

# QUICK START GUIDE NI 1450 Series Compact Vision System

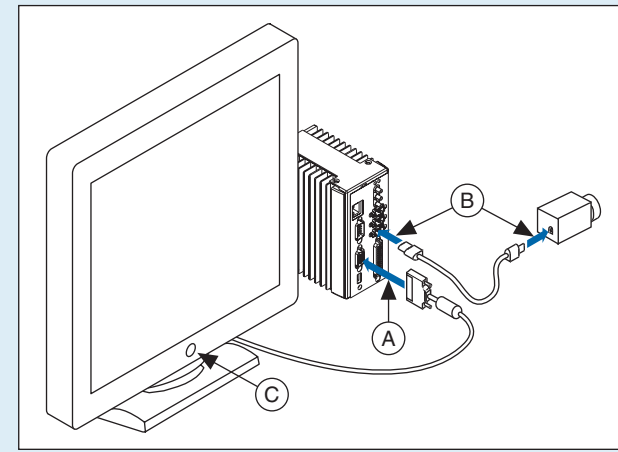
## Vision Builder for Automated Inspection

### 1 Connect the Hardware

**Caution** Before installing the NI 1450 hardware, refer to the safety information in the *NI 1450 Series Compact Vision System User Manual*.

#### Connect the Camera and Monitor to the NI 1450

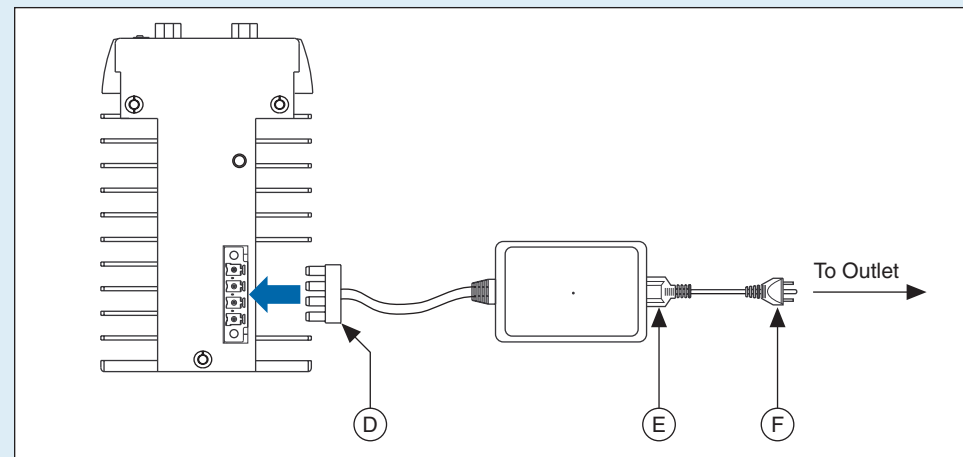
- Connect the VGA cable from the monitor to the VGA port on the NI 1450.
- Plug the IEEE 1394 cable into one of the IEEE 1394a ports on the NI 1450. Plug the other end of the cable into the IEEE 1394 receptacle on the camera.
- Plug in and power on the monitor.



#### Wire Power to the NI 1450

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

**Caution** Do not connect the NI 1450 to a power source other than 24 VDC  $\pm$ 10%. Refer to the *NI 1450 Series Compact Vision System User Manual* for information about power requirements.

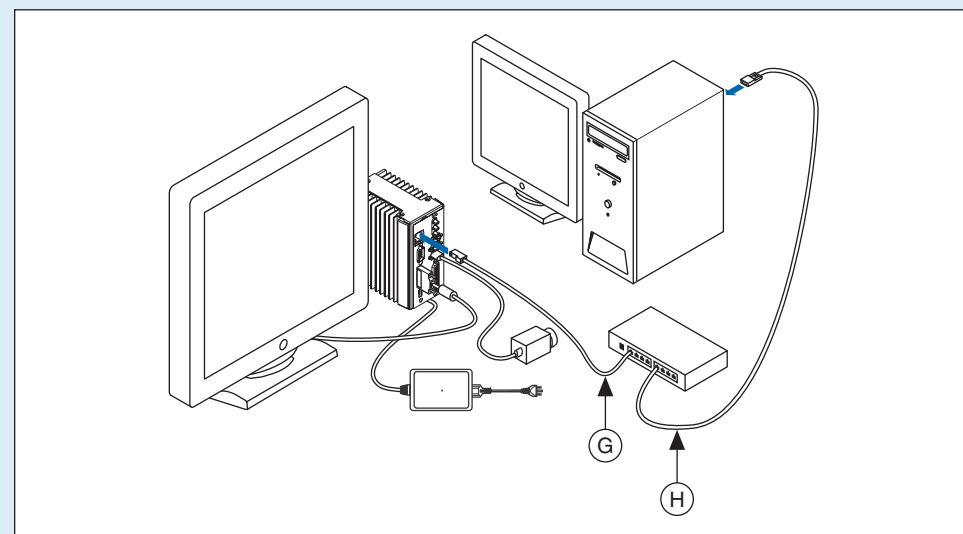


- Plug the 4-position connector from the power supply into the power receptacle on the NI 1450.
- Plug the power cord into the power supply.
- Plug the power cord into an outlet.

