

Agilent VEE 9.32

Refine your design — sooner



Change your work, change your world





Agilent Technologies

Introducing Agilent VEE

Agilent VEE is a powerful graphical language environment that provides a **quick and easy path to measurement and analysis**. With Agilent VEE you can:

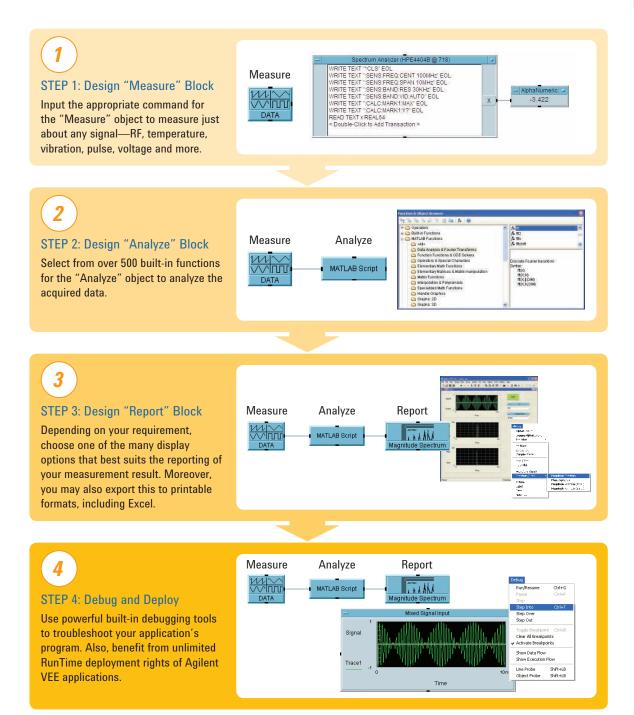
- **Develop test and measurement programs faster** by focusing less on programming or connectivity, and more on your measurement tasks: connecting, measuring, analyzing and reporting
- Make fast, easy connections to Agilent and non-Agilent instruments in just one or two steps
- Learn to use it easily through high-level graphical objects, avoiding the need to learn or memorize the details of a low-level programming language
- Keep programming simple with fewer lines of code and a less-complex development screen

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Introduction

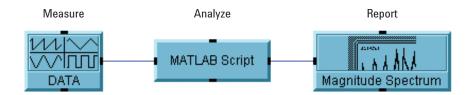
Jump-start steps to use Agilent VEE — it's so easy!



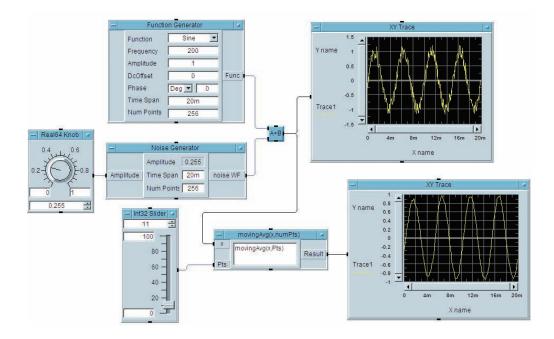
Introducing Agilent VEE

So easy to learn that it kick-starts your work

It's easy to learn something that seems familiar. With this in mind, Agilent VEE turns your familiarity with flowcharts and graphical user interfaces (GUIs) into the ability to assemble powerful programs. You simply create objects in the form of block diagrams using pull-down menus—and link them with wires that define the program flow. Programming tasks that would require hundreds of lines of code in a typical text-based language are simplified into a few high-level objects, rapidly reducing development time. This lets you spend more time focused on measurements and analysis, and less on programming.



Expanding from the above concept, the below program flow can be built.



One appealing aspect of Agilent VEE: Its consistent use of high-level objects shields you from the low-level details of text-based programming. Also, the software includes built-in tutorials and more than 700 sample programs that will jump-start your progress up the learning curve and into program development. With Agilent VEE, you learn quickly and save time.

