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Find the *National Instruments CVS-1456* at our website: ***Click HERE***

QUICK START GUIDE

NI CVS-1450 Series Compact Vision System

Vision Builder for Automated Inspection

1 Connect the Hardware

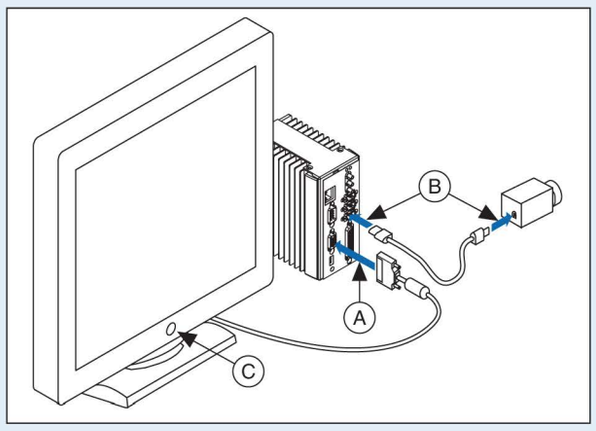
Caution Before installing NI CVS-1450 Series hardware, refer to the safety information in the *NI CVS-1450 Series User Manual*.

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.

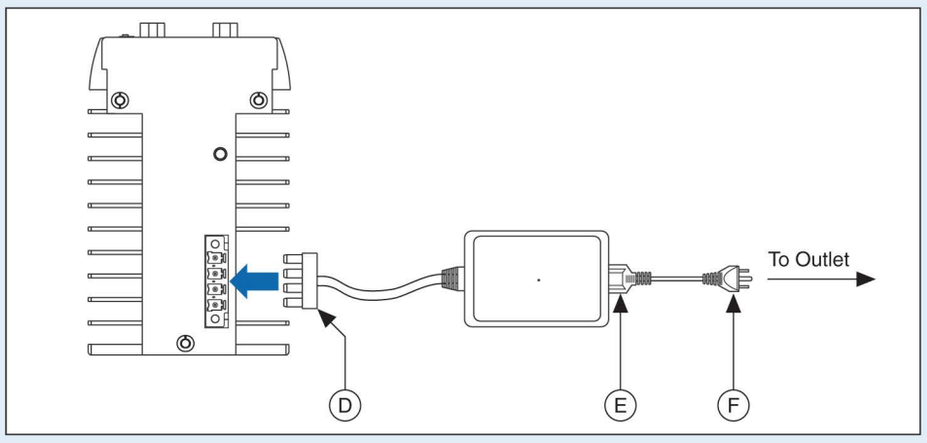
C. Plug in and power on the monitor.



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.

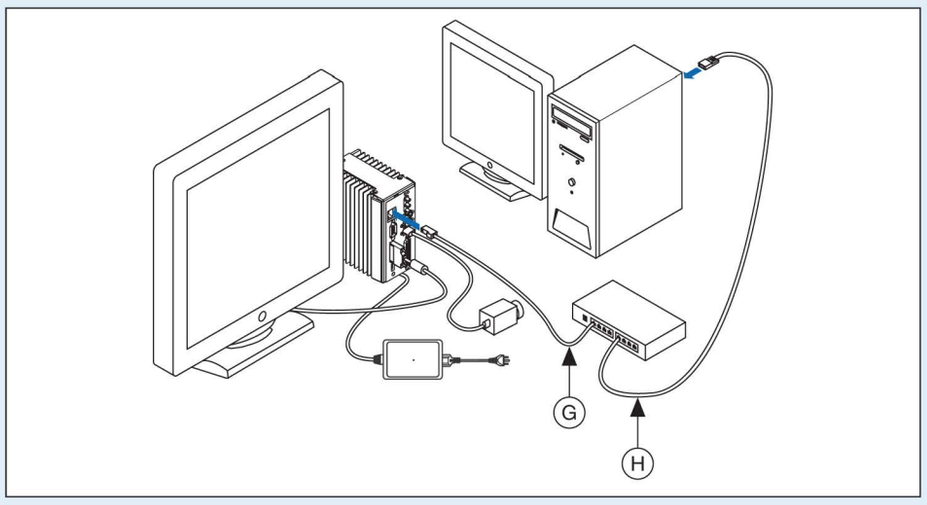
E. Plug the power cord into the power supply.

