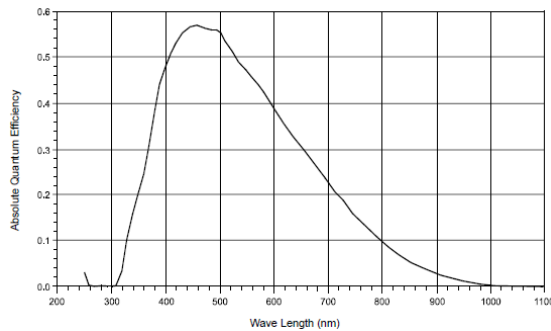


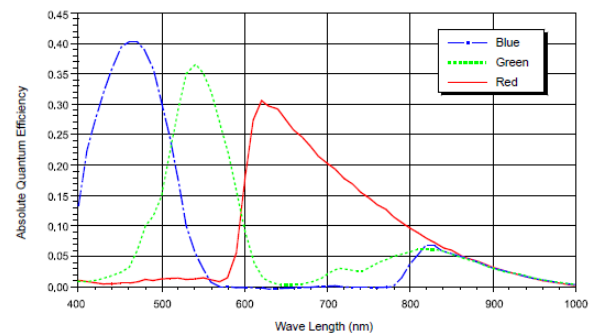
Pressure Sensitive Paint Camera

(Product ID: PSP-CCD-C, PSP-CCD-M)

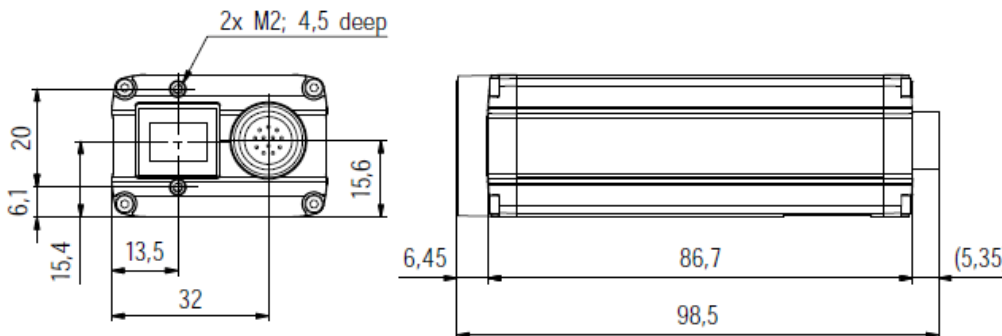
The PSP-CCD is a 2-megapixel CCD camera designed to operate within a PSP system. The camera is small and lightweight, allowing for an array of cameras to be mounted in a tight place for larger scale models and applications. A color and a monochromatic sensor are available with the camera. The color camera is used with Binary PSPs and particle shadow velocimetry applications whereas the monochrome version is used in single-color PSP. Rather than use optical filters in front of the camera lens, the filtering is applied on the sensor using a Bayer filter. In the case of Binary FIB, the signal channel is acquired on the red pixels and the reference channel is acquired on the green pixels. All images are acquired through a single camera and lens and this process minimizes image alignment errors. This single sensor system also accomplishes a second goal, all data is acquired simultaneously, and thus the stability of the illumination source is a less significant issue. The major drawback of this approach is the loss of spatial resolution. In a color sensor, only 1/4 of the pixels are sensitive to the signal channel (red pixels) on the Bayer filter. Despite the loss of spatial resolution, the color camera approach produces excellent results at low speeds. The normal frame rate is 35 fps but can operate at 44 fps in overclock mode. The camera features a software trigger and external TTL trigger over BNC. The camera is compatible with Windows 10, 8, 7, Vista and XP both 32- and 64-bit. The PSP-CCD is packaged with a ProAcquire data acquisition software license.



Quantum Efficiency of Monochrome Sensor



Quantum Efficiency of Color Sensor





SPECIFICATIONS

Sensor

Resolution	1600 x 1200 (2 megapixel)
Type	KAI-2020 CCD
Format	11.89 mm (H) x 8.94 mm (V), 14.8 mm diagonal (1" optical format)
Pixel Size	7.4 μm
Frame Rate	35 fps (40 MHz) Standard clock 44 fps (50 MHz) Overclocked
Electron Full Well Capacity	40,000 e^-
Readout Noise	20 electrons
Dynamic Range	60dB
Output Format(s)	8, 12
Binning H/L	1x, 2x, 3x, 4x, 8x
Maximum Exposure	10 seconds
Minimum Exposure	50 μs
Shutter	Global

Trigger

Inputs	External (TTL via IN1/IN2), software, computer
Options	Level, edge, pulse width, internal exposure
Modes	Free-run, standard, double, frame accumulation
Strobe Output	Programmable position and duration

Communication

Interface	GigE
On Board Memory	None
Software Interface	ProAcquire
Lens Control	Available in ProAcquire (LC-2 integration)

Environmental

Vibration/Shock	DIN EN 60068-2-64
Operating Temperature Range	0°C to 50°C
Humidity	20% to 80% non-condensing

Size & Weight

Size	98.5 mm (L) x 29 mm (H), 44 mm (L)
Weight	220 grams
Lens Mount	c-mount

Power Requirements

External Power Input	12-24 VDC
Power Consumption	4.9 W @ 12 VDC

Export

ECCN	EAR99
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