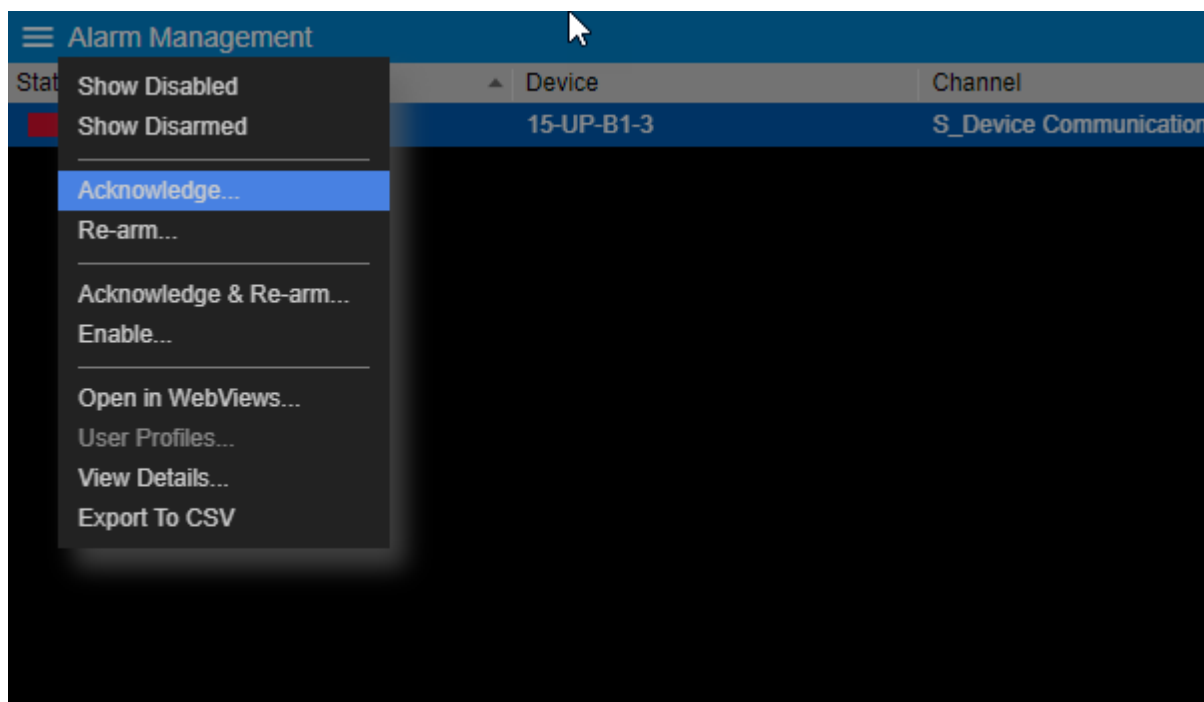
Acknowledging an Alarm

To acknowledge an alarm:

1. Click the Alarm link to display the Alarm Management window.
2. Locate the Channel in the alarm list and click it.

3. From the Menu, choose either Acknowledge or Ack & Rearm (which also allows Foreseer to monitor the channel for new alarms). Ack & Rearm acknowledges the alarm and rearms the channel. Rearm forces the channel to Normal (clears the alarm condition). If the channel is still in alarm, it will return as a new alarm.

Acknowledging an alarm causes Foreseer to:

- Stop declaring this as an active alarm unless the value rises to the next alarm threshold (for example, from cautionary to critical). This suspension is maintained until the channel is rearmed or the Ack Holdoff period (one hour by default) expires or the channel. However, the channel's value continues to be calculated and archived.
- Add the acknowledgment to the Alarm Log for a completed alarm (one that has transitioned back to Normal). The entry includes the time and date it was entered, as well as any associated Notes.
- Subtract the alarm from the Cautionary or Critical alarm count and add it to the Acknowledged total.

An acknowledged alarm will stop Message Management from escalating a notification (if there are delayed entries).
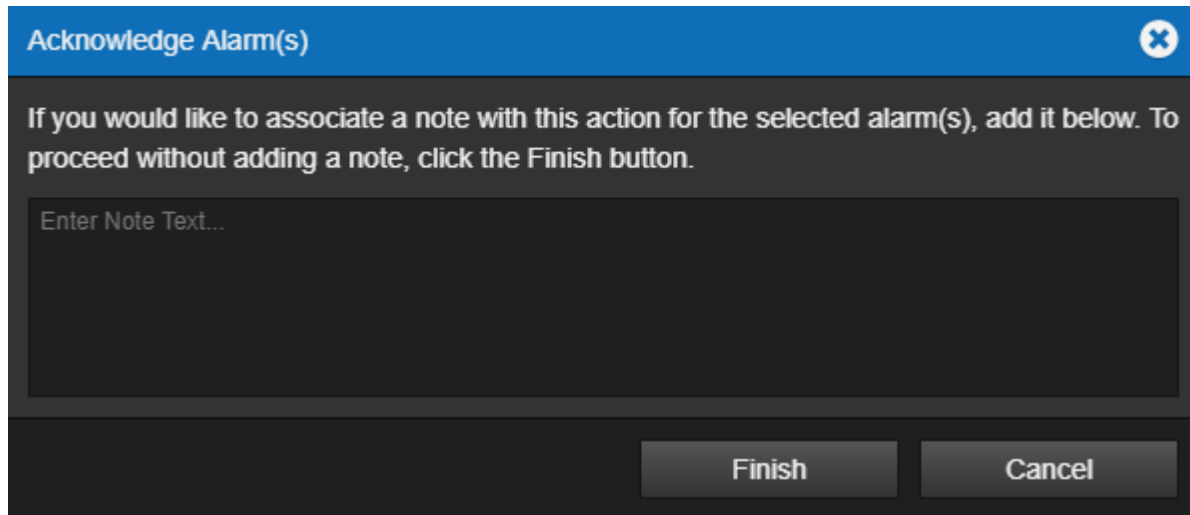

> ✓ Acknowledging applies to latched alarms. Non-latched alarms return to their normal state automatically after the alarm condition is gone.

Adding a Note

When you respond to an alarm either through the Actions list or Alarm Details, you'll be

prompted to add a note. A Note is a 256 character comment about the alarm and any actions taken. Notes are stored in the database and can be reviewed through the Notes Report. Foreseer automatically logs the following information about the alarm as part of a note:

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

Rearming a Channel

After a channel in alarm is acknowledged, Foreseer won't declare new alarms on that channel until the channel is either rearmed or the Ack Holdoff interval (an hour by default) expires. To rearm a channel:

1. Click the Alarm link to display the Alarm Management window.
2. Locate the Channel in the alarm list and click it. You can select multiple channels using Shift-click or Ctrl-click.
3. From the Menu, choose Re-arm.
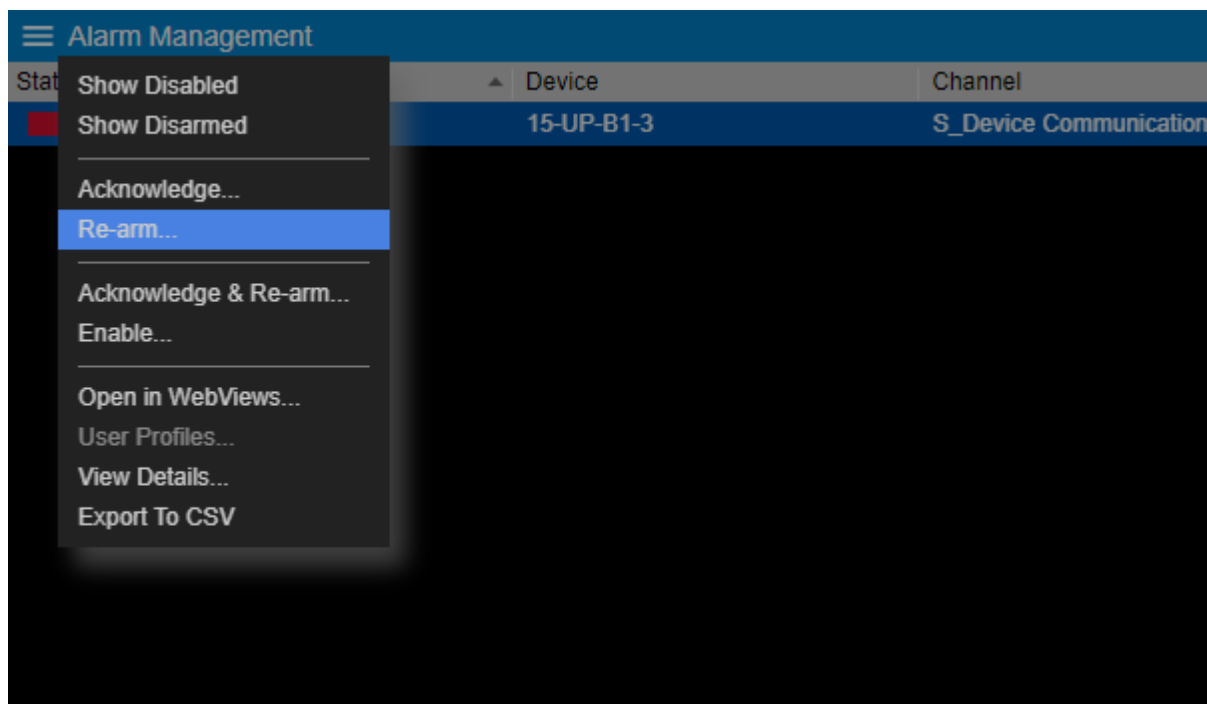
Managing an Alarm Through the Details Window

The Details window is a one-stop utility for managing a single alarm. To use it, select a single alarm in the Alarm Management Window and then click the Details button. Aside from providing an overview of an alarm, you can acknowledge, rearm, and Ack & rearm. If you have disabled the channel, you can also enable it from here. There's also a Notes field.