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.

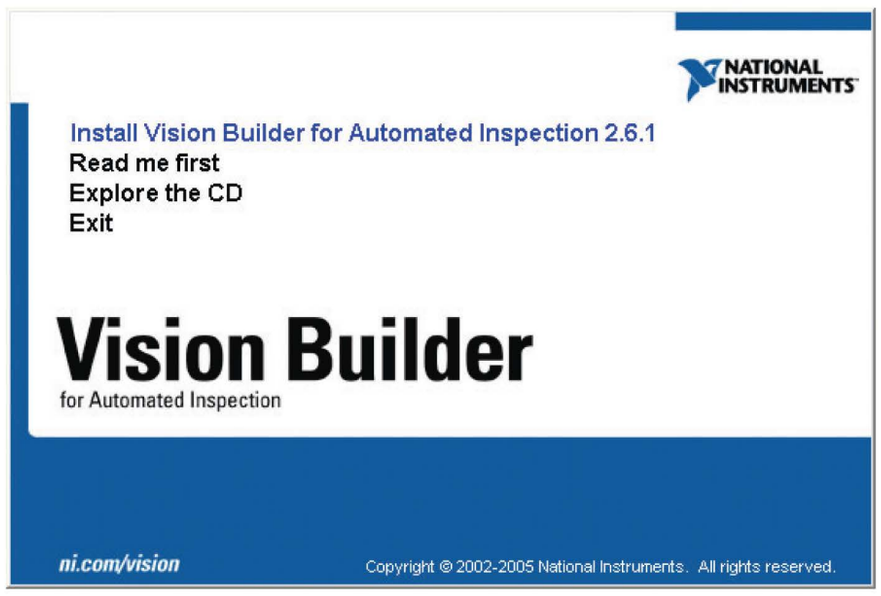
Note If you are not connecting through a network, use a crossover cable (part number 187375) to connect the NI CVS-1450 device to the development computer.

2 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.

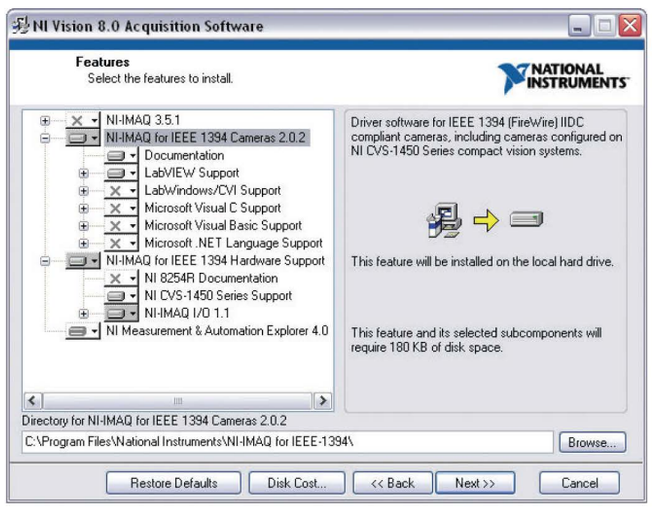


Install NI-IMAQ for IEEE 1394 Cameras

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



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



D. Click **Next**.

E. Follow the installer prompts to complete the installation.

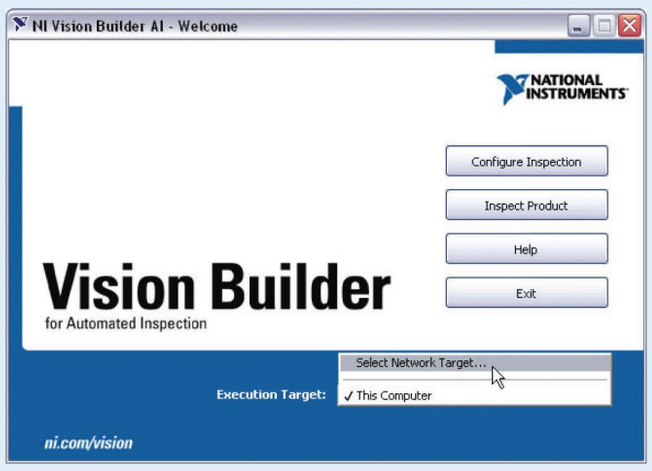
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3 Configure the NI CVS-1450 Device

