Agilent BenchLink XL 54600

Software for the Agilent Technologies 54600-Series Oscilloscopes

Getting Started With Agilent BenchLink XL

= IntuiLink

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Printing History

New editions are complete revisions of the manual. Update packages, which are issued between editions, may contain additional information and replacement pages which you merge into the manual. The dates on this page change only when a new edition is published.

Edition 1 (Part Number xxxxx-xxxxx) February 2000
Printed in U.S.A.

Agilent BenchLink XL 54600

Software for the Agilent 54600-Series Oscilloscopes

Software Overview

Agilent BenchLink XL offers a set of connectivity tools that enable you to quickly and easily move data from your Agilent 54600-Series Oscilloscopes to your PC. Whether you are an experienced programmer or would prefer not to program at all, Agilent BenchLink XL is designed to give you a high-level of instrument control using software applications that you are probably already using on your PC.

For the Non-Programmer — A Simple Toolbar Add-In for Excel and Word

Agilent BenchLink XL provides an easy-to-use toolbar that enables you to perform simple waveform data and image transfers directly into Microsoft® Excel® or Microsoft® Word®. Once installed, the toolbar is automatically loaded and operates just like any other toolbar in these applications. Use the **Tools | Add-Ins** menu to add or remove the toolbar from the application. The toolbar is shown below with a brief description of each toolbar button.

NOTE: To get started with the toolbar, you will need to open Excel or Word. The toolbar will automatically load when you open the application.

About Agilent 54600 Scope Toolbar Returns the software version number and allows you to select the local language for the dialog boxes and help system.

Connect to Scope Configures the remote interface connection to the oscilloscope.

Save / Load Scope Settings Stores the oscilloscope settings to a file or downloads a previously-stored settings file to the oscilloscope.

Get Waveform Data Uploads waveform time/voltage data from the oscilloscope to the active worksheet or document.

Get Screen Image Captures an image of the oscilloscope's display and places it in the active worksheet or document.

Get Single Measurement Acquires a single measurement (rise time, duty cycle, frequency, etc.) from the oscilloscope and places it in the active worksheet or document.

Toolbar Help Provides step-by-step explanations to help you learn to use the toolbar.

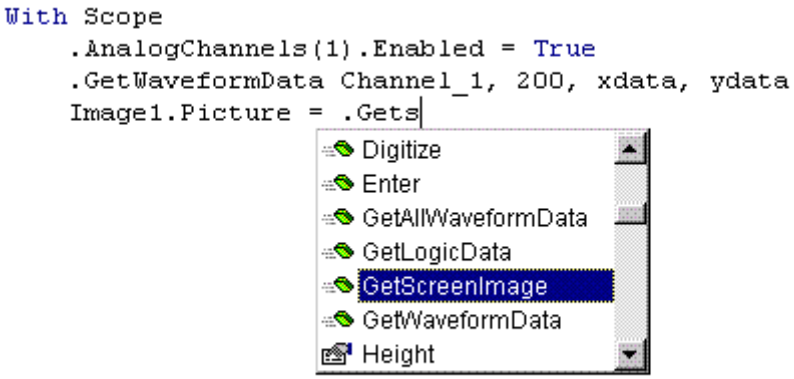
Excel Macro Support

You can create a macro for any of the toolbar operations using the Excel macro recording feature. You can then run the macro to automatically "play back" the recorded actions.

For the Programmer — An ActiveX Custom Control

For more sophisticated programming, an ActiveX™ Custom Control is provided with Agilent BenchLink XL to make it easy to program your oscilloscope using common programming environments such as Visual Basic®, Visual Basic® for Applications (Excel and Word), and Visual C++®. The **Agt54600Scope** Control gives you all of the functionality of the toolbar plus the added capability to programmatically control the operation of the oscilloscope. Within the Microsoft environment, you have complete access to all of the property pages, context-sensitive help, and persistence.

As shown in the sample below, it only takes a few lines of Visual Basic code to capture the waveform data and obtain a screen image from the oscilloscope using the **Agt54600Scope** Control.



The first line of code enables Channel 1 on the oscilloscope. The second line of code captures the waveform time/voltage pairs (200 waveform points) from Channel 1 and stores the data in two arrays. The third line of code shows the use of Microsoft's "IntelliSense" feature to select the function that places the screen image into an Image control.