Powerful tools lead to increased productivity

Agilent VEE is designed for test and measurement, with its set of powerful test executive tools. It automatically handles different data types, providing automatic conversion and giving you powerful data handling capabilities with minimum programming.

Spectrum Analyzer (HPE4404B @ 718)	
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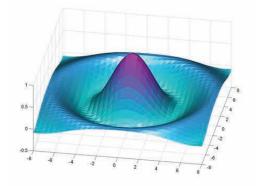
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Present Data	10	16.35	0.111	Refresh
SetupAndTrigger	10	14.12	0.096	Clear
Save Data To File	10	9.51	0.065	
Main	1	6.02	0.041	
SetStimuliPattern	10	0.03	0.000	Save
RetrieveData/Get From Instruments/Stimuli	10	0.03	0.000	-
RetrieveData/Get From Instruments	10	0.03	0.000	Options
				Help

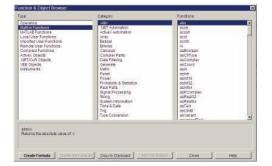
Agilent VEE's powerful Direct I/O object allows you to access instrument registers and advanced functionality such as service request and serial poll. Instrument addresses and other parameters can be verified at runtime and changed on the fly, without re-configuring programs.

When fine-tuning your test programs, Agilent VEE's built-in Profiler allows you to quickly analyze critical sections of code to save development time.

With a few clicks of your mouse button, you can access hundreds of built-in functions, including 1000 of the most popular MATLAB[®] analysis and visualization functions from the MathWorks Signal Processing Toolbox. In addition, 1800 MATLAB functions are at your fingertips through the MATLAB Script.

Apart from MATLAB, you can also access other built-in functions, that come together with Agilent VEE, which aid program development and ultimately reduce development and maintenance time of large, complex programs.





Agilent VEE also has a built-in web server which allows you to monitor your Agilent VEE program remotely. When you purchase the Agilent VEE software, it comes with a RunTime execution engine that enables you to distribute unlimited run-only copies of your Agilent VEE applications.

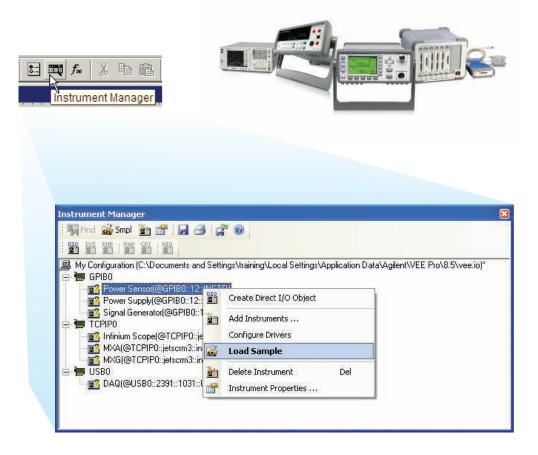
Introducing Agilent VEE

An open system, a complete solution

When you buy an Agilent VEE Pro software, you have access to all modern programming environments expected to satisfy even the most discerning of programmers. There is no need to buy expensive add-ons or select amongst Agilent VEE Pro's different versions to get the full set of Agilent VEE Pro functionality.

Agilent VEE Pro works seamlessly with hardware and software from Agilent and other companies, so you can feel confident that your program is flexible, expandable and compatible with the latest industry standards. Agilent VEE Pro can interact with data acquisition cards or measurement using GPIB, LAN, LXI, USB, GPIO, VXI, SCXI or PCI.

Instrument Manager's auto-detect functionality works with Agilent and non-Agilent instruments, helping you begin your measurement and analysis tasks in no time.



