

# **SW43W**

FlukeView Power Quality Analyzer Software  
Version 3.20 onwards

Users Manual

4822 872 30778

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# Chapter 1

## Installing FlukeView

### Installing the FlukeView Software

FlukeView® software offers you simple mouse-controlled tools to work with your Power Quality Analyzer.

For an optimal use of the FlukeView software install it on PC's running Windows 2000 and Windows XP.

To install FlukeView, insert the CD ROM into the CD ROM drive, and run SETUP.

The setup program starts up and prompts you for information to complete the installation.

### Running the FlukeView Software



Choose from **Start - Programs - FlukeView – Power Quality Analyzer** to run the FlukeView software.

### Connecting the Power Quality Analyzer

The FlukeView software communicates with your Power Quality Analyzer via the optically isolated OC4USB adapter/cable connected to the USB of the PC.

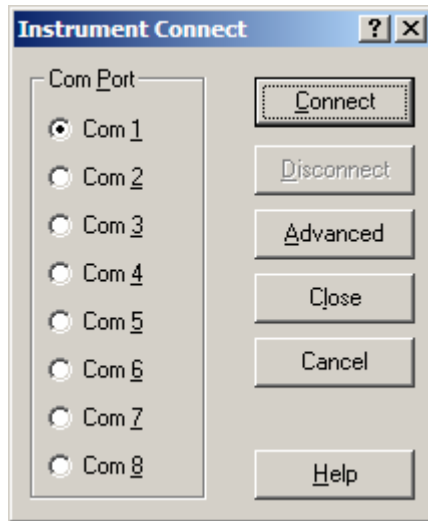
The OC4USB driver creates a virtual COM port. FlukeView will handle the USB port as a COM port.

#### *Note*

*The optional RS-232 adapter/cable PM9080 allows you to communicate via a COM port of your PC.*

During startup (except for the first time), the FlukeView software automatically tries to make a connection with the instrument according to the last valid connection.

If automatic connection is not successful, the dialog box shown below appears, allowing you to make a connection.




1. Select the **Com Port** that connects the instrument to the PC.
2. Click **Connect** to establish a connection with the instrument.

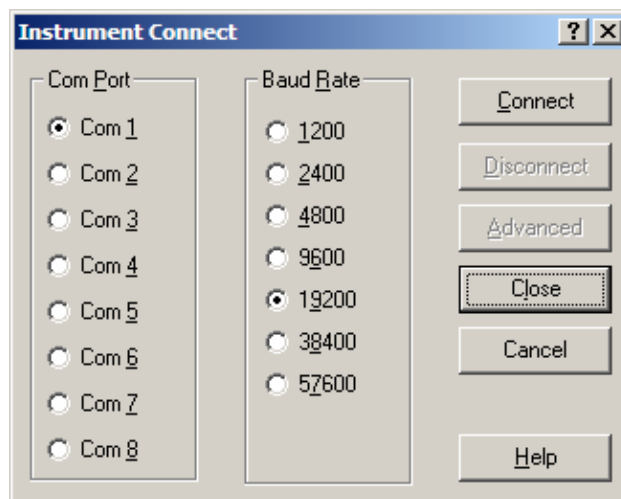
### Selecting the Baud Rate

If you want FlukeView to communicate at another baud rate do the following:

1. In the **Instrument Connect** menu click on **Advanced**. The dialog box shown below appears .

*Note:*

To see the **Instrument Connect** menu click  (connect/disconnect) in the toolbar button (most left button):



2. Click **Disconnect** if you are connected.
3. Select the **Baud Rate**, for example **57600**.
4. Click **Connect** to establish a connection with the instrument.

## **PC USB and COM port**

### **Determining the USB Cable COM port**

1. Attach the cable to the PC.
2. Go to the Windows Control Panel.
3. Open the "System Properties" dialog box.
4. Open the Device Manager:

On Windows 2000/XP, click on the "Hardware" tab of the "System Properties" dialog box and click on the "Device Manager" button,

On Windows 98SE/Me, click the "Device Manager" tab.

5. On the "Device Manager" dialog box, look under the "Ports (COM & LPT)" tree. The COM port associated with the USB-IR cable is listed there, as:  
"Prolific USB-to-serial bridge" (Windows 2000/XP),  
"USB to Serial Port" (Windows 98SE/Me).

### **Changing the COM port #**

Some programs require COM 1, 2, 3 or 4 and the USB cable is often installed as COM 5 or higher. To change the assigned COM port number, do the following:

1. Open Device Manager.
2. On the "Device Manager" dialog box, look under the "Ports (COM & LPT)" tree.
3. Click on the "Port Settings" tab. Click on the "Advanced" button.
4. On the bottom left side pull down the bar and select COM 1, 2, 3 or 4 (NOTE: Choose one that does not say "in use" next to it). Click "OK".
5. Click "OK" again. Notice that the device will show up as being on the same COM port that it was before (i.e., COM5), but will show up on the new port if you close the Device Manager and open it again.
6. Close the Device Manager.










## Chapter 2 Using FlukeView

### Using Online Help

The FlukeView software offers you access to online help by using the **F1** key, a **H**elp button, “**What’s This?**” help, or the **H**elp menu:

 or <b>Shift+</b> 	Press to get online help for the topic that has the focus.
 or 	Click, move the mouse pointer on a topic, and click again to get “What’s This” help.
	Click to get help in dialog and error boxes.

#### Note

To show help items on a help page, do one of the following:








- move the mouse pointer (changes to  above a help item);
- press **Tab** (changes the **background** of a help item).

### Introducing the FlukeView Software

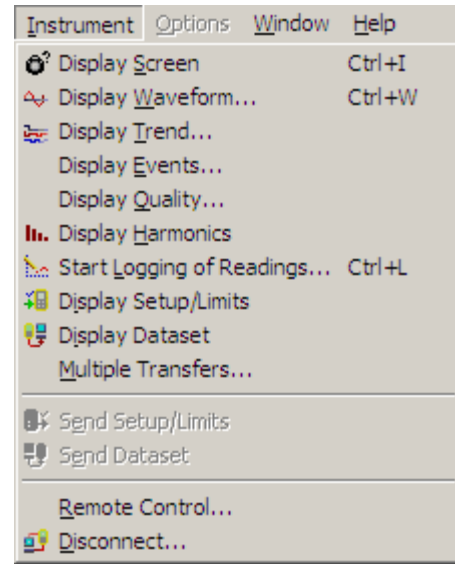
By clicking the buttons on the toolbar or by using the **I**nstrument pull down menu, you can read data from the Power Quality Analyzer.

Clicking a button will directly start reading the instrument data. Using the pull down menu enables you to make a selection (if applicable) of data to be read.

### Buttons

-  Display Screen
-  Display Waveforms
-  Display Trend
-  Display Harmonics
-  Display Setup/Limits
-  Display Dataset
-  Start Logging of readings

### Instrument Pull Down menu



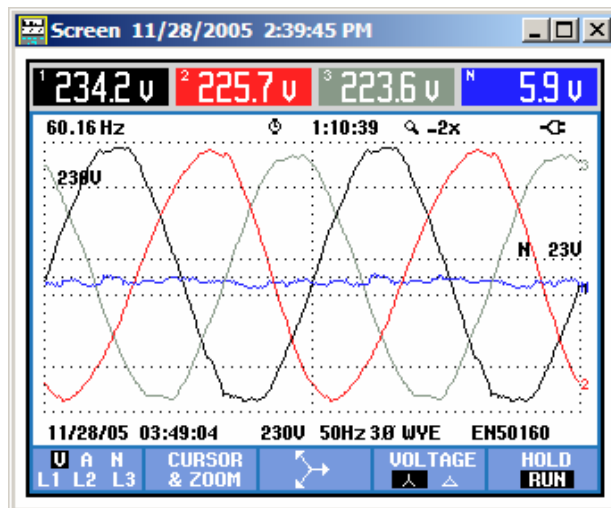
You can save, open, and print the data, or export it to other programs. FlukeView software enables you to read the following types of data from the Power Quality Analyzer into a window on the PC screen:

### Display Instrument Screens

 or **Instrument – Display Screen**

Transfers the instrument screen to the PC and displays the screen (bitmap) in a screen window.

The screen picture can be used to create documents, see also Documenting Screens on page 16.



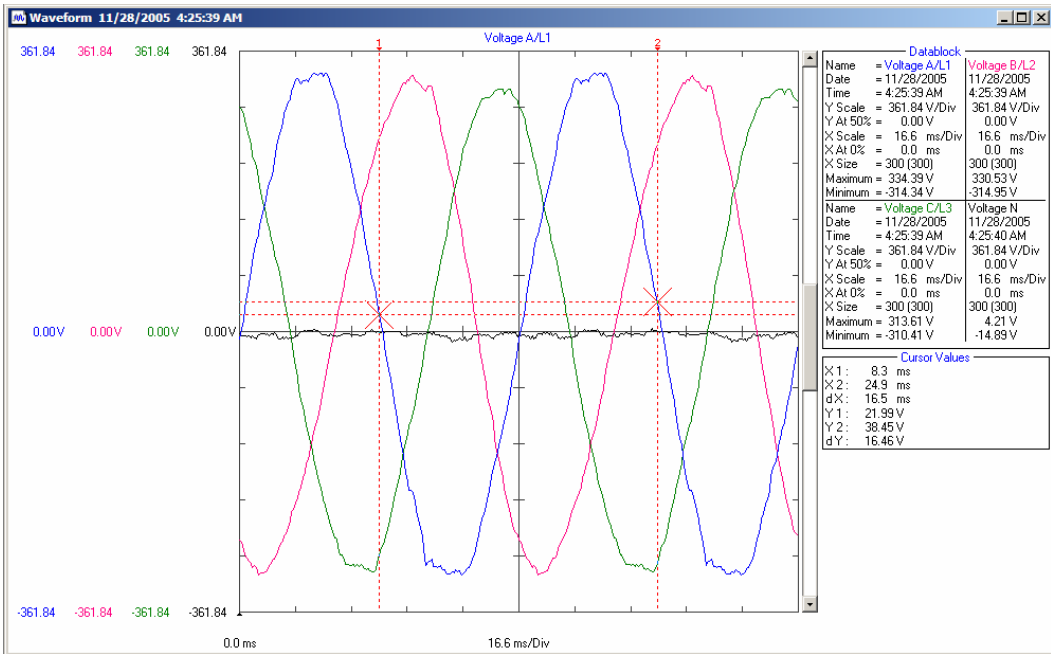
Display Waveforms



Transfers waveform sample data of all waveforms on the Power Quality Analyzer display to the PC and displays the waveform-points graphically in a waveform window.

Select **Instrument – Display Waveform** if you want to select the waveforms to be transferred.

You can zoom and scale the waveforms to analyze them, see Analyzing Waveforms and Trends on page 17.



