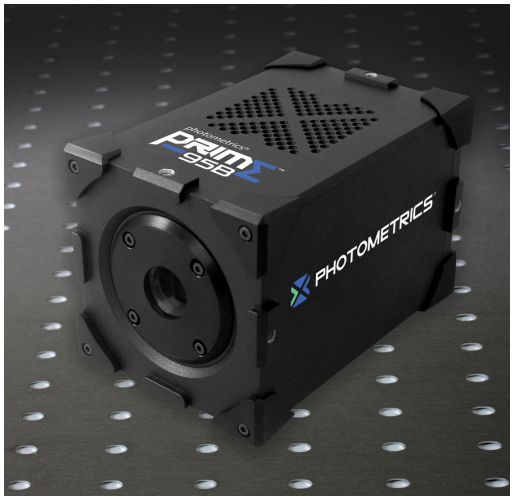


photometrics®

PRIME 95B™

Back Illuminated Scientific CMOS

Discovery depends on every photon

Prime 95B is the Scientific CMOS with extreme sensitivity using high Quantum Efficiency (QE) Backside Illumination (BSI), a first for Scientific CMOS cameras. The 95B's sensor converts up to 95% of incident photons into a measurable signal. Unlike microlens approaches to increasing QE, which lose effectiveness as objective magnification is increased, Prime 95B's BSI sensor brings light into the pixel photodiode from behind, avoiding structures that reflect or absorb light. When combined with large 11µm pixels, Prime 95B can deliver over 300% more signal than other sCMOS cameras at 100X magnification.

More importantly, Prime 95B outperforms EMCCD cameras—with no excess noise that negates the benefit of using a high QE sensor, and additional limitations from EM gain calibration, stability, expense, and sensor lifetime With a true 16-bit dynamic range, Prime 95B easily accomplishes what EMCCD can not—detect weak and bright signals within the same image with photon-noise limited performance.

The extreme sensitivity not only allows fainter signals to be detected, it provides the flexibility to increase frame rates, or turn down the excitation intensity to reduce cellular photo-damage. Yet Prime 95B maintains the same high frame rates, field-of-view and extremely low read noise that has made sCMOS so popular for live-cell imaging.

Primary applications:

Super-Resolution Microscopy

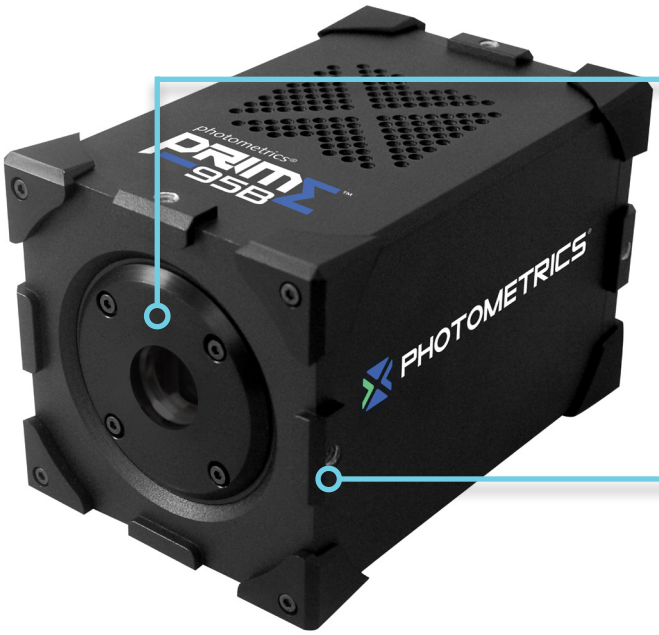
Confocal Microscopy

Single Molecule Fluorescence

Light Sheet Microscopy

- **95% Quantum Efficiency**
- **11µm x 11µm Pixel Area**
- **1.3e- Read Noise (median)**
- **41fps @ 16-bit / 82fps @ 12-bit**