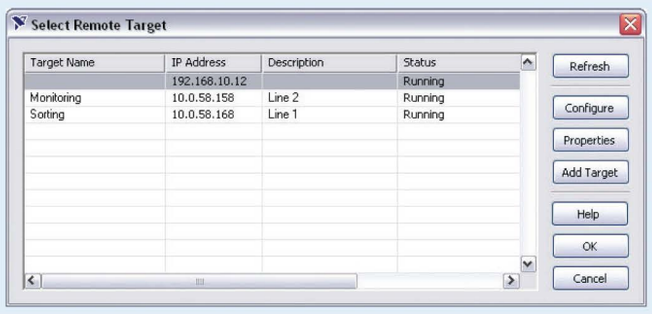
Obtain an IP Address

A. Launch Vision Builder AI.

B. Expand the **Execution Target** pull-down listbox and click **Select Network Target**.



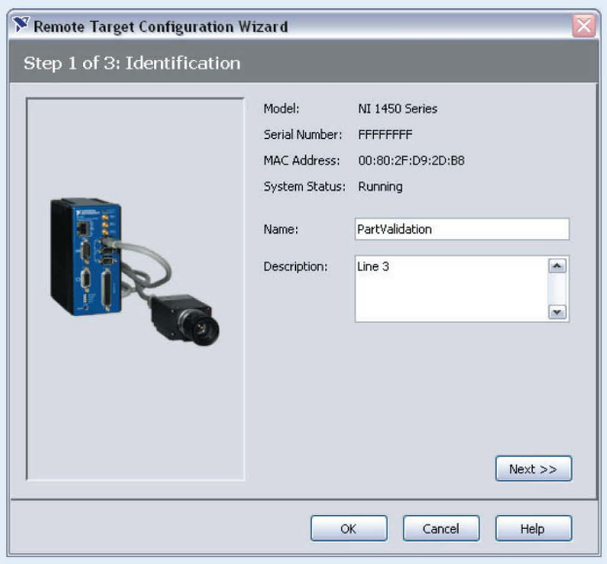
C. In the Select Remote Target window, click **192.168.10.12** to highlight the row. This IP address is assigned to all unconfigured NI CVS-1450 devices.



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

D. Click **Configure** to launch the Remote Target Configuration Wizard.

E. In the Identification window, enter a name for the NI CVS-1450 device in the **Name** field and a description of the NI CVS-1450 device in the **Description** field.



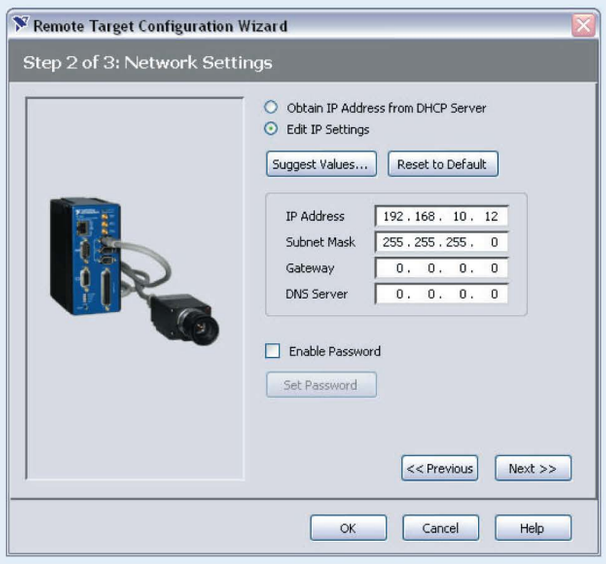
Note Device names are limited to 15 characters with no spaces or special characters. The first and last letters must be alphanumeric.

