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Waveform Viewer: Power Xpert Software 2.2

Powering Business Worldwide

Waveform Viewer User's Guide

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Introduction

Power Xpert Software's Waveform Viewer is a powerful tool for analyzing power quality. The tool captures and displays AC waveforms in a color-coded graphical format making viewing and analysis fast and easy.

Waveform Viewer gives you the tools to:

- View and analyze waveforms from events in a web browser.
- View trends for historical data, including data captured by Powernet devices or uploaded from Power Xpert Meters.
- Use zoom, pan, and scroll controls to traverse and magnify complex waveforms.
- Spot trends.
- Monitor voltage disturbances, voltage variances, etc.

Installation

Waveform Viewer is shipped on the Power Xpert Software CD. There are two ways to install the Waveform Viewer:

1. If you purchased Waveform Viewer at the same time as Server Core software, it will be automatically installed along with the Server Core. Refer to the Server Core Administration Guide for installation details.
2. If you purchased Waveform Viewer after you've installed the Server Core software. When you receive a new license key you can install the Waveform Viewer by modifying the existing Server Core software. Refer to the Server Core Administration Guide for installation details and follow the optional step to modify an existing installation.

Using the Waveform Viewer

Using the Waveform Viewer in the Power Xpert Web Application

Within the Power Xpert Web Application you can use the Waveform Viewer to view waveforms from events. To launch the Waveform Viewer from the Alarms/Events page, either:

- Click the **Alarms/Events** bar on the left side of the screen
- Select **Waveform Viewer** by using the **Navigation** menu (on the toolbar).

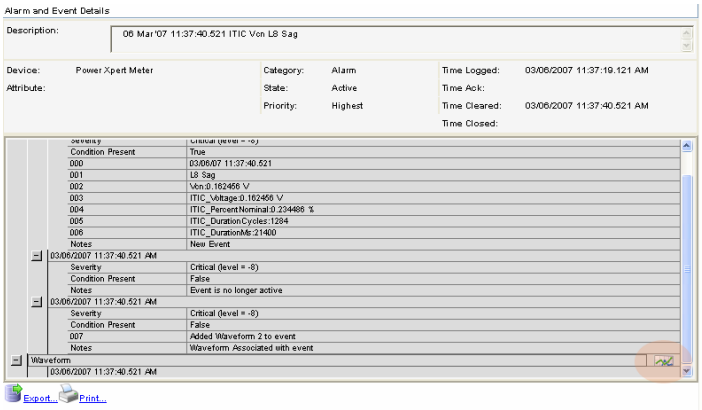
An example of the Events page from Power Xpert Software, showing the detail icons

To see if a waveform is available for a particular event, click the detail icon for that event.

Note

It can take 10 minutes for a waveform to be available after an event occurs.

