

PI-MAX4®

Fiber-coupled intensified
CCD camera

Princeton Instruments **PI-MAX4®** ICCD camera systems are featuring a 1024 x 1024 pixel interline CCD sensor fiber optically coupled to a variety of intensifiers covering the spectral range from UV to NIR. Fiber coupling with highest throughput is realized without vignetting. GigE interface supports fast data transfer over distances up to 50 meters.



System Features

- ▶ fiber coupled 18 mm intensifier
- ▶ 3 ns minimum exposure time
- ▶ 1024 x 1024 pixel interline CCD sensor
- ▶ 26 fps @ 16 bit and full resolution
- ▶ SB photo cathode, P43 phosphor other combinations on request
- ▶ GigE data interface
- ▶ camera operation under DaVis software control

Applications

- ▶ combustion diagnostics
- ▶ Laser Induced Fluorescence (LIF)
- ▶ chemiluminescence
- ▶ low light level imaging

CCD Image Sensor Specifications

Type of sensor	Kodak KAI-1003 scientific grade interline CCD
CCD format	1024 x 1024 imaging pixels; 12.8 x 12.8 μm pixels; 13.1 x 13.1 (18.5 mm diagonal)
System readout noise (typical)	
@ 4 MHz digitization	16 e ⁻ rms
@ 16 MHz digitization	40 e ⁻ rms
@ 32 MHz digitization	70 e ⁻ rms
Pixel full well	130 ke ⁻
Dark current @ -25° C (typical)	< 2 e ⁻ /p/sec

Frame Rate

Binning	1024 x 1024	512 x 512	256 x 256
1 x 1	26	48	85
2 x 2	56	90	140
4 x 4	95	142	199

NOTE: frames per second at 32 MHz

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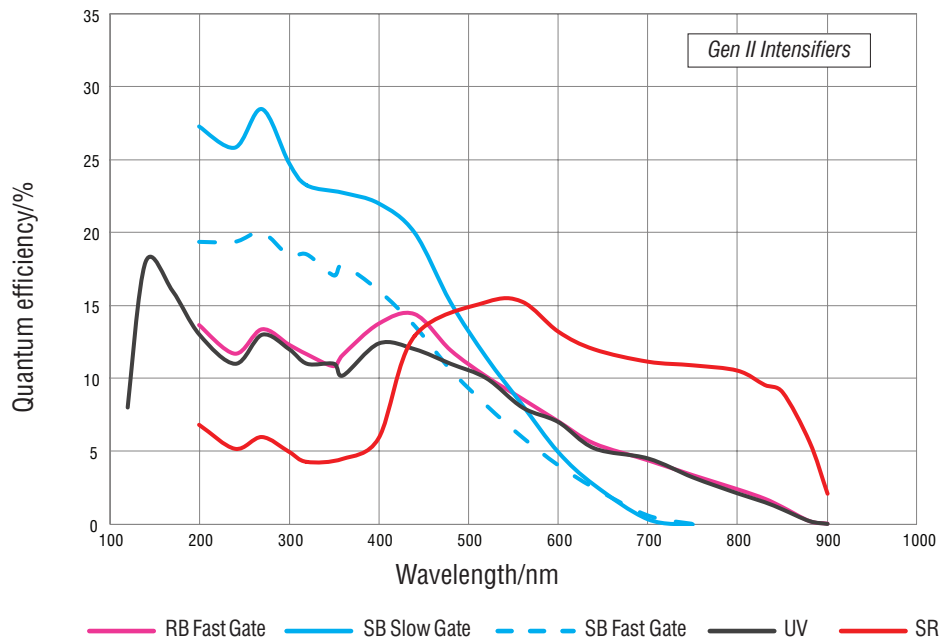
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Image Intensifier Specifications