Once connected, the NI 1450 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 1450 to the Development Computer

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



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

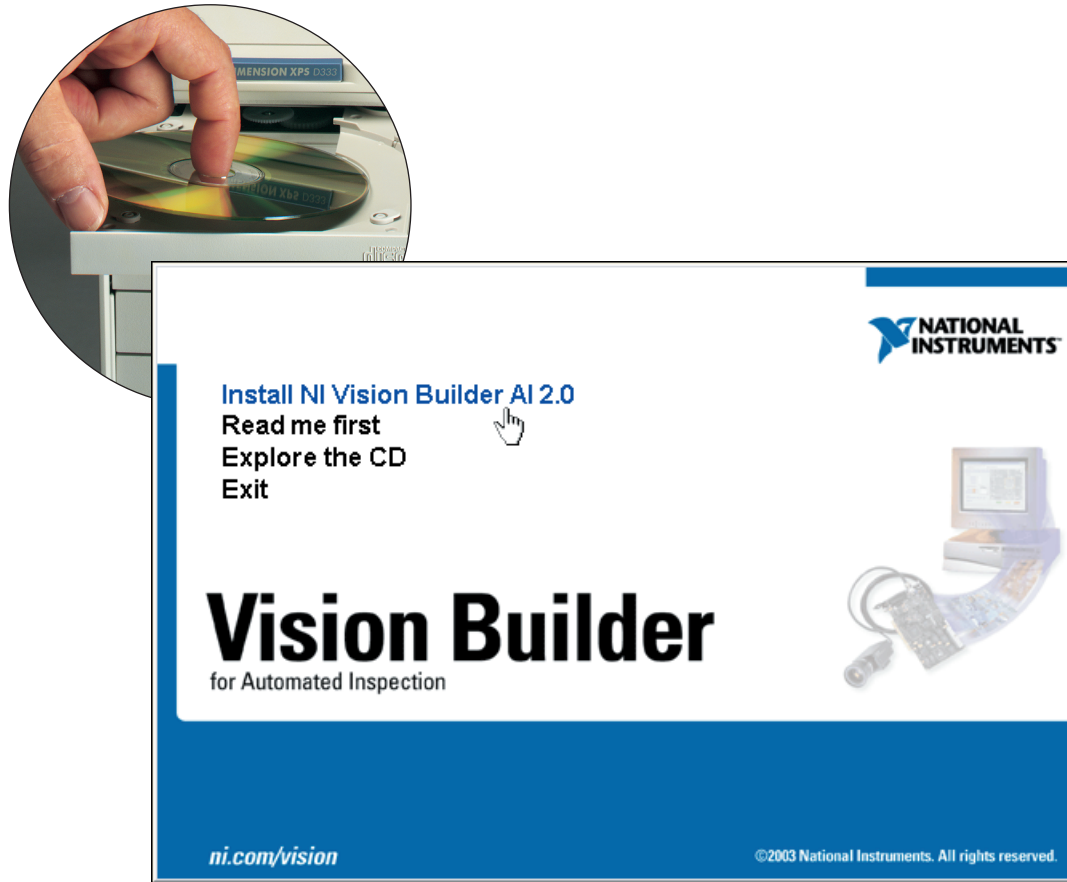
**Note** If you are not connecting through a network, use a crossover cable (part number 187375) to connect the NI 1450 directly to the development computer.