Introduction

🗷 * Untitled - Agilent VEE Pro Elle Edit Yew Debug Flow Device System I/O Data Display Excel Window Help 🕾 🤊 🖻 📜 🔍 🖓 🐜 🖻 📪 🖉 🖻 What is This N 🗃 🖬 🖪 🔺 🖏 하며 중요 유민국 == 4 (영요 🕼 🕘 , 🗉 Create New Workbook, Send Data, Save Create New Workbook, Create Chart, Save - 8 × Quick Start (Short Cuts) Initialize Excel Library Open Excel file and Get Data Settings New Work Open Excel file, Send Data, Save A Open Workbook Initialize Excel Library Select Workboo Excel Settings New Sheet Select Sheel Navigation Send Data Greate Charl SendDataSettings Send Panel Imag Eormatting Get Data Be Edt Vew Insert Format Iools Data Window H D Be Edt Vew Insert Format Iools Data Window H D Be Edt Vew Insert Format Iools Data Window H Save Workt 🛞 Σ • ½ 🕺 🌆 🐴 100% • 🥹 _ Save Workbook As Quit Excel Library •10 • B Z U 新業電磁 建建 田•◇•▲• 🛛 🦢 🖄 Printing
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Agilent VEE environment comes with a built-in pull down menu that interfaces seamlessly with Microsoft[®] Excel. This enables you to easily exchange data with a spreadsheet and automate its operation.

Agilent VEE Pro can interact with other programming languages using industry-standard interfaces such as ActiveX. You can use ActiveX to control Microsoft Word for reports, Microsoft Outlook for e-mails and Microsoft Access for database operations. Other programs can also call Agilent VEE Pro user functions, with the included ActiveX Automation Server that supports popular programming languages such as Visual Basic, C/C++, Visual C#, all .NET-compliant languages and LabVIEW.

Agilent VEE Pro is integrated with Microsoft .NET Framework (Common Language Runtime and Framework Class Libraries) that provides you with a multitude of functions and controls that can be used to enhance your program. You can integrate C dynamic link libraries (DLL) into your program, and run MS-DOS system commands and Windows[®] executable programs using the Execute Program object. All of these allow you to get up and running quickly and develop a sophisticated application with minimal effort.

Enhancements in Agilent VEE

Agilent VEE Pro 9.32 includes enhanced capabilities that equip you with more functionality—and include support for the industry's latest software tools and operating systems, including Windows 8.

Features list

Enhancements

Better, versatile user experience

- · Multithreading for improved execution time
- Multi-core programming for increased performance
- SCPI completion for faster programming
- · Conditional breakpoints for enhanced debugging
- A breakpoints window for debug exploration and control
- Integrated support for LXI instruments' Web interface
- · Integrated support for databases
- · Enhanced custom menus
- Private UserFunction for better program deployment management
- · Toolbars for VEE objects
- · Enhanced default preferences dialog box
- · Error call stack for debugging traceability
- General vTools and USB Modular DAQ vTools*
- * These vTools are only available via web download and can be downloaded for free at www.agilent.com/find/vee_download

Latest industry-standard support

- Windows 8, Windows 7, Windows Vista 32-bit and 64-bit operating system
- MATLAB R2007a
- Microsoft Office 2013
- Agilent IO Libraries 16.3.16603.3
- · Additional data-type: UInt16

Core features

Quick instrument connection

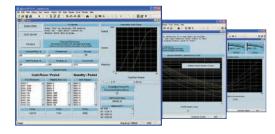
- · Automatic detection of all Agilent instruments
- Simple integration of industry-standard IVI-COM driver

Easy to learn and use

- High-level, task-oriented programming with graphical objects
- 700 built-in sample programs
- Undo/Redo capability to allow quick fix of mistakes
- · Watch Window for easy debugging
- Code Completion and Code Insight for fast coding
- Programmatic properties of objects to create better GUI—faster
- · Minimap for easy workspace navigation
- Standardized VISA-style addressing for all interfaces

Powerful and open to other software and hardware

- 1800 MATLAB functions and 1000 built-in MATLAB analysis and visualization functions
- Excel Library for saving and retrieving data, and automating reports
- .NET Framework for the addition of email capability to programs and accessing databases
- Seamless interoperability with GPIB, serial, VXI, USB and TCP/IP-based instruments



