Quick Start Guide

**Agilent Technologies
AC Source/ Power Analyzer
Graphical User Interface**
for Windows 95-98 and
Windows NT 4.0

Agilent Technologies

Contents

Description

What the GUI Will Do

The Agilent AC Source Graphical User Interface (GUI) is an easy to use soft front panel for the Agilent Technologies 6800-series AC Power Source/Analyzers. With it, you can:

- Control output and measurement functions from a single screen.
- View an oscilloscope-like display of actual output waveforms.
- View the harmonic content of the output waveform.
- Easily generate complex output transients and user-defined waveforms by clicking and dragging the mouse.
- View the instrument commands generated by the graphical user interface.
- Operate in either simulation mode (no ac source hardware required), or in instrument control mode.

What the GUI Will Not Do

The Graphical User Interface does not:

- Automatically generate test programs
- Control instruments other than Agilent ac sources
- Provide drivers for other GPIB instruments
- Link with the Agilent HFTS software
- Operate with Windows 3.1

System Requirements

PC

- 486DX66 minimum (Pentium 100 or better recommended)
- 16 Mbytes RAM
- 4 Mbytes of disk space

32-bit Platforms

- Windows 95 - 98
- Windows NT 4.0

Supported I/O

- Agilent 82340B, 82341C, 82341D, 82335B[1]
- National AT GPIB/TNT, AT GPIB/TNT PnP (Windows 95)
- RS-232

[1]The Agilent 82335B is only supported for Windows 95, provided you have either the E2094F or E2094E I/O library.

Supported Ac Source Models

- Agilent 6811A/B, 6812A/B, 6813A/B, 6814B, 6834B
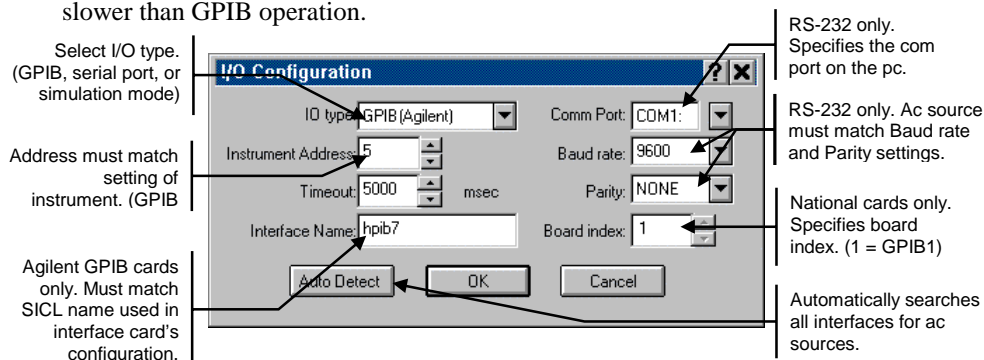- Agilent 6841A, 6842A, 6843A (in Normal mode only)

Installing and Running the Software

NOTE: Before running the Agilent AC Source GUI, you must have installed and connected your ac source to the pc using the appropriate interface cable. If you are using a National Instruments GPIB interface, you must have the appropriate card installed and configured on your pc. If you are using an Agilent GPIB interface card, you must also have the appropriate 32-bit SICL library drivers installed on your pc.

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1. Place Disk #1 in the A: drive of your computer and run SETUP.EXE.

2. Follow the directions on the screen to install the software. The README.TXT file contains product updates or corrections that are not documented in the help file. Use any text editor to open and read this file.

3. To run the Agilent AC Source GUI, click on its desktop icon: You can also click on the Start button and select: **Programs | Agilent AC Source | AC Source GUI**.

Configuring the I/O

To configure the I/O, select the **I/O Configuration** command in the Edit menu. This step is necessary to establish communication with the ac source. The I/O configuration screen comes up automatically when you turn Simulation mode off in the Source menu. Note that operating the ac source over a serial port is much slower than GPIB operation.

Select I/O type. (GPIB, serial port, or simulation mode)

RS-232 only. Specifies the com port on the pc.

Address must match setting of instrument. (GPIB

RS-232 only. Ac source must match Baud rate and Parity settings.