Filtering and Sorting Alarms

The Alarm Management window provides advanced filter and sort capabilities – allowing you to customize your experience for reviewing alarms and events generated by Foreseer.

Data columns include fine-grained filtering capabilities you can use to hone in on just the alarms you wish to see. This can be useful if a major incident occurred in your power system that triggered multiple alarms on multiple devices.

With Alarm Filters, you can exclude or include alarms nearly all categories listed within the Alarm Management interface.

Any customization you make can be saved to one or many alarm user profile definitions stored on the server. As you make changes or create new filters, you can save these definitions as additional profiles that can be loaded at a later date.

- Using Quick Filters from the Menu
- Sorting Alarms

- Using the Alarm Toolbar
- Search Tool
- Filter Tool
- Show / Hide Columns
- Audible Notification Control

Using Quick Filters from the Menu

Show and Hide Disarmed or Disabled channels provides some of the most commonly used "filters" which you can use to limit what's shown in the Alarm Management window.
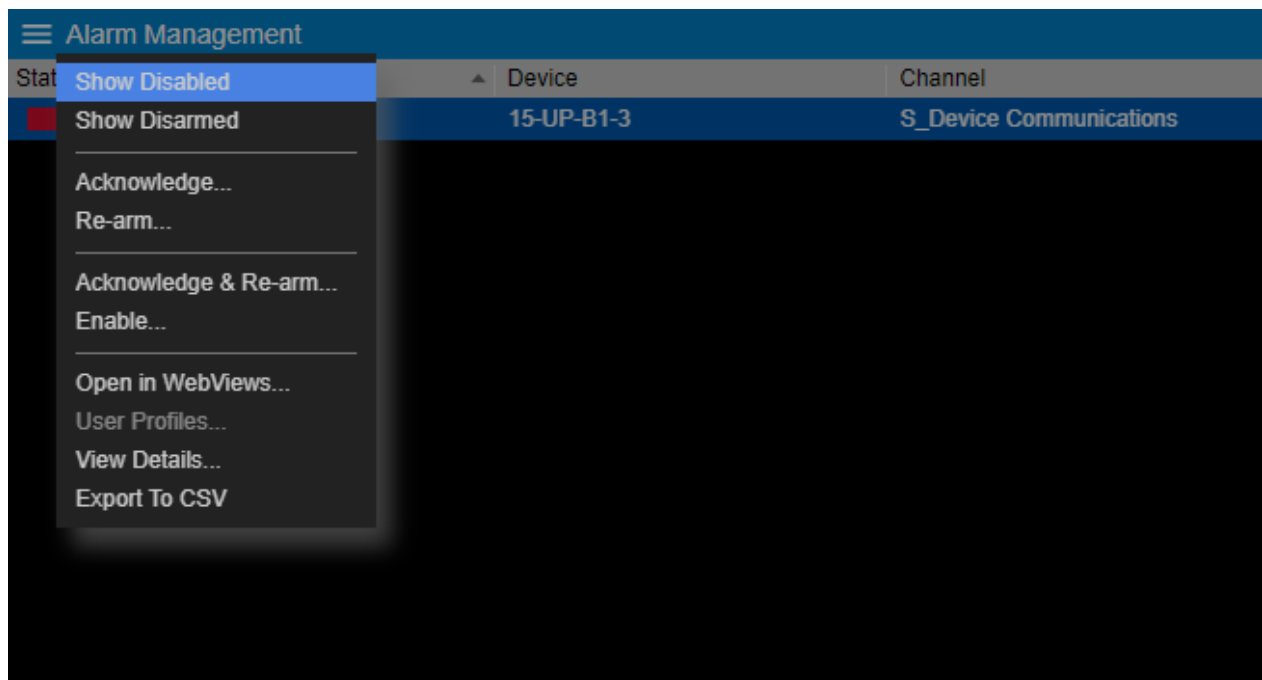
Sorting Alarms

Sorting the data in each alarm column is supported. To sort a particular data column, single-click the row header. Clicking the column header will result in either an ascending or descending sort of alarms listed in the Alarm Management window.

Each click will result in an arrow being displayed to the right of the data column label indicating the direction that the data is sorted.

Using the Alarm Toolbar

The Alarm Management interface includes a filtering toolbar.   Each option provides you with the ability to filter and sort alarms in an easy to navigate method. This toolbar enables the following capabilities:

 Search – Enables an easy to use Search feature with previous/next buttons.

 Filter – Enables Alarm Management column-based filters.

 Show / Hide Columns – Enables the ability to show or hide certain columns.

 Audible Notification Toggle – Used to silence an active audible alarm notification.

Each advanced feature is discussed in further detail.

Search Tool

The Search icon, when clicked, will enable a Search Bar within the title bar of the Alarm Management interface.

Using the Search bar, you can search for a particular string from a specific column. Click on the data column header that you wish to search. Then, click the Search icon and enter the criteria you wish to search by.

When multiple hits occur, the Previous and Next buttons can be used to cycle through multiple hits.

> ✓ An asterisk can be used to help "wild-card" searches through long lists.

Filter Tool

The Filter icon, when clicked, will enable individual filters over most of the columns of data presented in the Alarm Management window. Unless a Foreseer system administrator has prepared a default filter for you to use upon login, all columns will be displayed in an unfiltered manner, and the filter icon will be gray to indicate as such. When filtering capabilities are active, the icon will indicate a solid white color.


To enable the Filter, simply click its corresponding icon. This will transition the icon from gray to white and present a filtering icon for each respective data column. With the exception of the Alarm Value and Current Value column, all columns are eligible to be filtered.

State	Server	Device	Channel	Priority	Date/Time	Alarm Value	Current Val...
🟥	Local	US-PA-PIT-LOC121-PM1	M_Current Phase C	9999	12-09-2019 13:03:04	0.00	0.0000
🟥	Local	US-PA-PIT-LOC121-PM1	M_Current Phase B	9999	12-09-2019 13:03:09	0.00	0.0000
🟥	Local	US-PA-PIT-LOC121-PM1	M_Current Phase A	9999	12-09-2019 13:02:15	0.00	0.0000

To filter the data of a specific column, simply click the Filter icon associated with the desired column. Selecting the data column's corresponding Filter icon will present you with its filter setup.

By default, all items from a column will be checked (enabled) within the filter. You can click the (Select all) box to de-select all items in the list. Then, click the item(s) of interest. You can also type to search through the list to find one or many items using the supplied text box.

When finished, click anywhere outside of the filter setup to return to the Alarm Management window. A column with an active filter in place will show its respective filter icon in a black color.
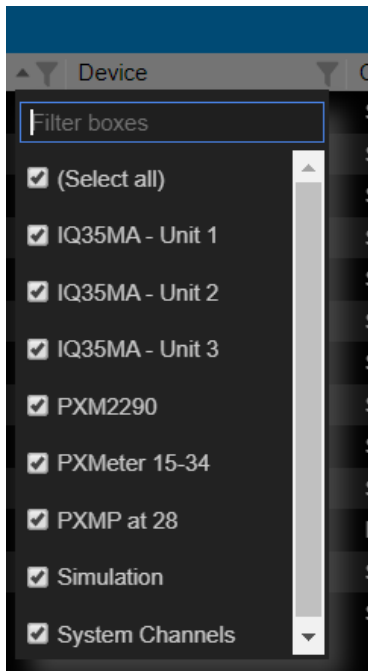
Show / Hide Columns

The Show/Hide Columns icon is used to control the visibility of certain data columns displayed in the Alarm Management window.

Data columns that can be controlled through the Show / Hide Columns feature include:
- Priority
- Date/Time
- Alarm Value
- Current Value
- Device Type
- Location
- Alarm Group

Simply click the Show/Hide Columns icon to open its editors. From the toolbar, you will be presented with a series of check boxes corresponding to each data column. By default, all columns are displayed (checked). To hide a particular column, remove the check from the data column's corresponding checkbox.
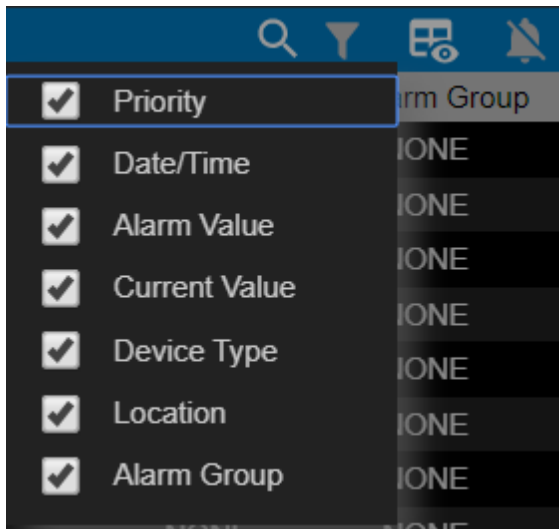
Audible Notification Control

The Audible Notification Control can be used to control active sounds generated by Foreseer when a new alarm is reported into the system.

When the icon is white (active), alarms delivered to the Alarm Management window will result in an audible notification played through your web browser.

To suppress an active audible notifications while working in the Alarm Management window, click the icon. The icon should turn to a gray color indicating that an active audible notification has been disabled. This will silence the audible notification for your active user session.

Silencing the audible notification can only be done from the Alarm Management window in the same browser as the notification plays within.

> ✓ An active audible notification will be suppressed until a new alarm is delivered to Foreseer's Alarm Management window.

Working with Alarm User Profiles

The Alarm Management window allows system administrators and users to create and maintain profiles that contain pre-defined alarm filter configurations.   A standard user can manage their own profile, whereas system administrators can manage profiles system-wide for themselves and other users.