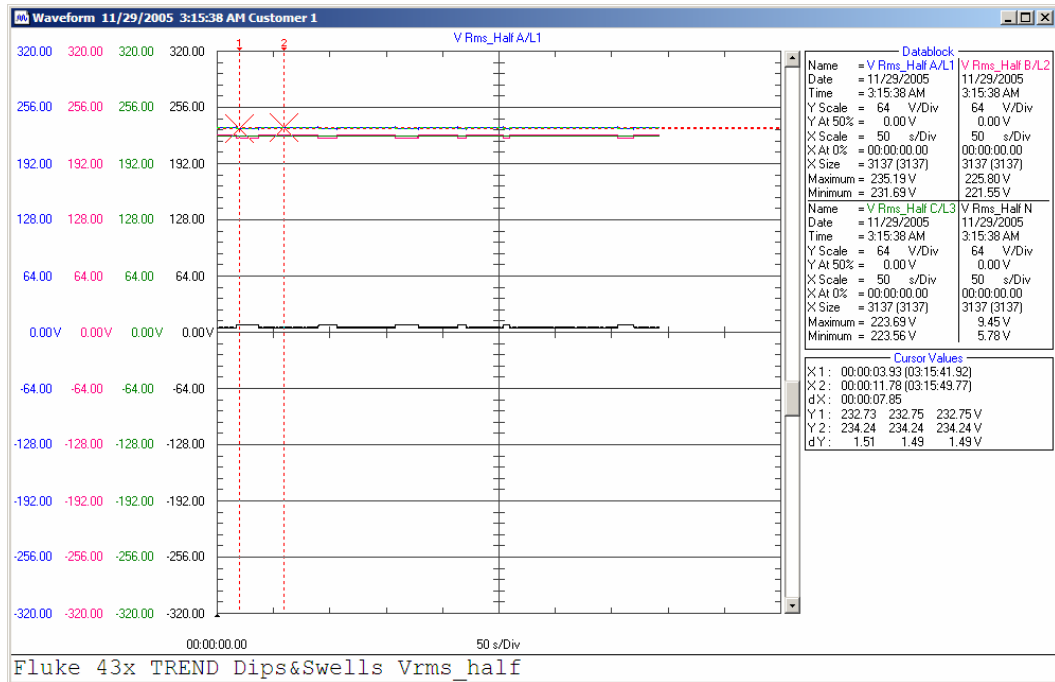
## Display Trend



Transfers trend sample data to the PC and displays the data graphically in a waveform window.

Select **Instrument – Display Trend** if you want a trend of a particular function to be transferred.

You can zoom and scale the trend graphs to analyze them, see Analyzing Waveforms and Trends on page 17

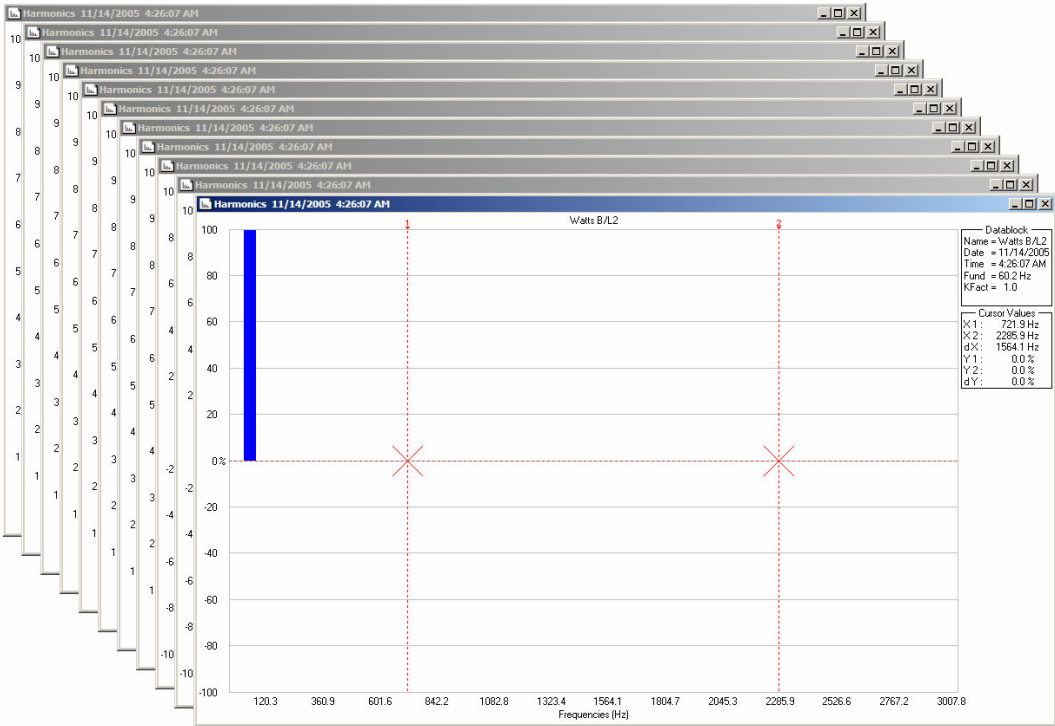


Display Spectrum/Harmonics

 or **Instrument – Display Harmonics**

Transfers **all** harmonics data from the Power Quality Analyzer to the PC and displays the data in a harmonics window.

You can perform frequency analysis on the data, see Analyzing Harmonics on page 20.



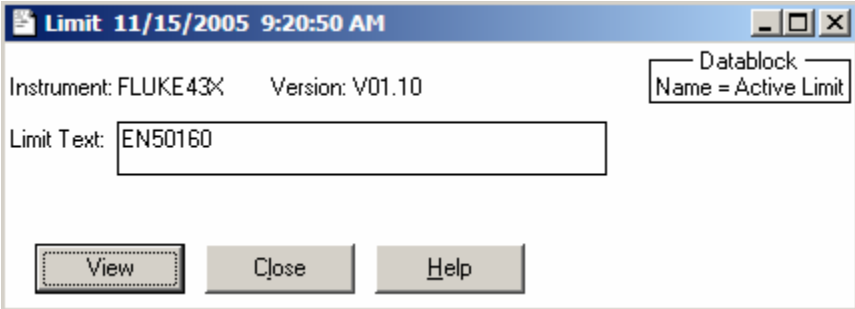
Display Limits (Fluke 43x)



Retrieves the actual instrument limit set from the Fluke 43x Power Quality Analyzer. An instrument limit set contains all limits used for power quality monitoring.

Select **Instrument – Display Setup/Limits** to retrieve the actual or a stored limit set.

You can view, edit, and send back an instrument limit set, see Limit Sets (not for Fluke 43B) on page 26.



### Display Setup (Fluke 43B)

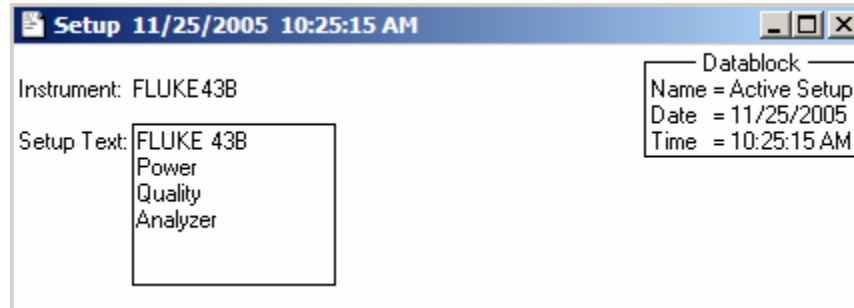


#### or **Instrument – Display Setup/Limits**

Retrieves the actual instrument setup from a Fluke 43B Power Quality Analyzer. An instrument setup contains all instrument settings.

You can send back an instrument setup to the Power Quality Analyzer.

See also Transferring Fluke 43B Instrument Setups on page 34.



### Display Datasets (not for Fluke43B)



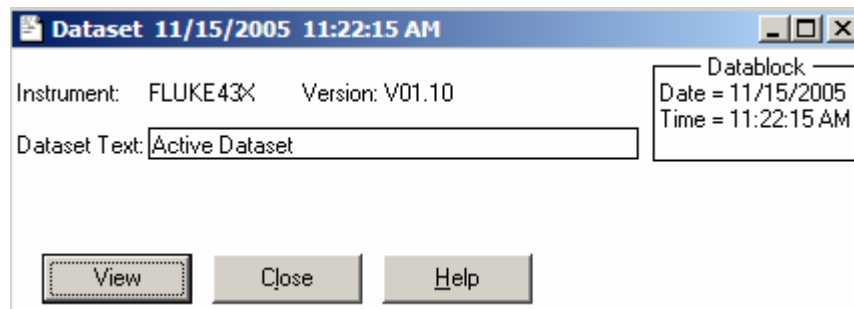
Transfers the actual measurement dataset to the PC.

A dataset contains all data belonging to a power quality measurement, including trend data and instrument setup data.

For the Logger function the dataset contains only the setup data. Dedicated software (Power-Log) is available for advanced analysis and reporting of logger data.

You can also select **Instrument – Display Dataset** to retrieve the actual measurement dataset or to retrieve a dataset from the Power Quality Analyzer's memory.

You can view, store, and send back measurement data sets. For detailed information see Using Datasets on page 22.



**Start Logging of Readings**

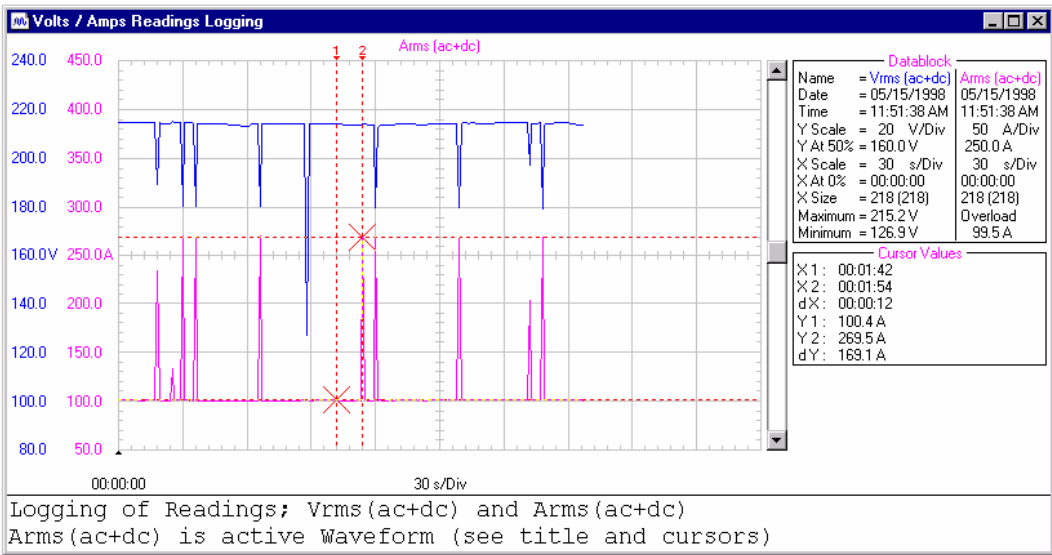


Transfers all numerical readings from the Power Quality Analyzer and displays them graphically in a readings window.

A reading is a numerical value from a single measurement by the Power Quality Analyzer.

Select **Instrument – Start Logging of Readings** to select readings from one or more functions to be transferred.