National cards only. Specifies board index. (1 = GPIB1)

Agilent GPIB cards only. Must match SICL name used in interface card's configuration.

Automatically searches all interfaces for ac sources.

I/O Configuration

IO type: GPIB (Agilent)   Comm Port: COM1:
Instrument Address: 5   Baud rate: 9600
Timeout: 5000   msec   Parity: NONE
Interface Name: hpib7   Board index: 1
Auto Detect   OK   Cancel

If there seems to be no communication between the Agilent AC Source GUI and the ac source, select **Auto Detect** to detect any ac sources connected to your pc. Also try resetting the I/O interface by clicking the red reset button. This also resets the ac source to its default settings.

NOTE: If you program the ac source from the front panel of the unit, you will need to refresh or update the Agilent AC Source GUI. Go to the **Source** menu and select the **Refresh Instrument State** command.

Performing Basic Operations

The **Main** window appears when you first run the Agilent AC Source GUI. From this window you can control the output of the ac source as well as view all output measurements.
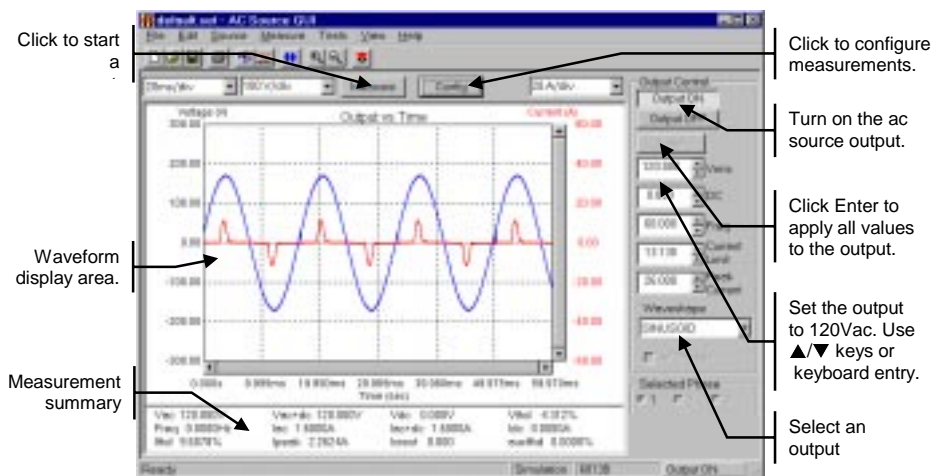
To access an existing configuration,

- Click **File**, **Open Configuration** in the menu. Configuration files contain Agilent AC Source GUI settings but not actual ac source instrument settings.

- Select the desired file (files have an *.set extension) and click **Open**.

- To create a new configuration, click **File**, **New Configuration**. This action clears the present configuration, resets the ac source instrument to its default values, and sets the I/O to simulation mode.

To program the output of the ac source,

- Under **Output Control**, program the output rms voltage, dc offset voltage, frequency, rms current limit, and peak current limit. You can either type in the values directly, or use the up/down arrows to adjust the present value. If you type in the values, you mst press the **Enter** button.

- For 3-phase ac sources, select the **Phase** that you want to control. You can couple or control **All** phases simultaneously, or control each phase individually.

- Select a waveshape from the **Waveshape** list box - either Sinewave, Squarewave, or Clipped sinewave. For **clipped sinewaves**, you can specify the clipping level in percent of amplitude, or in percent of total harmonic distortion.

- Select **Output On** to enable the output of the unit. Select **Output Off** to turn the output off. Note that the selected waveshape will **not** appear on the Main window unless you click the **Measure** button.

To view output measurements,

- Select the **Config Measurements** command in the Measure menu. Select the Configure Waveform Display folder.

Specify type of measurement.

Only applies to units with the AUX channel option.

Select units for harmonic graph axes

- To view voltage or current measurements, select **Voltage, Current,** or **Voltage + Current** in the Waveform to Display dropdown list.

- To view harmonic measurements, select a harmonic display functions.

- Click the **Measure** button to make an output measurement. The following figure shows a sample voltage harmonics measurement. Note that for 3-phase ac sources, you can only measure one phase at a time. Only the measurement of the selected phase is returned.

