

RELEASE NOTES

Measurement Studio™

These release notes introduce Measurement Studio 2009. Refer to this document for installation requirements, deployment requirements, installation instructions, information about new features and functionality, and resources in Measurement Studio.

These release notes are a subset of the *Measurement Studio User Manual*. For a complete introduction to Measurement Studio and to learn about Measurement Studio concepts, controls, and features, refer to the *Measurement Studio User Manual*. Select **Start»All Programs»National Instruments»<Measurement Studio>>Measurement Studio User Manual** to access the *Measurement Studio User Manual*.



Note Measurement Studio no longer includes a printed copy of the *Measurement Studio User Manual*.

For a list of fixed bugs and known issues, refer to the *Measurement Studio Readme*. There is a different *Measurement Studio Readme* for each supported version of Visual Studio. The *Measurement Studio Readme* files are available in the root folder of the installation media and are linked from the Autorun menu. After installing Measurement Studio 2009, select **Start»All Programs»National Instruments»<Measurement Studio>>Readme** to access the *Measurement Studio 2009 Readme*.



Note There are separate Start menu items for each version of Visual Studio support that you have installed.

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About Measurement Studio

Measurement Studio is an integrated suite of tools and class libraries that are designed for developers using Microsoft Visual Basic .NET, Visual C#, ASP.NET, and Visual C++ to develop measurement and automation applications.

Measurement Studio provides object-oriented measurement hardware interfaces, advanced analysis libraries, scientific user interface controls for Windows and Web applications, measurement data networking libraries, wizards, interactive code designers, and highly extensible .NET and Visual C++ classes. You can use Measurement Studio to develop a complete measurement and automation application that includes data acquisition, analysis, and presentation functionalities.

Measurement Studio 2009 Professional and Enterprise packages include two Visual Studio support installation discs—one DVD with support for Visual Studio .NET 2003, Visual Studio 2005, and Visual Studio 2008 and

one CD with support for Visual Studio 6.0. The Measurement Studio 2009 Standard package includes one CD with support for Visual Studio .NET 2003, Visual Studio 2005, and Visual Studio 2008.

Visual Studio .NET 2003 support, Visual Studio 2005 support, and Visual Studio 2008 support include .NET class libraries and controls for use with .NET languages and MFC class libraries and ActiveX controls for use with Visual C++. Visual Studio 6.0 support includes ActiveX controls for use in Visual Basic 6.0 and MFC class libraries and ActiveX controls for use in Visual C++ 6.0.

What's New in Measurement Studio 2009

What's New in Measurement Studio 2009 Support for Visual Studio 2008

New features in Measurement Studio 2009 support for Visual Studio 2008 include the following. Refer to the [New Features in Measurement Studio 2009](#) section for more information.

- 64-bit support in Measurement Studio .NET assemblies
- TDMS .NET class library enhancements
- Network Variable class library enhancements
- Automatic plot line color generation
- Updated style for .NET Help
- Additional improvements
 - New .NET Analysis class library methods
 - Support for Microsoft Windows 7
 - .NET class library support for NI Vision software
 - New TDMS UTC converter tool
 - Bug fixes

What's New in Measurement Studio 2009 Support for Visual Studio 2005

New features in Measurement Studio 2009 support for Visual Studio 2005 include the following. Refer to the [New Features in Measurement Studio 2009](#) section for more information.

- TDMS .NET class library enhancements
- Network Variable class library enhancements
- Automatic plot line color generation

- Updated style for .NET Help
- Additional improvements
 - New .NET Analysis class library methods
 - Support for Microsoft Windows 7
 - .NET class library support for NI Vision software
 - New TDMS UTC converter tool
 - Bug fixes

Measurement Studio 2009 Support for Visual Studio .NET 2003

Measurement Studio support for Visual Studio .NET 2003 is considered a legacy product. As a result, support for Visual Studio .NET 2003 has not been updated in Measurement Studio 2009. The version number for Measurement Studio support for Visual Studio .NET 2003 is 8.1.2, with the exception of the ActiveX controls. The ActiveX controls are shared between Visual Studio .NET 2003, Visual Studio 2005, and Visual Studio 2008 support.

