INDUSTRIAL/MACHINE VISION APPLICATIONS
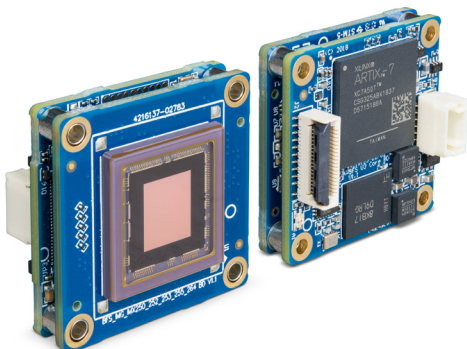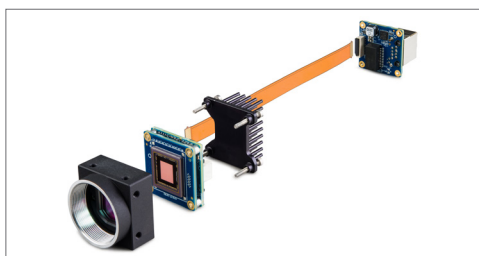
FLIR BLACKFLY® S BOARD-LEVEL

P/N: BFS-U3-31S4-BD2
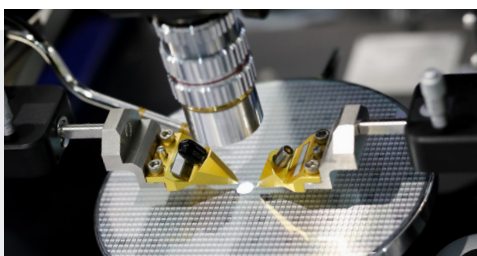
SMALL PACKAGE, POWERFUL RESULTS

The FLIR Blackfly S Board Level variants are high performance, machine vision, area scan cameras designed for embedding into tight spaces. Unlike many board level cameras, it boasts a rich feature set applied to the latest CMOS sensors; the same feature set as the cased version. It is ready for integration with proven compatibility with popular SBCs and SOMs.
The Blackfly S board level models enable OEMs to develop smaller, lighter, and lower cost solutions with embedded system connectivity and rich features.

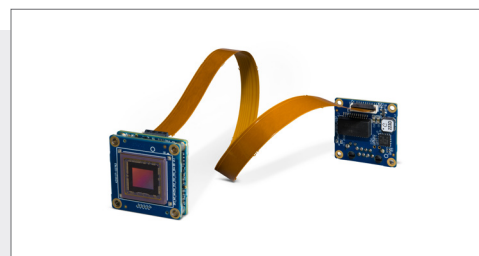www.flir.com/products/blackfly-s-board-level

DESIGNED FOR INTEGRATION IN SMALL SPACES

These models are ideal for mobile, handheld and desktop device integration with their 29 x 29 x 12 mm board level footprint, USB3 or GigE across FPC connection with latching connector , and low profile JST GPIO connector, and no fixed lens mount.

HIGH PERFORMANCE IMAGING

It is rare for board level cameras to integrate the most advanced CMOS sensors and come with a full feature set. The Blackfly S board level variants integrate the latest Pregius global shutter CMOS image sensors for distortion free, high dynamic range image capture. They have the same rich feature set as the cased variants allowing both automatic and precise manual control over image capture and on-camera pre-processing.

EMBEDDED ECO-SYSTEM SUPPORT

Ideal of embedded systems, the entire Blackfly S camera family provides proven compatibility with popular SBCs and Operating Systems including desktop Windows and Linux on ARM, x64 and x86.

