

RELEASE NOTES

NI Vision Builder for Automated Inspection

Version 3.0.1

These release notes introduce National Instruments Vision Builder for Automated Inspection 3.0.1 (NI Vision Builder AI). Refer to this document for system requirements, installation and activation instructions, device support, and information about new features in Vision Builder AI.

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System Requirements

To configure inspections using Vision Builder AI, the host machine must meet the following requirements:

	Minimum	Recommended
Processor	233 MHz Pentium or equivalent	Pentium 4/M or equivalent
Memory	256 MB RAM	512 MB RAM
Display	1,024 × 768 resolution video adapter with a 16-bit display	1,024 × 768 resolution video adapter with a 24- or 32-bit display
Operating System	Microsoft Windows Vista/XP/2000	
Browser	Microsoft Internet Explorer 5.0 or later	
Free Hard Disk Space	700 MB	

Installation Instructions



Complete the following steps to install Vision Builder AI:

Note You must be logged in with administrator privileges to install Vision Builder AI.

1. Insert the Vision Builder AI CD into your CD-ROM drive. If the CD does not run automatically, open Windows Explorer, right-click the CD drive icon, and select **AutoPlay**.
2. Select **Install Vision Builder for Automated Inspection** on the National Instruments Vision Builder for Automated Inspection screen.
3. Vision Builder AI prompts you to enter your user information. Select one of the following options:
 - **Install this product using the following serial number**
 - **Install this product for evaluation**If you choose to enter a serial number, enter the serial number found on your Certificate of Ownership card. Vision Builder AI automatically uses this serial number when you run the NI Activation Wizard.
4. Continue to follow the instructions on the screen.

Activation Instructions

If you did not activate Vision Builder AI during the installation process, when you run a Vision Builder AI application for the first time, it prompts you to activate a license for the product. If you do not activate a valid license, Vision Builder AI runs in Evaluation mode and continues to prompt you to activate a license on each subsequent launch.

Complete the following steps to activate the Vision Builder AI license:

1. Launch Vision Builder AI.
2. Click **Yes** when prompted to interactively activate Vision Builder AI.
3. Ensure that **Automatically activate through a secure Internet connection** is selected, and click **Next**.
4. Enter your serial number, and click **Next**.
5. Enter your registration information, and click **Next**.
6. You can enter your email address to receive a copy of your activation code for your records.

After completing these steps, the product(s) you installed are activated.

The following licensing options are available:

- **Vision Builder AI Full-Featured** (778649-01)—Allows full access to all Vision Builder AI features, which can be used to configure, benchmark, and deploy inspections. This license does not include the Vision Builder AI Development Toolkit.
- **Vision Builder AI Run-Time** (779799-03)—Allows you to deploy existing inspections to a host machine and modify the control values for steps in an inspection. This license does not allow you to add steps to or remove steps from an inspection.
- **Vision Builder AI Development Toolkit** (779343-03)—Licenses only the Vision Builder AI Development Toolkit, which allows you to create custom steps for use in any Vision Builder AI application.

Deployment Policy for Vision Builder AI

Pursuant to the National Instruments Software License Agreement, Vision Builder AI software is licensed to run on only one machine. Deployed applications that use Vision Builder AI require that Vision Builder AI be installed and licensed on each host machine. Therefore, you must purchase a separate Vision Builder AI license for each host machine. For more information, refer to the enclosed National Instruments Software License Agreement or visit ni.com/legal/license.

What's New in Vision Builder AI?