Measurement Studio 2009 Support for Visual Studio 6.0

Measurement Studio support for Visual Studio 6.0 is considered a legacy product; however, Measurement Studio Visual Studio 6.0 support still supports the most recent versions of the ActiveX user interface and 3D graph controls. Updates to the Measurement Studio Support for Visual Studio 6.0 software are available on ni.com by selecting **Support» Drivers and Updates» Software» Measurement Studio**.

New Features in Measurement Studio 2009

64-bit Support in Measurement Studio .NET Assemblies

Measurement Studio 2009 support for Visual Studio 2008 includes 64-bit support for Measurement Studio .NET assemblies. You can use Measurement Studio .NET assemblies in 64-bit applications to take advantage of the increased processing power and memory capabilities that are available to 64-bit applications.



Note Applications and libraries created from project templates included with Measurement Studio 8.6.1 or earlier will run as 32-bit unless you manually change the project settings to Any CPU (AnyCPU in Visual Basic) or x64, in which case the application will run as 64-bit on a 64-bit operating system.

Class Libraries

Measurement Studio 2009 support for Visual Studio 2008 includes 64-bit support for the following class libraries:

- Analysis
- Common
- Network Variable
- TDMS
- User Interface
- NI-DAQmx (8.9.5 and later versions)



Note Not all NI DAQ hardware supported by NI-DAQmx is supported in 64-bit user mode. Refer to the *NI-DAQ Readme* for more information, installed at **Start»All Programs»National Instruments»NI-DAQ»NI-DAQ Readme**.

- NI-VISA (4.5.1 and later versions)
- NI-488.2 (2.7.1 and later versions)
- MAX (4.6 and later versions)

64-bit support for the following class libraries is *not* available:

- DataSocket .NET class libraries
- All Visual C++ class libraries
- NI-SCOPE .NET class libraries
- NI Vision, NI-IMAQ, and NI-IMAQdx .NET class libraries
- Modular instruments .NET wrappers for other NI drivers



Note National Instruments has no plans to support using Measurement Studio Visual C++ class libraries in 64-bit applications.

Examples

Measurement Studio examples now target the Any CPU (AnyCPU in Visual Basic) platform instead of the x86 platform.

Related Documentation

For more information on 64-bit support in Measurement Studio 2009 .NET assemblies, refer to the *64-bit Support in Measurement Studio .NET Assemblies* topic in the *NI Measurement Studio Help*.

TDMS .NET Class Library Enhancements

The TDMS .NET class library now includes support for TDMS 2.0. You can use TDMS 2.0 to take advantage of TDMS performance improvements for both TDMS 1.0 and 2.0 while maintaining compatibility between files created with the .NET API and Technical Data Management Streaming (TDMS) files created by LabVIEW, LabWindows™/CVI™, NI-DAQmx (9.0 and later versions), and DIAdem. TDMS 2.0 can read TDMS 2.0 files as well as TDMS 1.0 files.

The TDMS 2.0 file format provides the following additional features:

- Faster file access
- Improved streaming performance
- Support for writing interleaved data
- Support for endian conversion
- Improved defragmenting
- Improved compatibility between NI TDMS applications

Related Documentation

For additional information, refer to the *Using the Measurement Studio TDMS .NET Library* topic in the *NI Measurement Studio Help* and *TDMS 2.0 FAQ* on ni.com.

Enhancements to the Network Variable Class Library

Measurement Studio 2009 includes the following new features and functionality in the `NationalInstruments.NetworkVariable` class library:

- New `NetworkVariableSubscriber.ConnectionBehavior` property. You can use this property to configure a `NetworkVariableSubscriber` to publish an update as soon as the `NetworkVariableSubscriber` connects.
- Ability to configure the `NetworkVariable.WindowsForms.NetworkVariableBinding` class to read or write immediately upon connection. You use the `NetworkVariable.WindowsForms.NetworkVariableBinding.ConnectionBehavior` property to set this behavior.
- Ability to configure the description and type for explicitly created network variables. Refer to *Explicitly Creating Network Variables* topic in the *NI Measurement Studio Help* for more information.
- New conceptual help topic, *Type Safety in the Network Variable Class Library*. Refer to this topic for information about `NetworkVariable` behavior when readers and writers use different types.

