POINT GREY
Innovation in Imaging

Will your system support the camera?

Recommended System Configuration:

- **OS**—Vista SP1, Windows 7
- **CPU**—Intel Core 2 dual
- **RAM**—2 GB
- **Video**—PCI Express 128 MB
- **Ports**—GigE
- **Software**—Microsoft Visual Studio 2005 SP1 and SP1 Update for Vista (to compile and run example code using FlyCapture)

Do you have a downloads account?

The Point Grey downloads page has many resources to help you operate your camera effectively, including:

- Software (required for installation)
- Drivers (required for installation)
- Firmware updates and release notes
- Dimensional drawings and CAD models
- Documentation

To access the downloads resources you must have a downloads account.

1. Go to the Point Grey downloads page.
2. Under **Register (New Users)**, complete the form, then click **Submit**.

After you submit your registration, you will receive an email with instructions on how to activate your account.

Do you have all the parts you need?

To install your camera you will need the following components:

- Interface card
- Ethernet cable
- 8-pin GPIO connector
- C-mount Lens

Point Grey sells a number of the additional parts required for installation. To purchase, visit the Point Grey Webstore or the Products Accessories page.

For More Information

For more information about...	See...
Your camera's settings and capabilities	Technical Reference Manual
Using the GigE Configurator	the Online Help included with the tool
Using the FlyCap demo program	the Online Help included with the tool
Accessing customer downloads	Knowledge Base Article 35
Selecting a lens	Knowledge Base Article 345
Troublesome Hardware Configurations	Knowledge Base Article 21
Camera Not Recognized/Not Listed in Device Manager	Knowledge Base Article 91

The FlyCapture SDK help and other technical references can be found in the **Programs>Point Grey Research>PGR FlyCapture>Documentation** directory. Our online Knowledge Base also addresses many problems.

Camera Interface

Ethernet Connector

The 8-pin RJ-45 Ethernet jack is equipped with two (2) M2 screwholes for secure connection. Pin assignments conform to the Ethernet standard.

General Purpose I/O Connector

The camera has an 8-pin GPIO connector on the back of the case; refer to the diagram for wire color-coding.

Diagram	Pin	Function	Description
	1	IO0	Opto-isolated input (default Trigger in)
	2	IO1	Opto-isolated output
	3	IO2	Input/Output/serial transmit (TX)
	4	IO3	Input/Output/serial receive (RX)
	5	GND	Ground for bi-directional IO, V_{EXT}, +3.3 V pins
	6	GND	Ground for opto-isolated IO pins
	7	V_{EXT}	Allows the camera to be powered externally
	8	+3.3 V	Power external circuitry up to 150 mA
To configure the GPIO pins, consult the General Purpose Input/Output section of your camera's Technical Reference Manual.			

Status Indicator LED

LED Status	Description
Off	Not receiving power
Steady green, high intensity (~5 seconds)	1. Camera powers up
Green/Red, flashing (~2 seconds)	2. Camera programs the FPGA
Green flashing quickly, low intensity	3. Establishing IP connection. The camera attempts to establish an IP connection in the following order:
One green blink (~1-2 seconds) Two green blinks (~1-2 seconds) Three green blinks (~1-2 seconds) Three red blinks (~1-2 seconds)	i) A persistent IP address, if enabled and available; ii) a DHCP address, if enabled and available; iii) a link-local address (LLA). iv) Failure to establish connection
Steady green, high intensity	4. Camera is streaming images
Red/Green flashing quickly	Firmware update in progress
Red flashing slowly	General error - contact technical support

Camera Care

To clean the imaging surface of your camera, follow the steps outlined in Knowledge Base Article 66.

Extended exposure to bright sunlight, rain, dusty environments, etc. may cause problems with the electronics and optics of the system.

Avoid excessive shaking, dropping, or mishandling of the device.

Do not open the camera housing. Doing so voids the Hardware Warranty. Avoid electrostatic charging. For more details, consult Knowledge Base Article 42.

Contacting Point Grey Research

For all general questions please contact us at info@ptgrey.com.

For technical support (existing customers only) contact us at www.ptgrey.com/support/contact/.

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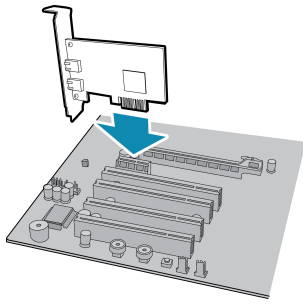Richmond, BC, Canada V6W 1K7

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Installing Your Interface Card and Software

1. Install your Interface Card

Ensure the card is installed per the manufacturer's instructions.