### 2 Install the Software

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

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

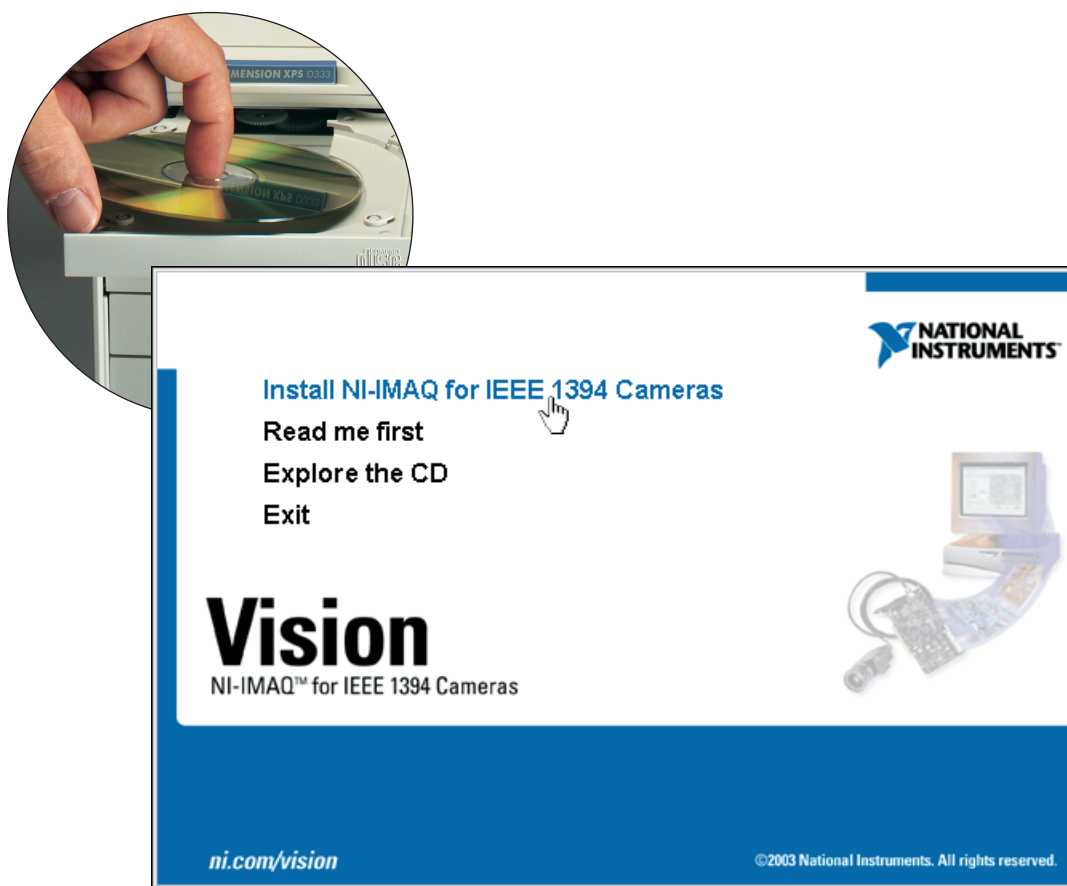
- Insert the Vision Builder AI CD. When the installation splash screen appears, click **Install NI Vision Builder AI 2.0** and follow the setup instructions.



- Insert the NI-IMAQ for IEEE 1394 Cameras CD.

**Note** When installing NI-IMAQ for IEEE 1394 Cameras, make sure to install the support files for LabVIEW Real-Time.

When the installation splash screen appears, click **Install NI-IMAQ for IEEE 1394 Cameras** and follow the setup instructions.

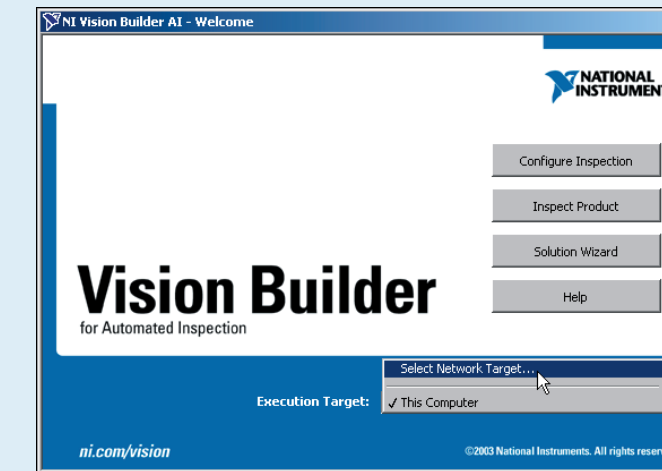


- Reboot the development computer.