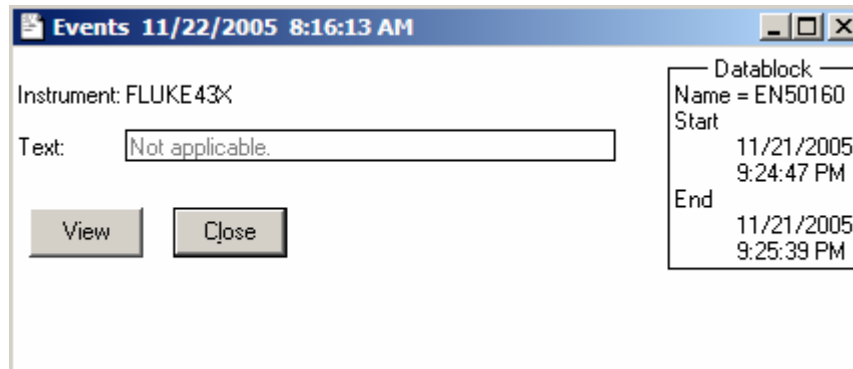
You can analyze the graphed readings by zooming or scaling. See also Logging Readings on page 29.



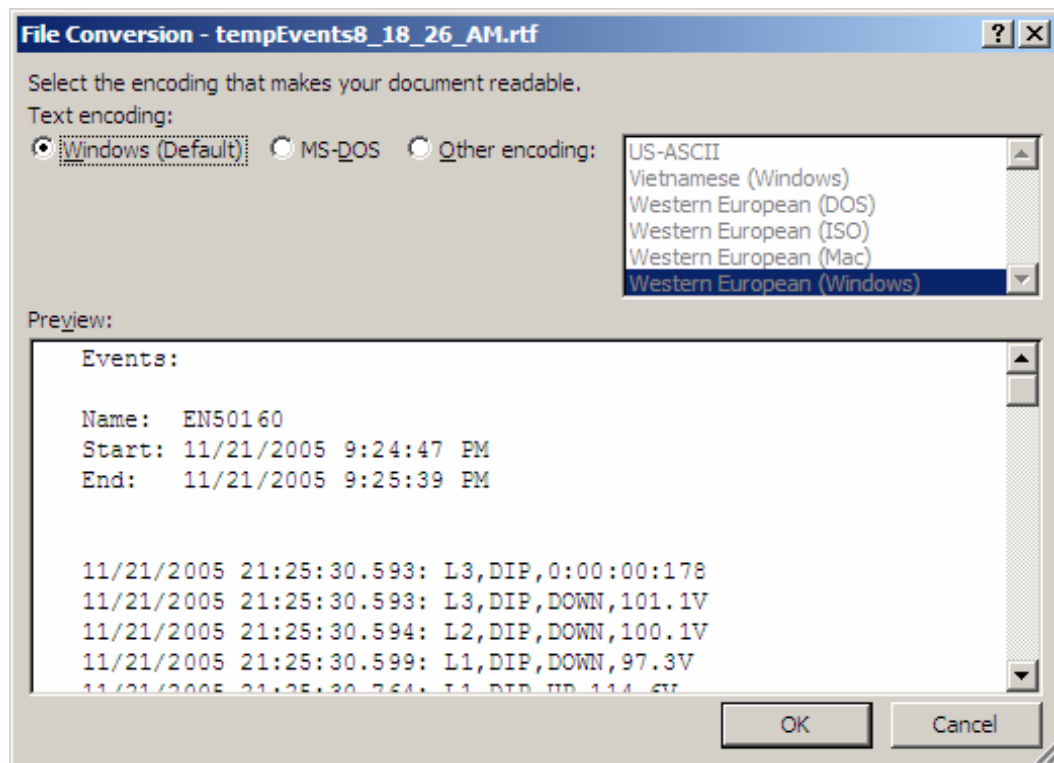
## Display Events (not for Fluke 43B)

### Instrument – Display Events

Transfers the active events list from the Power Quality Analyzer to the PC and displays name, date, and time of the events list in a window.



Click the **View** button to open the list in your default rtf (rich text format) viewer for Windows:



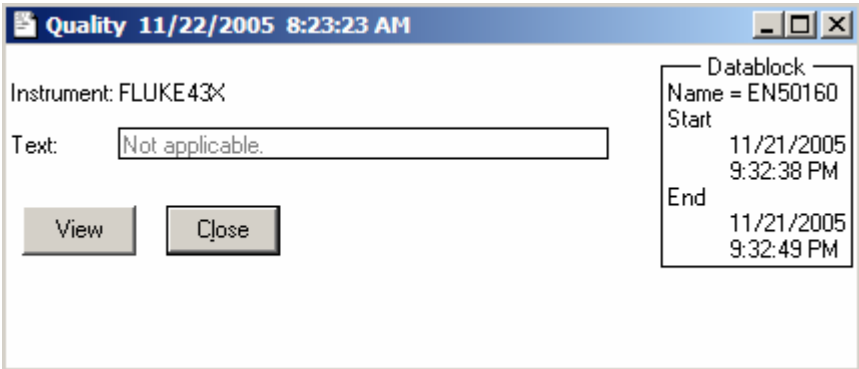
You can edit and save the events list for documenting purposes.



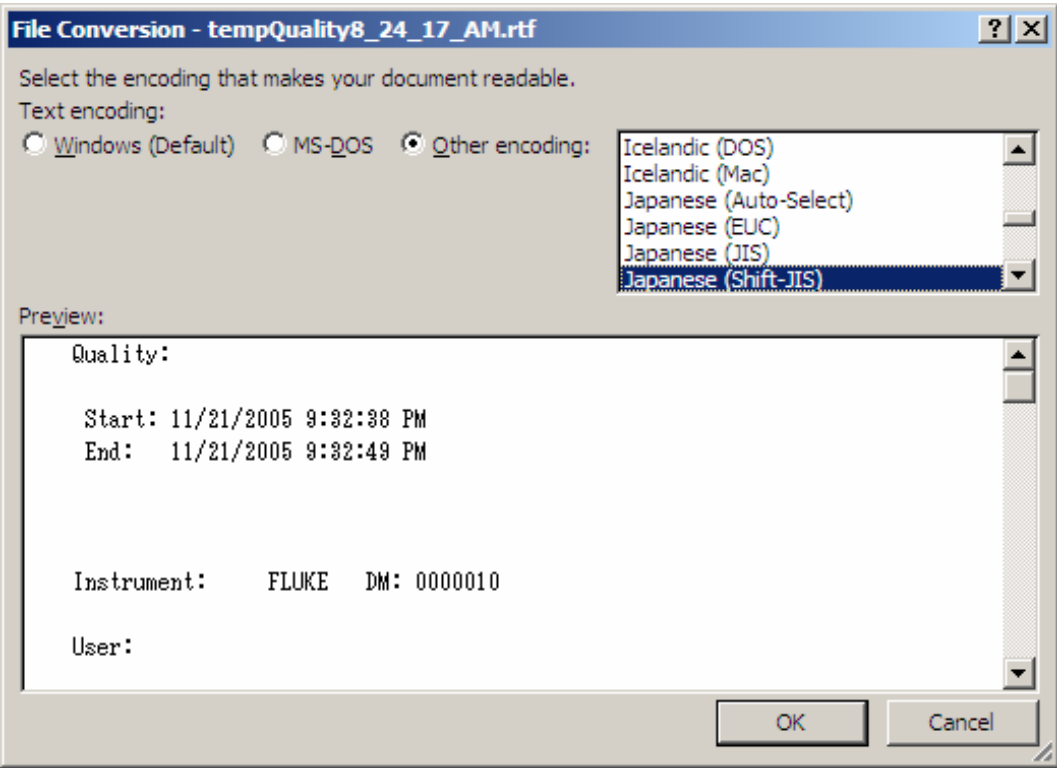
**Display Quality (not for Fluke 43B)**

**Instrument – Display Quality**

Transfers the Monitor mode quality data from the Power Quality Analyzer to the PC and displays name, date, and time of the quality list in a window.



Click the **View** button to open the list in your default rtf (rich text format) viewer for Windows:



You can edit and save the events list for documenting purposes.

## Multiple Transfers of Screens/Windows

### Instrument – Multiple Transfers

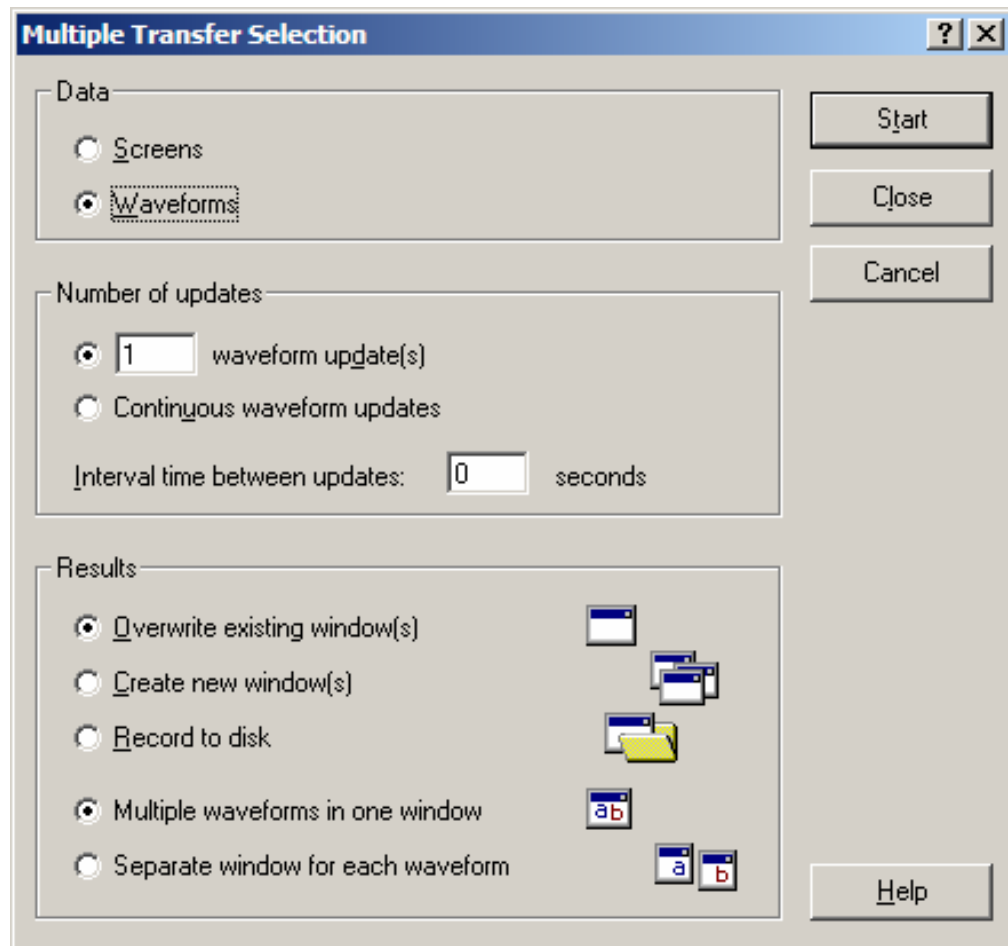
Allows you to select transfer possibilities for reading data from the Power Quality Analyzer,

for screens and waveforms:

- Whether the transferred data will be displayed in a new window, will overwrite the existing window, or will be recorded to disk.
- The number of times the data will be transferred from the Power Quality Analyzer to the PC.
- The interval time between two subsequent data transfers.

for waveforms:

- To display a maximum of 4 waveforms in one window or each waveform in a separate window.



**Remote Control (not for Fluke 43B)**

**Instrument – Remote Control**

FlukeView will open an instrument remote control screen. The instrument remote control screen is a copy of the Power Quality Analyzer front. It allows you to operate the Power Quality Analyzer on your PC (remote control).

