

GETTING STARTED

Flea3

USB 3.0 Digital Camera

I Pre-Installation

I. Recommended System Configuration

OS	CPU	RAM	VIDEO	PORTS
Windows 7 32- or 64-bit	Intel Core i3 3.1 GHz or equivalent	2 GB	NVIDIA GeForce 6 128 MB RAM	PCIe 2.0-compatible host controller with USB 3.0 connector

i Refer to [Knowledge Base Article 368](#) for important info on recommended and unsupported USB 3.0 system components.

- Windows 7 32- or 64-bit
- Intel Core i3 3.1 GHz or comparable processor
- 2 GB RAM
- PCIe 2.0-compatible host controller with USB 3.0 connector
- NVIDIA GeForce 6 video card with 128 MB RAM
- Microsoft Visual Studio 2005 SP1 and SP1 Update for Vista (to compile and run example code)

2. Electrostatic Precautions and Camera Care



- Do not open the camera housing. Doing so voids the Hardware Warranty.
- Avoid electrostatic charging. For more details, consult the following knowledge base article: www.ptgrey.com/support/kb/index.asp?a=4&q=42
- When handling the camera unit, avoid touching the lenses. To clean the lenses, use a standard camera lens cleaning kit or a clean dry cotton cloth. Do not apply excessive force.
- This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesirable operation. This Class A digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.



- To clean the imaging surface of your CCD, follow the steps outlined in www.ptgrey.com/support/kb/index.asp?a=4&q=66.
- Extended exposure to bright sunlight, rain, dusty environments, etc. may cause problems with the electronics and the optics of the system.
- Avoid excessive shaking, dropping or mishandling of the device.

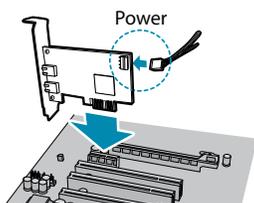
2 Installation

3. Install a PCIe 2.0-compatible USB 3.0 interface card

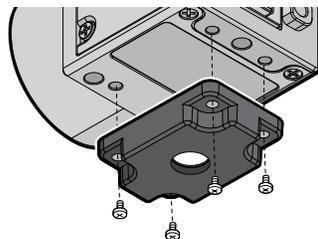
- Install a PCIe 2.0-compatible USB 3.0 host controller interface card according to manufacturer instructions.

i To purchase a 2-port PCIe USB 3.0 host controller please visit the [Point Grey Webstore](#)

- Alternatively use your PC's built-in USB 3.0 host controller, if equipped.



4. Installing the Tripod Mounting Bracket (optional)



- The ASA and ISO-compliant tripod mounting bracket for the Flea3 attaches to the camera using the included M2x5 screws.

5. Install a Lens

- Unscrew the dust cap from the CS-mount lens holder to install a lens.
Note: the camera is equipped with a removable 5mm C- to CS-mount adapter.

i To purchase lenses for the Flea3 USB 3.0 please visit the [Point Grey Webstore](#)

6. Register for a Customer Downloads Account and Install the FlyCapture® Software and Drivers

- Go to the Point Grey downloads page <http://www.ptgrey.com/support/downloads/index.asp>
 - **New customers:** Under Register (New Users), complete the form, then click **Submit**. After you submit your registration, you will receive an e-mail with further instructions on how to activate your account.
 - **Existing customers:** login under **Login with an Existing Account**. You will be taken to the product Downloads page. Scroll to the bottom and complete the form under **Add a new purchased product**.
- After activating your account, login to the Point Grey [downloads page](http://www.ptgrey.com/support/downloads/index.asp) (<http://www.ptgrey.com/support/downloads/index.asp>). After login, you will be taken to the downloads page for the products to which you have access. Expand **Software and Drivers for Imaging Products** for your operating system. Under FlyCapture v2x, click the 32- or 64-bit **Download** link to begin the download and installation.
- After the download is complete, the FlyCapture setup wizard begins. Follow the steps in each setup dialog. In the Interface Driver Selection dialog, select I will use USB cameras. This selection ensures the Point Grey pgrxhci (UsbPro) and pgrusbcam drivers are installed and enabled. By default, the pgrusbcam driver is configured on the camera to work in conjunction with the driver supplied by the manufacturer of the host controller. For optimal performance, after setup, we recommend configuring the pgrxhci (UsbPro) driver on the host controller, to operate directly with the camera.

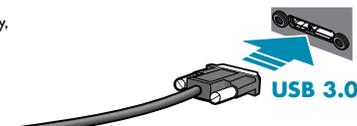
Note: The **UsbPro driver** may be incompatible with other (non-Point Grey) USB 3.0 devices operating on the same bus.

For information about the optimal setup for your system configuration, see [Knowledge Base Article 368](#).

7. Connect the host controller and USB 3.0 cable to the Camera

- Plug a USB 3.0 cable into the host controller card and the Flea3 USB 3.0 connector; the cable jack screws can be used for a secure connection.

To purchase a USB 3.0 cable from Point Grey, visit the [Point Grey Webstore](#).