To help you become familiar with the structure and operation of the **Agt54600Scope** Control, we have included several programming examples with Agilent BenchLink XL. These files will be loaded on your PC as part of the installation procedure. For more information, navigate to:

Start | Programs | Agilent BenchLink XL | Agt54600 | Samples

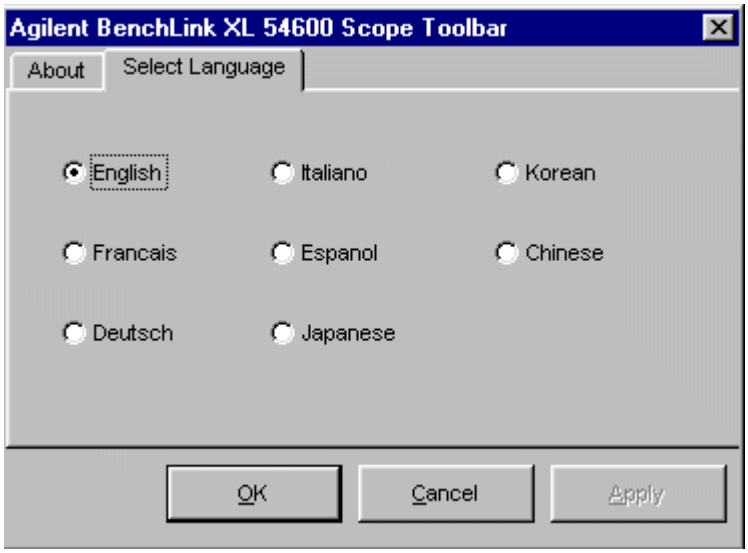
We have also included several getting started documents to help you become familiar with the **Agilent54600Scope** Control in Excel, Visual Basic, and C++. For more information, navigate to:

Start | Programs | Agilent BenchLink XL | Agt54600 | Automation Server Help

Toolbar Overview

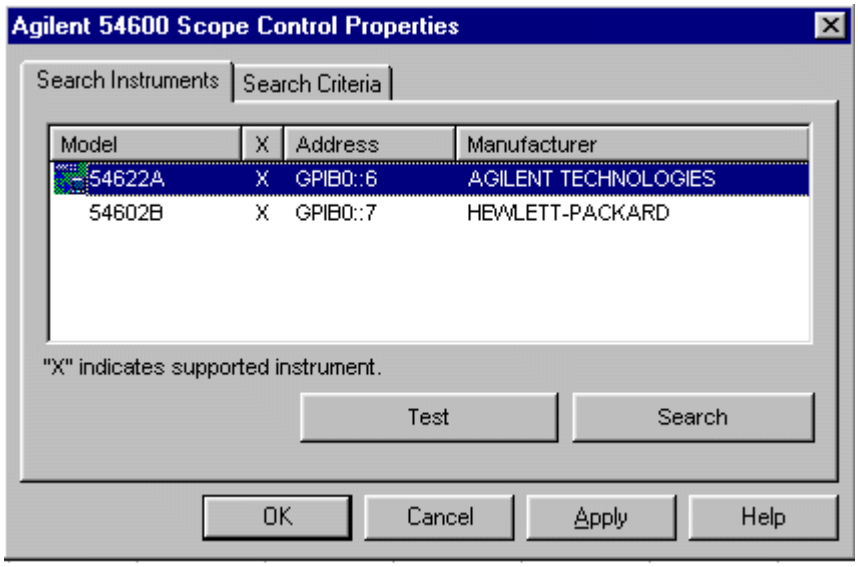
About Agilent 54600 Scope Toolbar

The dialog boxes and help system are available in several languages. Use the following dialog box to select the desired language.



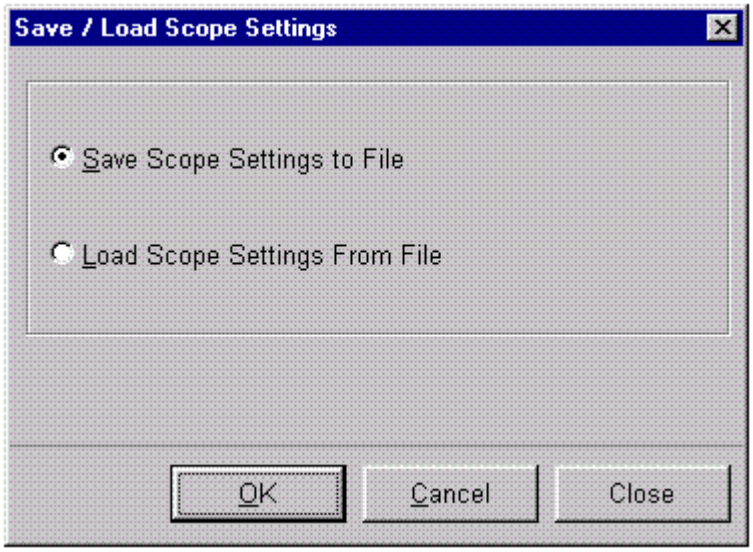
Connect to Scope

Agilent BenchLink XL makes it easy to establish an interface connection between your oscilloscope and your PC. Whether you are connecting to the oscilloscope using an Agilent-IB (GPIB) port or an RS-232 (COM) port, Agilent BenchLink XL does the work for you. Simply press the **Search** button (see below) and Agilent BenchLink XL determines which instruments are connected to your PC.