- New conceptual help topic, *Unicode Support in the Network Variable Class Library*, and updated function reference. Refer to this topic and supporting function reference members for information about how `NetworkVariable` treats strings that contain non-ASCII characters and problems that may occur when machines that use different languages transfer string data.
- New Distributed System Manager application for explicitly creating network variables. Distributed System Manager replaces the Variable Manager application.

Automatic Plot Line Color Generation

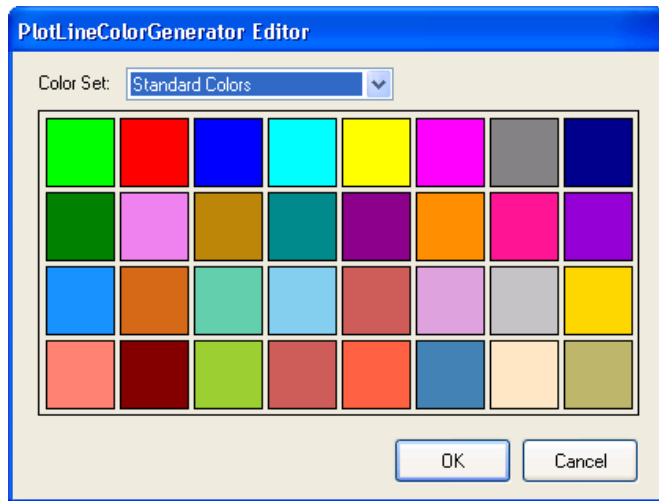
You can configure the Windows Forms and Web Forms scatter, waveform, and complex graphs to automatically generate different colors for different plots, eliminating the need for you to explicitly assign colors to plots that you add to these graphs. You use the `PlotLineColorGenerator` property on the graphs to assign a pre-defined or custom color set to your plot lines.



Note The digital waveform graph does not support the automatic plot line color functionality.

You enable or disable plot line color generation for individual plots with the `UseColorGenerator` property. You can use the `NationalInstruments.UI.FixedSetColorGenerator` class to select a set of colors that you assign to plot lines, or you can provide your own color set. Refer to the `NationalInstruments.UI.ColorGenerator` class overview for sample code to create a custom color generator.

The `NationalInstruments.UI.FixedSetColorGenerator` class includes a standard, dark, and light color set, and you can set these colors programmatically at run time or with the `PlotLineColorGenerator` item in the Property Grid at design time. The following image shows the `PlotLineColorGenerator` Editor dialog box with standard colors selected.



Related Documentation

Refer to the following topics in the *NI Measurement Studio Help* for more information about this feature:

- *Using Multiple Plots in Measurement Studio Windows Forms Scatter and Waveform Graph .NET Controls*
- *Using Multiple Plots in the Measurement Studio Windows Forms Complex Graph .NET Control*
- *Using Multiple Plots in Measurement Studio Web Forms Scatter and Waveform Graph .NET Controls*
- *Using Multiple Plots in the Measurement Studio Web Forms Complex Graph .NET Control*

Updated Style for .NET Help

Measurement Studio 2009 introduces an updated look and feel for the *NI Measurement Studio Help*, including the following improvements for both conceptual help and function reference:

- MSDN-style appearance and layout
- Collapsible documentation sections
- Copy code button functionality
- Code colorization for syntax and example code

For more information on the *NI Measurement Studio Help*, please refer to the *Using the Measurement Studio Help* topic in the *NI Measurement Studio Help*.

Additional Improvements

Measurement Studio 2009 also introduces the following new features:

