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Getting Started with NI-MAX and Labview

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Applicable Products

- All FLIR machine vision cameras

Application Note Description

This application note provides information on how to install, configure, and use FLIR machine vision cameras with NI-MAX and LabVIEW.

National Instruments' Measurement and Automation explorer (NI-MAX) is a viewer that allows users to configure cameras and stream images. This 32-bit application is typically used to verify camera functionality.

National Instruments' LabVIEW is a graphical programming language used for data acquisition and instrument control in various platforms including Windows and Linux. For more information about programming in LabVIEW, see [Introduction to NI LabView](#).

Note: This document provides examples using NI-MAX v5.6. For more information, visit the [National Instruments website](#).

Preparing for Use

Before you use your camera, we recommend that you are aware of the following resources available from our [downloads page](#):

- **Getting Started Manual for the camera**—provides information on installing components and software needed to run the camera.
- **Technical Reference for the camera**—provides information on the camera's specifications, features and operations, as well as imaging and acquisition controls.
- **Firmware updates**—ensure you are using the most up-to-date firmware for the camera to take advantage of improvements and fixes.
- **Tech Insights**—[Subscribe](#) to our monthly email updates containing information on new knowledge base articles, new firmware and software releases, and Product Change Notices (PCN).

Installation and Configuration

The steps for installing and setting up depend which interface your camera uses.

FireWire Cameras	GigE Vision Cameras	USB3 Vision Cameras	USB2 Cameras
Step 1—Install NI-MAX and LabVIEW	Step 1—Install NI-MAX and LabVIEW	Step 1—Install NI-MAX and LabVIEW	Step 1—Install NI-MAX and LabVIEW and FlyCapture [®] 2
Step 2—Connect the Camera to the PC	Step 2—Connect the Camera to the PC	Step 2—Connect the Camera to the PC	Step 2—Connect the Camera to the PC
Step 3—Start NI-MAX and Detect the Camera	Step 3—Start NI-MAX and Detect the Camera	Step 3—Start NI-MAX and Detect the Camera	Step 3—Start NI-MAX and Detect the Camera
Step 4—Start Acquisition	Step 4—Start Acquisition	Step 4—Start Acquisition	Step 4—Start Acquisition

The following sections provide more detail.

Step 1—Install NI-MAX and LabVIEW

NI-MAX is packaged in the installation of LabVIEW. It is available for download from the [National Instruments website](#). Alternatively, standalone NI-MAX software can be purchased separately [here](#).

Follow the installation instructions.

USB2 Cameras only—Install FlyCapture[®] 2

For USB2 cameras, the Direct Show filter provided with the FlyCapture2 SDK is required.

To install the FlyCapture2 Direct Show filter:

1. Download the FlyCapture2 SDK from the [downloads page](#).
2. Follow the installation instructions. Ensure the Direct Show filter is selected during installation.
3. Right click on the file below and run as administrator:
C:\Program Files\Point Grey Research\FlyCapture2\src\DirectShowScriptFiles\DirectShowRegister.bat

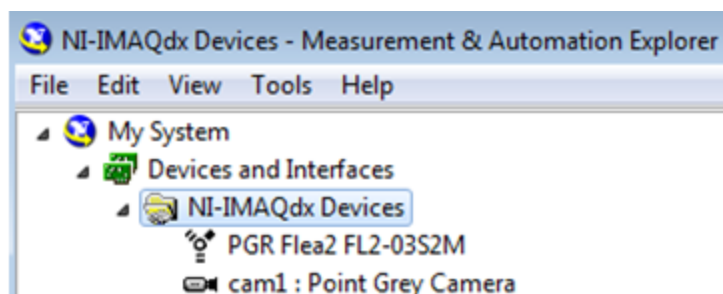
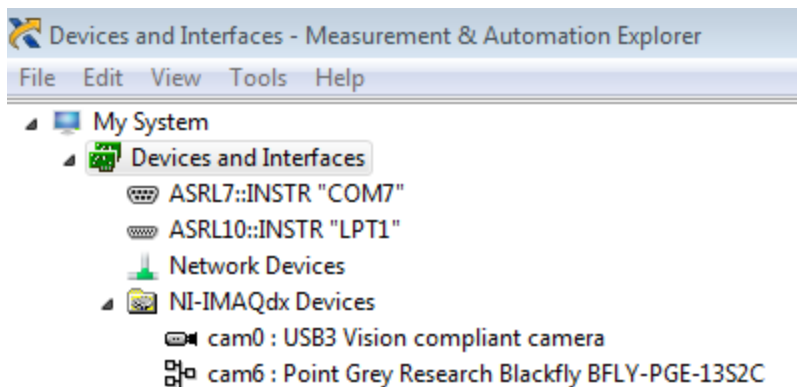
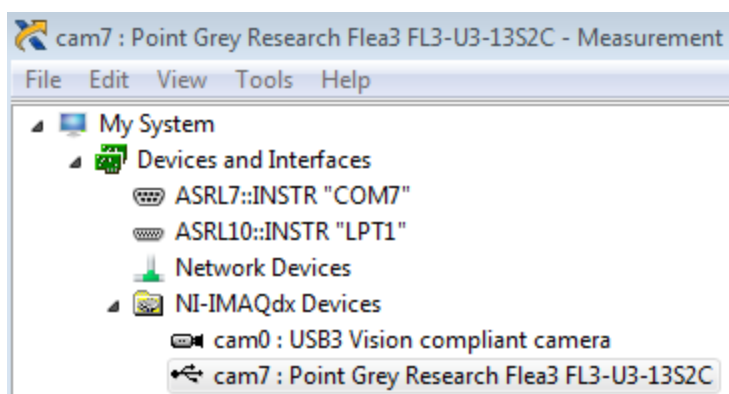
Step 2—Connect the Camera to the PC