Save / Load Scope Settings

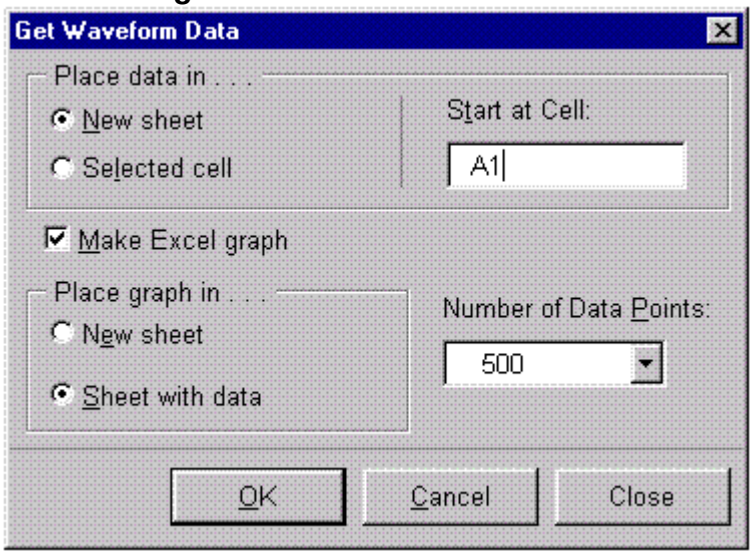
Agilent BenchLink XL gives you the ability to store the current oscilloscope settings to a file on your PC or download previously-stored settings to your oscilloscope. The oscilloscope settings are stored in a binary format (.scp file extension).



Get Waveform Data

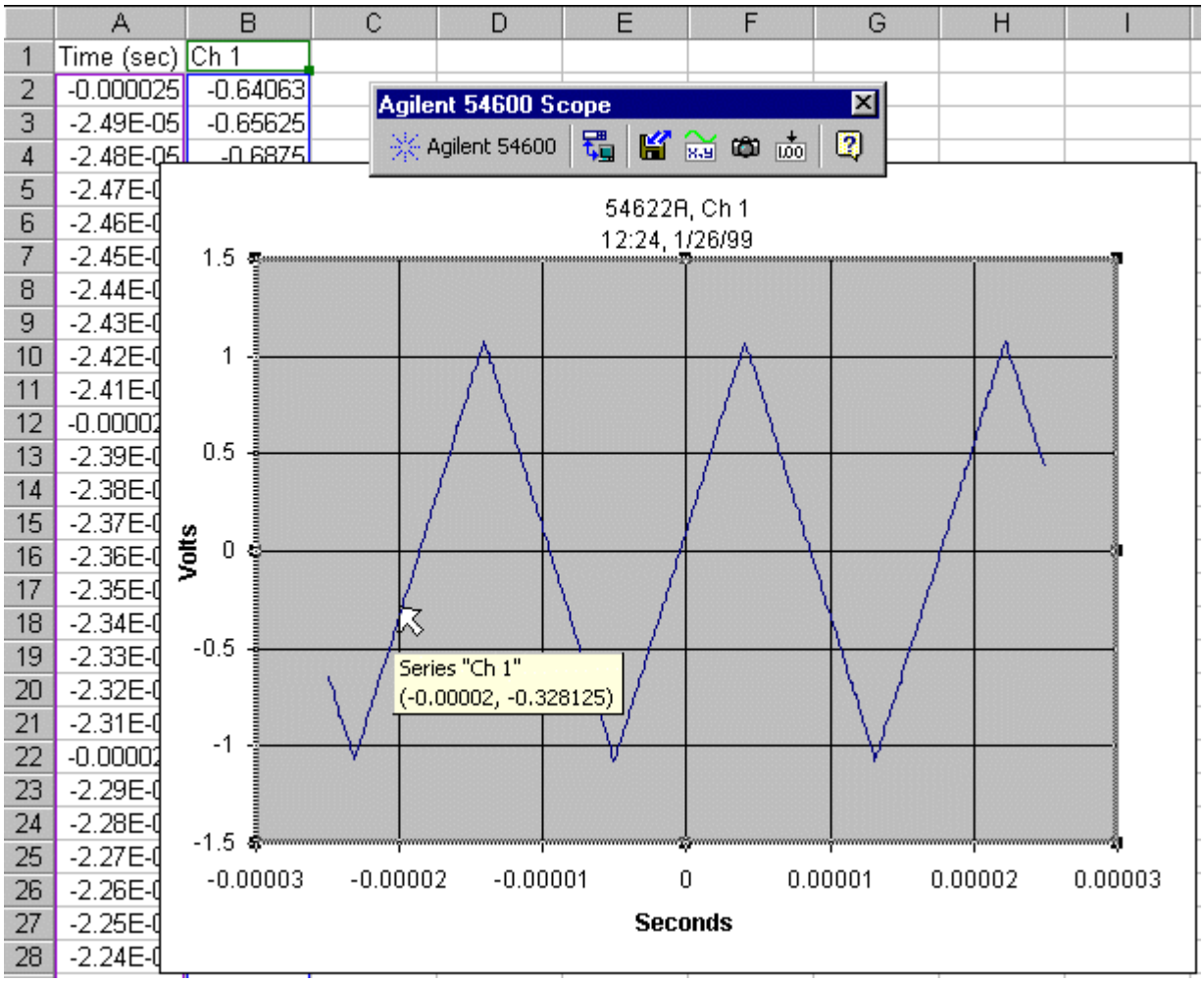
One of the most powerful features of Agilent BenchLink XL is the ability to capture waveform data (time/voltage pairs) from the oscilloscope. From Excel, the waveform data is automatically placed in rows and columns on the spreadsheet and you can also generate a graph using the captured data. From Word, the waveform data is downloaded, a graph is generated, and both are placed in the active document.

