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**CVS-1454**

## QUICK START GUIDE

# NI CVS-1450 Series Compact Vision System

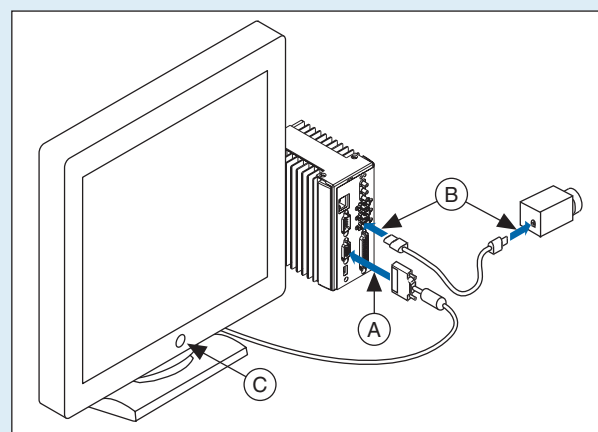
## Vision Builder for Automated Inspection

### 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

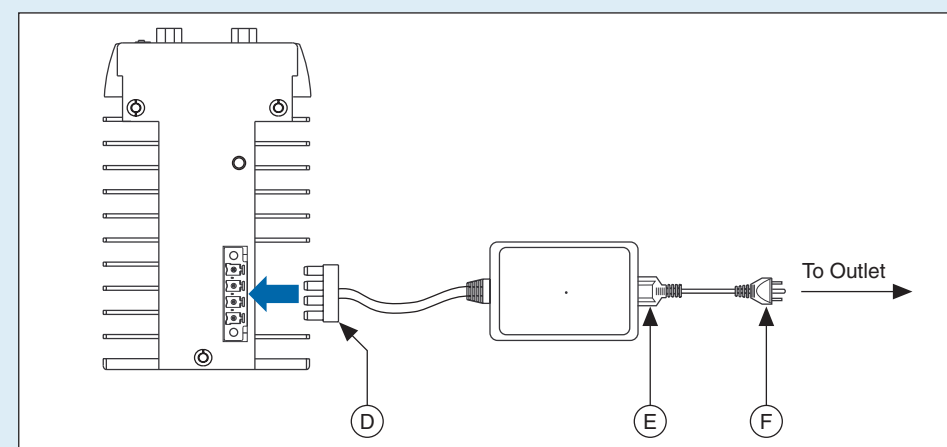
- Connect the VGA cable from the monitor to the VGA port on the NI CVS-1450 device.
- Plug the IEEE 1394 cable into one of the IEEE 1394 ports on the NI CVS-1450 device. Plug the other end of the cable into the IEEE 1394 port of the camera.
- Plug in and power on the monitor.



#### 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.

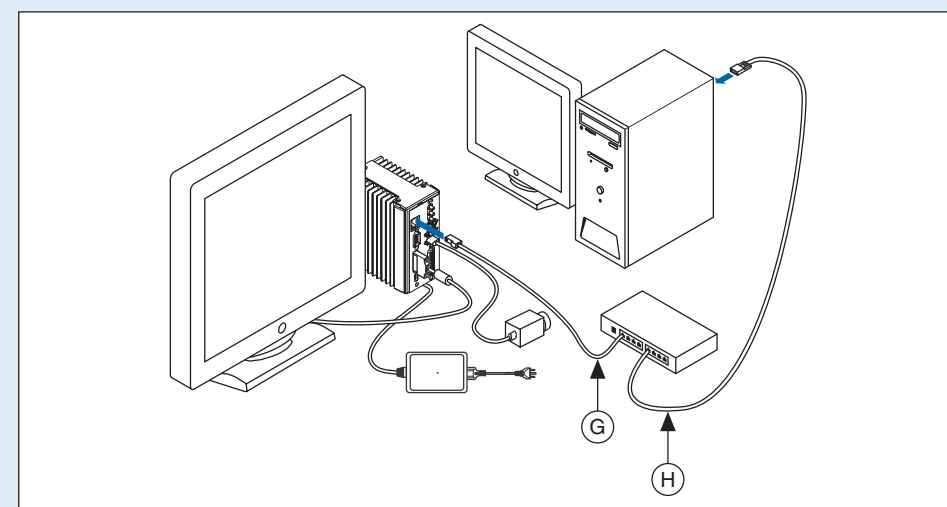


- Plug the 4-position connector from the power supply into the power receptacle on the NI CVS-1450 device.
- Plug the power cord into the power supply.
- Plug the power cord into an outlet.

