

Agilent VEE Pro 9.0 & Agilent VEE Express 9.0

Quick Start Guide



Agilent Technologies

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Introduction

Welcome to the Agilent VEE family! Agilent Visual Engineering Environment (VEE) is a powerful visual language environment that dramatically reduces your development time. To get you started quickly on Agilent VEE, we have prepared this guide to show you how to install and use your new software. This guide also contains two tutorials that show you how to communicate with an instrument via the USB interface, and how to generate and display a waveform from a virtual source.

Installing Agilent IO Libraries

The Agilent IO Libraries Suite software is included when you purchase Agilent VEE. This software enables you to communicate with instruments via serial, USB, GPIB or LAN interfaces.

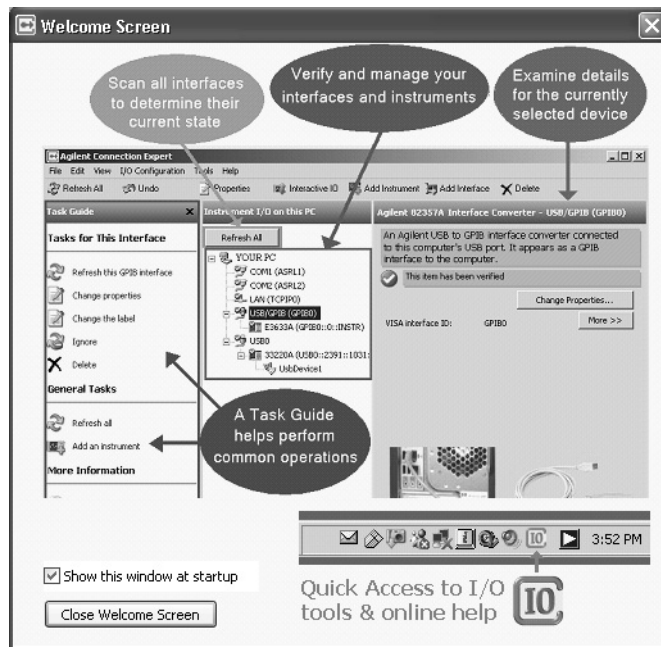
You are required to install the Agilent IO Libraries Suite 15.0 before installing Agilent VEE if you need to communicate with instruments using Agilent VEE. However, you can choose not to install the Agilent IO Libraries Suite if you do not use instruments.

Follow these simple installation steps:

- 1 Insert *Agilent IO Libraries Suite CD* into the CD-ROM drive. Click **Click Here to Install Now** in the Agilent IO Libraries Suite 15.0 window to begin installation.

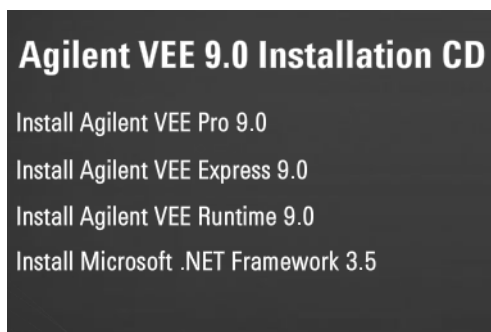


- 2 The InstallShield® Wizard will guide you through the installation process. Click **Next** to accept the default settings and complete the installation.
- 3 The Agilent Connection Expert Welcome Screen window will appear. This application configures the instruments that are connected to your PC. You may close this window before proceeding to the next step.



Installing Agilent VEE Pro or Agilent VEE Express

- 1 Insert the Agilent VEE installation CD and click **Install Agilent VEE Pro 9.0** or **Install Agilent VEE Express 9.0**. The InstallShield® Wizard will guide you through the installation process.



In regard to the differences of these products, refer to Page 19.

- 2 The InstallShield® Wizard will check if Agilent IO Libraries Suite 15.0 is installed. If it is not, the following message box will appear.

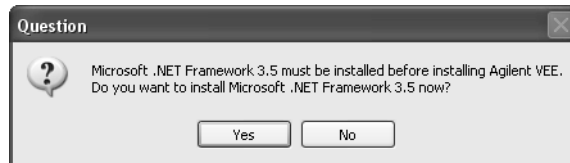


Please note that Agilent IO Libraries Suite 15.0 is a prerequisite if you communicate with instruments using Agilent VEE. So, please install Agilent IO Libraries Suite 15.0 or greater after finishing this installation.