- **New .NET Analysis Class Library Methods**
 - `Math.CurveFit.NonLinearFit`
 - `Math.LinearAlgebra.MultiplyMatrixByVector`
 - `Dsp.SignalProcessing.Convolve`
 - `Dsp.SignalProcessing.CrossCorrelate`
- **Microsoft Windows 7 Support**—Measurement Studio 2009 includes support for Windows 7. Refer to the *Installation Requirements* section for related information.
- **.NET Class Library Support for NI Vision software**
 - **NI-IMAQ**—You can use the NI-IMAQ .NET class libraries to acquire images from NI frame grabbers, display images, and save images. These class libraries provide a .NET interface to the underlying NI-IMAQ driver API. NI-IMAQ 4.3 and later include support for .NET class libraries. You can download NI-IMAQ from the NI Device Drivers DVD included with Measurement Studio, under Vision Acquisition Software in the installer feature tree. Alternatively, refer to *NI Drivers and Updates* on `ni.com` and enter `Device Drivers` into the search field to download the latest version of the NI Device Drivers.
 - **NI-IMAQdx**—You can use the NI-IMAQdx .NET class libraries to acquire images from GigE, IEEE 1394, or USB cameras; display images; and save images. These class libraries provide a .NET interface to the underlying NI-IMAQdx driver API. NI-IMAQdx 3.4 and later include support for .NET class libraries. You can download NI-IMAQdx from the NI Device Drivers DVD included with Measurement Studio, under Vision Acquisition Software in the installer feature tree. Alternatively, refer to *NI Drivers and Updates* on `ni.com` and enter `Device Drivers` into the search field to download the latest version of the NI Device Drivers.
 - **NI Vision Development Module**—The NI Vision Development Module .NET assemblies contain all of the classes necessary to analyze, process, and display images. NI Vision Development Module 2009 and later includes support for .NET class libraries. The NI Vision Development Module 2009 is not included with Measurement Studio 2009; you must purchase NI Vision Development Module 2009 or later to use the .NET assemblies. Refer to `ni.com/vision` for more information.

- **New TDMS UTC converter tool**—For TDMS files created with Measurement Studio 8.6.1 and earlier, the TDMS UTC converter rewrites TDMS files to use UTC instead of local time. The TDMS UTC converter tool is located in the [InstallDir]\Common\Tdms folder. For more information, refer to *Key Measurement Studio TDMS .NET Library Features* and *Measurement Studio Incompatibilities* topic in the *NI Measurement Studio Help*.
- **Bug Fixes**—Measurement Studio 2009 includes many fixes for previously reported bugs. Refer to the fixed bug chart in the *Measurement Studio 2009 Readme* for more information. Select **Start»All Programs»National Instruments»<Measurement Studio>>Readme** to access the *Measurement Studio 2009 Readme*.

Advance Notice of Visual C++ Deprecation in Measurement Studio 2010

This section provides you with advance notice of changes occurring in future versions of Measurement Studio regarding Visual C++ support.

NI Measurement Studio 2009 is the last version of Measurement Studio to include integrated support for Visual C++. In future releases of Measurement Studio, Visual C++ support will be considered legacy and made available only through electronic delivery for qualifying customers.

Measurement Studio Legacy Support for Visual C++

Legacy support for Visual C++ will be available as a separate package named *Measurement Studio Legacy Support for Visual C++*. National Instruments plans to make *Measurement Studio Legacy Support for Visual C++* available after the release of Measurement Studio 2010. For more information, refer to ni.com/info and enter info code `legacycpp`. The legacy product will enable you to continue using Measurement Studio libraries in Visual C++, develop new features and bug fixes, and recompile for migration to new versions of Visual Studio.

National Instruments will no longer actively develop, support, or fix bugs in *Measurement Studio Legacy Support for Visual C++*; however, you will be able to update the Measurement Studio Visual C++ libraries as you deem necessary.

To qualify to receive *Measurement Studio Legacy Support for Visual C++*, you must meet either of the following criteria:

- You must maintain an active Measurement Studio Standard Service Program (SSP) contract at the release of Measurement Studio 2010; or
- You must purchase Measurement Studio 2010.

As a qualifying Measurement Studio customer, you have the following options:

- You can download *Measurement Studio Legacy Support for Visual C++* from ni.com. The legacy product will enable you to continue using Measurement Studio libraries in Visual C++, develop new features and bug fixes, and recompile for migration to new versions of Visual Studio.
- You can receive the last Measurement Studio distribution that includes integrated Measurement Studio solution tools for Visual C++ by contacting an NI sales representative at ni.com/contact and requesting the Measurement Studio 2009 installation media.