Excel Dialog Box:

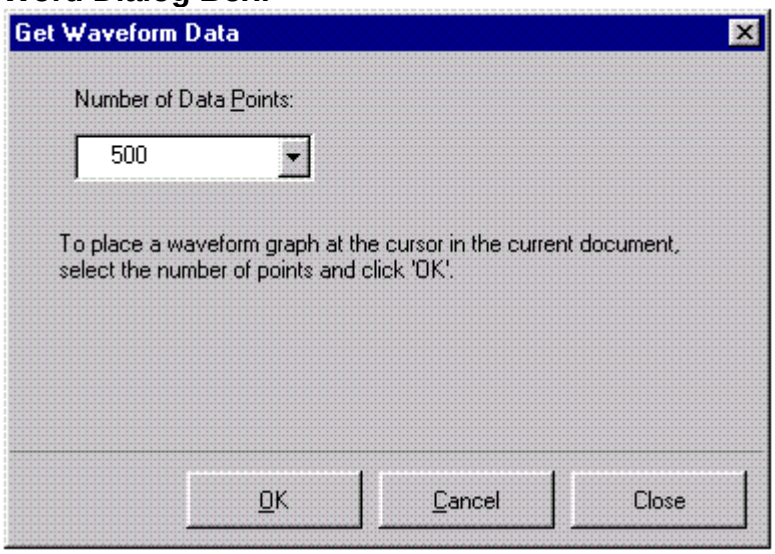


Waveform data plotted in Excel

When the waveform data is uploaded from the oscilloscope, the points are automatically plotted using Excel's built-in charting function.

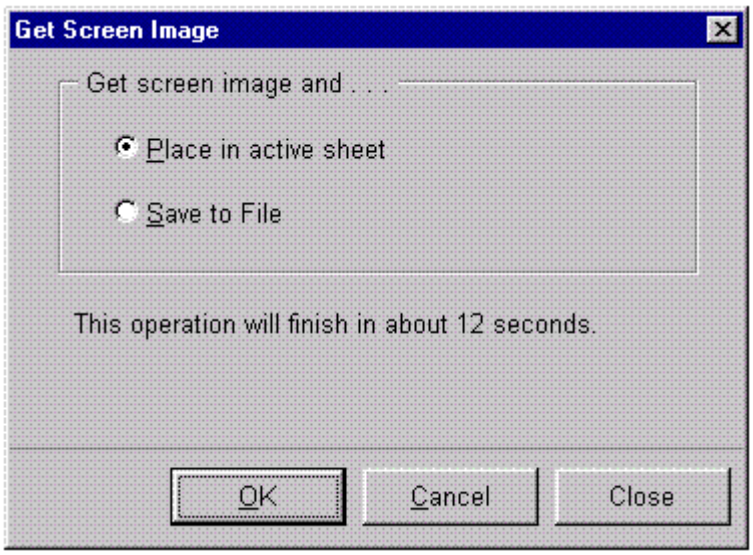


Word Dialog Box:

