



Camera Technology
Focused on Scientific Imaging
and Challenging Inspection

Scientific Cameras Catalog



《お問合せ》

URL: www.japanlaser.co.jp/

E-mail: lase@japanlaser.co.jp

TEL: 03-5285-0861

東京本社: 東京都新宿区西早稲田2-14-1



Camera Technology
Focused on Scientific Imaging
and Challenging Inspection

Web: www.tucsen.com

EMAIL: support@tucsen.com

TEL: +86 (591) 2805 5076 ext. 818



Follow us on social media

ADD: West Building No.1, Zone D, 89 Ruanjian Avenue, Gulou Area, Fuzhou, Fujian 350003, China

Version Number: Catalog-PRD-EN-V2.0-2026. Specifications in this manual are subject to change without prior notice.
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About Us

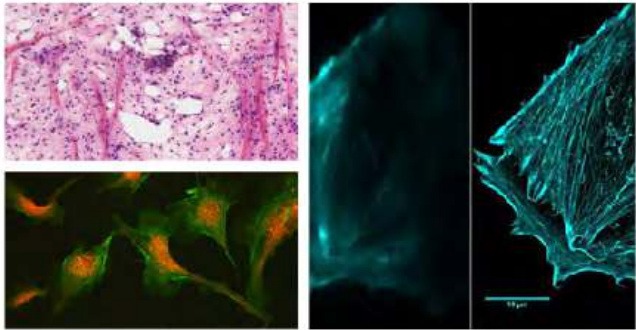


Tucsen is a high-tech enterprise specializing in the research, development, and manufacturing of scientific cameras for photon detection. Its products are widely used in research microscopy, physical spectroscopy, astronomical imaging, and industrial inspection. The company provides scientific imaging products, customized development, application support, and integrated solutions. Founded in 2006 and headquartered in Fuzhou, Tucsen serves customers worldwide.

Through sustained investment in research and development and a deep understanding of application needs, Tucsen has established a comprehensive product portfolio and service capability in the specialized fields of scientific imaging and challenging inspection. Looking ahead, the company will continue to focus on enhancing imaging performance, strengthening supply chain independence and control, and expanding its in-depth application services, with the aim of advancing the broader adoption of photonic information technologies in scientific research and industry.

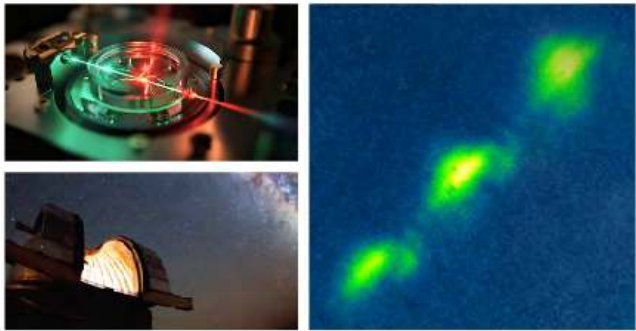
2006 Founded **200+** Employees **30+** Countries & Regions

2 R&D Centers **10,000m²** Advanced Manufacturing Base



Life Sciences

Offering a wide range of high-performance sCMOS and CMOS cameras for life sciences, supporting advanced microscopy and high-throughput imaging.



Physical Sciences

Specialized cameras for physical science research, featuring single-photon sensitivity, X-ray/EUV detection, and ultra-large-format imaging.



Semiconductor Inspection

High speed TDI line scan cameras and large area scan cameras for fast, precise semiconductor defect detection.

Catalog

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Gemini 16KTDI

The Gemini 16KTDI Series is a high-performance TDI line scan camera for large-field, high-speed inspection. Built on a back-illuminated TDI architecture, it offers UV and visible sensor options for multispectral imaging. With 16K resolution, up to 500 kHz line rate, and TEC + air cooling, it ensures stable, high-throughput operation with reduced integration complexity.



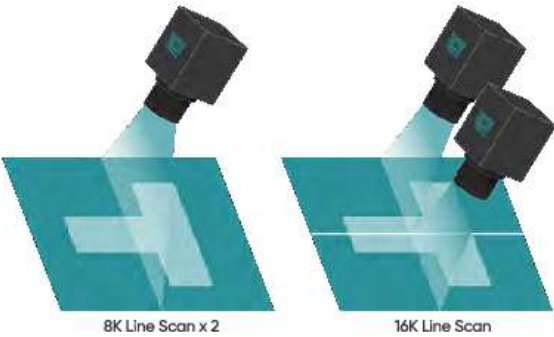
Key Features	Benefits
500 KHz @ 16 K	Wide coverage and high line rate for improved inspection efficiency. ^[1]
BSI TDI sCMOS Architecture	UV/visible enhanced sensors enable wide-spectrum inspection.
PRNU/DSNU Correction	Hundreds of parameters enable scenario-based calibration for accurate inspection.
TEC + HEX/TES Cooling	Compatible with industrial airflow systems, reducing integration and maintenance cost.
100G CoF Interface	Single-port bandwidth up to 100 Gbps, reducing system complexity.

Typical Applications

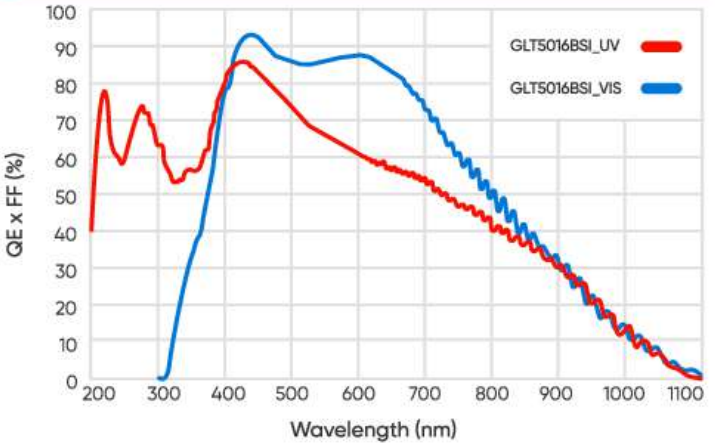
- Wafer Inspection
- Advanced Packing Inspection
- Mask Inspection
- FPD Inspection
- Lithium Battery Inspection
- Web Inspection

Noted Examples

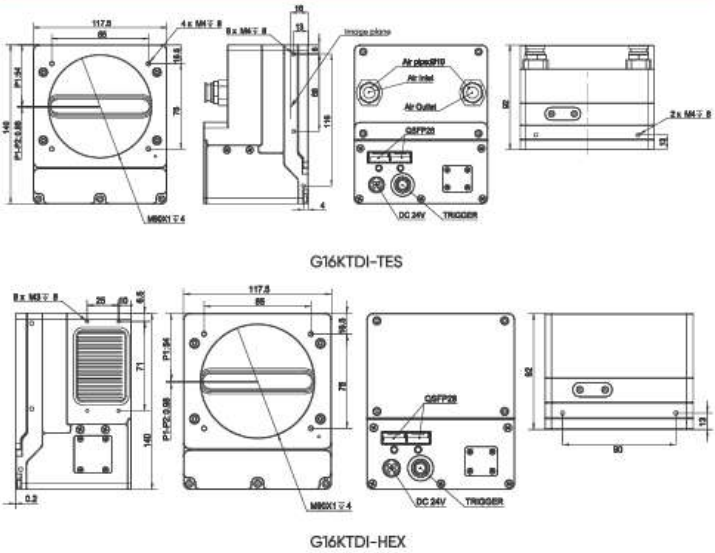
[1] Compared to 8K platforms, Gemini 16KTDI doubles single-scan coverage while maintaining a 500 KHz line rate, making it ideal for large-field high-speed industrial inspection.