Click

Displays the specified harmonics.
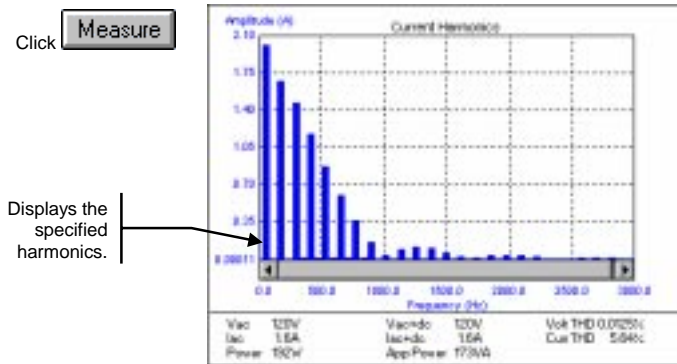
To save the configuration settings,

- Click **File**, **Save Config** in the menu.

- Enter a filename (setup files have an .set extension) and click **Save**. Note that Output Control settings are NOT saved in the setup file.
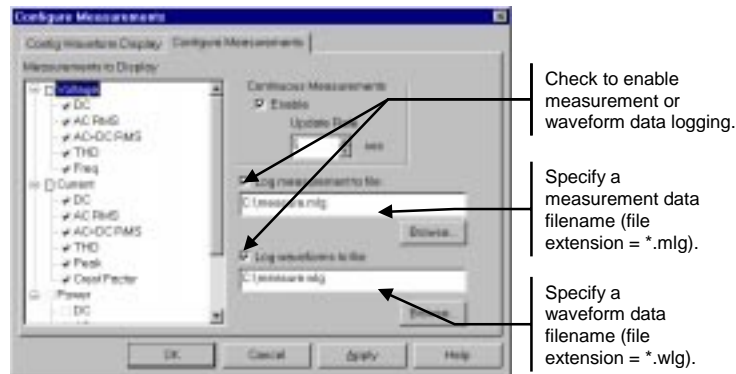
Printing and Saving Measurement Data

To print the measurement screen, click on either the Print icon or select the **Print** command in the File menu. You can preview and print the **Main** window only. The following is a sample preview/print of the Main window:

Click
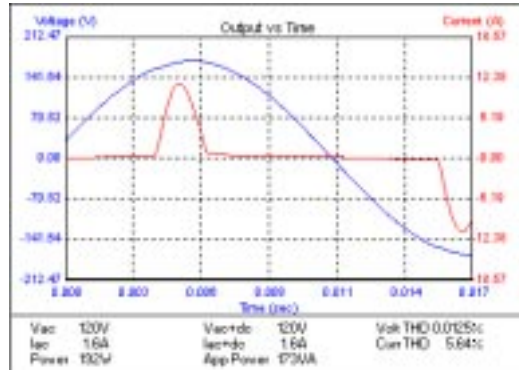
To save the waveform that appears in the display, select **Save Waveform** in the File menu. This saves the displayed waveform as an ASCII file, which can be easily imported into other application programs.

To log measurement or waveform data to an ASCII text file, select the **Config Measurements** command in the Measure menu. Select the Configure Measurements folder. Check the appropriate **Log to file** box and provide a name for the data file. Data will be logged whenever an output measurement is made.

Check to enable measurement or waveform data logging.

Specify a measurement data filename (file extension = *.mlg).

Specify a waveform data filename (file extension = *.wlg).

The measurement data file saves measurements in a comma-separated table of values. The columns in the list correspond to all available measurements, with blanks for non-measured values. For 3-phase units, only information from the selected phase will be saved.

The waveform data file saves measurements in a 3-column format. The columns are Time, Voltage and Current. Harmonics are not saved.