Features	Advantages
High Quantum Efficiency 95% Peak QE	Maximizes ability to detect weak signals, enables short exposure times for high frame rates, minimizes phototoxicity across a wide range of wavelengths
Large 11µm Pixel Size	Maximize light collection while maintaining proper spatial sampling
Extremely Low Read Noise	Maximize your ability to detect faint fluorescence
Fast Frame Rates	Capture highly dynamic events with high temporal resolution
Large Field of View	Maximize the number of cells that can be tracked and monitored per frame
Enhanced Dynamic Range	Measure both bright and dim signal levels within the same image 61,500:1 Dynamic Range (95.8 dB)
Multiple Expose Out Triggering	Control up to four light sources for multi-wavelength acquisitions
SMART Streaming	Faster acquisition rates with variable exposures, ideal for multi-probed live cell imaging Compatible with Multiple Expose Out Triggering



1.4 Megapixel BSI CMOS Sensor

Backside Illuminated Sensor
1.3e- Read Noise (Median)
>95% peak QE
80,000e- full well
11 x 11µm pixels
18.7mm diagonal

Easily Mounted and Secured

C-mount
Two ¼"-20 mounting holes per side

Convenient Interface

16-bit Data
- 41fps

12-bit Data
- 82fps

Multiple Cooling Options

Forced Air Cooling
- -10°C Cooling
- Selectable Fan Speed

Liquid Cooling
- -25°C Cooling
- Leak-proof, quick-disconnect ports

Advanced Triggering Capabilities

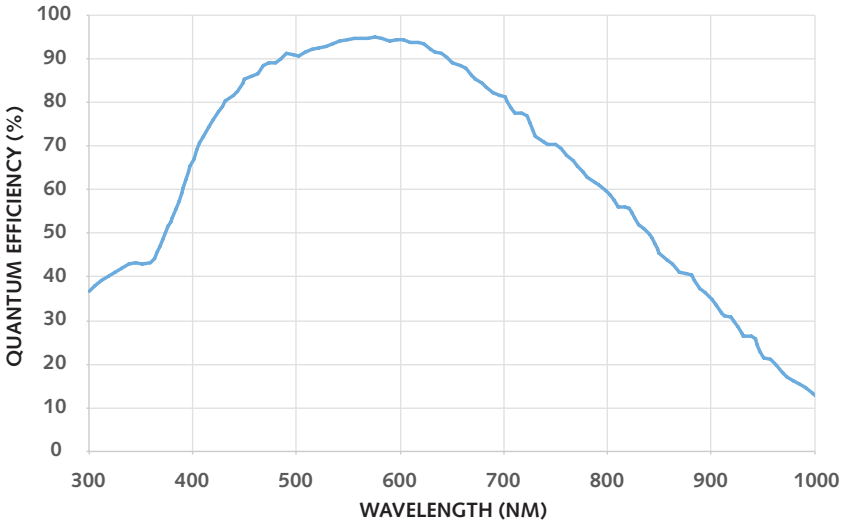
Effective Global Shutter
Up to four selectable expose-out lines

Specifications	Camera Performance
Sensor	GPixel GSense 144 BSI CMOS Gen IV, Grade 1 in imaging area
Active Array Size	1200 x 1200 pixels (1.44 Megapixel)
Pixel Area	11µm x 11µm (121µm²)
Sensor Area	13.2mm x 13.2mm 18.7mm diagonal
Peak QE%	>95%
Read Noise	1.3e- (Median) 1.5e- (rms)
Full-Well Capacity	80,000e- (Combined Gain) 4,500e- (High Gain)
Dynamic Range	61,500:1 (Combined Gain)
Bit Depth	16-bit (Combined Gain) 12-bit (High Gain)
Readout Mode	Rolling Shutter Effective Global Shutter
Binning	2x2 (on FPGA)

