

FORGE[®] 5GIGE CAMERAS

GigE Vision

Will your system support the camera?

- **OS, CPU, RAM**—dependent on SDK requirements
- **Ports**—GigE network adapter with 5G Full Duplex support
- **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:

- Ethernet cable
- Powered Ethernet switch or Ethernet power injector (if using PoE)
- Interface card
- GPIO cable
- Lens
- Tripod adapter (optional)

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 [Forge 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:

[Forge 5GigE 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](#)

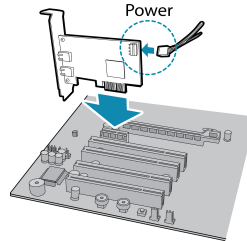
[Setting Up Multiple GigE Cameras](#)

[How to Optimize GigE Network Adapter Settings](#)

[Using the Spinnaker Multicore GigE Optimizer](#)

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.

Configure the network adapter to use 5G Full Duplex.

- a. Update the driver to the latest to access the 5G Full Duplex option.
- b. In Windows go to Control Panel\Network and Internet\Network Connections, right-click on your network adapter and select **Properties**.
- c. Click **Configure**.
- d. On the Advanced tab, from the Property box select **Speed & Duplex** and from the Value drop-down select **5Gbps Full Duplex**.
- e. Click **OK**.

On the Advanced tab, if not already enabled, set the Jumbo Packet to 9014 Bytes.

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. The Forge camera requires Spinnaker version 3.1 or later.

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

3. Optimize the settings of your Ethernet card

- a. 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 Forge 5GigE Camera

1. Attach a Lens



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

2. Connect the interface Card and Cable to the Camera



Plug the interface cable into the host adapter card and the camera. The cable jack screws can be used for a secure connection. If using PoE, connect a powered Ethernet switch or Ethernet power injector in between the card and the camera. For optimal ESD protection, use a shielded Ethernet cable or connect the camera housing to chassis ground (earth).

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

3. Plug in the GPIO connector



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

4. 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 and make changes to the camera's installation configuration.

5. Configure IP Settings if necessary

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 host adapter card.

Status Indicator LED

LED	5GigE
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.

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 _{EXT}	External Input Voltage (DC)
				GPI	Non-isolated Input
	Black	2	0	OPTOIN	Opto-isolated Input
	Red	3 ²	2	V _{AUX} OUT	Auxiliary Power Output
	White	4	1	OPTOOUT ³	Opto-isolated Output
	Blue	5	N/A	Opto GND	Opto-isolated Ground
	Brown	6	N/A	GND	Camera Power Ground

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

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.

 The outer case of the camera can become hot to the touch when running. This is expected behavior.