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.



- 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.
- Using a standard CAT 5 Ethernet cable, connect from the network port to the Ethernet port on the development computer.

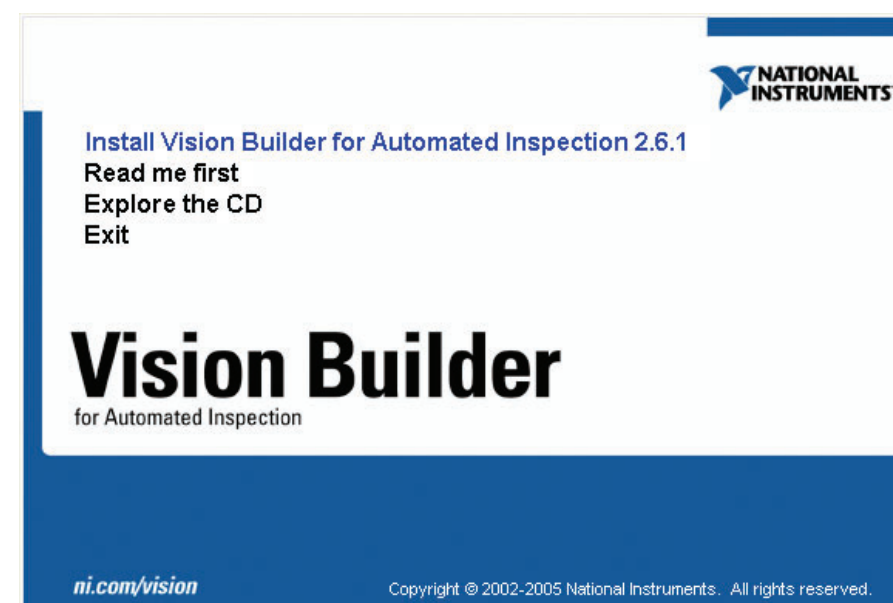
**Note** If you are not connecting through a network, use a crossover cable (part number 187375) to connect the NI CVS-1450 device to the development computer.

### 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

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

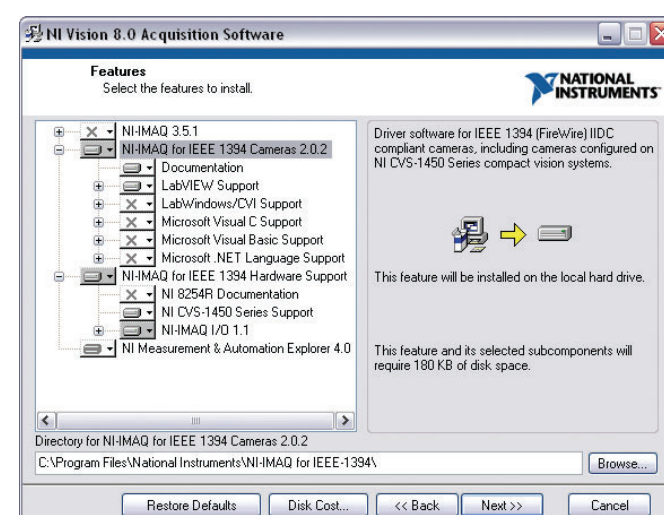


#### Install NI-IMAQ for IEEE 1394 Cameras

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



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

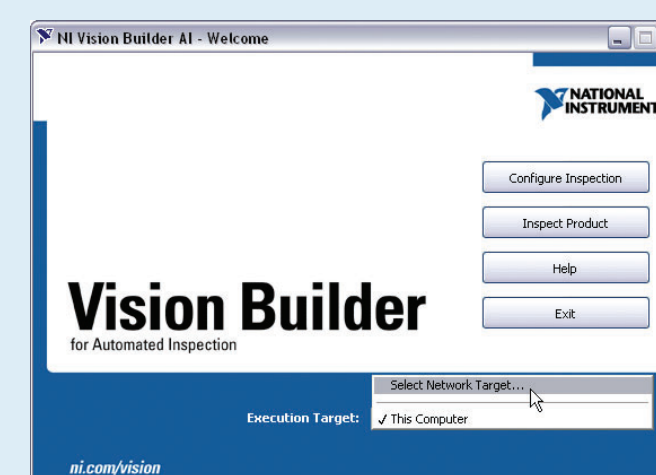


- Click **Next**.
- Follow the installer prompts to complete the installation.