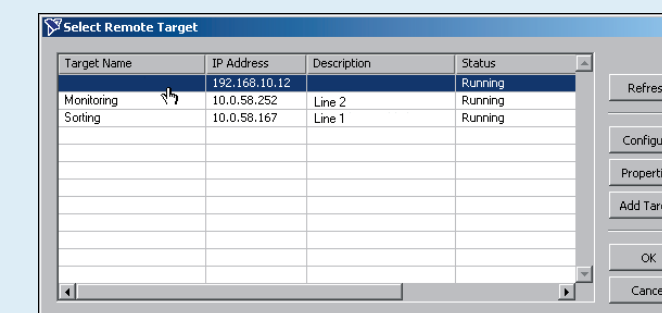
### 3 Configure the NI 1450

#### Obtain an IP Address

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

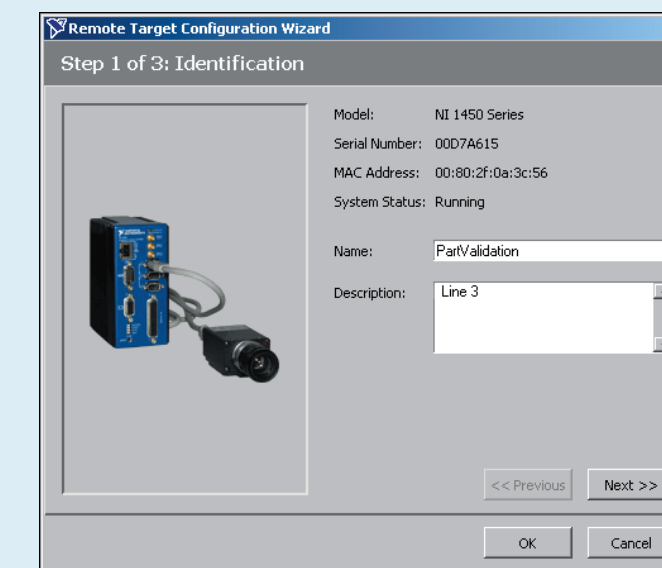


- In the Select Remote Target window, click **192.168.10.12** to highlight the row. This IP address is assigned to all unconfigured NI 1450s.



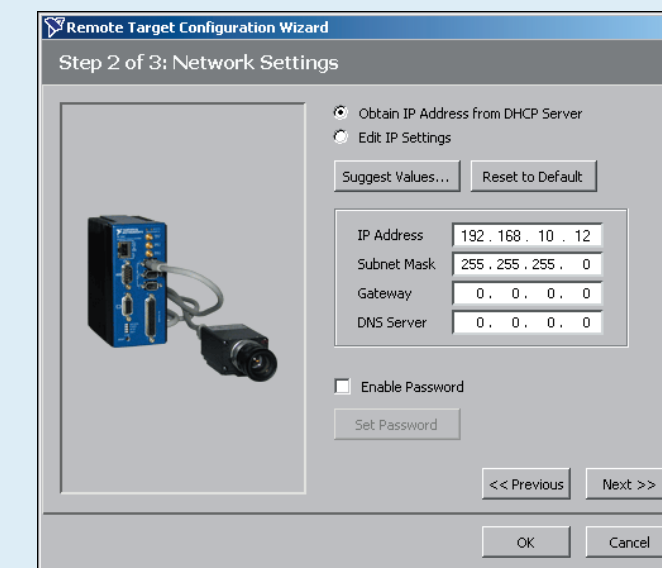
**Tip** To uniquely identify unconfigured NI 1450s, connect and configure one NI 1450 at a time.

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



- Click **Next**.

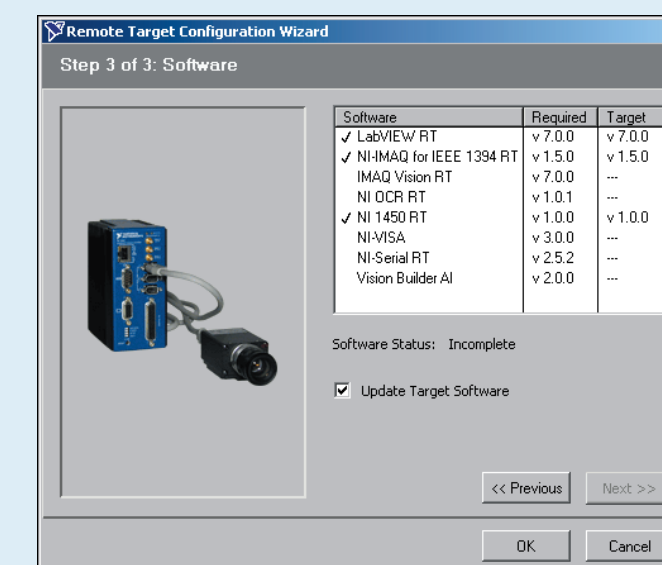
- If the network is configured to issue IP addresses using DHCP, select **Obtain IP Address from DHCP Server**.



- Click **Next**.

#### Download Software to the NI 1450

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



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

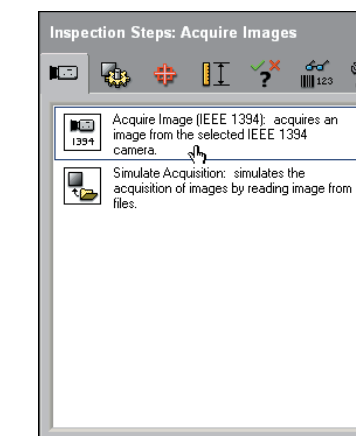
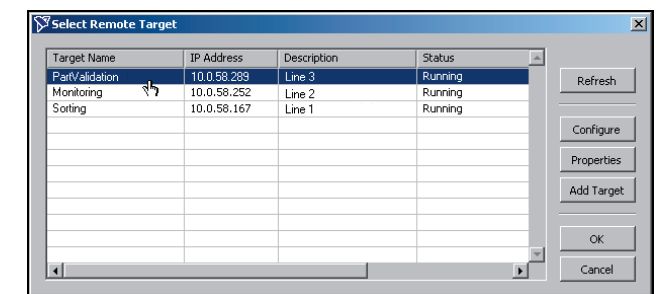
### 4 Acquire an Image

- Launch Vision Builder AI.

