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QUICK START GUIDE NI CVS-1450 Series Compact Vision System

Vision Builder for Automated Inspection



Connect the Hardware

Caution Before installing NI CVS-1450 Series hardware, refer to the safety information in the *NI CVS-1450 Series User Manual*. Â

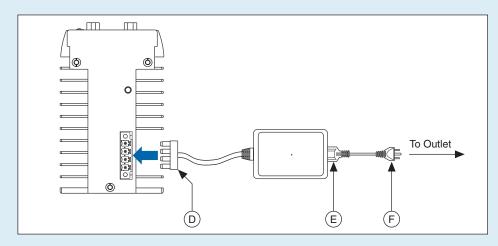
Connect the Camera and Monitor to the NI CVS-1450 Device

- A. Connect the VGA cable from the monitor to the VGA port on the NI CVS-1450 device.
- B. Plug the IEEE 1394 cable into one of the IEEE 1394 ports on the NI CVS-1450 device. Plug the other end of the cable into the IEEE 1394 port of the camera.
- C. Plug in and power on the monitor.

Wire Power to the NI CVS-1450 Device

This section explains how to connect the power supply (part number 778794-01) to the NI CVS-1450 device. For instructions on how to connect a separate main supply, refer to the NI CVS-1450 Series User Manual.

Caution Do *not* connect the NI CVS-1450 device to a power source other than 24 VDC +10%. Refer to the *NI CVS-1450 Series User Manual* for information about power requirements.



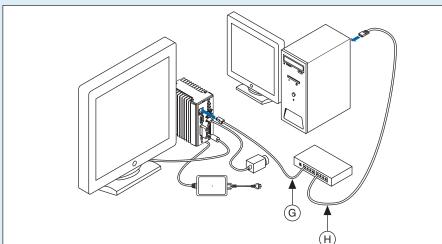
D. Plug the 4-position connector from the power supply into the power receptacle on the NI CVS-1450 device.

Connect the NI CVS-1450 Device to the Development Computer

Verify that the development computer is connected to the network and powered on.

- E. Plug the power cord into the power supply.
- F. Plug the power cord into an outlet.

Once connected, the NI CVS-1450 device runs a startup program that acquires images and displays them on the monitor. These images verify that the hardware is properly connected.



- G. Using a standard CAT 5 Ethernet cable (part number 189174), connect from the
- network port to the Ethernet port on the NI CVS-1450 device. H. Using a standard CAT 5 Ethernet cable, connect from the network port to the
- Ethernet port on the development computer.
- **Note** If you are not connecting through a network, use a crossover cable (part number 187375) to connect the NI CVS-1450 device to the development computer.

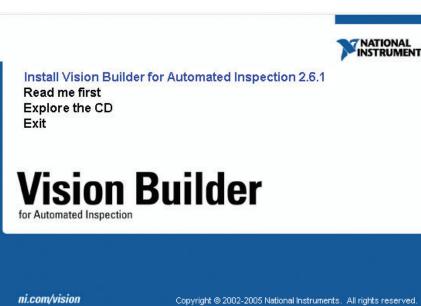


Install the Software

Note You must install Vision Builder for Automated Inspection (Vision Builder AI) *before* installing the NI-IMAQ for IEEE 1394 Cameras driver software.

Install Vision Builder AI and NI-IMAQ for IEEE 1394 Cameras

A. Insert the Vision Builder AI CD. When the installation splash screen appears, click Install Vision Builder for Automated Inspection and follow the setup instructions.