8. Confirm Successful Installation

- Run the FlyCap Demo program
From the **Start** menu, select **Point Grey Research > FlyCapture2 > FlyCap2**

3 Troubleshooting

The camera manual, FlyCapture® User Guide and other technical references can be found in the **Programs > Point Grey Research > FlyCapture2 > doc** directory. Our on-line Knowledge Base (www.ptgrey.com/support/kb/) also addresses the following problems:

- Article 368: Recommended and unsupported USB 3.0 system components
- Article 370: How does my USB 3.0 camera appear in Device Manager?
- Article 371: My USB 3.0 camera does not achieve full frame rate
- Article 372: Diagnosing USB 3.0 camera and bus errors

CONTACTING POINT GREY

Email:

For all general questions about Point Grey Research, please contact us at info@ptgrey.com.
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STATUS LED SEQUENCE ON POWER-UP

Off	Not receiving power
Steady green	Camera receiving power (approx. 3 seconds)
Flashing yellow	Initializing FPGA (approx. 1 second)
Steady yellow	FPGA initialized (approx. 1 second)
Steady yellow-green	Sensor powered

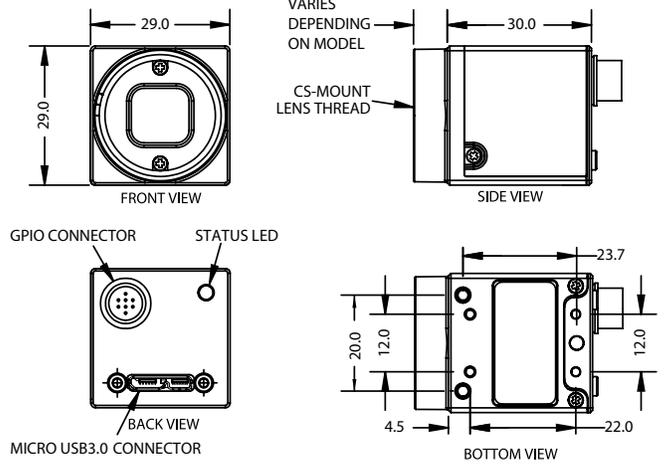
STATUS LED DURING CAMERA OPERATION

Steady bright green	Acquiring and transmitting images
Flashing bright, then brighter green	Camera registers being accessed (no image acquisition)
Steady red	Temporary camera problem
Slow flashing red	Serious camera problem

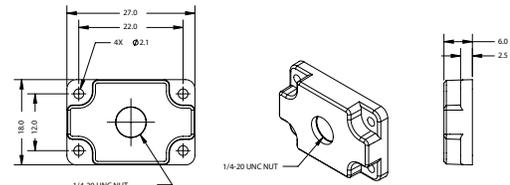
GPIO

Diagram	Pin	Function	Description
	1	IO0	Opto-isolated Input (default Trigger in)
	2	IO1	Opto-isolated Output
	3	IO2	Input / Output / RS232 Transmit (TX)
	4	IO3	Input / Output / RS232 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	+3.3V	Power external circuitry up to a total of 150mA
To configure the GPIO pins, consult section 3.4 "General Purpose Input / Output" of the Grasshopper Express Technical Reference Manual			

TECHNICAL DRAWINGS



TRIPOD ADAPTER



FL3-U3-32S2M/C	3.2 MP	Sony IMX036 CMOS, 1/2.8", 3.45 µm, Rolling Shutter	2080 x 1552 at 60 FPS
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Data Interface	USB 3.0 5 Gbit/s interface with screw locks for camera control, data, and power
A/D Converter	10 / 12-bit ADC (FL3-U3-13Y3 10-bit only)
Image Data Formats	Y8, Y16, Mono8, Mono12, Mono16 (all models) RGB, YUV411, YUV422, YUV444, Raw8, Raw12, Raw16 (color models)
Partial Image Modes	Pixel binning and region (area) of interest video modes
Synchronization	Via external trigger
Trigger Modes	External hardware or software trigger. Standard, bulb shutter, multi-shot.
Gain Control	Automatic / manual / one-push gain modes, programmable via software up to 24 dB
Shutter Speed	Automatic / manual / one-push extended shutter modes, programmable via software or synchronized to external trigger, 0.03ms to greater than 30 seconds
Gamma / LUT	0.50 to 4.00
Image Processing	Hue, saturation and sharpness
Memory	32 MByte frame buffer; 1 MByte data flash; 2 user configuration sets
Dimensions	29 x 29 x 30 mm (excluding lens holder)
Lens Mount	CS-mount
GPIO Connector	8-pin GPIO connector for power, trigger, strobe, PWM, and serial I/O. 1 opto-isolated input, 1 opto-isolated output, 2 bi-directional I/O pins
Power Requirements	Nominal 5 V, < 3 W at 5 V, via GPIO or USB 3.0 interface
Status Monitoring	Temperature, power and up-time status monitoring; bi-color status LED
Updates	In-field firmware updates via data interface
Camera Specification	IIDC Digital Camera Specification v1.32
Software	FlyCapture SDK supports all Point Grey FireWire, USB, and GigE cameras under Windows 32- and 64-bit operating systems
Compliance	CE, FCC, RoHS
Warranty	2 years
Special Features	Embedded image information (timestamp, frame counter, shutter, gain, ROI offset); image mirror (x-axis); HDR mode (cycle 4 gain and shutter presets); sharpness; test pattern; pixel defect correction