Connect the camera to the PC. For information, see the camera's Getting Started Manual.

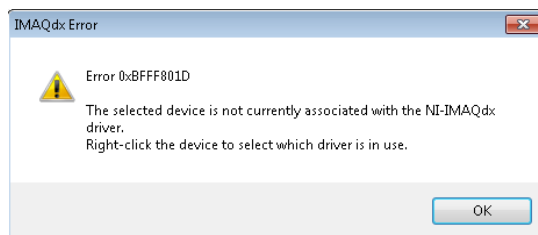
Step 3—Start NI-MAX and Detect the Camera

To start NI-MAX:

1. Launch NI-MAX.
Start Menu→All Programs→National Instruments→NI-MAX
2. Under NI-IMAQdx Devices, select the camera.

 FireWire

 GigE Vision

 USB3 Vision

 USB2


3. If your camera is using another manufacturer's driver, the following message appears when you select the camera:

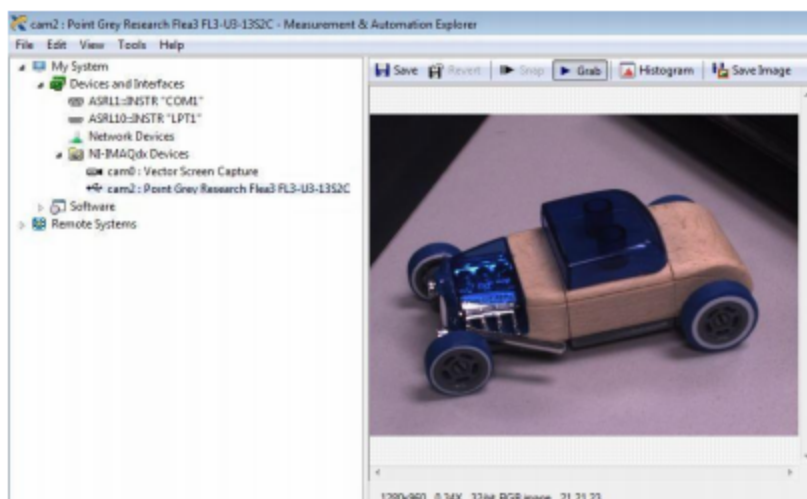
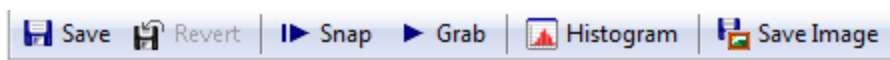