Install NI-IMAQ for IEEE 1394 Cameras

B. When prompted, insert the NI Vision Acquisition Software CD.

nsert So	urce				
NI Vision	Acquisition (Software			
	uired files ma ion below.	ay be four	nd elsewh	iere, please	enter
D:N					
The spec	ified folder d	loes not c	ontain th	e correct v	olume.
	Record	Drive	Car		

C. In the Features tree, select NI-IMAQ for IEEE 1394 Cameras and NI-IMAQ for IEEE 1394 Hardware Support.

うNI Vision 8.0 Acquisition Software	
Features Select the features to install.	
NI-IMAQ 3.5.1 NI-IMAQ 3.5.1 Documentation LabVEW Support LabVEW Support X - LabWindows/CVI Support X - LabWindows/CVI Support X - Microsoft Visual C Support X - Microsoft Visual Basic Support NI-IMAQ for IEEE 1334 Hardware Support NI-IMAQ for IEEE 1334 Hardware Support NI-VS-1450 Series Support NI-VS-1450 Series Support NI-MAQ I/O 1.1 NI Measurement & Automation Explorer 4.0	Driver software for IEEE 1394 (FireWire) IIDC compliant cameras, including cameras configured on NI CVS-1450 Series compact vision systems.
Image: Second Seco	34\ Browse
Restore Defaults Disk Cost	<pre></pre>

E. Follow the installer prompts to complete the installation.

A. Launch Vision Builder Al.	🌾 NI Vision Builder Al - Welcome	D. For and the Forest in
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Target pull-down listbox		and click Select Network Target.
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	Vision Builder	Select Network Target
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	Execution Target: Vis Computer	ni.com/vision
	ni.com/vision	C. Select the NI CVS-1450
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This IP address	Add Target	Configure Inspection.
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CVS-1450 devices.	Cancel	Inspection Steps: Acquire Images Acquire Image (IEEE 1394) Setup
() Tin To uniquely identi	fy unconfigured NI CVS-1450 devices, connect and configure	Main Features Trigger Format 7 Features
Tip To uniquely idention one NI CVS-1450 device		Acquire Image (IEEE 1394): Acquires an image from the selected IEEE 1394 camera.
		Simulate Acquisition: Simulates the acquisition of images by reading images by readi
D. Click Configure to launch th	e Remote Target Configuration Wizard.	Select Image: Selects a new image to inspect.
E. In the Identification	Remote Target Configuration Wizard	
window, enter a name for the NI CVS-1450 device	Step 1 of 3: Identification	Video Mode \$640x480 Y (Mono 16) 30.00fps
in the Name field and a	Model: NI 1450 Series	V OK Cancel
description of the NI CVS-1450 device in	Serial Number: FFFFFFF MAC Address: 00:80:2F:D9:2D:88	
the Description field.	System Status: Running	E. From the Acquire Images palette, F. Click the Snap 🖿 button to acc
Note Device names	Name: PartValidation Description: Line 3	click Acquire Image (IEEE 1394) . single image, or click the Grab to acquire continuous images.
are limited to 15		Once you have configured your acquisition, click OK to add the step. You can now ad
characters with no spaces or special		inspection steps as described in the <i>NI Vision Builder for Automated Inspection: Configura</i>
characters. The first		
and last letters must		
be alphanumeric.	Next >>	
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·	Next >> OK Cancel Help	QUICK START GUIDE
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NATIONAL INSTRUMENTS





QUICK START GUIDE NI CVS-1450 Series Compact Vision System

LabVIEW Real-Time Module with the **NI Vision Development Module**



Connect the Hardware

Caution Before installing NI CVS-1450 Series hardware, refer to the safety information in the NI CVS-1450 Series User Manual.

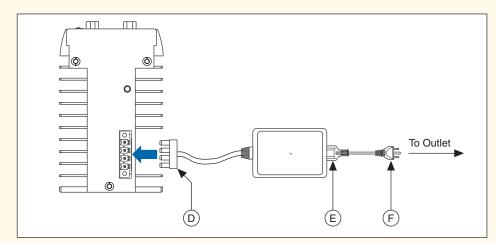
Connect the Camera and Monitor to the NI CVS-1450 Device

- A. Connect the VGA Cable from the monitor to the VGA port on the NI CVS-1450 device.
- B. Plug the IEEE 1394 cable into one of the IEEE 1394 ports on the NI CVS-1450 device. Plug the other end of the cable into the IEEE 1394 port of the camera.
- C. Plug in and power on the monitor.