F. Click **Next**.

G. 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 IP Settings**, **Suggest Values**, and **OK**.

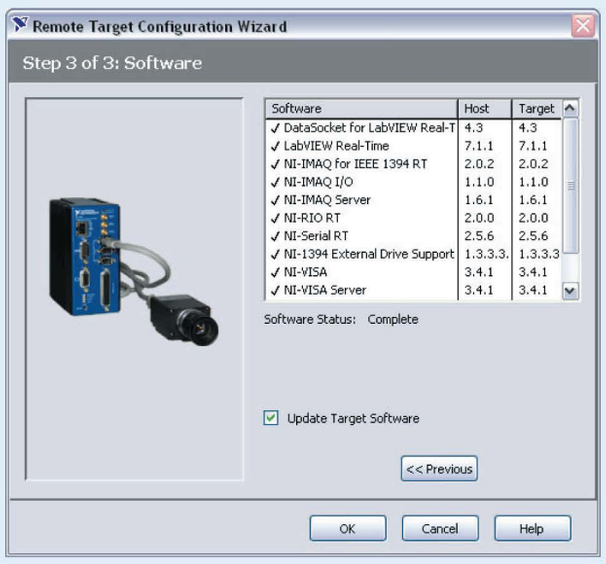
H. Click **Next**.



Download Software to the NI CVS-1450 Device

I. Select the **Update Target Software** checkbox.

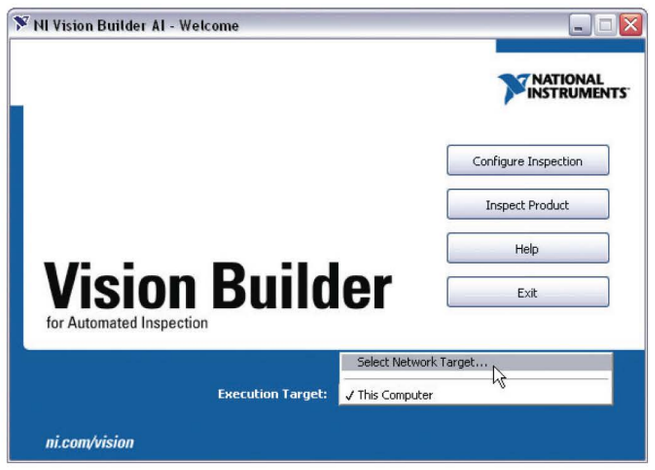
J. Click **OK** to begin configuring the IP address and downloading software onto the NI CVS-1450 device. This initial installation process takes several minutes.



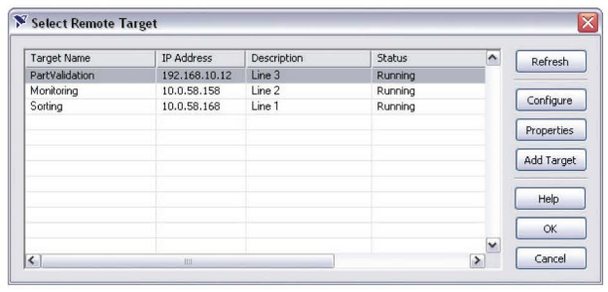
4 Acquire an Image

A. Launch Vision Builder AI.

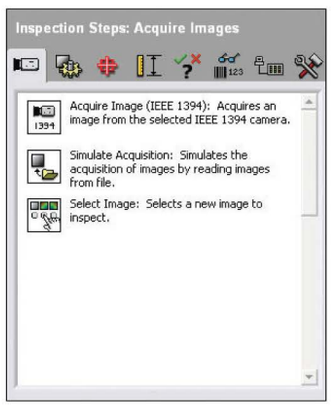
B. Expand the **Execution Target** pull-down listbox, and click **Select Network Target**.

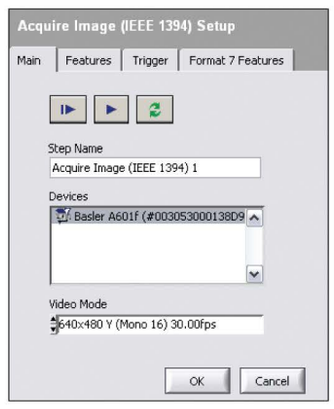


C. Select the NI CVS-1450 device you configured, and click **OK**.



D. On the Vision Builder AI Welcome screen, click **Configure Inspection**.





E. From the Acquire Images palette, click **Acquire Image (IEEE 1394)**.

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

Once you have configured your acquisition, click **OK** to add the step. You can now add inspection steps as described in the *NI Vision Builder for Automated Inspection: Configuration Help*.