To access the user profile manager, select User Profiles from the Alarm Management window's menu.
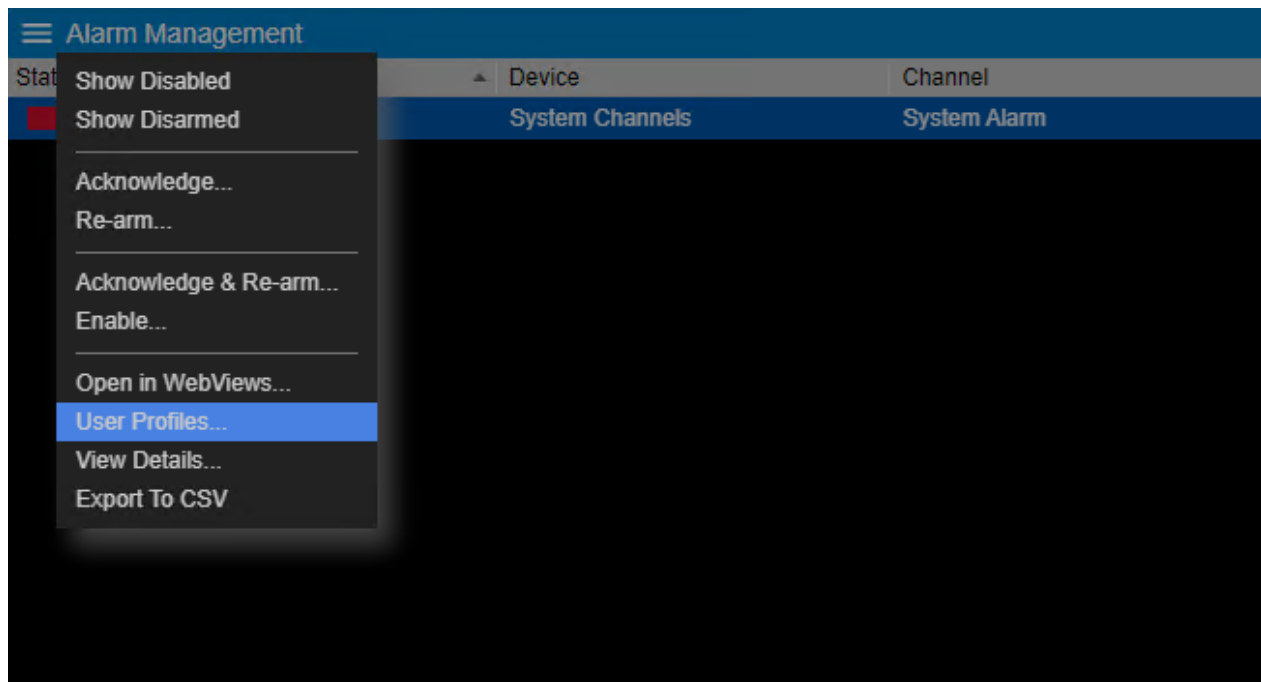
The User Profiles dialog provides the following control options:

- User – used to select any Foreseer system user that has saved one or more user profiles. By default, system administrators will be presented with their own user profile list. To change from one user to another, click the drop-down menu and select the appropriate user.
- Profile List – used to select a specific profile from a list of previously saved profiles. A profile marked with a check-mark icon indicates the default profile. A default profile is the profile configuration loaded each time you login to the system.
- Profile Name – used to assign/enter a name for a user profile.
- Set as Default – used to set a particular user profile as the default.
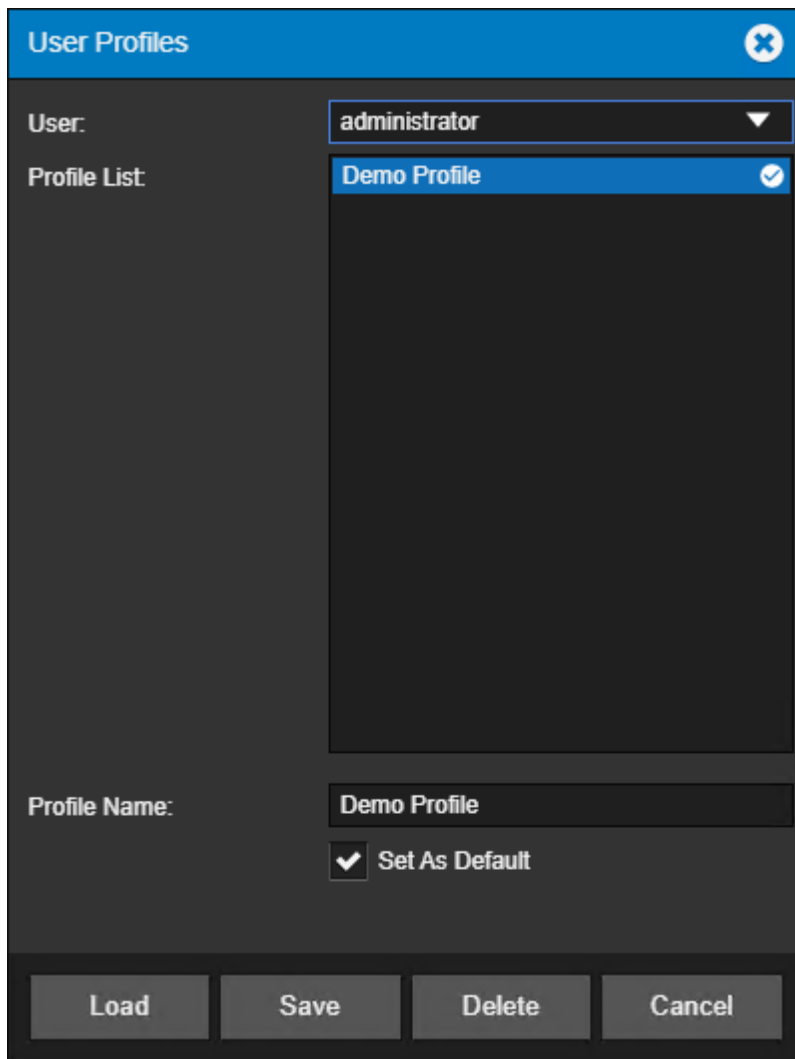
The User Profiles dialog contains four buttons. These four buttons control the behavior of intended actions.

- Load – used to load a user profile selected from Profile List.
- Save – used to save a new or updated user profile.
- Delete – used to delete a user profile selected from the Profile List.
- Cancel – used to exit the User Profile screen without saving any changes.
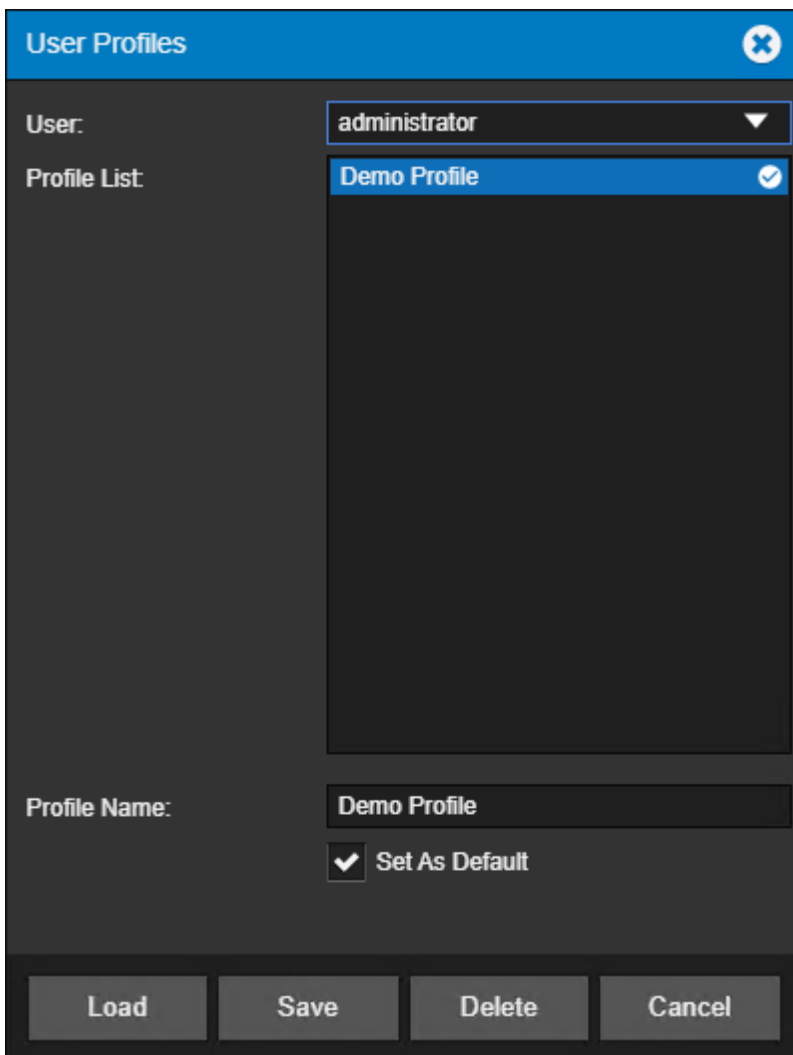
Saving an Alarm Profile

You can save any filter configuration to a file, which can then reload whenever you wish. The files are saved onto the server based on your user account.