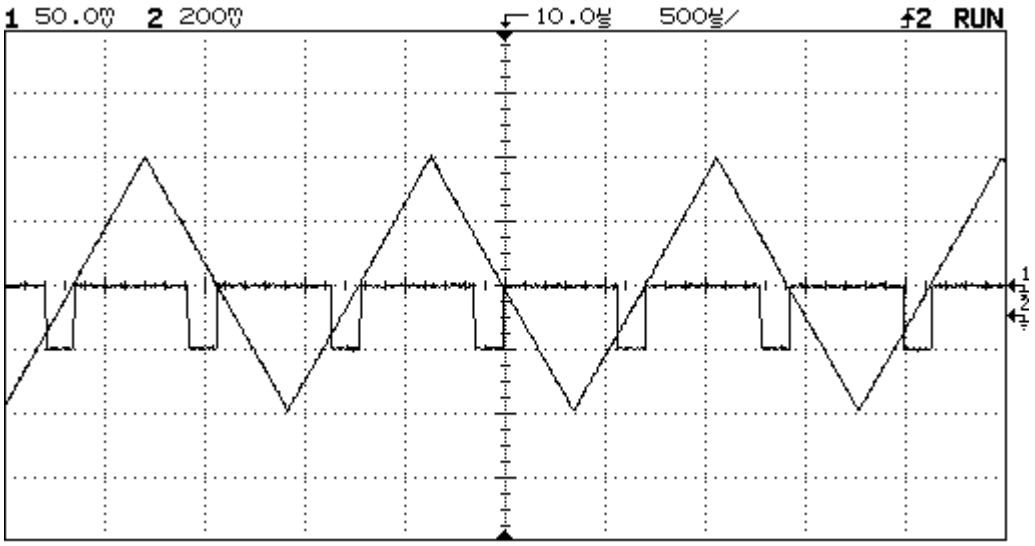


Get Screen Image

For documentation purposes, you may want to capture a "snapshot" of the oscilloscope display. With Agilent BenchLink XL, it just takes a few seconds to insert the image into your Excel or Word document. Note that you can also save the image to a file (.bmp format).



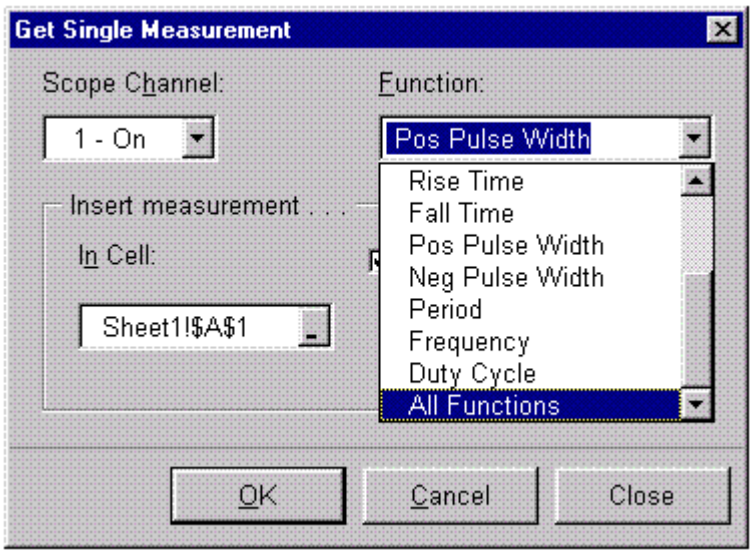
Screen image captured from oscilloscope



Get Single Measurement

For some applications, you may want to capture a single measurement (rise time, duty cycle, frequency, etc.) and place it in the active worksheet or document. From the **Function** drop-down list (see below), you can select a specific measurement or select "All Functions" to place all 12 available measurements in the active document.

Excel Dialog Box:

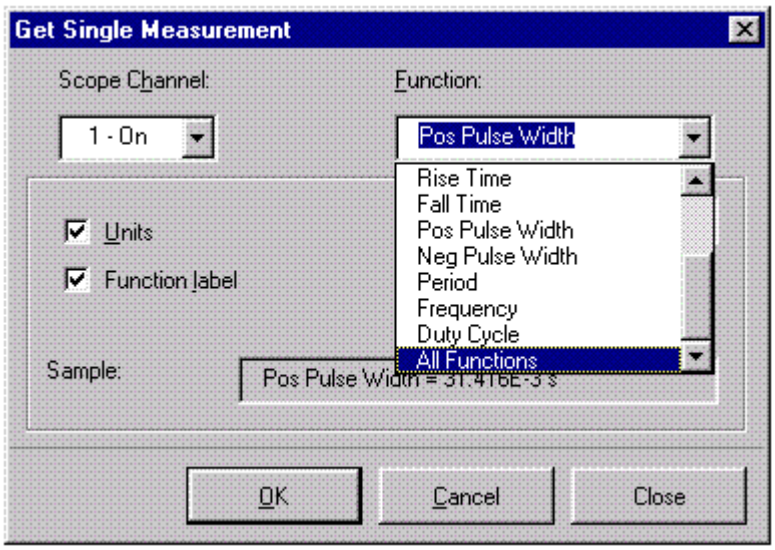


Measurement data in Excel

In Excel, the measurement is placed in the highlighted cell. If desired, you can annotate each reading (mV, kHz, etc.). The sample below shows all 12 available measurements placed in the active worksheet.

