



NI Vision Builder for Automated Inspection 2014 Readme

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This file contains important information about National Instruments Vision Builder for Automated Inspection and is organized into the following sections:

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Refer to the [Machine Vision](#) Web site at ni.com/vision for the latest information about the NI Vision Builder for Automated Inspection.

System Requirements

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

	Minimum	Recommended
Processor	Pentium 4/M or equivalent	Core Duo or equivalent
Memory	512 MB RAM	1 GB RAM
Display	1,024 × 768 resolution video adapter with a 24- or 32-bit display	1,280 × 1,024 resolution video adapter with a 24- or 32-bit display
Operating System	<ul style="list-style-type: none">• Windows 8.1 (32- and 64-bit)• Windows 8 (32- and 64-bit)• Windows 7 (32- and 64-bit)• Windows Vista (32- and 64-bit)• Windows XP SP3 (32-bit)• Windows Server 2012 R2 (64-bit)• Windows Server 2008 R2 (64-bit)• Windows Server 2003 R2 (32-bit)	
Browser	Microsoft Internet Explorer 6.0 or later	
Hard Disk Space	1 GB	

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 DVD into your DVD-ROM drive. If the DVD does not run automatically, open Windows Explorer, right-click the DVD 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.

Automating the Installation of NI Products

You can automate the installation of most NI products using command-line arguments to suppress some or all of the installer user interface and dialog boxes. However, starting with the August 2012 releases (products using NI Installers version 3.1 or later), you may need to perform additional steps before or during a silent installation of NI software.

If the NI product you are installing uses Microsoft .NET 4.0, the .NET installer may run before any NI software installs and may require a reboot before the installation of NI software begins. To avoid a .NET reboot, install .NET 4.0 separately before you install NI software.

For more information, refer to the following KnowledgeBase articles:

- For more information on silent installations of individual NI products, refer to KB 4CJDP38M, [Automating the Installation of a Single Installer](#).
- For more information on silent installations of suited NI products, such as NI Developer Suite, refer to KB 4GGDQH0, [Automating the Installation of a Suited Installer](#).
- To determine what version of NI Installers your product contains, refer to KB 4CJDR18M, [How Can I Determine the Type and Version of My National Instruments Installer?](#)

Activation Instructions

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 launch. At the end of the evaluation period you must activate a Vision Builder AI license to continue using the product.

Note: While Vision Builder AI is in Evaluation mode, all features are available except **Migrate Inspection to LabVIEW**.

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

1. Launch Vision Builder AI.
2. Click **Yes** when prompted to 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 an email address to receive a copy of the activation code for your records.

New Features

The following list describes the changes and enhancements in Vision Builder AI 2014:

Added support for the NI CVS-1458RT and NI CVS-1459RT

The NI CVS-1458RT GigE Vision and NI CVS-1459RT USB3 compact vision systems are now supported.

Updated Find Circular Edge Step

The Find Circular Edge step has been updated to allow logging of all edges found by each search line.

Updated Caliper Step

The Caliper step has been updated to allow logging of additional points found by a search line.

Updated Geometry Step

The Geometry step has been updated to support new geometric measurements and allow multiple measurements in the same step.

Updated Read 1D Barcode Step

The Read 1D Barcode step has been updated to automatically locate and read 1D barcodes in images, as well as read multiple barcodes in a single step.

Updated Inspect Contours Step

The Inspect Contours step has been updated to allow logging of all edges found along the contour, and to allow a user-specified number of edges to be skipped before logging the next edge.

Updated Variable Manager

The Variable Manager has been updated to support importing and exporting multiple variables at once.

Updated Acquire Image (1394, GigE, or USB) Step

The Acquire Image (1394, GigE, or USB) step outputs an image acquisition timestamp string result for cameras that are synchronized with an IEEE 1588 timebase.

Updates and Improvements

The following list describes issues in previous versions of the NI Vision Builder for Automated Inspection that are fixed in this release. If you have a CAR ID, you can search this list to validate that the issue has been fixed. This is not an exhaustive list of issues fixed in the current version of the NI Vision Builder for Automated Inspection.

ID	Fixed Issue
430094	ROI may shift when selecting Run Once or editing a step.
446072	Disabled steps do not return information or errors in response to the Get Measurements API call.
453632	Calibration file is duplicated when opening an inspection that refers to a calibration file modified by another inspection.
466674	The NI Calibration Training Interface allows negative pixel values when specifying reference points.
470974	When editing a Run LabVIEW VI step, the step results can appear out of order if the VI contains unsupported indicator types.
491125	TCP Modbus custom polling rate setting is reset when using the Communication Manager.
492435	An error occurs when switching between a CameraLink EVS and an IEEE 1394 EVS in the same Vision Builder AI session.
494038	The Detect Texture Defects step displays an incorrect unit type.
498177	A connection timeout occurs when installing software to a target on a different subnet.
501881	The Select Inspection button is not available in inspection mode when the Ethernet/IP Adapter Step is used in the Select Inspection state.