SPECS	BFS-U3-31S4M-BD2	BFS-U3-31S4C-BD2
Resolution	2048 x 1536	
Frame Rate*	55 FPS	
Megapixels	3.2 MP	
Chroma	Mono	Color
Sensor	Sony IMX265, CMOS, 1/1.8"	
Readout Method	Global shutter	
Pixel Size	3.45 µm	
Lens Mount	Sold separately	
ADC	12-bit	
Minimum Frame Rate**	1 FPS	
Gain Range**	0 to 47 dB	
Exposure Range**	25 µs to 30 s	
Acquisition Modes	Continuous, Single Frame, Multi Frame	
Partial Image Modes	Pixel binning, decimation, ROI	
Image Processing	Gamma, lookup table, and sharpness	Color correction matrix, gamma, lookup table, saturation, and sharpness
Sequencer	Up to 8 sets using 6 features	
Image Buffer	240 MB	
User Sets	2 user configuration sets for custom camera settings	
Flash Memory	6 MB non-volatile memory	
Non-isolated I/O	4 bi-directional	
Auxiliary Output	3.3 V, 120 mA maximum	
Serial Port	Supported	
Interface	USB 3.1 Gen 1	
Interface Connector	Hirose TF38 FPC connector	
Power Requirements	5 V via USB3 interface	
Power Consumption	3 W maximum	
Dimensions/Mass	29 mm x 29 mm x 10 mm / 10 g	
Machine Vision Standard	USB3 Vision v1.0	
Compliance	CE, FCC, RoHS, REACH / ECCN is EAR099	
Temperature	Operating: 0°C to 50°C Storage: -30°C to 60°C	
Humidity	Operating: 20% to 80% (no condensation) Storage: 30% to 95% (no condensation)	
Warranty	3 years	

*Frame rates are measured with Device Link Throughput Limit of 380 MBps and Acquisition Frame Rate disabled. Values are rounded down to whole numbers.

**Values are the same in binning and no binning modes.

VN: 20-0305-OEM-BFS-U3-31S4-BD2-v1

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FLIR BLACKFLY® S BOARD-LEVEL

P/N: BFS-U3-32S4-BD2

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www.flir.com/products/blackfly-s-board-level

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US3 VISION   **GEN<i>CAM**

HIGH PERFORMANCE IMAGING

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EMBEDDED ECO-SYSTEM SUPPORT

Ideal of embedded systems, the entire Blackfly S camera family provides proven compatibility with popular SBCs and Operating Systems including desktop Windows and Linux on ARM, x64 and x86.

SPECS	BFS-U3-32S4M-BD2	BFS-U3-32S4C-BD2
Resolution	2048 x 1536	
Frame Rate*	118 FPS	
Megapixels	3.2 MP	
Chroma	Mono	Color
Sensor	Sony IMX252, CMOS, 1/1.8"	
Readout Method	Global shutter	
Pixel Size	3.45 µm	
Lens Mount	Sold separately	
ADC	10-bit and 12-bit	
Minimum Frame Rate**	1 FPS	
Gain Range**	0 to 47 dB	
Exposure Range**	19 µs to 30 s	
Acquisition Modes	Continuous, Single Frame, Multi Frame	
Partial Image Modes	Pixel binning, decimation, ROI	
Image Processing	Gamma, lookup table, and sharpness	Color correction matrix, gamma, lookup table, saturation, and sharpness
Sequencer	Up to 8 sets using 6 features	
Image Buffer	240 MB	
User Sets	2 user configuration sets for custom camera settings	
Flash Memory	6 MB non-volatile memory	
Non-isolated I/O	4 bi-directional	
Auxiliary Output	3.3 V, 120 mA maximum	
Serial Port	Supported	
Interface	USB 3.1 Gen 1	
Interface Connector	Hirose TF38 FPC connector	
Power Requirements	5 V via USB3 interface	
Power Consumption	3 W maximum	
Dimensions/Mass	29 mm x 29 mm x 10 mm / 10 g	
Machine Vision Standard	USB3 Vision v1.0	
Compliance	CE, FCC, RoHS, REACH / ECCN is EAR099	
Temperature	Operating: 0°C to 50°C Storage: -30°C to 60°C	
Humidity	Operating: 20% to 80% (no condensation) Storage: 30% to 95% (no condensation)	
Warranty	3 years	

*Frame rates are measured with Device Link Throughput Limit of 380 MBps and Acquisition Frame Rate disabled. Values are rounded down to whole numbers.

**Values are the same in binning and no binning modes.
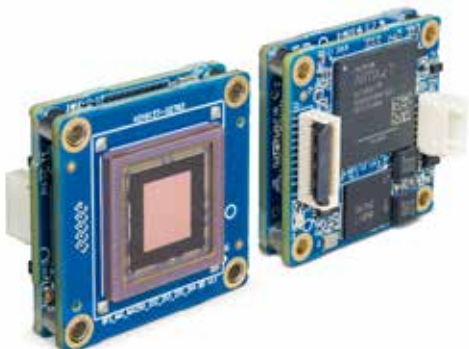
VN: 19-2721-OEM-BFS-U3-32S4-BD2-v1

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INDUSTRIAL/MACHINE VISION APPLICATIONS

FLIR BLACKFLY® S BOARD-LEVEL

P/N BFS-U3-50S5-BD2

SMALL PACKAGE, POWERFUL RESULTS

The Blackfly S is a compact, high performance machine vision camera that allows designers to easily produce the exact images they need. With both automatic and precise manual control over image capture and on-camera pre-processing, the Blackfly S accelerates application development.

www.flir.com/mv

FEATURES

Leverage the latest CMOS sensors and new on-camera image processing features. Harness increased binning flexibility, powerful auto-exposure controls and robust color transformation tools.