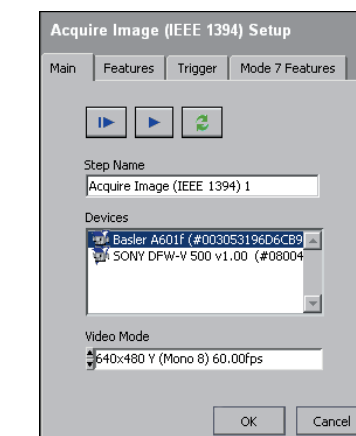


- In the Vision Builder AI Welcome screen, expand the **Execution Target** pull-down listbox and click **Select Network Target**.

- Select the NI 1450 you configured and click **OK**.
- In 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 1450 Series Compact Vision System

This document describes how to set up and acquire an image using National Instruments Vision Builder for Automated Inspection (AI) and LabVIEW Real-Time with the NI 1450 Series Compact Vision System. Use these instructions to verify that hardware and software are properly installed, to configure an IP address for the NI 1450, and to acquire an image using Vision Builder AI or LabVIEW Real-Time.

**Note** These instructions are intended for *basic* installation and configuration. Refer to the *NI 1450 Series Compact Vision System 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  
**LabVIEW Real-Time with the Vision Development Module**



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# QUICK START GUIDE NI 1450 Series Compact Vision System

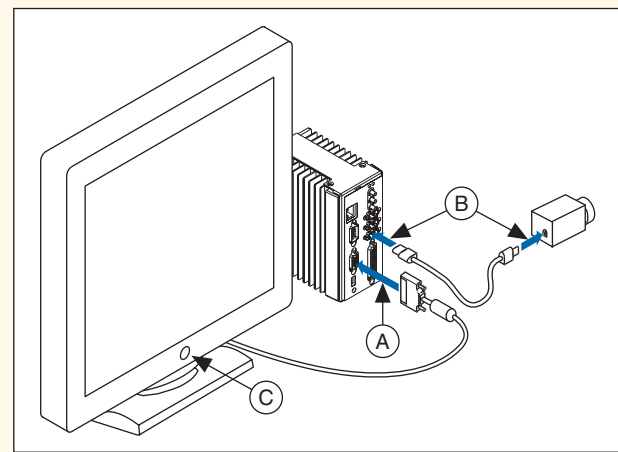
## LabVIEW™ Real-Time with the Vision Development Module

### 1 Connect the Hardware

**Caution** Before installing the NI 1450 hardware, refer to the safety information in the *NI 1450 Series Compact Vision System User Manual*.

#### Connect the Camera and Monitor to the NI 1450

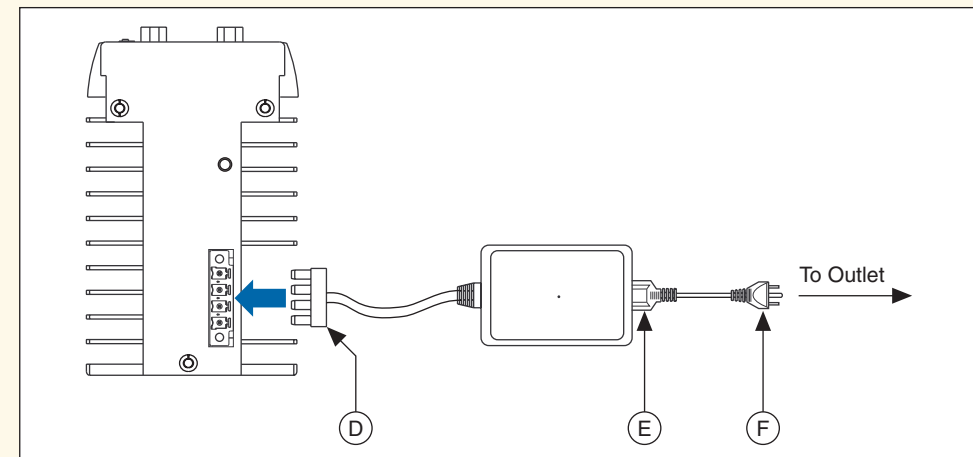
- Connect the VGA cable from the monitor to the VGA port on the NI 1450.
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**Caution** Do not connect the NI 1450 to a power source other than 24 VDC ±10%. Refer to the *NI 1450 Series Compact Vision System User Manual* for information about power requirements.

