LABVIEW™ REAL-TIME

Version 6.0.3

These release notes provide information about LabVIEW Real-Time (RT), related documentation, special installation considerations, compatibility with NI-DAQ, examples of LabVIEW RT applications, new features in version 6.0.3, and issues known to affect the performance of LabVIEW RT.

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About LabVIEW Real-Time

LabVIEW RT combines the user-friendliness of LabVIEW with the power of real-time systems, so you can use graphical programming to create deterministic applications. You create Virtual Instruments (VIs) and applications with LabVIEW RT the same way you do with LabVIEW for Windows. Using a host PC or PXI system running a Windows operating system, you can create LabVIEW RT VIs and applications. You also use the host PC to download VIs to the RT Engine on an RT Series device, such as a PCI/PXI-7030 RT Series DAQ device or a PXI controller. VIs downloaded to the RT Engine run in real time.

LabVIEW RT 6.0.3 extends the capabilities of LabVIEW RT 5.1.2 and adds support for LabVIEW RT on new RT Series devices. Refer to the National Instruments Web site at `ni.com/express` and enter the Info Code: `RT0001` for more information about LabVIEW RT support of specific National Instruments RT Series devices.

You create LabVIEW RT applications by using the same functions you use to create applications in LabVIEW for Windows. However, LabVIEW RT includes the following two additional sets of VIs you can use in real-time applications:

- Shared Memory VIs in both host and RT Engine applications communicate data using the shared memory on PCI/PXI-7030 real-time boards.

- Watchdog Timer VIs access the watchdog timer hardware on PXI controllers using LabVIEW RT applications.

Refer to the *LabVIEW Real-Time Help*, available by selecting **Help»LabVIEW Real-Time Help**, for more information about the Shared Memory and Watchdog Timer VIs.

Related Documentation

The following documents contain information you might find helpful as you work with LabVIEW RT:

- *LabVIEW Real-Time User Manual*

- *LabVIEW Real-Time Help*, available by selecting **Help»LabVIEW Real-Time Help**

- *RT Series DAQ Device User Manual*

- *RT Series PXI/CompactPCI Controller User Manual*

- Your RT Series hardware user manual and documentation

- *Getting Started with LabVIEW*

- *LabVIEW User Manual*

- *LabVIEW Help*, available by selecting **Help»Contents and Index**

- *LabVIEW Application Builder Release Notes*

- *Measurement & Automation Explorer (MAX)*, available by selecting **Tools»Measurement & Automation Explorer** from the LabVIEW toolbar

- *MAX Help*, available by selecting **Help»Help Topics** from the MAX toolbar

Refer to your RT Series device user manual and the *LabVIEW Real-Time User Manual* for more information about programming LabVIEW RT.

Installation

You must install LabVIEW RT on a PC or PXI system running Windows to use LabVIEW RT with either the PCI/PXI-7030 plug-in board or a networked RT Series device. The Windows-operated PC or PXI system serves as the host PC for LabVIEW RT applications. Refer to Chapter 2, *Installation*, of the *LabVIEW Real-Time User Manual* for more information about installing LabVIEW RT and drivers, such as NI-DAQ, on the host PC.

When you install LabVIEW RT on the host PC, LabVIEW RT automatically installs Measurement & Automation Explorer (MAX). Use MAX to configure networked RT Series devices for use with LabVIEW RT.

NI-DAQ Compatibility

Because LabVIEW RT uses NI-DAQ on the host PC and in the RT Engine on RT Series DAQ devices, only certain versions of NI-DAQ are compatible with LabVIEW RT. The following table summarizes LabVIEW RT and NI-DAQ compatibility.

LabVIEW RT Version	Compatible NI-DAQ Versions
5.1	6.5.2, 6.6
5.1.2	6.7, 6.9.1
6.0.3	6.9.1

Examples

Refer to the VIs located in \LabVIEW 6\examples\rt for examples of real-time programming and control applications. The LabVIEW RT examples are grouped into the following VI libraries:

- RT Communication.llb
- RT Control (7030).llb
- RT Control.llb
- RT Tutorial.llb
- RT Watchdog (PXI-8156B).llb

RT Communication

RT Communication examples demonstrate how to communicate data between RT Engine VIs and host PC VIs. You can use the VI Server and TCP/IP examples with the RT Engine on RT Series DAQ devices or networked RT Series devices. You can use the shared memory examples only with the RT Engine on RT Series DAQ devices.