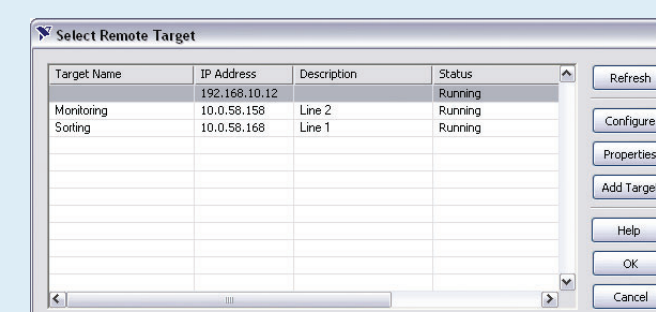
### 3 Configure the NI CVS-1450 Device

#### Obtain an IP Address

- Launch Vision Builder AI.
- Expand the **Execution Target** pull-down listbox, and click **Select Network Target**.



- 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.

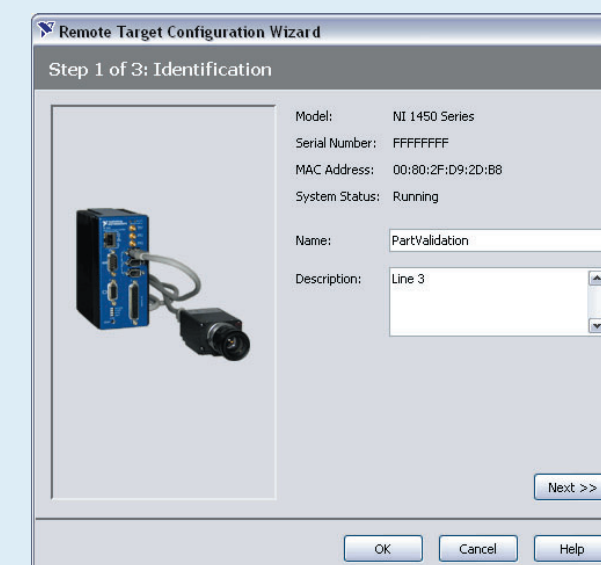


**Tip** To uniquely identify unconfigured NI CVS-1450 devices, connect and configure one NI CVS-1450 device at a time.

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

- 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.

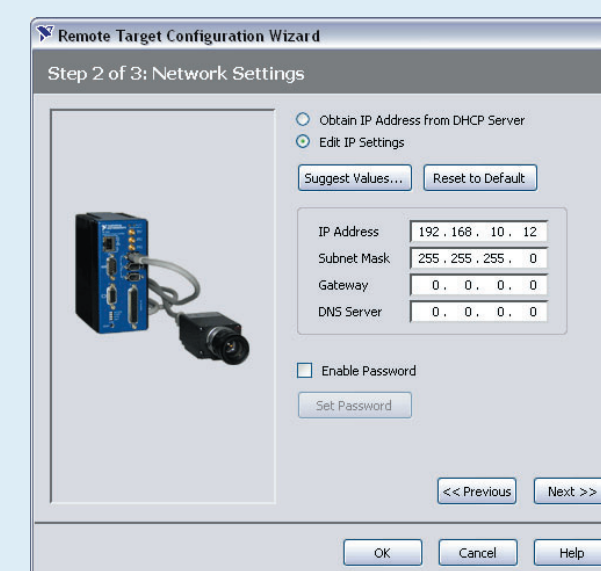


- Click **Next**.

- If the network is configured to issue IP addresses using DHCP, select **Obtain IP Address from DHCP Server**.