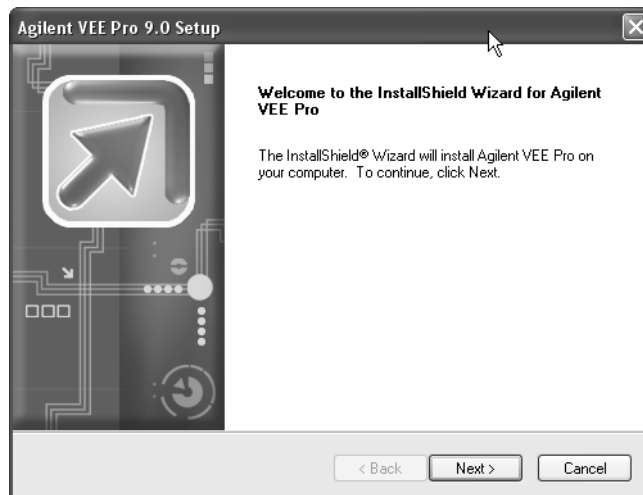
Click **OK**, the InstallShield® Wizard will check if Microsoft .NET Framework 3.5 is installed.

- 3 If Microsoft .NET Framework 3.5 is not installed, following Question dialog box will appear to ask you to install it. Click **Yes** to install the Microsoft .NET Framework 3.5 immediately. After the installation, the Agilent VEE installation will continue automatically. Clicking **No** will abort the Agilent VEE installation.

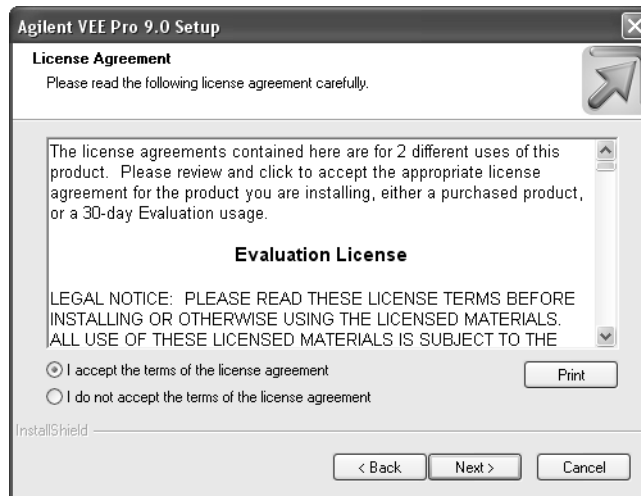
If Microsoft .NET Framework 3.5 is installed, the InstallShield® Wizard will guide you to the next step directly to install your Agilent VEE selection in Step 1.



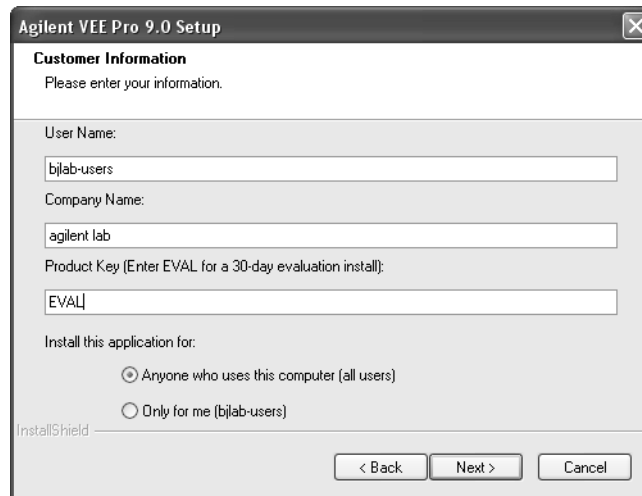
- 4 Click **Next**, when the following dialog box appears.



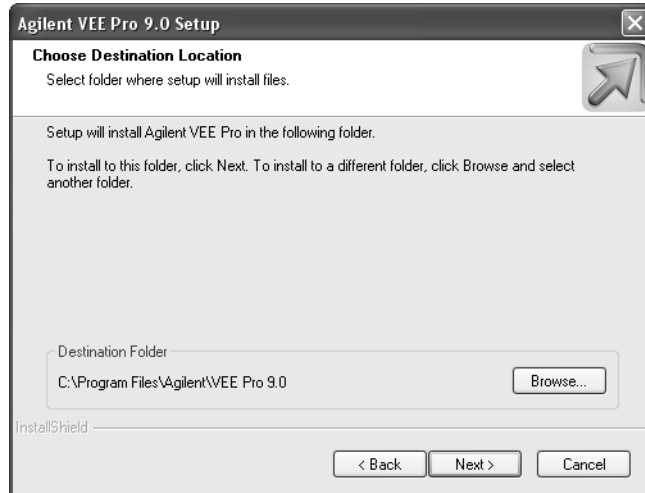
- 5 Accept the license agreement when the License Agreement dialog box appears, then click **Next**.