Richer enhancements for a more enjoyable programming experience

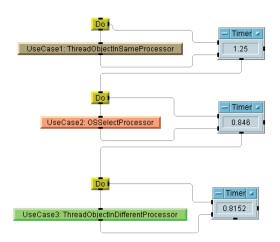
inhanceme

UsingUserObject UserObject2 UserObject3 UserObject2 UserObject3 UsingThreadObject ThreadObject2 ThreadObject2 ThreadObject3

Multithreading, which is the creation of multiple execution threads, decreases runtime, enhances response time and accelerates input/output (I/O) throughput. Creating a thread is as simple as selecting an object and choosing "ThreadObject" from the Device menu. The results are impressive: A typical do-loop executed as a thread object may be almost twice as fast as one executed as a user object.

Enhance program performance

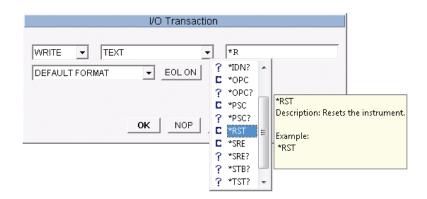
Improve test time and I/O throughput



In a multi-core PC, Agilent VEE uses its multi-core programming capability to allocate individual execution threads to different CPU cores, further increasing program performance beyond multithreading alone. The level of improvement varies from application to application.

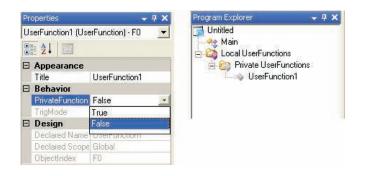
Enhancements in Agilent VEE

Program faster—and avoid syntax errors



Programming is simplified by capabilities such as auto-completion of SCPI commands, which eliminates the need to memorize command syntax. Simply choose the appropriate SCPI command from the list that appears as you type within the IO Transaction object. A description of the chosen command is also displayed, saving you the trouble of hunting through a manual to check for proper syntax.

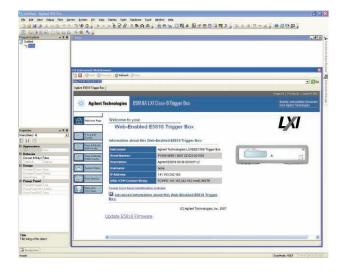
Encapsulate VEE programs within larger applications



Agilent VEE includes a new type of function called Private UserFunction. This lets you encapsulate VEE programs for use within larger applications and improve program abstraction. You can create totally new functions or convert existing UserFunctions into Private UserFunctions.

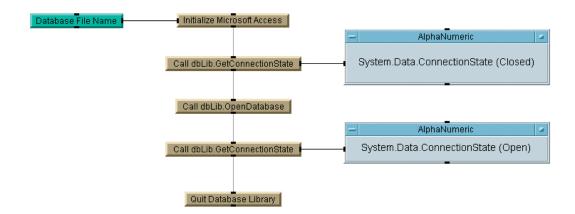
Enhancements

Access LXI instruments directly



As part of its support for industry standards, Agilent VEE provides direct access to LXI instruments through their built-in Web interface. With the advanced Web capabilities built into many Agilent LXI instruments, you can monitor, configure and control LXI devices directly from within Agilent VEE. This Web interface also allows you to surf the Internet within Agilent VEE environment.

Connect to popular databases



With Agilent VEE, you can easily integrate database operations into your test system. This capability enables connections to databases supported by ADO.NET, including Microsoft Access, SQL Server, Oracle[®] and MySQL. You can store massive amounts of test data in a well-structured format, then retrieve results as needed for additional testing or analysis.

