

# FLIR **BLACKFLY**<sup>®</sup> GIGE VISION



## UNBEATABLE VALUE + ULTRA-COMPACT + POE

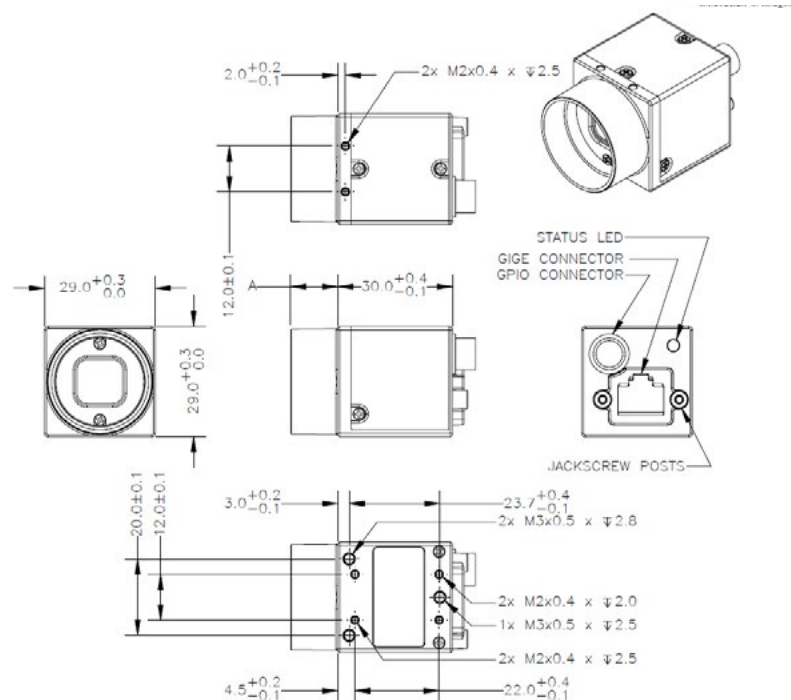
The Blackfly camera line combines Power over Ethernet, industry-leading affordability and a host of unique features for uncompromising value. Every Blackfly model comes packed with functionality designed to maximize performance and reliability, including a 16 MByte frame buffer; LED status indicators; and an on-camera image processing pipeline that provides color interpolation, gamma, and lookup table functionality. The Blackfly camera weighs just 36 grams, measures 29x29x30mm and uses 2 watts of power.

## KEY FEATURES

- Ultra-compact PoE camera, only 29 x 29 x 30mm
- On-camera image processing: color interpolation, gamma, and LUT
- 16 MByte frame buffer; LED status indicator



SENSOR	BARREL LENGTH - "A" (+0.10/-0.15)	
	C-MOUNT	CS-MOUNT
ICX204	12.30	-
ICX424	12.30	7.27
ICX267	12.30	-
ICX274	12.30	7.27
ICX692	-	7.27
ICX693	-	7.27
ICX445	12.30	7.27
ICX655	12.30	-
ICX414	-	-
ICX618	-	-
EV76C560	-	6.94
EV76C570	-	6.94
IMX104	-	6.72
IMX136	-	6.72
AR0134	-	6.45
MT9P	-	6.45
RJ32	12.30	-
RJ33	-	7.083



