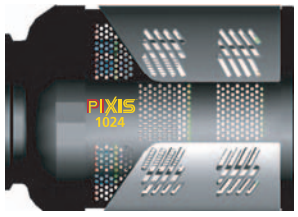
PIXIS™

Princeton Instruments
a division of Roper Scientific, Inc.



PIXIS: 1024B

1024 x 1024 CCD array | 13 x 13-µm pixels

The Princeton Instruments PIXIS:1024B is a **fully integrated,** high-performance, full-frame digital camera system. It uses a back-illuminated, scientific-grade CCD with a 1024 x 1024 imaging array and 100% fill factor. The camera system has deep thermoelectric cooling, low-noise electronics and a **permanent-vacuum guarantee** for worry-free operation. A modular, metal-seal vacuum design ensures very high reliability for OEM and research applications. High QE, low read noise, low dark current and fast readout speed make this camera ideal for a variety of ultra-low-light applications. Software-selectable gains and readout speeds offer the ultimate flexibility.

Applications: high-throughput screening, semiconductor failure analysis, astronomy, macro-imaging, chemiluminescence, pressure sensitivity paint, photometry, plasma diagnostics, film digitization, combustion

Features	Benefits
Permanent vacuum	Guaranteed temperature performance and worry-free operation with all-metal seals
Deep thermoelectric cooling/air	Worry-free operation without the need for circulating liquid or an additional power supply
1024 x 1024 imaging array 13 x 13-µm pixels	High spatial resolution
Scientific-grade CCD	Low noise, few defects, linear response
Back-illuminated CCD	Highest sensitivity from UV to NIR
Dual-digitizer option	Dual-speed digitization allows complete freedom to select between "slow operation" for low noise and highest SNR or "fast operation" for rapid image acquisition
Up to 2-MHz digitization	Delivers high frame rates without compromising system performance
Ultra-low-noise electronics	Best possible system performance
Flexible, user-selectable binning and subarray readout	Total flexibility to optimize experiments and signal-to-noise ratio (SNR)
Software-selectable gains	Allows optimization of system performance for lowest noise to highest dynamic range
High intrascenic dynamic range	Quantifies both strong and weak signals in the same image
TTL input and output	External trigger input with programmable polarity TTL output with exposure or readout monitor
Single optical window	No losses due to multiple optical surfaces
USB 2.0 interface	Seamless, plug-n-play connection to PC notebooks and desktops Easy OEM integration
Renowned WinView software	Offers easy-yet-sophisticated Windows® GUI controls Automates data acquisition, analysis and display
PICAM® for VB, C, C++ and Scientific Imaging Toolkit for LabVIEW™	Respected application program interface provides a universal interface to all Princeton Instruments hardware

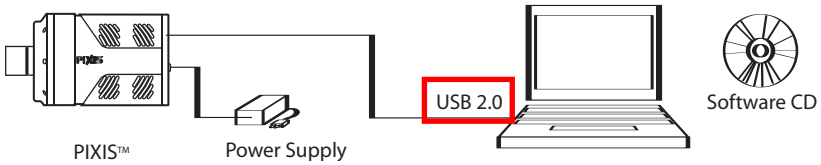
PIXIS™ Specifications

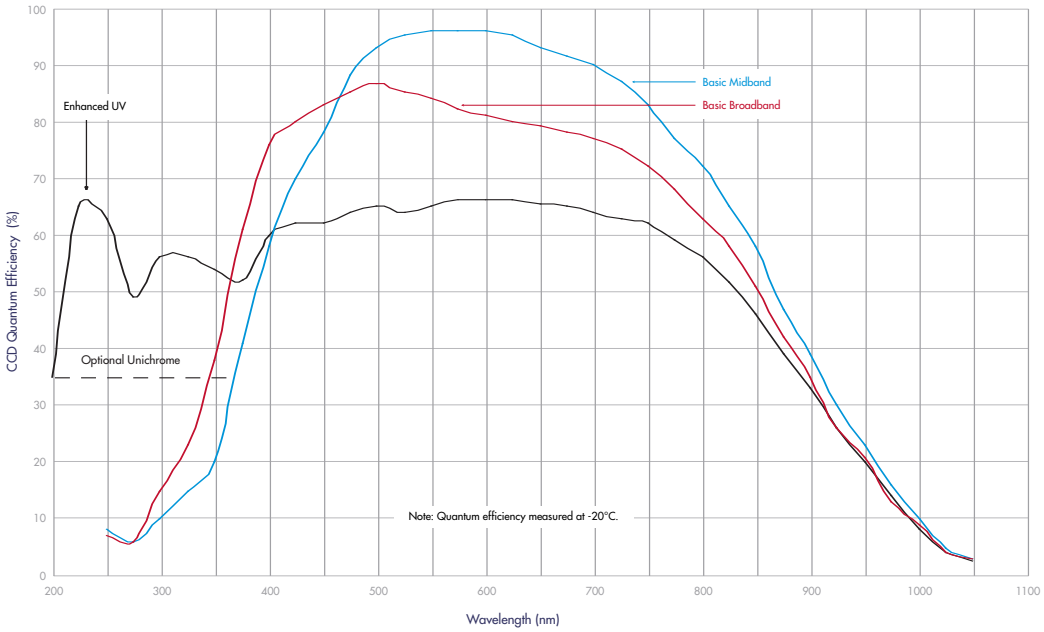
CCD image sensor	E2V CCD 47-10; scientific grade 1; MPP; back-illuminated device; available with UV-enhanced process or Unichrome coating		
CCD format	1024 x 1024 imaging pixels 13 x 13-µm pixels 100% fill factor 13.3 x 13.3-mm imaging area (optically centered)		
	Minimum	Typical	Maximum
CCD read noise*		2 e- rms	4 e- rms
System read noise @ 100-kHz digitization @ 2-MHz digitization		3.6 e- rms 9 e- rms	5 e- rms 15 e- rms
Single-pixel full well	60 ke-	100 ke-	
Output amplifier	200 ke-	240 ke-	
Dark current @ -70°C operation *with abmient air @+20°C*		0.001 e-/p/s	0.003 e-/p/s
Deepest cooling temperature TE cooling (air) *with ambient air @+20°C*	-65°C	-70°C	
Thermostating precision	±0.05°C across entire temperature range		
Software-selectable gains (e-/count)	1, 2, 4		
Nonlinearity @ 100 kHz	<2%		
Vertical shift rate	30 µsec per row		
Readout bits / speed	16 bits @ 100 kHz and 2 MHz		
Operating environment	+5 to +30°C non-condensing		