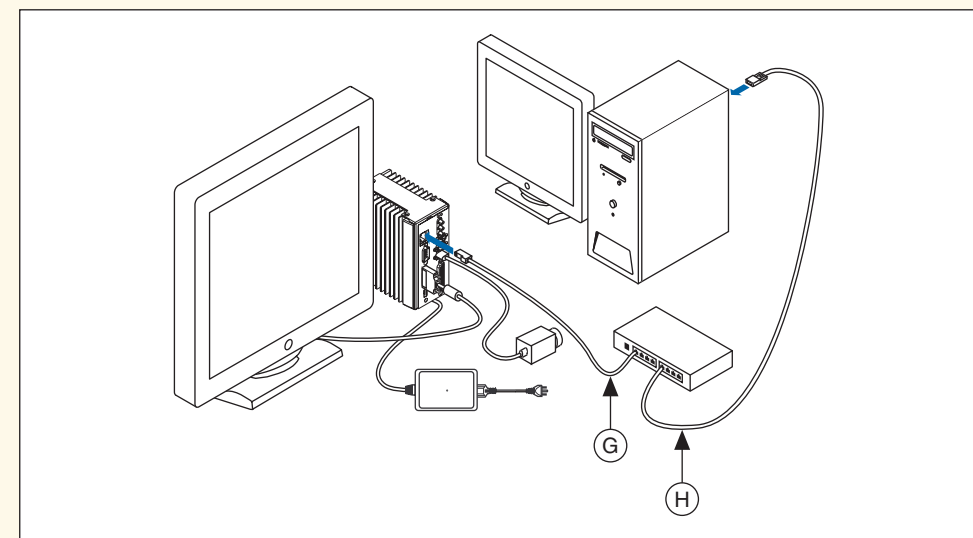


- Plug the 4-position connector from the power supply into the power receptacle on the NI 1450.
- Plug the power cord into the power supply.
- Plug the power cord into an outlet.

Once connected, the NI 1450 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 1450 to the Development Computer

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



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

### 2 Install the Software

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

#### Install LabVIEW and LabVIEW Real-Time

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

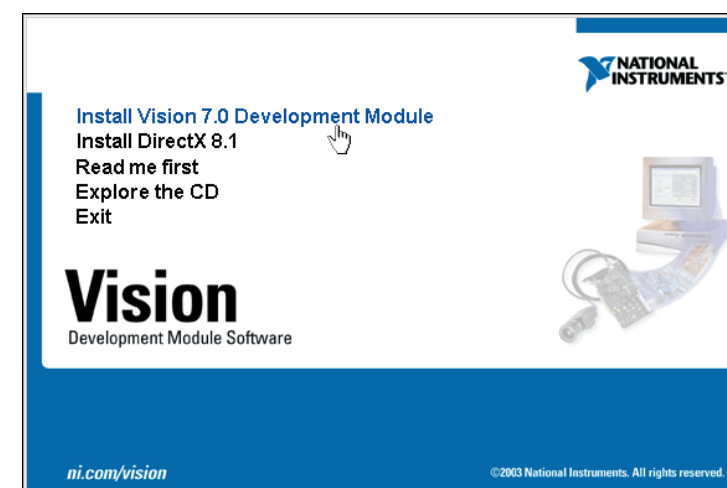


- Insert the LabVIEW Real-Time CD. When the installation splash screen appears, click **Install LabVIEW Real-Time** and follow the setup instructions.



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

- Insert the Vision Development Module CD. When the installation splash screen appears, click **Install Vision 7.0 Development Module**.



- Insert the NI-IMAQ for IEEE 1394 Cameras CD.

**Note** If you select the custom software installation, make sure to install the support for the NI 1450 Series Compact Vision System.

