RELEASE AND UPGRADE NOTES

NATIONAL INSTRUMENTS

HιQ™
Version 4.0

These notes introduce you to HiQ, describe the system requirements, and contain installation instructions, upgrade information, new features, and updated documentation information.

Contents

System Requirements

HiQ requires the following minimum system configuration:

- Windows 95 or Windows NT 4.0
- 486 CPU with coprocessor
- 8 MB RAM with Windows 95, 16 MB RAM with Windows NT
- 256-color, 800 by 600 VGA display
- 40 MB free disk space

The following specifications are the recommended system configuration for HiQ:

- Windows NT 4.0
- Pentium 90 or higher
- 16 MB RAM with Windows 95, 32 MB RAM with Windows NT
- Accelerated True Color, 1024 by 768 display
- 40 MB free disk space

Installing HiQ

Use the following procedure to install HiQ.

1. Insert the CD in the CD-ROM drive of your computer.
2. Follow the *Setup* instructions you see on your screen.

By default, the HiQ installation routine creates a new folder, `C:\Program Files\National Instruments\HiQ`, that contains the following items:

- `Program` folder—`HiQ.exe`, HiQ help files, and related files.
- `Examples` folder—Example Notebooks demonstrating many of the analysis and visualization capabilities of HiQ, organized by category.
- `Readme.txt` file—Late-breaking information about HiQ, known bugs, and corrections.

New Features

HiQ 4.0 is a major upgrade that includes enhancements to the user interface, additional support for ActiveX, compatibility with MATLAB, and new analysis and visualization capabilities.

User Interface

- **HiQ Command Window**—The HiQ Command Window provides an interactive interface for prototyping and experimenting with analysis and graphics operations using HiQ-Script.

- **HiQ Explorer**—The HiQ Explorer replaces the Object List interface in HiQ 3.*x*. It displays all loaded notebooks and their contents in a hierarchical tree view.

- **Drag-Drop Support**—You can drag data from applications such as Excel directly onto your notebook. You also can drag HiQ objects from the HiQ Explorer onto your notebook or onto objects on the notebook page. For example, you can quickly graph a matrix by dragging the matrix from the Explorer and dropping it on a 3D graph on the notebook page.

- **User Interface Enhancements**
    - Layout grid with snap-to-grid capability
    - Improved alignment and distribution tools
    - Improved undo
    - Object views in separate windows
    - Object labels
    - Hierarchical property pages for graph and plot objects
    - Default property schemes
    - Log Window

- **Context-Sensitive Help Hints**—From the property pages, you can right click on an option and select **What's This** for more information. The popup displays a description of the property and an example of how to access that property from HiQ-Script.

Analysis

The following analysis and utility functions have been added to HiQ 4.0.

Function	Purpose
clearLog	Clears the Log Window.
compose	Computes the composition of two polynomials or permutations.
createInterface	Creates an ActiveX object.
createView	Creates a view of an object in a separate window.
divide	Computes the ratio of two polynomials.
find	Finds the occurrences of an element in a vector or matrix.
fitEval	Evaluates a fit at the given points.
interpEval	Evaluates an interpolation at the given points.
logMessage	Displays a message in the Log Window.
remove	Removes elements of a vector or matrix.
replace	Replaces the elements of a vector or matrix.
saveLog	Saves the contents of the Log Window to a file.
splineEval	Evaluates a spline at the given points.
subrange	Returns a subrange from a vector or matrix.
toComplex	Converts any numeric type to complex.
toInteger	Creates an integer numeric object.
toMatrix	Converts any numeric object to a matrix object.
toReal	Converts any numeric object to real.
toScalar	Converts any numeric object to a scalar object.
toVector	Converts any numeric object to a vector object.

Visualization

- **2D Multiple Y Axes**—2D graphs now support multiple Y axes. You can have up to 8 Y axes on a single 2D graph.

- **3D Contour Plots**—3D plots support contour and surface contour plot styles. You can set contour properties, such as number of levels, labels, and colors, interactively or programmatically.

- **OpenGL Hardware Acceleration**—HiQ supports graphics accelerator boards that implement OpenGL hardware acceleration.

ActiveX

- **ActiveX Server Support**—HiQ Notebooks can be embedded in ActiveX containers such as Microsoft Word or Excel.

- **ActiveX Control Support**—You can insert ActiveX controls in a HiQ Notebook and control them from HiQ-Script. Use ActiveX controls to extend the functionality and appearance of HiQ Notebooks.

- **ActiveX Automation Client Support**—HiQ-Script can control ActiveX automation servers. Use the `CreateInterface` function to attach to any automation server.

- **ActiveX Object Browser**—You can interactively browse interfaces for ActiveX automation servers and ActiveX controls.

MATLAB Compatibility

Use the HiQ Command Window to attach to MATLAB and execute MATLAB commands in the same way you do in MATLAB. This compatibility allows you to pass data between HiQ and MATLAB.

With this feature, you leverage your existing MATLAB applications while using the enhanced visualization, analysis, and report generation capabilities of HiQ. In addition, you can import and translate MATLAB M-Files into HiQ-Script objects.

☞ **Note**   *To take advantage of this feature, you must have MATLAB 5.0 or greater installed on your computer.*

Using HiQ with LabVIEW

You can combine the data acquisition and instrument control capabilities of LabVIEW with the powerful data analysis, 3D visualization, and report generation features of HiQ.