Quantum Efficiency



Dimensions (Unit: mm)



Product Name	Gemini 16KTDI		
Model	G16KTDI-TES-100G	G16KTDI-HEX-100G	G16KTDI-UV-HEX-100G
Sensor Type	BSI sCMOS TDI		
Sensor Model	GLT5016BSI VIS	GLT5016BSI VIS	GLT5016BSI UV
Peak QE	Typical: 94.2%@460 nm	Typical: 94.2%@460 nm	Typical: 70.76%@266 nm
Spectral Range	300 nm~1100 nm	300 nm~1100 nm	180 nm~1100 nm
Chrome	Mono		
Array Diagonal	82 mm		
Resolution	P1: 16416 pixels x 256 stages; P2: 16416 pixels x 32 stages		
Pixel Size	5 μm x 5 μm		
Operation Mode	TDI, Area		
TDI Stage	P1: 4, 32, 64, 128, 192, 224, 252, 256; P2: 2, 4, 8, 16, 24, 28, 30, 32		
Scan Direction	Forward, Reverse, Trigger Control		
CTE	≥ 0.99999		
Anti-Blooming	≥ 50X		
Full Well Capacity	Typical: 16 Ke-		
Dynamic Range	Typical: 67 dB@12 bit		
Max. Line Rate	500 KHz@16K		
Readout Noise	Typical: 7.5 e-@12 bit		
Dark Current	Typical: 2500 e-/p/s@30°C (Corrected)		
DSNU	Typical: 1.4 e-@12 bit, 500 KHz (Corrected)		
PRNU	Typical: 0.018%@12 bit (Corrected)		
Cooling Method	TES Cooling	HEX Cooling	HEX Cooling
Cooling Temp.	33°C@22°C 120 L/Min		
Binning	1 x 2, 2 x 2, 4 x 4, 8 x 8		
ROI	Support		
Trigger Mode	Trigger Input, Scan Direction Input		
Trigger Output	Strobe Out		
Trigger Interface	Hirose		
Gain	Analog Gain: x 1~x 4, Digital Gain: x 0~x 16		
Data Interface	QSFP28 (100G CoF)		
Optical Interface	M90 / M95, User Customization		
Power Supply	120 W / 21 V~27 V		
Dimensions	117.5 mm (H) x 140 mm (W) x 92 mm (L)		
Weight	3300 g		
Software	Sample Pro		
SDK	C / C++		
Operating System	Windows 10/11 (X64), Ubuntu 20.04/22.04 (X64)		
Environment	Working: Temp. 0°C~40°C, Hum. 20%~80%;		
	Storage: Temp. -20°C~60°C, Hum. 20%~80%;		
	Working altitude: 0 m~2000 m		

Gemini 8KTDI

The Gemini 8KTDI is a high-performance TDI camera for biological and industrial inspection. It features optional visible and UV-enhanced sensors for multispectral imaging. Integrated with 100G / 40G CoF interface, it reaches 1 MHz @ 8K line rate to maximize throughput. Powered by Tucsen's reliable cooling design, it minimizes thermal noise for higher precision and efficiency.



Key Features	Benefits
1 MHz@8K High Line Rate	Doubles data throughput, significantly boosts inspection efficiency. ^[1]
BSI TDI sCMOS Architecture	UV / Visible enhanced sensors enable wide-spectrum inspection.
PRNU / DSNU Correction	Hundreds of parameters enable scenario-based calibration for accurate inspection.
High-Reliability Cooling	± 0.5°C stable control reduces fluctuation and improves inspection accuracy. ^[2]
100G / 40G CoF Interface	High bandwidth and excellent anti-interference, enabling long-distance transmission.

Typical Applications

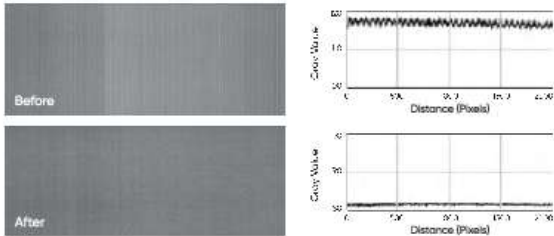
- Wafer Inspection
- Advanced Packing Inspection
- Mask Inspection
- FPD Inspection
- High-Throughput Gene Sequencing
- Pathology Slide Scanning

Noted Examples

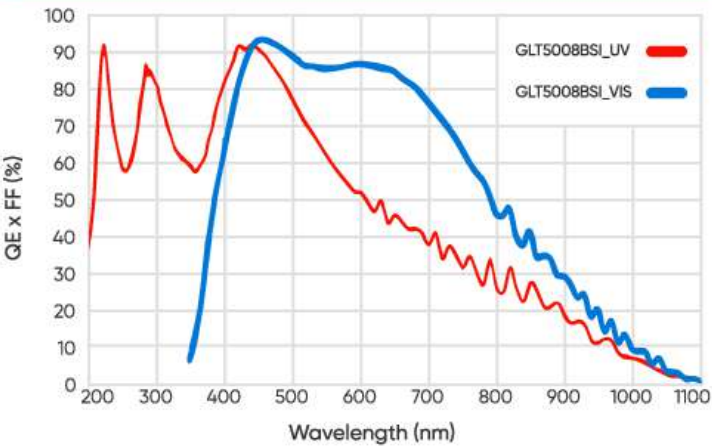
[1] The Gemini 8KTDI doubles data throughput compared to the previous generation.

