

PIXIS 100/400 CCD CAMERA

KEY FEATURES

- 1340 x 100 format sensor for spectroscopy
- Large 20 μm pixels to maximize sensitivity
- eXcelon® technology for sensitivity across UV and NIR
- Thermoelectric cooling down to 90 °C for low dark current
- Acquisition rates of up to 2 MHz
- Permanent vacuum seal
- Dual amplifiers with software selectable gains
- Optional UV phosphor coatings
- Optional AR coating and wedge windows are available

TYPICAL APPLICATIONS

- Raman spectroscopy
- Single-molecule spectroscopy
- Absorbance spectroscopy
- Emission spectroscopy
- Fluorescence spectroscopy
- Reflectance spectroscopy

RELIABILITY

- One-year warranty
- Lifetime vacuum guarantee

High-Performance, Low-Noise CCDs

The PIXIS camera family consists of fully integrated, low noise CCD cameras with deep cooling for quantitative scientific imaging and spectroscopy applications from UV to NIR. High quantum efficiency and ultra-low-noise electronics make PIXIS cameras highly sensitive and ideal for demanding low-light applications.

These models include the PIXIS 100 and 400 CCDs, featuring a back-illuminated 1340 x 100 or 1340 x 400 sensor format, respectively, and large 20 μm pixels optimized for sensitive spectroscopy research. The PIXIS 100 and 400 offer thermoelectric cooling down to -80 °C, an all-metal hermetically sealed design (with a lifetime vacuum guarantee), and exclusive eXcelon® technology for increased sensitivity from UV to NIR with reduced etaloning.