To operate the connected Power Quality Analyzer via this screen click on the simulated keys. In addition, your PC F1...F5 keys, arrow keys, and Enter key will perform the same action as corresponding instrument keys.

Fluke 43x keys	PC keyboard
Softkeys F1...F5	F1...F5 or mouse click on Fluke 43x screen
Blue arrow keys	Arrow keys
Enter	Enter

After each remote control action the updated Power Quality Analyzer screen will be transferred to the PC screen.

The Power Quality Analyzer can still be operated with its own keys (local operation is not locked out). If you do this, the PC screen can be updated via the Update Screen button.



Click on Close to close the remote control screen.

**Window Properties**

To change the window to your preference do the following:

- Select **Options - Add Description** and type a description in the text box below the window (max. 10 lines).
- Select **Options - Colors** to change waveform colors.
- Select **Options - Titles** to change window titles.
- Select **Options – Scales** to change the scaling of a waveform.
- Select **View - Description** to show or hide the description,.
- Select **View - Data**l**ock** to show or hide the data block.
- Select **View – Cursors** to show or hide the cursors.


Use the mouse or (Shift) ← → keys to move the cursors.

- Click  or select **View – Zoom In** to zoom in on a waveform
- Click  or select **View – Zoom Out** to zoom out on a waveform.

You can also right click in the window to change the window properties.

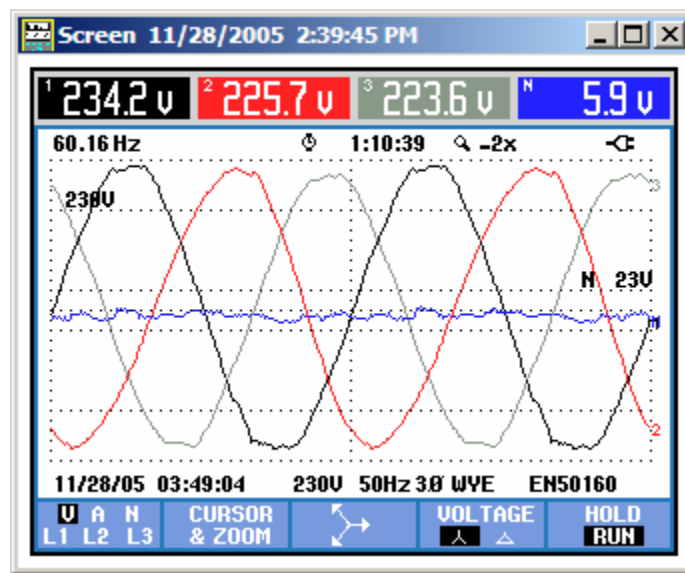
## Documenting Screens

### Displaying an Instrument Screen on the PC

1.  Click to display the active ScopeMeter screen in a screen window. Select **Instrument – Display Screen** to select the actual screen or a screen from the Analyzer memory.

#### Tip

To specify conditions for transferring screens, choose **Instrument - Multiple Transfers**




Each Power Quality Analyzer screen appears in a separate screen window  
To change the window to your preference see Window Properties on page 15.

### Inserting Screens into a Document

1. Click on the screen window you want to insert.

#### Tip

To avoid losing resolution because of copying to the clipboard, choose **Window – Default Size**.

2.  Click to copy the window to the clipboard.
3. Switch to a word processor, open or create a document and place the cursor where you want to insert the window.
4. Paste the screen window into the document.

#### Note

In the same way, you can insert waveform and harmonics/spectrum windows into a document.

## Analyzing Waveforms and Trends

You can read numerical waveform samples from the Power Quality Analyzer and display these samples in a waveform window.

*Note*


*You can analyze Trends in the same way as analyzing waveforms.*

### Displaying Waveforms on the PC

To demonstrate this select for example **VOLTS/AMPS/HERTZ** (Fluke 43B) or **SCOPE** (Fluke 43x)

#### 1. Select **I**nstrument – **D**isplay **W**aveform.

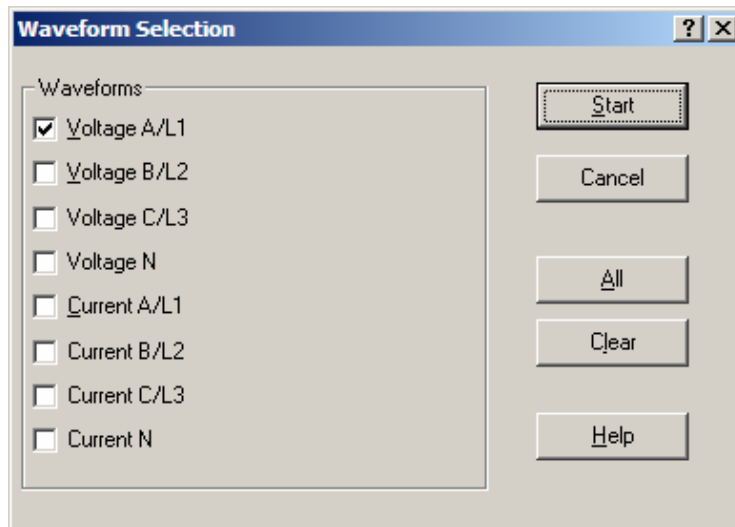
A dialog box appears allowing you to select the waveforms you want to read.

Click  to retrieve all waveforms (no dialog box).

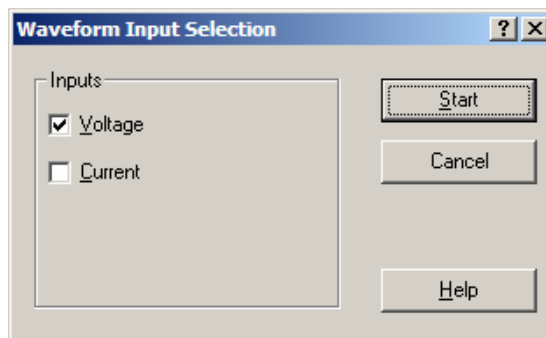
**Tip**

*To specify conditions for transferring waveforms, choose **I**nstrument - **M**ultiple **T**ransfers*

Fluke 43x Waveform Selection dialog box:



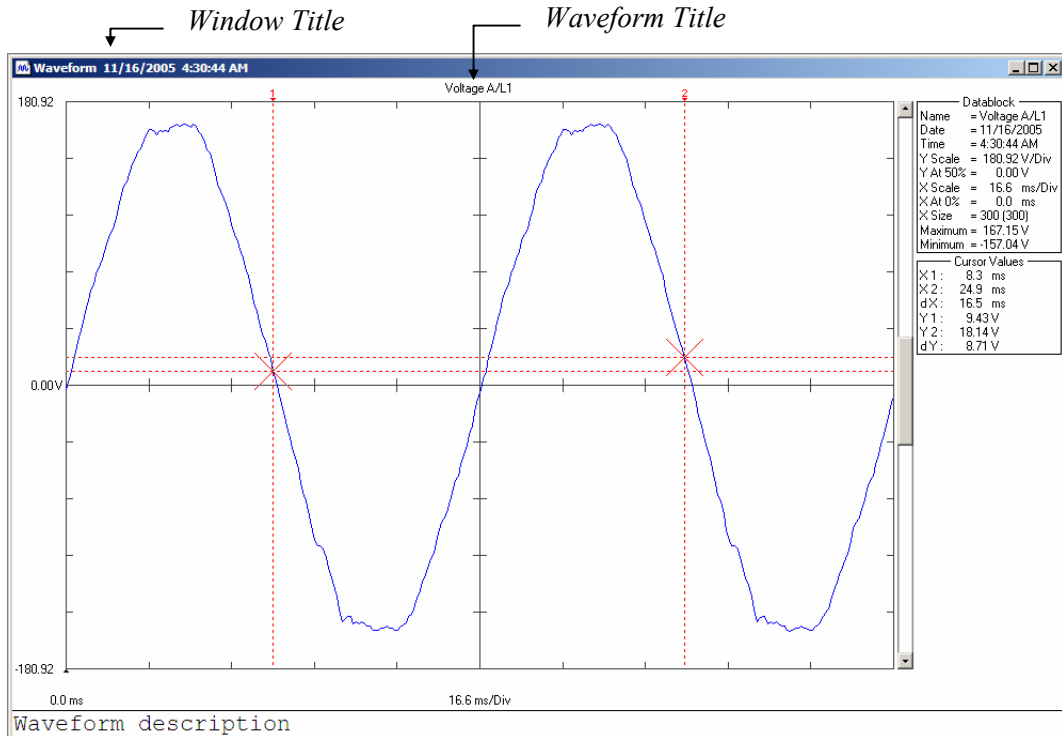
Fluke 43B Waveform Selection dialog box:



2. Choose for example **Voltage** (Fluke43B) or **Voltage A/L1** (Fluke 43x).
3. Click **Start** to read and display the selected waveforms.

To change the window to your preference see Window Properties on page 15.

**Fluke 43x waveform example:**



Datablock	Cursor Values
Name : Name of the waveform	X1 : Time at cursor 1
Date : Start date of the waveform	X2 : Time at cursor 2
Time : Start time of the waveform	dX : X2 - X1
Y Scale : Vertical scale	Y1 : Minimum and maximum value at cursor 1
Y At 50 : Vertical position	Y2 : Minimum and maximum value at cursor 2
X Scale : Horizontal scale	dY : Minimum and maximum Y2 - Y1
X At 0% : Horizontal position	
X Size : Shown (Total) number of waveform points	
Maximum : Maximum value	
Minimum : Minimum value	

Notice that values apply to the active waveform.

*Note*

*The Date and Time formats depend on the Windows® settings.*

**Tip**

*Right click in the window to see the View/Options menu, for example to show or hide the datablock, cursors and description.*

### **Zooming In and Out on a Waveform**

Drag with the mouse in the graph to select and zoom in on the part of the waveform you want to enlarge.



Click to zoom in on a waveform.

Use the scroll bar to select the part you want to view.



Click to zoom out on a waveform (undoes one 'zoom in' step).

### **Select the Active Waveform**

If multiple waveforms are displayed in one window, the active waveform can be changed (scale, colors), moved or deleted.

To select the active waveform do one of the following:

- select **View – Active Waveform**, select the waveform to be made active

**OR**

- move the cursor on a waveform until you will see the **|** or the **↕** sign.

The **↕** sign indicates the active waveform.

Click when you see the inactive waveform sign **|** , to make the belonging waveform the active one.

### **Scaling a Waveform**

If a waveform is not completely shown in a window, a scroll bar is displayed. Use this scroll bar to select the part you want to view.

Select **Options – Scales** or right click in the active window, to change the following:

- horizontal scaling (Time axis) of **all** waveforms
- vertical scaling (Y axis) of the **active** waveform

### **Change Waveform Colors and Titles**

Select **Options – Colors** or right click in the active window and select **Colors...**

Select **Options – Titles** or right click in the active window and select **Titles...**

### **Moving waveforms**

You can move a waveform up or down within a window. If multiple waveform windows are displayed you can move a waveform from one window to another:

- Select the active waveform, click and hold the mouse button and drag the waveform it to another window.

### **Deleting waveforms**

To delete the active waveform press the PC keyboard **Delete** key.