Remote Target Support

You can use Vision Builder AI to remotely configure and control a supported remote target. Vision Builder AI supports the following remote targets:

- NI 1732, 1752, and 1754 Smart Cameras
- NI 177x Smart Cameras
- NI CVS-1457RT, 1458RT, and 1459RT Compact Vision Systems
- NI EVS-1463RT and 1464RT Embedded Vision Systems

Note: Vision Builder AI no longer provides support for the NI 1712, 1722, 1742, 1744, 1762, and 1764 Smart Cameras, and NI CVS-1454, 1455, and 1456 Compact Vision Systems.

To use Vision Builder AI with a remote target, you must use Vision Builder AI to configure the remote target. For more information about using Vision Builder AI to configure the remote target, refer to the documentation included with the remote target.

Note: National Instruments recommends using WebDAV to transfer files to and from a real-time target. For more information on using WebDAV to transfer files to and from a remote target, go to ni.com/info and enter the Info Code `WebDAVtransfer`.

The following table illustrates when a remote target requires you to install driver software on the development computer.

Remote Target or Camera Connected to a Remote Target	Requires Driver Software Installed on Development Computer
NI Smart Camera	No
IEEE 1394	No
GigE Vision	No
Camera Link	Yes

Note: To acquire images from a Camera Link camera attached to a NI EVS-1463RT device, you must use MAX to associate a camera file with the camera. For information about how to associate a camera file with a Camera Link camera connected to a remote target, visit ni.com/info and enter the info code `rtcamerafile`.

Software Requirements for Migrating an Inspection to LabVIEW

To migrate an inspection to LabVIEW, Vision Builder AI 2014 requires LabVIEW 2014 or later and NI Vision Development Module 2014 or later.

Some Vision Builder AI steps require additional software to successfully migrate an inspection to LabVIEW.

- OPC UA requires the Datalogging and Supervisory Control Module for LabVIEW.
- Ethernet/IP or Ethernet/IP adapter require NI-Industrial Communications for Ethernet/IP.

Refer to the following table for software requirements to migrate specific steps.

Note: NI-IMAQ, NI-IMAQdx, and NI-IMAQ I/O are available on the NI Vision Acquisition Software CD included with Vision Builder AI.

Step Name	Requirement
Acquire Image	NI-IMAQ 4.6.4 or later
Acquire Image (IEEE 1394)	Legacy NI-IMAQ for IEEE 1394 Cameras 2.4 or later
Acquire Image (IEEE 1394, GigE, or USB)	NI-IMAQdx 3.8.1 or later
Acquire Image (Smart Camera)	NI-IMAQ 4.6.4 or later (excluding NI 177x Smart Cameras) NI-IMAQdx 3.8.1 or later (NI 177x Smart Cameras only)
Generate Pulse	NI-IMAQ 4.6.4 or later
Generate Pulse (Vision RIO)	NI-IMAQ I/O 2.6 or later
Read/Write I/O	NI-IMAQ 4.6.4 or later
Read/Write I/O (NI-DAQmx)	NI-DAQmx 9.3.5 or later
Read/Write I/O (Vision RIO)	NI-IMAQ I/O 2.6 or later

Software Requirements for the Run LabVIEW VI Step

The Run LabVIEW VI step in Vision Builder AI 2014 supports VIs saved in LabVIEW 2014 or later.

PC-Based Image Acquisition and I/O Support

Vision Builder AI supports the following types of image acquisition and I/O devices:

- [National Instruments image acquisition devices](#)
- [IEEE 1394 industrial digital cameras](#)
- [GigE Vision cameras](#)

- [DirectShow-compatible USB cameras](#)
- [IP cameras](#)
- [Digital or analog I/O from NI data acquisition \(DAQ\) devices](#)
- [Serial devices](#)

Note: You must install driver software to acquire images from an image acquisition device connected to the development computer.

National Instruments Image Acquisition Devices

This version of Vision Builder AI supports National Instruments image acquisition devices that require NI-IMAQ driver version 4.6.4 or later. Specific devices may require later versions.

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 Cameras, GigE Vision Cameras, DirectShow-Compatible USB Cameras, and IP Cameras

This version of Vision Builder AI supports IEEE 1394 cameras, GigE Vision cameras, USB 3 Vision, DirectShow-compatible USB cameras, IP cameras, and requires NI-IMAQdx driver version 3.3 or later. Specific devices may require later versions.

To acquire an image from one of these camera types when the camera is connected to the host computer, use the **Acquire Image (1394, GigE, or USB)** step. The **Acquire Image (1394, GigE, or USB)** step requires NI-IMAQdx, which can be installed from the NI Vision Acquisition Software DVD included with Vision Builder AI.

You must configure an IEEE 1394 camera to use the NI-IMAQdx driver. Complete the following steps to use MAX to configure an IEEE 1394 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**.