Improve cycle time using advanced camera controls and programmable logic Utilize sequencer, chunk data, event notification, counters, timers and logic blocks.

Accelerate your time to market using our GenICam3 API, GUI API library, detailed API logging and comprehensive documentation.

APPLICATIONS

- BIOMEDICAL APPLICATIONS SUCH AS MICROARRAY READING A FLUORESCENCE MICROSCOPY

- FLAT-PANEL DISPLAY INSPECTION AND ALIGNMENT

- UAS AERIAL IMAGING

- HIGH-RESOLUTION AUTOMATED OPTICAL INSPECTION

*US*3
VISION

GEN‹i›CAM

SPECIFICATIONS

SPECS	BFS-U3-50S5M-BD2	BFS-U3-50S5C-BD2
Resolution	2448 x 2048	
Frame Rate*	35 FPS	
Megapixels	5.0 MP	
Chroma	Mono	Color
Sensor	Sony IMX264, CMOS, 2/3"	
Readout Method	Global shutter	
Pixel Size	3.45 µm	
Lens Mount	Sold separately	
ADC	12-bit	
Minimum Frame Rate**	1 FPS	
Gain Range**	0 to 47 dB	
Exposure Range**	13 µs to 30 s	
Acquisition Modes	Continuous, Single Frame, Multi Frame	
Partial Image Modes	Pixel binning, decimation, ROI	
Image Processing	Gamma, lookup table, and sharpness	Color correction matrix, gamma, lookup table, saturation, and sharpness
Sequencer	Up to 8 sets using 6 features	
Image Buffer	240 MB	
User Sets	2 user configuration sets for custom camera settings	
Flash Memory	1 MB non-volatile memory	
Non-isolated I/O	4 bi-directional	
Auxiliary Output	3.3 V, 120 mA maximum	
Serial Port	Supported	
Interface	USB 3.1 Gen 1	
Interface Connector	Hirose TF38 FPC connector	
Power Requirements	5 V via USB3 interface	
Power Consumption	3 W maximum	
Dimensions/Mass	29 mm x 29 mm x 10 mm / 10 g	
Machine Vision Standard	USB3 Vision v1.0	
Compliance	CE, FCC, RoHS, REACH / ECCN is EAR099	
Temperature	Operating: 0°C to 50°C / Storage: -30°C to 60°C	
Humidity	Operating: 20% to 80% (no condensation) / Storage: 30% to 95% (no condensation)	
Warranty	3 years	

*Frame rates are measured with Device Link Throughput Limit of 380 MBps and Acquisition Frame Rate disabled. Values are rounded down to whole numbers.

**Values are the same in binning and no binning modes.

FIND THE BEST BLACKFLY S FOR YOUR NEEDS

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FLIR BLACKFLY® S BOARD-LEVEL

P/N BFS-U3-51S5-BD2

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- FLAT-PANEL DISPLAY INSPECTION AND ALIGNMENT
- UAS AERIAL IMAGING
- HIGH-RESOLUTION AUTOMATED OPTICAL INSPECTION