# Specifications

Model	Version	MP	Imaging Sensor
BFLY-PGE-03S2C-CS BFLY-PGE-03S2M-CS	Color Mono	0.3 MP	<ul style="list-style-type: none"> <li>Sony ICX424, 1/3", 7.4 μm</li> <li>Global shutter</li> <li>84 FPS at 648 x 488</li> </ul>
BFLY-PGE-03S3C-CS BFLY-PGE-03S3M-CS	Color Mono	0.3 MP	<ul style="list-style-type: none"> <li>Sony ICX414, 1/2", 9.9 μm</li> <li>Global shutter</li> <li>90 FPS at 648 x 648</li> </ul>
BFLY-PGE-05S2C-CS BFLY-PGE-05S2M-CS	Color Mono	0.5 MP	<ul style="list-style-type: none"> <li>Sony ICX693, 1/3", 6.0 μm</li> <li>Global shutter</li> <li>50 FPS at 808 x 608</li> </ul>
BFLY-PGE-09S2C-CS BFLY-PGE-09S2M-CS	Color Mono	0.9 MP	<ul style="list-style-type: none"> <li>Sony ICX692, 1/3", 4.08 μm</li> <li>Global shutter</li> <li>30 FPS at 1288 x 728</li> </ul>
BFLY-PGE-12A2C-CS BFLY-PGE-12A2M-CS	Color Mono	1.2 MP	<ul style="list-style-type: none"> <li>Aptina AR0134, 1/3", 3.75 μm</li> <li>Global shutter</li> <li>52 FPS at 1280 x 960</li> </ul>
BFLY-PGE-13E4C-CS BFLY-PGE-13E4M-CS	Color Mono	1.3 MP	<ul style="list-style-type: none"> <li>e2v EV76C560, 1/1.8", 5.3 μm</li> <li>Global shutter</li> <li>60 FPS at 1280 x 1024</li> </ul>
BFLY-PGE-13H2C-CS BFLY-PGE-13H2M-CS	Color Mono	1.3 MP	<ul style="list-style-type: none"> <li>Sharp RJ3313CA3DE/Sharp RJ3314CA3DE, 1/3", 3.75 μm</li> <li>Global shutter</li> <li>30 FPS at 1288 x 964</li> </ul>
BFLY-PGE-13S2C-CS BFLY-PGE-13S2M-CS	Color Mono	1.3 MP	<ul style="list-style-type: none"> <li>Sony ICX445, 1/3", 3.75 μm</li> <li>Global shutter</li> <li>30 FPS at 1288 x 964</li> </ul>
BFLY-PGE-14S2C-CS	Color	1.3 MP	<ul style="list-style-type: none"> <li>Sony IMX104, 1/3", 3.75 μm</li> <li>Rolling shutter</li> <li>60 FPS at 1296 x 1032</li> </ul>
BFLY-PGE-20E4C-CS BFLY-PGE-20E4M-CS	Color Mono	2.0 MP	<ul style="list-style-type: none"> <li>e2v EV76C570, 1/1.8", 4.5 μm</li> <li>Global shutter</li> <li>50 FPS at 1600 x 1200</li> </ul>
BFLY-PGE-23S2C-CS	Color	2.3 MP	<ul style="list-style-type: none"> <li>Sony IMX136, 1/2.8", 2.8 μm</li> <li>Rolling shutter</li> <li>27 FPS at 1920 x 1200</li> </ul>
BFLY-PGE-23S6C-C BFLY-PGE-23S6M-C	Color Mono	2.3 MP	<ul style="list-style-type: none"> <li>Sony IMX249, 1/1.2", 5.86 μm</li> <li>Global shutter</li> <li>41 FPS at 1920 x 1200</li> </ul>
BFLY-PGE-31S4C-C BFLY-PGE-31S4M-C	Color Mono	3.2 MP	<ul style="list-style-type: none"> <li>Sony IMX265, 1/1.8", 3.45 μm</li> <li>Global shutter</li> <li>35 FPS at 2048 x 1536</li> </ul>
BFLY-PGE-50A2C-CS BFLY-PGE-50A2M-CS	Color Mono	5.0 MP	<ul style="list-style-type: none"> <li>Aptina MT9P006/Aptina MT9P031, 1/2.5", 2.2 μm</li> <li>Rolling Shutter with Global Reset</li> <li>13 FPS at 2592 x 1944</li> </ul>
BFLY-PGE-50H5C-C BFLY-PGE-50H5M-C	Color Mono	5.0 MP	<ul style="list-style-type: none"> <li>Sharp RJ32S3AA0DT/Sharp RJ32S4AA0DT, 2/3", 3.45 μm</li> <li>Global shutter</li> <li>7.5 FPS at 2448 x 2048</li> </ul>
BFLY-PGE-50S5C-C BFLY-PGE-50S5M-C	Color Mono	5.0 MP	<ul style="list-style-type: none"> <li>Sony IMX264, 2/3", 3.45 μm</li> <li>Global shutter</li> <li>22 FPS at 2448 x 2048</li> </ul>

## FLIR Integrated Imaging Solutions

### CANADA

12051 Riverside Way  
Richmond, BC, Canada  
V6W 1K7  
T: +1 866.765.0827 (toll free)  
T: +1 604.242.9937  
F: +1 604.242.9938  
E: mv-sales@flir.com  
www.flir.com/iis