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Sample Tests

Several sample tests are provided with the Agilent AC Source Graphical User Interface. These pre-defined tests help you quickly perform some common ac source applications.
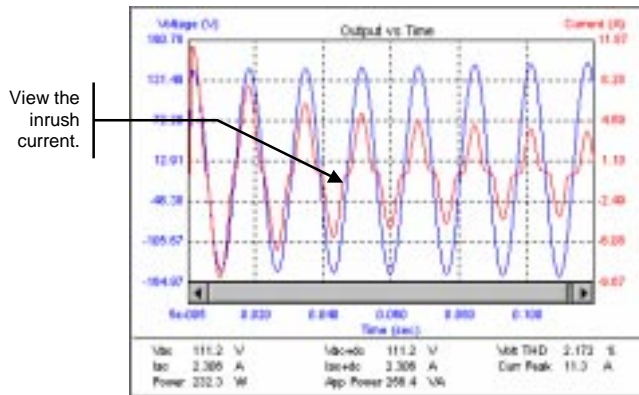
Inrush Current Measurement

To perform an inrush current measurement, select **Inrush Current** in the Tests menu. The test uses the parameters that you enter in the following dialog box. This box is displayed on the screen when the test is first selected.
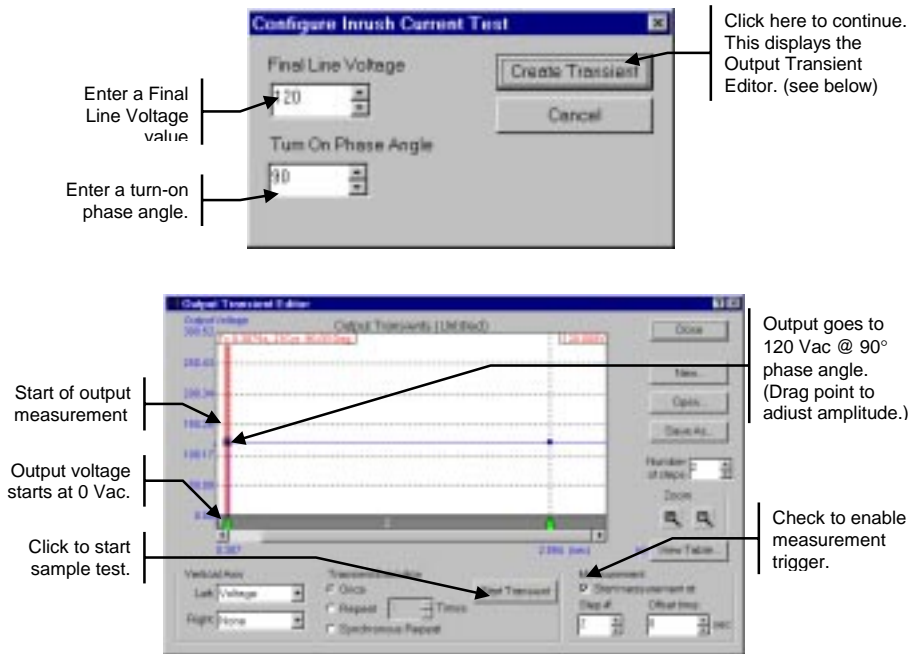
You can use the transient editor to make any final adjustments to the inrush current measurment such as fine tuning the width of the transient step, or positioning and enabling the measurement trigger.

When measurements are enabled, you can view the inrush measurement in the Main window. If necessary, move the Transient editor out of the way to see the Main window. The following figure shows a sample inrush curent measurement.

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View the inrush current.

AC Line Dropout

To perform an ac line dropout, select **Dropout** in the Tests menu. The test uses the parameters that you enter in the following dialog box. This box is displayed on the screen when the test is first selected.

Enter the number of dropout cycles

Enter the dropout voltage value

Enter a starting phase angle.

Click here to continue. This displays the Output Transient Editor.

Check to enable measurement trigger.

Start of output measurement

Step #1, output voltage @ 120 Vac.

Step #2, output voltage @ 0 Vac for one cycle.

Click to start sample test.