Continuing Support for NI-DAQmx Visual C++ Libraries

National Instruments will continue to maintain, enhance, and release future versions of the NI-DAQmx Visual C++ library to support new NI-DAQmx features, including new devices, and future versions of Visual Studio.

Please contact National Instruments at ni.com/contact for additional information.

Installation Requirements

To use Measurement Studio, your computer must have the following:

- Microsoft Windows 7/Vista/XP/2000 (SP3 or later) for Visual Studio 2005 or Microsoft Windows 7/Vista/XP for Visual Studio 2008



Note This version of Measurement Studio supports, and was tested with, the latest operating system service packs that were available at the time this version of Measurement Studio was released. National Instruments recommends using Measurement Studio with the latest operating system service pack.



Note If you want to upgrade your operating system from one major version to another, National Instruments recommends first uninstalling all National Instruments software, including application software and drivers. This is not necessary when installing an operating system service pack.

- Microsoft .NET Framework 2.0 for Visual Studio 2005 or Microsoft .NET Framework 3.5 for Visual Studio 2008 (required only for the Measurement Studio .NET class libraries)
- Intel Pentium III class processor, 1.6 GHz or higher
- Video display—1024 × 768, 256 colors (16-bit color recommended for user interface controls)
- Minimum of 384 MB of RAM (1024 MB or higher recommended)

- Minimum of 419 MB of free hard disk space for Visual Studio 2005 support or minimum of 395 MB of free hard disk space for Visual Studio 2008 support
- Microsoft-compatible mouse
- Microsoft Internet Explorer 6.0 or later

Optional Installation—In order for links from Measurement Studio help topics to .NET Framework help topics to work, you must install the product documentation for Visual Studio, which installs the MSDN Library. This requires a secondary installation during the Visual Studio installation process.

Driver Support

To use .NET or Visual C++ class libraries that interface to National Instruments device drivers, NI-DAQmx, NI-VISA, NI-488.2, NI-SCOPE, NI-IMAQ, NI-IMAQdx, and the MAX (Measurement & Automation Explorer) configuration utility, you must install the underlying device drivers in addition to the .NET or Visual C++ class libraries. You can run the underlying device driver installers from the NI Device Drivers DVD included with Measurement Studio. Alternatively, refer to *NI Drivers and Updates* on ni.com and enter *Device Drivers* into the search field to download the latest version of the NI Device Drivers.



Note The DAQ Assistant and the Instrument I/O Assistant are installed from the NI Device Drivers DVD. You must install the NI Device Drivers DVD to use the assistants.



Note NI-SCOPE, NI-IMAQ, MAX, and NI-IMAQdx do not include Visual C++ libraries.



Note To download NI-SCOPE .NET class libraries, refer to *NI-SCOPE .NET Driver Support* on ni.com.



Note Currently, 64-bit support for NI device drivers is available only in the .NET class libraries for the following drivers: NI-DAQmx 8.9.5, NI-VISA 4.5.1, NI-488.2 2.7.1, and MAX 4.6. 64-bit class libraries are included only with support for Visual Studio 2008.

Installation Instructions

Complete the following steps to install Measurement Studio. These steps describe a typical installation. Please carefully review all additional licensing and warning dialog boxes.

National Instruments recommends that you exit all programs before running the Measurement Studio installer. Applications that run in the background, such as virus scanning utilities, might cause the installer to take longer than average to complete.



Note There are separate installers for Measurement Studio support for Visual Studio 2005 and Measurement Studio support for Visual Studio 2008. Repeat the installation instructions to install support for both. When installing support for more than one version of Visual Studio, you can reduce installation time by running the Device Drivers DVD installer only once. To do this, ensure that the Device Drivers DVD feature is enabled only for the **last** Measurement Studio Visual Studio support installer that you run.

Complete the following steps to install Measurement Studio:

1. Log on as an administrator or as a user with administrator privileges.
2. Launch `Autorun.exe`, either from the installation media or from the location to which you extracted the downloaded disc image.
3. Select the version of Visual Studio you want to install support for.
4. Follow the instructions that appear on the screen.



Tip You can use a spec file to programmatically control the Measurement Studio installer. An example spec file is located on your installation media at `<drive>:\VS200x\template_spec.txt`. For more information, refer to KnowledgeBase Article 4CJDP38M: *Automating the Installation of a Single Installer*.