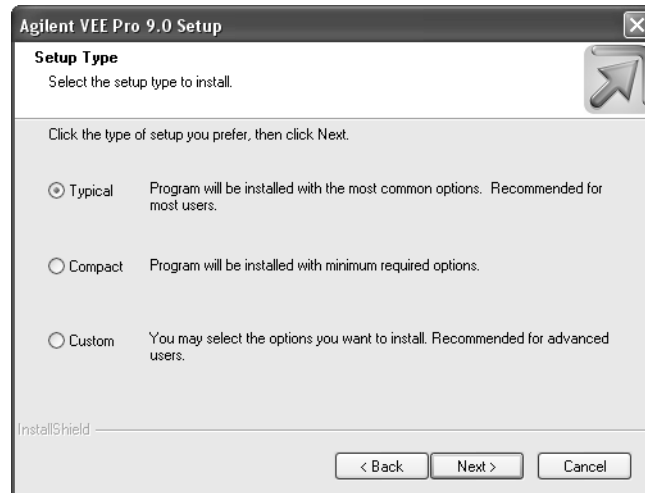
- 6 Type your name, company name and product key when the Customer Information dialog box appears, then click **Next**. The product key is contained in the *Agilent VEE Pro or Agilent VEE Express Product Key Certificate*.



- 7 Click **Next** to accept the default settings when the following dialog box appears.

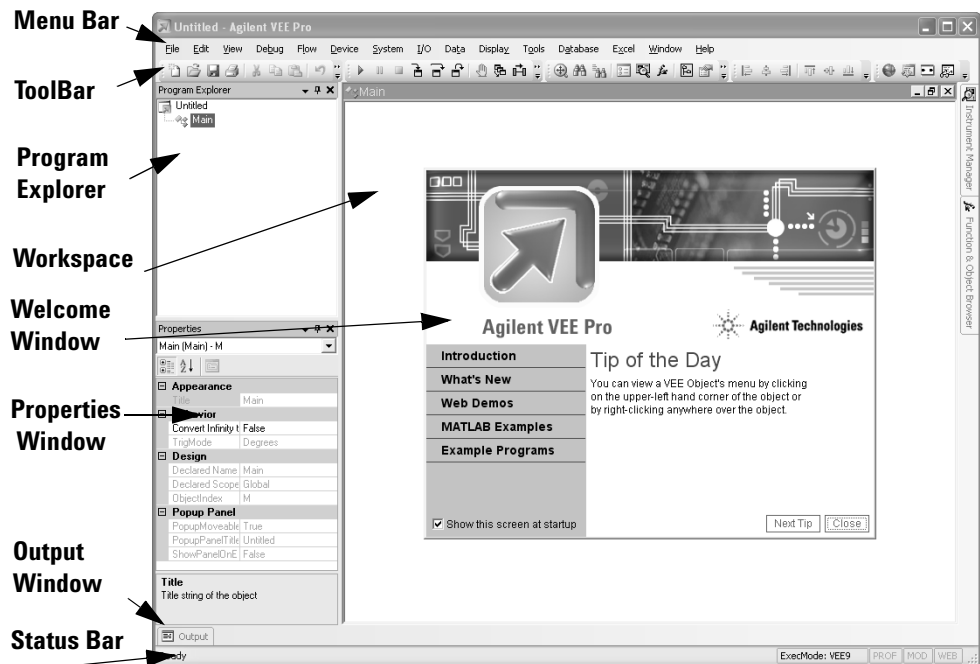


- 8 Select **Typical Setup** when the Setup Type dialog box appears, then click **Next** to complete the installation.



Launching Agilent VEE Pro or Agilent VEE Express

Go to **All Programs > Agilent VEE Pro 9.0 > VEE Pro 9.0** or **All Programs > Agilent VEE Express 9.0 > VEE Express 9.0** to launch Agilent VEE Pro or Agilent VEE Express.



You can access the demos, MATLAB examples (only available in Agilent VEE Pro) as well as sample programs via the Agilent VEE Pro or Agilent VEE Express welcome window. You may close the window after exploring it.