QUICK START GUIDE

NI CVS-1450 Series Compact Vision System

This document describes how to set up and acquire an image using the NI CVS-1450 Series compact vision system with NI Vision Builder for Automated Inspection or the LabVIEW Real-Time Module and the NI Vision Development Module. Use these instructions to verify that hardware and software are properly installed, to configure an IP address for the CVS-1450 device, and to acquire an image.

Note These instructions are intended for *basic* installation and configuration. Refer to the *NI CVS-1450 Series User Manual* and the application software documentation for detailed installation and configuration instructions.

Refer to the blue side of this document if you are using
Vision Builder for Automated Inspection

Refer to the yellow side of this document if you are using the
LabVIEW Real-Time Module with the NI Vision Development Module

373609B-01 Mar06

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QUICK START GUIDE

NI CVS-1450 Series Compact Vision System

LabVIEW Real-Time Module with the NI Vision Development Module

1 Connect the Hardware

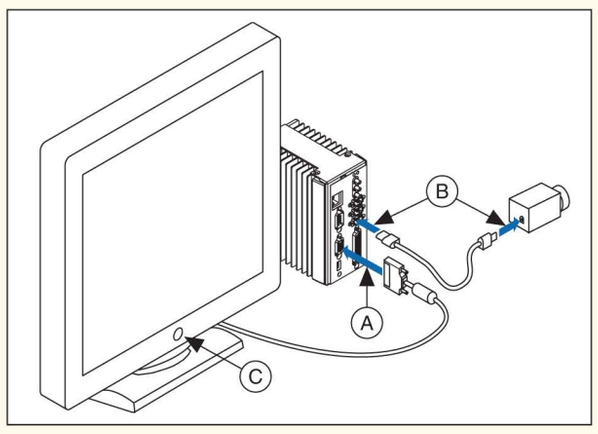
Caution Before installing NI CVS-1450 Series hardware, refer to the safety information in the *NI CVS-1450 Series User Manual*.

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.

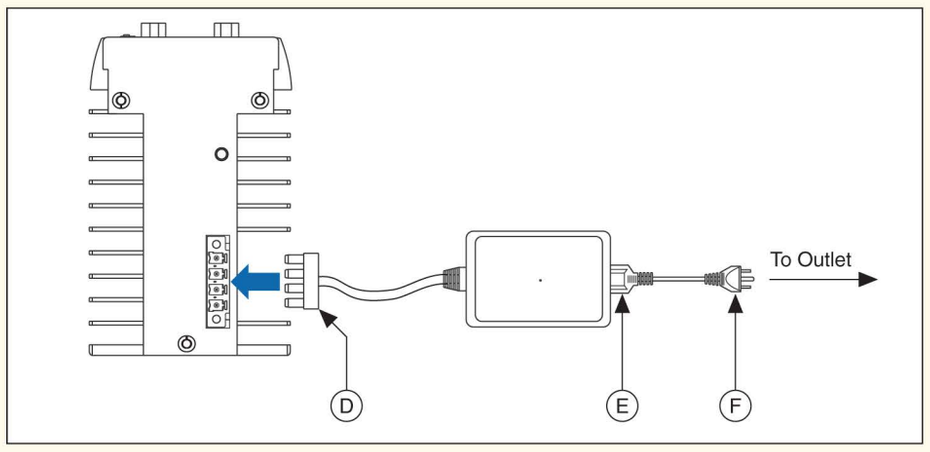
C. Plug in and power on the monitor.



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.

