GETTING STARTED

BLACKFLY®S
Board-level GigE Vision

Will your system support the camera?

Recommended System Configuration:

- **OS**—Windows or Linux (32- or 64-bit)
- **CPU**— Intel i5 or greater
- **RAM**—4 GB
- **Ports**—GigE network adapter
- **Software**—Microsoft Visual Studio 2010, Visual Studio 2013, or Visual Studio 2015 (to run and compile example code)

Do you have a downloads account?

A downloads account is required to download software and firmware.

1. Go to www.flir.com/account.
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 the credentials you've created.

The Blackfly S Board-level resources page has many resources to help you operate your camera effectively, including:

- Spinnaker® SDK software, including drivers (login required)
- Firmware updates and release notes (login required)
- Dimensional drawings and CAD models
- Documentation

Do you have all the parts you need?

To install your camera you need the following components:

- Ethernet cable
- Powered Ethernet switch or Ethernet power injector (if using PoE)
- TF38 to FPC RJ45 PoE panel mount adapter
- Heatsink (recommended)
- FPC cable
- GPIO cable
- Lens mount and lens
- Tripod adapter (optional)
- Interface card

Teledyne FLIR sells a number of the additional parts required for installation. To purchase, visit the Accessories page.

Camera Care

To clean the imaging surface of your camera, follow the steps outlined in Cleaning the imaging surface of your camera.
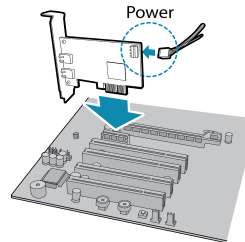
Extended exposure to bright sunlight, rain, dusty environments, etc. may cause problems with the electronics and optics of the system.

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

> **Warning!** Avoid electrostatic charging.

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® 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.

a. Go to the Spinnaker SDK page.
b. Click the Download button. You are prompted to login, if not already.
c. Select your operating system. Depending on your selection there may be other versions to select.
d. After download is complete, open the file to start the Spinnaker setup wizard.
e. Follow the steps in each setup dialog.

3. Enable jumbo frames on the Ethernet card

a. In **Start->All Programs-> Spinnaker SDK->SpinView**, right click on the Network Adapter and select Adapter Configuration, then select IP Configuration.
b. Click Open Network Connections.
c. Click Change Settings.
d. Click on the Advanced tab and from the Settings list select Jumbo Packet.
e. Set the Value to 9014 Bytes and click OK.

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.

TELEDYNE FLIR
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Installing Your Blackfly S Board-level
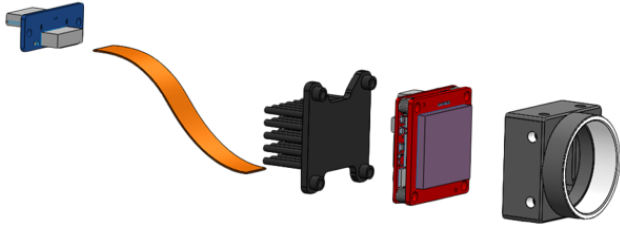
1. Prepare the lens mount.

The board-level models can use C-mounts, CS-mounts, or S-mounts.
For C- and CS-mounts, install the retainer, flip over and place IR filter in it then install the gasket.

2. Remove sticker and install lens mount.

The sensor is covered with a protective sticker. Remove the sticker. If any residue is present, clean the sensor surface with a non-abrasive cotton swab and isopropyl alcohol cleaning solution. Immediately install the image board over the prepared lens mount.

3. Install a heat sink.

A heatsink (ACC-01-7000) is recommended but depends on your design and usage.

4. Connect the FPC cable to the panel mount adapter then connect the adapter to the interface card.

A TF38 to FPC RJ45 PoE panel mount adapter allows a GigE cable connection to a PC.

5. Attach a Lens

6. Plug in the GPIO connector if required

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

7. Confirm Successful Installation

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

Run the SpinView application: **Start->All Programs->Spinnaker->SpinView** The SpinView application can be used to test the camera's image acquisition capabilities.

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
Rapid Flashing Green	Firmware update in progress
Flashing Green and Red	General Error

Camera Interface

Ethernet Connector

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.

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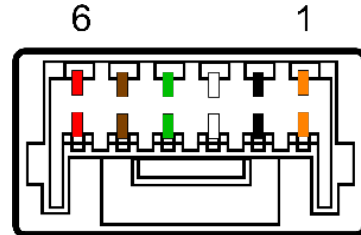
Color	Pin	Line	Function	Description
Orange	1	0	GPIO0	Non-isolated Input/Output
Black	2	1	GPIO1	Non-isolated Input/Output
White	3	2	GPIO2	Non-isolated Input/Output
Green	4	N/A	VExt	Camera Input Power
Brown	5	N/A	GND	Camera Power Ground
Red	6	N/A	Vout	Camera Power Output

For More Information

Teledyne FLIR endeavors to provide the highest level of technical support possible to you.

Support resources can be accessed through the Blackfly S Board-level resources page.

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

Contacting Teledyne FLIR

For general questions and sales inquiries contact us at mv-sales@flir.com.

For technical support contact our support team.

Visit our website at: www.flir.com/iis

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