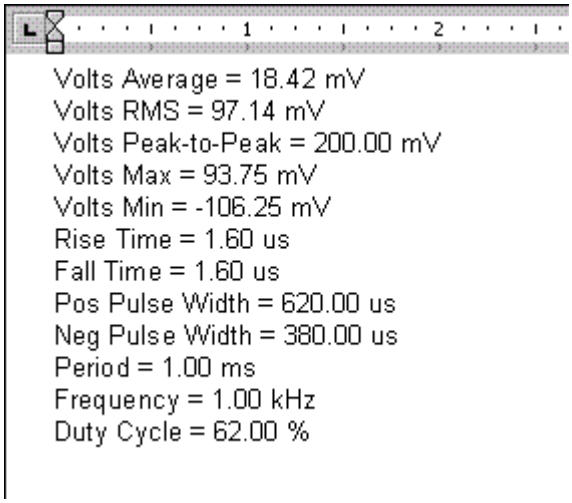
	A	B	C	D
1	18.42	mV, Volts Average		
2	97.138	mV, Volts RMS		
3	200	mV, Volts Peak-to-Peak		
4	93.75	mV, Volts Max		
5	-106.25	mV, Volts Min		
6	1.6	us, Rise Time		
7	1.6	us, Fall Time		
8	620	us, Pos Pulse Width		
9	380	us, Neg Pulse Width		
10	1	ms, Period		
11	1	kHz, Frequency		
12	62	%, Duty Cycle		
13				

Word Dialog Box:



Measurement data in Word

In Word, the measurement is placed at the cursor in the active document. If desired, you can annotate each reading (mV, kHz, etc.). The sample below shows all 12 available measurements placed in the active document.



Toolbar Help

Like most PC applications, a help system is included with Agilent BenchLink XL to assist you with the operation of the toolbar. The help system and all dialog boxes are available in multiple languages.

Software Installation

Installing Agilent BenchLink XL

You can install Agilent BenchLink XL from the CD-ROM included with your oscilloscope's interface module or you can download the software from the Agilent Technologies web site (www.hp.com/go/bi). Software updates and future releases will also be available from this web site.

After installing the software on your PC, go to the **Tools | Add-Ins** menu in Excel or Word to enable Agilent BenchLink XL operations in the selected application. For more information on using the **Agt54600Scope** Control with Visual Basic, refer to the help file included with the ActiveX Control. Note that all of the necessary I/O functionality is also loaded when you install the software, including the ability to control your oscilloscope using both Agilent Technologies and National Instruments interface cards and standard RS-232 (COM) ports on your PC.

Minimum System Requirements

PC Operating System Requirements:

Windows® 95 or Windows® 98
- 486DX/66
- 16 MB RAM
- 20 MB free disk space

Windows NT® 4.0
- Service Pack 3
- Pentium-90
- 32 MB RAM
- 20 MB free disk space

Environments Supported:

Applications
- Microsoft Excel 97
- Microsoft Word 97

Software Development
- Visual Basic 5.0/6.0
- VBA 5.0
- Agilent VEE 5.0 or greater
- LabVIEW 5.0 or greater
- Visual C/C++ 5.0/6.0

Supported Instruments

Oscilloscope Models Supported:

Agilent 54600B
Agilent 54602B
Agilent 54603B
Agilent 54610B
Agilent 54615B
Agilent 54616B/C
Agilent 54620A/C
Agilent 54621A/D
Agilent 54622A/D
Agilent 54624A
Agilent 54645A/D

Interface Modules Supported:

Agilent 54650A
Agilent 54652B
Agilent 54657A
Agilent 54659B

Supported PC-to-Instrument Interfaces

GPIB Interface

Supported using Agilent SICL (Standard Instrument Control Library):

Agilent 82335B
Agilent 82340A/B/C
Agilent 82341A/B/C/D
Agilent 82350A

Supported using National Instruments NI-488.2 Library:

National Instruments AT-GPIB/TNT
National Instruments PCI-GPIB
National Instruments PCMCIA-GPIB

RS-232 Interface:

COM1
COM2
COM3
COM4

Task Reference: Agilent 54600 Scope Toolbar for Excel

Agilent BenchLink XL provides an easy-to-use toolbar that enables you to perform simple waveform data and image transfers directly into Excel. Once installed, the toolbar is automatically loaded and operates just like any other toolbar in these applications. Use the **Tools | Add-Ins** menu to add or remove the toolbar from the application.

Connect to the Scope and verify communication

1. Click **Connect to Scope** on the Agilent Scope toolbar.
2. From the **Search Instruments** tab, click **Search** to find all instruments connected to your PC. If this is your first 'Search', all interface ports on your PC will be checked. To exclude any ports or instruments from future searches, click the **Search Criteria** tab.
3. Select the desired Agilent Oscilloscope from the list.
4. Click **Test** to verify the interface connection.
5. Click **OK** to save the connection.