US3 VISION   GEN⟨i⟩CAM

SPECIFICATIONS

SPECS	BFS-U3-51S5M-BD2	BFS-U3-51S5C-BD2
Resolution	2448 x 2048	
Frame Rate*	75 FPS	
Megapixels	5.0 MP	
Chroma	Mono	Color
Sensor	Sony IMX250, CMOS, 2/3"	
Readout Method	Global shutter	
Pixel Size	3.45 μm	
Lens Mount	Sold separately	
ADC	10-bit / 12-bit	
Minimum Frame Rate**	1 FPS	
Gain Range**	0 to 47 dB	
Exposure Range**	6 μs to 30 s	
Acquisition Modes	Continuous, Single Frame, Multi Frame	
Partial Image Modes	Pixel binning, decimation, ROI	
Image Processing	Gamma, lookup table, and sharpness	Color correction matrix, gamma, lookup table, saturation, and sharpness
Sequencer	Up to 8 sets using 6 features	
Image Buffer	240 MB	
User Sets	2 user configuration sets for custom camera settings	
Flash Memory	1 MB non-volatile memory	
Non-isolated I/O	4 bi-directional	
Auxiliary Output	3.3 V, 120 mA maximum	
Serial Port	Supported	
Interface	USB 3.1 Gen 1	
Interface Connector	Hirose TF38 FPC connector	
Power Requirements	5 V via USB3 interface	
Power Consumption	3 W maximum	
Dimensions/Mass	29 mm x 29 mm x 10 mm / 10 g	
Machine Vision Standard	USB3 Vision v1.0	
Compliance	CE, FCC, RoHS, REACH / ECCN is EAR099	
Temperature	Operating: 0°C to 50°C / Storage: -30°C to 60°C	
Humidity	Operating: 20% to 80% (no condensation) / Storage: 30% to 95% (no condensation)	
Warranty	3 years	

*Frame rates are measured with Device Link Throughput Limit of 380 MBps and Acquisition Frame Rate disabled. Values are rounded down to whole numbers.

**Values are the same in binning and no binning modes.

VN: BFS-U3-51S5-BD2-v1

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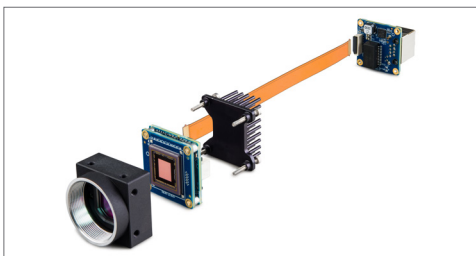
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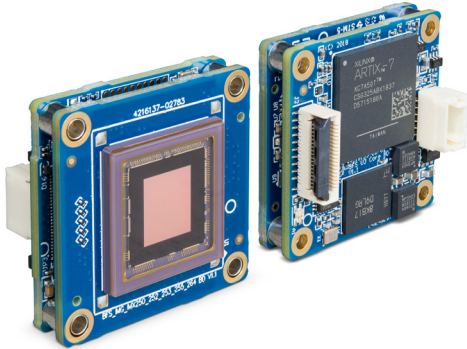
FLIR BLACKFLY® S BOARD-LEVEL

P/N: BFS-U3-88S6-BD2
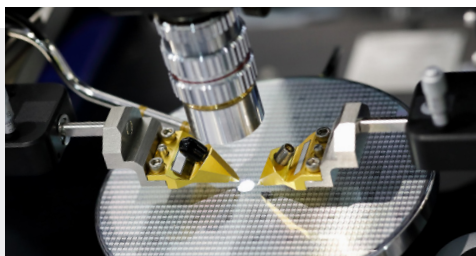
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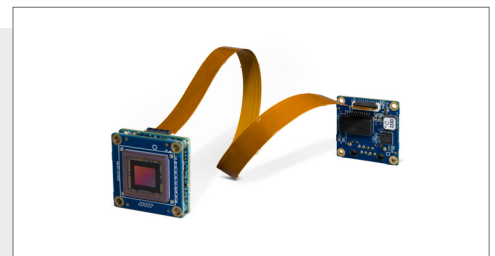www.flir.com/products/blackfly-s-board-level

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HIGH PERFORMANCE IMAGING

It is rare for board level cameras to integrate the most advanced CMOS sensors and come with a full feature set. The Blackfly S board level variants integrate the latest Pregius global shutter CMOS image sensors for distortion free, high dynamic range image capture. They have the same rich feature set as the cased variants allowing both automatic and precise manual control over image capture and on-camera pre-processing.

EMBEDDED ECO-SYSTEM SUPPORT

Ideal of embedded systems, the entire Blackfly S camera family provides proven compatibility with popular SBCs and Operating Systems including desktop Windows and Linux on ARM, x64 and x86.