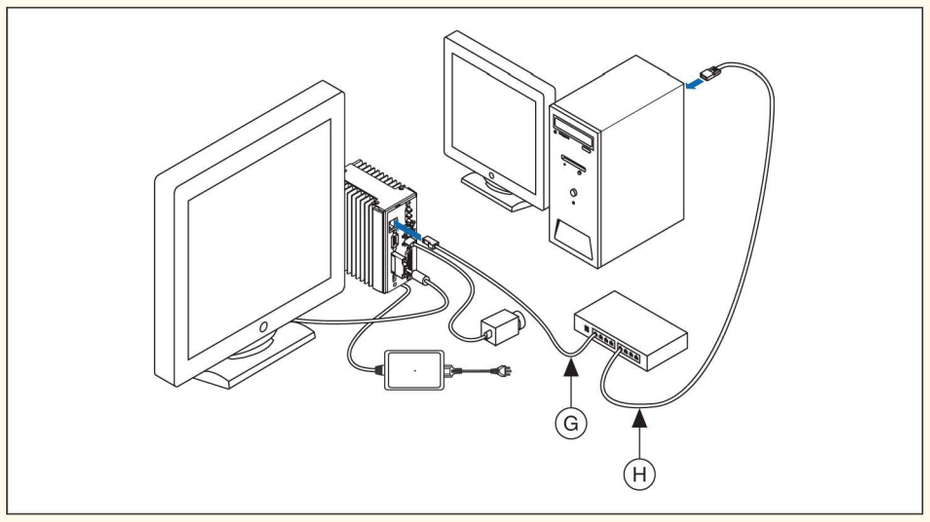
E. Plug the power cord into the power supply.

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.

2 Install the Software

Note You must install LabVIEW, the LabVIEW Real-Time Module, and the NI Vision Development Module software *before* installing the NI-IMAQ for IEEE 1394 Cameras 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.

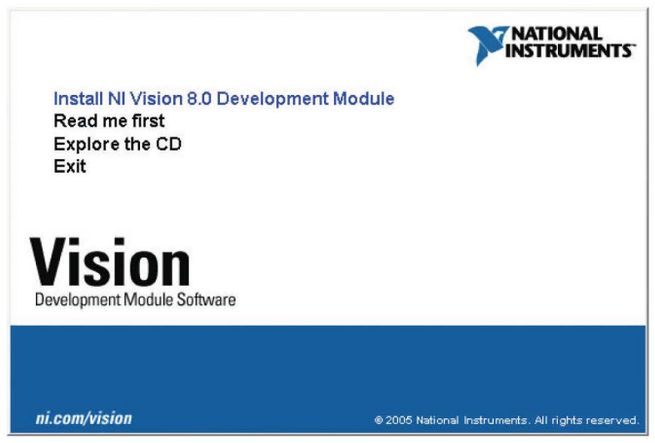


B. Insert the LabVIEW Real-Time Module CD. When the installation screen appears, click **Install LabVIEW Real-Time Module** and follow the setup instructions.



Install the NI Vision Development Module and NI-IMAQ for IEEE 1394 Cameras

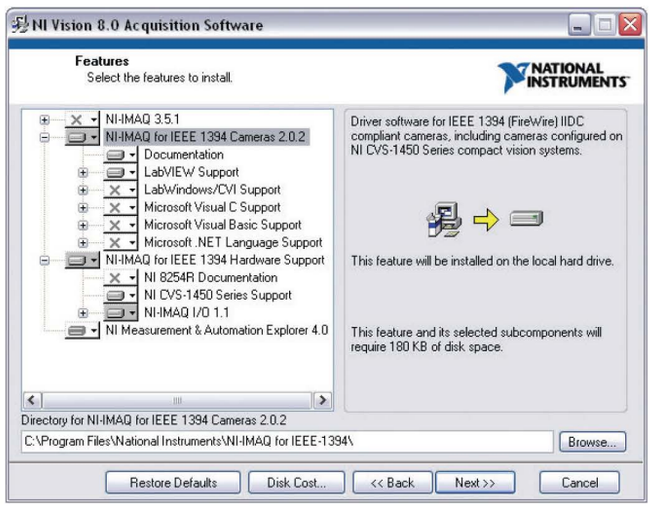
C. Insert the NI Vision Development Module CD. When the installation screen appears, click **Install NI Vision Development Module** and follow the setup instructions.