You can also open sample programs from the menu bar. To open a sample program, go to **File > Open Example ...** or **Help > Open Example....**

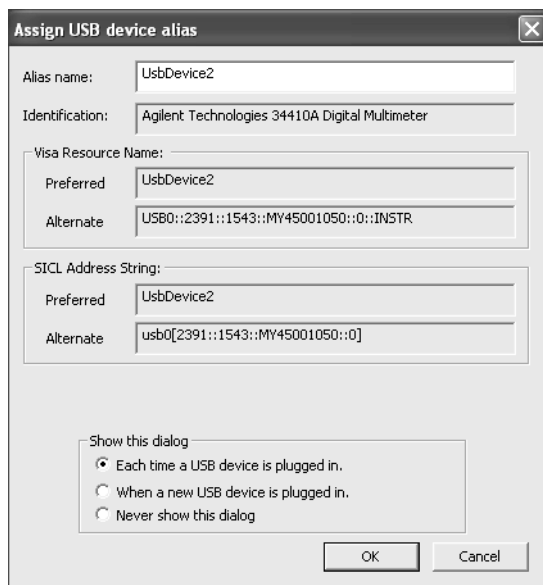
Instrument Communication Tutorial

In this tutorial, we will connect to an instrument via the USB interface. Ensure that the **Agilent IO Libraries Suite 15.0** is installed before proceeding.


If you do not have a USB instrument, the tutorial for a GPIB instrument is similar from Step 3 onwards.

The following screenshots are sourced from Agilent VEE Pro. Agilent VEE Express has similar screenshots.

- 1 Connect to an instrument via any USB port on your PC. Then, turn on the instrument. The Found New Hardware Wizard dialog box may appear. Just step through the wizard clicking **Next**.
- 2 When the Assign USB device alias dialog box appears, you must click **OK** to register the interface to your system.

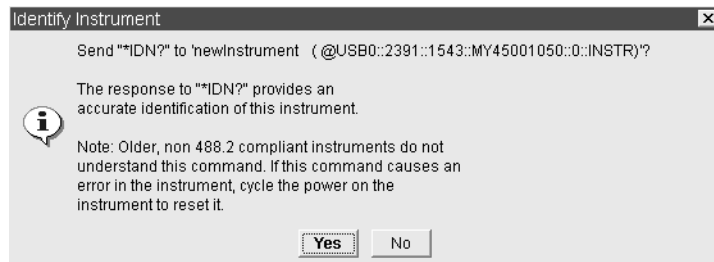


- 3 Launch Agilent VEE Pro or Agilent VEE Express, if you have not. Click the **Instrument Manager** button  on the toolbar.

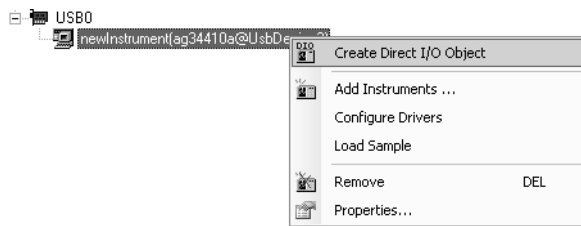
- 4 The Instrument Manager tool window will appear. Click the **Find Instruments** button  to automatically detect all instruments



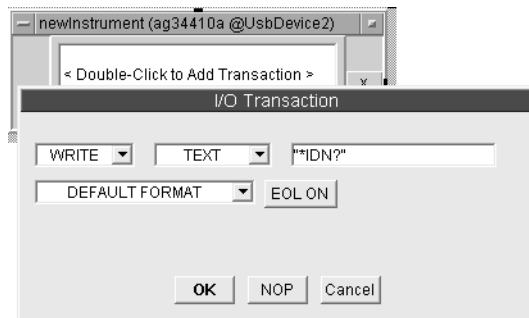
connected to your PC. Click **Yes** if the Identify Instrument pop-up dialog box appears. This automatically identifies the instrument on the USB interface. In this example, an Agilent 34410A Digit Multimeter is present.



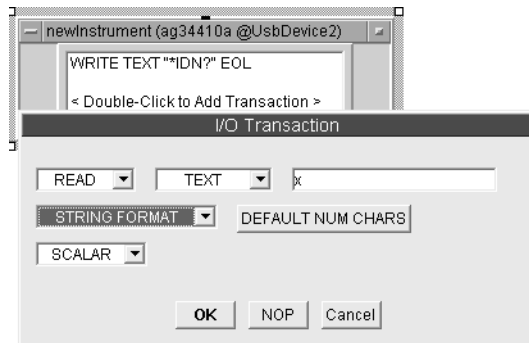
- 5 Right click newInstrument in the Instrument List panel. Then, choose **Create Direct I/O Object** in the opened context menu to place a Direct I/O object for the selected newinstrument on the workspace. This object allows you to send/receive commands to/from your instrument.