1 MHz@8K	8208 Mpixel/s
510 KHz@9K	4590 Mpixel/s

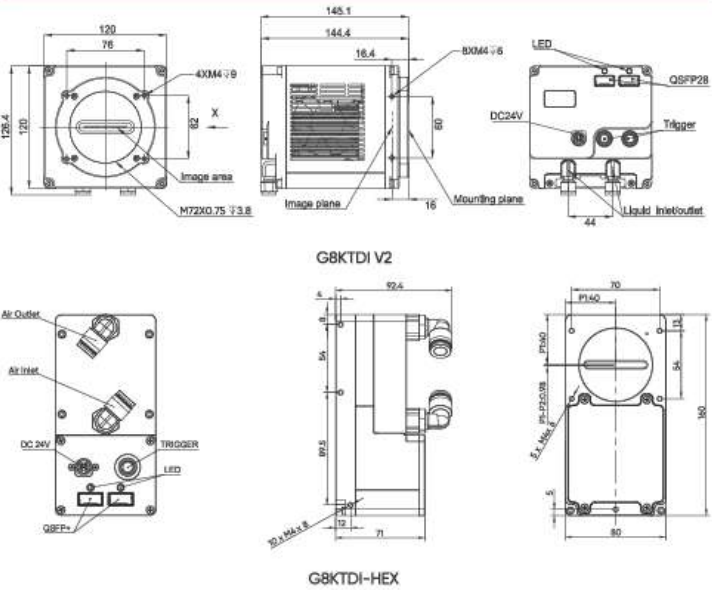
[2] The Gemini 8KTDI features stable cooling, offering excellent noise control and uniform imaging background, providing precise and reliable data for high-accuracy inspections.



Quantum Efficiency



Dimensions (Unit: mm)



Product Name	Gemini 8KTDI		
Model	G8KTDI V2	G8KTDI-HEX-40G	G8KTDI-UV-HEX-40G
Sensor Type	BSI sCMOS TDI		
Sensor Model	GLT5008BSI_VIS	GLT5008BSI_VIS	GLT5008BSI_UV
Peak QE	Typical: 94.2%@460 nm	Typical: 94.2%@460 nm	Typical: 65.8%@266 nm
Spectral Range	180 nm~1100 nm	300 nm~1100 nm	180 nm~1100 nm
Chrome	Mono		
Array Diagonal	41 mm		
Resolution	P1: 8208 pixels x 256 stages; P2: 8208 pixels x 32 stages		
Pixel Size	5 μm x 5 μm		
Operation Mode	TDI, Area		
TDI Stage	P1: 4, 32, 64, 128, 192, 224, 252, 256; P2: 2, 4, 8, 16, 24, 28, 30, 32		
Scan Direction	Forward, Reverse, Trigger Control		
CTE	≥ 0.99993		
Anti-Blooming	≥ 50X		
Bit Depth	8 bit, 10 bit, 12 bit		
Full Well Capacity	Typical: 16.8 Ke-		
Dynamic Range	Typical: 62.8 dB@10 bit, 67.6 dB@12 bit		
Max. Line Rate	1 MHz@8 / 10 bit; 500 KHz@12 bit		
Readout Noise	Typical: 12.5 e-@10 bit, 7.4 e-@12 bit		
Dark Current	Typical: 550 e-/p/s@10°C (Corrected)		
DSNU	Typical: 5 e-@10 bit (Corrected), 1.35 e-@12 bit (Corrected)		
PRNU	Typical: 0.045% (Corrected), 0.05%@12 bit(Corrected)		
Cooling Method	Air & Liquid Cooling	HEX Cooling	HEX Cooling
Cooling Temp.	Air: 10°C@22°C Ambient; Liquid: 0°C@22°C Water	Hex: 20°C@25°C 100L/Min	Hex: 20°C@25°C 100L/Min
Binning	1 x 2, 2 x 2, 4 x 4, 8 x 8		
ROI	Support		
Trigger Mode	Trigger Input, Scan Direction Input		
Trigger Output	Strobe Out		
Trigger Interface	Hirose 12		
Gain	Analog Gain: x 1~x 4, Digital Gain: x 0.1~x 15.9		
Data Interface	QSFP28 (100G CoF)	QSFP+ (40 CoF)	QSFP+ (40 CoF)
Optical Interface	M72 x 0.75, User Customization		
Power Supply	72 W / 21 V~27 V		
Dimensions (mm)	120 (H) x 120 (W) x 144.5 (L)	80 (H) x 160 (W) x 71 (L)	80 (H) x 160 (W) x 71 (L)
Weight	< 3500 g	1700 g	1700 g
Software	Sample Pro		
SDK	C / C++		
Operating System	Windows 10 / 11 (X64), Ubuntu 20.04 / 22.04 (X64), Euler OS (ARM64)		
Environment	Working: Temp. 0°C~40°C, Hum. 20%~80%; Storage: Temp. -20°C~60°C, Hum. 20%~80%; Working altitude: 0 m~2000 m		

Gemini 8KTDI LT

The Gemini 8KTDI LT is a lightweight TDI imaging platform developed by Tucsen for scalable industrial inspection systems. Built on high-performance BSI TDI technology, it features a compact, system-level optimized design to meet the core demands for inspection accuracy, throughput, and cost efficiency in industrial applications.



Key Features	Benefits
500 KHz Line Rate	High-speed scanning supports high-throughput industrial inspection. ^[1]
BSI TDI sCMOS Architecture	UV/visible enhanced sensors enable wide-spectrum inspection.
Standard CXP Interface	Compatible with mainstream devices, lowering development time and costs.
Passive or Air Cooling	Lowers system complexity and minimizes maintenance requirements.
Compact Design	Fits existing systems easily with minimal modification.

Typical Applications

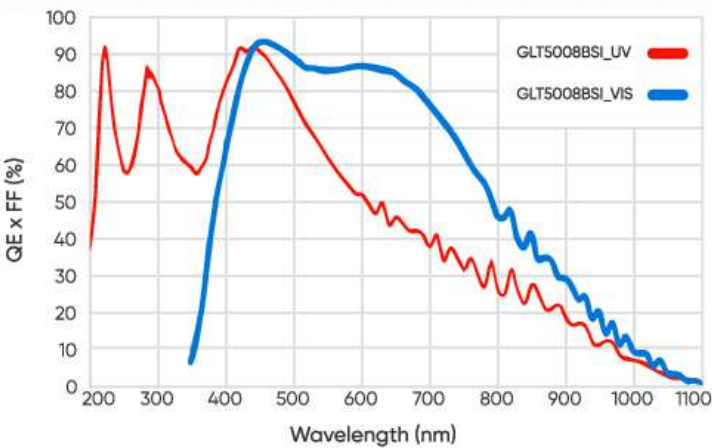
- Semiconductor Inspection
- Chip Packaging Inspection
- FPD Inspection
- Lithium Battery Inspection
- Web Inspection