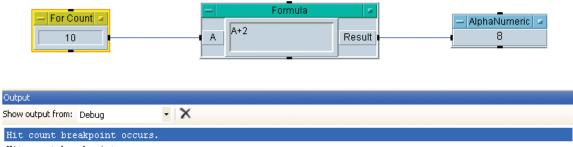
Enhancements in Agilent VEE

Simplify debugging with conditional breakpoints

Breakpoint Condition			
Condition	an an an an		
When the breakpoint location is reached, the expression is ev breakpoint is hit only if the expression is true.	aluated	and the	
Condition:			
Hit Count		. and a set	
A break prior to ball others the break prior to protion to conclude a set			
A breakpoint is hit when the breakpoint location is reached an is satisfied. The hit count is the number of times the breakpoin			
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is satisfied. The hit count is the number of times the breakpoint When the breakpoint is hit. [break when the hit count is a multiple of Current hit count: 4 Specify what to do when the breakpoint is hit.		en hit.	

Program debugging is flexible, powerful and simple with the new conditional breakpoints functionality. This capability lets you set conditions and hit counts and specify what action to take when a breakpoint is reached.

See more with the breakpoints window



Hit count breakpoint occurs.

The breakpoints window lets you explore and control all breakpoints within a VEE program. For example, you can activate, deactivate or delete. You can also browse information such as hit count, condition and when hit to better understand what's happening inside your program.

Where Agilent VEE is Used



Applications

Student lab and design projects

Agilent VEE Pro can be used in just about any application or industry—R&D, design validation, scientific research, education, industrial manufacturing, automotive, aerospace and defense, medical device testing, wireless communications, and more.

Customer Testimonials

Measuring the performance of fuel cells

The Korean Automotive Technology Institute (KATECH) selected Agilent VEE and Agilent USB data acquisition (DAQ) modules to measure the performance of proton-exchange-membrane fuel cells (PEMFCs). These fuel cells convert chemical energy generated by fuel oxidation into electrical energy.

At KATECH, the performance of 1 kW PEMFC stacks is determined by measuring a total of 53 parameters including stack voltage, current, flow, temperature, pressure and humidity. In this case, Agilent VEE was used to measure, display and analyze all 53 performance parameters.

To simplify the process, some analog parameters from the PEMFC were converted into voltages to enable measurement with the Agilent U2353A multifunction USB DAQ module. Data from the U2353A was sent to VEE through a direct I/O connection.

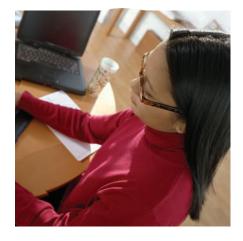
Within VEE, some data traces were displayed using the strip-chart mode. These readings were monitored versus pass and fail limits in real time. At the end of each acquisition session, all 53 parameters were saved in Microsoft Excel format using the built-in VEE Excel Library. The fuel-cell experiment required a full week to complete.



During the initial phase of the project, Korean Network Standard Co., Ltd, an authorized Agilent Channel Partner, helped KATECH tune the system to reduce the time required to gather data from all 53 PEMFC parameters.

"Agilent VEE was very easy to learn, which helped us ramp up and get useful results very quickly. Now, we're teaching our clients how to create fuel-cell measurement systems based on Agilent VEE and Agilent USB DAQ."

Young-Mo Goo, Senior Researcher, KATECH



The Ultimate Customer Satisfaction

Testing aerospace avionics with Agilent VEE

A large aerospace/defense company in the United Kingdom is involved in a major European fighter-jet program. The company's contributions to the program include a number of safety-related avionics modules.

When the team set out to design its test system, the test engineers compared a variety of available system architectures. Ultimately, they chose LXI as the enabling technology for their needs. To implement the actual test application, they chose Agilent VEE Pro.

According to the lead test engineer, VEE allows his team to get results quickly: "We refine and build on these results as we go." The combined power of VEE's ease of use and its built-in functionality—including the tightly integrated MATLAB script engine—helps the team meet its ongoing objective of minimizing development time.

In the system verification and commissioning phase, the test team relied heavily on the Web pages served by Agilent LXI instruments. These can be easily viewed in a browser window or, now, directly from VEE.