Cooling Performance	Sensor Temperature	Dark Current
Air Cooled	-10°C @ 30°C Ambient	1.9 e-/pixel/second
Liquid Cooled	-25°C @ 30°C Ambient	0.7 e-/pixel/second

Specifications	Camera Interface
Digital Interface	PCIe
Lens Interface	C-Mount
Mounting Points	2 x ¼ 20" mounting points per side to prevent rotation
Liquid Cooling	Quick Disconnect Ports

Triggering Mode	Function
Input Trigger Modes	Trigger-First – Sequence triggered on first rising edge Edge – Each frame triggered on rising edge SMART Streaming – Fast iteration through multiple exposure times
Output Trigger Modes	First Row – Expose signal is high while first row is acquiring data Any Row – Expose signal is high while any row is acquiring data All Rows – Effective Global Shutter – Expose signal is high when all rows are acquiring data
Output Trigger Signals	Expose Out (up to four signals), Read Out, Shutter Out, Trigger Ready



Frame Rate (PCIe interface)		
Array Size	**16-bit**	**12-bit**
1200 x 1200	41	82
1200 x 512	96	192
1200 x 256	192	384
1200 x 128	384	768

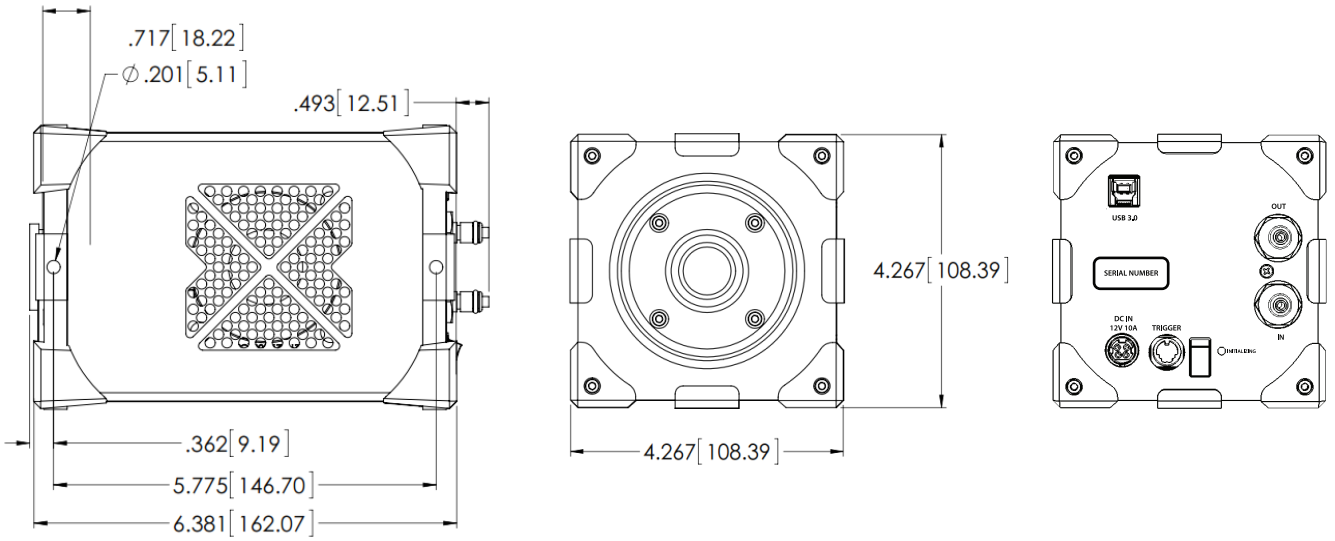
Accessories (Included)

- PCIe Card/Cable
- Trigger Cable
- Power Supply
- Manuals and QuickStart Guide
- Performance and Gain Calibration Test Data

Accessories (Additional)

- Liquid Circulator
- Liquid Cooling Tubes

Distance from C-mount to sensor



Specifications in this datasheet are subject to change.

Refer to the Photometrics website for most current specifications.

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