### USA

T: +1 866.765.0827 (toll free)  
E: mv-na-sales@ptgrey.com

### EUROPE

T: +49 7141 488817-0  
F: +49 7141 488817-99  
E: mv-eusales@flir.com

### CHINA

T: +86 10 8215 9938  
F: +86 10 8215 9936  
E: mv-chinasales@flir.com

### ASIA

E: mv-asiasales@ptgrey.com

For a full list of international distributors and offices visit [www.flir.com/contact-us](http://www.flir.com/contact-us)

Imaging Performance (EMVA 1288)	See the <a href="#">Imaging Performance Specification</a> , which includes quantum efficiency, saturation capacity (full well depth), read noise, dynamic range and signal to noise ratio.
A/D Converter	10-bit BFLY-PGE-13E4/BFLY-PGE-20E4; 10- and 12-bit BFLY-PGE-23S6; 12-bit all others
Video Data Output	8, 12, 16 and 24-bit digital data
Image Data Formats	Mono8, Mono12, Mono16, Raw8, Raw12, Raw16 (all models); RGB, YUV411, YUV422, YUV 444 (color models)
Partial Image Modes	Pixel binning, decimation, and region of interest (ROI) modes
Image Processing	Gamma, lookup table, hue, saturation, and sharpness
Shutter	Global shutter; Rolling shutter (BFLY-PGE-14S2/BFLY-PGE-23S2/BFLY-PGE-50A2); Automatic/manual/one-push See product webpage for specific model's range
Gain	Automatic/manual/one-push See product webpage for specific model's range
Gamma	0.50 to 3.99, programmable lookup table
White Balance	Automatic/manual/one-push
High Dynamic Range	Not supported
Color Processing	On-camera in YUV or RGB format, or on-PC in Raw format
Digital Interface	Gigabit Ethernet interface with screw locks for camera control and data; Power over Ethernet
Transfer Rates	10/100/1000 Mbit/s
GPIO	6-pin Hirose HR10A-7R-6PB GPIO connector for trigger, strobe, and power
External Trigger Modes	Standard, bulb (BFLY-PGE-03S2/BFLY-PGE-03S3/BFLY-PGE-13H2/BFLY-PGE-13S2/BFLY-PGE-14S2/BFLY-PGE-23S2/BFLY-PGE-23S6/BFLY-PGE-31S4/BFLY-PGE-50A2/BFLY-PGE-50S5), low smear (BFLY-PGE-03S2/BFLY-PGE-03S3/BFLY-PGE-05S2/BFLY-PGE-09S2/BFLY-PGE-13H2/BFLY-PGE-13S2/BFLY-PGE-50H5), overlapped (BFLY-PGE-03S2/BFLY-PGE-03S3/BFLY-PGE-05S2/BFLY-PGE-09S2/BFLY-PGE-13H2/BFLY-PGE-13S2/BFLY-PGE-23S6/BFLY-PGE-31S4/BFLY-PGE-50S5), multi shot
Image Buffer	16 MB frame buffer
Memory Channels	2 user configuration sets for custom camera settings
Flash Memory	512 KB non-volatile memory
Dimensions	29 mm x 29 mm x 30 mm excluding lens holder, without optics (metal case)
Mass	36 grams (without optics)
Power Consumption	Power over Ethernet (PoE); or 12 V nominal (5 - 16 V) via GPIO interface, maximum 2.5 W (2 W BFLY-PGE-13E4)
Machine Vision Standard	GigE Vision v1.2
Camera Control	Via FlyCapture SDK or GigE Vision third party software
Camera Updates	In-field firmware updates
Lens Mount	C-mount (C-mount BFLY-PGE-23S6/BFLY-PGE-31S4/BFLY-PGE-50H5/BFLY-PGE-50S5) (5 mm C-mount adapter not included)
Temperature	Operating: 0° to 45°C; Storage: -30° to 60°C
Humidity	Operating: 20 to 80% (no condensation); Storage: 20 to 95% (no condensation)
Compliance	CE, FCC, RoHS
Operating System	Windows, Linux (32- and 64-bit)
Warranty	3 years

©2017 FLIR® Integrated Imaging Solutions Inc. All rights reserved.

Names and marks appearing on the products herein are either registered trademarks or trademarks of FLIR® Systems, Inc. and/or its subsidiaries.