Customer Testimonials

Agilent VEE in Education

To help inspire the scientists and engineers of tomorrow, Agilent supports programs that help increase students' interest and achievement. A special version of VEE—Agilent VEE Education—is designed to support such efforts. VEE Education is a customized version of the software designed for use in educational institutions. It includes 10 standalone licenses in a single package.

Our commitment goes beyond the software. The "VEE Edu Program" caters to the needs of educational institutions by simplifying and accelerating the creation of course syllabi and lab materials based on Agilent VEE. As part of this program, our educational customers are eligible to receive a free VEE Education license and a copy of the book Agilent VEE: Practical Graphical Programming, a useful learning guide for instructors and their students.

We also partner directly with universities, sponsoring programs that give students an opportunity to work on projects that address real-world industry needs. One recent example was a joint effort between Agilent's Basic Instruments Division and the National University of Singapore's Department of Electrical and Computer Engineering.

During the two-semester program, final-year engineering students developed test applications using Agilent VEE and Agilent U2300 Series DAQ devices. Working independently, but with guidance from an academic supervisor, the students first analyzed their projects in depth and then created fully functional test solutions. Their work was evaluated by a panel of judges who assessed each project's level of innovation and practical value as well as the knowledge gained by the participants. Three finalists were chosen and all received cash awards for their work.

To learn more about Agilent resources for educators, please visit the following Web sites:

- Agilent VEE Education: www.agilent.com/find/vee_edu
- · Agilent VEE Student: www.agilent.com/find/vee_student
- · Educators Corner: www.agilent.com/find/educatorscorner



Evaluate Agilent VEE Today

Request a trial CD or download an evaluation copy

See it for yourself! If you would like to test-drive Agilent VEE before you buy, request a trial CD or download your fully functional 30-day evaluation copy of Agilent VEE and see it in action.



Multimedia demonstrations

The Agilent VEE Multimedia Demonstrations webpage demonstrates how to use Agilent VEE to perform a variety of common tasks. In just a few minutes, you will learn how to acquire data from your instruments, and then analyze and visualize the data using Agilent VEE's built-in display objects and MATLAB capabilities. To access this webpage, go to

view online demo www.agilent.com/find/veedemos.

Agilent VEE TV

Be thoroughly entertained while learning the intricacies of Agilent VEE programming from Melvin, the VEE Answerman, as he lays a solid foundation for structuring Agilent VEE Pro objects for your menus. Now showing on www.agilent.com/find/veetv.

Comparison Chart

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Line Probe and Object Probe	Automatic Error Handling								
	Show Data Flow and Show Execution Row								
Step-into, Step-out and Step-over	Line Probe and Object Probe								
	Step-into, Step-out and Step-over								

	Agilent	VEE 9.32	A	gilent VEI	8.5	Agilen	t VEE 8.0	Agilent VEE 7.5
	Pro	Student	Pro	Express	Student	Pro	Express	Pro
Connectivity Tools								
LXI Support								
Industry-standard Connectivity	*1	*1	*1	*2	*1	*1	*2	*3
Dynamically Change VISA Interface and Address								
Using Agilent IO Monitor to Monitor Instant Communications								
Instrument Manager Auto-detect and Configure of Instruments								A
VEE I/O Configuration File Saved with Program								
Other Tools								
Integrated Database Library								
Custom Menu in XML Format								
MATLAB 2007a Support								
Built-in MATLAB Engine								
MATLAB Script Objects		*4			*4			
Integrated Excel Library								

*1 - GPIB, RS-232, GPIO, USB, LAN, VXI *2 - Agilent USB only *3 - GPIB, RS-232, GPIO, USB, LAN, VXI *4 - Support only when MATLAB is installed on your machine

Agilent VEE Education 9.32 has all the features of Agilent VEE Pro 9.32 and comes packaged with 10 standalone licenses. Agilent VEE 9.32 does not come with an express version.

