PRIME BSI CMOS CAMERA

KEY FEATURES

- Backside sensor illumination
- 95% quantum efficiency
- 63 fps imaging speed
- Balanced 6.5 µm pixels
- Low 1.0 e^- read noise
- CMS mode for low noise imaging at high speeds
- High dynamic range
- Programmable scan mode to control camera readout, ideal for light sheet

TYPICAL APPLICATIONS

- Light-sheet microscopy
- Super-resolution microscopy (PALM, STORM, and DNA-PAINT)
- Spinning disk confocal imaging
- Live cell imaging
- Fluorescence imaging

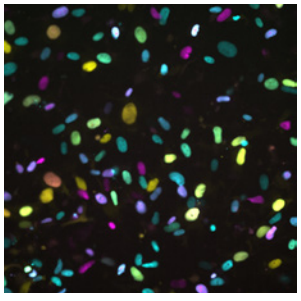
RELIABILITY

- Three-year warranty
- Extended warranty available

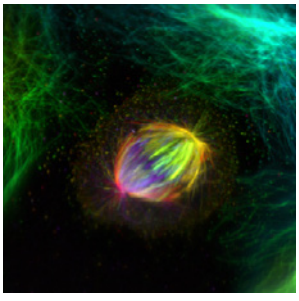
High-Resolution, Back-Illuminated CMOS Cameras

The Prime BSI CMOS is a back-illuminated camera designed to provide a balance between high-resolution imaging and sensitivity, with the combination of a 6.5 µm pixel and near-perfect 95% quantum efficiency making it an ideal solution for a range of applications.

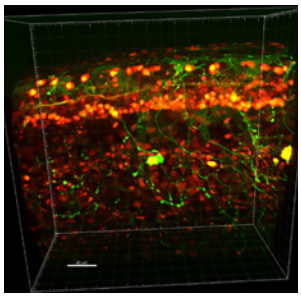
The balanced 6.5 µm pixel provides high-resolution imaging, pairing with microscope objectives to ensure the highest quality images. Combined with a Correlated Multi-Sampling (CMS) low-noise mode, the Prime BSI CMOS camera delivers optimal imaging with both high sensitivity and high resolution.