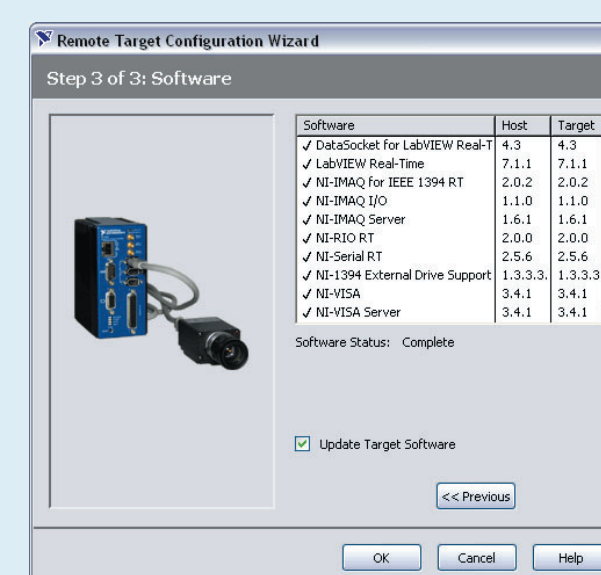
Otherwise, set the IP address manually by selecting **Edit IP Settings**, **Suggest Values**, and **OK**.

- Click **Next**.



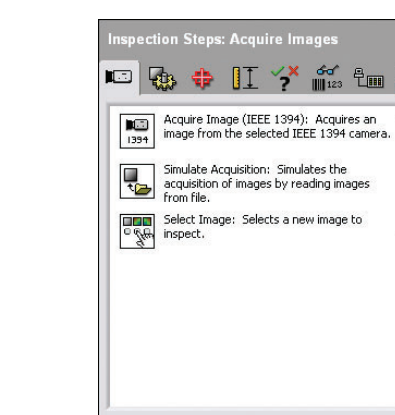
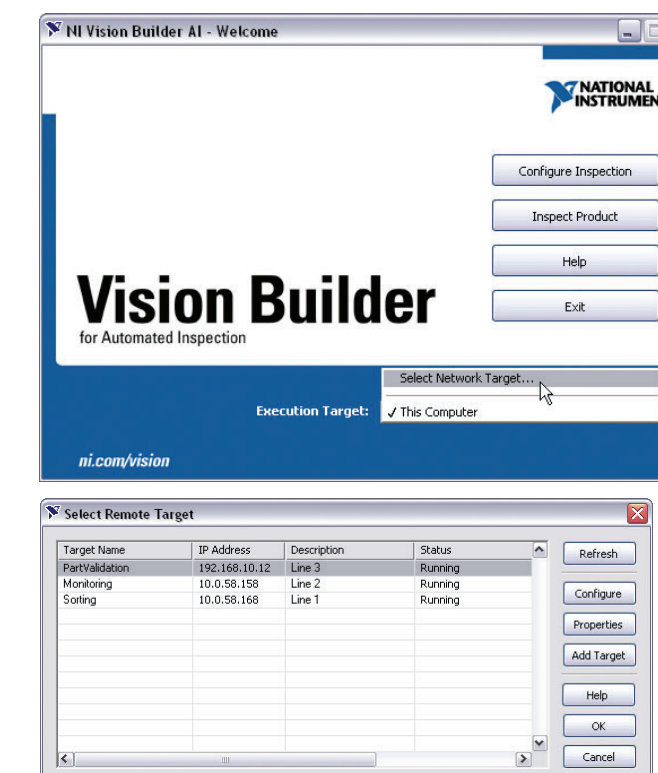
#### Download Software to the NI CVS-1450 Device

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

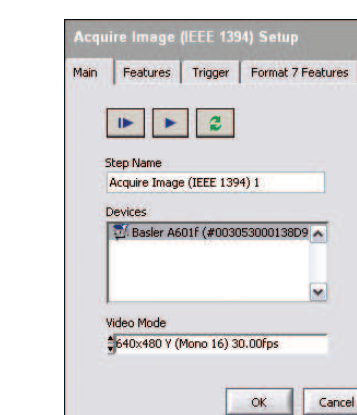


### 4 Acquire an Image

- Launch Vision Builder AI.
- Expand the **Execution Target** pull-down listbox, and click **Select Network Target**.
- Select the NI CVS-1450 device you configured, and click **OK**.
- On the Vision Builder AI Welcome screen, click **Configure Inspection**.



