NATIONAL INSTRUMENTS™

NI-IMAQ FOR WINDOWS NT/98/95

NI-IMAQ for Windows NT/98/95 is the image acquisition software for all National Instruments IMAQ devices.

These release notes describe how to install your NI-IMAQ software. Also included is information about upgrading from NI-IMAQ 1.*x* to NI-IMAQ 2.2. Please also see the readme.txt file included with your software for the most up-to-date information about this release of NI-IMAQ.

Contents

What's New in NI-IMAQ 2.2

This release of NI-IMAQ includes several major revisions, as follows:

- Replaces the IMAQ Configuration Utility with the new Measurement & Automation Explorer. For more information on the Measurement & Automation Explorer, see the *IMAQ Hardware Configuration* section in this document or go to the Measurement & Automation Explorer online help (**Help»Help Topics**).

- Supports the new IMAQ PCI-1411 image acquisition device, which supports color analog cameras.

NI-IMAQ Documentation

Your NI-IMAQ software documentation is online. Refer to the *About the Online Manual Set* section later in these notes for more information about using the online manuals.

Software Components

Your NI-IMAQ software kit contains the following components:

❑ NI-IMAQ device driver software

❑ NI-IMAQ Microsoft Visual C/C++, Borland, and CodeWarrior import libraries

❑ ComponentWorks IMAQ Acquisition Control for Active X support

❑ NI-IMAQ VIs for G

❑ Measurement & Automation Explorer for IMAQ

❑ NI-IMAQ for Windows NT/98/95 installer

❑ NI-IMAQ sample code

❑ Online documentation

Installation Procedures

Insert the NI-IMAQ CD into your drive. An autorun screen appears, as shown in Figure 1.

Click on **Install NI-IMAQ** to launch the NI-IMAQ 2.2 installer and follow the instructions on the installation screens. You must install NI-IMAQ before installing your IMAQ hardware device.

✎ **Note** You must have administrator access in Windows NT to perform the installation.

Figure 1. Initial Installer Screen

The **Install IMAQ Vision Evaluation** option allows you to install evaluation versions of IMAQ Vision for LabVIEW, BridgeVIEW, LabWindows/CVI, and ComponentWorks. IMAQ Vision adds high-level machine vision and image processing functions to your application development environment.

The **View Release Notes** and **View Online Documents** options allow you to view the online documentation for NI-IMAQ 2.2 and your IMAQ device. These documents are provided in Adobe Acrobat portable document format (pdf). If you do not have Acrobat Reader installed on your system, you will be prompted to install it using the installer provided on the CD.

IMAQ Hardware Configuration

NI-IMAQ 2.2 introduces the Measurement & Automation Explorer, the new National Instruments utility for configuring your measurement and automation system.

An icon for Measurement & Automation Explorer, which replaces the IMAQ Configuration Utility from earlier versions of NI-IMAQ, appears on your desktop after you install NI-IMAQ 2.2. Double-click this icon to run the utility. You can also configure other National Instruments hardware, such as DAQ or GPIB devices, from the Measurement & Automation Explorer.

The Measurement & Automation Explorer interface is similar to the IMAQ Configuration Utility; however, there are some changes. Instructions on configuring an IMAQ device are included in the Measurement & Automation online help. You can access the online help through the **Help** menu in Measurement & Automation Explorer.

Configure and test your IMAQ hardware by running the Measurement & Automation Explorer. Refer to the *Getting Started with Your IMAQ System* document for your device and the Measurement & Automation Explorer online help for configuration, installation, and testing instructions.

Two other new features in the Measurement & Automation Explorer include image zooming and drag and drop image saving.

To zoom in or out of your images, right-click on the image and choose **Zoom in** or **Zoom out** to zoom in incremental steps or **Zoom** to select the ratio. You can use the zoom feature after a snap or while grabbing images.

To quickly save your current image to your desktop as a bitmap, click in the image window with your left mouse button and drag the image to your desktop. A new bitmap image file then appears on your desktop. You can open this bitmap file in any program that supports the standard bitmap file format. This technique saves the current still image, whether it was taken with a snap or a grab; it will not save images from a currently running grab.

