



photometrics®



Large Field of View BSI Scientific CMOS

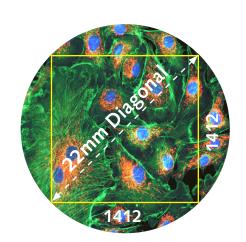
Discovery depends on every photon

The Prime 95B 22mm delivers a large imaging area and combines this with the near-perfect sensitivity of a Backside Illuminated (BSI) Scientific CMOS sensor. The Prime 95B 22mm sensor converts up to 95% of incident photons into measurable signal, and provides a large 22mm field of view. The Prime 95B 22mm is optimally positioned to maximize detection and imaging throughput on larger format microscopes.

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. The Prime 95B 22mm improves the field of view and maintains the high frame rates and extremely low read noise that has made sCMOS so popular for live-cell imaging.

- ▶ 95% Quantum Efficiency
- ▶ 22mm Field of View (1412x1412)
- ▶ 1.6e- Read Noise (median)
- > 35fps @ 16-bit / 70 fps @ 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 22mm Field of View	Maximize imaging area and increase throughput	
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	
Enhanced Dynamic Range	Measure both bright and dim signal levels within the same image 50,000:1 Dynamic Range (94 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	





2.0 Megapixel BSI CMOS Sensor

Backside Illuminated Sensor 1.6e- Read Noise (Median) >95% peak QE 80,000e- full well 11 x 11µm pixels 22mm diagonal