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



- 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**

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# QUICK START GUIDE NI CVS-1450 Series Compact Vision System

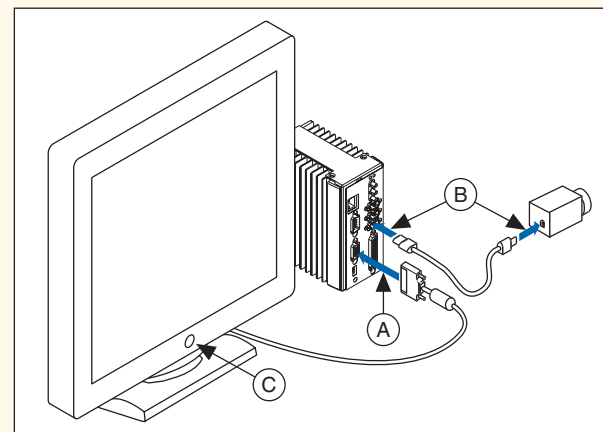
## LabVIEW Real-Time Module with the NI Vision Development Module

### 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

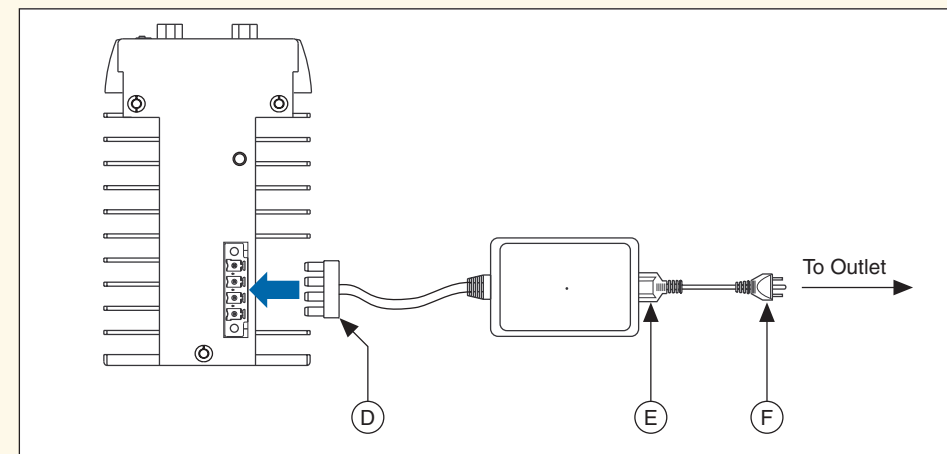
- Connect the VGA Cable from the monitor to the VGA port on the NI CVS-1450 device.
- Plug the IEEE 1394 cable into one of the IEEE 1394 ports on the NI CVS-1450 device. Plug the other end of the cable into the IEEE 1394 port of the camera.
- Plug in and power on the monitor.



#### 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.

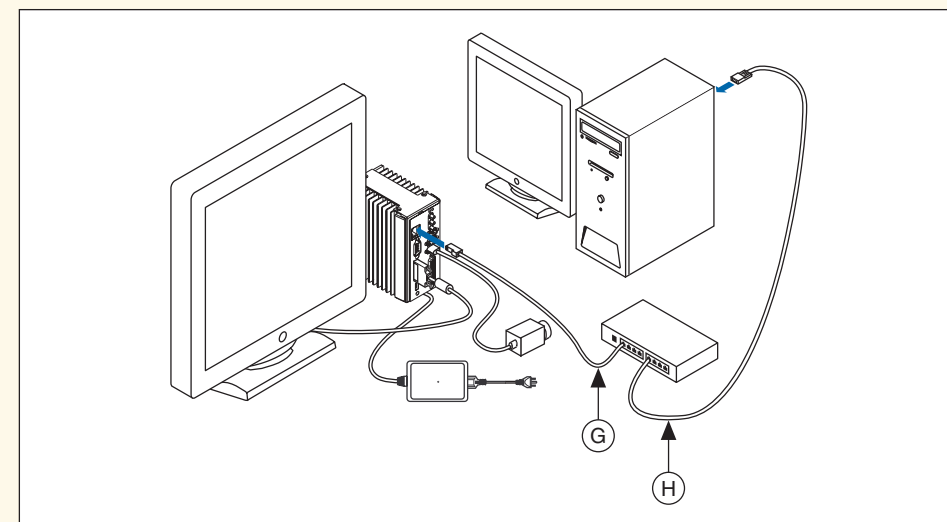


- Plug the 4-position connector from the power supply into the power receptacle on the NI CVS-1450 device.
- Plug the power cord into the power supply.
- Plug the power cord into an outlet.

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.



