...SEE the Future

Princeton Instruments

PI-MAX: 1024

The PI-MAX: 1024 from Princeton Instruments is a high performance intensified camera system featuring a spectroscopy format CCD. It is fiber optically coupled to a variety of Gen II, Gen III *filmless* and proprietary Unigen™ II intensifiers. These intensifiers offer the highest possible sensitivity from UV to NIR and offer resolution that is ideally matched to the CCD. Sub nanosecond gating capability and an integrated programmable timing generator (PTG) make these ICCD cameras ideal for time-resolved spectroscopy applications.

PI-MAX: 1024 is specifically designed for time resolved spectroscopy applications and is available with 25-mm intensifiers for wide spectral coverage.

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

Features	Benefits
1024 x 256 Imaging Array	Ideal aspect ratio for spectroscopy
Dual speed, 16-bit digitization	High speed provides rapid image acquisition for focusing. Low speed operation provides the best signal-to-noise ratio
Thermoelectric Cooling	Reduces dark current to negligible levels
A wide selection of Intensifiers **Gen II** **Gen III *filmless*** **Unigen™ II**	Best sensitivity and gate speed in the desired wavelength range. Best combination of UV-Blue sensitivity and fast gating (SB). RB provides wide spectral coverage. Offers highest sensitivity and fastest gate speed. Proprietary Unigen™ II intensifier provides the best overall coverage from UV to NIR. Significant improvement over previous generation.
Fiberoptic coupling	Highest optical throughput possible; 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)
USB 2.0 Interface	Seamless, plug-n-play connection to PC desktops and laptops
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

PI-MAX: 1024 Specifications

CCD

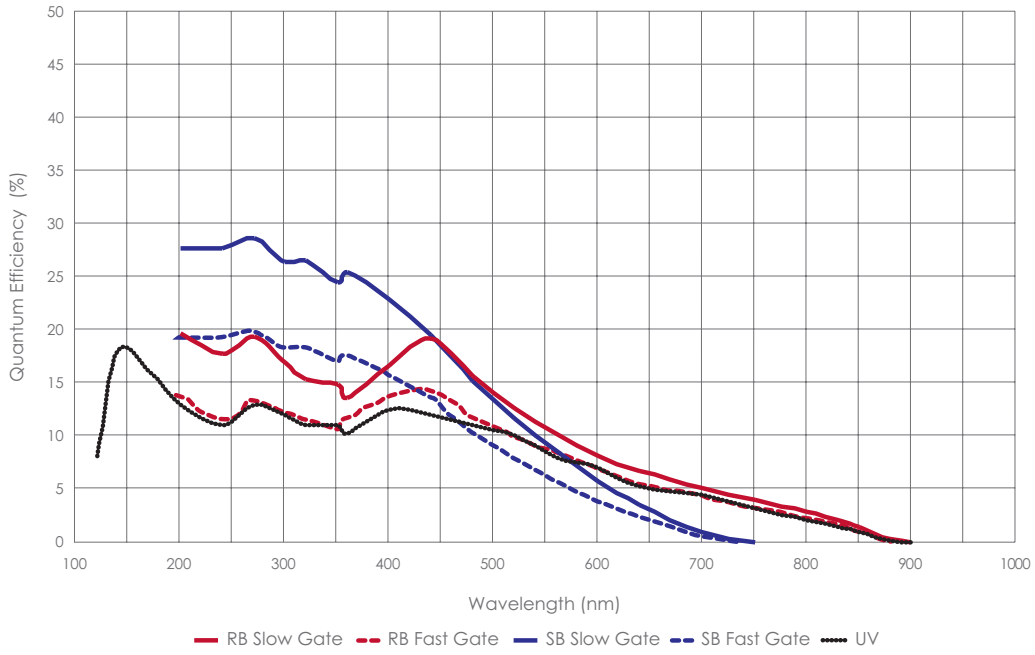
Image sensor	e2v CCD30-11 scientific grade, MPP front-illuminated CCD		
CCD format	1024 x 256 imaging pixels 26 x 26-µm pixels 18 mm x 6.7 mm (using 18-mm intensifier) 25 mm x 6.7 mm (central region using 25-mm intensifier)		
	Minimum	Typical	Maximum
System read noise **@ 100-kHz digitization** **@ 1-MHz digitization**		8 e- rms 15 e- rms	12 e- rms 20 e- rms
Pixel Full Well	450 ke-	500 ke-	
Dark current (e-/p/sec) @ -20°C		5	10
Deepest cooling temperature	-20°C (air cooled); -35°C (with water circulation)		
Vertical Shift Rate	15 µsec/row (variable via software)		
Spectral Rate	185 Hz, full vertical binning 630 Hz, 200 µm tall spectrum		