Requirements

Minimum System Requirements for Agilent VEE Pro 9.32

Prior to installing Agilent VEE Pro 9.32, ensure that your PC meets the following minimum system requirements for installation and operation.

Hardware Requirements	
Processor	Windows XP, 450 MHz Pentium II or higher Windows Vista/Windows 7/Windows 8, 1 GHz Pentium III or higher
Operating system	One of the following Microsoft Windows versions:
	Windows XP (Service Pack 3 or higher)
	 Windows Vista Business, Ultimate or Enterprise edition (Service Pack 1 or higher)
	Windows 7 Professional, Ultimate or Enterprise edition
	Windows 8 Professional or Enterprise edition
	Please note that 64-bit Windows 8 support is only available by running 32-bit application on a Windows-on-Windows emulator
RAM	Windows XP, 128 MB or higher Windows Vista/Windows 7/Windows 8, 1 GB or higher
Hard disk space	700 MB
Video	Windows XP, Super VGA (800x600) or higher resolution, 256 colors or more Windows Vista/Windows 7/Windows 8, Support for DirectX 9 graphics with 128 MB graphics memory recommended; Super VGA graphics supported
PC requirements	Keyboard, 2-button mouse and CD-ROM drive (if installing from CD)
Software Pequiremente	

Software Requirements

Windows XP: Microsoft Internet Explorer 6.0 or higher

Windows Vista/Windows 7/Windows 8: Microsoft Internet Explorer 7.0 or higher

Microsoft Office 2003, 2007, 2010 and 2013 (if using Office products with Agilent VEE Pro)

Agilent IO Libraries Suite 16.3.16603.3 or higher (if communicating with instruments using Agilent VEE)

Microsoft .NET Framework 3.5 SP1

Connectivity options for instrumentation

Agilent 82350B PCI-GPIB interface

Agilent 82351A PCIe/GPIB interface

Agilent 82357B USB/GPIB interface

Agilent E5810A LAN/GPIB gateway and Agilent E5810B LAN/GPIB/USB gateway

USB connectivity to instruments supporting the USBTMC protocol

Standard RS-232

LAN connectivity to instruments supporting the VXI-11 protocol

National Instruments I/O hardware using NI 488 version 1.5 (or higher)

National Instruments I/O hardware using NI VISA version 3.0 (or higher)

For more details, visit www.agilent.com/find/vee

Note: All products listed below are structured as options under the W4000D product number.

Core product	Notes
Agilent VEE Pro 9.32 Software (W4000D-1TP)	Includes the full feature of Agilent VEE Pro 9.32 CD and Quick Start Guide (6 languages)
Agilent VEE Pro 9.32 Student Software (W4000D-2TP) (for students only)	Includes the full feature of Agilent VEE Student 9.32 CD and Quick Start Guide (6 languages)
Agilent VEE Pro Education 9.32 (W4000D-3TP) (for education customers only)	Includes 10 licenses of Agilent VEE Pro 9.32 and Quick Start Guide (6 languages)
Upgrade licenses	Notes
Upgrade from Agilent VEE Pro 8.5 to Agilent VEE Pro 9.32 (W4000D-5TP)	Includes CD and Quick Start Guide (6 languages)
Upgrade from Agilent VEE Pro 8.0 to Agilent VEE Pro 9.32 (W4000D-6TP)	Includes CD and Quick Start Guide (6 languages)
Upgrade from Agilent VEE Pro 7.5 & below to Agilent VEE Pro 9.32 (W4000D-7TP)	Includes CD and Quick Start Guide (6 languages)
Upgrade from Agilent VEE Express to Agilent VEE Pro 9.32 (W4000D-8TP)	Includes CD and Quick Start Guide (6 languages)
Additional options	Notes
Agilent VEE Education 9.32 10-license option (W4000D- 4TP)	Includes Software Entitlement Certificate to add on 10 licenses to VEE Education 9.32 (W4000D-3TP)
*No Documentation/Education Package (W4000D-0B0)	Includes Software Entitlement Certificate only/Basic Education package only (default for W4000D-2TP and W4000D-4TP)