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



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



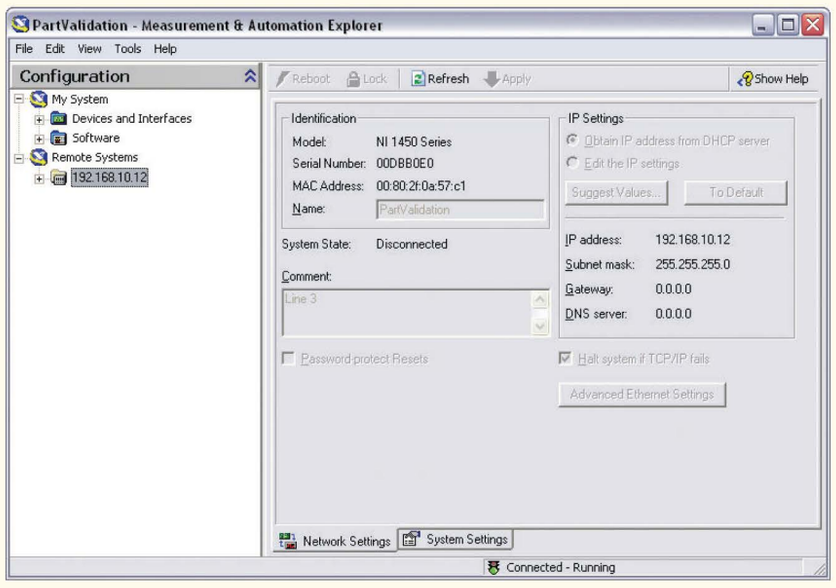
F. Click **Next**.

G. Follow the installer prompts to complete the installation.

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3 Configure the NI CVS-1450 Device

Obtain an IP Address



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 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.

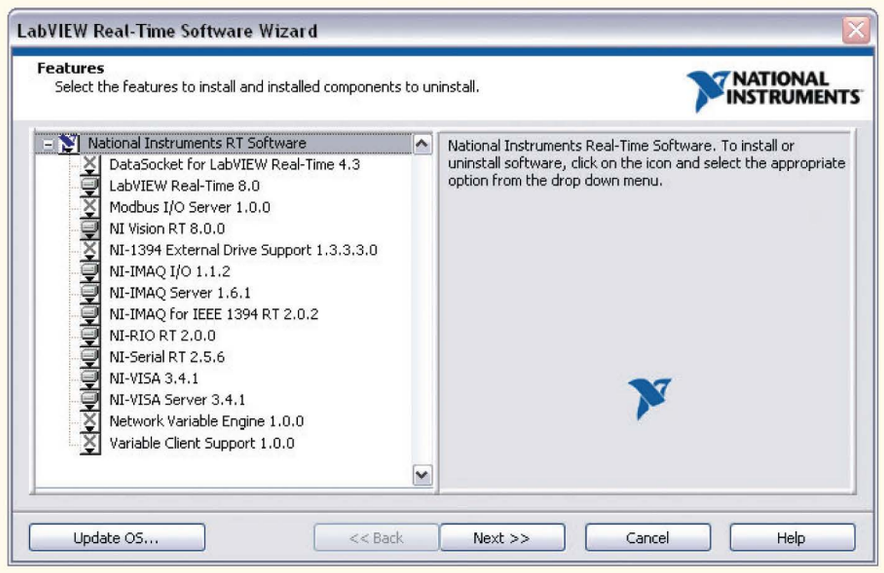
Download Software to the NI CVS-1450 Device

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.

H. Click the **Add/Remove Software** button.

I. Select the software to install on the NI CVS-1450 device.



J. Click **Next**.

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

4 Acquire an Image

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

Acquire an Image using MAX

A. Launch MAX.

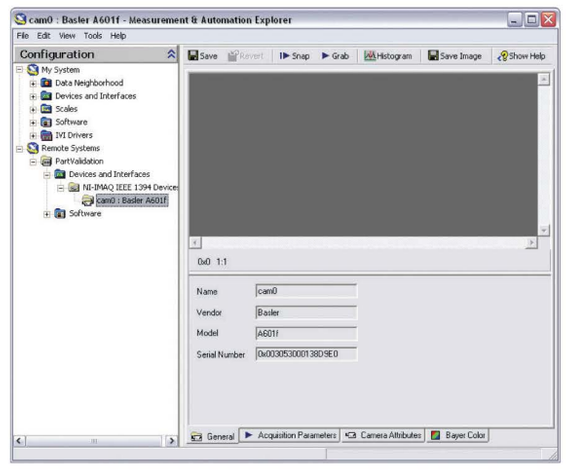
B. In the MAX configuration tree, expand the device folder.