NI-IMAQ 2.1 Changes for LabVIEW 5.1

NI-IMAQ 2.1 changes for LabVIEW 5.1 include a new IMAQ Property Node and a new IMAQ Session control.

IMAQ Property Node

In LabVIEW 5.1, the IMAQ property node replaces the NI-IMAQ Attribute VI and incorporates all attributes used with it. If you are using LabVIEW 5.0 or earlier, continue using the IMAQ Attribute VI to set IMAQ attributes.

The IMAQ Property Node gets and/or sets IMAQ properties. The node is growable; evaluation starts from the top and proceeds downward until an error or the final evaluation occurs. To access the property node, select **Functions»Image Acquisition** and select the **Property Node** icon located on the bottom row of the Image Acquisition palette. For more information on the IMAQ Property Node, see the *NI-IMAQ VI Reference Manual*.

IMAQ Session Control

In LabVIEW 5.1, the IMAQ Refnum control has been replaced with the IMAQ Session control. The control is located on the **Controls»Path&Refnum** palette. If you used an integer to represent the IMAQ Refnum control in the past, you may need to replace those integers with IMAQ Session controls.

Additional Color Attributes

Additional color attributes have been added to NI-IMAQ 2.2 functions and VIs. These attributes are not included in the online documentation.

Table 1 shows a list of additional attributes for NI-IMAQ functions. Use these attributes with the `imgSetAttribute` and `imgGetAttribute` functions.

Attribute describes the constant name of the attribute. The *type* is the attribute's data type. *I/S* describes whether the get/set attribute function requires an INTERFACE_ID (I) or SESSION_ID (S) type parameter. *Imd.* describes whether the effect of setting the attribute is immediate (Yes), or whether it requires a subsequent `imgSessionConfigure` to take effect (No). *R/W* describes whether the attribute is read only (R), write only (W), or both (R/W). *Description* describes what values the attribute can take and the effect the setting of the attribute has or what values are returned.

Table 1. Attribute Summary

Attribute	Type	I/S	Imd.	R/W	Description
IMG_ATTR_GAIN_BLUE	double*	S	No	R/W	Gets/sets the gain applied to the blue color plane of the RGB image. This gain also affects the blue data used to calculate the hue, saturation, and luminance planes. The range is 0.8 to 1.2. Default value is 1.0.
IMG_ATTR_GAIN_GREEN	double*	S	No	R/W	Gets/sets the gain applied to the green color plane of the RGB image. This gain also affects the green data used to calculate the hue, saturation, and luminance planes. The range is 0.8 to 1.2. Default value is 1.0.
IMG_ATTR_GAIN_RED	double*	S	No	R/W	Gets/sets the gain applied to the red color plane of the RGB image. This gain also affects the red data used to calculate the hue, saturation, and luminance planes. The range is 0.8 to 1.2. Default value is 1.0.

If you use NI-IMAQ VIs to program your IMAQ device, use the following properties with the IMAQ Property Node to get or set color properties:

Color Gain Blue

`DBL`
Gets/sets the gain applied to the blue color plane of the RGB image. This gain also affects the blue data used to calculate the hue, saturation, and luminance planes. The range is 0.8 to 1.2. Default value is 1.0.

Access Privilege: Read/Write

Color Gain Green

`DBL`
Gets/sets the gain applied to the green color plane of the RGB image. This gain also affects the green data used to calculate the hue, saturation, and luminance planes. The range is 0.8 to 1.2. Default value is 1.0.

Access Privilege: Read/Write

Color Gain Red

`DBL`
Gets/sets the gain applied to the red color plane of the RGB image. This gain also affects the blue data used to calculate the hue, saturation, and luminance planes. The range is 0.8 to 1.2. Default value is 1.0.

Access Privilege: Read/Write

LabVIEW/BridgeVIEW Compatibility between NI-IMAQ 1.*x* and 2.*x*

The NI-IMAQ VIs changed between NI-IMAQ 1.5 and 2.*x* to increase ease of use and to add more functionality. The following changes were made:

• All VIs now have a **IMAQ Session In** and **IMAQ Session Out** parameter. This is similar to the **TaskID** input/output used with the data acquisition VIs.