This section describes the changes and enhancements in Vision Builder AI:

- **Configurable Process Model**—Allows you to create a state diagram that controls the flow of execution for the inspection.
- **Dynamic Region of Interest**—Defines and manipulates dynamic regions of interest within an inspection.
- **Global Variables**—Allow you to define and reference data from within the inspection script, and allows users to pass data among states within an inspection.
- **Defect Detection**—Compares areas of an image to a golden template and returns differences.
- **Custom Overlays**—Overlay graphics, data, and text onto the inspection image.
- **Data Matrix Grading**—Allows you to output the ISO 16022 (AIM) grade for a given Data Matrix code.
- **Optical Character Verification**—Verifies the accuracy of characters within an image.
- **Updated I/O Steps**—Include support for digital and analog NI-DAQmx devices, and single-shot pulse generation and change detection on NI-IMAQ I/O devices.
- **GigE Vision Camera Support**—Allows you to acquire images from GigE Vision cameras.
- **Microsoft Windows Vista Support**—Allows Vision Builder AI to run on Windows Vista.

Device Support

Vision Builder AI supports various image acquisition devices, the NI CVS-1450 Series compact vision system, NI digital I/O and data acquisition (DAQ) devices, IEEE 1394 industrial digital cameras, GigE Vision cameras, and serial devices.

Image Acquisition Devices

This version of Vision Builder AI supports the following National Instruments image acquisition devices:

- | | | |
|-------------------|-------------------|-------------------|
| • NI PCI-1405 | • NI PXI/PCI-1411 | • NI PCIe-1427 |
| • NI PXI/PCI-1407 | • NI PXI/PCI-1422 | • NI PXI/PCI-1428 |
| • NI PXI/PCI-1409 | • NI PCI-1424 | • NI PCIe-1429 |
| • NI PXI/PCI-1410 | • NI PCI-1426 | • NI PCIe-1430 |



Note If you are using an image acquisition device, you must install NI Vision Acquisition Software before you install the image acquisition device. NI Vision Acquisition Software gives you access to Measurement & Automation Explorer (MAX), which is software you can use to configure National Instruments devices.

IEEE 1394 (FireWire®) Cameras

This version of Vision Builder AI supports the following National Instruments IEEE 1394 host adapters:

- NI PXI/PCI-8252
- NI PCI-8254R
- NI PCIe-8255R

If you want to use IEEE 1394 industrial video cameras with Vision Builder AI, you need NI-IMAQ for IEEE 1394 Cameras 2.0 or later. You must also associate the driver software with the camera you want to use to acquire images. IEEE 1394 driver software can be installed from the NI Vision Acquisition Software CD included with Vision Builder AI. As of NI Vision Acquisition Software 8.2.1, all of the functionality of NI-IMAQ for IEEE 1394 Cameras driver software has been bundled into the NI-IMAQdx driver software.

If you have an existing inspection that uses the **Acquire Image (IEEE 1394)** step or you want to use the **Acquire Image (IEEE 1394)** step to acquire images from an IEEE 1394 camera connected to the host computer, you must configure the camera to use the legacy NI-IMAQ for IEEE 1394 Cameras driver. Complete the following steps to use MAX to configure the camera to use the legacy NI-IMAQ for IEEE 1394 Cameras driver:

1. Launch MAX.
2. In the MAX configuration tree, expand **Devices and Interfaces** to obtain a list of installed devices.
3. Expand **NI-IMAQdx Devices** to obtain a list of available cameras.
4. Right-click the camera and select **Driver»NI-IMAQ IEEE 1394 IIDC Digital Camera**. The camera should appear in the MAX configuration tree under **Legacy NI-IMAQ IEEE 1394 Devices**.

You are now ready to acquire an image using the **Acquire Image (IEEE 1394)** step.

To use the **Acquire Image (IEEE 1394 or GigE)** step to acquire images from an IEEE 1394 camera, you must configure the camera to use the NI-IMAQdx driver. Complete the following steps to use MAX to configure the camera to use the NI-IMAQdx driver:

1. Launch MAX.
2. In the MAX configuration tree, expand **Devices and Interfaces** to obtain a list of installed devices.
3. Expand **NI-IMAQdx Devices** to obtain a list of available cameras.
4. Right-click the camera and select **Driver»NI-IMAQdx IIDC Digital Camera**.

You are now ready to acquire an image using the **Acquire Image (IEEE 1394 or GigE)** step.