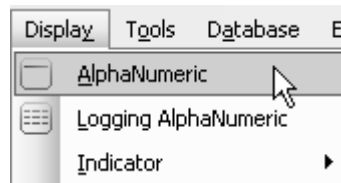
- 6 Double-click the Direct I/O object's blue transaction bar to add a transaction to the Direct I/O object.
- 7 Type `"*IDN?"` (include the quotation marks) in the I/O Transaction dialog box as shown below. A list of available SCPI commands may appear while you are typing. You can choose one command as desired instead of typing the whole command. Click **OK** to proceed.
`*IDN?` is one of standard commands for programmable instruments (**SCPI**) command that queries the instrument for its identification string.



- 8 After sending the `"*IDN?"` query to the instrument, you need to read back its response. Double-click the text box of the newInstrument object to add a new transaction. This time, select the transaction to **READ a STRING FORAT** text to an output terminal named x. The output terminal x will be automatically created when you click **OK**.



- 9 Select **Display > AlphaNumeric** and place an AlphaNumeric object on the workspace to the right of the Direct I/O object.

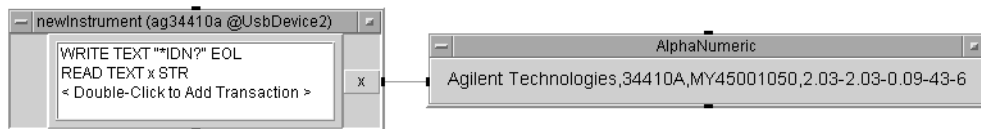


- 10 You will now connect the Direct I/O object to the AlphaNumeric object. Place the mouse cursor beside the Direct I/O output terminal and a square icon will appear. Left-click and drag a line to the input terminal of the AlphaNumeric object. Left-click again to complete the connection.



- 11 Run the program by clicking the **Run** button  on the toolbar.

- 12** The AlphaNumeric object will display the identification string output by the instrument as shown below.

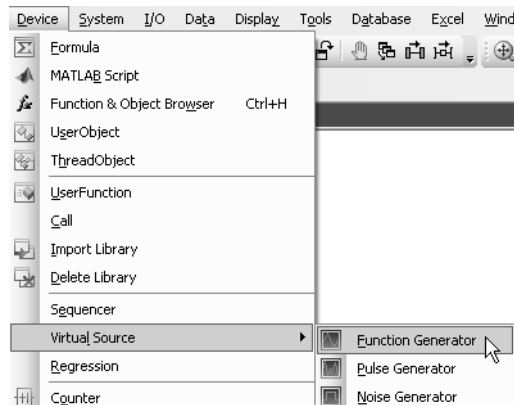


- 13** To save your VEE code, select **File > Save As** and name the file as *Tutorial 1.vee*.

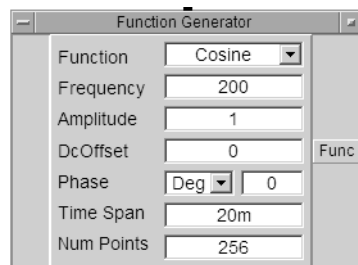
Virtual Source Tutorial

In this tutorial, you will generate and display a waveform from a virtual source. No instrument is needed.

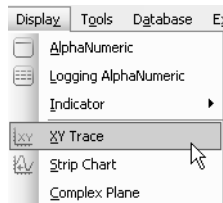
- 1 If you have an existing program in your Agilent VEE Pro or Agilent VEE Express workspace, select **File > New**. Then, select **Device > Virtual Source > Function Generator** and place a function generator object on the workspace.



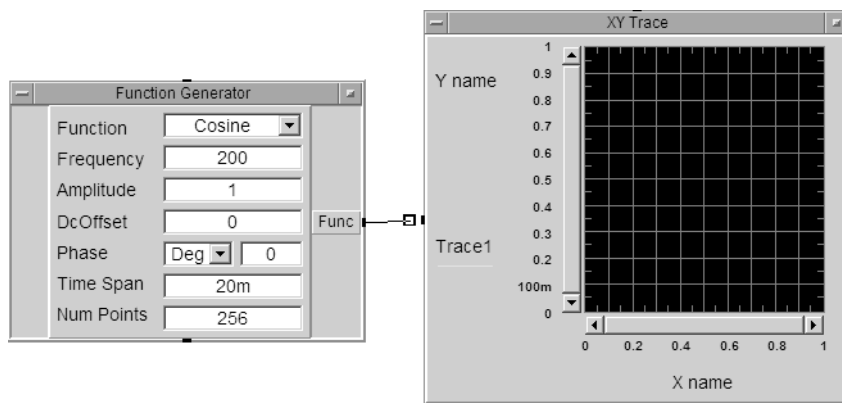
- 2 By default, the function generator will generate a virtual cosine waveform at a frequency of 200 Hz, and an amplitude of 1.




- 3 Select **Display > XY Trace** and place an XY Trace object to the right of the function generator.