• The underscore has been removed from all VI names.

• Low-level acquisition VIs have been added. These VIs add more functionality such as asynchronous acquisitions, accessing buffers during acquisition, ring acquisitions, and the ability to download custom look-up tables (LUTs) to your IMAQ device.

• Signal I/O VIs have been added. These VIs allow you to control trigger lines, generate specific timing pulses, and wait for a hardware event.

High-Level VI Changes

IMAQ_Grab is now two VIs—IMAQ Grab Setup and IMAQ Grab Acquire. IMAQ Grab Setup starts the grab acquisition. IMAQ Grab Acquire returns a copy of the image currently in the buffer. You can use IMAQ Close to stop the hardware acquisition.

IMAQ Sequence no longer has a mode input, which required that you call the VI four times to perform a sequence acquisition. Instead, call IMAQ Sequence once to set up the acquisition, perform the acquisition, and return the acquired images.

IMAQ_1408 Setup Analog has been removed. IMAQ_1408 Setup Analog allowed the white and black reference levels to be set in volts. Use the IMAQ Attribute VI to achieve the same functionality. The **White Reference Level** and **Black Reference Level** attributes in NI-IMAQ 2.2 are now set in volts instead of steps.

IMAQ_Snap Async has been removed because the functionality is now provided in IMAQ Snap. IMAQ Snap is now asynchronous so that you can use it with triggering.

IMAQ_Wait for Event has been changed to IMAQ Wait Signal. The IMAQ Wait Signal VI has the same functionality as IMAQ_Wait for Event with additions for the IMAQ PCI-1424.

IMAQ_Trigger Control has been replaced by three VIs. IMAQ Trigger Configure configures trigger lines to allow an acquisition to start on a trigger. IMAQ Trigger Drive drives a trigger line with a specified signal. IMAQ Trigger Read reads the current value of a trigger line.

IMAQ_Trigger RTSI Map has been removed. The mapping of RTSI lines is now handled internally by NI-IMAQ. If you specify a RTSI line when using the trigger VIs, NI-IMAQ internally maps the RTSI line on the RTSI bus to a RTSI trigger line on the IMAQ board.

IMAQ_Info has been removed. The same functionality is available with IMAQ Attribute.

IMAQ_Channel has been removed. The acquisition VIs now have a channel input that allows you to select a channel on the IMAQ board.

Compatibility VIs

All of the NI-IMAQ 1.5 VIs are available as compatibility VIs. They are installed in the `vi.lib/addons/imaq/compatibility` directory; however, they do not appear on the **imaqview** palette. These VIs allow you to load and run existing IMAQ applications without changing your code. You should replace your NI-IMAQ 1.5 VIs with NI-IMAQ 2.2 VIs at your earliest convenience, because the compatibility VIs will not be included in future NI-IMAQ releases.

NI-IMAQ provides a tool that will convert some of the NI-IMAQ 1.*x* VIs to 2.2 VIs. Using this tool, you can convert the following VIs:

- IMAQ_Snap to IMAQ Snap
- IMAQ_Snap Async to IMAQ Snap
- IMAQ_Init to IMAQ Init
- IMAQ_Close to IMAQ Close
- IMAQ_Attribute to IMAQ Attribute
- IMAQ_StillColor Attribute to IMAQ StillColor Attribute
- IMAQ_StillColor Setup to IMAQ StillColor Setup

To use the conversion tool, launch `lvimaq.exe`, which is located in the `<ni-imaq>/G compatibility` directory. This will launch a special version of LabVIEW that contains the conversion tool. Load your IMAQ application. As your application loads, the appropriate NI-IMAQ VIs will be converted. After your VI loads, save it. You can now load the VI into LabVIEW or BridgeVIEW and convert the VIs that were not converted.

Note This conversion tool will only work with LabVIEW 5.*x* or BridgeVIEW 2.*x* VIs. If you have an earlier version of LabVIEW or BridgeVIEW, do not use this tool.

The following table describes the corresponding NI-IMAQ 2.2 VI for each
NI-IMAQ 1.*x* VI.