Intensifier

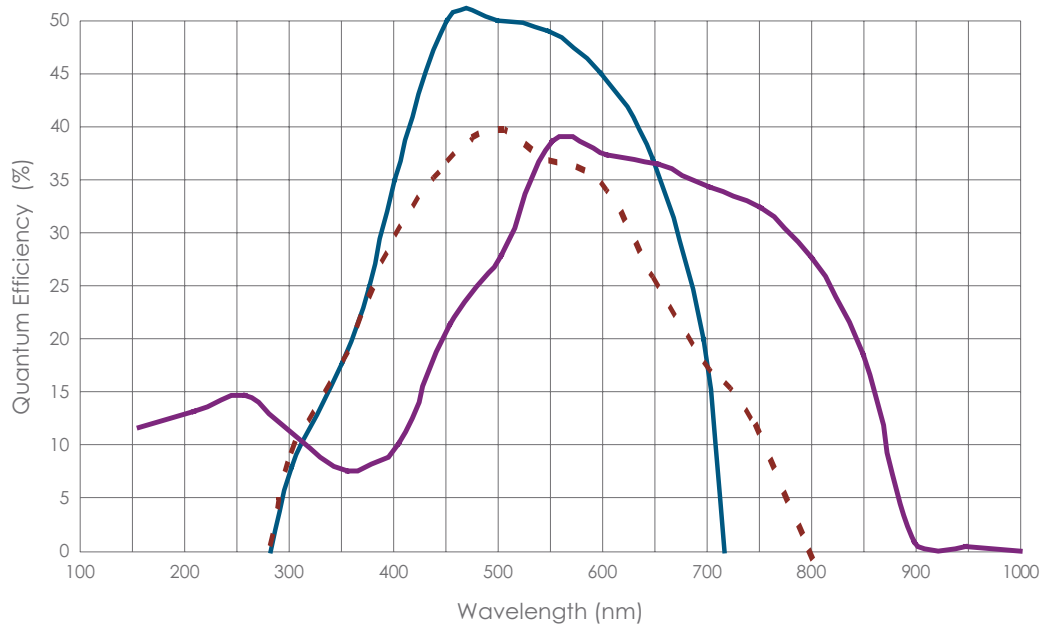
Intensifiers available	18mm & 25mm - Gen II, Gen III *filmless*, Unigen™ II					
Method of coupling to the CCD	1:1 fiber optic					
Intensifier type	Gen II			Gen III *filmless*		Unigen™ II
	UV	SB	RB	HB*f*	HQ*f*	Unigen™ II
Intensifier Input Window	MgF_2	Quartz		Borosilicate Glass		Fiberoptic
Wavelength Range	See QE Curves					
Minimum Gate Speed (optical FWHM) **Fast Gate** **Slow Gate**	< 2nsec(500 ps*) < 50 nsec (< 9 nsec with MCP gating**)			<2 nsec -NA-		
Repetition Rate: **sustained/burst (kHz)**	50/500			50/500		
Resolution limit	54 to 64 lp/mm			57 to 64 lp/mm		64 lp/mm
EBI (Photo e-/pixel/sec)	0.05 - 0.2			0.02		
Phosphor	P43 (P46 optional)					

Notes: All specifications subject to change.
* For 18mm intensifiers
[1]Enquire about the ultra-fast gating option
[2] SB slow gate tubes are offered with special MCP Gating (MG) option to achieve < 9 nsec gate width and >25% QE in the UV-blue region.