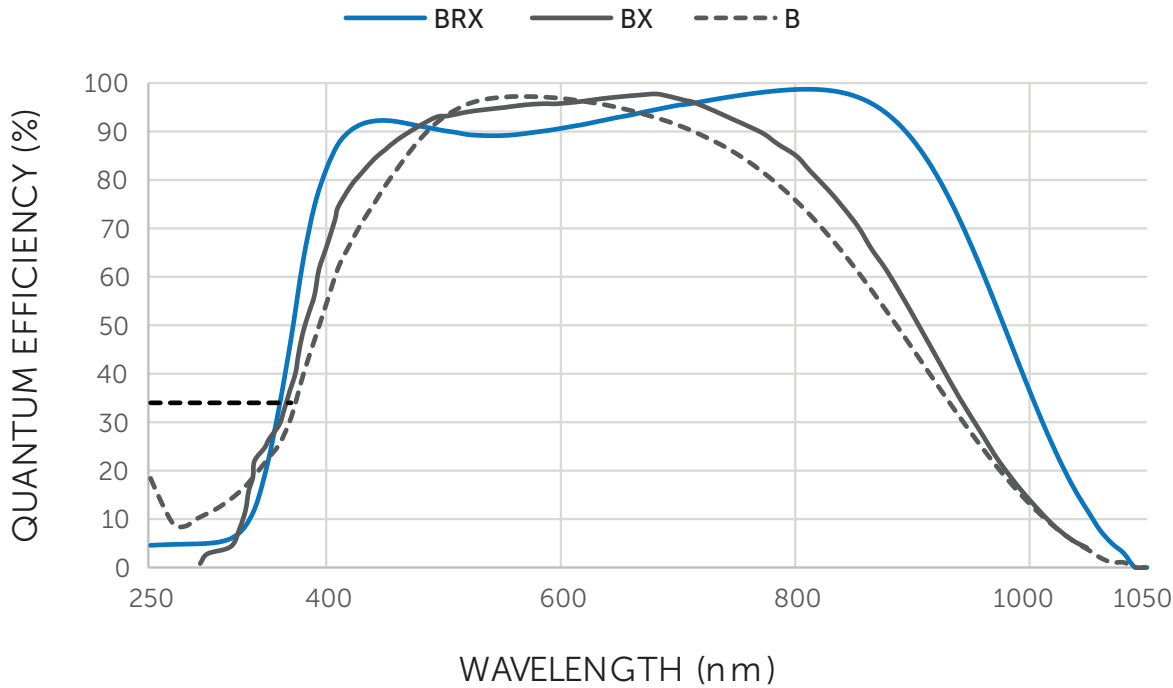
PIXIS 100/400 SPECIFICATIONS

SPECIFICATIONS	PIXIS 100	PIXIS 400
CCD Sensor Format	B: Back-illuminated (highest QE in visible, subject to NIR etaloning, optional UV coating) BR: Back-illuminated, deep-depleted (high QE in NIR with minimal etaloning, optional UV coating) BX: Back-illuminated, with eXcelon (high QE from UV-NIR with low etaloning) BRX: Back-illuminated, deep-depleted with eXcelon (highest QE from UV-NIR with negligible etaloning)	
Active Array Size	1340 x 100 pixels	1340 x 400 pixels
Pixel Area	20 μm x 20 μm (400 μm^2)	
Sensor Area	26.8 mm (W) x 2.0 mm (H) (optically centered)	26.8 mm (W) x 8.0 mm (H) (optically centered)
Spectral Response	250 – 1100 nm	
Spectrometric Well Capacity	300,000 e ⁻ (High Sensitivity); 1,000,000 e ⁻ (High Capacity)	
ADC Rates	2 MHz, 100 kHz	
Analog Gain (typical)	1, 2, 4 e ⁻ /ADU (High Sensitivity); 4, 8, 16 e ⁻ /ADU (High Capacity) (available at all ADC rates)	
Non-linearity	< 1.0% @ 100 kHz	
I/O Signals	Two MCX to BNC connectors for programmable frame readout, shutter, trigger in	
Typical System Readout Modes	3.0 e ⁻ @ 100 kHz; 11.0 e ⁻ @ 2 MHz	
Typical Dark Current	BRX/BR: 0.03 e ⁻ /p/s @ -80 °C BX/B: 0.001 e ⁻ /p/s @ -80 °C	
Cooling Options	Thermoelectric air or liquid cooling (optional CoolCUBE II coolant circulator available) -70 °C	
Thermostating Precision	± 0.05 °C across temperature range	
Vertical Shift Times	< 15 μsec /row (programmable)	
Output Interface	USB 2.0	
Digitization	16-bit	
Operating Temperature Range	5 °C to 30 °C (non-condensing)	
Camera Weight	5 lbs, 2.27 kg	
Camera Dimensions	163 x 118 x 114 mm (L x W x H)	
Certification	CE	

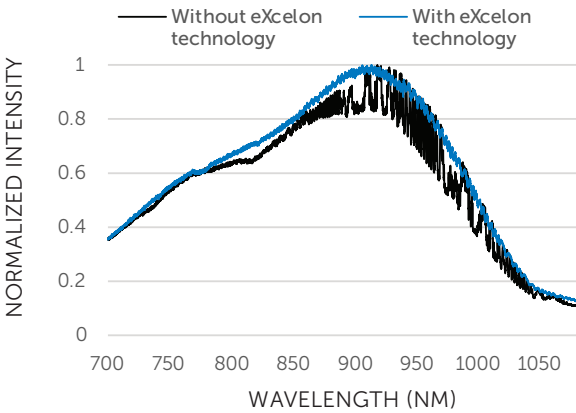
PIXIS 100/400 SPEED TABLES

SPECIFICATIONS	PIXIS 100	PIXIS 400
@100 kHz Full Vertical Bin	70 fps	60 fps
@2 MHz Full Vertical Bin	750 fps	315 fps
@2 MHz 0.4 mm high	1300 fps	1300 fps