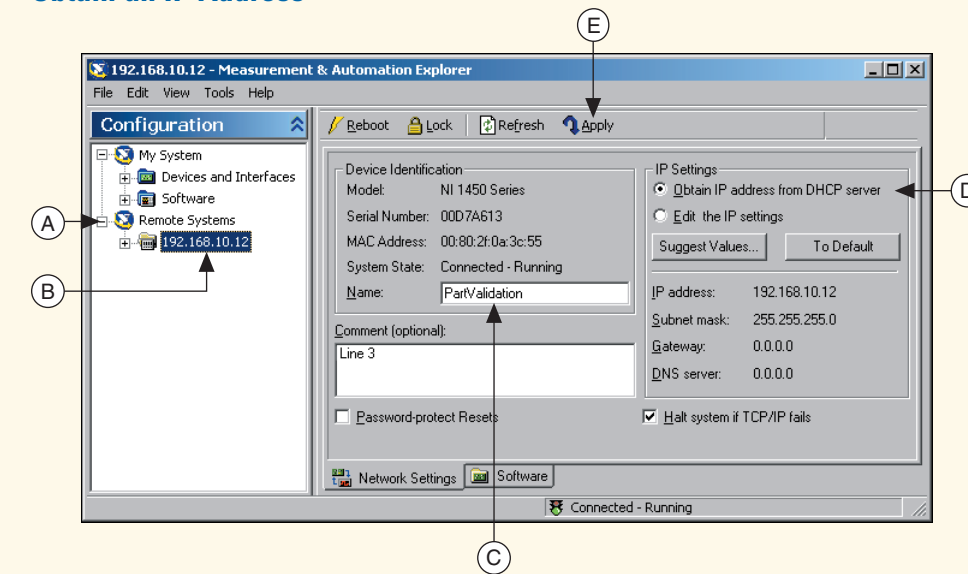
When the installation splash screen appears, click **Install NI-IMAQ for IEEE 1394 Cameras** and follow the setup instructions.



- When prompted, click **Yes** to reboot the development computer.

### 3 Configure the NI 1450

#### 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 1450s.



**Tip** To uniquely identify unconfigured NI 1450s, connect and configure one NI 1450 at a time.

- In the Network Settings window, type a name for the NI 1450 in the **Name** field and a description of the NI 1450 in the **Comment** field.

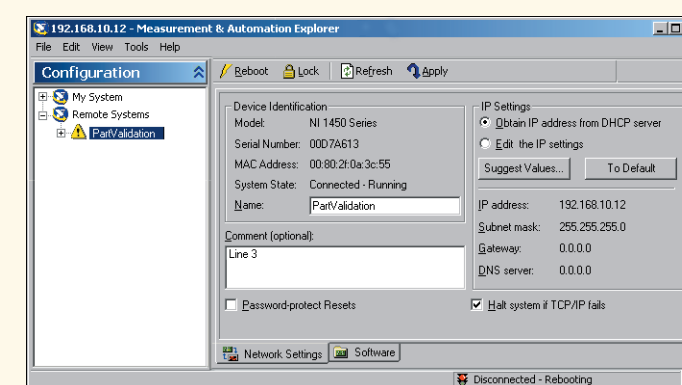



**Note** Device names are limited to 15 characters with no spaces or special characters. The first and last letters must be alphanumeric.

- 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 reboot the NI 1450. This initial installation process takes several minutes.

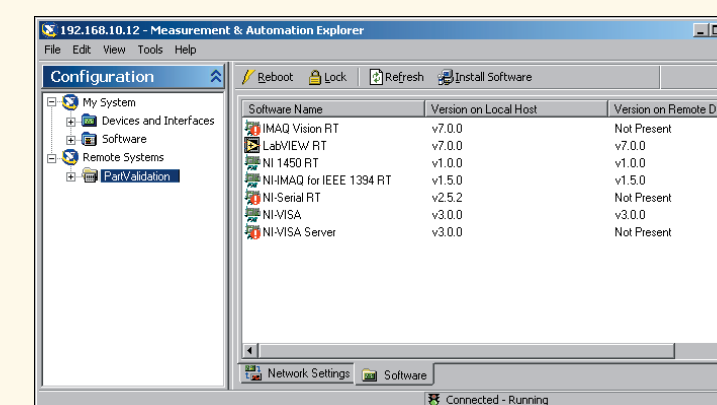


While the NI 1450 is rebooting, an  icon appears next to the device name to indicate that the NI 1450 is disconnected.

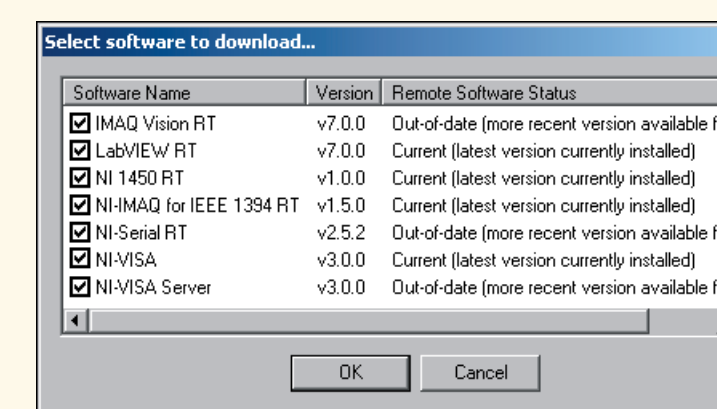
The MAX status bar also indicates the connection status of the NI 1450.

