



The PI-MAX2: 1003 from Princeton Instruments is the next generation intensified camera system featuring a high resolution interline CCD fiberoptically coupled to a variety of Gen II, Gen III, Gen III *filmless* and proprietary Unigen™ II intensifiers. The intensifiers offer the highest possible sensitivity from UV to NIR and offer resolution that is ideally matched to the CCD. Nanosecond gating capability and an integrated programmable timing generator (PTG) make these ICCD cameras ideal for time-resolved imaging and spectroscopy applications. The special, Dual Image Feature (DIF) enables two images to be captured in rapid succession for applications such as particle imaging velocimetry (PIV).

PI-MAX2: 1003 is the only ICCD camera in the market today to offer both high frame rate at 5MHz/16-bit digitization and exceptional sensitivity.

Applications: Fluorescence Lifetime Imaging Microscopy (FLIM), Time Resolved Imaging and Spectroscopy, Combustion, Planar Laser Induced Fluorescence (PLIF), Particle Imaging Velocimetry (PIV).

Features	Benefits
1024 x 1024 Imaging Array	High resolution imaging and spectroscopy
Interline CCD architecture	Capture two images in rapid succession
5MHz / 16-bit digitization	High frame rate required to match the repetition rate of the excitation laser sources.
Thermoelectric Cooling	Reduces dark current to negligible levels
A wide selection of Intensifiers	Best sensitivity and gate speed in the desired wavelength range. Gen II Best combination of UV-Blue sensitivity and fast gating (SB). RB provides wide spectral coverage. Gen III Ideal for Blue (350nm)-NIR (900nm) range. Gen III <i>filmless</i> Offers highest sensitivity and fastest gate speed. Unigen™ II Proprietary Unigen™ II intensifier provides the best overall coverage from UV to NIR. Significant improvement over previous generation.
Fiberoptic coupling	Highest optical throughput; No vignetting
Sub-nanosecond gating	Temporal resolution for effective background discrimination, kinetics imaging and spectroscopy
Built-in high voltage pulser	Rugged, integrated design for minimal insertion delay
Programmable Timing Generator™ (PTG)	Built-in, fully software controlled gate timing; Controls gate widths and delays in linear, or exponential increments; Low insertion delay (25nsec)
PCI interface	Industry standard for fast data transfer over long distances
WinSpec/WinView and PVCAM®	Offers powerful, easy-to-use set of Windows GUI controls; Automatic data acquisition, analysis and display; PVCAM provides unified programming interface for custom programming
LabVIEW™ Scientific Imaging Tool Kit (SITK™)	Pre-defined LabView vis provide easy integration of the camera into complex experiment setup

CCD

Image sensor	Kodak KAI-1003; scientific grade; interline CCD		
CCD format	1024 x 1024 imaging pixels 12.8 x 12.8- μ m pixels 13.1 x 13.1 (18.5 mm diagonal)		
	Minimum	Typical	Maximum
System read noise @ 1-MHz digitization @ 5-MHz digitization		12e- rms 25 e- rms	15 e- rms 30 e- rms
Pixel Full Well	130 ke-	150 ke-	
Dark current (e-/p/sec) @ -20°C		0.5	1
Deepest cooling temperature	-20°C (air cooled)		
Vertical Shift Rate	4 μ sec/row (variable via software)		

Intensifier

Intensifiers available	18mm - Gen II, Gen III , Gen III <i>filmless</i> , Unigen™ II							
Method of coupling to the CCD	1:1 fiber optic							
Intensifier type	Gen II			Gen III		Gen III <i>filmless</i>		Unigen™ II
	UV	SB	RB	HB	HQ	HBf	HQf	Unigen™ II
Intensifier Input Window	MgF ₂	Quartz		Glass		Borosilicate Glass		Fiber
Wavelength Range	See QE Curves							
Minimum Gate Speed (optical FWHM)	Fast Gate			Slow Gate				
	< 2nsec(500 ps*)			< 5nsec -NA-		<2 nsec -NA-		
Repetition Rate: sustained/burst (kHz)	50/500			5/50		50/500		
Resolution limit	54 to 64 lp/mm			64 to 72 lp/mm		57 to 64 lp/mm		64 lp/mm
EBI (Photo e-/pixel/sec)	0.05 - 0.2			0.05 - 0.2		0.02		
Phosphor	P43 (P46 optional)							

Notes: All specifications subject to change.