### **Copying Waveforms to Other Applications**


You can export waveform data (sample values) or the waveform window (bitmap) to other applications like Windows Excel or Word. Proceed as follows:

- Select **Edit – Copy Data** or **Edit - Copy Graphics** (or right click in the window) to copy the waveform data or the waveform window to the clipboard.
- Open another application, e.g. windows Excel or Word, and paste the data or graphics into this application.

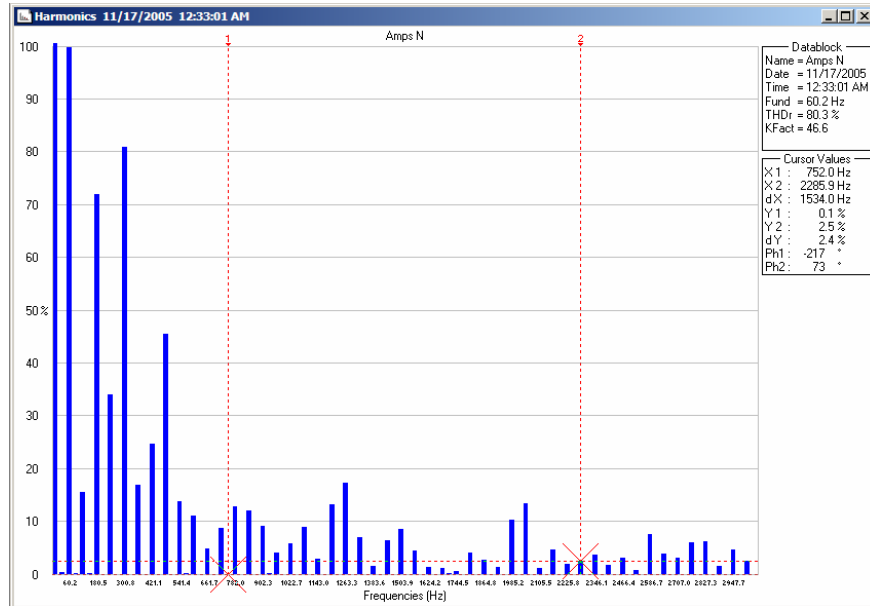
## Analyzing Harmonics

### Displaying Harmonics on the PC

To demonstrate this start the **HARMONICS** function on your Power Quality Analyzer.

-  Click to display the harmonics from the Power Quality Analyzer (or select **Instrument – Display Harmonics**). All harmonics will be retrieved.

Example of a harmonics window:



Example for Harmonics – Amps:

Datablock	Cursor Values
Name : Name of the harmonics	X1 : Frequency (or Harmonic Number) at cursor 1
Date : Date of the harmonics	X2 : Frequency (or Harmonic Number) at cursor 2
Time : Time of the harmonics	dX : X2 - X1
Fund : Fundamental frequency	Y1 : Spectrum value at cursor 1
RMS : Root Mean Square	Y2 : Spectrum value at cursor 2
THDr : Total Harmonic Distortion compared to RMS	dY : Y2 - Y1
THDf : Total Harmonic Distortion compared to fundamental	Ph1 : Phase at cursor 1
KFact : K-factor	Ph2 : Phase at cursor 2

*Note*

*The Date and Time formats depend on the Windows® settings.*

To change the window to your preference see Window Properties on page 15

**Tip**

*Right click in the window to see the View/Options menu*



### **Scaling a Spectrum**

Select **O**ptions - **S**cales, to change the following in the active window:

- horizontal scaling (frequency or harmonics number) of the spectrum
- vertical scaling (Y axis) of the spectrum

### **Copying Harmonics Data to Other Applications**

You can export harmonics data (rms values) or the waveform window (bitmap) to other applications like Windows Excel or Word. Proceed as follows:

1. Select **E**dit - **C**opy **D**ata or **E**dit - **C**opy **G**raphics to copy the harmonics data or the harmonics window to the clipboard.
2. Open another application, e.g. Windows Excel or Word, and paste the data or graphics into this application.


## Using Datasets (not for Fluke 43B)

A dataset contains all data belonging to a measurement, including trend data and instrument setup data.

For the Logger function the dataset contains only the setup data. Dedicated software (Power-Log) is available for advanced analysis and reporting of logger data.

### Retrieving, Saving, Sending Back a Dataset

Proceed as follows to retrieve, save, and send back a dataset:

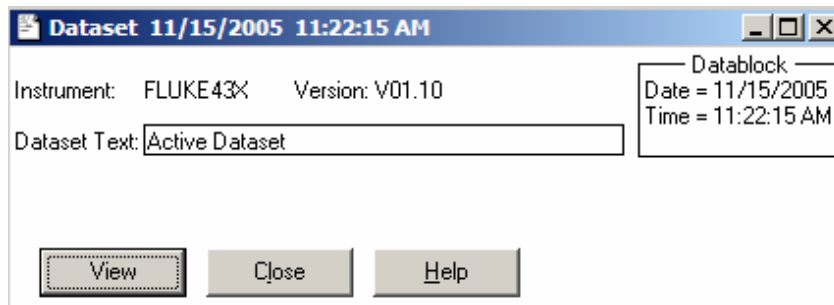
-  Click to retrieve the dataset of the actual measurement

Select **Instrument – Display Dataset** to retrieve the actual dataset or a dataset from the Power Quality Analyzer memory.

- Select the required dataset and click on **Start**.

Retrieving one dataset can take up to 2 minutes at the highest baud rate.


When ready, the dataset window will be displayed:



- Select **File – Save As** to save the dataset.

Use **.fvf** (FlukeView format) to save the dataset window and the dataset data.

A dataset that has been saved as a **.fvf** file can be opened again, can be viewed using the viewer, and can be send back to the Analyzer.

-  Click to send the active dataset to the Power Quality Analyzer.  
Select **Instrument – Send Dataset** to select the dataset to be send to the Analyzer.

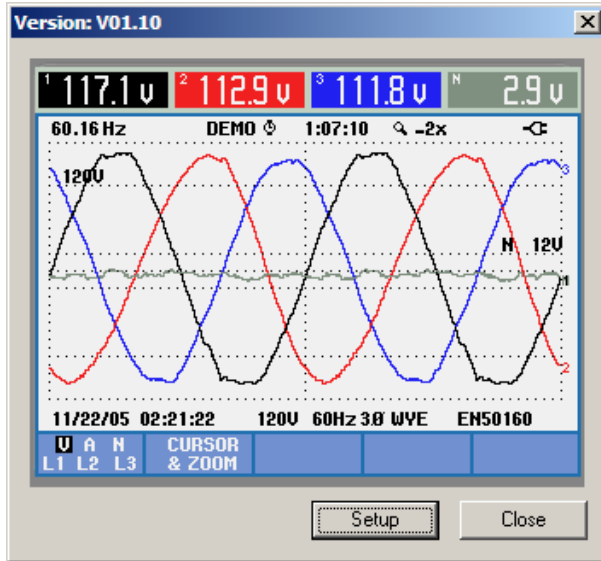
### Analyzing a Dataset

- Retrieve a dataset or open a saved dataset.
- In the Dataset window click **View** to open the dataset viewer.

The dataset viewer disconnects the instrument and connects to a virtual Power Quality Analyzer that has been provided with the data retrieved from the instrument. The virtual Analyzer shows a Fluke 43x screen.

The viewer allows you:

- to view the dataset as on the instrument, see step 3 below
- to display waveforms, trends, events, quality, and harmonics from the dataset, see step 4 below.



*Notes:*

Click on **Close** to close the viewer and to re-connect the instrument.

The Viewer has a high process priority on your PC and may slow down other applications.

- To view the dataset follow the procedure described in the Fluke 43x Users Manual, but use your PC keyboard to operate the viewer:

Fluke 43x keys	PC keyboard
Softkeys F1...F5	F1...F5 or mouse click on Fluke 43x screen
Blue arrow keys	Arrow keys
SETUP	Click on Setup



- To display waveforms, trends, events, quality, and harmonics you can use the FlukeView **Instrument - Display xxxxxxxx** commands. The viewer will behave like a real Power Quality Analyzer, see the example below.

*Note:*

The viewer will hide a warning message when you try to perform an illegal action. Move the viewer window to see the warning messages.

**Example: Export a Waveform from a Dataset to Windows Excel**

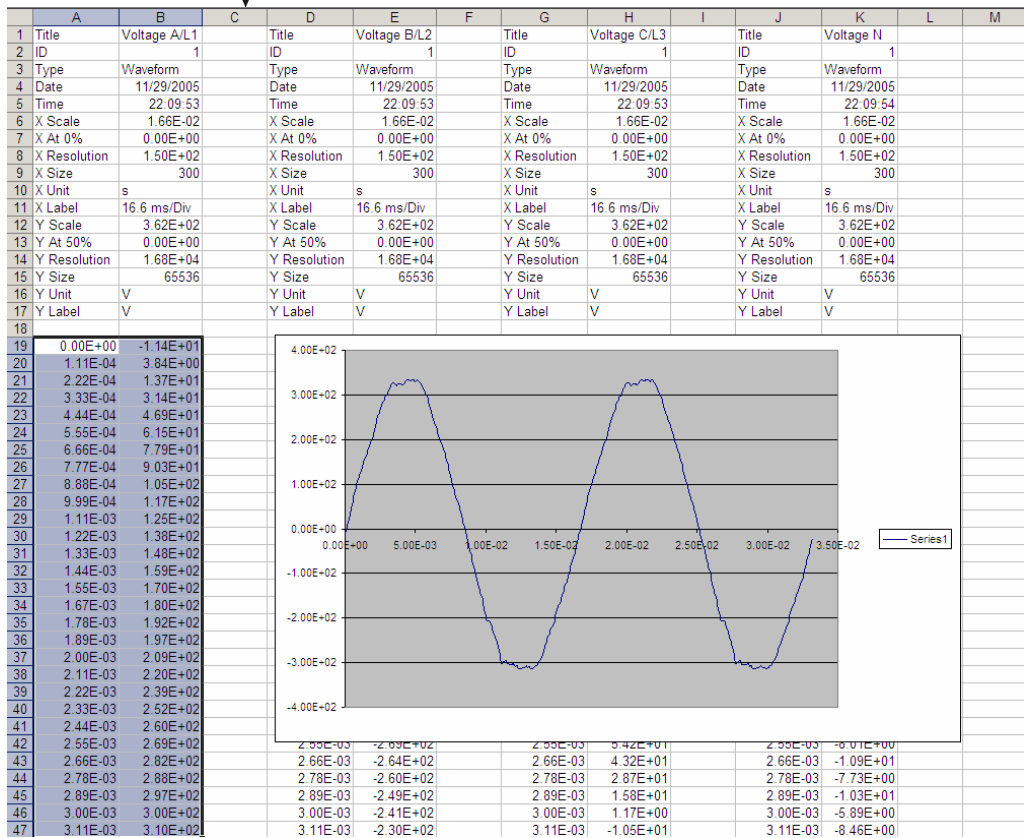
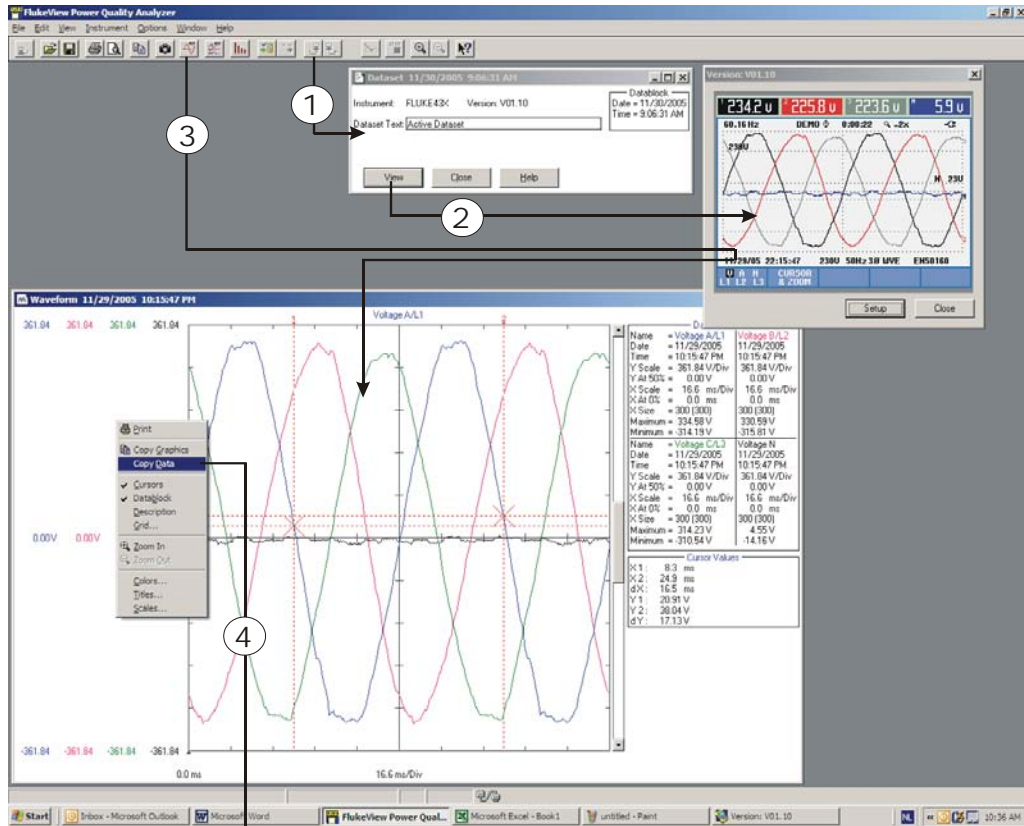
For this example the connected Power Quality Analyzer should be in the Scope mode Volts, and the viewer must be closed. See also the picture on the next page.