Noted Examples

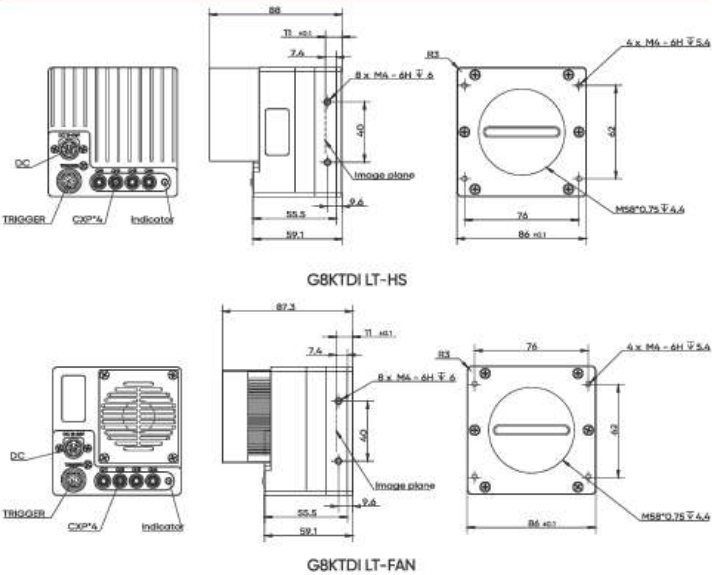
[1] Gemini 8KTDI LT (high-performance version): 68% smaller, 75% lighter, ~51% lower power consumption than the 8KTDI.

Gemini	8KTDI LT	8KTDI V2
Dimensions (mm)	86×86×88	120×120×144.5
Weight	850 g	3500 g
Power Supply	35 W	72 W
Cooling Method	Fan/Passive cooling	Air & Liquid Cooling
Data Interface	CXP	100G CoF

Quantum Efficiency



Dimensions (Unit: mm)



Product Name	Gemini 8KTDI LT		
Model	G8KTDI LT-HS-CXP	G8KTDI LT-UV-HS-CXP	G8KTDI LT-FAN-CXP
Sensor Type	BSI sCMOS TDI		
Sensor Model	GLT5008BSI_VIS	GLT5008BSI_VIS	GLT5008BSI_UV
Peak QE	Typical: 94.2%@460 nm	Typical: 94.2%@460 nm	Typical: 65.8%@266 nm
Spectral Range	300 nm~1100 nm	300 nm~1100 nm	180 nm~1100 nm
Chrome	Mono		
Array Diagonal	41 mm		
Resolution	P1: 8208 pixels x 256 stages; P2: 8208 pixels x 32 stages		
Pixel Size	5 μm x 5 μm		
Operation Mode	TDI, Area		
TDI Stage	P1: 4, 32, 64, 128, 192, 224, 252, 256; P2: 2, 4, 8, 16, 24, 28, 30, 32		
Scan Direction	Forward, Reverse, Trigger Control		
CTE	≥ 0.99993		
Anti-Blooming	≥ 50X		
Bit Depth	8 bit, 10bit, 12bit		
Full Well Capacity	Typical: 16.8 Ke-		
Dynamic Range	Typical: 67 dB@12 bit		
Max. Line Rate	500 KHz@8 bit; 410 KHz@10 bit; 380 KHz@12 bit		
Readout Noise	Typical: 7.4 e-@12 bit		
Dark Current	Typical: 2000e-/p/s@25°C (Corrected)		
DSNU	Typical: 1.4 e-@12 bit (Corrected)		
PRNU	Typical: 0.05%@12 bit (Corrected)		
Cooling Method	Fan	Passive Cooling	Passive Cooling
Cooling Temp.	≤ 25°C@22°C	/	/
Binning	1 x 2, 2 x 2, 4 x 4, 8 x 8		
ROI	Support		
Trigger Mode	Trigger Input, Scan Direction Input		
Trigger Output	Strobe Out		
Trigger Interface	Hirose 12		
Gain	Analog Gain: x 1~x 4, Digital Gain: x 0.1~x 15.9		
Data Interface	CXP 12 x 4		
Optical Interface	M58 x 0.75		
Power Supply	35 W / 12 V~24 V		
Dimensions	86 mm (H) x 86 mm (W) x 88 mm (L)		
Weight	850 g		
Software	Sample Pro		
SDK	C / C++		
Operating System	Windows 10 / 11 (X64), Ubuntu 20.04 / 22.04 (X64), Euler OS (ARM 64)		
Environment	Working: Temp. 0°C~40°C, Hum. 20%~80%;		
	Storage: Temp. -20°C~60°C, Hum. 20%~80%;		
	Working altitude: 0 m~2000 m		

Dhyana 9KTDI Pro Series

The Dhyana 9KTDI Pro is a back-illuminated TDI camera built with advanced sCMOS thinning and TDI integration technology. Covering the range from 180 nm to 1100 nm, it enhances UV line scanning and low-light detection. With reliable cooling and noise reduction, it provides stable, high-efficiency detection for semiconductor wafer inspection and genomic sequencing.



Key Features	Benefits
180 nm~1100 nm	Wide Spectral Response, supports UV, visible, and near-infrared imaging applications.
82% Quantum Efficiency	Provides excellent low-light and weak-signal detection.
256-Stage TDI	Enhances SNR in low-light imaging, improving inspection accuracy.
600 KHz@9K	Delivers data throughput over 10X higher than typical sCMOS cameras. [1]
High-Reliability Cooling	Reduces dark current noise and data fluctuations, ensuring stable system operation. [2]

Typical Applications

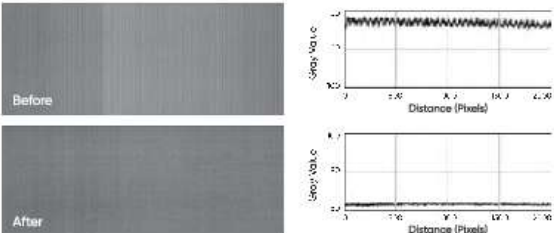
- High-Throughput Imaging
- Neuroscience Imaging
- Spatial Omics Analysis
- Super-Resolution Imaging
- Genomic Sequencing
- Semiconductor Inspection

Noted Examples

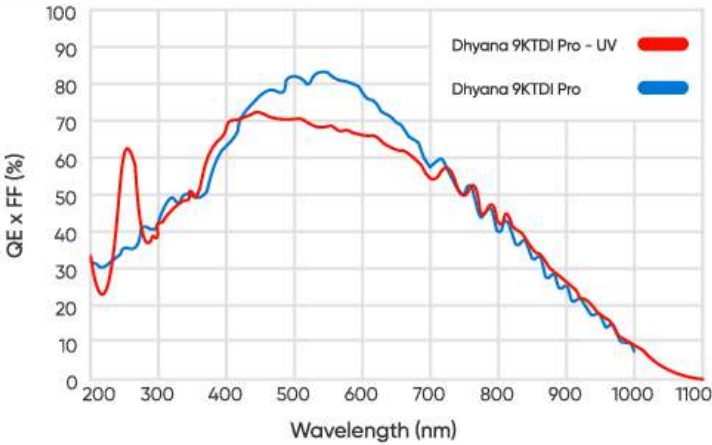
[1] The Dhyana 9KTDI Pro series achieves a data throughput of 5,400 Mpixels/s, over 10X higher than typical sCMOS cameras.