Alternatively, use your PC's built-in host controller, if equipped.

Open the Windows Device Manager. Ensure the card is properly installed under **Network Adaptors**. An exclamation point (!) next to the card indicates the driver has not yet been installed.

2. Install the FlyCapture® Software

For existing users who already have FlyCapture installed, we recommend ensuring you have the latest version for optimal performance of your camera. If you do not need to install FlyCapture, use the DriverControlGUI to install and enable drivers for your card.

a. Login to the Point Grey downloads page.

b. Select your **Camera** and **Operating System** from the drop-down lists and click the **Search** button.

c. Click on the **Software** search results to expand the list.

d. Under **FlyCapture v2x**, click the appropriate link to begin the download and installation.

After the download is complete, the FlyCapture setup wizard begins. If the wizard does not start automatically, double-click the .exe file to open it. Follow the steps in each setup dialog.

3. Enable the Drivers for the card

During the FlyCapture installation, you are prompted to select your interface driver.

In the **Interface Driver Selection** dialog, select the **I will use GigE cameras**.

This selection ensures the Point Grey Image Filter driver is installed and enabled. The Image Filter Driver operates as a network service between GigE Vision cameras and the Microsoft built-in UDP stack to filter out GigE Vision stream protocol (GVSP) packets. Use of the filter driver is recommended, as it can reduce CPU load and improve image streaming performance.

Alternatively, Point Grey GigE Vision cameras can communicate directly with the Microsoft UDP stack.

GigE Vision cameras operating on Linux systems communicate directly with native Ubuntu drivers.

To uninstall or reconfigure the driver at any time after setup is complete, use the DriverControlGUI .

4. Configure IP Settings

After installation is complete, the Point Grey GigE Configurator opens. This tool allows you to configure the IP settings of the camera and network card.

If the GigE Configurator does not open automatically, open the tool from **Start>Point Grey Research>FlyCapture2>Utilities>GigE Configurator** . If prompted to enable GigE enumeration, select **Yes**.

a. In the **left pane**, select the Local Area Connection corresponding to the network interface card (NIC) to which the camera is connected.

b. In the **right pane**, review maximum transmission unit (MTU). If not 9000, enable jumbo frames on the NIC by clicking **Open Network Connections**. (While most NICs support 9000-byte jumbo frames, this feature is often disabled by default.)

Installing Your Camera

1. Install the Tripod Mounting Bracket
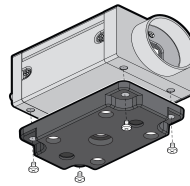
The ASA and ISO-compliant tripod mounting bracket attaches to the camera using the included screws.
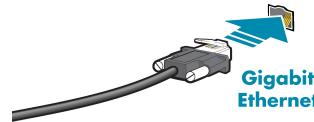
2. Attach a Lens

Unscrew the dust cap from the C-mount lens holder to install a lens.

3. Plug in the GPIO connector

GPIO can be used for power, trigger, pulse width modulation, serial input output, and strobe.

The wiring harness must be compatible with a Hirose HR25 8-pin female GPIO connector.

4. Connect the interface Card and Cable to the Camera

Plug the interface cable into the host controller card and the camera. The cable jack screws can be used for a secure connection.

5. Configure IP Settings

In the GigE Configurator:

a. In the **left pane**, select your GigE Vision camera. (Note: there may be a delay of several seconds before the camera is detected by the GigE Configurator on startup.)

- Under "Current IP Configuration," review the IP address. By default, a dynamic IP address is assigned to the camera according to the DHCP protocol. If DHCP addressing fails, a link-local address is assigned. If necessary, change the IP address of the camera to be on the same subnet as the NIC. If the subnets do not match, the camera is marked "BAD" on the left pane.

- Under "Packet Size Discover," click **Discover Maximum Packet Size** and note the value.

b. Close the GigE Configurator.

6. Confirm Successful Installation and Configure Packet Size

a. Run the FlyCap2 program: **Start-> Point Grey Research->FlyCapture2-> FlyCap2**

b. In the camera selection dialog, select the GigE camera that was installed and click **Configure Selected**.

c. In the Camera Control dialog, click **Custom Video Modes**. By default, **Packet Size** is set to 1400 bytes. We recommend increasing this value to the size noted in the GigE Configurator, as maximizing packet size reduces processing overhead.

The FlyCap2 program can be used to test the camera's image acquisition capabilities through the Ethernet connection.

Changes to your camera's installation configuration can be made using utilities available in the FlyCapture2 SDK.