Gen II Intensifiers

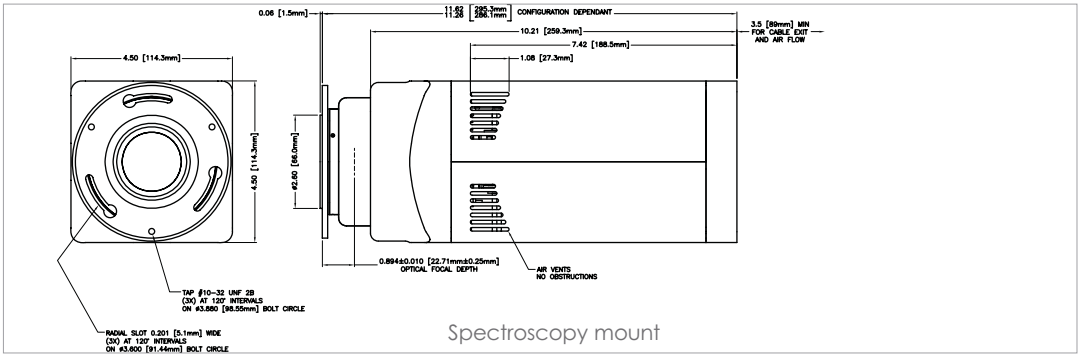


Gen III *filmless* Intensifiers

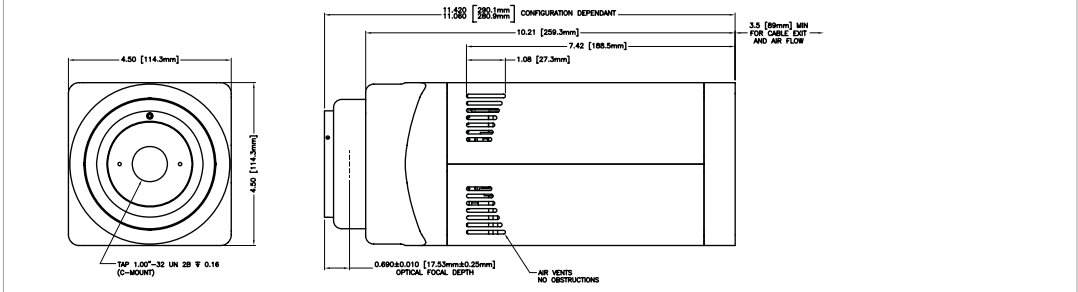


* QE relative to GEN III filmed Unigen Intensifier

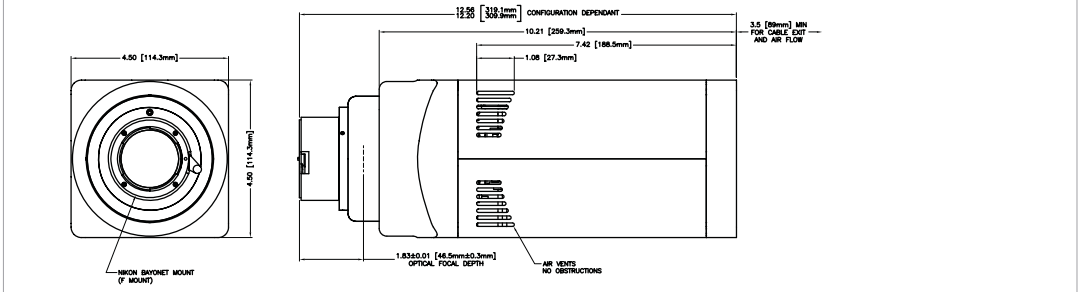
Notes: Specofocations are subject to change.



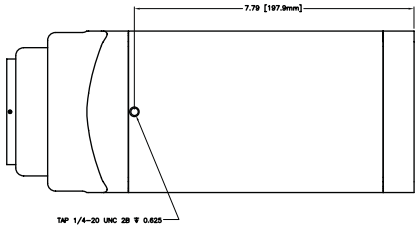
Spectroscopy mount



C-mount



F-mount



Bottom View showing tapped hole for tripod mount

Princeton Instruments

www.piacton.com
email: moreinfo@piacton.com
USA +1.877.4 PIACTON | France +33 (1) 60.86.03.65
Germany +49 (0) 89.660.779.3 | UK +44 (0) 28.38310171
Asia/Pacific +65.6293.3130 | China +86 135 0122 8135
Japan +81.3.5639.2741