-  Click to retrieve the dataset
- Click **View** in the Dataset window to open the viewer.
-  Click to retrieve all waveforms from the viewer.

To analyze the waveforms see Analyzing Waveforms (page 17).

To save the windows see Saving Windows to a File (page 36).



- Right Click in the Waveform window and click **Copy Data** to copy data to the clipboard. Then paste the data into for example an Excel sheet. See also Copying Data via the Clipboard (page 36).



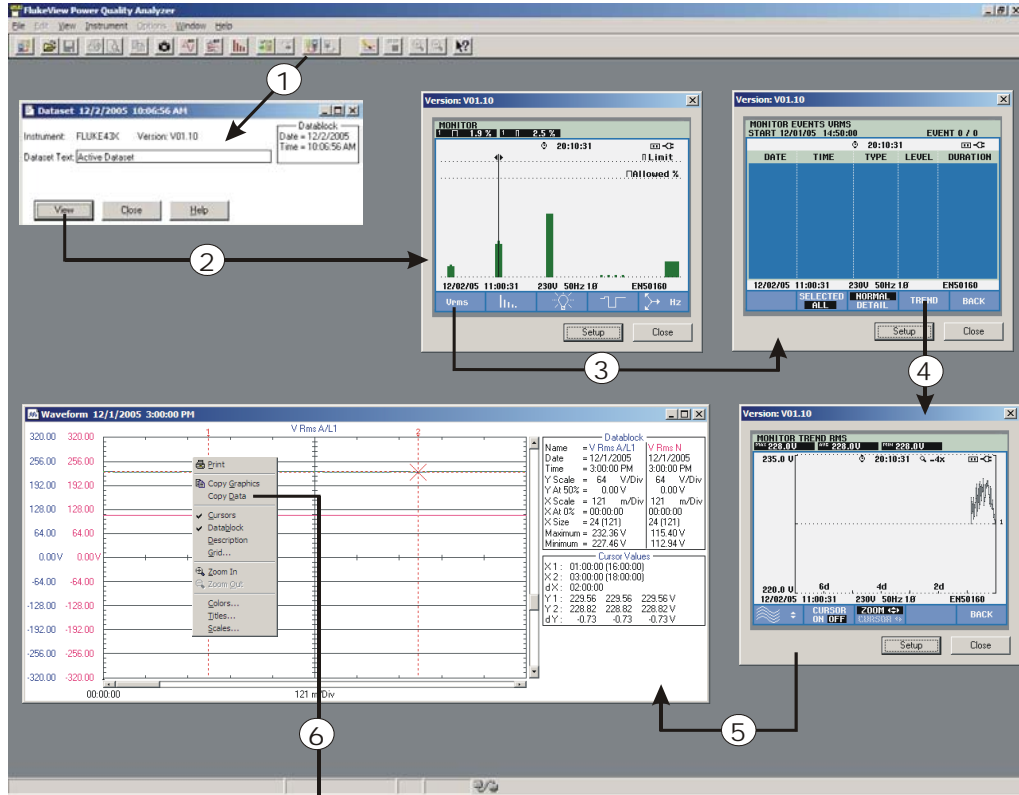
In this example column A (time axis) and column B (Voltage A/L1) are graphed using the Excel Chart Wizard.

**Example: Export a Vrms Trend from a Monitor Dataset to Windows Excel**

For this example the connected Power Quality Analyzer should be in the Monitor mode, and the viewer must be closed. See also the pictures on the next page.

1.  Click to retrieve the actual dataset
2. Click **View** in the Dataset window to open the viewer.
3. Click the Vrms softkey F1 in the viewer to select the Vrms events
4. Click the TREND softtkey F4 in the viewer to see the trend
5. Click  or select **I**nstrument – **D**isplay **T**rend to retrieve trendplot(s) from the viewer.
6. Select **E**dit – **C**opy **D**ata, or right click in the Trend window and select **C**opy **D**ata to copy the trend data to the clipboard.

Open Excel and paste the clipboard data into the Excel sheet.



A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
3	Type	MinAvgMaxFlagged				Type	MinAvgMaxFlagged							
4	Date	12/1/2005				Date	12/1/2005							
5	Time	15:00:00				Time	15:00:00							
6	X Scale	5.00E+04				X Scale	5.00E+04							
7	X At 0%	0.00E+00				X At 0%	0.00E+00							
8	X Resolution	8.33E+01				X Resolution	8.33E+01							
9	X Size	121				X Size	121							
10	X Unit	s				X Unit	s							
11	X Label	50000 s/Div				X Label	50000 s/Div							
12	Y Scale	2.00E+00				Y Scale	6.40E+01							
13	Y At 50%	2.29E+02				Y At 50%	-8.19E+02							
14	Y Resolution	9.27E+01				Y Resolution	2.97E+03							
15	Y Size	65536				Y Size	65536							
16	Y Unit	V				Y Unit	V							
17	Y Label	V				Y Label	V							
18	Time	Minimum	Average	Maximum	Flagged	Time	Minimum	Average	Maximum	Flagged				
19														
20	0.00E+00	2.30E+02	2.30E+02	2.30E+02	0.00E+00	0.00E+00	1.14E+02	1.14E+02	1.14E+02	0.00E+00				
21	6.00E+02	2.29E+02	2.29E+02	2.29E+02	0.00E+00	6.00E+02	1.14E+02	1.14E+02	1.14E+02	0.00E+00				
22	1.20E+03	2.27E+02	2.27E+02	2.27E+02	0.00E+00	1.20E+03	2.33E+02							
23	1.80E+03	2.28E+02	2.28E+02	2.28E+02	0.00E+00	1.80E+03	2.32E+02							
24	2.40E+03	2.29E+02	2.29E+02	2.29E+02	0.00E+00	2.40E+03	2.40E+02							
25	3.00E+03	2.28E+02	2.28E+02	2.28E+02	0.00E+00	3.00E+03	2.32E+02							
26	3.60E+03	2.30E+02	2.30E+02	2.30E+02	0.00E+00	3.60E+03	2.32E+02							
27	4.20E+03	2.30E+02	2.30E+02	2.30E+02	0.00E+00	4.20E+03	2.31E+02							
28	4.80E+03	2.29E+02	2.29E+02	2.29E+02	0.00E+00	4.80E+03	2.31E+02							
29	5.40E+03	2.29E+02	2.29E+02	2.29E+02	0.00E+00	5.40E+03	2.31E+02							
30	6.00E+03	2.29E+02	2.29E+02	2.29E+02	0.00E+00	6.00E+03	2.31E+02							
31	6.60E+03	2.30E+02	2.30E+02	2.30E+02	0.00E+00	6.60E+03	2.30E+02							
32	7.20E+03	2.30E+02	2.30E+02	2.30E+02	0.00E+00	7.20E+03	2.30E+02							
33	7.80E+03	2.28E+02	2.28E+02	2.28E+02	0.00E+00	7.80E+03	2.28E+02							
34	8.40E+03	2.28E+02	2.28E+02	2.28E+02	0.00E+00	8.40E+03	2.28E+02							
35	9.00E+03	2.28E+02	2.28E+02	2.28E+02	0.00E+00	9.00E+03	2.29E+02							
36	9.60E+03	2.28E+02	2.28E+02	2.28E+02	0.00E+00	9.60E+03	2.28E+02							
37	1.02E+04	2.29E+02	2.29E+02	2.29E+02	0.00E+00	1.02E+04	2.28E+02							
38	1.08E+04	2.29E+02	2.29E+02	2.29E+02	0.00E+00	1.08E+04	2.28E+02							
39	1.14E+04	2.29E+02	2.29E+02	2.29E+02	0.00E+00	1.14E+04	2.27E+02							
40	1.20E+04	2.29E+02	2.29E+02	2.29E+02	0.00E+00	1.20E+04	2.27E+02							
41	1.26E+04	2.29E+02	2.29E+02	2.29E+02	0.00E+00	1.26E+04	1.14E+02	1.14E+02	1.14E+02	0.00E+00				
42	1.32E+04	2.30E+02	2.30E+02	2.30E+02	0.00E+00	1.32E+04	1.15E+02	1.15E+02	1.15E+02	0.00E+00				
43	1.38E+04	2.30E+02	2.30E+02	2.30E+02	0.00E+00	1.38E+04	1.15E+02	1.15E+02	1.15E+02	0.00E+00				
44	1.44E+04	2.30E+02	2.30E+02	2.30E+02	0.00E+00	1.44E+04	1.15E+02	1.15E+02	1.15E+02	0.00E+00				
45	1.50E+04	2.30E+02	2.30E+02	2.30E+02	0.00E+00	1.50E+04	1.14E+02	1.14E+02	1.14E+02	0.00E+00				
46	1.56E+04	2.31E+02	2.31E+02	2.31E+02	0.00E+00	1.56E+04	1.15E+02	1.15E+02	1.15E+02	0.00E+00				
47	1.62E+04	2.31E+02	2.31E+02	2.31E+02	0.00E+00	1.62E+04	1.15E+02	1.15E+02	1.15E+02	0.00E+00				
48	1.68E+04	2.32E+02	2.32E+02	2.32E+02	0.00E+00	1.68E+04	1.15E+02	1.15E+02	1.15E+02	0.00E+00				
49	1.74E+04	2.29E+02	2.29E+02	2.29E+02	0.00E+00	1.74E+04	1.14E+02	1.14E+02	1.14E+02	0.00E+00				


In this example column A (time axis) and column B (Min. Voltage trend 1) are graphed using the Excel Chart Wizard.

