

FLIR **BLACKFLY**[®] GIGE VISION



UNBEATABLE VALUE + ULTRA-COMPACT + POE

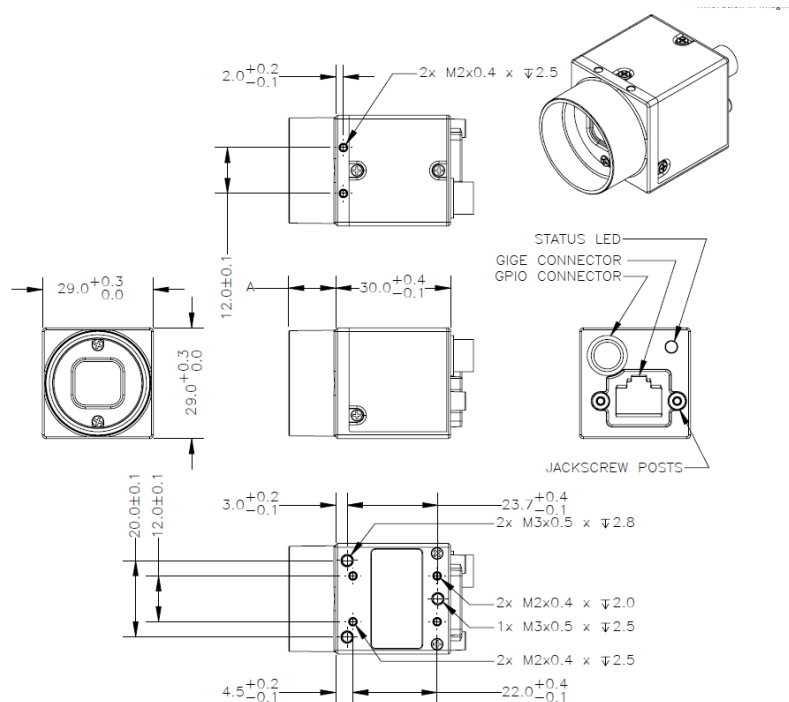
The Blackfly camera line combines Power over Ethernet, industry-leading affordability and a host of unique features for uncompromising value. Every Blackfly model comes packed with functionality designed to maximize performance and reliability, including a 16 MByte frame buffer; LED status indicators; 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	■ Sony ICX424, 1/3", 7.4 µm ■ Global shutter ■ 84 FPS at 648 x 488
BFLY-PGE-03S3C-CS BFLY-PGE-03S3M-CS	Color Mono	0.3 MP	■ Sony ICX414, 1/2", 9.9 µm ■ Global shutter ■ 90 FPS at 648 x 648
BFLY-PGE-05S2C-CS BFLY-PGE-05S2M-CS	Color Mono	0.5 MP	■ Sony ICX693, 1/3", 6.0 µm ■ Global shutter ■ 50 FPS at 808 x 608
BFLY-PGE-09S2C-CS BFLY-PGE-09S2M-CS	Color Mono	0.9 MP	■ Sony ICX692, 1/3", 4.08 µm ■ Global shutter ■ 30 FPS at 1288 x 728
BFLY-PGE-12A2C-CS BFLY-PGE-12A2M-CS	Color Mono	1.2 MP	■ Aptina AR0134, 1/3", 3.75 µm ■ Global shutter ■ 52 FPS at 1280 x 960
BFLY-PGE-13E4C-CS BFLY-PGE-13E4M-CS	Color Mono	1.3 MP	■ e2v EV76C560, 1/1.8", 5.3 µm ■ Global shutter ■ 60 FPS at 1280 x 1024
BFLY-PGE-13H2C-CS BFLY-PGE-13H2M-CS	Color Mono	1.3 MP	■ Sharp RJ33J3CA3DE/Sharp RJ33J4CA3DE, 1/3", 3.75 µm ■ Global shutter ■ 30 FPS at 1288 x 964
BFLY-PGE-13S2C-CS BFLY-PGE-13S2M-CS	Color Mono	1.3 MP	■ Sony ICX445, 1/3", 3.75 µm ■ Global shutter ■ 30 FPS at 1288 x 964
BFLY-PGE-14S2C-CS	Color	1.3 MP	■ Sony IMX104, 1/3", 3.75 µm ■ Rolling shutter ■ 60 FPS at 1296 x 1032
BFLY-PGE-20E4C-CS BFLY-PGE-20E4M-CS	Color Mono	2.0 MP	■ e2v EV76C570, 1/1.8", 4.5 µm ■ Global shutter ■ 50 FPS at 1600 x 1200
BFLY-PGE-23S2C-CS	Color	2.3 MP	■ Sony IMX136, 1/2.8", 2.8 µm ■ Rolling shutter ■ 27 FPS at 1920 x 1200
BFLY-PGE-23S6C-C BFLY-PGE-23S6M-C	Color Mono	2.3 MP	■ Sony IMX249, 1/1.2", 5.86 µm ■ Global shutter ■ 41 FPS at 1920 x 1200
BFLY-PGE-31S4C-C BFLY-PGE-31S4M-C	Color Mono	3.2 MP	■ Sony IMX265, 1/1.8", 3.45 µm ■ Global shutter ■ 35 FPS at 2048 x 1536
BFLY-PGE-50A2C-CS BFLY-PGE-50A2M-CS	Color Mono	5.0 MP	■ Aptina MT9P006/Aptina MT9P031, 1/2.5", 2.2 µm ■ Rolling Shutter with Global Reset ■ 13 FPS at 2592 x 1944
BFLY-PGE-50H5C-C BFLY-PGE-50H5M-C	Color Mono	5.0 MP	■ Sharp RJ32S3AA0DT/Sharp RJ32S4AA0DT, 2/3", 3.45 µm ■ Global shutter ■ 7.5 FPS at 2448 x 2048
BFLY-PGE-50S5C-C BFLY-PGE-50S5M-C	Color Mono	5.0 MP	■ Sony IMX264, 2/3", 3.45 µm ■ Global shutter ■ 22 FPS at 2448 x 2048

Imaging Performance (EMVA 1288)	See the Imaging Performance Specification , 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	CS-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

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