Localized Quick Start Guide versions are available. Agilent VEE Pro is shipped with embedded MATLAB Script, MathWorks' Signal Processing Toolbox, .NET Framework, ActiveX programmatic access at no extra charge, and comes with unlimited RunTime distribution rights. The full MATLAB product can be purchased from The MathWorks at www.mathworks.com or 508 647-7000. Updated or new instrument drivers can be downloaded with no extra charge from Agilent Drivers and Software website www.agilent.com/find/inst_drivers. Download Agilent VEE code samples at www.agilent.com/find/veesamples.

Resources

Agilent VEE software forum

This is the VEE users forum where members can post questions and get answers from VEE experts and peers all over the world. Register for free and login with your username and password at any time to participate in the latest VEE related discussions. What's more, you can search for previous posts and find useful tips easily in the forum.

Join the VEE Software Discussion Forum today at http://www.agilent.com/find/veeforum

Sign up for LearnVEE – Agilent VEE e-learning courses – at http://www.agilent.com/find/learnvee

More resources at www.agilent.com/find/vee

- Application Notes and White
 Papers
- Manuals
 - Authorized Channel Partners
- Instrument Drivers
- Software Downloads
- Agilent VEE Application Developers
- Education and Training
- Report a Software Defect
- Frequently Asked Questions (FAQs)
- Request an Enhancement
- Agilent T&M Software Compatibility

Hands-On Training Courses for Agilent VEE Pro – Sign Up Today!



Don't miss this training opportunity! Learn how to build powerful programs from scratch and automate measurements easily with Agilent VEE Pro.

Training	Part number	Location
Introduction to Agilent VEE Pro	H7218A-200, H7218B-200	Worldwide*
Advanced Agilent VEE Pro	H7218A-300, H7218B-300	Worldwide*
* Excluding Japan		

Further details on training scope, schedule, location, and pricing is available at www.agilent.com/find/veetraining

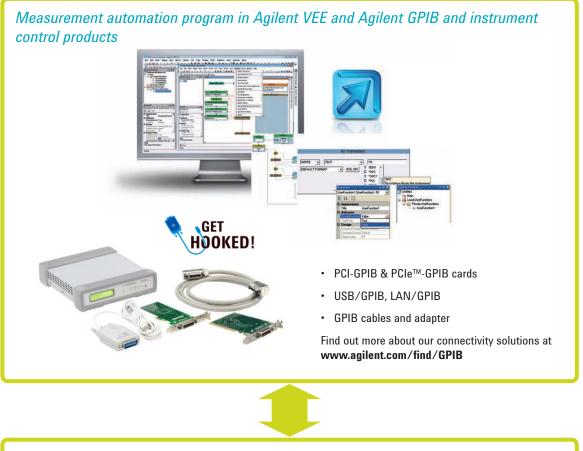
Call for registration. Complete contact list available at www.agilent.com/find/contactus

Related Agilent Literature

Publication title	Pub number
Agilent VEE Pro 9.32 Data Sheet	5990-9117EN
Solutions for Aerospace Avionics Testing - How to optimize test systems using LXI technology Brochure	5989-8374EN
RF Power Amplifier Characterization for R&D and manufacturing using Customized Agilent VEE Test Program	5989-7419EN
Implementation Of Cyclic Periodogram Detection On VEE For Cognitive Radio Application Note	5989-7480EN
How to Use IVI-COM Drivers in Agilent VEE Pro 8.0 Application Note	5989-6914EN
Accessing Microsoft [®] Excel from VEE White Paper	5989-4911EN
Enhancing Agilent VEE Pro Programs with Microsoft® .NET Controls White Paper	5989-4912EN
Accessing a PostgreSQL Database from VEE White Paper	5989-4913EN
Implementing a Supportable VEE Architecture White Paper	5988-2388EN

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