Wire Power to the NI CVS-1450 Device

This section explains how to connect the power supply (part number 778794-01) to the NI CVS-1450 device. For instructions on how to connect a separate main supply, refer to the NI CVS-1450 Series User Manual.

Caution Do *not* connect the NI CVS-1450 device to a power source other than 24 VDC +10%. Refer to the NI CVS-1450 Series User Manual for information about power requirements.

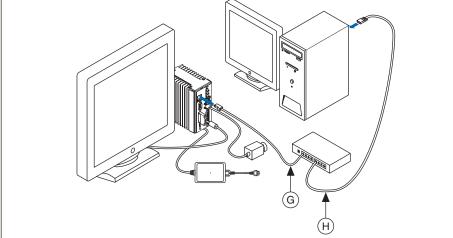


- D. Plug the 4-position connector from the power supply into the power receptacle on the NI CVS-1450 device.
- E. Plug the power cord into the power supply.
- F. Plug the power cord into an outlet.

Once connected, the NI CVS-1450 device runs a startup program that acquires images and displays them on the monitor. These images verify that the hardware is properly connected

Connect the NI CVS-1450 Device to the Development Computer Verify that the development computer is connected to the network and powered on.





- G. Using a standard CAT 5 Ethernet cable (part number 189174), connect from the network port to the Ethernet port on the NI CVS-1450 device.
- H. Using a standard CAT 5 Ethernet cable, connect from the network port to the Ethernet port on the development computer.

Note If you are not connecting through a network, use a crossover cable (part number 187375) to connect the NI CVS-1450 device to the development computer.



Install the Software

Note You must install LabVIEW, the LabVIEW Real-Time M Development Module software before installing the NI-IMA driver software.

Install LabVIEW and the LabVIEW Real-Time Module

A. Insert the LabVIEW CD. When the installation screen appears, click **Install LabVIEW** and follow the setup instructions.

Welcome to LabVIEW 8.0
 Install LabVIEW 8.0 View Readme Explore the CD Exit
LabVIEW 8
ni.com/labview
© 2005 National Instruments. All rights reserved.
B. Insert the LabVIEW Real-Time Module CD. When the instal click Install LabVIEW Real-Time Module and follow the se
Welcome to LabVIEW 8.0 Real-Time Module Install LabVIEW 8.0 Real-Time Module View Readme Explore the CD Exit
LabVIEW 8
ni.com/labview
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Install the NI Vision Development Module and NI-IMAQ for IEEE 1394 Cameras

C. Insert the NI Vision Development Module CD. When the installation screen appears, click Install NI Vision Development Module and follow the setup instructions.

	INSTRUMENTS.
Install NI Vision 8.0 Developr Read me first Explore the CD Exit	nent Module
Vision Development Module Software	
ni.com/vision	© 2005 National Instruments. All rights reserved.

D. When prompted, insert the NI Vision Acquisition Software CD.

Insert Source 🛛 🔀
NI Vision Acquisition Software
If the required files may be found elsewhere, please enter that location below.
D:\\
The specified folder does not contain the correct volume.
Rescan Drive Cancel

E. In the Features tree, select NI-IMAQ for IEEE 1394 Cameras and NI-IMAQ for IEEE 1394 **Hardware Support**

Features Select the features to install.	NATIONAL INSTRUMENT
NI-IMAQ 3.5.1 NI-IMAQ 3.5.1 Documentation JabVIEW Suppot Advinows/CVI Support X Microsoft Visual C Support Microsoft Visual Basic Support NI-IMAQ for IEEE 1394 Hardware Support NI 8254R Documentation NI 8254R Documentation NI NI 2V3-1450 Series Support NI-IMAQ I/O 1.1 NI Measurement & Automation Explorer 4.0	Driver software for IEEE 1394 (FireW/re) IIDC compliant cameras, including cameras configured or NI CVS-1450 Series compact vision systems.
ctory for NI-IMAQ for IEEE 1394 Cameras 2.0.2	
Program Files\National Instruments\NI-IMAQ for IEEE-139	4\ Browse

- F. Click Next.
- G. Follow the installer prompts to complete the installation.