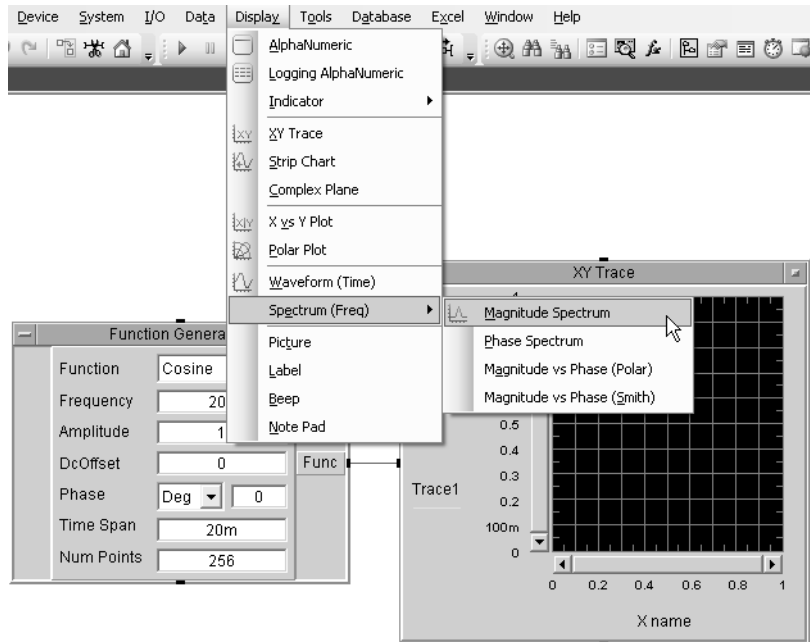



- 4 Connect the function generator output terminal to the input terminal of the XY trace. Place the mouse cursor beside the function generator output terminal and a square icon will appear. Left-click and drag a line to the input terminal of the XY Trace object. Left-click again to complete the connection.

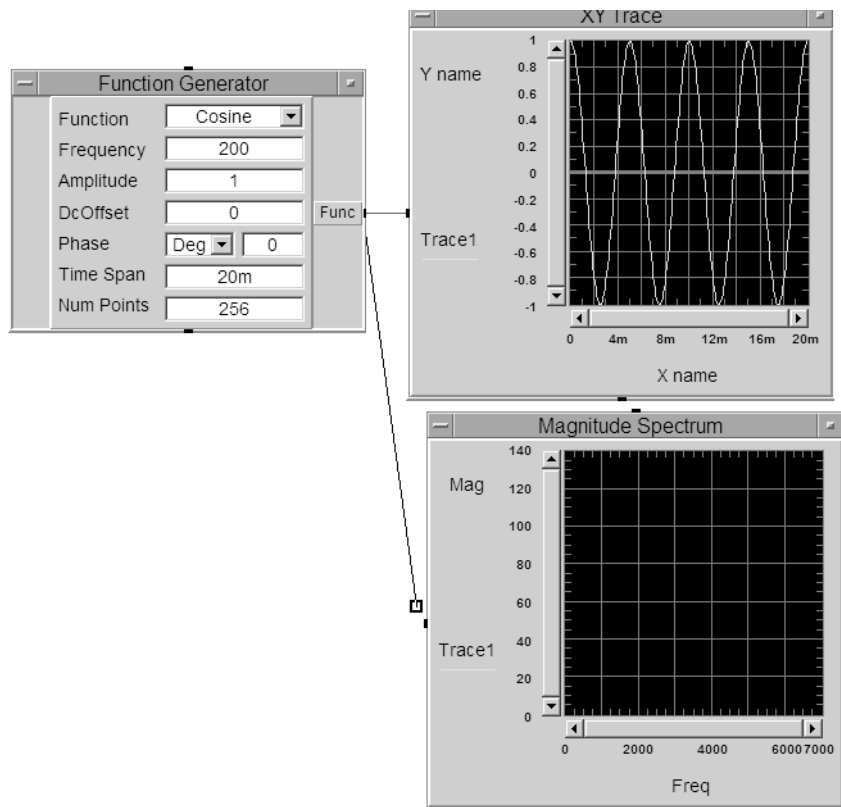


- 5 Click the **Run** button  on the toolbar and you can see the cosine waveform displayed on the XY Trace object.