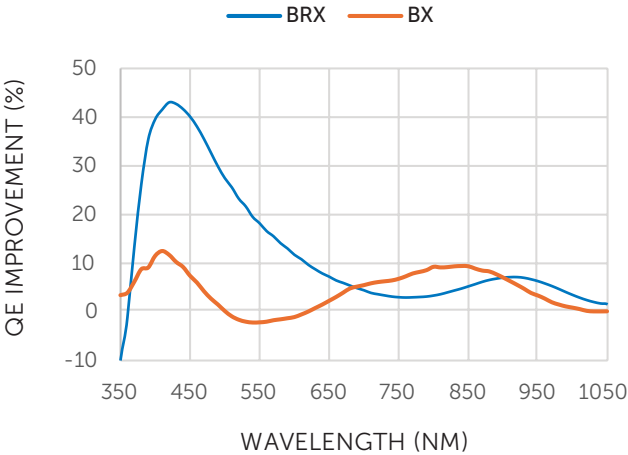
PIXIS 100/400 QE CURVES



NIR FRINGE COMPARISON



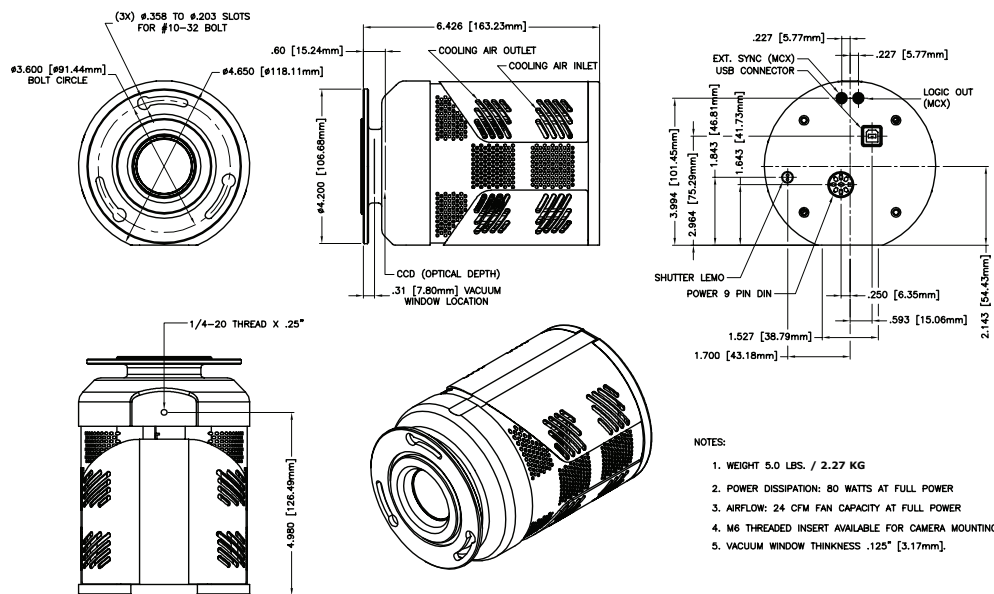
EXCELON QE IMPROVEMENT



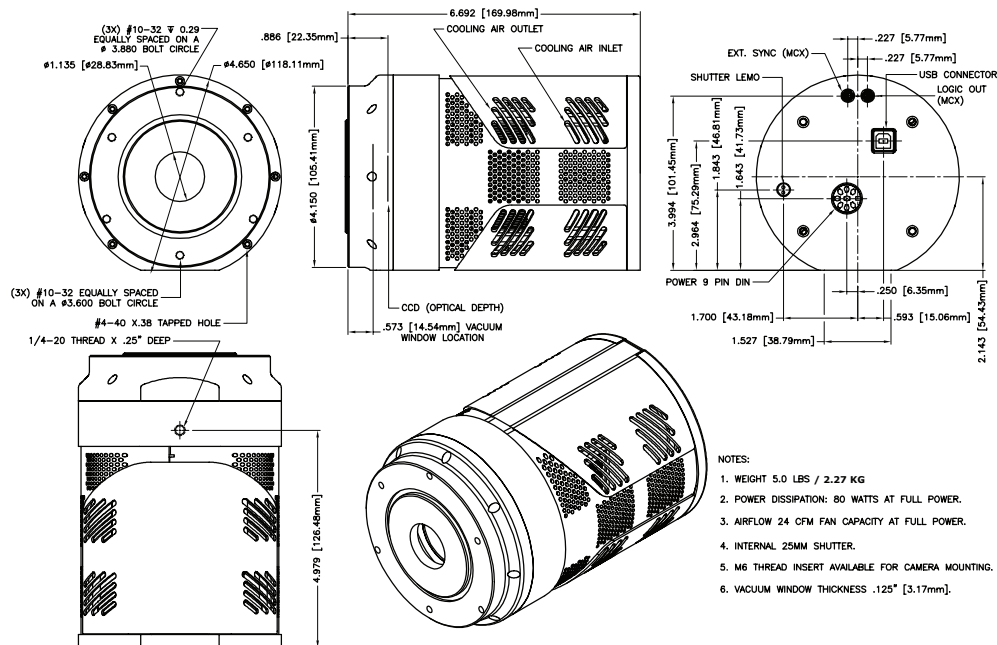
PIXIS 100/400 ACCESSORIES

Accessories (Air Cooled)	Accessories (Liquid Cooled)	Accessories (Optional)
MCX to BNC cables (x2)	MCX to BNC cables (x2)	WinX application software
USB 2.0 interface cable	USB 2.0 interface cable	LightField® application software
Certificate of Performance	Certificate of Performance	SITK™ for LabVIEW
Power supply (120V/240V)/cables	Power supply (120V/240V)/cables	Internal 25 mm or 45 mm shutter
	Liquid circulator with hoses	Fiber optic extender kit

PIXIS 100/400 DIMENSIONAL OUTLINES — SPECTROMETER MOUNT (UNITS: INCHES [MM])



PIXIS 100/400 DIMENSIONAL OUTLINES — SPECTROMETER MOUNT WITH SHUTTER (UNITS: INCHES [MM])



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Specifications in this datasheet are subject to change.
Refer to the Teledyne Princeton Instruments website for
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PIXIS 2048 CCD CAMERA

KEY FEATURES

- 2048 x 2048 format sensor for spectroscopy
- Balanced 13.5 μm pixels to maximize sensitivity
- eXcelon® technology for sensitivity across UV and NIR
- Thermoelectric cooling down to -75 °C for low dark current