Step #3, output voltage returns to 120 Vac. (Drag point to adjust amplitude .)
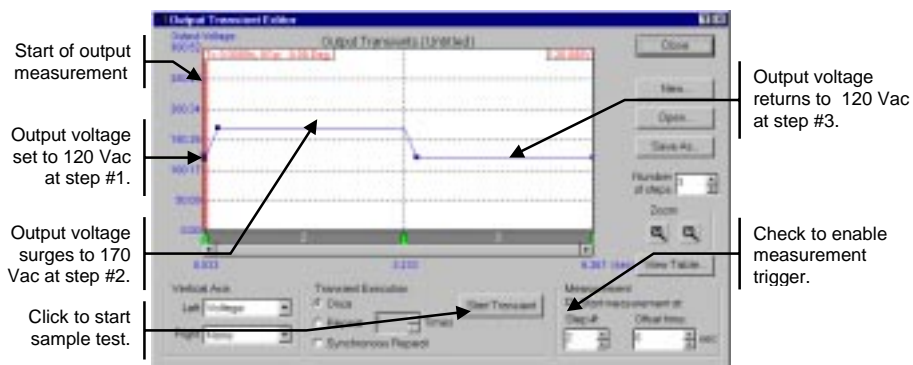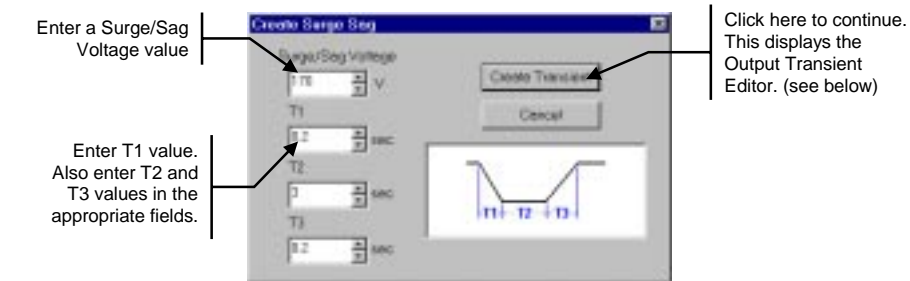
Drag pointer to adjust width of dropout.

Check to enable measurement trigger.

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You can use the transient editor to make any final adjustments to the ac line dropout test such as fine tuning the width of the dropout, or positioning and enabling the measurement trigger.

When measurements are enabled, you can view the line dropout measurement in the Main window. If necessary, move the Transient editor out of the way to see the Main window.

AC Line Surge or Sag

To perform an ac line surge/sag, select **Surge/Sag** in the Tests menu. The test uses the parameters that you enter in the following dialog box. This box is displayed on the screen when the test is first selected.
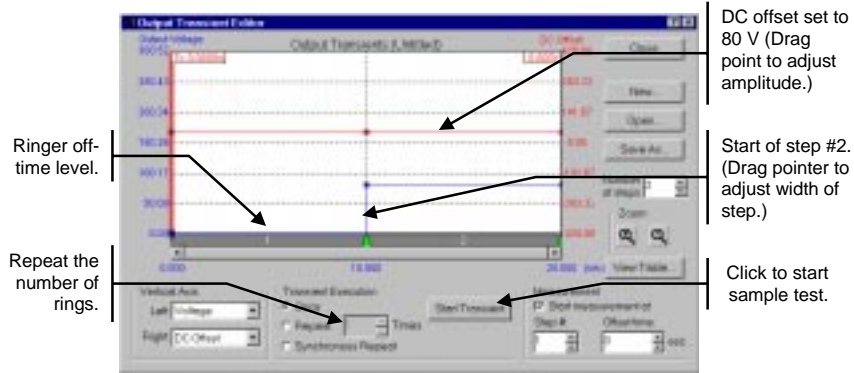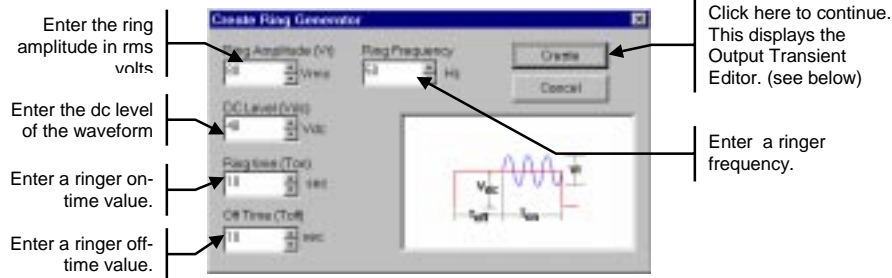

You can use the transient editor to make any final adjustments to the ac line surge/sag test such as fine tuning the slew rates of the surge or sag, or positioning and enabling the measurement trigger.