C. Expand **Devices and Interfaces**.

D. Expand **NI-IMAQ IEEE 1394 Devices**.

E. Select a camera.

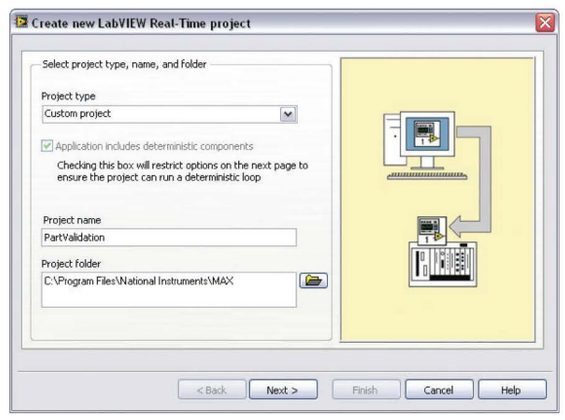
F. Click the **Snap** button to acquire a single image, or click the **Grab** button to acquire continuous images.



Acquire an Image using the LabVIEW Real-Time Module

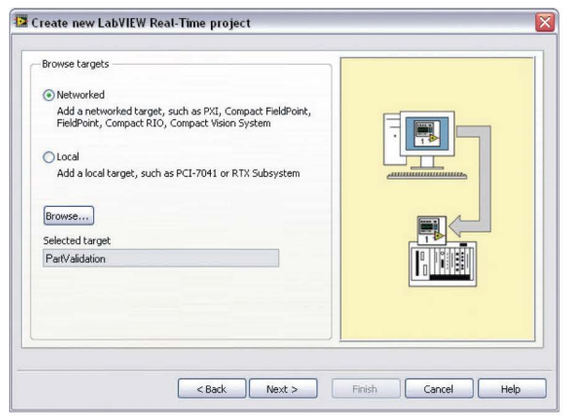
A. Launch LabVIEW, and select to create a new **Real-Time Project**.

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**.

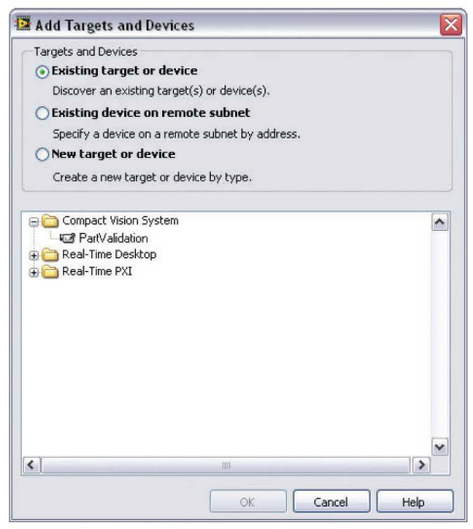


C. Select **Add blank vi to target**, and click **Next**.

D. Select the **Networked** option for Browse targets, and click **Browse**.

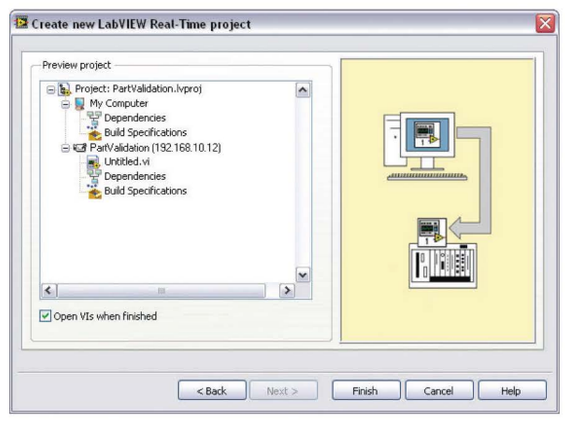


E. Select the **Existing target or device** option from Targets and Devices, expand the **Compact Vision System** branch, select your device, and click **OK**.



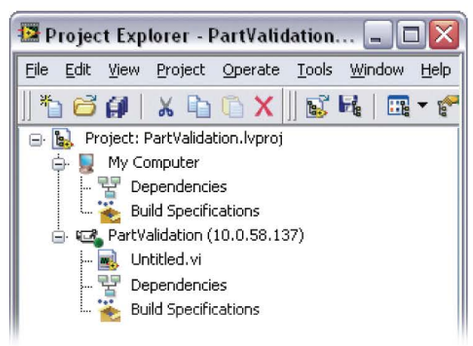
F. Click **Next**.

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.llb`, 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.

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