MN02601003E Waveform Viewer: Power Xpert Software 2.2





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.
- 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).

Alarms/Events Tasks									
Alarma and Events Search Alarma and Events Search Addroxeledae All Alarma Addroxeledae All Alarma Retest Harma Events List									
	<i>R</i> .						10 2		1
Description	Device	Attribute	Time Logged 🍸	Cleared	Rek	Close	Priority	Detail	No
06 Mar '07 14:05:52.521 ITIC Vbn L8 Sag	Power Xpert Meter		03/06/2007 02:05:06.113 PM	8			Highest		1
06 Mar '07 13:10:40.502 Sub-Cycle Disturb	Power Xpert Meter		03/06/2007 01:10:40.502 PM	X			Highest	1	
06 Mar '07 13:10:40.520 ITIC Ven L8 Sag	Power Xpert Meter	í	03/06/2007 01:09:24.020 PM	M			Highest	E.	
06 Mar 107 13:09:24.013 Sub-Cycle Disturb	Power Xpert Meter		03/06/2007 01:09:24.013 PM	V			Highest	6	Г
06 Mar '07 13:07:32:475 ITIC \don L8 Sag	Power Xpert Meter	1	03/06/2007 01:07:32.475 PM	<i>w</i>			Highest	6	
06 Mar '07 13:03:08.810 Sub-Cycle Disturb	Power Xpert Meter		03/06/2007 01:03:08.810 PM	<u> </u>			Highest	6	-
06 Mar '07 11:49:04.040 ITIC \vbn L8 Sag	Power Xpert Meter	Ĩ.	03/06/2007 11:49:04.040 AM	M			Highest	a.	Th
06 Mar '07 11:49:04.040 ITIC \/on L8 Sag	Power Xpert Meter		03/06/2007 11:49:02.124 AM	<u> </u>			Highest	6	
06 Mar '07 11:41:21.828 ITIC Van L8 Sag	Power Xpert Meter		03/06/2007 11:41:19.612 AM	1 M			Highest	6	
06 Mar '07 11:41:14.292 Sub-Cycle Disturb	Power Xpert Meter		03/06/2007 11:41:14.292 AM	<u> </u>			Highest	a l	
06 Mar '07 11:41:14.295 ITIC Von L8 Sag	Power Xpert Meter		03/06/2007 11:41:11.945 AM	191			Highest	6	
06 Mar '07 11:40:59.639 ITIC Von L8 Sag	Power Xpert Meter		03/06/2007 11:40:57.098 AM	×			Highest	0	-
06 Mar '07 11:40:43.726 ITIC Vbn L2 Sag	Power Xpert Meter		03/06/2007 11:40:42.435 AM				Highest	6	T
06 Mar '07 11:37:40.517 Sub-Cycle Disturb	Power Xpert Meter		03/06/2007 11:37:40.517 AM	M			Highest	a	T
06 Mar '07 11:37:40.521 ITIC Ven L8 Sag	Power Xpert Meter		03/06/2007 11:37:19.121 AM				Highest	a	-
06 Mar '07 11:35:31 254 Sub-Carole Disturb	Power Xnert Meter		03/06/2007 11:35:31 254 AM				Highest	10	-

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.

ription:	06 Mar'07	11:37:40.521 ITIC Von L8 Sag					
e:	Power Xpert Meter	Category:	Alarm	Time Logged:	03/06/2007 11:37:19.121 AM		
bute:		State:	Active	Time Ack:			
		Priority:	Highest	lime ureared: U3/06/2007 11:37:40.521 AM			
				Time Closed:			
	oevening	citical (level = -o)					
	Condition Present	True					
	000	03/06/07 11:37:40.521					
	001	L8 Sag					
	002	Von:0.162456 V					
	003	ITIC_Voltage:0.162456 V					
	004	ITIC_PercentNominal:0.234486	×				
	005	ITIC_DurationCycles:1284					
	006	ITIC_DurationMs:21400					
	Notes	New Event					
- 03	/06/2007 11:37:40.521 AM						
	Severity	Critical (level = -8)					
	Condition Present	False					
	Notes	Event is no longer active					
E 03	/06/2007 11:37:40.521 AM						
	Severity	Critical (level = -8)					
	Condition Present	False					
	007	Added Waveform 2 to event					
	Notes	Waveform Associated with eve	ent				
Wavefo	m						

BExport...

The waveform icon on the Details Page

Quick Tour of the Waveform Viewer





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.

