Bumblebee®

STEREO VISION CAMERA SYSTEMS

- **1/3" Sony® CCDs, BW or Color**
- **Pre-calibrated against distortion and misalignment**
- **GPIO pins for trigger and strobe**
- **IEEE-1394 FireWire interface**
- **Software for plug and play use**

Triclops™ Stereo SDK

The Triclops Stereo SDK included with the Bumblebee2 and Bumblebee XB3 supplies an assembly-optimized fast-correlation stereo core that performs Sum of Absolute Differences (SAD) stereo correlation. This method is known for its speed, simplicity and robustness, and generates dense disparity images. The Triclops SDK provides flexible access to all image stages in the stereo processing pipeline, making it ideal for custom stereo processing approaches.

FlyCapture® SDK

The FlyCapture software development kit (SDK) for image acquisition and camera control is included with the Bumblebee2 and Bumblebee XB3. It is compatible with Microsoft® Windows® and includes a camera device driver, full software library with Application Programming Interface (API), demo programs and C/C++ example source code. The FlyCapture SDK also includes the PGRPRO™ driver, which provides enhanced debuging and diagnostics and allows 1394b devices to run at 800Mb/s.

Development Kit:

The Development Accessory Kit includes commonly used IEEE 1394 cables, connectors and adaptor cards, to make use of the camera systems as easy as possible.

- 4.5 meter 1394a (BB2) or 1394b (BB XB3) cable with ferrites
- Hirose HR10 male GPIO connector prewired
- 1394a 400Mb/s (BB2) or 1394b 800Mb/s (BB XB3) OHCI PCI Host Adapter 3-port card
- Triclops SDK, FlyCapture SDK, device drivers

Bumblebee®2

47.4 mm   157 mm   36 mm

Bumblebee®XB3

41.8 mm   277 mm   37 mm

Recommended System Configuration:

- Windows XP Service Pack 1
- 512MB of RAM
- Intel® Pentium 4 2.0GHZ or compatible processor
- AGP video card with 64 MB video memory
- 32-bit standard PCI slot required for IEEE-1394 card
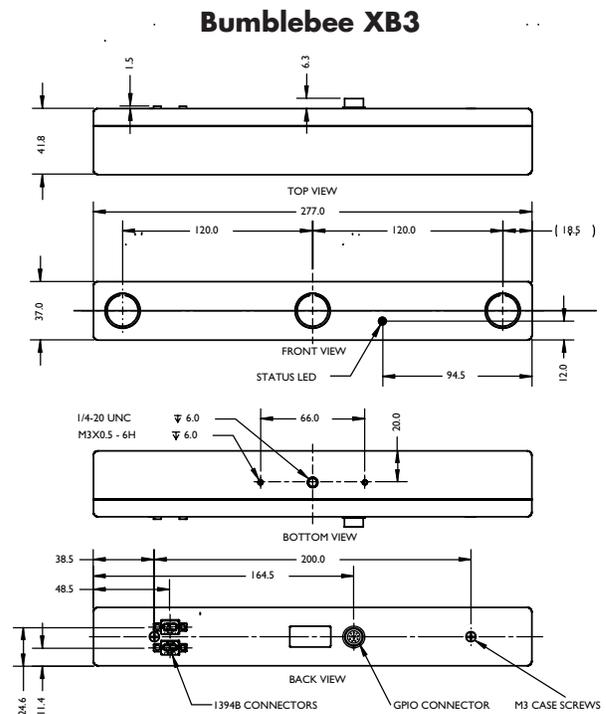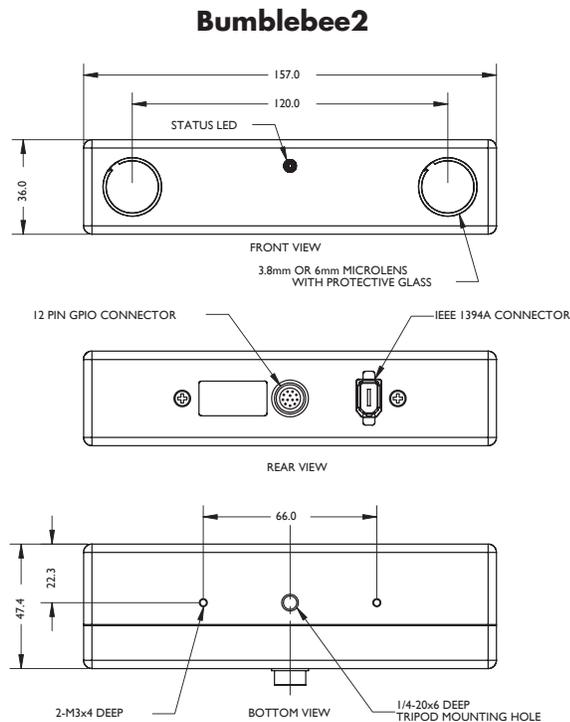- Microsoft Visual C++ 6.0 (to compile and run sample code)

Models		
BB2-03S2M/03S2C-XX	Sony 1/3" CCD, BW or Color	640x480 at 48 FPS
BB2-08S2M/08S2C-XX	Sony 1/3" CCD, BW or Color	1024x768 at 20 FPS
BBX3-13S2M/13S2C-XX	Sony 1/3" CCD, BW or Color	1280x960 at 16 FPS

Bumblebee® Specifications

Specification	BB2-03S2	BB2-08S2	BBX3
Image Sensor Type	Sony® 1/3" progressive scan CCD		
	ICX424 (648x488 max pixels)	ICX204 (1032x776 max pixels)	ICX445 (1280x960 max pixels)
	7.4µm square pixels	4.65µm square pixels	3.75µm square pixels
Baseline	12 cm		12 cm and 24 cm
Focal Lengths	2.5mm with 97° HFOV (BB2 only) or 3.8mm with 66° HFOV or 6mm with 43° HFOV		
A/D Converter	12-bit analog-to-digital converter		
White Balance	Automatic / Manual (Color model)		Manual (Color model)
Frame Rates	48 FPS	20 FPS	16 FPS
Interfaces	6-pin IEEE-1394a for camera control and video data transmission 4 general-purpose digital input/output (GPIO) pins		2 x 9-pin IEEE-1394b for camera control and video data transmit 4 general-purpose digital input/output (GPIO) pins
Voltage Requirements	8-30V via IEEE-1394 interface or GPIO connector		
Power Consumption	2.5W at 12V		4W at 12V
Gain	Automatic/Manual		
Shutter	Automatic/Manual, 0.01ms to 66.63ms at 15 FPS		
Trigger Modes	DCAM v1.31 Trigger Modes 0, 1, 3, and 14		DCAM v1.31 Trigger Modes 0, 1, 3, and 14
Signal To Noise Ratio	60dB		54dB
Dimensions	157 x 36 x 47.4mm		277 x 37 x 41.8mm
Mass	342 grams		505 grams
Camera Specification	IIDC 1394-based Digital Camera Specification v1.31		
Lens mount	2 x M12 microlens mount		3 x M12 microlens mount
Emissions Compliance	Complies with CE rules and Part 15 Class A of FCC Rules		
Operating Temperature	Commercial grade electronics rated from 0° to 45°C		
Storage Temperature	-30° to 60°C		

Dimensional Drawings (in mm) CAD models available at www.ptgrey.com/support/downloads.

Bumblebee2

Bumblebee XB3

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