Administrative users of the Foreseer system that have appropriate group access can also view and manage alarm profiles for regular system users.
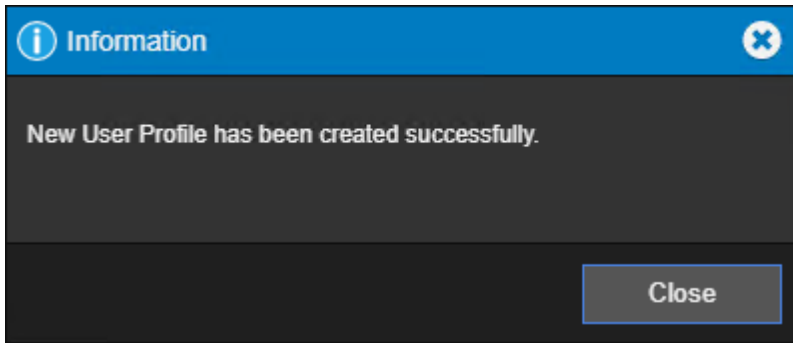
1. From the Alarm Management window, click the Menu icon and select User Profiles.
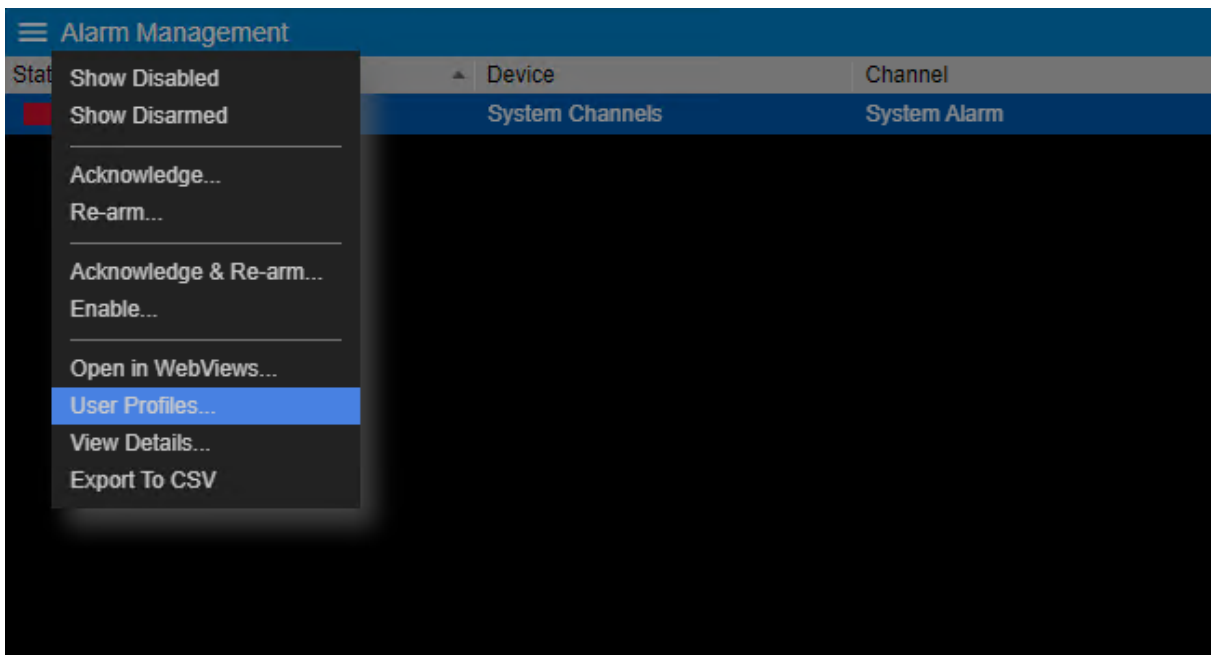
2. The User Profiles dialog will appear. Enter an appropriate name into the Profile Name text box. If you would like to set the filter configuration as the default view each time you open the Alarm Management window, check the Set As Default option.

3. Click the Save button. An informational message should appear confirming that your new user profile has been created successfully.
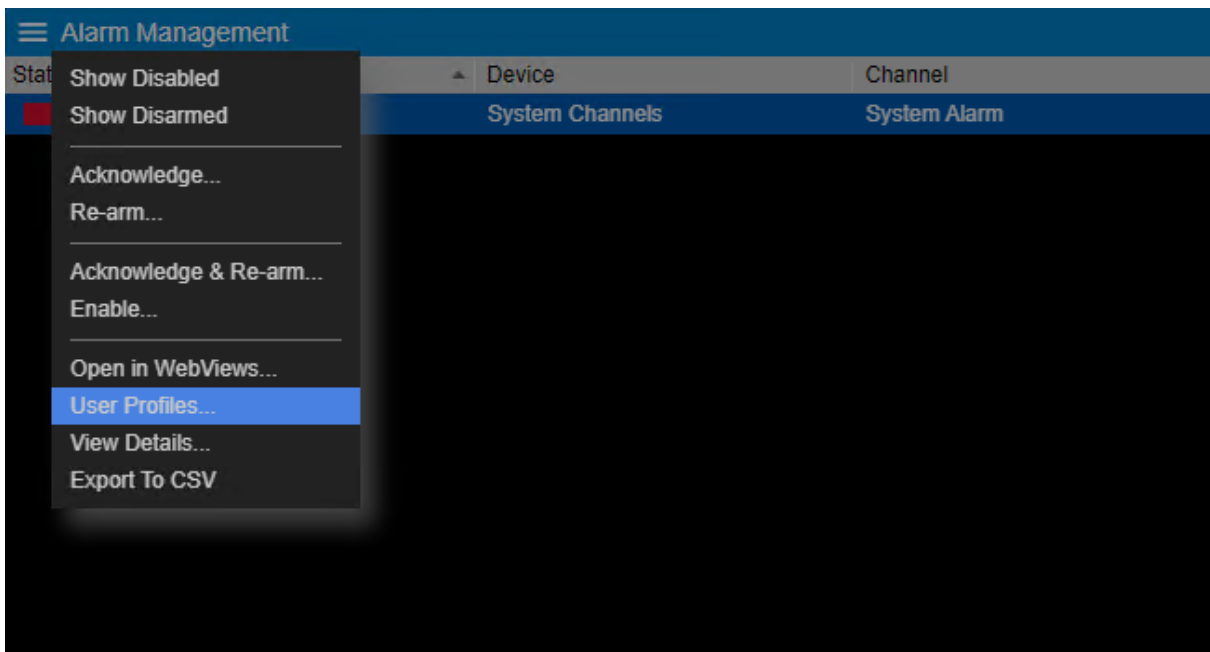

4. Repeat the above process for each unique alarm filter configuration you wish to save.

Loading an Alarm Profile

You can load any filter configuration saved under your user profile when using the Alarm Management window. To load an alarm user profile, perform the following:

1. From the Alarm Management window, click the Menu icon and select User Profiles.


2. The User Profiles dialog will appear. From the list, select the profile you wish to load into the Alarm Management window.   Then, click the Load button.
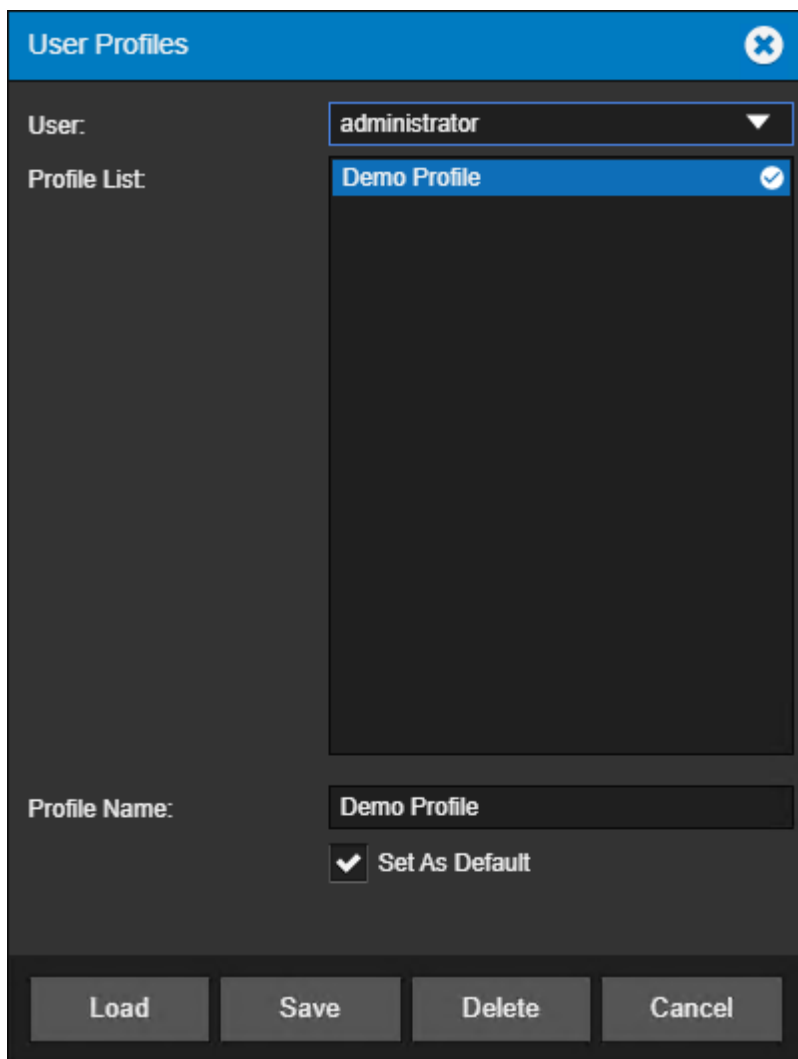
Exporting Alarms to CSV

During the normal course of system usage, it may become necessary to generate and export information regarding alarms presently active in the system. To facilitate a direct approach to do so, the Alarm Management window provides users with the ability to export the current Alarm Management window view to a comma separate value (CSV) file.