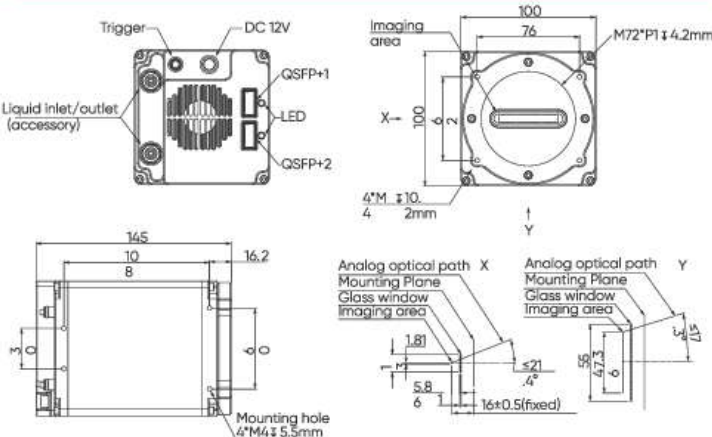
[2] The Dhyana 9KTDI Pro features stable cooling, offering excellent noise control and uniform imaging background, providing precise and reliable data for high-accuracy inspections.



Quantum Efficiency



Dimensions (Unit: mm)



Product Name	Dhyana 9KTDI Pro	Dhyana 9KTDI Pro-UV
Sensor Type	BSI sCMOS TDI	
Sensor Model	Gpixel GLT5009BSI	Gpixel GLT5009BSI-DUV
Peak QE	82%@550 nm, 50%@350 nm, 38%@800 nm	50%@266 nm
Chrome	Mono	
Array Diagonal	45.4 mm	
Effective Area	45.36 mm x 1.28 mm	
Resolution	9072 (H) x 256 (V)	
Pixel Size	5 μ m x 5 μ m	
Operation Mode	TDI, Area	
TDI Stage	4, 8, 16, 32, 64, 96, 128, 160, 192, 224, 240, 248, 252, 256	
Scan Direction	Forward, Reverse, Trigger Control	
CTE	≥ 0.99993	
Bit Depth	8 bit, 10 bit, 12 bit	
Full Well Capacity	Typical: 14 Ke-@10 bit, 14 Ke-@12 bit	
Dynamic Range	Typical: 63.6 dB@10 bit, 68 dB@12 bit	
Max. Line Rate	600 KHz@8 bit, 600 KHz@10 bit, 299 KHz@12 bit	
Readout Noise	Typical: 10.5 e-@10 bit, 6.2 e-@12 bit	
DSNU	Typical: 4 e-@10 bit, 1.6 e-@12 bit	
PRNU	Typical: 0.3%	
Cooling Method	Air Cooling, Liquid Cooling	
Cooling Temp.	20°C below ambient (20°C); 35°C below water (20°C)	
Binning	1 x 2 (Sensor Bin), 2 x 2, 4 x 4, 8 x 8 (FPGA Bin)	
ROI	Support	
Trigger Mode	Trigger Input, Scan Direction Input	
Trigger Output	Strobe out	
Trigger Interface	Hirose, HR10A-7R-4S	
Gain	Analog Gain: x 2~x 8; Digital Gain: x 0.5~x 10	
Data Interface	QSFP+	
Optical Interface	M72, User Customization	
Power Supply	12 V / 8 A	
Power Cons.	< 75 W	
Dimensions	100 mm (H) x 100 mm (W) x 145 mm (L)	
Weight	1800 g	
Software	Sample Pro	
SDK	C++ (Supports the GenICam standard)	
Operating System	Windows, Linux	
Environment	Working: Temp. 0°C~40°C, HUM 0%~85%; Storage: Temp. 0°C~60°C, HUM 0%~90%	

Dhyana 9KTDI

The Dhyana 9KTDI back-illuminated TDI camera combines advanced sCMOS back-thinning technology with TDI (Time Delay Integration), effectively enhancing low-light scanning performance. It is designed to provide scientific instruments and industrial vision systems with comprehensive performance in spectral response, precision, and throughput.



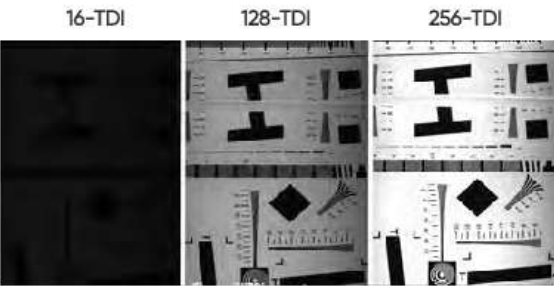
Key Features	Benefits
180 nm-1100 nm	Wide Spectral Response, supports UV, visible, and near-infrared imaging applications.
82% Quantum Efficiency	Provides excellent low-light and weak-signal detection.
256-Stage TDI	Enhances SNR in low-light imaging, improving inspection accuracy. ^[1]
510 KHz@9K	Data throughput is nearly 46X higher than TDI-CCD technology. ^[2]
High-Reliability Cooling	Reduces dark current noise and data fluctuations, ensuring stable system operation.

Typical Applications

- Semiconductor / Wafer Inspection
- FPD Inspection
- Fluorescence Detection
- Spectral Analysis

Noted Examples

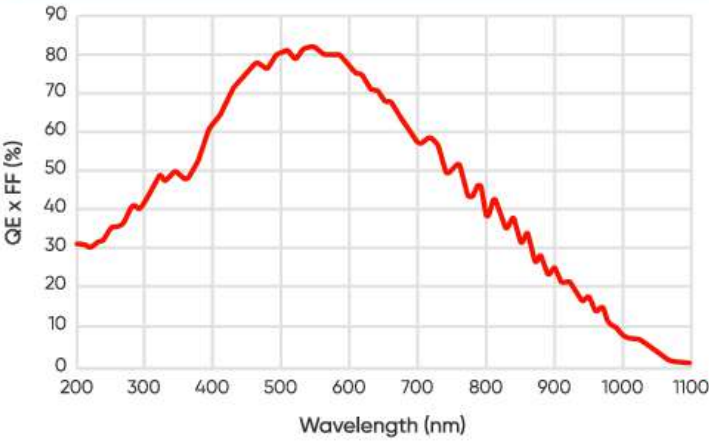
[1] Higher TDI stages provide improved signal-to-noise ratio (SNR).