Installing the Current Version of Measurement Studio over Previous Versions of Measurement Studio

You can have only one version of Measurement Studio installed on a system for each version of Visual Studio or the .NET Framework installed on the system. For example, you can have Measurement Studio 8.6.1 for Visual Studio 2005 installed on the same system as Measurement Studio 2009 for Visual Studio 2008, but you cannot have Measurement Studio 2009 for Visual Studio 2005 installed on the same system as Measurement Studio 2009 for Visual Studio 2008.

If you install a newer version of Measurement Studio on a machine that has a prior version of Measurement Studio installed, the newer version installer replaces the prior version functionality, including class libraries. However, the prior version assemblies remain in the global assembly cache (GAC); therefore, applications that reference the prior version continue to use the prior version .NET assemblies.

Deployment Requirements

To deploy an application built with Measurement Studio .NET class libraries, the target computer must have a Windows 7/Vista/XP/2000 operating system and either the .NET Framework version 2.0 for Visual Studio 2005 or the .NET Framework version 3.5 for Visual Studio 2008.

To deploy an application built with Measurement Studio Visual C++ class libraries, the target computer must have a Windows 7/Vista/XP/2000 operating system.

Deploying 64-bit Applications

To facilitate use in Visual Studio Setup projects, all Measurement Studio class libraries that support 64-bit include both 32-bit and 64-bit deployment merge modules. This is true regardless of whether the class library includes platform-specific (i.e., x86 or x64) or platform-agnostic (i.e., Any CPU) assemblies. Refer to *Deploying Windows Applications* topic in the *NI Measurement Studio Help* for more information on using 64-bit merge modules.

Learning Measurement Studio

As you work with Measurement Studio, you might need to consult additional resources. For detailed Measurement Studio help, including function reference and in-depth documentation on developing with Measurement Studio, refer to the *NI Measurement Studio Help* within the Visual Studio environment. The *NI Measurement Studio Help* is fully integrated with the Visual Studio help. You must have Visual Studio installed to view the online help, and you must have the Microsoft .NET Framework SDK 2.0 for Visual Studio 2005 or the Microsoft .NET Framework SDK 3.5 for Visual Studio 2008 installed in order for links from Measurement Studio help topics to .NET Framework help topics to work. You can launch the *NI Measurement Studio Help* in the following ways:

- From the Windows Start menu, select **Start»All Programs»National Instruments»<Measurement Studio>»Measurement Studio Documentation**.
- From Visual Studio, select **Help»Contents** to view the Visual Studio table of contents. The *NI Measurement Studio Help* is listed in the table of contents.
- From Visual Studio, select **Measurement Studio»NI Measurement Studio Help**.

The following resources also are available to provide you with information about Measurement Studio.

- Getting Started information—Refer to the *Measurement Studio Core Overview* topic and the *Getting Started with the Measurement Studio Class Libraries* section in the *NI Measurement Studio Help* for an introduction to Measurement Studio and for walkthroughs that guide you step-by-step in learning how to develop Measurement Studio applications. For an introduction to Measurement Studio resources, refer to the *Using the Measurement Studio Help* topic in the *NI Measurement Studio Help*.
- Examples—Measurement Studio installs examples organized by class library, depending on the component, the version of Visual Studio or the .NET Framework that the example supports, the version of Measurement Studio installed on the system, and the operating system. For more information on example locations, refer to the *Where to Find Examples* topic in the *NI Measurement Studio Help*.
- Measurement Studio Web site, ni.com/mstudio—Contains Measurement Studio news, support, downloads, white papers, product tutorials, and purchasing information.
- NI Developer Zone, zone.ni.com—Provides access to online example programs, tutorials, technical news, and Measurement Studio discussion forums where you can participate in discussion forums for Visual Basic 6.0, Visual C++, and .NET Languages.
- *Measurement Studio .NET Class Hierarchy Chart* and *Measurement Studio Visual C++ Class Hierarchy Chart*—Provide overviews of class relationships within class libraries. Charts are included with all Measurement Studio packages and are posted online at ni.com/manuals.
- Review the information from the Microsoft Web site on using Visual Studio.

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