To export the Alarm Management window and its current contents, access the Menu icon and select *Export To CSV*.
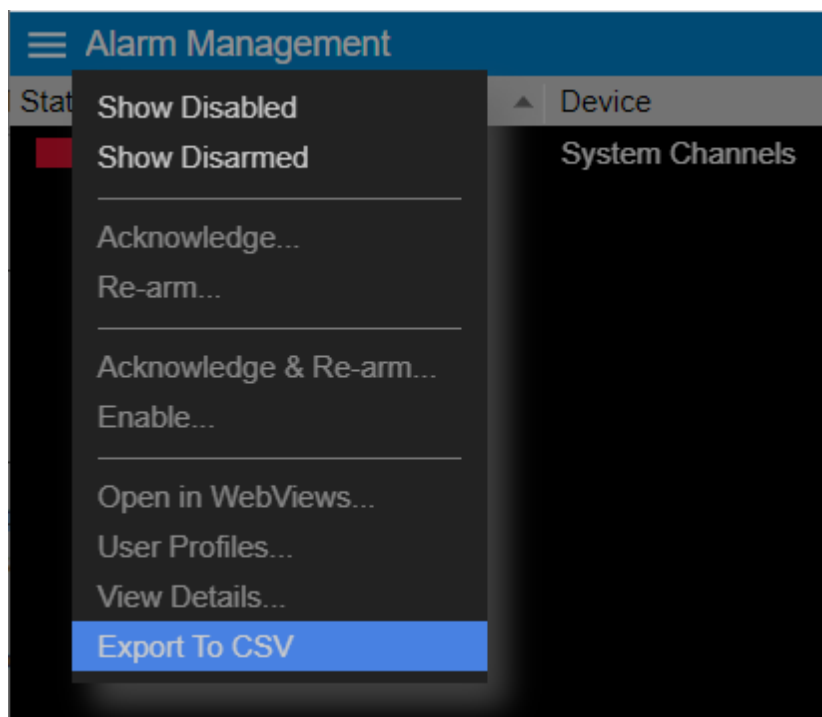
A CSV file containing all of the contents of the Alarm Management window will be automatically downloaded to your machine by your web browser.

The name of the file will be in a format that includes the current date and time. For example, performing an export on December 4, 2020 at 9:21:07 will result in a file named *Alarm_Mgt_Export_12-4-2020_9-21-7.csv*.

You can open the .CSV file with most text or spreadsheet viewing software products.

Using WebViews Reports

WebViews Reports furnish important insights into system performance. 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.

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

- Generating Reports
- Setting up a Custom Report
- Exporting Report Data

Foreseer Reports provide information about Foreseer system status; however, there is an add-on reporting system for Foreseer that 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.

Generating Reports

Click on the Reports link on any WebViews page to display the Reports window.
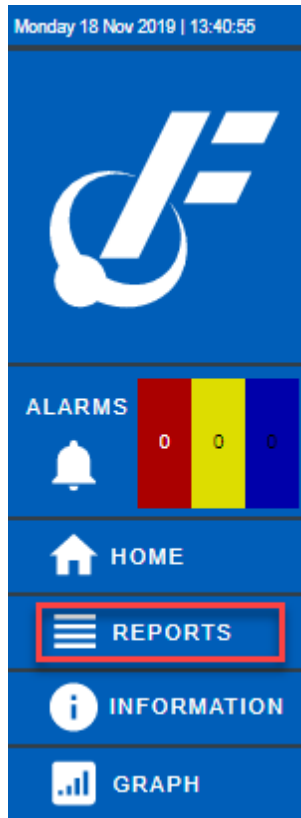
The pop-up has the following reports:

- Alarm History (1 Day, 7 Days, or 30 Days) is a series of reports listing all alarms detected over the past day, week, month or specified time period. These three 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.
- Alarm History (Custom) has a selection of time intervals and is similar to the other Alarm History reports except that it does not list alarms that are currently active or unacknowledged.
- 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.

- Driver Log File report provides detailed information on the drivers in use by the Foreseer system.
- Interval Data Report provides raw historical data from Foreseer High Resolution databases in a standard CSV format for any Analog or Derived Analog channel.
- Log File reports all recorded events since the last Foreseer Server system reset. This report is not available in tabbed format.
- Previous Driver Log File report provides detailed information on the drivers previously in use by the Foreseer system.
- Previous Log File reports all events recorded in the previous Foreseer Server session. This report is not available in tabbed format.
- 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.
- 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.
- 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 was launched and terminated. The default format is tab-delimited.

| Reports			
Report Type	**Available Reports**		
Alarm History [1 Day]	10/16/19 11:37:02 [2538 bytes]		
Alarm History [30 Day]			
Alarm History [7 Day]			
Alarm History [Custom]			
Audit History			
Channel Data			
Channel	10/04/19 09:35:23 [322943 bytes]		
Driver Log File	10/04/19 09:34:17 [1244 bytes]		
Interval Data Report	10/04/19 09:38:14 [887 bytes]		
Log File	10/24/19 10:14:09 [4779 bytes]	10/23/19 11:06:42 [4392 bytes]	10/23/19 11:06:42 [4392 bytes]
Notes History [1 Day]	10/04/19 09:38:45 [390 bytes]		
Notes History [30 Day]			
Notes History [7 Day]			
Notes History [Custom]			
Previous Driver Log File			
Previous Log File			
Sequence of Events			
System Configuration	11/06/19 11:13:32 [1982 bytes]	11/06/19 11:10:33 [1939 bytes]	11/06/19 11:07:29 [3853 bytes]
System Up-Down			

> ✅ To generate a report, simply click the listing under Report Type. If a choice in formats or time intervals is available, you'll be prompted to choose.

Setting up a Custom Report

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

- Filter by either predefined time periods or custom time periods with specified start and end dates and times.
- Filter by Foreseer server, device, channel orstring.
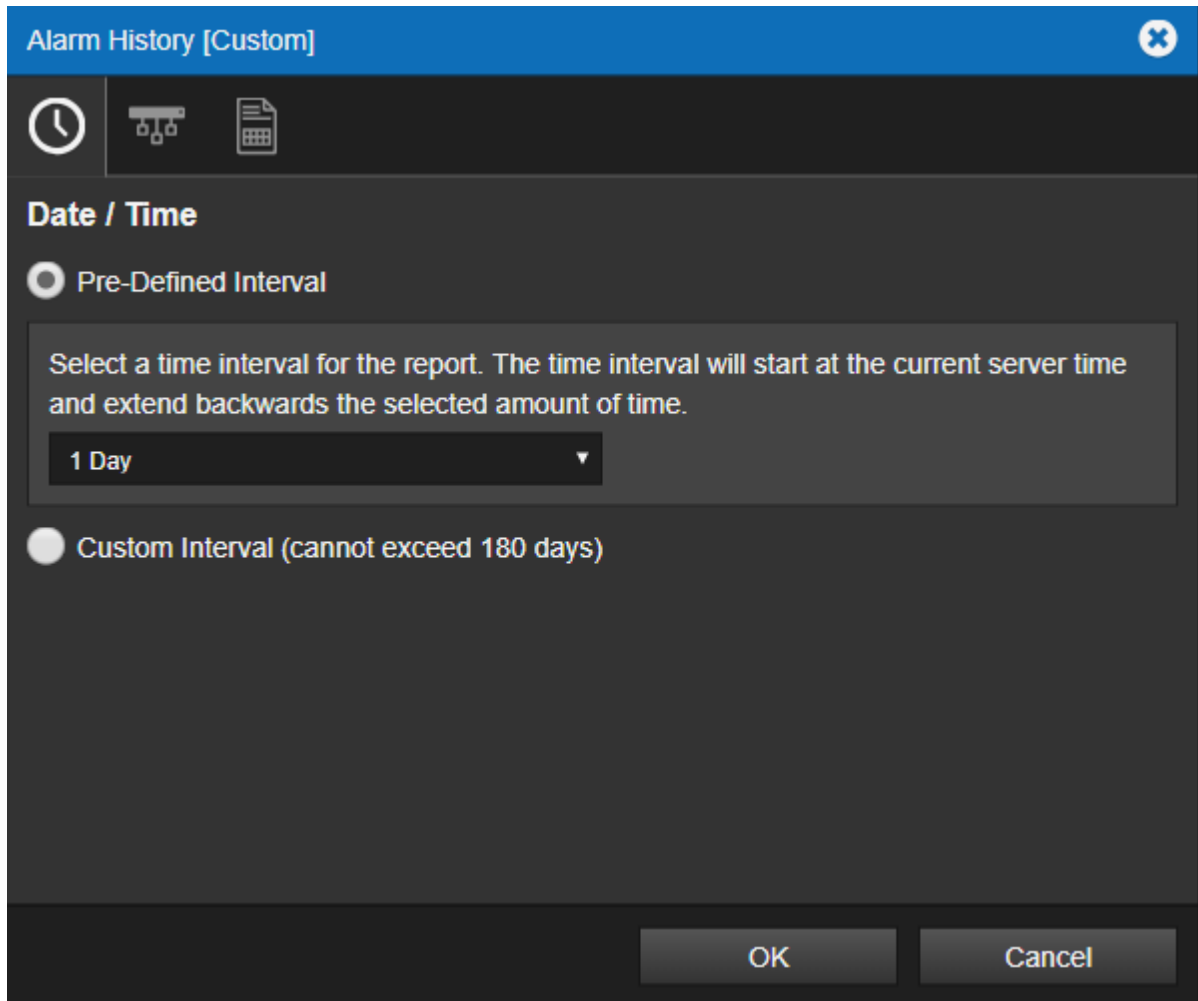
Setting the Time Interval

You can select a predefined interval from the menu or create your own using Custom Interval. Selecting Custom Interval launches calendar controls and a time picker so that you can set the beginning and end dates and times.

Selecting Channels

You select the servers, devices, and channels the report will include through the Device/Channel Selection tab. There are two ways to select these:
- Interactively, through the server/device/channel picker. Access this by clicking the + sign.
- Using the network path. This can be a very quick and powerful method because you can include a number of regular expression-like wild-cards in the network path.

Reports			
Report Type	**Available Reports**		
Alarm History [1 Day]	10/16/19 11:37:02 [2538 bytes]		
Alarm History [30 Day]			
Alarm History [7 Day]			
Alarm History [Custom]			
Audit History			
Channel Data			
Channel	10/04/19 09:35:23 [322943 bytes]		
Driver Log File	10/04/19 09:34:17 [1244 bytes]		
Interval Data Report	10/04/19 09:38:14 [887 bytes]		
Log File	10/24/19 10:14:09 [4779 bytes]	10/23/19 11:06:42 [4392 bytes]	10/23/19 11:06:42 [4392 bytes]
Notes History [1 Day]	10/04/19 09:38:45 [390 bytes]		
Notes History [30 Day]			
Notes History [7 Day]			
Notes History [Custom]			
Previous Driver Log File			
Previous Log File			
Sequence of Events			
System Configuration	11/06/19 11:13:32 [1982 bytes]	11/06/19 11:10:33 [1939 bytes]	11/06/19 11:07:29 [3853 bytes]
System Up-Down			

Once generated, each report becomes a link to the right of the report button. Click the report link at any time to view that particular report. You have the choice of either opening the report in your browser or downloading it for local viewing. As reports are generated, older links move to the right. Only the three most recent reports are retained.