When measurement are enabled, you can view the line surge/sag measurement in the Main window. If necessary, move the Transient editor out of the way to see the Main window.

Telephone Ring Generator

CAUTION: This test is only designed to test telephone ringer circuits. Do not use this test to power any device that requires ac input power.

The telephone ring generator produces an output signal to test telephone ringers. The test uses the parameters that appear in the dialog box that is displayed on the screen when the test is first selected.

Enter the ring amplitude in rms volts

Enter the dc level of the waveform

Enter a ringer on-time value.

Enter a ringer off-time value.

Click here to continue. This displays the Output Transient Editor. (see below)

Enter a ringer frequency.

DC offset set to 80 V (Drag point to adjust amplitude.)

Ringer off-time level.

Start of step #2. (Drag pointer to adjust width of step.)

Repeat the number of rings.
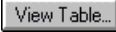
Click to start sample test.

You can use the transient editor to make any final adjustments to the telephone ringer waveform such as fine tuning the dc level of the waveform. Note that the transient editor only displays the rms-portion of the telephone ringer; it does not display the actual waveform.

When measurements are enabled, you can view the ringer waveform in the Main window. If necessary, move the Transient editor out of the way to see the Main window.

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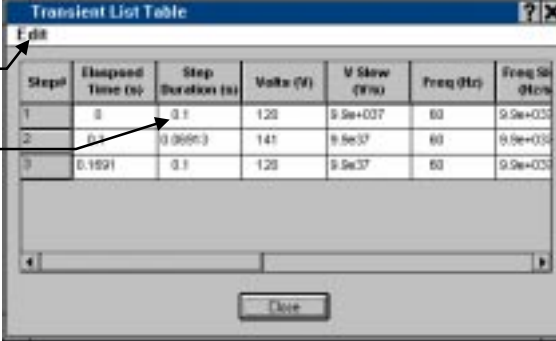## Editing With the Transient List Table

The previous four sample tests introduced you to using the click and drag editing features of the Transient Editor.

A more precise method of creating and editing transients is available by using the Transient List table. Click the **View Table** button in the Output Transient editor. The Transient List table is simply another view of the transient editor. The values in the table correspond exactly to the corresponding transient graph. The following table shows the values for the sample **Surge/Sag** test.

Click — Menu commands to simplify editing.

Select and edit individual values in each cell.

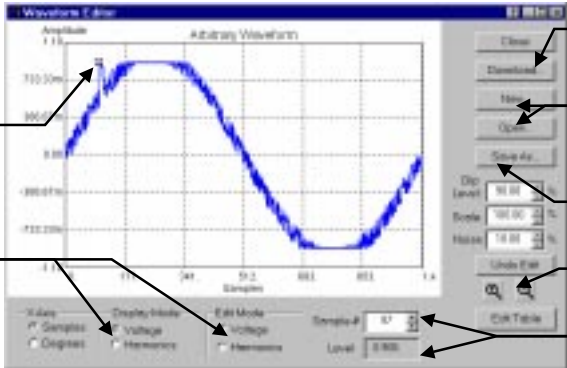## Creating User-Defined Output Waveforms

To create user-defined voltage waveforms, select either the waveform icon or the **Arbitrary Waveforms** command in the Source menu. This window lets you edit basic waveform shapes to create a user-defined arbitrary waveform.

Waveforms can be edited in either waveform or harmonic format. To create or edit a waveform, the Display Mode must match the Edit Mode. Download the completed waveform to the ac source. **To output the downloaded waveform, you must select it in the Waveshape box of the Main window.**

Click

Drag waveform points to edit the shape.

Edit Mode must match Display Mode to edit the waveform.

Download the waveform to the ac source.

Select New or Open to edit a waveform

Save the waveform as an ASCII file.

Select to zoom the display in or out.

Indicates the of the active point.

To create or edit waveforms in the harmonic format, set the Edit Mode and the Display Mode to **Harmonics**. Note that continually switching edit modes will result in cumulative waveform truncation errors. Therefore, select only one edit mode to work in. Switching display modes does not cause recalculation errors.