Easily Mounted and Secured

C-Mount Two $\frac{1}{4}$ "-20 mounting holes per side

Convenient Interfaces

16-bit Data

35 fps

12-bit Data

• 70 fps

Multiple Cooling Options

Forced Air Cooling

- -20°C Cooling
- Selectable Fan Speed

Liquid Cooling

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



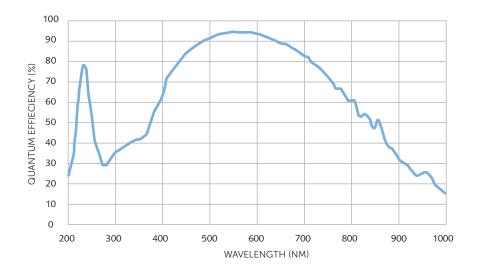
Advanced Application Triggers

Effective Global Shutter
Up to four selectable expose-out lines



Serisor GPixel GSerise 400 BSI CMOS Gen IV, Grade 1 in Imaging area Active Array Size 1412 x 1412 (2.0 Megapixel) Pixel Area 11µm x 11µm (121µm²) Serisor Area 15.5mm 22mm diagonal Peak OE% 295% Read Noise 16.6m (Median) 1.8er (RMS) Full-Well Capacity 80,000e- Dynamic Range 50,000.1 Bit Depth 16-bit, 12-bit Readout Mode Effective Global Shutter Effective Global Shutter	Specifications	Camera Performance			
Pixel Area 11µm x 11µm (121µm²?	Sensor	GPixel GSense 400 BSI CMOS Gen	IV, Grade 1 in imaging area		
Sensor Area 25mm vals.5mm 22mm diagonal 27mm	Active Array Size	1412 x 1412 (2.0 Megapixel)	1412 x 1412 (2.0 Megapixel)		
Sensor Area 22mm diagonal Peak OEK >95% Read Noise 1.6e (Median) 1.8e* (RMS) Full-Well Capacity 80,000e- Dynamic Range 50,000:1 Readout Mode Read	Pixel Area	11µm x 11µm (121µm²)	11μm x 11μm (121μm²)		
1.6e* (Median) 1.8e* (RMS)	Sensor Area				
Read Noise 1.8e (RMS) Full-Well Capacity 80,000e- Dynamic Range 50,000:1 Bit Depth 16-bit, 12-bit Readout Mode Rolling Shutter Effective Global Shutter Binning 2x2 (on FPGA) Linearity 99.5% Cooling Performance Sensor Temperature Dark Current Air Cooled -20°C @ 25°C Ambient 0.55e /pixel/second Liquid Cooled -25°C @ 25°C Ambient 0.5e /pixel/second Specification Camera Interface Digital Interface PCle, USB 3.0 Lens Interface C-Mount Mounting Points 2x 1/4* 20 mounting points per side to prevent rotation Liquid Cooling Guick Disconnect Ports Triggering Mode Function Trigger First: Sequence triggered on first rising edge Edge: Each frame triggered on rising edge SMART Streaming: Fast Iteration through multiple exposure times First Keyne: Expose signal is high while first row is acquiring data Any Row: Expose signal is high while first row is acquiring data All Rows: Effective Global Shutter - Expose signal is high when all rows are acquiring data All Rows: Effective Global Shutter - Expose signal is high when all rows are acquiring data All Rows: Effective Global Shutter - Expose signal is high when all rows are acquiring data All Rows: Effective Global Shutter - Expose signal is high when all rows are acquiring data All Rows: Effective Global Shutter - Expose signal is high when all rows are acquiring data	Peak QE%	>95%	>95%		
Bit Depth 16-bit. 12-bit Readout Mode Rolling Shutter Effective Global Shutter Binning 2x2 (on FPGA) Linearity >99.5% Cooling Performance Sensor Temperature Dark Current Air Cooled -20°C @ 25°C Ambient 0.55e /pixel/second Liquid Cooled -25°C @ 25°C Ambient 0.5e /pixel/second Liquid Cooled -25°C @ 25°C Ambient 0.5e /pixel/second Specification Camera Interface PCIe, USB 3.0 Lens Interface PCIe, USB 3.0 Lens Interface C-Mount Mounting Points 2x 1/4° 20 mounting points per side to prevent rotation Liquid Cooling Tingger First Sequence Triggered on first rising edge Edge: Each frame triggered on first rising edge Edge: Each frame triggered on rising edge Edge: Each frame triggered on rising edge Effective Global Shutter – Expose signal is high while first row is acquiring data All Rows: Effective Global Shutter – Expose signal is high when all rows are acquiring data All Rows: Effective Global Shutter – Expose signal is high when all rows are acquiring data	Read Noise				
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Readout Mode Effective Global Shutter Binning 2x2 (on FPGA) Linearity >99.5% Cooling Performance Sensor Temperature Dark Current Air Cooled -20°C @ 25°C Ambient 0.55e /pixel/second Liquid Cooled -25°C @ 25°C Ambient 0.3e /pixel/second Camera Interface Digital Interface PCle, USB 3.0 Lens Interface C-Mount Mounting Points 2x 1/4° 20 mounting points per side to prevent rotation Liquid Cooling Quick Disconnect Ports Triggering Mode Function Trigger First: Sequence triggered on first rising edge Edge: Each frame triggered on rising edge SMART Streaming: Fast iteration through multiple exposure times First Row: Expose signal is high while first row is acquiring data All Rows: Effective Global Shutter – Expose signal is high when all rows are acquiring data All Rows: Effective Global Shutter – Expose signal is high when all rows are acquiring data	Bit Depth	16-bit, 12-bit	16-bit, 12-bit		
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Specification Camera Interface PCIe, USB 3.0 Lens Interface C-Mount Mounting Points 2x 1/4* 20 mounting points per side to prevent rotation Liquid Cooling Quick Disconnect Ports Triggering Mode Function Trigger First: Sequence triggered on first rising edge Edge: Each frame triggered on rising edge SMART Streaming: Fast iteration through multiple exposure times 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	Air Cooled	-20°C @ 25°C Ambient	0.55e ⁻ /pixel/second		
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Mounting Points 2x 1/4" 20 mounting points per side to prevent rotation Quick Disconnect Ports Triggering Mode Function Trigger First: Sequence triggered on first rising edge Edge: Each frame triggered on rising edge SMART Streaming: Fast iteration through multiple exposure times 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	Digital Interface	PCle, USB 3.0	PCle, USB 3.0		
Liquid Cooling Quick Disconnect Ports Triggering Mode Function Trigger First: Sequence triggered on first rising edge Edge: Each frame triggered on rising edge SMART Streaming: Fast iteration through multiple exposure times 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	Lens Interface	C-Mount	C-Mount		
Triggering Mode Function Trigger First: Sequence triggered on first rising edge Edge: Each frame triggered on rising edge SMART Streaming: Fast iteration through multiple exposure times 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	Mounting Points	2x 1/4" 20 mounting points per side	2x 1/4" 20 mounting points per side to prevent rotation		
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All Rows: Effective Global Shutter – Expose signal is high when all rows are acquiring data	Output Trigger Modes				
Output Trigger Signals Expose Out (up to four signals), Read Out, Trigger Ready	Output Ingger Modes				
	Output Trigger Signals	Expose Out (up to four signals), Rea	Expose Out (up to four signals), Read Out, Trigger Ready		





Frame Rate (PCIe interface)				
Array Size	16-bit	12-bit		
1412X1412	35	70		
1412X1200	41	82		
1412X512	96	192		
1412X256	192	384		
1412X128	384	736		

Accessories (Included)

PCle Card/Cable Power Supply

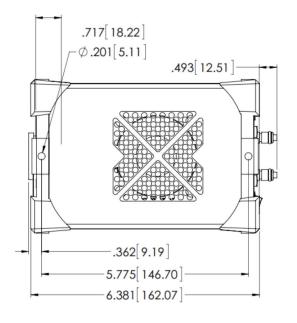
USB 3.0 Cable Manuals and QuickStart Guide

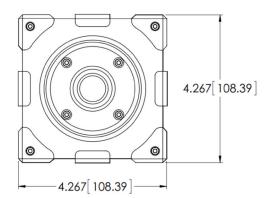
Trigger Cables Performance and Gain Calibration Test Data

Accessories (Additional)

Liquid Circulator
Liquid Cooling Tubes

Distance from C-mount to sensor







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Specifications in this datasheet are subject to change. Refer to the Teledyne Photometrics website for most current specifications.