NI Analog and Digital I/O Devices

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

Serial Communication

To support serial communication, Vision Builder AI requires NI-VISA 2.6.0 or later, which is included with Vision Builder AI. You can use the serial ports built into the PC or one of the following NI serial interfaces: NI PCI-232/x, NI PXI-8420/x, or NI PXI-8422/x. You do not need to install NI-VISA to use the serial port on a remote target.

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.

Licensing Options

Vision Builder AI offers the following licensing options:

- **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.

Known Issues

You can access the software and documentation known issues list online. Refer to the [National Instruments Web site](#) for an up-to-date list of known issues in the NI Vision Builder for Automated Inspection.

- Using a TCP slave device with the Vision Builder AI API and the main Vision Builder AI application simultaneously can cause the device to stop communicating.
- Vision Builder AI behaves unexpectedly or may not display an inspection image if the image is large and your computer is low on available memory.
- If you configure a step to pass or fail based on pixel distances and subsequently calibrate the image, the step compares calibrated values against pixel-based limits.
- After connecting to a remote target and starting an inspection in the Vision Builder AI Configuration interface, if you lose communication and reconnect to the target, the inspection opens in the Vision Builder AI Inspection interface.
- Vision Builder AI cannot disable Ethernet Port 1 on the NI CVS-1458RT.
- DAQmx steps are not available on the NI CVS-1458RT and 1459RT.

Windows Firewall

If you are using the Windows Firewall, you may notice the following behavior:

- **Microsoft Windows 7, Windows Vista, Windows Server 2008, Windows Server 2003, or Windows XP with Service Pack 2 (SP2) or later installed**
When you launch Vision Builder AI, a dialog box may prompt you to allow Vision Builder AI to receive information over the network. Depending on your operating system, select **Allow access** or **Unblock this program** so that Vision Builder AI can communicate with your remote target.

Additional 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.

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 selecting **Start»All Programs»National Instruments»Vision Builder AI»Documentation**.

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

- *NI Vision Concepts Help*—Contains basic concepts of image analysis, image processing, and machine vision. This document also contains in-depth discussions about imaging functions for advanced users.
- *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.
- *NI Vision Builder for Automated Inspection: Inspection Help*—Contains information about using the Vision Builder AI Inspection interface to run inspections.
- *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 Adobe PDF documents:

- *Vision Builder for Automated Inspection Tutorial*—Describes Vision Builder for Automated Inspection and provides step-by-step instructions for solving common visual inspection tasks, such as inspection, gauging, part presence, guidance, and counting.
- *NI Vision Builder for Automated Inspection Development Toolkit Tutorial*—Contains instructions for using LabVIEW

to create custom steps for Vision Builder AI.

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.

How to Use NI Software with Microsoft Windows 8

When you install National Instruments software on Microsoft Windows 8, you will notice a few additional tiles on the Start screen, including shortcuts to NI application software products such as NI LabVIEW, Measurement & Automation Explorer (MAX), and the new NI Launcher.

Using NI Launcher

NI Launcher helps you find and launch installed NI products. It provides you with a method of finding NI products similar to the Start menu in previous versions of Microsoft Windows. To use NI Launcher, click the **NI Launcher** tile on the Start screen. NI Launcher launches the desktop and opens a menu containing a list of NI products. Click any NI product to launch it.

Note MAX does not appear as a desktop shortcut when installed on Microsoft Windows 8. You can launch MAX either from the Start screen or from within NI Launcher.

Pinning Frequently Used Applications

For convenience, you can pin your most-used NI applications, such as MAX, to either the Start screen or the Taskbar on the desktop, as necessary:

Current Application	Icon Location	Pin to Action
Windows 8 Desktop	Desktop Taskbar	Right-click application and select Pin to Taskbar
Windows 8 Desktop	Start screen	Right-click application and select Pin to Start
Windows 8 Start screen	Desktop Taskbar	Right-click application and select Pin to taskbar from the menu bar on the bottom of the screen

Finding All Programs

If you want to find a particular application or related files, such as documentation files, from the Start screen, you can access all installed files by right-clicking anywhere on the Start screen and selecting **All apps**. A list of all installed software and related files appears, in alphabetical order by creator or type.

For more information about NI support for Windows 8, visit ni.com/windows8.

NI Vision Builder for Automated Inspection Drops Support for Microsoft Windows Vista, Windows XP, and Windows Server 2003 in 2016

National Instruments Vision Builder for Automated Inspection will drop support for Microsoft Windows Vista, Windows XP, and Windows Server 2003 as of July 1, 2016. Versions of Vision Builder for Automated Inspection that ship after July 1, 2016 will not install or run on Windows Vista, Windows XP, or Windows Server 2003. For detailed information about NI application software product life cycles, visit ni.com/info and enter one of the following Info Codes:

Product	Info Code
NI LabVIEW	lifecycle
NI LabWindows™/CVI™	cvi_lifecycle
NI Measurement Studio	mstudiolifecycle
NI TestStand	tslcp
NI DIAdem	ddlcp
NI SignalExpress	selcp
NI VeriStand	nivslifecycle

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