Drag harmonic to change the amplitude.

Edit Mode must match Display Mode to edit the waveform.

Lets you edit individual waveform data points.
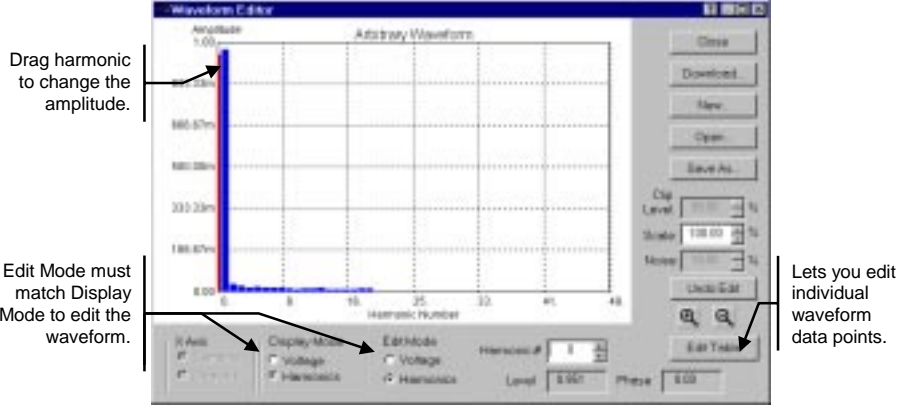
Generating AM or FM Output Signals

AM or FM ouput signals can be precisely generated using the AM amd FM Modulation table. Either click the Modulation icon, or select the **Modulation** command in the Source menu.
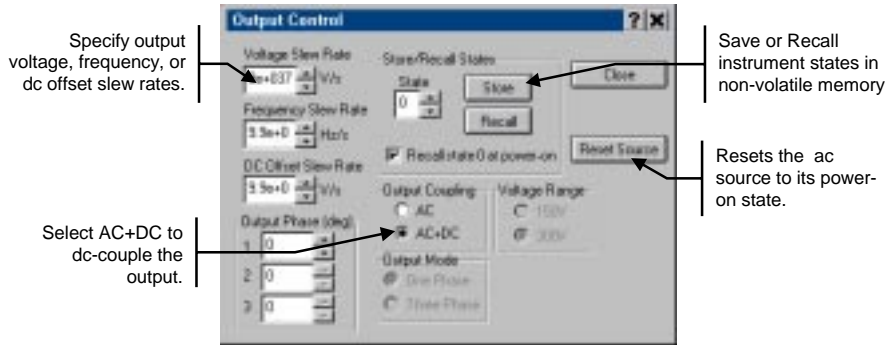
AM or FM output waveforms consist of a carrier signal (the fundamental) and a modulation signal. The voltage and frequency of the carrier signal is defined in the Output Control section of the Main window. Only the modulation signal is defined in this dialog box.

Click

Lets you edit # of steps in modulation profile.

Enter parameters for modulation signal.

Modulation signals are comprised of from one to 20 individually programmed steps that may be combined into a modulation sequence and then run. Each step programs the modulation signal for the duration of the step. The amplitude and frequency of the modulation signal may be constant, swept linearly, or swept logarithmically from the starting value to a stop value. The sweep period is programmed in seconds.
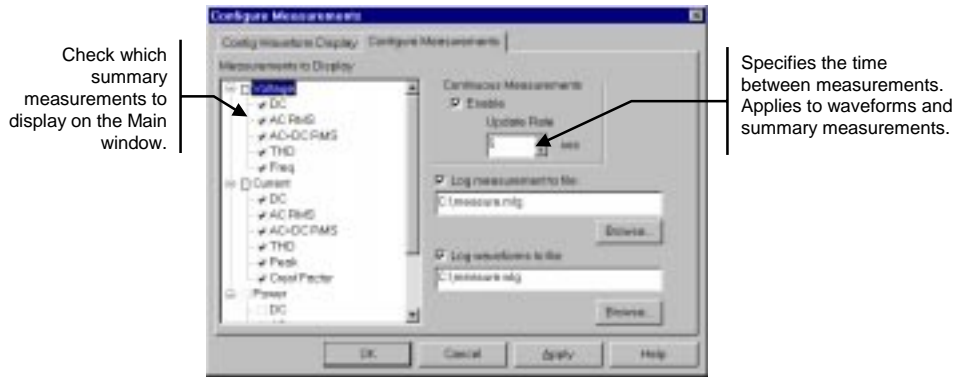
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Advanced Controls

To access the less frequently used output controls, select the **Output Control** command in the Source menu. These output controls include slew rate settings, relative-phase on 3-phase units, output coupling, voltage range, and save/recall states.