SPECS	BFS-U3-88S6M-BD2	BFS-U3-88S6C-BD2
Resolution	4096 x 2160	
Frame Rate*	32 FPS	
Megapixels	8.9 MP	
Chroma	Mono	Color
Sensor	Sony IMX267, CMOS, 1"	
Readout Method	Global shutter	
Pixel Size	3.45 µm	
Lens Mount	Sold separately	
ADC	12-bit	
Minimum Frame Rate**	1 FPS	
Gain Range**	0 to 47 dB	
Exposure Range**	28 µs to 30 s	
Acquisition Modes	Continuous, Single Frame, Multi Frame	
Partial Image Modes	Pixel binning, decimation, ROI	
Image Processing	Gamma, lookup table, and sharpness	Color correction matrix, gamma, lookup table, saturation, and sharpness
Sequencer	Up to 8 sets using 6 features	
Image Buffer	240 MB	
User Sets	2 user configuration sets for custom camera settings	
Flash Memory	6 MB non-volatile memory	
Non-isolated I/O	4 bi-directional	
Auxiliary Output	3.3 V, 120 mA maximum	
Serial Port	Supported	
Interface	USB 3.1 Gen 1	
Interface Connector	Hirose TF38 FPC connector	
Power Requirements	5 V via USB3 interface	
Power Consumption	3 W maximum	
Dimensions/Mass	29 mm x 29 mm x 10 mm / 10 g	
Machine Vision Standard	USB3 Vision v1.0	
Compliance	CE, FCC, RoHS, REACH / ECCN is EAR099	
Temperature	Operating: 0°C to 50°C Storage: -30°C to 60°C	
Humidity	Operating: 20% to 80% (no condensation) Storage: 30% to 95% (no condensation)	
Warranty	3 years	

*Frame rates are measured with Device Link Throughput Limit of 380 MBps and Acquisition Frame Rate disabled. Values are rounded down to whole numbers.

**Values are the same in binning and no binning modes.
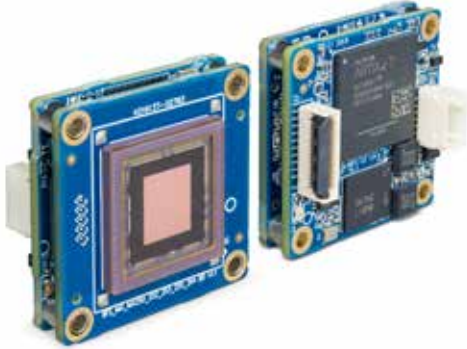
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INDUSTRIAL/MACHINE VISION APPLICATIONS

FLIR BLACKFLY® S BOARD-LEVEL

P/N BFS-U3-200S6-BD2

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- UAS AERIAL IMAGING

- HIGH-RESOLUTION AUTOMATED OPTICAL INSPECTION

US3 VISION   GEN‹i›CAM

SPECIFICATIONS

SPECS	BFS-U3-200S6M-BD2	BFS-U3-200S6C-BD2
Resolution	5472 x 3648	
Frame Rate*	18 FPS	
Megapixels	20.0 MP	
Chroma	Mono	Color
Sensor	Sony IMX183, CMOS, 1"	
Readout Method	Rolling shutter with global reset	
Pixel Size	2.4 µm	
Lens Mount	Sold separately	
ADC	10-bit and 12-bit	
Minimum Frame Rate**	1 FPS	
Gain Range**	0 to 27 dB	
Exposure Range**	11 µs to 30 s	
Acquisition Modes	Continuous, Single Frame, Multi Frame	
Partial Image Modes	Pixel binning, decimation, ROI	
Image Processing	Gamma, lookup table, and sharpness	Color correction matrix, gamma, lookup table, hue, saturation, and sharpness
Sequencer	Up to 8 sets using 5 features	
Image Buffer	240 MB	
User Sets	2 user configuration sets for custom camera settings	
Flash Memory	6 MB non-volatile memory	
Non-isolated I/O	4 bi-directional	
Serial Port	1 (over non-isolated I/O)	
Auxiliary Output	3.3 V, 120 mA maximum	
Interface	USB 3.1 Gen 1	
Power Requirements	5 V via USB3 interface	
Power Consumption	3 W maximum	
Dimensions/Mass	29 mm x 29 mm x 10 mm / 10 g	
Machine Vision Standard	USB3 Vision v1.0	
Compliance	CE, FCC, RoHS, REACH. The ECCN for this product is: EAR099.	
Temperature	Operating: 0℃ to 50℃ Storage: -30℃ to 60℃	
Humidity	Operating: 20% to 80% (no condensation) Storage: 30% to 95% (no condensation)	
Warranty	3 years	

*Frame rates are measured with Device Link Throughput Limit of 500 MBps and Acquisition Frame Rate disabled. Values are rounded down to whole numbers.

**Values are the same in binning and no binning modes.

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