#### Download Software to the NI 1450

- In the MAX configuration window, click the **Software** tab. This window displays the status of the software on the NI 1450.
- Click the **Install Software** button.



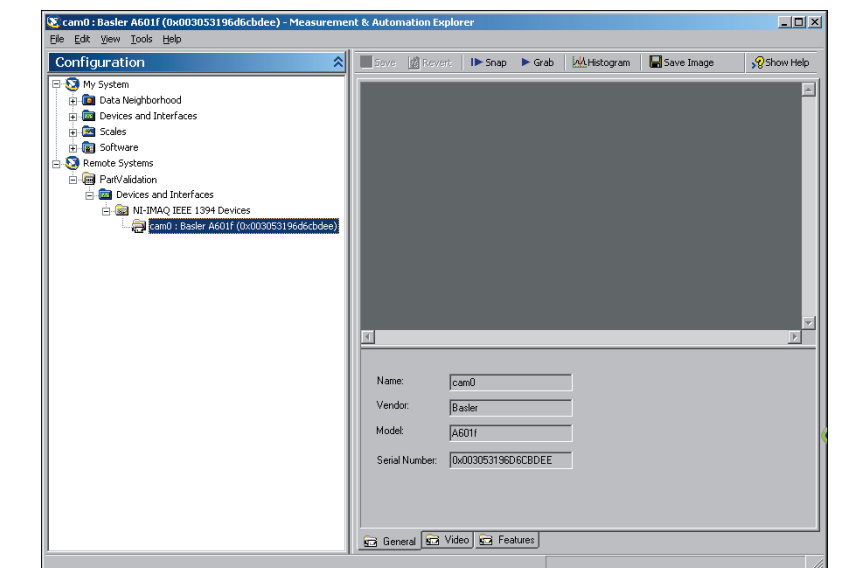
- Select the software to download. For initial installation, make sure all checkboxes are selected.
- Click **OK**.
- When prompted, click **Yes** to reboot the NI 1450. This process takes several seconds.



### 4 Acquire an Image

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

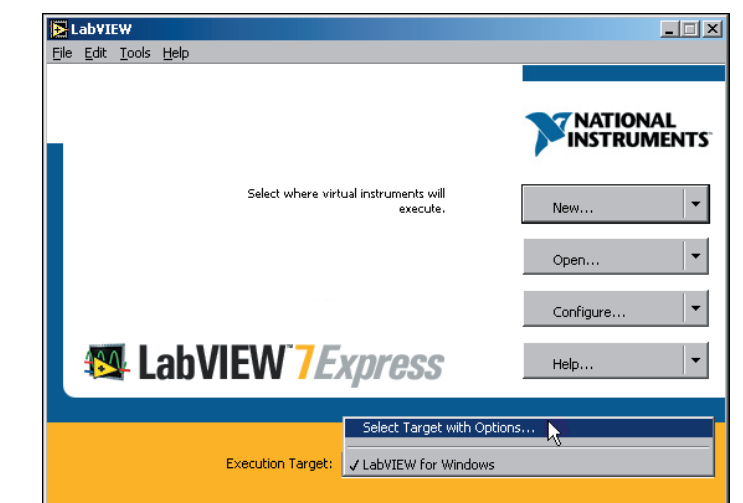
#### Acquire an Image in MAX



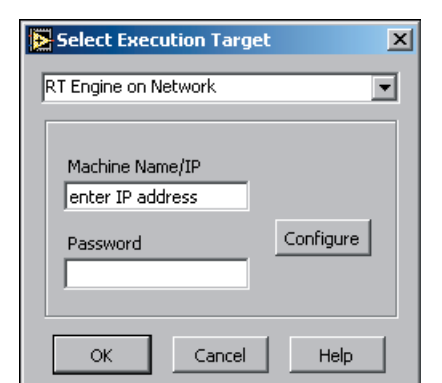
- In the MAX configuration tree, expand the device folder by clicking the plus sign next to the device name.
- Expand **Devices and Interfaces**.
- Expand **NI-IMAQ IEEE 1394 Devices** to display the camera(s) connected to the NI 1450.
- Select a camera.
- Click the **Snap** button to acquire a single image, or click the **Grab** button to acquire continuous images.

#### Acquire an Image in LabVIEW Real-Time

- Launch LabVIEW. Expand the **Execution Target** pull-down listbox and click **Select Target with Options**.



- Type the NI 1450 IP address in the **Machine Name/IP** field and click **OK**. The NI 1450 IP address now appears in the LabVIEW **Execution Target** pull-down listbox.
- Click the **Open** button and navigate to Program Files\National Instruments\LabVIEW 7.0\examples\IMAQ.



- Double-click **IMAQ1394 examples.llb** and select **Grab.vi**.
- Click the **Run** button to begin acquiring images.

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