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 web page 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.

Channel Properties

Channels Properties Dialog Box - Operators can double-click a Channel to access detailed information about its properties. iPad users can access Channel Properties by selecting the associated Checkbox and then choosing Channel Properties from the Objects menu. The tabbed Properties dialog box defines its operational parameters. These characteristics vary somewhat depending on whether the channel is analog or digital, but they are grouped similarly:
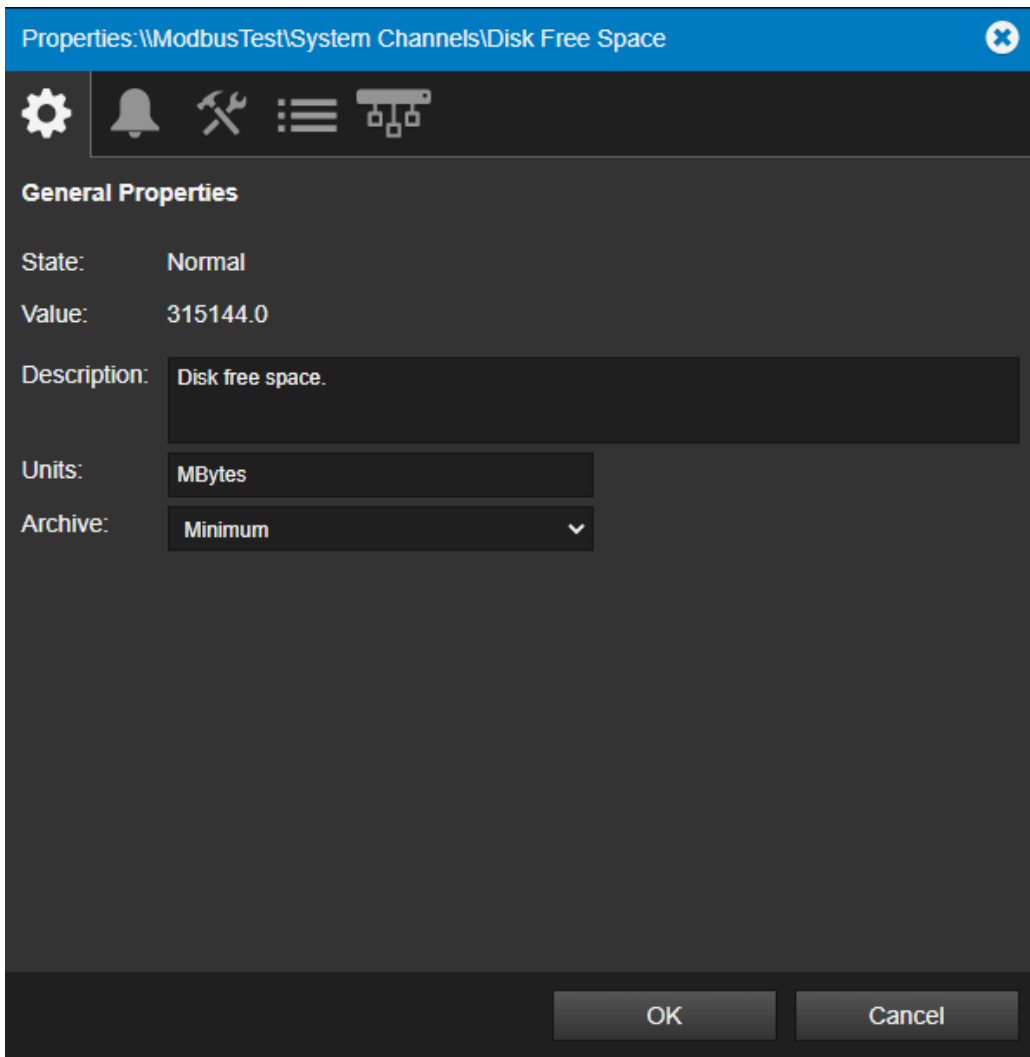
- General Channel Properties identify the individual input, its display, and archiving characteristics.
- Basic Channel Properties define the situations under which the channel reports an alarm, as well as the text Messages corresponding to the particular condition. A setting also assigns a relative level of importance to the channel for Priority sorting in the Alarms Manager.
- Advanced Channel Properties specify various automatic responses to a detected alarm.

> ✓ Channel Properties can be modified by an operator with sufficient privileges.

- Analog Channel Properties
- Analog Channel Alarm Properties
- Analog Channel Advanced Properties
- Scaling Analog Channel Values
- User Derived Equation Properties
- Analog Channel User Defined Properties
- Analog & Digital Channel Alarm User Defined Properties

Analog Channel Properties

- State is a fixed entry reporting the current alarm status of the input as Normal, Cautionary, Critical, or Acknowledged.
- Value is a fixed entry showing the channel's value when the channel properties was accessed.
- Description is descriptive text (up to 255 characters) identifying the channel.
- Units are the measurement units.
- Archive specifies the Channel value that is archived to the 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.

Analog Properties: General Tab

Analog Channel Alarm Properties

For more information about alarm settings, see Understanding Foreseer Alarms

Operators can activate and configure the channel's Cautionary (yellow) and Critical (red) alarm Limits. The 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.

Message is the text that displays with 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. Operators can filter on Priority in the Alarm Management window.

You can also enable Global Alarm Limits and then choose a channel to reference for alarm settings.
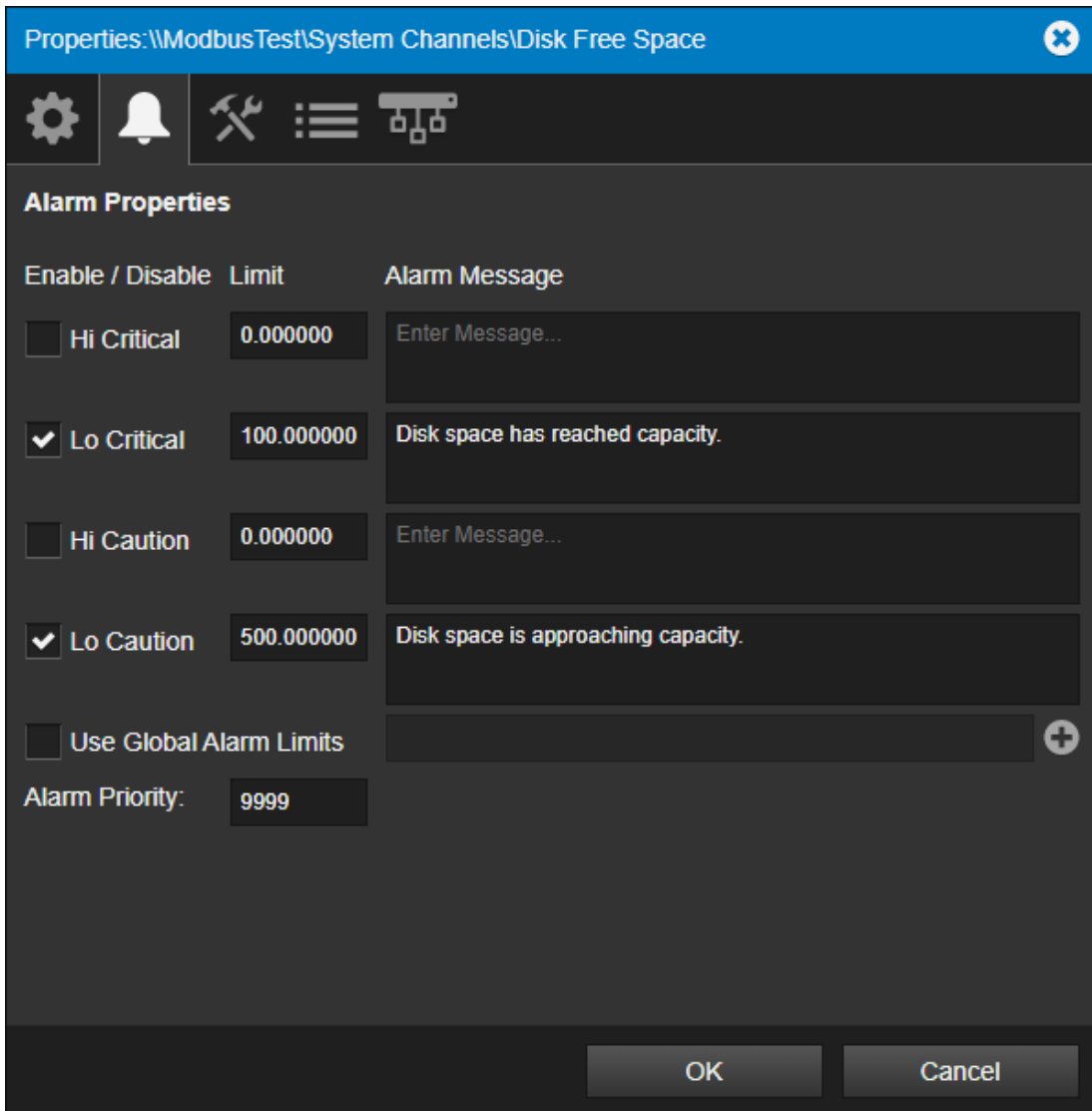
Analog Properties: Alarm Tab

Analog Channel Advanced Properties

For more information about Advanced Properties, see Understanding Foreseer Alarms. Advanced settings affect the behavior of alarms. The following describes each control:

Ack Holdoff (Latched Only)

Ack Holdoff defines the delay interval (in minutes) after the time a latched alarm is acknowledged until it's automatically rearmed. During this period, channel values continue to be displayed and archived; however, the channel's value isn't compared to its defined alarm Limits.