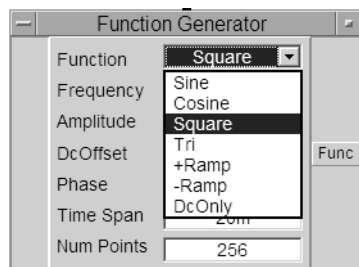
- 6 Select **Display > Spectrum (Freq) > Magnitude Spectrum** and place a Magnitude Spectrum object on the workspace below the XY Trace object




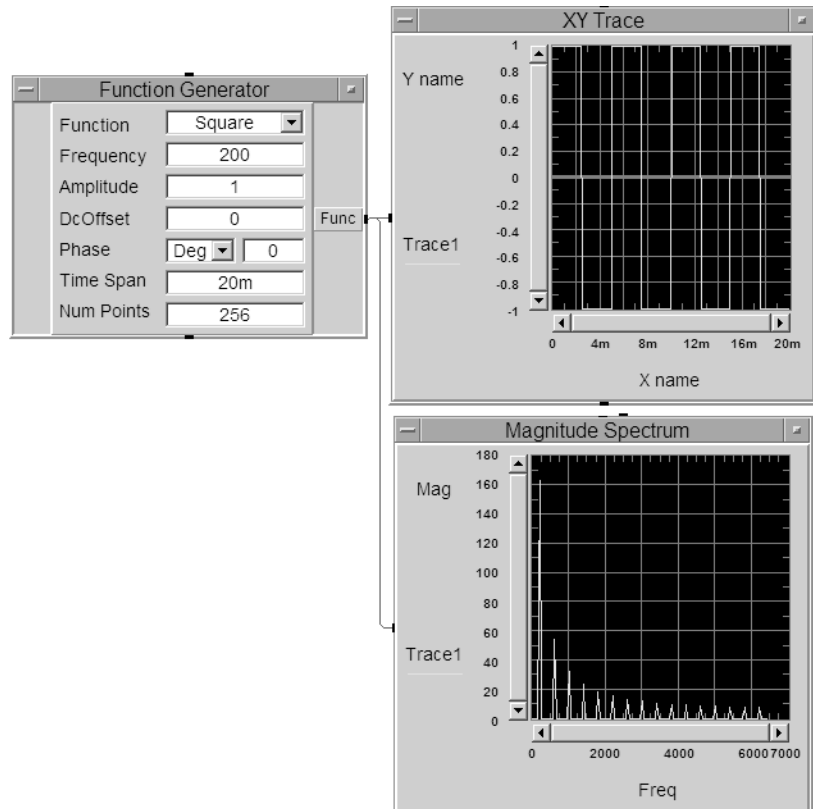
- 7 Connect a second line from the output of the function generator to the input of the Magnitude Spectrum object using the same left-click and drag method as described in Step 4.
- 8 Click the **Run** button  and observe the magnitude spectrum display. As the waveform is a 200 Hz cosine, the magnitude spectrum displayed will be a vertical line at the frequency of 200 Hz.



- 9 Change the waveform function on the virtual function generator to a square waveform.



- 10 Click the **Run** button  and observe the difference. Agilent VEE gives you the flexibility to analyze your signal source in multiple graph displays simultaneously.



- 11 To save your VEE code, select **File > Save As** and name the file as *Tutorial 2.vee*

Differences Between Agilent VEE Pro and Agilent VEE Express

The following table shows the differences between Agilent VEE Pro and Agilent VEE Express.

Features		Agilent VEE Pro	Agilent VEE Express
Interfaces	GPIB, LAN, RS-232, VXI, PXI, SCXI	✓	✗
	USB	✓	✓ (Agilent USB devices in LiveMode Only)
MatlabScript objects & MatlabScript engine		✓	✗
Creating RunTime version of Agilent VEE programs and secured version of Agilent VEE objects		✓	✗
Programmatic changing of instrument address		✓	✗
The Callable Server feature, i.e. calling Agilent VEE as an ActiveX Automation server		✓	✗
The Remote Function feature, i.e. importing a UserFunction that runs in another Agilent VEE process on a remote host computer		✓	✗
Other features		✓	✓

Agilent also provides Agilent VEE Student and Agilent Education versions for academic users.

Agilent VEE 9.0 New Features

Multithreading-- This feature can increase the performance of your system created with Agilent VEE. With this feature, you can easily create multiple threads in an Agilent VEE program to gain shorter execution time, faster response speed, and higher IO throughput. A new Execution Mode is also introduced along with the Multithreading feature.

Multicore Programming-- This new feature provides you with the Multicore Programming capability. You can gain even higher performance for your multithread programs by allocating different threads to specified CPU cores if your computer has a multi-core CPU.

SCPI Completion -- With this feature, you can easily choose a SCPI command from a list that appears while you are typing a SCPI command in the IO Transaction object. A description of the chosen SCPI command is also displayed. It saves your time spent searching in SCPI manuals and checking syntax errors dramatically. Moreover, you can even choose your own SCPI command file instead of using the default SCPI command file automatically selected by VEE.