Specify output voltage, frequency, or dc offset slew rates.

Save or Recall instrument states in non-volatile memory

Resets the ac source to its power-on state.

Select AC+DC to dc-couple the output.

To program Output impedance, select the **Impedance** command in the Source menu. You can program real or reactive impedance. These controls are not available on all ac source models.

Enable ouput impedance control

Enter impedance values

To configure output measurements, select the **Config Measurements** command in the Measure menu. Then select the Configure Measurements folder. You can select what measurements appear in the measurement summary area and how often the summary measurements are updated. You can also configure measurement and waveform logging, as previously discussed.

Check which summary measurements to display on the Main window.

Specifies the time between measurements. Applies to waveforms and summary measurements.

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To program minimum and maximum user-defined limits for critical ac source parameters, select the **User Defined Limits** command in the Source menu. The controls in this dialog box can be used to prevent a user from accidentally programming dangerous voltage or frequency values in the Main window.

Enter minimum and maximum user-defined limit values.

Resets the limits to the hardware default values.
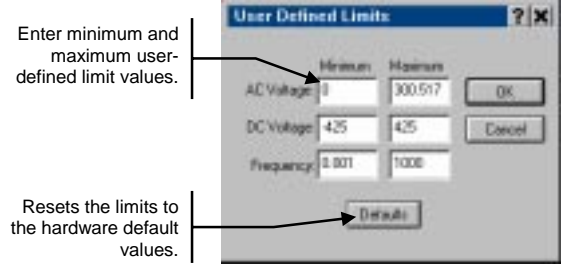
To display the maximum programmable values for the ac source that is presently being controlled by the Agilent AC Source GUI, select the **Ratings** command in the Source menu.

Displays maximum programmable settings of ac source.
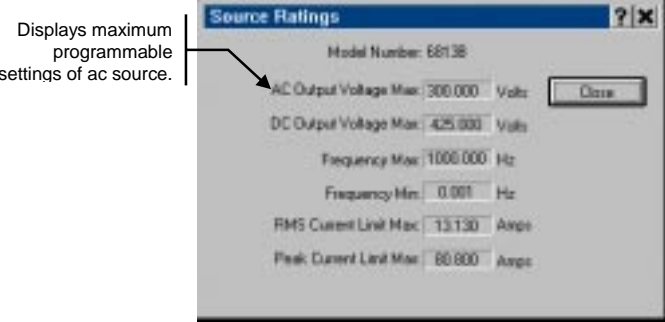
To view the SCPI instrument commands sent to the ac source, select **Instrument Commands** in the View menu.

Select command viewing options.

View the programming commands.
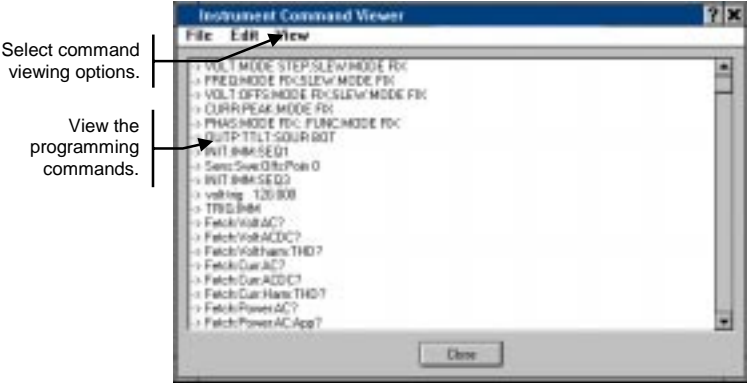
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