* Enquire about the ultra-fast gating option for fast gate tubes

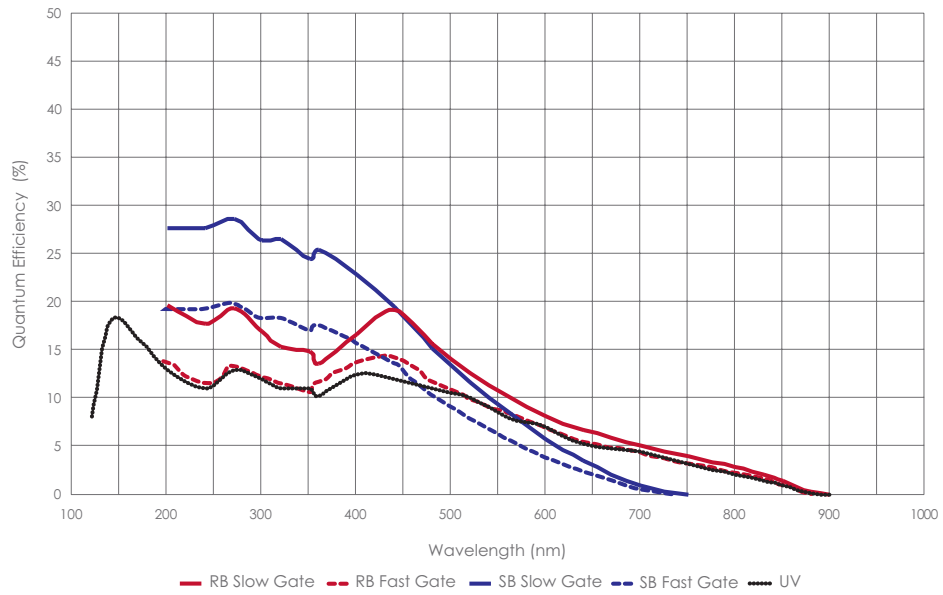
** SB slow gate tubes are offered with special MCP Gating (MG) option to achieve < 9 nsec gating and at the same time offering >25% QE

Frame Rates

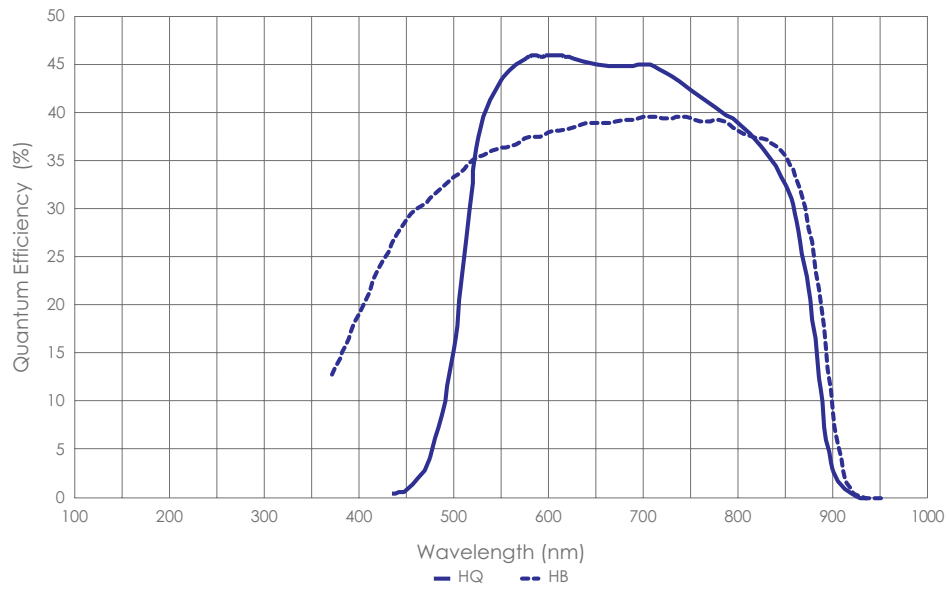
Binning	1024 x 1024	400 x 400	200 x 200
1 x 1	4	10	17
2 x 2	8	17	27
4 x 4	15	27	37