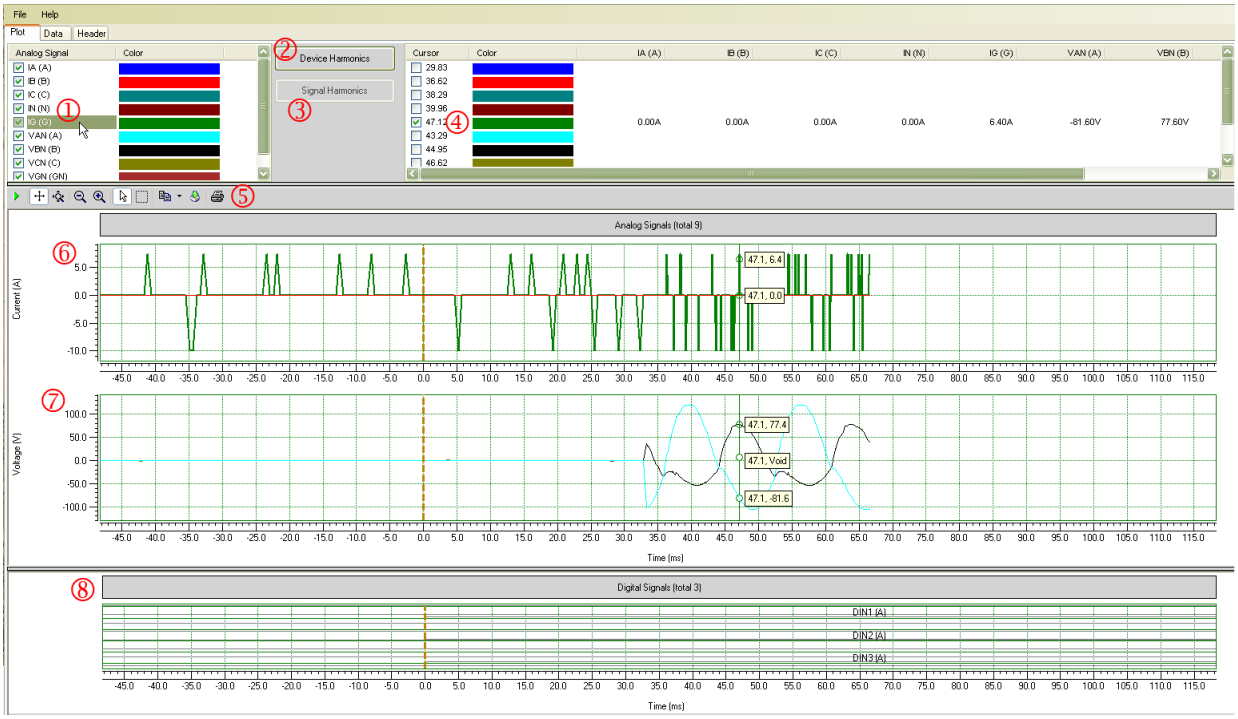
If an event comes from a device via PowerNet, a waveform icon will be on the bottom right of the screen. Click the icon to launch the Waveform Viewer's Waveform Viewer.



The waveform icon on the Details Page

Quick Tour of the Waveform Viewer

Refer to the following illustration and legend for a description of the various controls.



The Waveform Viewer

(1) Attribute selector. This is the set of available attributes in waveform data. Each channel selected appears in the plots. Select the check box to plot the waveform for that attribute. Click next to the label (as shown in preceding figure) to select a single attribute in the plots. This highlights the associated line in the plots and activates one of the harmonics controls for the applicable harmonics.

(2) The Device Harmonics viewer button. If an attribute is currently selected from an IQ Analyzer or MPCV Relay, this button becomes active. Click the button to view the harmonics data for the selected attribute. See the section on the Harmonics Viewers for more information.

(3) The Signal Harmonics button. For waveform data originating from most devices, if an attribute is selected this button becomes active. Click the button to view the harmonics data for the selected attribute. See the section on the Harmonics Viewers for more information.

(4) The cursor selector window. Selecting an attribute places a color-coded cursor in the plots. You can click-and-drag the cursor to view the values along the timeline.

(5) The toolbar. See the Toolbar section for a description of each tool.

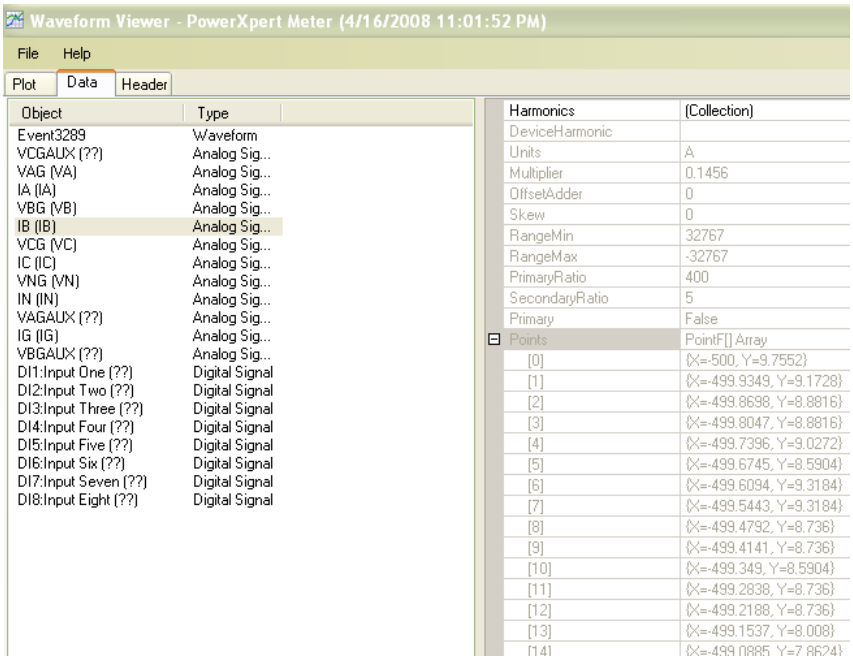
(6) The Current plot.