- Acquisition rates of up to 2 MHz
- Permanent vacuum seal
- Large 45 mm integrated shutter
- Dual amplifiers with software selectable gains
- Optional UV phosphor coatings
- Optional AR coating and wedge windows are available

TYPICAL APPLICATIONS

- Semiconductor failure analysis
- Solar cell inspection
- Astronomy
- Photometry
- Laser beam profiling
- Luminescence, and chemiluminescence
- Fluorescence imaging
- Bose-Einstein condensate imaging

RELIABILITY

- One-year warranty
- Lifetime vacuum guarantee

High-Performance, Low-Noise CCDs

The PIXIS camera family consists of fully integrated, low-noise CCD cameras with deep cooling for quantitative scientific imaging and spectroscopy applications from UV to NIR. High quantum efficiency and ultra-low-noise electronics make PIXIS cameras highly sensitive and ideal for demanding low-light applications.

The PIXIS 2048 CCD model features a large 2048 x 2048 sensor format and balanced 13.5 μm pixels optimized for high spatial resolution and sensitive imaging or spectroscopy research. The PIXIS 2048 offers thermoelectric cooling down to -90 °C, an all-metal hermetically sealed design (with a life-time vacuum guarantee), and exclusive eXcelon® technology for increased sensitivity from UV to NIR with reduced etaloning.