Re-Arm

Re-Arm is the period of time (in minutes) before alarm monitoring is automatically restored from a disarmed channel. Once rearmed, Foreseer resumes testing a channels current value against its specified alarm Limits.

Delay Alarm

Delay Alarm is the period of time (in seconds) before an alarm is reported. The default for channels is to report alarms immediately. However, for device communications channels it's set to 30
seconds and the alarm behavior is unlatched. This combination provides a sort of "deadband" for digital channels. In this case, if communications comes back before the 30 seconds is up, no alarm is declared. This prevents nuisance alarm trips for occasional communications problems.
Similarly, you can use it to prevent nuisance alarm trips for analog channels such as non-critical voltage channels. For example, in the case of a voltage channel that could be powered by an emergency generator, that generator needs sufficient time to start up, synchronize, and transfer the load. As long as that normal activity happens, voltage will return to acceptable values within just a few seconds and an alarm isn't needed. Setting the delay on such channels to a long enough value, such as 45 seconds, will prevent nuisance alarms when things are operating as they should. If, however, that sequence doesn't happen then a valid alarm will be reported as soon as the delay period expires.

Latch Alarm

Latched and unlatched sets the behavior of alarms for the channel. For unlatched, when the alarm condition goes away, the alarm notification automatically disappears. When latched, the channels highest alarm state is reported regardless of its current value. For a detailed discussion of these behaviors, see Understanding Foreseer Alarms.

Hysteresis (Analog Channels Only)

Hysteresis determines the threshold value beyond the alarm limit before a new alarm is reported for an analog channel. Hysteresis is used to eliminate nuisance alarms when the channels input fluctuates near an alarm limit setting. Once an alarm occurs, the input level must drop below, or rise above, the threshold value then exceed the alarm limit again before a new alarm is reported.

You can set a scaling factor in the channel properties to scale channel values. This works well with simple, linear conversions such as changing W to kW.
To access this feature:

1. Double-click a channel object to launch the Channel Properties.
2. Click the Advanced Properties tab.
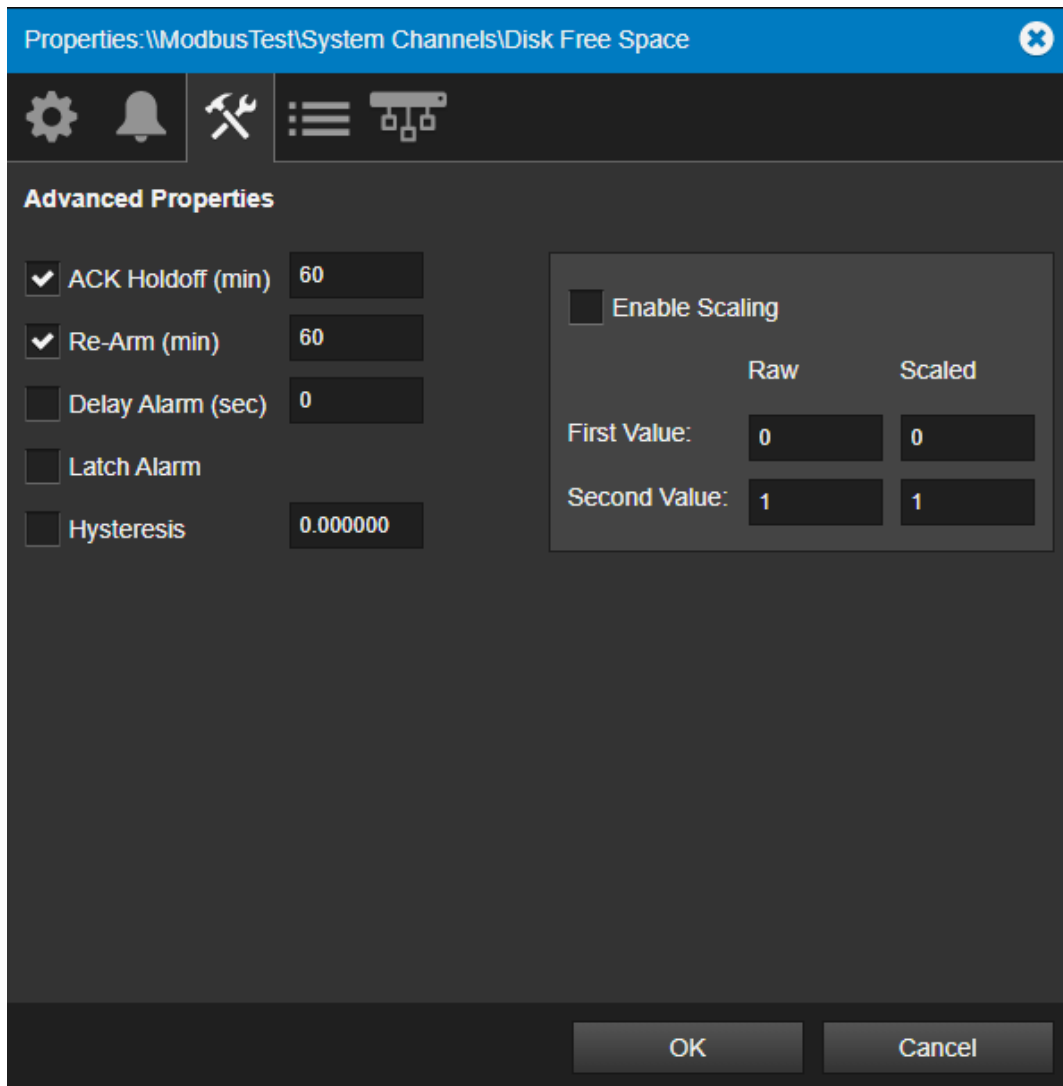
The scaling factors are in the Second Value fields. The Raw value is a divisor and the Scaled value is a multiplier. For example, a Raw value of 1000 converts W to kW. Conversely, a Scaled value of 1000 converts kW to W.
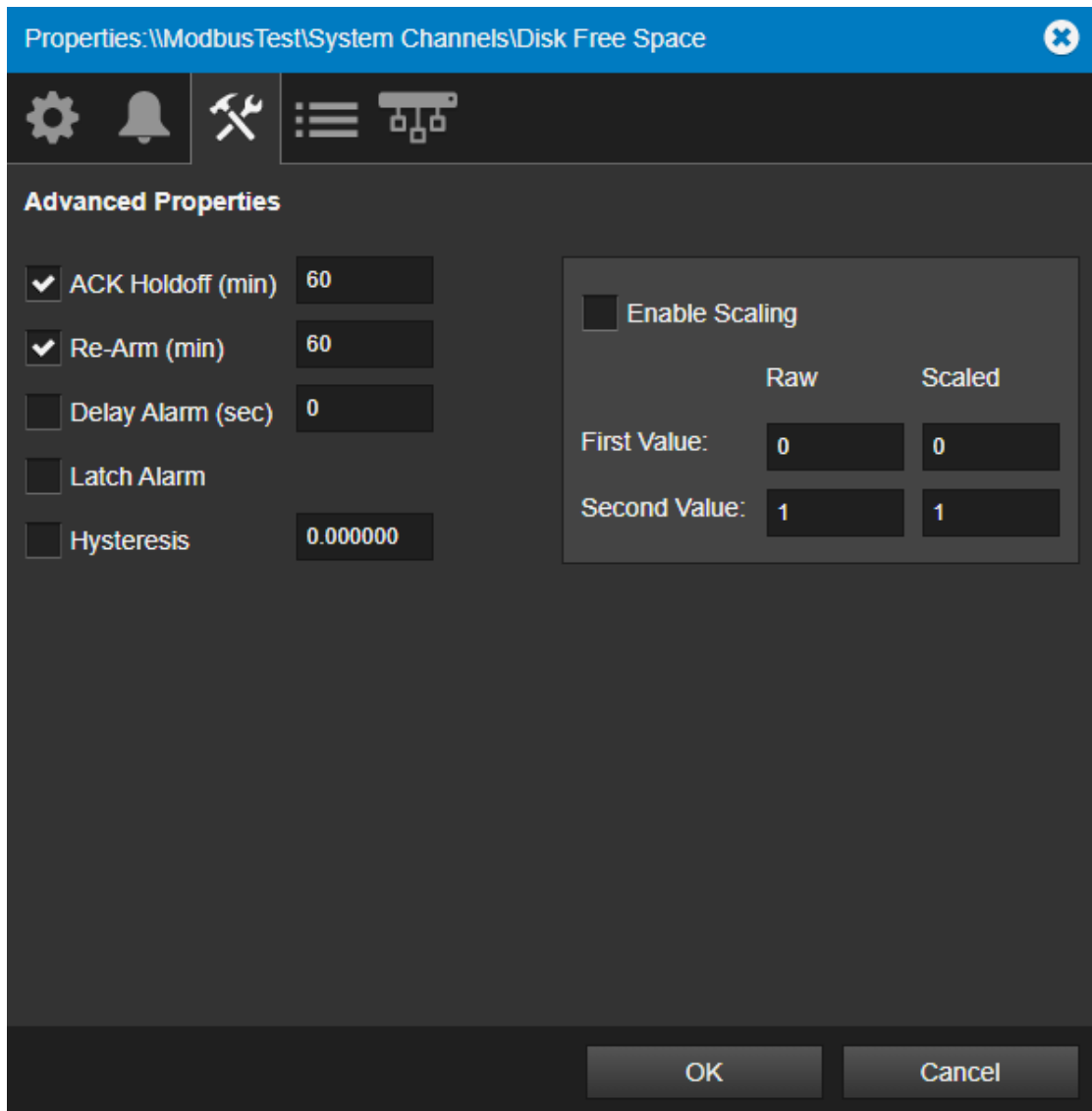
Two things to keep in mind:

- You must check Enable Scaling before this takes effect.
- You can only enter integer values. Floating point values will be reset.