Live Cell Imaging
Prof. Kurt Anderson



Expansion Light Sheet
Prof. Johann Danzl



Spinning Disk Confocal
Dr. Delgado-Martins

PRIME BSI SPECIFICATIONS

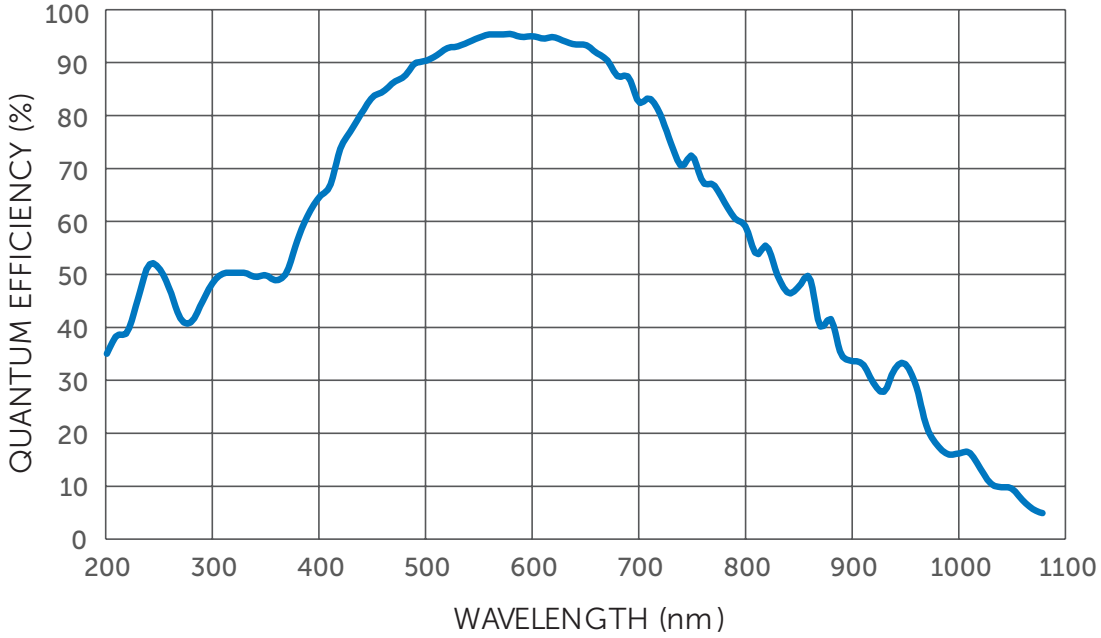
SPECIFICATIONS	Camera Performance
Sensor	GPixel GSENSE2020BSI scientific CMOS sensor
Active Array Size	2048 x 2048 (4.2 megapixel)
Pixel Area	6.5 x 6.5 µm (42.25 µm^2)
Sensor Area	13.2 mm x 13.2 mm (18.7 mm diagonal)
Peak QE%	95%
Readout Modes	Rolling shutter
	Effective global shutter
	Programmable scan mode (PCIe only)
Digital Binning	2 x 2
Linearity	> 99.5%
Cooling Options	Air cooled (-20 °C @ 30 °C ambient, 0.5 e$^-$/pixel/second dark current) Liquid cooled (-30 °C @ 30 °C ambient, 0.12 e$^-$/pixel/second dark current)
Digital Interfaces	PCI-Express Gen 2
	USB 3.0
Lens Interfaces	C-mount
Mounting Points	2x ¼" -20 TPI mounting points per side to prevent rotation
Camera Weight	1.7 kg, 3.7 lbs

CAMERA MODES

SPECIFICATIONS	Speed (200 MHz)	HDR (100 MHz)	CMS (100 MHz)
Bit Depth	11-bit	16-bit	12-bit
Frame Rate (Full Frame)	63 fps	43 fps	43fps
Read Noise	1.6 e$^-$	1.6 e$^-$	1.0 e$^-$
Cooling (Air)	-20 °C	-20 °C	-20 °C
Line Time	7.7 µsec/line	11.4 µsec/line	11.4 µsec/line
Dark Current (Air)	0.5 e$^-$/p/sec	0.5 e$^-$/p/sec	0.5 e$^-$/p/sec
Full Well Capacity	10,000 e$^-$	45,000 e$^-$	1,000 e$^-$

TRIGGERING MODE	Function
INPUT TRIGGER MODES	
Trigger First	Sequence triggered on first rising edge
Edge Trigger	Each frame in sequence triggered by rising edge
SMART Streaming	Fast iteration through multiple exposure times, works with the four trigger out cables to control multiple light sources at multiple exposure times
OUTPUT TRIGGER MODES	
Any Row	Expose signal is high while any row is acquiring data
First Row	Expose signal is high while first row is acquiring data
Line Output	Expose signal provides rising edge for each row advanced by the rolling shutter readout
EFFECTIVE GLOBAL SHUTTER TRIGGER MODES	
All Row	Expose out signal high for exposure time, maintains exposure time but drops frame rate
Rolling Shutter	Expose out signal high for exposure time – readout time. Keeps frame rate but drops exposure time.
OUTPUT TRIGGER SIGNALS	
Expose Out (up to four signals), Read Out, Trigger Ready	