🔀 Waveform Viewer	- PowerXpert M	eter (4/16/2008 11:0)1:5	2 PM)	
File Help					
Plot Data Header					
Object	Туре			Harmonics	(Collection)
Event3289	Waveform			DeviceHarmonic	
VCGAUX (??)	Analog Sig			Units	A
VAG (VA)	Analog Sig			Multiplier	0.1456
IA (IA)	Analog Sig			OffsetAdder	0
VBG (VB)	Analog Sig			Skew	0
IB (IB)	Analog Sig			RangeMin	32767
	Analog Sig			RangeMax	-32767
	Analog Sig			PrimaryRatio	400
IN (IN)	Analog Sig			SecondaryRatio	5
VAGAUX (??)	Analog Sig			Primary	False
IG (IG)	Analog Sig		E	Points	PointF[] Array
VBGAUX (??)	Analog Sig			[0]	{X=-500, Y=9.7552}
DI1:Input Une [??]	Digital Signal			[1]	{X=-499.9349, Y=9.1728}
DI2:input Two (77)	Digital Signal Digital Signal			[2]	{X=-499.8698, Y=8.8816}
DI4:Input Four (22)	Digital Signal			[3]	{X=-499.8047, Y=8.8816}
DI5:Input Five (??)	Digital Signal			[4]	{X=-499.7396, Y=9.0272}
DI6:Input Six (??)	Digital Signal			[5]	{X=-499.6745, Y=8.5904}
DI7:Input Seven (??)	Digital Signal			[6]	{X=-499.6094, Y=9.3184}
DI8:Input Eight (??)	Digital Signal			[7]	{X=-499.5443, Y=9.3184}
				[8]	{X=-499.4792, Y=8.736}
				[9]	{X=-499.4141.Y=8.736}
				[10]	{X=-499.349, Y=8.5904}
				[11]	{X=-499.2838, Y=8.736}
				[12]	{X=-499.2188. Y=8.736}
				[13]	{X=-499.1537. Y=8 008}
				[14]	{X=-499.0885 Y=7.8624}

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.

🎢 Waveform Vie	ewer - PowerXpert Meter (4/16/2008 11:01:52 PM)
File Help	
Plot Data He	eader
Event(D=3752 Description:1 16 Ap Wed, 16 Apr 2008 2 type: [CDateTime] el type: [CDateTime] el type: [Ina32, 1] elem type: [Ina32, 1] elem	ar '08 23:01:52.311 -0400 Out of Limits lavg Caution High 3:01:52 -0400 4ement: [eProxyElement_Invalid] value: [Wed, 16 Apr 2008 23:01:52 -0400] unit: []) element: [eProxyDelement_Invalid] value: [eTrgState_CautionHigh] unit: [] ment: [eProxy_lavg] value: [14:5044] unit: [] ment: [eProxy_ODLAve] value: [0.378577] unit: [] ment: [eProxy_ODLAve] value: [0.378577] unit: [] ment: [eProxy_InLimitCount] value: [223553] unit: [] ment: [eProxy_InLimitCount] value: [223553] unit: [] ment: [eProxy_Von] value: [123.36] unit: [M ment: [eProxy_Von] value: [123.20] unit: [M ment: [eProxy_Von] value: [123.35] unit: [M ment: [eProxy_Von] value: [123.35] unit: [M ment: [eProxy_Von] value: [123.374] unit: [M] ment: [eProxy_Von] value: [123.2559] unit: [M] ment: [eProxy_Von] value: [123.411] unit: [M] ment: [eProxy_Von] value: [123.411] unit: [M] ment: [eProxy_Von] value: [123.559] unit: [M] ment: [eProxy_Von] value: [123.559] unit: [A] ment: [eProxy_lon] value: [14.5044] unit: [A] ment: [eProxy_lon] value: [14.5044] unit: [A] ment: [eProxy_lon] value: [14.5044] unit: [A] ment: [eProxy_LondVaveromId] value: [4635] unit: [] ent: [eProxy_LondVaveromId] value: [4635] unit: []

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.



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

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ResumeClick to restore zoom level to default.
Axes ScrollClick the X or Y axis of the current or voltage plot and drag to scroll.
Axes ZoomClick the X or Y axis of the current or voltage plot and drag to increase or decrease the resolution.
Zoom-OutClick 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.
SelectClick the voltage or current plot to zoom in on the selected point.
Zoom BoxClick and drag a selection box on either the current or voltage plots to zoom in on that area.
Copy to ClipboardClick 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.
ExportClick 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.