Intensifiers available	18 mm - Gen II, Gen III <i>filmless</i>							
Method of coupling to the CCD	1:1 fiber optic							
Intensifier type	Gen II				Gen III <i>filmless</i>			
	UV	SB	RB	SR	HBf	HRf	InGaAs	
Wavelength range	See QE curve							
Min. Gate Width (Optical FWHM)								
Picosecond Gate	< 500 ps (for Fast Gate tubes only)				< 500 ps (for Fast Gate tubes only)			
Fast Gate	~ 2 ns (typical), 3 ns (guaranteed)				~ 2 nsec (typical), 3 nsec (guaranteed)			
Slow Gate	For SB only: < 200 ns, < 8 ns (w/MCP gating)				-NA-			
DIF mode inter frame time	450 ns (min); P46 phosphor decay time - 500ns (to 10%), 2 µsec (to 1%)							
Repetition rate: Sustained	1 MHz; 100 kHz with Picosecond gating; 8 kHz with MCP gating; 6.25 kHz with MCP bracket pulsing							
Resolution limit	40 to 64 lp/mm				57 to 64 lp/mm			
Equivalent Background Illumination (EBI)								
Photo e-/pixel/sec @ room temp (with photocathode cooling)	0.05 - 0.2 (0.005 - 0.02)				0.02 (0.002)			
Phosphor	P43 (P46, P47 optional)							
Operating environment	+5° C to +30° C non-condensing							
Storage environment	-25° C to +55° C							
Certification	CE							

Quantum Efficiency



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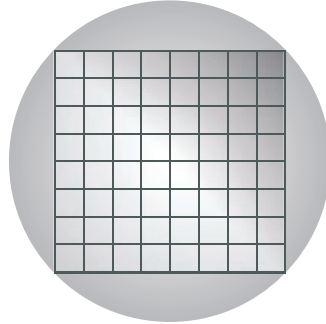
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Optical Coupling

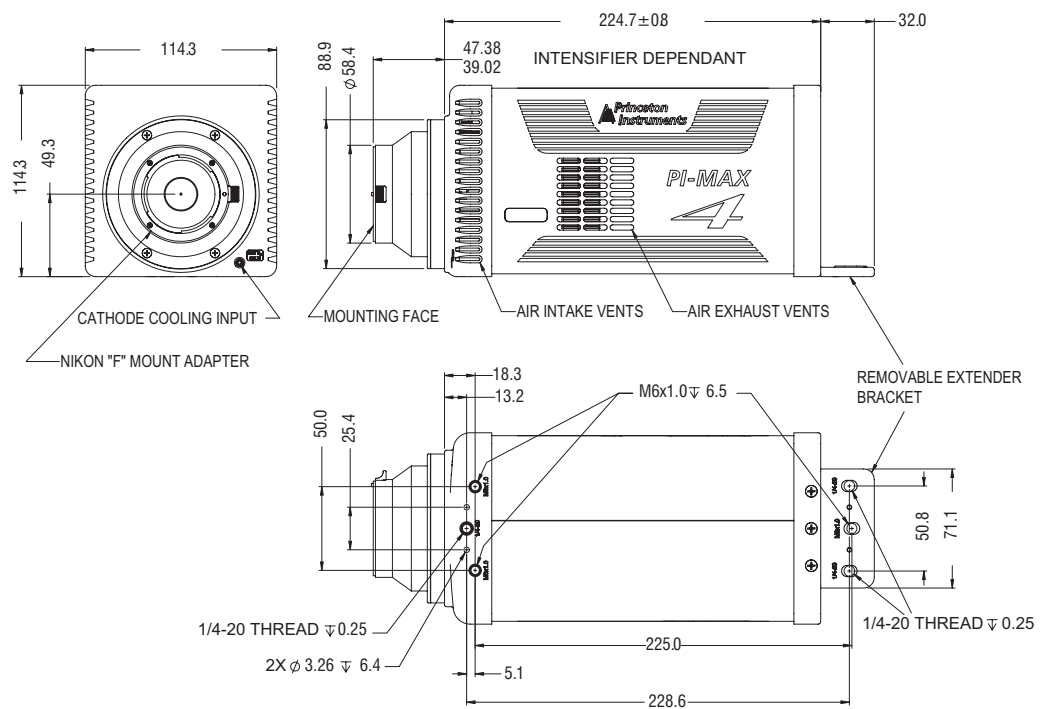
Fiber-coupled to CCDs for the highest light throughput



Imaging

1024i with 18 mm intensifier

Dimensions



all dimensions shown in mm

Ordering information

Part number	Description
1102093	Princeton Instruments PI-MAX4®:1024i iCCD camera system, SB, fast gate intensifier, P43

Data provided by LaVision are believed to be true. However, no responsibility is assumed for possible inaccuracies or omissions. All data are subject to change without notice.

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