PRIME BSI QE CURVE

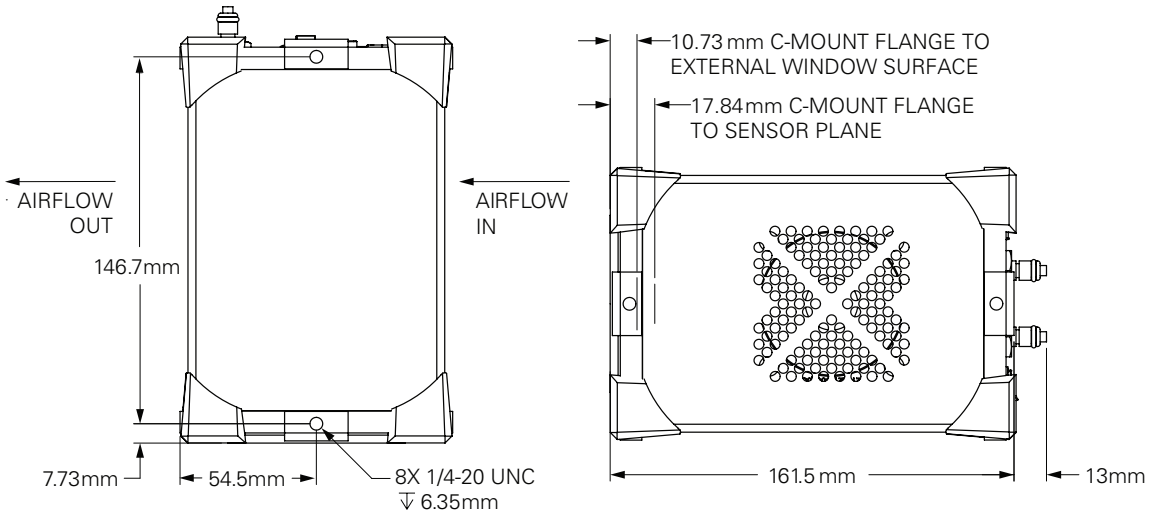


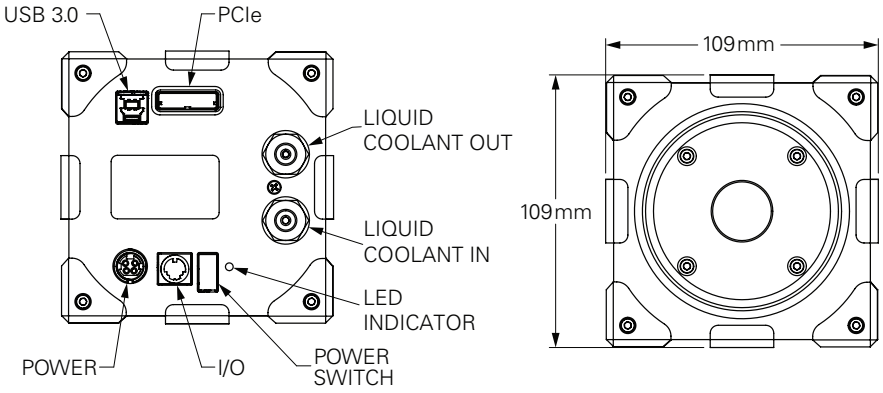
PRIME BSI SPEED TABLE

FRAME RATES (HZ)		
ARRAY SIZE	SPEED (11-bit)	HDR (16-bit) and CMS (12-bit)
2048 x 2048	63	43
2048 x 1024	125	87
2048 x 512	250	173
2048 x 256	497	346
2048 x 128	979	687

PROGRAMMABLE SCAN MODE	Function
SCAN MODES	
Auto	Normal camera operation
Line Delay	Control rolling shutter propagation rate by adding delays to the line time
Scan Width	Control number of rows between reset and readout signal in the rolling shutter
SCAN DIRECTION	
Down	Rolling shutter readout begins at the top of the sensor
Up	Rolling shutter readout begins at the bottom of the sensor
Down/Up Alternate	Rolling shutter readout alternates direction after starting at the top of the sensor

PRIME BSI DIMENSIONAL OUTLINES (UNIT: MM)





PRIME BSI ACCESSORIES

ACCESSORIES (INCLUDED)		
PCIe interface card	Power supply (12V/10A DC)	Liquid circulator
PCIe data cable	PVCAM drivers/software	Liquid cooling tubes
USB A-B data cable, 2m	Quick installation guide	
BNC trigger cable	Performance and gain test data	

FOR MORE INFORMATION REACH OUT ONLINE:

CONTACT US: photometrics.com/contact
FOR OEM ENQUIRIES: photometrics.com/oem-page
CONTACT SUPPORT: photometrics.com/contact/support

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