Iodule, and the NI Vision	
AQ for IEEE 1394 Cameras	

tion screen appears, p instructions.

Configure the NI CVS-1450 Device

Obtain an IP Address

3

nfiguration	🕿 🖉 Reboot 🔒 Lock 🛛 💽 Refresh 🛛 🕹 Apply	Show Help
My System Solvices and Interfaces Software Remote Systems 192168.10.12	Identification Modet NI 1450 Series Serial Number: 000 BB0E0 MAC Address: 00:80:2f:0a:57:c1 Name: PartValidation System State: Disconnected Comment: Line 3	IP Settings Ditain IP address from DHCP server Edit the IP settings Suggest Values To Default IP address: 192.168.10.12 Subnet mask: 255.255.0 Gateway: 0.0.0 DNS server: 0.0.0
	Password protect Resets	➡ Halt system if TCP/IP fails Advanced Ethernet Settings

- A. Launch Measurement & Automation Explorer (MAX) and expand the Remote Systems branch of the configuration tree.
- B. Click **192.168.10.12** to display the Network Settings window. This IP address is assigned to all unconfigured NI CVS-1450 devices.

Tip To uniquely identify unconfigured NI CVS-1450 devices, connect and configure \bigcirc one NI CVS-1450 device at a time.

- C. In the Network Settings window, type a name for the NI CVS-1450 device in the Name field and a description of the NI CVS-1450 device in the Comment field
- **Note** Device names are limited to 15 characters with no spaces or special characters. The first and last letters must be alphanumeric devices.

D. If the network is configured to issue IP addresses using DHCP, select **Obtain IP address** from DHCP server. Otherwise, set the IP address manually by selecting Edit the IP settings, Suggest Values, and OK.

E. Click Apply. When prompted, click Yes to restart the NI CVS-1450 device. This initial installation process takes several minutes. While the NI CVS-1450 device is restarting, a red X 🗪 appears next to the device name to indicate that the NI CVS-1450 device is disconnected. The MAX status bar also indicates the connection status of the NI CVS-1450 device.

Download Software to the NI CVS-1450 Device

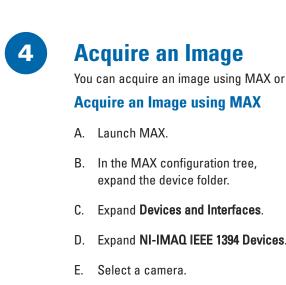
- F. In the MAX configuration tree, expand the device folder by clicking the plus sign next to the device name.
- G. Click the Software branch.

J. Click Next.

- H. Click the Add/Remove Software button.
- I. Select the software to install on the NI CVS-1450 device.



The NI CVS-1450 device will automatically restart. This process takes several seconds.



F. Click the **Snap** button to acquire a single image, or click the **Grab** button to acquire continuous images.

Acquire an Image using the LabVIEW Real-Time Module

- A. Launch LabVIEW, and select to create a new Real-Time Project.
- B. Select **Custom project** for the Project type, enter a Project name, select the **Project folder** where you want to store the project, and click Next.
- C. Select Add blank vi to target, and click Next.
- D. Select the **Networked** option for Browse targets, and click **Browse**.
- E. Select the **Existing target or device** option from Targets and Devices, expand the Compact Vision System branch, select your device, and click **OK**.

- F. Click Next.
- G. Verify that the NI CVS-1450 device appears correctly in the LabVIEW Real-Time Project, and click Finish.
- H. In the Project Explorer window, right-click the name of your NI CVS-1450 device, and select Add File.
- I. Navigate to Program Files National Instruments\ LabVIEW 8.0\examples\ IMAQ\IMAQ1394 examples.11b, and click Add File.
- J. Click Grab.vi, and click Select.
- K. Click the **Run** button to begin acquiring images.

Now that you are acquiring images in LabVIEW, you can use the NI Vision Development Module and the installed NI CVS-1450 device drivers to process images and to control inputs and outputs.

You can acquire an image using MAX or the LabVIEW Real-Time Module.