- 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.
- 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

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



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

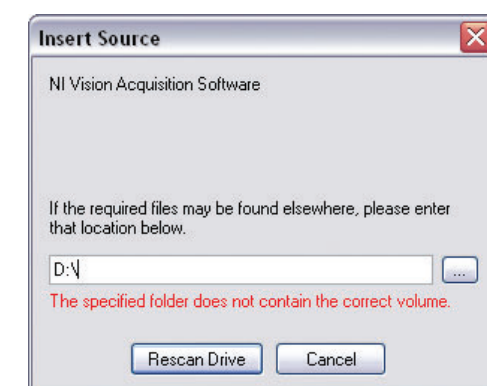


#### Install the NI Vision Development Module and NI-IMAQ for IEEE 1394 Cameras

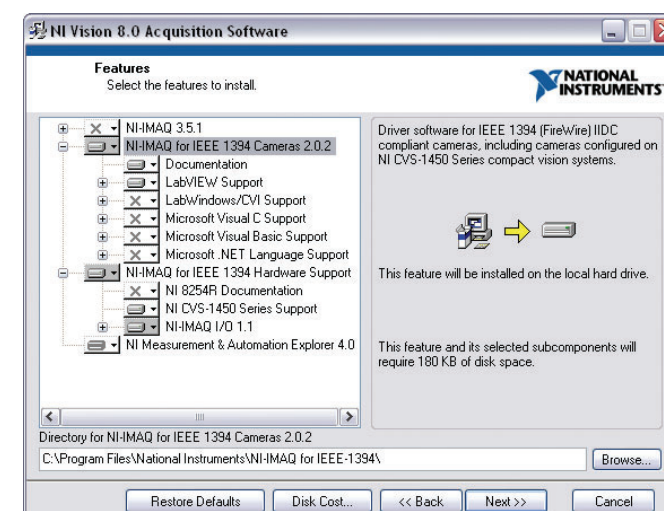
- Insert the NI Vision Development Module CD. When the installation screen appears, click **Install NI Vision Development Module** and follow the setup instructions.



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



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

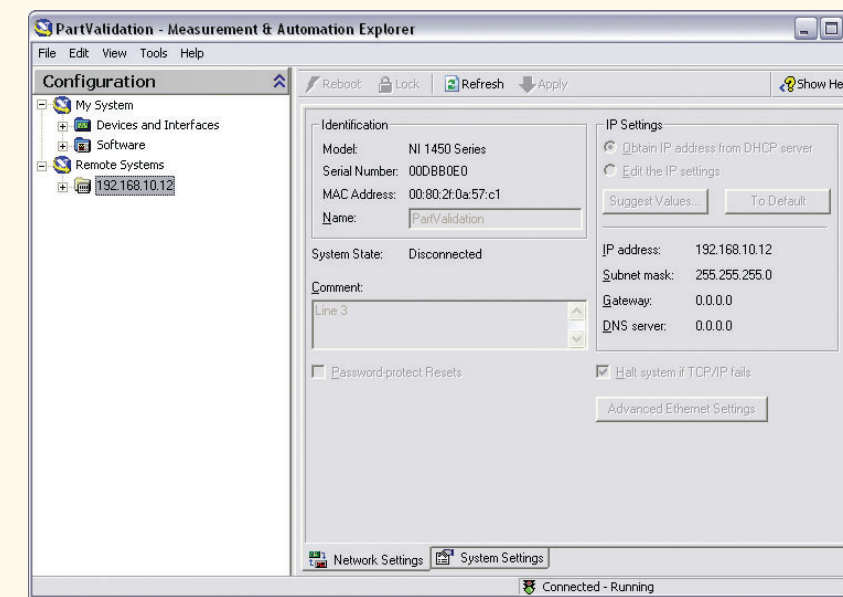


- Click **Next**.

- Follow the installer prompts to complete the installation.

### 3 Configure the NI CVS-1450 Device

#### Obtain an IP Address



- Launch Measurement & Automation Explorer (MAX) and expand the **Remote Systems** branch of the configuration tree.
- 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.

- 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.

- 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**.

