

BLACKFLY[®] S CAMERAS

GigE Vision

Will your system support the camera?

- **OS, CPU, RAM**—dependent on SDK requirements
- **Ports**—GigE network adapter
- **Software**—Microsoft Visual Studio to run/compile example code

Do you have all the parts you need?

Teledyne FLIR IIS sells a number of the additional parts required for installation. Visit our [Accessories page](#).

To install your camera you need the following components:

- Interface card
- GPIO cable
- Lens (type of lens mount is model dependent)
- Tripod adapter (optional)
- Ethernet cable
- Powered Ethernet switch / Ethernet power injector (if using PoE)

Have you visited our website?

A downloads account is required to download software and firmware.

1. Go to the [Teledyne Vision Solutions website](#).
2. Enter your email address and click Continue.
3. Complete the Create an account form and click Continue.
4. You will receive an email with a link to activate your account.
5. Once activated, you can login using your credentials.

The [Blackfly S GigE camera resources](#) page has many links to help you operate your camera effectively, including:

- Knowledge Base articles
- Spinnaker[®] SDK software, including drivers and Firmware updates and release notes (login required)
- Documentation and dimensional drawings / CAD models

Contacting Teledyne FLIR IIS

For any questions, concerns or comments please contact us:

Email	General questions
Support Ticket	Technical support
Support Forum	Teledyne FLIR IIS Community
Website	Find specifications, articles, and downloads: Teledyne FLIR IIS

For More Information

Teledyne FLIR IIS endeavors to provide the highest level of technical support possible to you. Support resources can be accessed through:

[Blackfly S GigE Camera Resources and Support](#)

Your camera's settings and capabilities—Technical Reference or Camera Reference

[Spinnaker[®] SDK—API Reference / Programmer's Guide](#)

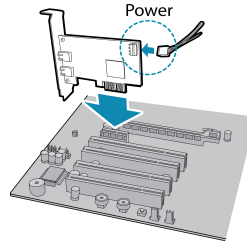
[Selecting a lens for your camera](#)

[Setting Up Multiple GigE Cameras](#)

[Using third-party applications from our software partners](#)

Installing your Interface Card and Software

1. Install your Interface Card



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

Connect the internal IDE or SATA power connector on the card to the computer power supply.

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

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

2. Install the Spinnaker[®] SDK Software

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

- Go to the [Spinnaker SDK Download](#) page. If you are not already logged in, you are prompted to login.
- Click the Download Now button.
- Select your operating system and version.
- After download is complete, open the file to start the Spinnaker setup wizard.
- Follow the steps in each setup dialog.

3. For GigE cameras—Optimize the settings of your Ethernet card

- In **Start→Teledyne Spinnaker SDK→SpinView**, right click on the Network Adapter and select Adapter Configuration. The Adapter Config Utility lists your network adapters and allows you to access the following:

- | | | |
|----------------------|--------------------|----------------------|
| ▪ Adapter IP address | ▪ Receive buffers | ▪ RSS |
| ▪ Subnet mask | ▪ Transmit buffers | ▪ Media optimization |
| ▪ Default gateway | ▪ Jumbo packets | ▪ CPU affinity |

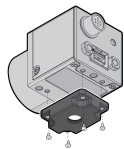
Note: See [How to Optimize GigE Network Adapter Settings](#) for more information on configuring for best performance.

Using the Spinnaker[®] SDK

You can monitor or control features of the camera through Spinnaker API examples provided in the Spinnaker SDK, or through the SpinView camera evaluation application. A *Programmer's Guide and API Reference* is included in the installation.

Installing Your Blackfly S GigE—Cased Models

1. Install the Tripod Mounting Bracket (optional)



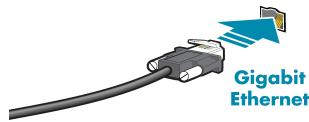
The ASA and ISO-compliant tripod mounting bracket attaches to the camera using the included screws.

2. Attach a Lens

Unscrew the dust cap from the lens holder to install a lens.

3. 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.

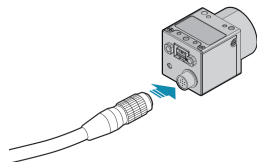


For optimal ESD protection, use a shielded Ethernet cable or connect the camera housing to chassis ground (earth).

If using PoE, connect a powered Ethernet switch or Ethernet power injector in between the card and the camera.

When the camera is first connected, the operating system automatically installs the camera driver. Camera drivers are available with the Spinnaker SDK installation.

4. Plug in the GPIO connector if required



GPIO can be used for power, trigger, and strobe.

5. Confirm Successful Installation

Run the SpinView application: **Start→Teledyne Spinnaker SDK→SpinView**
The SpinView application can be used to test the camera's image acquisition capabilities.

6. Configure IP Settings if necessary

For GigE cameras 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, in SpinView change the IP address of the camera to be on the same subnet as the NIC.

Changes to your camera's installation configuration can be made using the SpinView application.

Status Indicator LED

LED	GigE
No Light	No power or LED is in inactive state or LED is in error status state with no error
Blinking Green (1 blink)	Link-Local Address (LLA)
Blinking Green (2 blinks)	DHCP IP Address
Blinking Green (3 blinks)	Persistent IP Address
Solid Green	Acquisition Started
Solid Red	Link down
Rapid Flashing Green	Firmware update in progress
Flashing Green and Red	General Error

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.

The camera is equipped with a GigE TF38 connector that is used for data transmission, camera control, and power.

General Purpose I/O Connector

The camera is equipped with a 6-pin GPIO connector on the back of the case.

Diagram	Color ¹	Pin	Line	Function	Description
	Green	1 ²	3	V _{AUX}	Auxiliary Input Voltage (DC)
				GPI	Non-isolated Input
	Black	2	0	OPTOIN	Opto-isolated Input
				VOUT	Camera Power Output
	Red	3 ²	2	GPIO ³	Non-isolated Input/Output
	White	4	1	OPTOOUT ³	Opto-isolated Output
				Opto GND	Opto-isolated Ground
	Blue	5	N/A	GND	Camera Power Ground

1—GPIO cable assembly wire colors
2—Dual function pin
3—Open drain output, requires pullup resistor

Color	Pin	Line	Function	Description
Orange	1	0	GPIO0	Non-isolated Input/Output
Black	2	1	GPIO1	Non-isolated Input/Output
White	3	2	GPIO2	Non-isolated Input/Output
Green	4	N/A	VExt	Camera Input Power
Brown	5	N/A	GND	Camera Power Ground
Red	6	N/A	Vout	Camera Power Output

Camera Care

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.

Warning! Do not open the camera housing. Doing so voids the Hardware Warranty.

Avoid electrostatic charging.