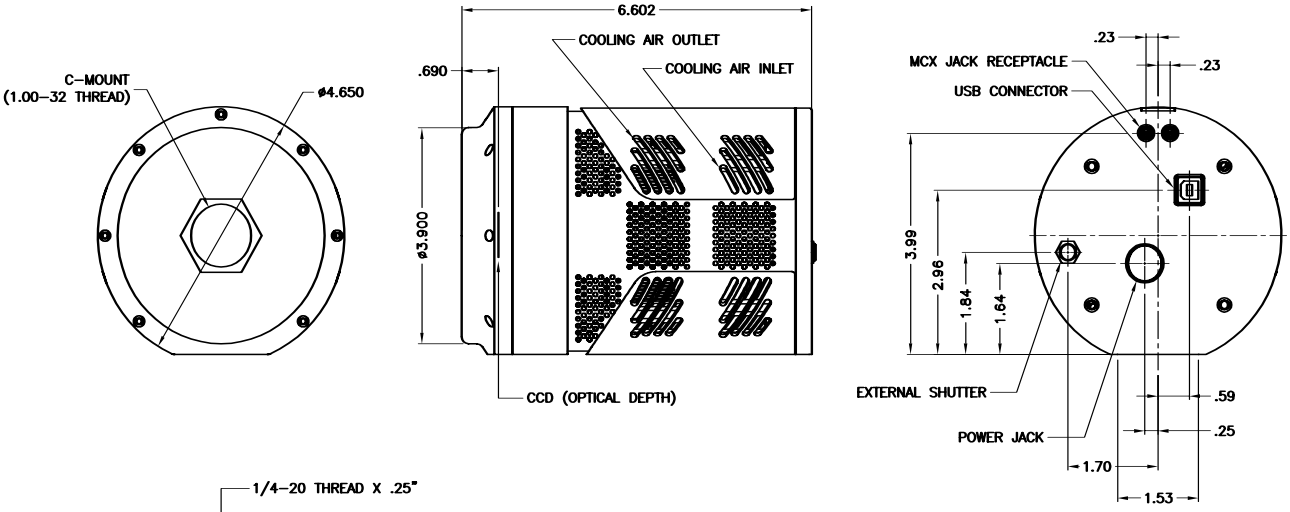
Note: Specifications are subject to change.
* See CCD manufacturer's data sheet for more details.

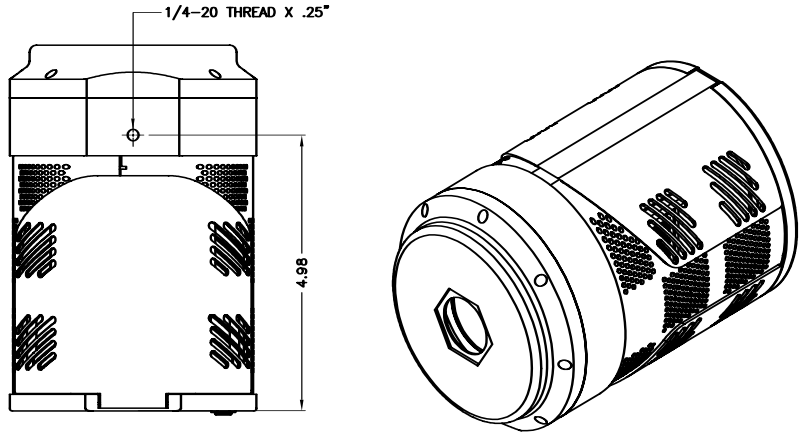
Readout Rates

Binning	@ 2 MHz	@ 100 kHz
1 x 1	583 msec	10.05 sec
2 x 2	282.3 msec	2.8 sec
4 x 4	138.4 msec	0.85 sec