Note: If the dialog box shows an Agilent Oscilloscope selected, then the connection has already been established.

Get waveform time/voltage data from the Scope

1. Click **Get Waveform Data** on the Agilent Scope toolbar.
2. Select **New sheet** to place the waveform data in a new Excel worksheet or **Selected sheet** to use the active worksheet.
3. From the **Number of Data Points** drop-down list, select the number of points to be downloaded from the Scope.
4. Click **OK**.

Make a graph of the waveform points obtained from the Scope

1. Click **Get Waveform Data** on the Agilent Scope toolbar.
2. To create an Excel graph of the waveform data obtained from the Scope, check **Make Excel graph**.
3. Select **New sheet** to place the graph in a new Excel worksheet or **Sheet with data** to use the active worksheet.
4. Click **OK**.

Insert an image of the Scope display in the spreadsheet

1. Click **Get Screen Image** on the Agilent Scope toolbar.
2. Select **Place in active sheet** to place the image in the active worksheet. Note that you can also save the image to a file.
3. Click **OK**.

Capture a single measurement from the Scope

1. Click **Get Single Measurement** on the Agilent Scope toolbar.
2. From the **Scope Channel** drop-down list, select an enabled ('On') scope channel.
3. From the **Function** drop-down list, select the desired measurement (or 'All Functions').
4. Select the cell in which you want to place the measurement. If desired, select **with Engineering Units** to annotate each reading (mV, kHz, etc.).
5. Click **OK**.

Save the current Scope settings to a file

1. Click **Save / Load Scope Settings** on the Agilent Scope toolbar.
2. Select **Save Scope Settings to File** and then click **OK**.
3. Navigate to the desired directory on your PC and enter a file name (.scp file extension).
4. Click **Save** to store the file.

Download previously stored settings to the Scope

1. Click **Save / Load Scope Settings** on the Agilent Scope toolbar.
2. Select **Load Scope Settings From File** and then click **OK**.
3. Navigate to the desired directory on your PC and open the previously stored file (.scp file extension). Note that you can also download a file stored from Agilent BenchLink Scope (.stp file extension).
4. Click **Open** to open the file and download the stored settings to the Scope.

Note: An error may be generated if you attempt to download to a different Scope than was used to create the original settings file.

Delete the Agilent Scope Toolbar from Excel

1. From the **Tools** menu in Excel, select **Add-Ins**.
2. Clear the check box next to 'Agilent Scope Toolbar'. Make sure that the box is not checked.
3. Click **OK**.

Automate tasks using an Excel macro

You can automate any of the operations on the Agilent Scope Toolbar using an Excel macro. You can then run the macro to automatically "play back" the recorded actions. Refer to the Excel help system for more information on using macros.

The recorded macro automatically lists the required arguments. You may want to record the macro in several different ways to see how the arguments are actually used. All descriptive arguments use English (non-translated) text inside the quotation marks. Numeric arguments, such as a channel number, must be enclosed in quotation marks ("1") as demonstrated in the recorded macro.

For the Measurement macro, use one of the following strings in the **measureFunction** argument:

"Rise Time", "Fall Time", "Frequency", "Period", "Volt Average", "Volt RMS", "Volt Min", "Volt Max", "Volt PkPk", "PosPulseWidth", "NegPulseWidth", "Duty Cycle", "All Functions"

Select the local language

1. Click **About Agilent Scope Toolbar** on the toolbar.
2. Click the **Select Language** tab.
3. Select the desired language. The dialog boxes and help system will appear in the selected language.
4. Click **OK**.

Task Reference: Agilent 54600 Scope Toolbar for Word

Agilent BenchLink XL provides an easy-to-use toolbar that enables you to perform simple waveform data and image transfers directly into Word. Once installed, the toolbar is automatically loaded and operates just like any other toolbar in these applications. Use the **Tools | Add-Ins** menu to add or remove the toolbar from the application.

Connect to the Scope and verify communication

1. Click **Connect to Scope** on the Agilent Scope toolbar.
2. From the **Search Instruments** tab, click **Search** to find all instruments connected to your PC. If this is your first 'Search', all interface ports on your PC will be checked. To exclude any ports or instruments from future searches, click the **Search Criteria** tab.
3. Select the desired Agilent Oscilloscope from the list.
4. Click **Test** to verify the interface connection.
5. Click **OK** to save the connection.

Note: If the dialog box shows an Agilent Oscilloscope selected, then the connection has already been established.

Get waveform data from the Scope and make a graph

1. Click **Get Waveform Data** on the Agilent Scope toolbar.
2. From the **Number of Data Points** drop-down list, select the number of points to be downloaded from the Scope.
3. Click **OK**.