Private UserFunction -- Agilent VEE 9.0 provides a new type of UserFunction -- Private UserFunction to help you to modularize your VEE programs better and encapsulate your VEE programs for larger scale applications.

Conditional Breakpoint -- Conditional Breakpoint equips you with the capability to set conditions and hit count for a breakpoint and specify what to do when a breakpoint is hit, which gives you more control of the debugging process and higher efficiency.

Breakpoints Window -- The Breakpoints window allows you to explore and control all breakpoints in your VEE program. For example, you can activate or deactivate breakpoints as well as delete breakpoints in the Breakpoints window.

Error Call Stack -- Use the Error Call Stack as an aid in debugging your VEE program. The Error Call Stack displays the UserObject or UserFunction where the error occurs. In addition, the Error Call Stack also shows the list or hierarchy of which UserObject

or UserFunction is invoking or calling the currently executing object where the error occurs.

Integrated Database Support -- This feature allows you to easily connect to any databases supported by ADO.NET, such as Microsoft Access, Microsoft SQL Server, Oracle, MySQL etc; you can store huge amounts of testing data in that database with a well structured format, and then retrieve them at anytime as needed to do analysis or testing.

LXI Support -- All LXI instruments have a web interface that provides useful information about the instrument, a standard way to configure the LAN interface, and other features. Agilent VEE provides a easy way to open an LXI web interface of an instrument in a VEE built-in Web Browser.

Enhanced Default Preferences -- Default Preferences dialog box is reorganized and enhanced to give you not only modern programming experience but also enhanced functionality.

Enhanced Custom Menu Support -- Besides the text format, XML format is also supported in Agilent VEE 9.0. Two custom menu tools are also released with Agilent VEE 9.0 to help to edit your custom menu and convert custom menus from the old text format to the new XML format.

New Toolbars for VEE Object-- A new set of icon as well as several new toolbars are assigned to some frequently used VEE objects. It is easier for you to pick a VEE object from these toolbars than from main menu.

Support for NaN and Infinity -- Agilent VEE 9.0 adds support for NaN and +/-Infinity for data type Real64 and Real32 and introduces four built-in functions: isNaN, isInfinity, isNegativeInfinity, isPositiveInfinity. VEE can convert NaN, Infinity from number to string and vice versa and allow NaN and Infinity in .NET and MATLAB to output to VEE and vice versa.

New Examples -- New Agilent VEE examples for some commonly used VEE objects are added to help you to easily kickstart your learning.

Agilent Connectivity Products



E5810A



E5805A



10833X

82350B



E5818A



82357B



82351A

Agilent provides a complete range of high performance and highly reliable products to connect from your PC to your instruments. These include networked USB hub, LAN/GPIB gateway, PCI GPIB, USB/GPIB and USB/RS232 interfaces. For more information on Agilent connectivity products, visit www.agilent.com/find/io.

Agilent Support, Services and Assistance

With Agilent VEE Pro & Agilent VEE Express, you have access to Agilent's worldwide resources for start-up assistance, training classes, and update services. As part of the purchase of any Agilent VEE product you are entitled to receive technical support free of charge. There is no need to register.

Additional consulting services are available from Agilent. There are currently over 30 companies available in North America, Europe, Middle East and Asia to help you develop your Agilent VEE solution.

Sign up for the Agilent VEE electronic users group at <http://www.agilent.com/find/vrf>, and get help on using Agilent VEE from experts around the world.

Appendix

Agilent VEE Pro Help is now available in other languages. To use online help file in other languages, please

- 1 Download localized online help from www.Agilent.com/find/vee.
- 2 Save downloaded files into the installation directory of Agilent VEE. Generally, it is **C:\Program Files\Agilent\VEE Pro 9.0**. Please do not change the name of the downloaded online help files.
- 3 Open Agilent VEE.
- 4 Open the Default Preferences (File => Default Preferences). Choose the help file language as you need under the Help tab.
- 5 Click OK to close the Default Preferences dialog box.

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Contact us

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(tel) 800 829 4444 (fax) 800 829 4433

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China:

(tel) 800 810 0189 (fax) 800 820 2816

Europe:

(tel) 31 20 547 2111

Japan:

(tel) (81) 426 56 7832 (fax) (81) 426 56 7840

Korea:

(tel) (080) 769 0800 (fax) (080) 769 0900

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Other Asia Pacific Countries:

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Or visit Agilent worldwide web at:

www.agilent.com/find/assist

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Printed in Malaysia
August 30, 2008

W4000-90030



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