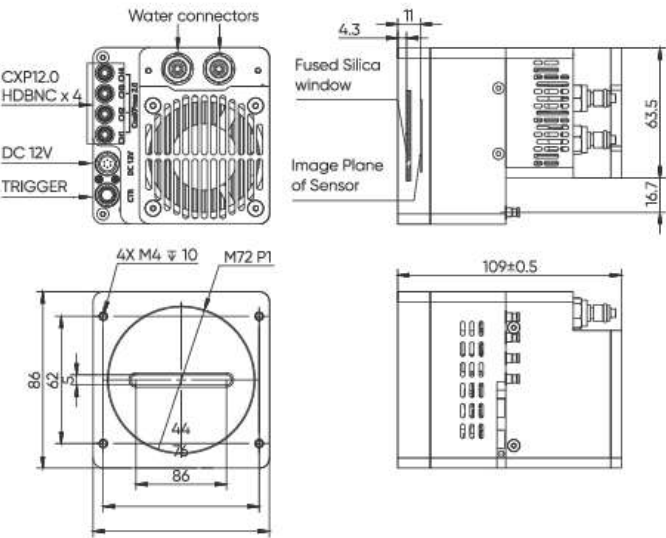
[2] The Dhyana 9KTDI achieves data throughput nearly 46X higher than back-illuminated TDI-CCD cameras.

Dhyana 9KTDI 9K@510 KHz	4590 Mpixel/s
BSI TDI-CCD 2K@50 KHz	100 Mpixel/s

Quantum Efficiency



Dimensions (Unit: mm)



Product Name	Dhyana 9KTDI
Sensor Type	BSI sCMOS TDI
Sensor Model	Gpixel GLT5009BSI
Peak QE	38%@266 nm, 51%@355 nm; 82%@550 nm, 38%@800 nm
Chrome	Mono
Array Diagonal	45.4 mm
Effective Area	45.36 mm x 1.28 mm
Resolution	9072 (H) x 256 (V)
Pixel Size	5 μm x 5 μm
Operation Mode	TDI, Area
TDI Stage	4, 8, 16, 32, 64, 96, 128, 160, 192, 224, 240, 248, 252, 256
Scan Direction	Forward, Reverse, Trigger Control
CTE	≥ 0.99993
Bit Depth	8 bit, 10 bit, 12 bit
Full-Well Capacity	Typical: 10 Ke-@10 bit, 10 Ke-@12 bit
Dynamic Range	Typical: 63 dB@10 bit, 66 dB@12 bit
Max. Line Rate	510 KHz@8 bit, 345 KHz@10 bit, 299 KHz@12 bit
Readout Noise	Typical: 6.6 e-@10 bit, 6.2 e-@12 bit
DSNU	Typical: 4 e-@10 bit, 4 e-@12 bit
PRNU	Typical: 0.3%
Cooling Method	Air Cooling, Liquid Cooling
Cooling Temp.	20°C Below Ambient (20°C); 35°C Below Water (20°C)
Binning	1 x 2 (SENSOR BIN), 2 x 2, 4 x 4, 8 x 8 (FPGA BIN)
ROI	Support
Trigger Mode	Trigger Input, Scan Direction Input
Trigger Output	Strobe out
Trigger Interface	Hirose, HR10A-7R-4S
Gain	Analog Gain: x 2~x 8, Digital Gain: x 0.5~x 10
Data Interface	CXP 12 X 4
Optical Interface	M72, User Customization
Power Supply	12 V / 8 A
Power Cons.	< 60 W
Dimensions	86 mm (H) x 86 mm (W) x 109 mm (L)
Weight	1100 g
Software	Sample Pro
SDK	C++ (Supports the GenICam standard)
Operating System	Windows, Linux
Environment	Working: Temp. 0°C~40°C, HUM 0%~85%; Storage: Temp. 0°C~60°C, HUM 0%~90%

Aries 16 LT

The Aries 16 Series is a new generation of BSI sCMOS camera developed exclusively by Tucsen Photonics. With sensitivity which matches EMCCD and surpasses binned sCMOS combined with high full well capacity normally observed in large format CCD cameras, the Aries 16 provides a fantastic solution for both low-light detection and high-dynamic range imaging.



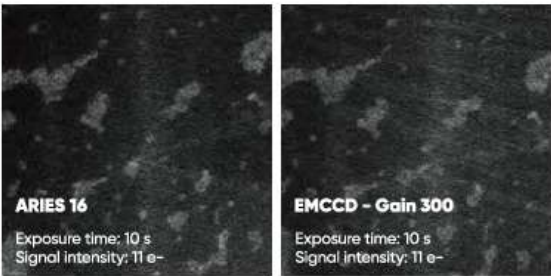
Key Features	Benefits
BSI-sCMOS Technology	16 μm large pixels, 0.9 e- readout noise, and up to 90% QE.[1]
Advanced Cooling Technology	To reduce the thermal noise, ensuring high SNR imaging and stable measurement results.
73 Ke- Well Capacity	Dual modes provide flexibility for high dynamic and low-light applications.
HDR & Low Noise Modes	High dynamic range to capture strong and weak signals simultaneously.
High-Reliability Cooling	Reduces dark current noise and data fluctuations, ensuring stable system operation.

Typical Applications

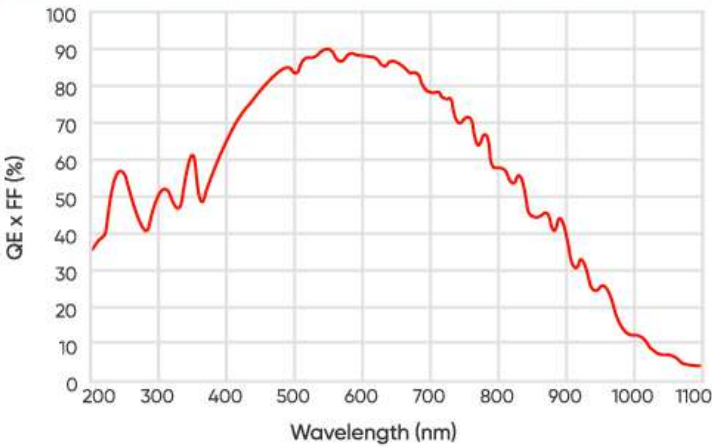
- Cold Atoms
- Quantum Physics
- Single-Molecule Fluorescence
- Super Resolution Microscopy
- FRET
- FCS
- TIRF
- Bioluminescence
- Chemiluminescence