4. If so, right click the camera and select the driver prefixed by NI-IMAQdx.

Step 4—Start Acquisition

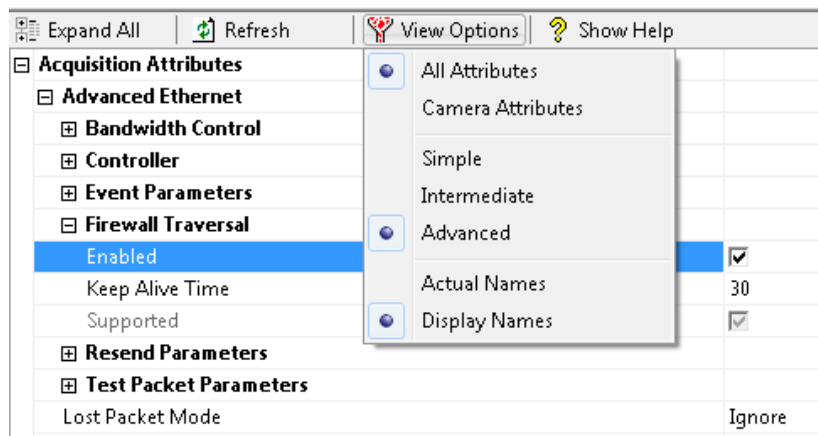
To start acquisition:

- Click the Grab button in NI-MAX.



For GigE Vision cameras, if you receive an error that the system did not receive a test packet from the camera you need to enable Firewall Traversal in NI-MAX.

1. Click View Options and select All Attributes.
2. Browse to Acquisition Attributes → Advanced Ethernet and ensure Firewall Traversal is enabled.



Note: For USB3 Vision users, more information is available from [Using USB3 Vision Cameras with National Instruments' Vision Acquisition Software](#).

Programming with LabVIEW

To program using LabVIEW, you can either use the built-in IMAQdx library or access the camera through the ActiveX interface.

Note: To use ActiveX with LabVIEW users must install the FlyCapture2 SDK available from the [Downloads](#) site. The installation process automatically registers the ActiveFlyCap_v100.dll via the regsvr32 command.

LabVIEW example source code is available from [Knowledge Base Article 10714](#).

Troubleshooting Tips

The following suggestions may help you troubleshoot issues with your camera:

1. Update the driver to the latest version.
2. Update the firmware to the latest version.
3. Update the software to the latest version.
4. Perform a soft reboot and if still necessary a hard reboot of the PC.
5. Disable then enable the driver.
6. Power cycle the camera.
7. Power the camera through GPIO, if wiring harness is available.
8. Use a separate host controller instead of an integrated one, if available.
9. Ensure the card is powered via the 4-pin hard drive connector, if applicable.
10. Use a different cable or host controller or PC.

Update Camera Driver (FireWire and USB3 only)

If the camera driver is not installed properly, the camera does not appear in the NI-IMAQdx Devices list.

To update your driver:

1. Connect the camera to the PC.
2. Open Device Manager in Windows and locate the camera.
3. Right click on the camera and select Update Driver Software.
4. Click Browse my computer for driver software.
5. Click Let me pick from a list of device drivers on my computer
6. Click Have Disk...
7. Browse to the driver location and click Open:
 - FireWire: C:\Program Files (x86)\National Instruments\NI-IMAQdx\Staging\NI-IMAQdx\niimaqdxk.inf
 - USB3: C:\Program Files (x86)\National Instruments\NI-IMAQdx\Staging\NI USB3 Vision\niu3vk.inf

Downloads and Support

FLIR endeavors to provide the highest level of technical support possible to our customers. Most support resources can be accessed through the [Support](#) section of our website.



The first step in accessing our technical support resources is to obtain a Customer Login Account. This requires a valid name and email address. To apply for a Customer Login Account go to our [Downloads](#) page.

Customers with a Customer Login Account can access the latest **software** and **firmware** for their cameras from our website. We encourage our customers to keep their software and firmware up-to-date by downloading and installing the latest versions.

Finding Information

FlyCapture SDK—The FlyCapture SDK provides API examples and the FlyCap camera evaluation application. Available from our [Downloads](#) page.

API Documentation—The installation of the FlyCapture SDK comes with API references for C++, C#, and C code. Available from Start Menu→All Programs→Point Grey FlyCapture2 SDK→Documentation

Product Documentation—The camera's *Getting Started Manual* provides information on installing components and software needed to run the camera. The *Technical Reference* provides information on the camera's specifications, features and operations, as well as imaging and acquisition controls. They are available from the [Downloads](#) page.

Knowledge Base—A database of articles and application notes with answers to common questions as well as articles and tutorials about hardware and software systems. Available from our [Knowledge Base](#).

Learning Center—Our [Learning Center](#) contains links to many resources including videos, case studies, popular topics, other application notes, and information on sensor technology.

Contacting Technical Support

Before contacting Technical Support, have you:

1. Read the product documentation?
2. Searched the Knowledge Base?
3. Downloaded and installed the latest version of software and/or firmware?

If you have done all the above and still can't find an answer to your question, contact our [Technical Support](#) team.