(7) The Voltage plot.

(8) The digital I/O plot. If the device has digital inputs, their states will be plotted at against time in this graph. (If you don't see this graph, extend the window downward.)

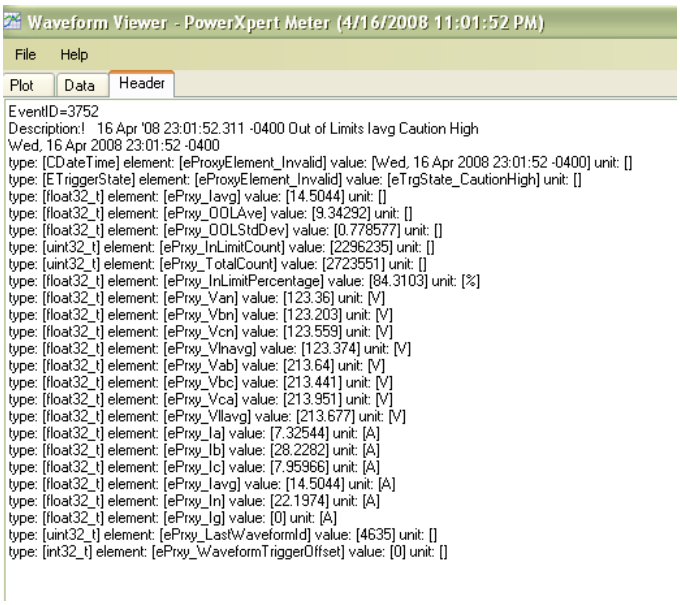
Tabs

The Waveform Viewer has three tabs: Plot (which was shown in the previous section), Data, and Header. The Data tab provides detailed information about the waveform data, including the event number and information about each attribute. Clicking an attribute loads the right pane of the window with that attribute's detailed information. Expand the Points item to see the individual data points that make up the waveform.



The Data Tab

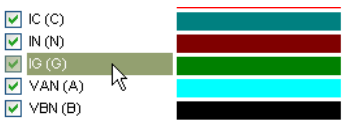
The Header tab displays the file header information for the waveform file currently loaded. Files from Powernet (.osw files) don't have headers.