Noted Examples

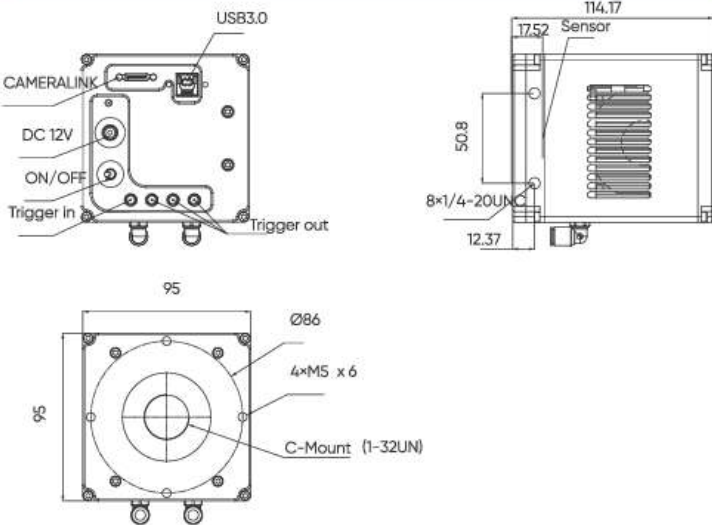
[1] Aries 16 can replace EMCCD in extreme signal detection fields such as Bioluminescence, and the imaging quality is equivalent.



Quantum Efficiency



Dimensions (Unit: mm)



Product Name	Aries 16 LT
Model	A16 LT
Sensor Type	BSI sCMOS
Peak QE	90.7%@550 nm
Chrome	Mono
Resolution	800 (H) x 600 (V)
Array Diagonal	16 mm
Pixel Size	16 μm x 16 μm
Effective Area	12.8 mm x 9.6 mm
Full Well Capacity	Typical: 73 Ke-
Dynamic Range	Typical: 93 dB
Frame Rate	60 fps@HDR Mode, 25 fps@Low Noise Mode
Readout Noise	Typical: 1.6 e-@HDR Mode, 0.9 e-@Low Noise Mode
Shutter Mode	Rolling, Global Reset
Exposure Time	26 μs~60 s
DSNU	0.3 e-
PRNU	0.3%
Cooling Method	Air Cooling, Liquid Cooling
Cooling Temp.	Air: 50°C below ambient; Liquid: 60°C below ambient
Dark Current	0.2 e-/p/s
Binning	2 x 2, 4 x 4, Any Bin
ROI	Support
Trigger Mode	Hardware, Software
Trigger Output	Exposure Start, Global Exposure, Readout End, High, Low
Trigger Interface	SMA
Timestamp Acc.	1 μs
Data Interface	USB 3.0 & CameraLink
SDK	C / C++ / C# / Python
Bit Depth	12 bit, 16 bit
Optical Interface	C Mount
Power Supply	12 V / 8 A
Power Cons.	38 W
Dimensions	95 mm (H) x 95 mm (W) x 114 mm (L)
Weight	1500 g
Software	Mosaic V3, Sample Pro, LabVIEW, MATLAB, Micro-Manager 2.0
Operating System	Windows, Linux
Environment	Working: Temp. 0°C~40°C, HUM 0%~85%; Storage: Temp. 0°C~60°C, HUM 0%~90%

Aries 6504 Pro

The Aries 6504 Pro is built on a next-generation back-illuminated sCMOS platform. In high-sensitivity readout mode, it achieves 0.43 e⁻ (RMS) readout noise for single-photon-level signal discrimination, complemented by 297 fps at 4.2 MP and ≤ 0.01 e⁻/p/s@-20°C, enabling precise measurement in demanding scientific and high-end industrial applications.



Key Features	Benefits
High-Sensitivity Mode	0.43 e ⁻ (RMS) readout noise at 99 fps @ 4.2 MP, enabling single-photon-level resolution. ^[1]
High-Speed Mode	297 fps@4.2 MP with 0.8 e ⁻ (RMS) readout noise, optimized for high-speed low-light imaging.
HDR Mode	170 fps@4.2 MP with 16-bit depth; high-speed acquisition and wide dynamic range.
≤ 0.01 e ⁻ /p/s@-20°C Dark Current	5X gen-over-gen improvement, enabling high-precision quantitative long-exposure imaging.
USB 3.2 & CoaXPress Interfaces	Flexible connectivity at the same frame rate; adaptable to diverse applications.
Air & Liquid Cooling	Reduces dark current and signal fluctuation, supporting long-term system stability.

Typical Applications

- Super-resolution imaging
- Light sheet imaging
- SIM imaging
- Calcium / voltage imaging
- Bioluminescence
- High-content imaging
- Quantum physics
- Astronomical research

Noted Examples

[1] In high-sensitivity mode, The Aries 6504 Pro shows clearly separated histogram peaks at ultra-low illumination of 2 e⁻/pixel, delivering a significant SNR improvement over the previous-generation back-illuminated sCMOS camera.

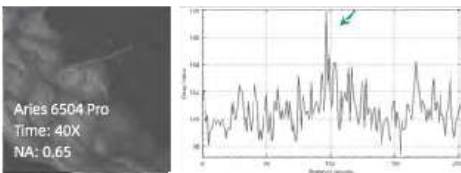


Fig. 1-1 Aries 6504 Pro Ultra-low-light image (2 e⁻/pixel)

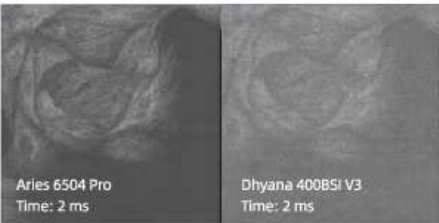
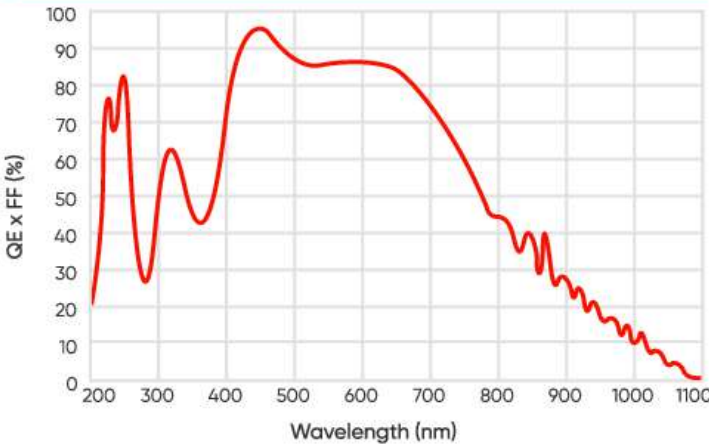
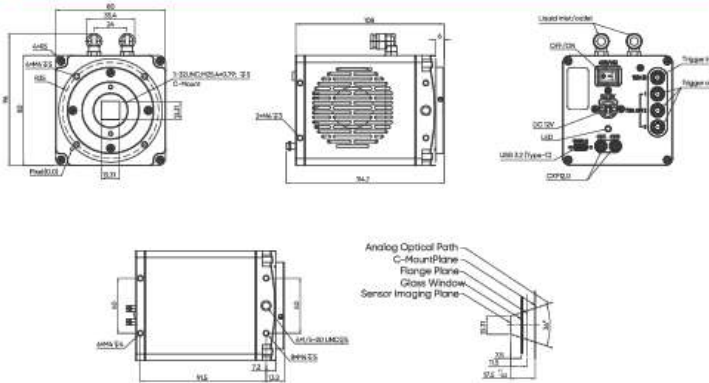