HiQ includes a high-level ActiveX automation interface that allows LabVIEW applications to control HiQ through a set of virtual instruments (VIs) that support operations such as the following:

- Launching HiQ

- Opening a notebook

- Setting and getting scalar, vector, matrix and text data

- Running a script

- Printing a notebook

These VIs appear in the Communication functions palette in LabVIEW.

Refer to the LabVIEW manuals and online reference for complete information about the HiQ VIs. In addition, there are several example VIs and HiQ Notebooks in the LabVIEW `Examples\Comm\HiQ` folder that demonstrate this link.

Note   *You must use LabVIEW 4.0 or greater.*

Upgrade Issues

Loading Notebooks

You can open notebooks created with HiQ 3.*x* in HiQ 4.0. However, Notebooks saved with HiQ 4.0 cannot be opened with HiQ 3.*x*.

If you load a HiQ 3.*x* Notebook into HiQ 4.0 that contains multiple views of the same numeric, text, or script object, you might notice changes in one or more of these views because multiple views of the same object in HiQ 4.0 now share the same set of properties.

Zooming Graphs

HiQ 4.0 now uses the <Alt> key instead of the <Ctrl> key to zoom a 3D graph using the mouse. Use the <Ctrl> key and your mouse to move views of an object.

Root Built-In Function

In the usages for the Newton and Muller options for the built-in function `root`, if you specify any parameter to the right of `ftolr`, you also must provide `ftolr`.

Using Vector Objects in Matrix Initialization and Linear Algebra

HiQ 4.0 interprets vector objects as single-column matrices in linear algebra operations and matrix initialization. For example, given three five-element vectors `v1`, `v2`, and `v3`, the following HiQ 4.0 script creates a 5-by-3 matrix whose columns are `v1`, `v2`, and `v3`:

```
M = {v1, v2, v3};
```

In HiQ 3.1, the above script creates a 3-by-5 matrix whose rows are `v1`, `v2`, and `v3`.

The following HiQ 4.0 script creates the same 3-by-5 matrix:

```
M = {v1';v2';v3'};
```

Notes for Windows 95 Users

The following limitations exist on Windows 95:

- You cannot use more than 32 different fonts per page.
- You cannot set the virtual page size greater than 32x32 inches (800x800 millimeters).
- Concurrent use of HiQ and other graphic-intensive programs might exhaust system resources.

☞ **Note** *These limitations do not exist on Windows NT.*

Notes for Windows NT 3.51 Users

HiQ 4.0 uses Microsoft OpenGL version 4.0 for advanced 3D visualization. Because this version of OpenGL is not supported by Microsoft Windows NT 3.51, you must upgrade to Microsoft Windows NT 4.0 or Windows 95.

Important Issues

The following sections list important issues about HiQ performance regarding graphics, printing, ActiveX support, and font objects.

Graphics

- 3D graphs draw slowly on some systems running in 64k color mode. To improve performance, try switching to 256 colors or True Color (24-bit or higher).

- Contour labels are not drawn when a 3D plot style is set to surface-contour.

- Certain display adapters, including the Matrox Millennium, exhibit incorrect behavior when the **Use 3D Acceleration** option is selected in the Preferences dialog box. If you experience problems, deselect this option.

Printing

- Printing large 3D graphs to high-resolution output devices might require a long print time. Although certain printers do not correctly support this feature, the **Compress Bitmap Images** option in the Preferences dialog box can drastically reduce the print time.

- If you experience problems printing in HiQ, verify that you have the latest printer driver installed on your system. You can request the latest driver from the manufacturer of the printer. If your problem persists, contact National Instruments for technical support.

- Certain PCL printer drivers do not support some operations that HiQ requires in order to produce accurate, high-resolution output. If you experience a problem and your printer supports Postscript, use the Postscript driver instead. Often you can improve output by configuring the printer to print text as graphics.

ActiveX Support

- HiQ does not support the **Create From File** option when embedding a HiQ Notebook into another application.

- Do not interact with an instance of HiQ that is being controlled by another application via ActiveX automation.

Creating Font Objects Programmatically

If you create Font objects programmatically, do not use compound font names that specify both the face and the style of the font. Instead, specify only the face name and set the style property separately to prevent errors when the system maps the font name to an actual font. For example, use

```
myFont = {font: "Arial",10};
myFont.Style = <bold>;
```

rather than

```
myFont = {font: "Arial Bold",10};
```

User Feedback

National Instruments is interested in your applications, suggestions, and any problems you might encounter while using HiQ 4.0. To report a problem or suggestion, complete the following steps.

1. Complete the Technical Support Form located in the online help.

2. Email the form to `hiq_support@natinst.com` or fax to (512) 794-5499.

Manual Clarifications and Additions

- You can set the font style for the title of a graph, as in the following example. The `title.font` property should have appeared in Table 3-2, *Graph Properties*, and Table 4-15, *Graph Object Properties*.

  ```
  graph.title.font = {font: "Arial", 10};
  ```

- Table 3-3, *Plot Properties*, and Table 4-18, *Plot Object Properties*, do not list `<linePoint>` as a valid value for 3D plots. `<linePoint>` is a valid plot style constant for both 2D and 3D plots.

- For the most current information about HiQ built-in functions, refer to the online help, which you can access in HiQ by selecting **HiQ Help Topics** from the **Help** menu.