Notes: Frames per second at 5MHz digitization

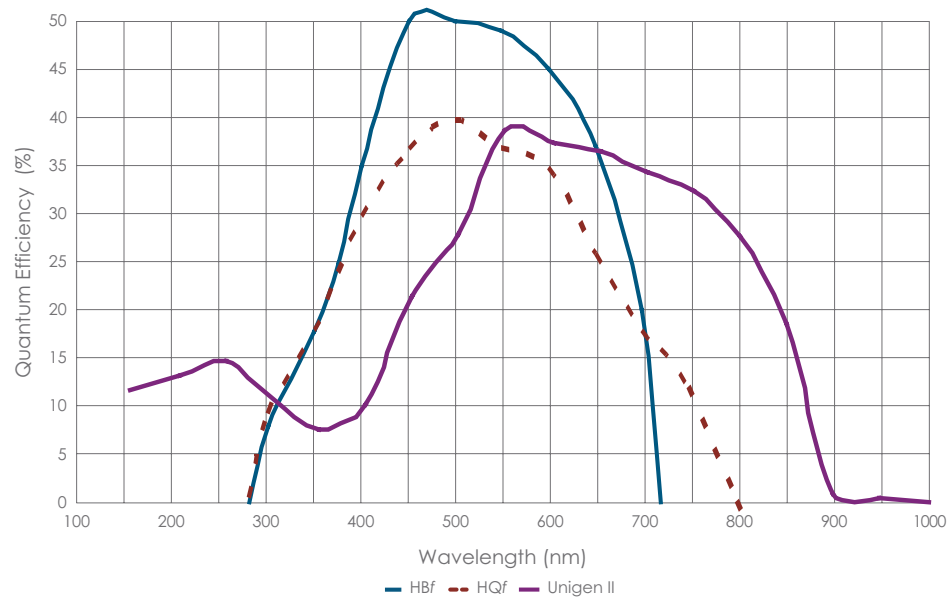
Gen II Intensifiers



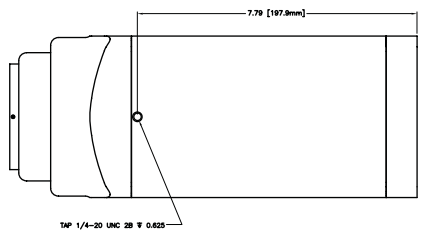
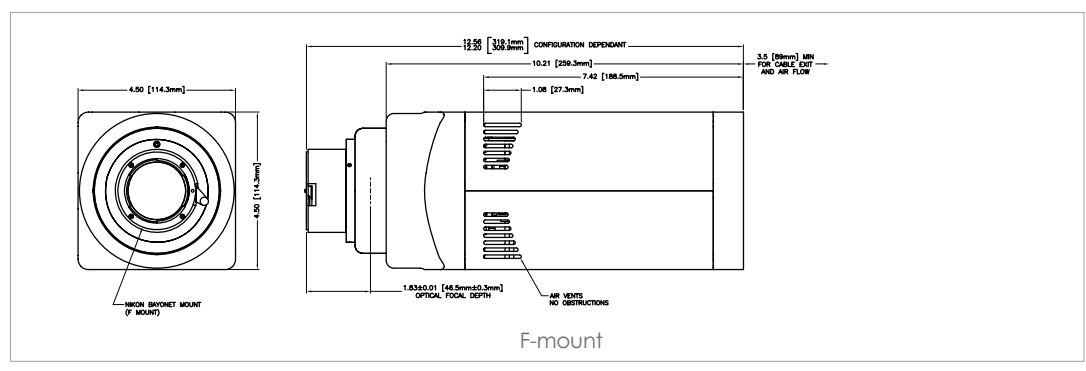
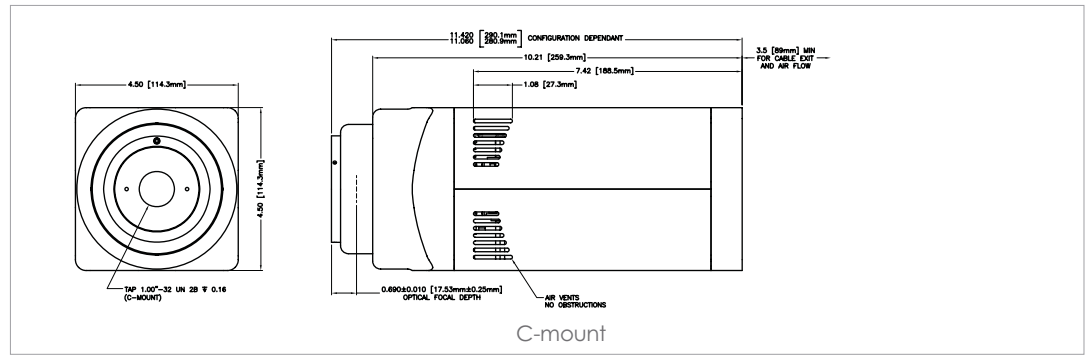
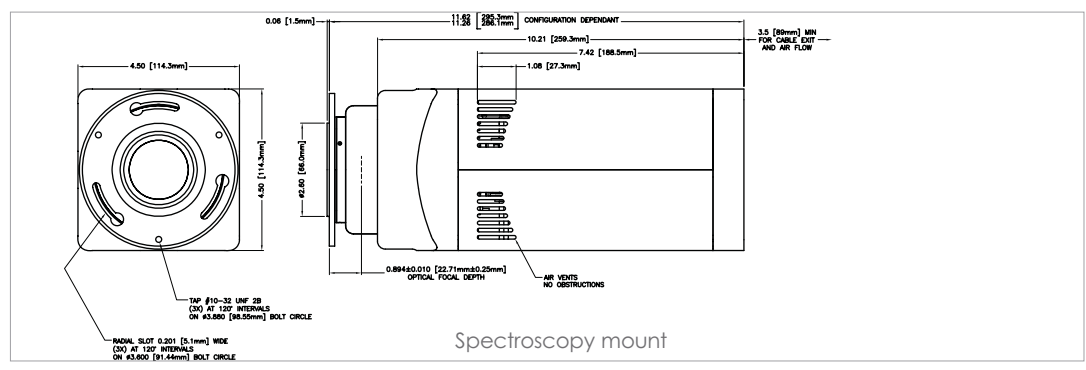
Gen III Intensifiers



Gen III filmless Intensifiers



Notes: Specofocations are subject to change.



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