## Limit Sets (not for Fluke 43B)

An instrument limit set contains all limits used for power quality monitoring.

### Retrieving, Saving, Sending Back a Limit set

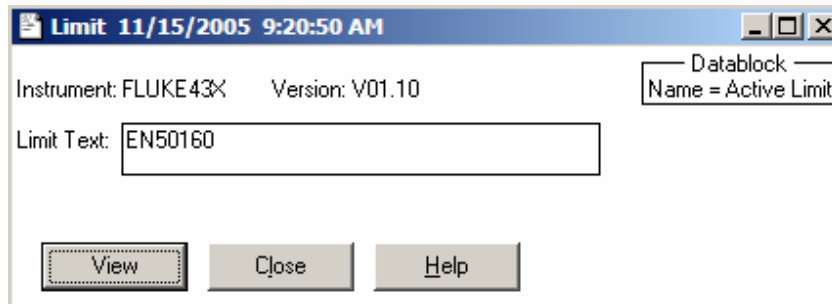
Proceed as follows to retrieve, save, and send back a limit set:

1.  Click to retrieve the limit set of the actual measurement

Select **Instrument – Display Setup/Limits** to retrieve the actual limit set or a limit set from the Power Quality Analyzer memory.

2. Select the required dataset and click on **Start**.


When ready, the limit window will be displayed:



3. Select **File – Save as** to save the limit set.

Use **.fvf** (FlukeView format) to save the limit set window and the limit set data.

A limit set that has been saved as a **.fvf** file can be opened again, can be viewed using the viewer, and can be send back the Analyzer.

4.  Click to send the active limit set to the Power Quality Analyzer.

Select **Instrument – Send Setup/Limits** to select the limit set to be send to the Analyzer.

### Viewing and Editing a Limit set

1. Retrieve a limit set or open a saved limit set.
2. In the Limit window click View to open the limit viewer.

The limit viewer disconnects the instrument and connects to a virtual Power Quality Analyzer that has been provided with the limits retrieved from the instrument. The virtual Analyzer shows a Fluke 43x screen.

The viewer allows you:

- to view the limits as on the instrument.
- to edit the limits, save edited limit set and send it back to the analyzer.



*Note:*

*Click on Close to close the viewer and to re-connect the instrument.*

3. To view and edit the limits follow the procedure described in the Fluke 43x Users Manual (Setting up the Analyzer), but use your PC keyboard to operate the viewer:

<b>Fluke 43x keys</b>	<b>PC keyboard</b>
Softkeys F1...F5	F1...F5 or mouse click on Fluke 43x screen
Blue arrow keys	Arrow keys
SETUP	Click on Setup

4. Close the viewer after editing the limits, the Limit text in the limit window will be provided with an \*, e.g. EN50160 will become EN50160\*.

5.  Click to save the edited limit set.
6.  Click to send the limit set to the Analyzer.



## Logging Readings

### Graphing Readings

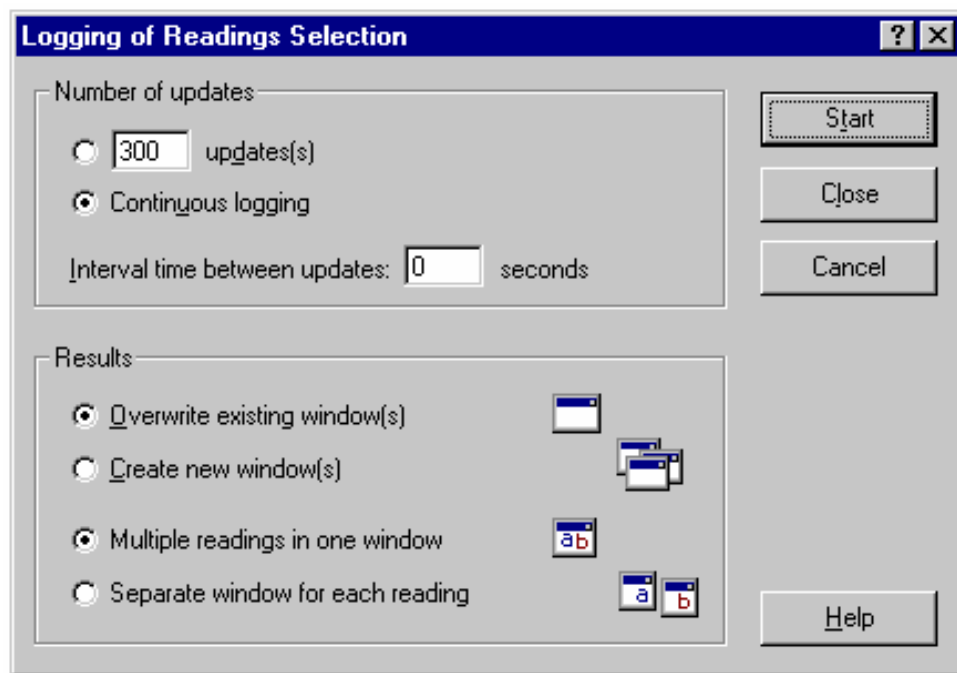
You can transfer and graph readings taken by the Power Quality Analyzer over a period of time. Up to four types of readings can be displayed in one window.

#### Note

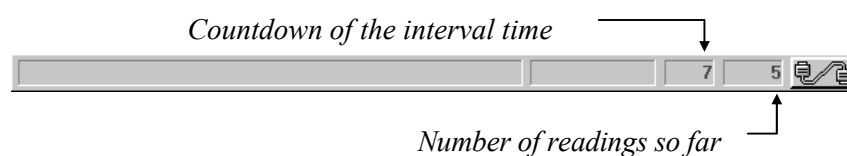
*Harmonics data from the Fluke 43B are not retrieved as readings, but are retrieved as screens. To log the 43B harmonics see page 33*


To demonstrate graphing readings,  $V_{rms}$  and  $A_{rms}$  readings will be logged. Press **MENU** on the Power Quality Analyzer and start the **VOLTS/AMPS/HERTZ** function.

-  Click or select **Instrument - Start Logging of Readings**. A dialog box appears allowing you to select the logging parameters.

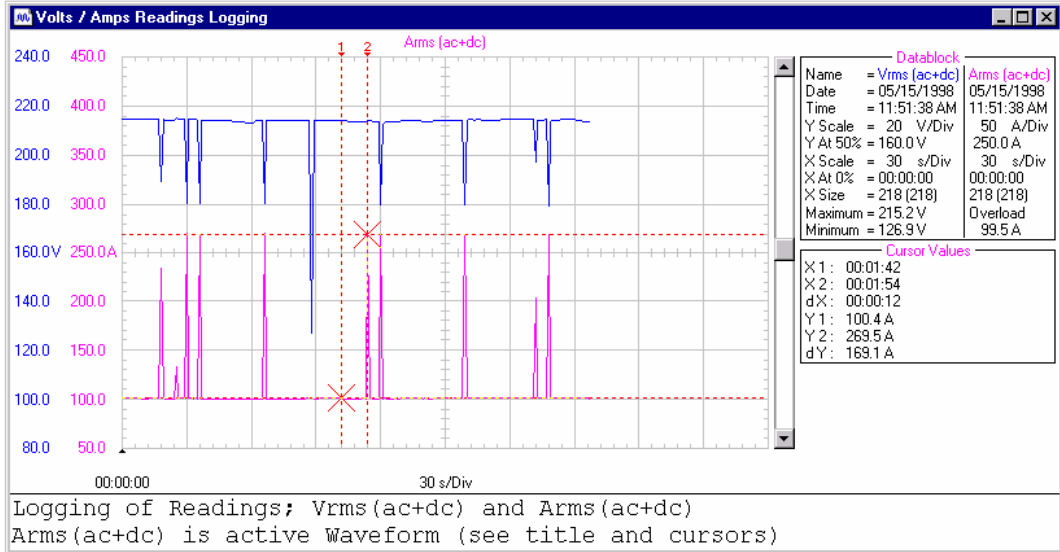


- Set **Interval time** to three seconds, and choose **Continuous logging**, **Overwrite existing window(s)** and **Multiple readings in one window**.
- Click **Start**. A dialog box appears allowing you to select the type of readings you want to log (only if you selected **Instrument - Start Logging of Readings**).
- Click **Start** to start logging. The status bar at the bottom of the screen shows the logging progress.




-  Click to stop logging.

To change the window to your preference see Window Properties on page 15.  
See below for an example of logged readings in a waveform window.



Datablock of Vrms and Arms	Cursor Values
Name : Name of the waveform	X1 : Time at cursor 1
Date : Date of the waveform	X2 : Time at cursor 2
Time : Time of the waveform	dX : X2 - X1
Y Scale : Vertical scale	Y1 : Readings value at cursor 1
Y At 50% : Vertical position	Y2 : Readings value at cursor 2
X Scale : Horizontal scale	dY : Y2 - Y1
X At 0% : Horizontal position	Notice that values apply to the active waveform.
X Size : Shown (Total) number of waveform points	
Maximum : Maximum value	
Minimum : Minimum value	

**Tips**

-  Click to zoom in on a part of a waveform.
- Use the mouse or (**Shift**) ← → keys to move the cursors.

*Note*

*The Date and Time formats depend on the Windows® settings.*

### **Inserting Logged Data into a Spreadsheet**


1. Click on the window you want to insert.
2. Select **E**dit - **C**opy **D**ata to copy the reading's data to the clipboard.
3. Switch to a spreadsheet program.
4. Open or create a worksheet and place the cursor where you want to insert the data.
5. Insert the data into the worksheet. The numerical readings will be arranged in columns.

#### *Note*

*You can insert waveform and spectrum points into a spreadsheet in the same way.*

### **Example: Graphing Harmonics from the Fluke 43x**

Proceed as follows to graph harmonics from the Fluke 43x:

1. On the Fluke 43x select Harmonics, then select the TABLE screen (softkey F3).
2.  Start logging of readings.
3. Select from the Logging of Readings window:
  - continuous logging
  - interval 0
  - create new windows
  - multiple readings in one window
4. Click on **S**tart.

FlukeView will open seven new windows to graph the harmonics readings in. The readings of each row in the HARMONICS TABLE screen will be graphed in one window, see the picture on the next page.