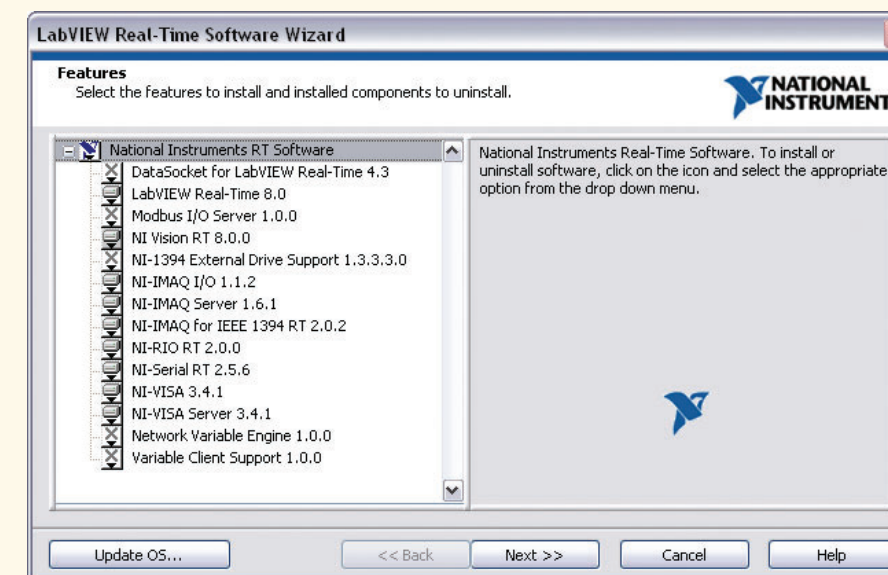
- Click **Apply**. When prompted, click **Yes** to restart the NI CVS-1450 device. This initial installation process takes several minutes.

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

- In the MAX configuration tree, expand the device folder by clicking the plus sign next to the device name.
- Click the **Software** branch.
- Click the **Add/Remove Software** button.
- Select the software to install on the NI CVS-1450 device.



- Click **Next**.

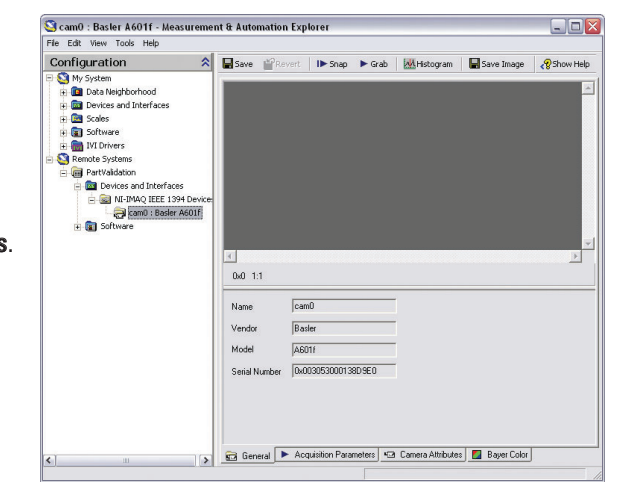
The NI CVS-1450 device will automatically restart. This process takes several seconds.

### 4 Acquire an Image

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

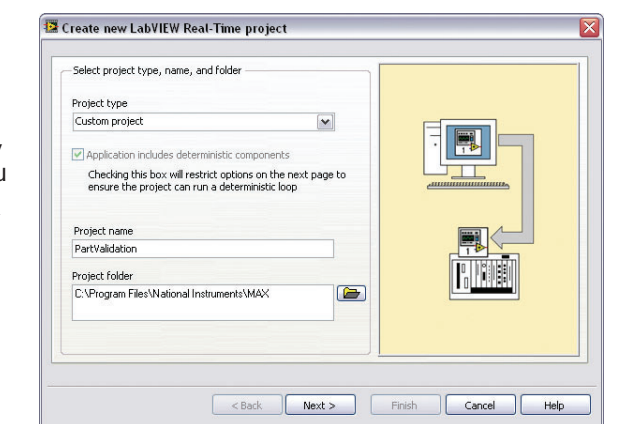
#### Acquire an Image using MAX

- Launch MAX.
- In the MAX configuration tree, expand the device folder.
- Expand **Devices and Interfaces**.
- Expand **NI-IMAQ IEEE 1394 Devices**.
- Select a camera.
- Click the **Snap** button to acquire a single image, or click the **Grab** button to acquire continuous images.