Scaling Analog Channel Values

You can set a scaling factor in the channel properties to scale channel values. This works well with simple, linear conversions such as changing W to kW.

To access this feature:

1. Double-click a channel object to launch the Channel Properties.
2. Click the Advanced Properties tab.

The scaling factors are in the Second Value fields. The Raw value is a divisor and the Scaled value is a multiplier. For example, a Raw value of 1000 converts W to kW. Conversely, a Scaled value of 1000 converts kW to W.

Two things to keep in mind:

- You must check Enable Scaling before this takes effect.
- You can only enter integer values. Floating point values will be reset.

The following are additional scaling examples:

Reducing a Value by a factor of 10
Minimum Raw Value: 0
Maximum Raw Value: 10

Minimum Scaled Value: 0
Maximum Scaled Value: 1

Converting Temperature Values from Fahrenheit to Celsius:
Minimum Raw Value: 32
Maximum Raw Value: 212
Minimum Scaled Value: 0
Maximum Scaled Value: 100

Converting Temperature Values from Celsius to Fahrenheit:
Minimum Raw Value: 0
Maximum Raw Value: 100
Minimum Scaled Value: 32
Maximum Scaled Value: 212

Converting Pressure Values from KPA to PSI
Minimum Raw Value: 0
Maximum Raw Value: 1000
Minimum Scaled Value: 0
Maximum Scaled Value: 145

Dividing a value by half
Minimum Raw Value: 0
Maximum Raw Value: 10
Minimum Scaled Value: 0
Maximum Scaled Value: 5

Kelvin to Fahrenheit
Minimum Raw Value: 0
Maximum Raw Value: 100
Minimum Scaled Value: -460
Maximum Scaled Value: -280

User Derived Equation Properties

The User Derived Equations tab of Channel Properties provides a viewer and editor for adjusting equation calculations that may be attached to a channel. The dialog provides a text viewer for viewing and adjusting equation logic as needed.
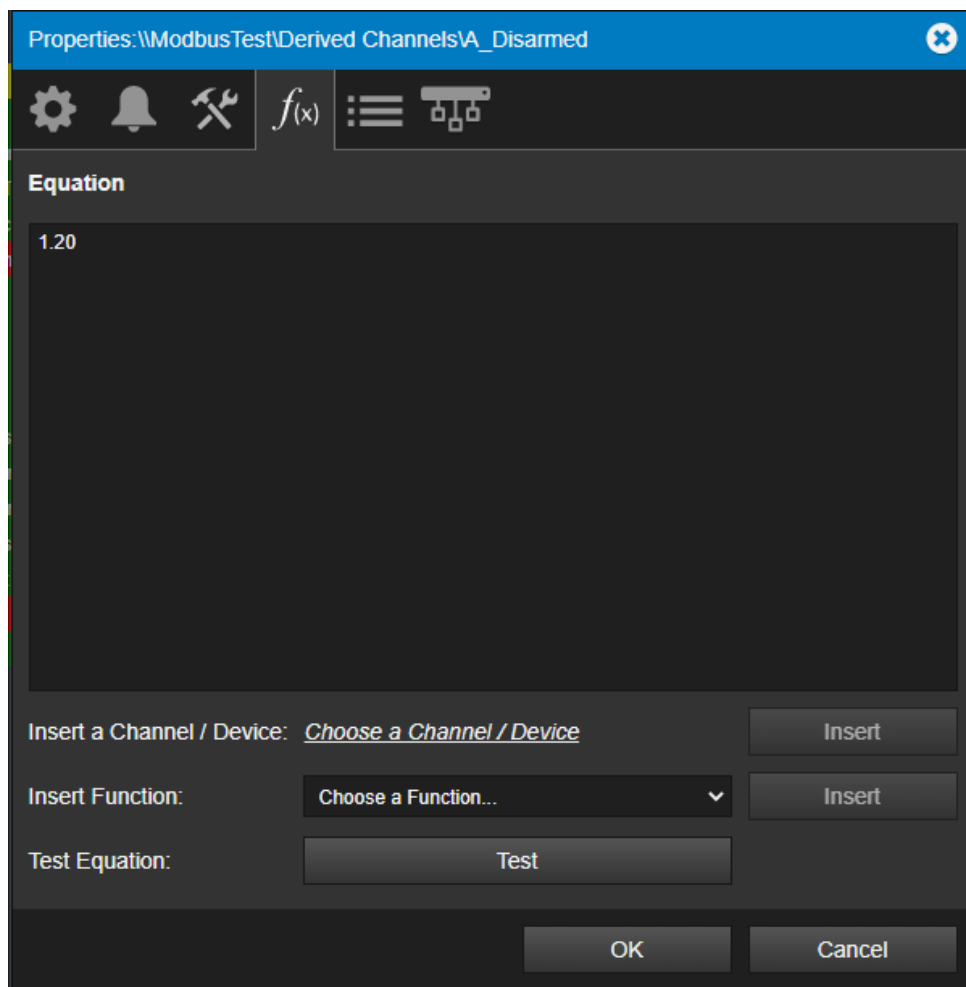
For expansive editing, functions within the dialog are provided to:
- Insert a channel or device
- Insert a UDE logic function
- Test an equation.

Analog Channel User Defined Properties

The User Defined Properties tab of Channel Properties provides a list of custom properties and their values. The contents of this tab and its value will depend on the design of your Foreseer system configuration. For more information on User Defined Properties, please refer to the Web Configuration Guide for further details.
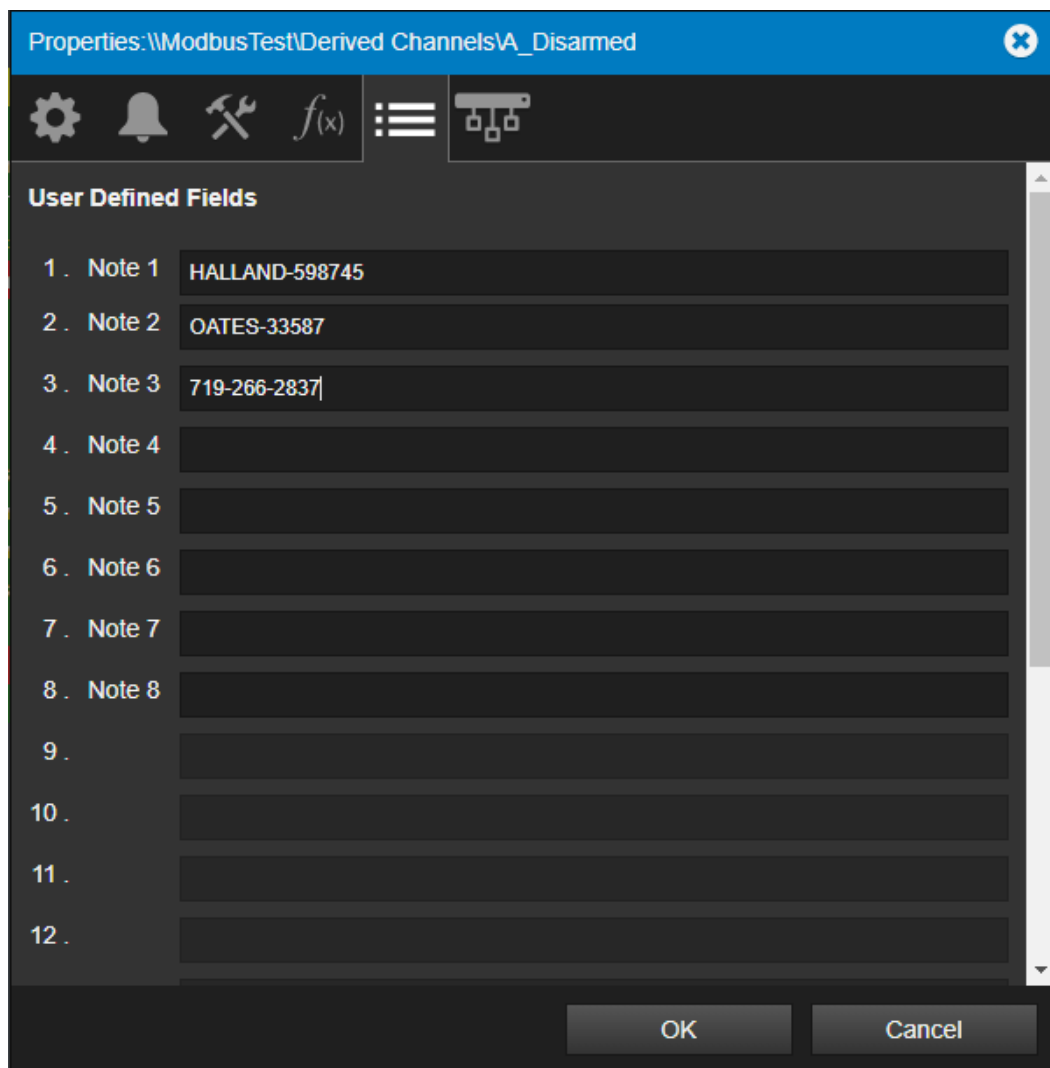
Analog and Digital Alarm User Defined Fields

The Alarm User Defined Fields tab of Channel Properties provides a list of custom properties and their values. The contents of this tab and its value will depend on the design of your Foreseer system configuration. For more information on User Defined Properties, please refer to the Web Configuration Guide for further details.

Properties:\\ModbusTest\Derived Channels\A_Disarmed

Hi Critical Alarm User Defined Fields

1. Extreme Limit — Extreme Limit description
2.
3.
4.
5.

Hi Caution Alarm User Defined Alarm Fields

1. Extreme Limit — Extreme Limit description
2.
3.
4.
5.

OK   Cancel

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