The Header Tab

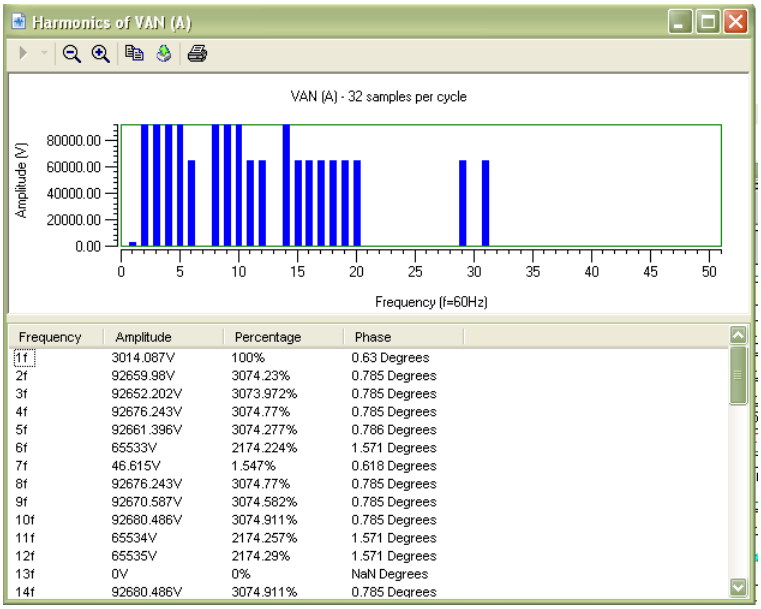
Harmonics Viewers

Waveforms from the IQ Analyzer or MPCV Relay contain attributes that provide device harmonics information and attributes from other devices may provide signal harmonics information. In both cases, you must first select the attribute by clicking its label before the appropriate button will become active.



Selecting an Attribute

Clicking the Harmonics button launches the Harmoncs Viewer, which provides both a bar chart and a table of datapoints. The Export button on the toolbar writes a file of the current plot in one of several graphics formats or the Frequency and Amplitude data to a tab delimited ASCII file with a .dat extension.



Frequency	Amplitude	Percentage	Phase
1f	3014.087V	100%	0.63 Degrees
2f	92659.98V	3074.23%	0.785 Degrees
3f	92652.202V	3073.972%	0.785 Degrees
4f	92676.243V	3074.77%	0.785 Degrees
5f	92661.396V	3074.277%	0.786 Degrees
6f	65533V	2174.224%	1.571 Degrees
7f	46.615V	1.547%	0.618 Degrees
8f	92676.243V	3074.77%	0.785 Degrees
9f	92670.587V	3074.582%	0.785 Degrees
10f	92680.486V	3074.911%	0.785 Degrees
11f	65534V	2174.257%	1.571 Degrees
12f	65535V	2174.29%	1.571 Degrees
13f	0V	0%	NaN Degrees
14f	92680.486V	3074.911%	0.785 Degrees

Device Harmonics

The **Signal Harmonics** button launches the Harmonics Viewer and displays signal harmonics data for the selected channel. The viewer controls are the same as for Device Harmonics.

Toolbar

The toolbar provides controls for adjusting the plot access, zooming in on areas of interest, exporting data, or printing plots. An abridged version of the toolbar exists in the Harmonics viewers. Refer to the following for the function of each of the tools:

Tool	Function
	Resume...Click to restore zoom level to default.
	Axes Scroll...Click the X or Y axis of the current or voltage plot and drag to scroll.
	Axes Zoom...Click the X or Y axis of the current or voltage plot and drag to increase or decrease the resolution.
	Zoom-Out...Click the tool to zoom out on both the current and voltage plots.
	Zoom-In... Click the tool to zoom in on both the current and voltage plots.
	Select...Click the voltage or current plot to zoom in on the selected point.
	Zoom Box...Click and drag a selection box on either the current or voltage plots to zoom in on that area.
	Copy to Clipboard...Click to copy waveform data to the Windows clipboard. Use the drop-down list next to the tool to select to copy either the plot picture or tab-delimited attribute data.
	Export...Click to export the plot as a graphics file (you can select the format) or, if the .dat file extension is select, export the data as a tab-separated ASCII file.

Tool	Function
	Print...Print the selected plot.

Working With Waveform Files

The Waveform Viewer can load waveform files either in the industry standard Comtrade format or the Powernet waveform format (.osw) files. You can load waveform files from either your local computer's file system (including mapped network resources) or directly from the Power Xpert Software server. Files loaded from the Power Xpert Software server are actually waveform data stored in the Power Xpert Software database, and are either in .osw format if the waveform originated on a Powernet device or Comtrade format if the waveform came from a PowerXpert meter.

The File menu provides access to the file load commands. To use the Open Waveform from Server command, you'll need to know the web address of the Power Xpert Server.

After loading a file from the server, you can save it to your file system via the File > Save as command. The default file name is the event ID. You can only save the file in its original format.