Screen 12/7/2005 1:20:07 PM

### HARMONICS TABLE

DEMO 0:20:40

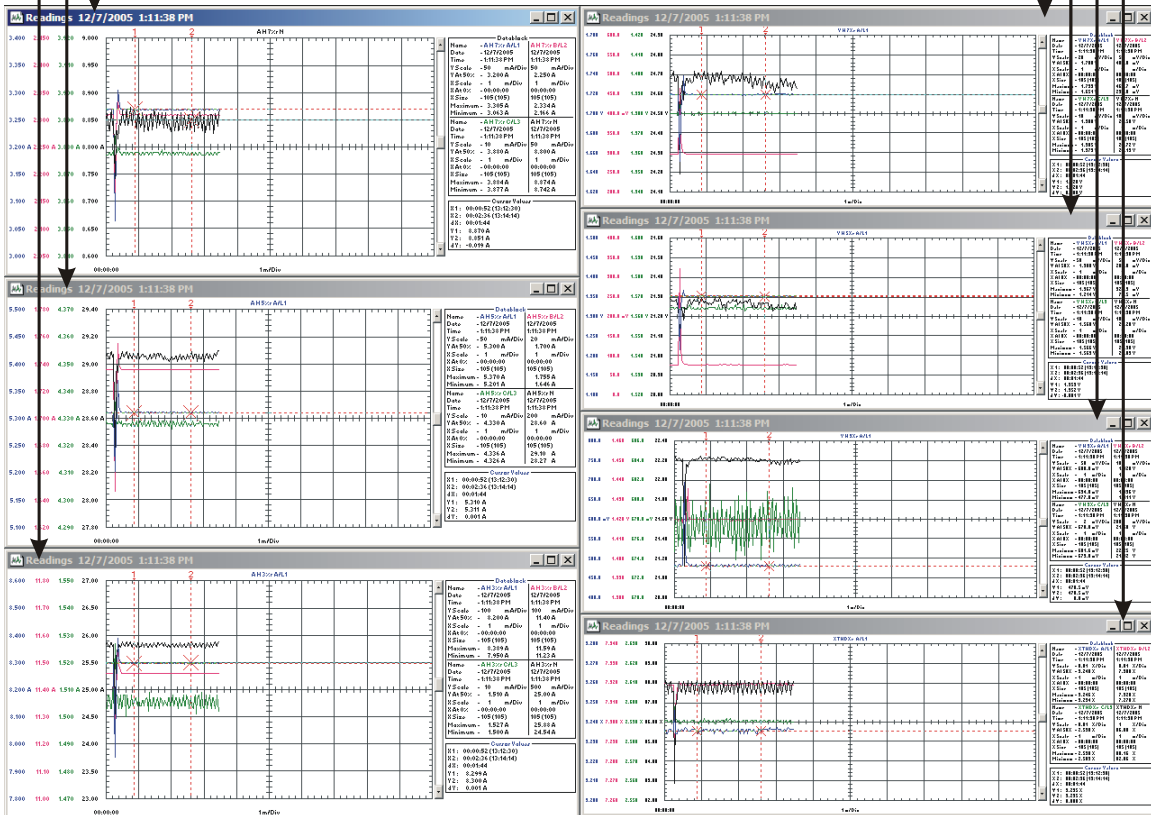
Volt	L1	L2	L3	N
THD%	3.2	7.3	2.6	87.8
H3%	0.5	1.4	0.7	22.2
H5%	1.4	0.1	1.6	21.2
H7%	1.7	0.3	1.4	24.6

Amp	L1	L2	L3	N
H3%	8.3	11.5	1.5	25.9
H5%	5.3	1.7	4.3	29.1
H7%	3.3	2.3	3.9	8.9

12/07/05 02:29:12 230V 50Hz 3Ø WYE EN50160\*


U A W BACK TREND HOLD RUN

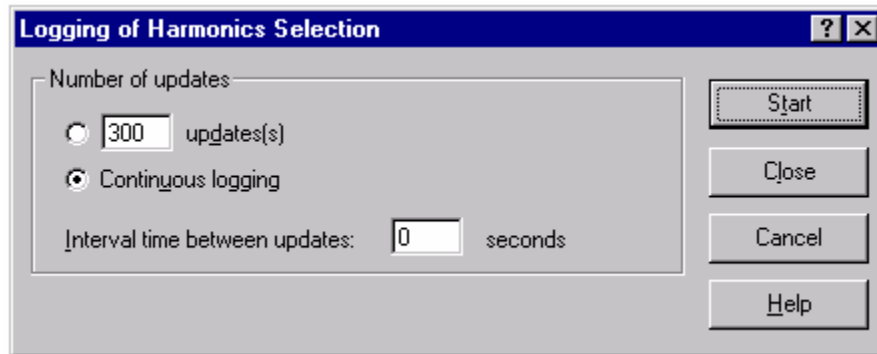




### Graphing Harmonics from the Fluke 43B

You can transfer and graph harmonics taken by the Fluke 43B over a period of time.

To demonstrate this, press **MENU** on the Power Quality Analyzer and start the **HARMONICS** function.


-  Click to start logging. A dialog box appears allowing you to select the logging parameters.

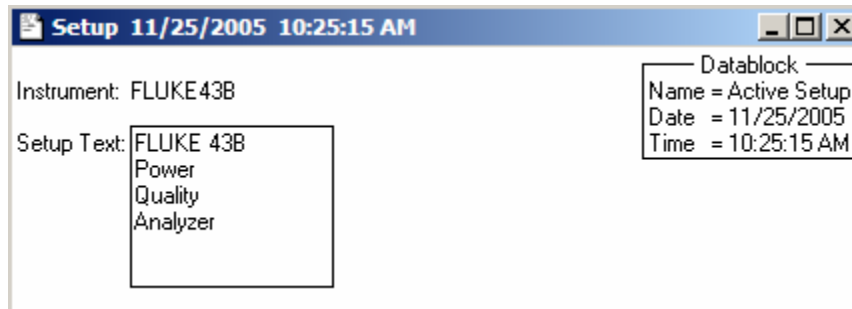


- Set **Interval time** to three seconds, and choose **Continuous logging**.
- Click **Start**. All harmonics are logged, but only the actual harmonics are shown in a harmonics window.
-  Click to stop logging.
-  Click to save all logged harmonics to a FVF, CSV, or TXT file.

To graph the harmonics use for example windows Excel, see Inserting Logged Data into a Spreadsheet on page 31.


## Transferring Fluke 43B Instrument Setups

1.  Click to read the active setup.
2. Select **Options - Add Description** and type a description in the text box below the window (max. 10 lines).
3. Select **Options - Titles** to change the title of the window.
4. Select **View - Datablock** to show the datablock.
5. Select **Options - Colors** to change window colors.




Each setup appears in a separate setup window.

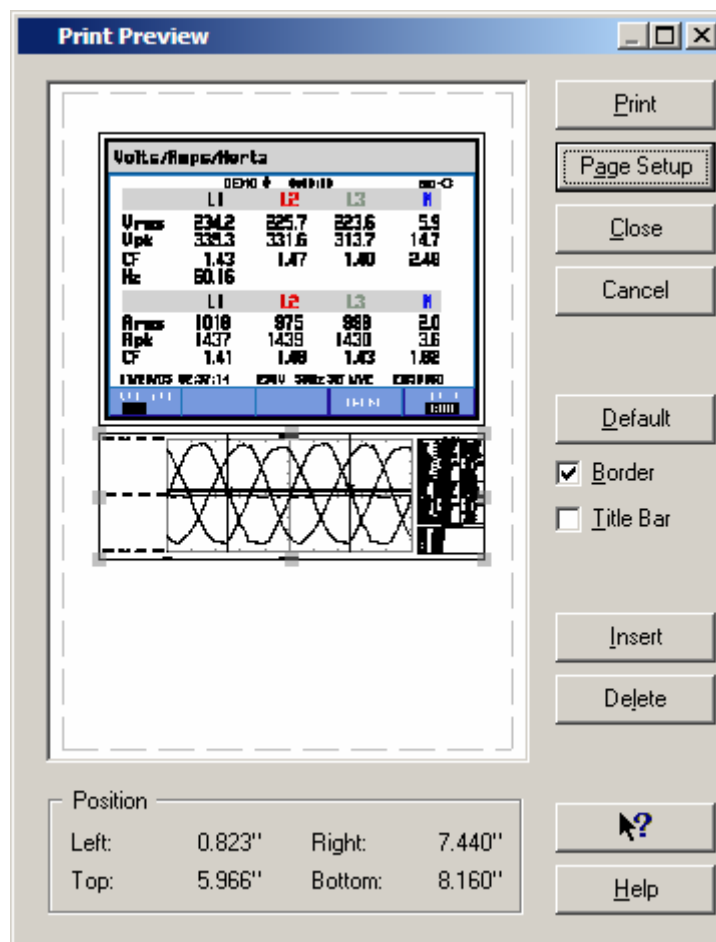
If available from the Power Quality Analyzer, the Setup Text box shows setup information.

6.  Click to send the setup from the selected setup window to the Power Quality Analyzer.

## Printing Windows

The Print Preview function enables you to preview any combination of screen, waveform, readings, harmonics, and setup windows on a page before printing.


1. Click on the window you want to print.
2.  Click to preview the window on the page.

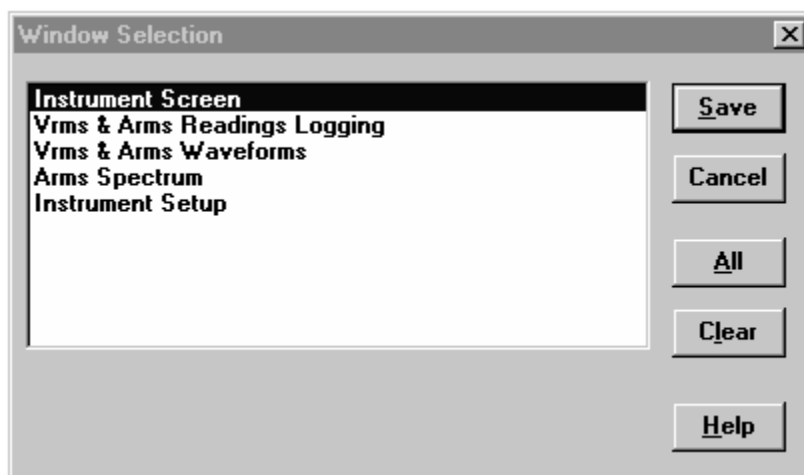


3. Choose **B**order to add a border around the active window.
4. Choose **T**itle Bar to add the title of the active window.
5. Click **I**nsert to add more windows on a page. A dialog box appears allowing you to select another window.
6. Click **P**age Setup to change the page setup
7. Click **P**rint to start printing the window(s).
8. To change printer settings, select **F**ile - **P**rint Setup.

## **Saving Windows to a File**

You can save any combination of screen, waveform, readings, harmonic, and setup windows to an FVF file.

1. Click on the window you want to save.
2.  Click. If there are more windows, a dialog box appears.



3. Select the windows of your choice or click **All** to select all windows.
4. Click **Save**. Another dialog box appears.
5. Enter a name for the file in the **File name** box (FVF is default file type).
6. Click **OK** to start saving the windows you selected to the file.

For more information on saving to a file, select **Help - Index** and look for **File Formats**.

## **Copying Data via the Clipboard**

You can export data belonging to the selected window, for example a waveform window, to other applications like Windows Excel or Word via the clipboard.

Proceed as follows:

1. Select **Edit - Copy Data** or **Edit - Copy Graphics**

You can also right click the mouse in the window and select **Copy Data** or **Copy Graphics**

**Copy Data** will copy the measured values (numerical data), **Copy Graphics** will copy the picture (bitmap).

2. Open the application where you want to use the data and paste the clipboard contents into it.