For additional information about the migration from NI-IMAQ for IEEE 1394 Cameras to NI-IMAQdx, refer to the *NI Vision Acquisition Software Release Notes*.

GigE Vision Cameras

This version of Vision Builder AI supports the National Instruments PCIe-8231 Gigabit Ethernet host adapter.

If you want to use GigE Vision-compliant industrial video cameras with Vision Builder AI, you need NI-IMAQdx 3.0 or later driver software. NI-IMAQdx can be installed from the NI Vision Acquisition Software CD included with Vision Builder AI.

NI CVS-1450 Series Compact Vision System

Vision Builder AI supports the NI CVS-1450 Series compact vision system, allowing you to remotely configure and control the device. To use a CVS-1450 device with Vision Builder AI, you must install one of the following options for driver software.

- NI-IMAQ for IEEE 1394 Cameras 2.0 or later
- NI-IMAQdx 3.0 or later with Legacy NI-IMAQ for IEEE 1394 Cameras Support enabled.



Note If you are using Vision Builder AI with a CVS-1450 device, you must install the driver software *after* you install Vision Builder AI. For more information, refer to the *NI CVS-1450 Series Compact Vision System Quick Start Guide*, included with every CVS-1450 device.

I/O Devices

This version of Vision Builder AI supports digital and analog I/O from any National Instruments DAQ device using DAQmx Global Channels. To support NI DAQ devices, Vision Builder AI requires NI-DAQmx 8.0 or later.

DAQmx Global Channels

Use MAX to create DAQmx Global Channels. For information about creating DAQmx Global Channels, refer to the *DAQ Assistant Help* in MAX.

Serial

To support serial communication, Vision Builder AI requires NI-VISA 2.6.0 or later. You can use the serial ports built into your PC or one of the following NI serial interfaces: NI PCI-232/x, NI PXI-8420/x, or NI PXI-8422/x.

Vision Builder AI Resources

How do I get started?

Read the *NI Vision Builder for Automated Inspection Tutorial*, which provides exercises for learning how to perform basic machine vision techniques using Vision Builder AI.

Are there any known issues or late-breaking information?

Refer to the *NI Vision Builder for Automated Inspection Readme*, which you can access from **Start»All Programs»National Instruments»Vision Builder AI»Documentation**. The readme file contains information about known issues.

Where can I find reference information?



Reference information for Vision Builder AI is available from within Vision Builder AI by clicking the **Show Context Help** button, or by selecting **Start»All Programs»National Instruments»Vision Builder AI»Documentation**.

The following documents are provided with Vision Builder AI as online help:

- The *NI Vision Builder for Automated Inspection: Configuration Help* contains information about the Vision Builder AI Configuration interface, managing inspections and images, and creating steps for an inspection.
- The *NI Vision Builder for Automated Inspection: Inspection Help* contains information about using the Vision Builder AI Inspection interface to run inspections.

- The *NI Vision Builder for Automated Inspection: ActiveX Component Reference Help* contains information about the ActiveX objects available to embed Vision Builder AI inspections into ActiveX applications.

Use the **Search** tab in the help files to quickly locate specific information. For information about how to use the search functionality, refer to the *Using Help»Searching Help* topic in the help file.

The following documents are provided with Vision Builder AI as PDFs:

- The *NI Vision Builder for Automated Inspection Development Toolkit User Guide* contains instructions for using LabVIEW to create custom steps for Vision Builder AI.
- The *NI Vision Concepts Manual* contains basic concepts of image analysis, image processing, and machine vision. This document also contains in-depth discussions about imaging functions for advanced users.

Where can I find examples?

Examples of common Vision Builder AI inspections are installed to the <Vision Builder AI>\Examples directory, where <Vision Builder AI> is the location to which you installed Vision Builder AI.

Where else can I go for Vision Builder AI information?

Visit ni.com/vision and the NI Developer Zone at ni.com/zone for the most up-to-date information about Vision Builder AI.

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