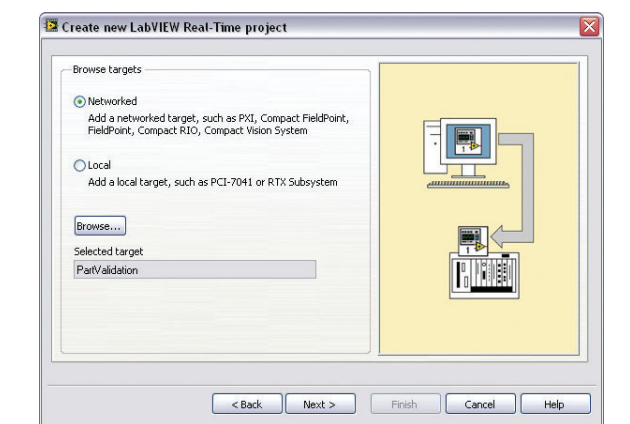


#### Acquire an Image using the LabVIEW Real-Time Module

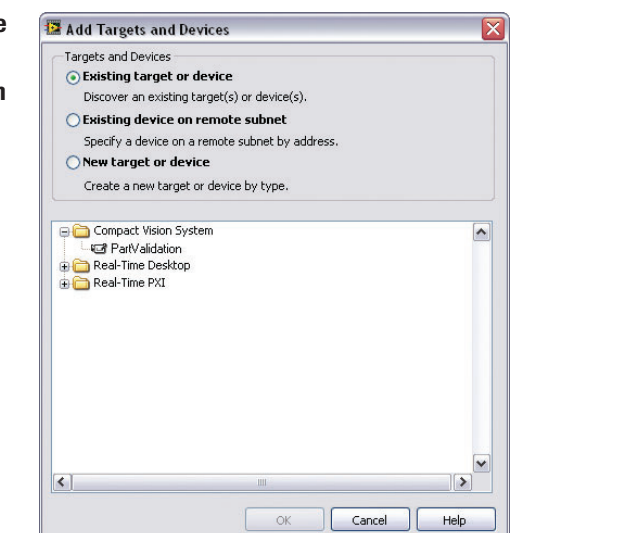
- Launch LabVIEW, and select to create a new **Real-Time Project**.
- Select **Custom project** for the **Project type**, enter a **Project name**, select the **Project folder** where you want to store the project, and click **Next**.



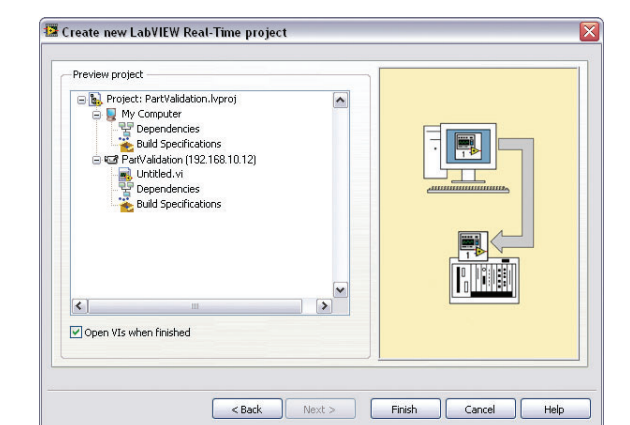
- Select **Add blank vi to target**, and click **Next**.
- Select the **Networked** option for **Browse targets**, and click **Browse**.



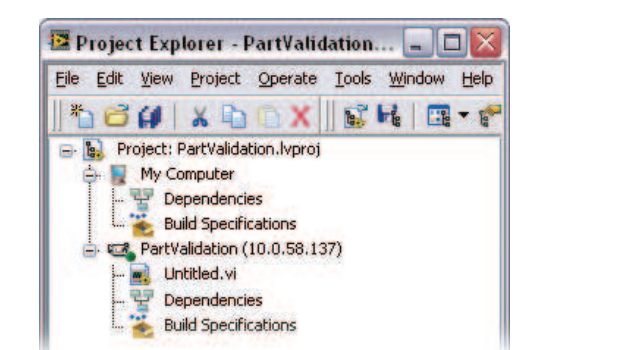
- Select the **Existing target or device** option from **Targets and Devices**, expand the **Compact Vision System** branch, select your device, and click **OK**.



- Click **Next**.
- Verify that the NI CVS-1450 device appears correctly in the LabVIEW Real-Time Project, and click **Finish**.



- In the Project Explorer window, right-click the name of your NI CVS-1450 device, and select **Add File**.



- Navigate to `Program Files\National Instruments\LabVIEW 8.0\examples\IMAQ\IMAQ1394\examples.llb`, and click **Add File**.
- Click **Grab.vi**, and click **Select**.
- 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.