RT Control (7030)

RT Control (7030) examples are similar to the Proportional Integral Derivative (PID) control examples in RT Control.llb. However, RT Control (7030) examples use shared memory to communicate with VIs on the host PC. You can use the RT Control (7030) VIs only with PCI/PXI-7030 plug-in boards.

RT Control

RT Control examples demonstrate various PID control applications that you can run on RT Series devices. The examples use VI Server and TCP/IP for communication. Therefore, you can use them with either PCI/PXI-7030 plug-in boards or networked RT Series devices.

RT Tutorial

RT Tutorial examples illustrate various techniques for programming real-time applications in LabVIEW RT. The examples demonstrate VI priority settings, benchmarking utilities, and use of the LEDs on RT Series DAQ devices.

RT Watchdog

RT Watchdog examples demonstrate how to use the watchdog timer VIs to safely shutdown or restart a LabVIEW RT application if an application crashes. These examples work only on PXI controllers.

What's New in Version 6.0.3

The following are new features in LabVIEW RT 6.0.3:

- MAX replaces Remote System Explorer as the tool used to configure networked RT Series devices for use with LabVIEW RT.

- LabVIEW RT now supports Flexmotion PXI motion controllers.

- LabVIEW RT now supports NI plug-in PXI Serial communication modules.

- NI-VISA 2.5.2 is included with LabVIEW RT 6.0.3. You can use NI-VISA 2.5.2 to communicate with PXI, GPIB, and Serial instruments.

- LabVIEW now supports DataSocket client communication for LabVIEW RT applications. You can connect to DataSocket servers or NI network technology servers such as Lookout, LabVIEW Datalogging and Supervisory Control Module, and Fieldpoint Ethernet network modules. Refer to the *LabVIEW Help*, available by selecting **Help»Contents and Index**, for more information about DataSocket technology.

- New Point-by-Point Analysis VIs are available for online analysis of continuously acquired signals. Refer to *LabVIEW Point-By-Point VI Library Help*, available by selecting **Help»Point-by-Point Analysis Help,** for more information about Point-by-Point Analysis.

Known Issues

The following are known issues with LabVIEW RT 6.0.3:

- If you use LabVIEW RT with a PXI controller, you need to ensure that the hard drive of the PXI controller is not formatted with Windows NT File System (NTFS). If your PXI controller has an NTFS system, you must convert the file system to FAT16 or FAT32 in order to use LabVIEW RT.

- You can programatically change the attributes of front panel controls and indicators in LabVIEW by using attribute nodes on a VI block diagram. Similarly, when you target, or connect, LabVIEW RT to the RT Engine on an RT Series device, attribute nodes affect the front panel of the RT Development System on the host computer. However, if you disconnect the RT Development System from the RT Engine and subsequently reconnect it, you must reset the attributes in order for them to take effect on the reopened front panel.

- The RT Series PXI controller cannot use the internal SCXI control bus in a PXI/MXI-III system without modification to the PXISYS.INI file on the RT Series PXI Controller. This issue only affects users who connect the PXI chassis to the downstream side of the MXI-III bridge and want to use the internal SCXI bus to control the SCXI modules. Web support is available through the Technical Support section of ni.com

- Time-critical LabVIEW RT applications take priority over real-time operating system tasks. Because the real-time operating system maintains the date and time information, the Get Date/Time in Seconds function might return inaccurate values. Timing functions such as Tick Count (ms) are not affected by this problem.

- PXI floppy disk utilities created using LabVIEW RT 5.1.2 are not compatible with LabVIEW RT 6.0.3. You must use MAX to create new PXI utility disks compatible with LabVIEW RT 6.0.3.