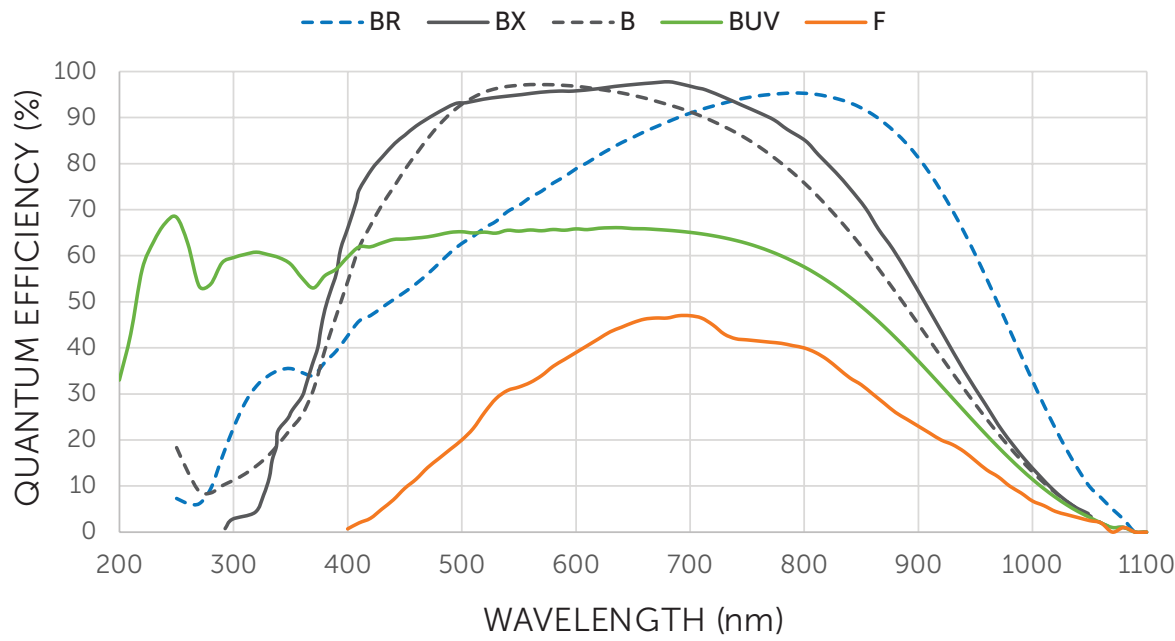
PIXIS 2048 SPECIFICATIONS

SPECIFICATIONS	PIXIS 2048
CCD Sensor Format	B: Back-illuminated (highest QE in visible, subject to NIR etaloning, optional UV coating) BR: Back-illuminated, deep-depleted (high QE in NIR with minimal etaloning, optional UV coating) BX: Back-illuminated, with eXcelon (high QE from UV-NIR with low etaloning) BUV: Back-illuminated (highest sensitivity in UV, subject to NIR etaloning) F: Front-illuminated (moderate QE, no etaloning, optional UV coating)
Active Array Size	2048 x 2048 pixels (4.2 megapixel)
Pixel Area	13.5 μm x 13.5 μm (182.25 μm^2)
Sensor Area	27.6 mm x 27.6 mm (39 mm diagonal, optically centered)
Spectral Response	120 – 1100 nm
Spectrometric Well Capacity	100,000 e ⁻ (single pixel); 1,000,000 e ⁻ (output node)
ADC Rates	2 MHz, 100 kHz
Analog Gain (typical)	1, 2, 4 e ⁻ /ADU; 3.5, 7, 14 e ⁻ /ADU (High Capacity) (available at all ADC rates)
Non-linearity	< 2.0% @ 100 MHz
I/O Signals	Two MCX connectors for programmable frame readout, shutter, trigger in
Typical System Readout Modes	3.5 e ⁻ @ 100 kHz; 12.0 e ⁻ @ 2 MHz
Typical Dark Current	BRX/BR/BUV: 0.2 e ⁻ /p/s @ -60 °C BX/B: 0.005 e ⁻ /p/s @ -60 °C F: 0.002 e ⁻ /p/s @ -60 °C
Cooling Options	Thermoelectric air or liquid cooling (optional coolant circulator available) -70 °C
Thermostating Precision	± 0.05 °C across temperature range
Vertical Shift Times	< 32.2 μsec /row (programmable)
Output Interface	USB 2.0 (5m cable provided), optional fiberoptic interface available for remote operation
Digitization	16-bit
Operating Temperature Range	5.5 °C to 30 °C (non-condensing)
Camera Weight	5 lbs, 2.5 kg
Camera Dimensions	195.1 x 118.1 x 114 mm (L x W x H)
Certification	CE

PIXIS 2048 FRAME RATES

BINNING	2 MHz	100 kHz
1 x 1	0.44	0.03
2 x 2	1.05	0.11
4 x 4	2.18	0.39
8 x 8	4.02	1.36
16 x 16	6.49	3.47