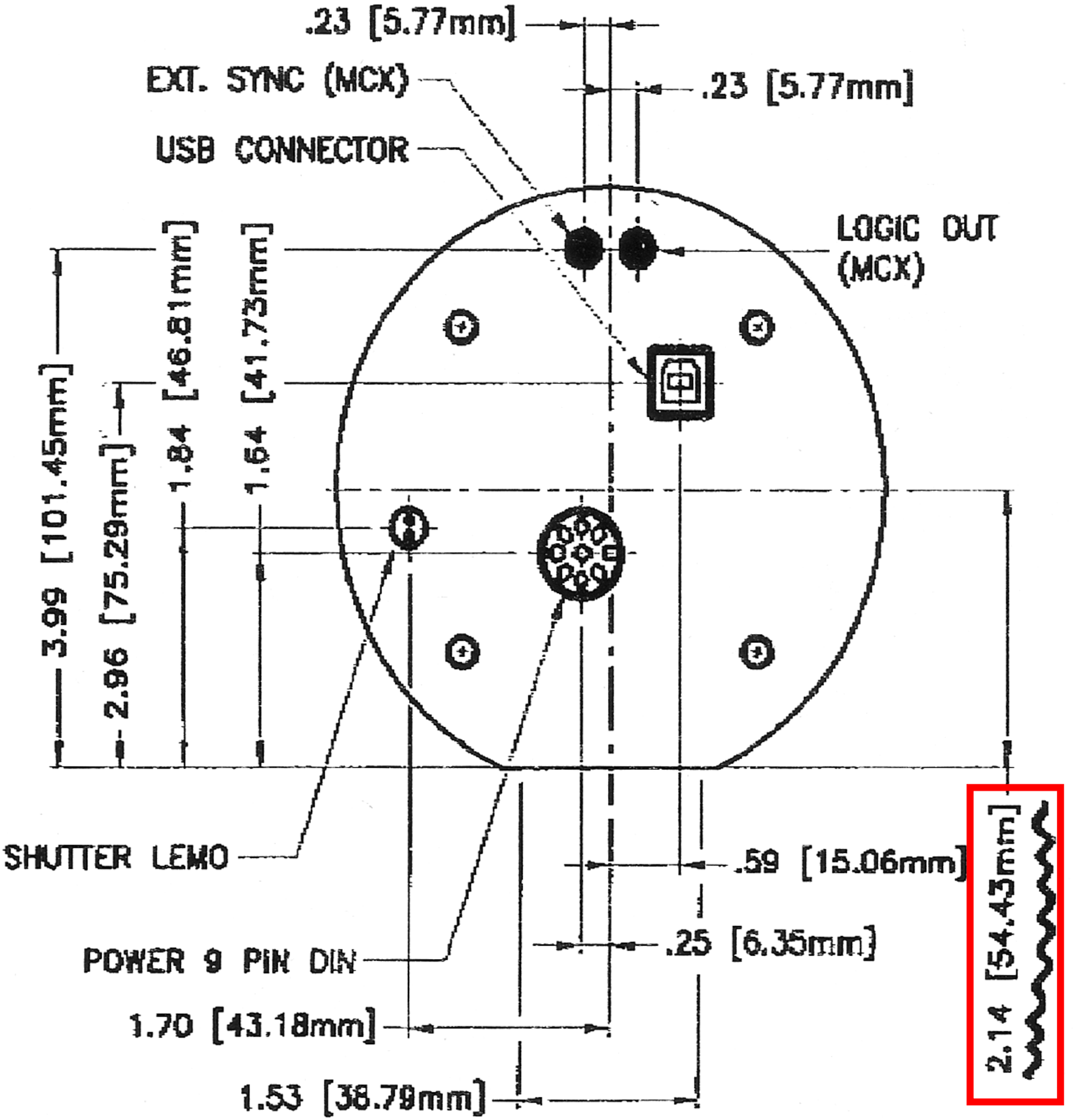






NOTES:

1. WEIGHT 5.0 LBS.
2. POWER DISSIPATION: 90 WATTS AT FULL POWER
3. AIRFLOW: 24 CFM FAN CAPACITY AT FULL POWER
4. INTERNAL 25mm SHUTTER
5. M6 THREADED INSERT SUPPLIED WITH CAMERA


.23 [5.77mm]
EXT. SYNC (MCX)
.23 [5.77mm]
USB CONNECTOR
LOGIC OUT
(MCX)
3.99 [101.45mm]
2.96 [75.29mm]
1.84 [46.81mm]
1.64 [41.73mm]
SHUTTER LEMO
.59 [15.06mm]
.25 [6.35mm]
POWER 9 PIN DIN
1.70 [43.18mm]
1.53 [38.79mm]
2.14 [54.43mm]