Insert an image of the Scope display in the document

1. Click **Get Screen Image** on the Agilent Scope toolbar.
2. Select **Place in document at cursor** to place the image in the active document. Note that you can also save the image to a file.
3. Click **OK**.

Capture a single measurement from the Scope

1. Click **Get Single Measurement** on the Agilent Scope toolbar.
2. From the **Scope Channel** drop-down list, select an enabled ('On') scope channel.
3. From the **Function** drop-down list, select the desired measurement (or 'All Functions').
4. Note that you can display the measurement with a variety of annotations (units, decimal places, etc.).
5. Click **OK** to place the measurement at the cursor in the active document.

Save the current Scope settings to a file

1. Click **Save / Load Scope Settings** on the Agilent Scope toolbar.
2. Select **Save Scope Settings to File** and then click **OK**.
3. Navigate to the desired directory on your PC and enter a file name (.scp file extension).
4. Click **Save** to store the file.

Download previously stored settings to the Scope

1. Click **Save / Load Scope Settings** on the Agilent Scope toolbar.
2. Select **Load Scope Settings From File** and then click **OK**.
3. Navigate to the desired directory on your PC and open the previously stored file (.scp file extension). Note that you can also download a file stored from Agilent BenchLink Scope (.stp file extension).
4. Click **Open** to open the file and download the stored settings to the Scope.

Note: An error may be generated if you attempt to download to a different Scope than was used to create the original settings file.

Adding the toolbar in Word

You can add the toolbar to Microsoft Word from the menu "Tools | Templates and Add-Ins...". Browse to locate the template file (.dot) in the application directory.

\ Program Files \ Agilent \ BenchLink XL \ *application*

Note: Depending upon the version of Microsoft Word you are using, you can locate the template by either using the **Browse** button or the **Add** button. In either case, you should locate a template file (.dot) that has the same model number in the file name as the Agilent application you are using.

Select the local language

1. Click **About Agilent** on the toolbar.
2. Click the **Select Language** tab.
3. Select the desired language. The dialog boxes and help system will appear in the selected language.
4. Click **OK**.

Technical Support

Complimentary Start-Up Assistance

Terms and Conditions

Agilent Technologies (Agilent) will provide Start-Up Assistance at no charge to resolve questions relating to the installation, operation, and use of this software product. Start-Up Assistance is available to help you install the software on your PC, establish communication with a compatible instrument, and answer questions relating to the functionality of the software components provided by Agilent. Start-Up Assistance does not support requests to modify or enhance the functionality of the software. For services not covered by Start-Up Assistance, you may be referred to fee-based services for advanced assistance.

Agilent will make reasonable efforts to respond to each customer request for Start-Up Assistance within two working days, but is under no obligation to respond within a prescribed time frame. Requests for Start-Up Assistance are handled in the order in which they were received. Agilent will make reasonable efforts to solve customer problems, but cannot guarantee success.

Agilent Technologies reserves the right to terminate Start-Up Assistance at any time without notice.

Contacting Agilent for Technical Support

Country	Telephone	Fax	E-Mail
Australia	1 800 629 485	03 9272 0749	info_tmo@agilent.com
Austria	(01) 25000-7006	(01) 25000-6558	messtechnik_vertrieb@hp.com
Bangladesh	880-2-9130480	880-2-871034	jiu@bangla.net
Belgium	32-2-778.34.13	32-2-778.34.14	---
Brazil	(+55 11) 7297-8600	(+55 11) 7297-8171	tmobrasil@hp.com
Canada	877 894-4414	(905) 206-4120	---
China	86 10 65645261	86 10 65668250	HPAcademy_China@hp.com
Czech Republic	+420 2 333 21 707	+420 2 333 20 672	haasz@htest.cz
Denmark	45 99-15-15	---	---
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Finland	358-10-885 2100	---	---
France	01 69 29 4114	01 69 82 6535	---
Germany	---	(0180) 524-6335	messtechnik_vertrieb@hp.com
Hong Kong	(852) 2599 7889	(852) 2506 9256	---
Hungary	(36) 1 382 6006	(36) 1 382 6001	---
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Sri Lanka	94-74-717 701	941-504 340	dayankaru@sscomp.co.ae
Sweden	(08) 444-2277	46 8 444-2525	---
Switzerland	---	(0180) 524-6335	messtechnik_vertrieb@hp.com
Taiwan	0800-47866	---	---
Thailand	(02) 661-5900	(02) 661-6420	---
Turkey	(90/312) 468 87 70	(90/312) 468 87 78	ozlem_sutlas@agilent.com
United Kingdom	01344-366666	---	---
United States	800 452 4844	888-900-8921	---
Viet Nam	844-8-229808	844-8-229553	sysco.vn@hn.vnn

Note: In all other countries, please contact your local Agilent Representative or go to the Agilent web site at www.tmo.agilent.com.