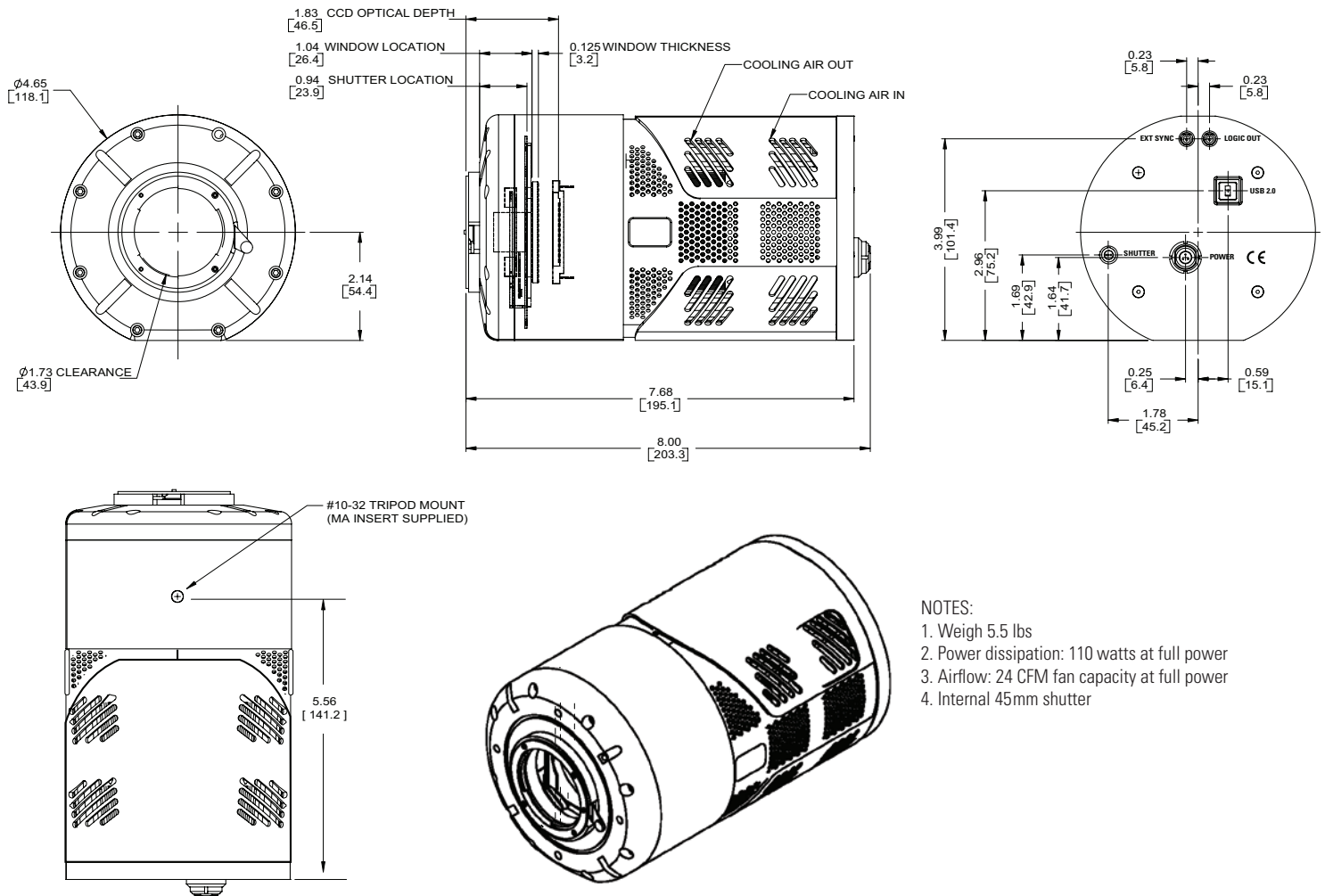
PIXIS 2048 QE CURVES



Enhanced UV version available upon special request

PIXIS 2048 ACCESSORIES

Accessories (Air Cooled)	Accessories (Liquid Cooled)	Accessories (Optional)
MCX to BNC cables (x2)	MCX to BNC cables (x2)	WinX application software
USB 2.0 interface cable	USB 2.0 interface cable	LightField® application software
Certificate of Performance	Certificate of Performance	SITK™ for LabVIEW
Power supply (120V/240V)/cables	Power supply (120V/240V)/cables	Internal 25 mm or 45 mm shutter
	Liquid circulator with hoses	Fiber optic extender kit

PIXIS 2048 DIMENSIONAL OUTLINES — F-MOUNT WITH SHUTTER (UNITS: INCHES [MM])

NOTES:

1. Weigh 5.5 lbs
2. Power dissipation: 110 watts at full power
3. Airflow: 24 CFM fan capacity at full power
4. Internal 45mm shutter


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