Table 2. NI-IMAQ VI Equivalents

NI-IMAQ 1.*x* VI	NI-IMAQ 2.2
IMAQ_Snap	IMAQ Snap
IMAQ_Grab	IMAQ Grab Setup, IMAQ Grab Acquire
IMAQ_Sequence	IMAQ Sequence
IMAQ_Init	IMAQ Init
IMAQ_Close	IMAQ Close
IMAQ_Attribute	IMAQ Attribute
IMAQ_1408 Setup Analog	Removed (same functionality is available with IMAQ Attribute)
IMAQ_Snap Async	Removed (IMAQ Snap provides the same functionality)
IMAQ_Wait for event	IMAQ Wait Signal
IMAQ_Trigger Control	IMAQ Trigger Configure replaces starting an acquisition on a trigger IMAQ Trigger Drive replaces driving trigger lines IMAQ Trigger Read replaces reading trigger lines
IMAQ_Trigger RTSI Map	Removed (VIs will perform this functionality internally)
IMAQ_Info	Removed (same functionality is available with IMAQ Attribute)
IMAQ_Channel	Removed (acquisition VIs now have channel input)

NI-IMAQ 1.*x* and 2.*x* Compatibility

The following changes have been made to NI-IMAQ between versions 1.*x* and 2.*x*:

- Functions

  - `imgSessionSetTrigger` has been replaced with `imgSessionTriggerConfigure` and `imgSessionTriggerDrive`. `imgSessionTriggerConfigure` configures a trigger to start an acquisition. `ImgSessionTriggerDrive` drives a trigger with a specified signal. `ImgSessionSetTrigger` is still supported; however, you should use the new trigger functions.

  - `imgSessionSaveBuffer` has been replaced with `imgSessionSaveBufferEx`, which takes a buffer pointer instead of a buffer number to determine which buffer to save to file.

  - New LUT functions, `imgSessionSetUserLUT8bits` and `imgSessionSetUserLUT16bits`, allow you to download custom LUTs to your IMAQ device.

  - The `imgSessionReleaseBuffer` parameter list changed.

- Camera attributes

  - The camera attributes allow you to control camera functions, such as integration time and pixel binning, directly from NI-IMAQ with the IMAQ PCI-1424. Consult the *Camera Attributes* section in the *NI-IMAQ User Manual* for more information.

- Attributes

  - IMG_ATTR _WHITE_REF, IMG_ATTR _BLACK_REF, and IMG_ATTR_GAIN have been replaced by IMG_ATTR_BLACK_REF_VOLT and IMG_ATTR_WHITE_REF_VOLT. This allows you to set the black and white reference in volts instead of steps.

  - IMG_ATTR_LUT is now a session attribute instead of an interface attribute.

  - IMG_ATTR_FRAME_FIELD is now a session attribute instead of an interface attribute.

  - IMG_ATTR_INTERFACE_TYPE has been removed.

About the Online Manual Set

The IMAQ hardware and software documentation set ships with your software as Adobe Acrobat portable document format (PDF) files.

To view one of these documents, double-click on the `DocList.pdf` file, located in the `Documents` folder on your NI-IMAQ CD. Click on any document name to launch the document you want to view.

Note If you do not already have Acrobat Reader installed on your system, the installer will create a new directory, `<target install dir>\ACROREAD`, and insert the Adobe Acrobat Installer into it. Run this installer before viewing your online documentation. You must have Acrobat Reader 3.0 or later installed to use the online documentation.

Using the NI-IMAQ Online Manual Set

The NI-IMAQ software online help and PDF documentation also is installed onto your hard drive with the NI-IMAQ software.

To view the online help, click the **Start** button on the taskbar, point to **Start»Programs»National Instruments IMAQ** and choose either **NI-IMAQ Function Help** or **NI-IMAQ VI Help**.

To view the PDF documents, click the **Start** button on the taskbar, point to **Start»Programs»National Instruments IMAQ»Documentation**, and choose the appropriate document. This will automatically launch the Acrobat Reader and open the selected PDF file. You can assemble your own printed manuals by printing either the entire documentation set or only the sections relevant to your application.

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