Flea® 2

ULTRA-COMPACT + VERSATILE + 1394B

- **12 different models, 0.3 MP to 5.0 MP**
- **Smallest 1394b camera in the world**
- **High speed 1394b 800 Mb/s digital interface**
- **Metal case with locking screw connection**
- **Ideal for industrial machine vision**

With resolutions ranging from 0.3MP (VGA) to 5.0MP and 12 different models to choose from, the compact, versatile Flea®2 camera system is a complete, cost effective and reliable IEEE-1394b solution for demanding imaging applications such as semiconductor inspection and high-speed assembly.

Specification	FL2-03S2M/C	FL2-08S2M/C	FL2-14S3M/C	FL2-20S4M/C	FL2G-13S2M/C	FL2G-50S5M/C
Image Sensor Type	Sony progressive scan interline transfer CCD's with square pixels and global shutter, monochrome or color					
Image Sensor Model	Sony ICX424 1/3"	Sony ICX204 1/3"	Sony ICX267 1/2"	Sony ICX274 1/1.8"	ICX445 1/3" EXview HAD CCD™	ICX655 2/3 SuperHAD CCD™
Maximum Resolution	648x488	1032x776	1392x1032	1624x1224	1288x964	2448x2048
Pixel Size	7.4 x 7.4µm	4.65 x 4.65µm	4.65 x 4.65µm	4.4 x 4.4µm	3.75 x 3.75µm	3.45 x 3.45µm
Analog-to-Digital Converter	Analog Devices 12-bit ADC					
Video Data Output	8, 12, 16 and 24-bit digital data					
Image Data Formats	Y8, Y16 (all models), RGB, YUV411, YUV422, YUV444, 8-bit and 16-bit raw Bayer data (color models)					
Color Processing	On-camera in YUV or RGB format, or on-PC in Raw format					
Digital Interface	Bilingual 9-pin IEEE-1394b for camera control, video data transmission, and power					
Transfer Rates	100, 200, 400, 800 Mbit/s					
Maximum Frame Rate	648x488 at 80 FPS	1032x776 at 30 FPS	1392x1032 at 15 FPS	1624x1224 at 15 FPS	1288x964 at 30 FPS	2448x2048 at 7.5 FPS
Partial Image Modes	pixel binning and region of interest modes via Format_7					
White Balance	automatic / manual / one-push modes, programmable via software					
General Purpose I/O Ports	8-pin Hirose HR25 GPIO connector opto-isolated pins for trigger and strobe (FL2G models only), bi-directional pins for trigger, strobe or serial port					
Gain Control	automatic / manual / one-push gain modes, programmable via software, 0dB to 24dB in 0.04dB increments					
Shutter Speed	automatic / manual / one-push modes, programmable via software, 0.02ms to greater than 10s (extended shutter mode)					
Gamma/LUT	0.50 to 4.00 / programmable lookup table					
Synchronization	via external trigger, software trigger (on same bus only), or free-running					
External Trigger Modes	DCAM v1.31 Trigger Modes 0, 1, 3, 4 and 5 (multiple exposure, 03S2 and 08S2 models only), 14 (overlapped trigger), and 15 (multi-shot trigger)					
Power Consumption	power via Vext GPIO pin or 9-pin 1394b interface: 8 to 30 V, less than 2.5 W					
Dimensions (L x W x H)	29mm x 29mm x 30mm (excluding lens holder, without optics)					
Mass	58g (without optics)					
Memory Storage	(FL2G models only) 32MB frame buffer, 512KB non-volatile data flash					
Memory Channels	3 memory channels for custom camera settings					
Camera Specification	IIDC 1394-based Digital Camera Specification v1.31, compatible with IEEE-1394b and IEEE-1394a interfaces					
Lens Mount	C-mount					
Emissions Compliance	Complies with CE rules and Part 15 Class B of FCC Rules					
Operating Temperature	0° to 45°C					
Storage Temperature	-30° to 60°C					
Warranty	2 year					

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Flea®2 Specifications

IEEE-1394b Benefits

The bilingual IEEE-1394b interface used by the Flea2 camera provides reliable, deterministic communication with guaranteed bandwidth and 800 Mb/s data rates. The Flea2 supports data transfer rates up to 800 Mb/s, and is backward compatible with 1394a, allowing it to work seamlessly with existing 1394a systems.

Smallest 1394b Camera in the World

At 29x29x30mm, the Flea2 fits into the small, tight spaces that are common in industrial imaging, making it an ideal camera for OEM applications. The 1394b connector with locking screw holes not only guarantee a reliable connection, but also reduce stress on internal electronics that can be caused by cable movement. The cable also carries both data and power, minimizing the need for additional cables or external power sources.

Triggering and GPIO

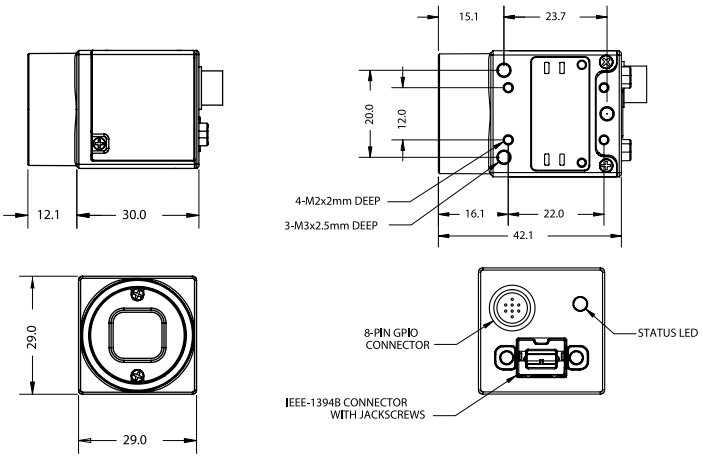
The Flea2 camera has an 8-pin GPIO connector located on the back. The GPIO is a programmable interface that allows the user to coordinate the camera with external devices such as light sources and GPS units. It can be programmed to accept external trigger signals that initiate the start of exposure, output variable strobe patterns, or send and receive serial data.

Industry Standard Mechanics

Every mechanical component of the Flea2 is designed to maximize usability, including the compact cast metal case, C-mount lens holder and ASA/ISO-compliant tripod mounting bracket, status LED and removable glass/IR filter system.

Dimensional Drawings (in mm)

CAD models available at www.ptgrey.com/support/downloads.



Color Processing

The color Flea2 features on-camera color processing and auto white balance. Available outputs include YUV411, YUV422, YUV444 and RGB. If a reduction in the bus bandwidth is required, users can access the raw Bayer pattern.

Automatic Synchronization

Multiple Flea2 cameras networked on the same IEEE-1394 bus are automatically synchronized to within 125µs (maximum deviation) of each other, and can synchronize across buses using Point Grey MultiSync™ software.

Software

The FlyCapture® SDK is included with all imaging products. The SDK is compatible with Microsoft® Windows® and includes device drivers, software Application Programming Interface (API), demo programs and C/C++ example source code. It also includes the FirePROTM driver, which provides enhanced debugging and diagnostics, and allows 1394b devices to run at 800Mb/s.

Development Accessory Kit

- 4.5 meter, 9-pin to 9-pin, IEEE-1394b cable with locking screws for secure connection
- 4.5 meter, 6-pin to 9-pin, IEEE-1394a to 1394b cable for secure connection
- IEEE-1394b OHCI PCI Host Adapter 3-port 800Mb/s card
- 1 meter GPIO wiring harness with HR25 8-pin male connector for easy triggering
- FlyCapture® SDK (C/C++ API and device drivers) CD

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