Fig. 1-2 Ultra-low-light comparison (2 e⁻/pixel)

Quantum Efficiency



Dimensions (Unit: mm)



Product Name	Aries 6504 Pro
Model	A6504 Pro
Sensor Type	BSI sCMOS
Sensor Model	GSENSE6504BSI
Chrome	Mono
Spectral Range	200 nm – 1100 nm
Peak QE	95%@450 nm
Resolution	2048 (H) x 2048 (V)
Pixel Size	6.5 μm x 6.5 μm
Effective Area	13.3 mm x 13.3 mm
Frame Rate	99 fps@Sensitive mode 170 fps@Dynamic mode 297 fps@Speed mode
Full-Well capacity	15 Ke-@Dynamic mode
Dynamic Range	91 dB@Sensitive mode
Readout Noise	RMS: 0.43 e ⁻ @Sensitive mode
Dark Current	≤ 0.01e ⁻ /p/s@-20°C
DSNU	0.1 e ⁻ @Dynamic mode
PRNU	0.3%
Cooling Method	Liquid, Air
Cooling Temp.	Liquid: -20°C@Liquid Temperature 20°C; Air: -10°C@Ambient Temperature 25°C
Binning	2 x 2, 4 x 4
ROI	Support
Trigger Mode	Hardware, Software
Trigger Output	Readout End, Global Exposure, Exposure Start, Trigger Ready, First Row, Any Row, High, Low
Trigger Interface	SMA*4
Timestamp	Support
Data Interface	USB 3.2 Gen 2x2, CXP 12 x 2
Optical Interface	C Mount
Bit Depth	12 bit, 16 bit
Power Supply	DC 12 V
Power Cons.	60 W
Dimensions*	80 mm (H) x 80 mm (W) x 108 mm (L)
Weight	950 g
Software	Sample Pro, Mosaic V3
SDK	C / C++
Operating System	Windows 10 / 11, Ubuntu 22.04
Operating Environment	Working: Temp. 0°C~40°C, Hum. 20%~80%, Altitude 0 m~3000 m; Storage: Temp. -20°C~60°C, Hum. 20%~80%;

* The dimensions shown refer to the bare camera body only, Please see the mechanical drawing for details.

Aries 6504

The Aries 6504 is based on a BSI sCMOS platform, achieving 0.8 e⁻ readout noise and 297 fps at 4.2 MP resolution, ≤ 0.01 e⁻/p/s dark current at -20°C. It supports high-speed, low-light and long-exposure for life sciences, physical sciences, and industrial inspection.



Key Features	Benefits
High-Speed Mode	297 fps@4.2 MP with 0.8 e ⁻ (RMS) readout noise, optimized for high-speed low-light imaging. ^[1]
HDR Mode	170 fps@4.2 MP with 16-bit depth; high-speed acquisition and wide dynamic range.
≤ 0.01 e ⁻ /p/s@-20°C Dark Current	5X gen-over-gen improvement, enabling high-precision quantitative long-exposure imaging.
USB 3.2 & CoaXPress Interfaces	Flexible connectivity at the same frame rate, adaptable to diverse applications.
Air & Liquid Cooling	Reduces dark current and signal fluctuation, supporting long-term system stability.

Typical Applications

- Super-resolution imaging
- Light sheet imaging
- Calcium / voltage imaging
- High-content imaging
- Astronomical research

Noted Examples

[1] The Aries 6504 shows clearly separated histogram peaks at ultra-low illumination of 20 e⁻/pixel, delivering a significant SNR improvement over the previous-generation back-illuminated sCMOS camera.

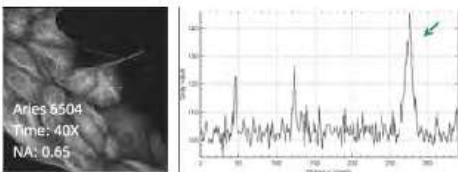


Fig. 1-1 Aries 6504 Ultra-low-light image (20 e⁻/pixel)

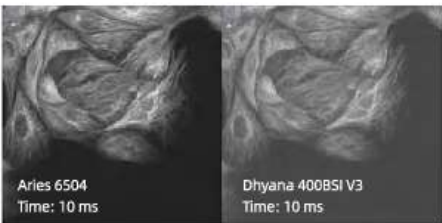
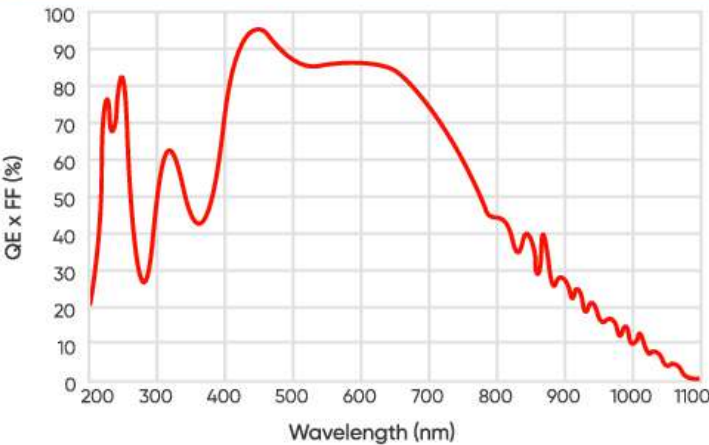
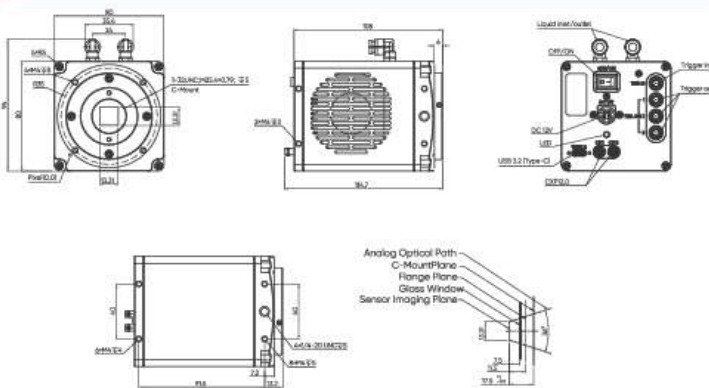


Fig. 1-2 Ultra-low-light comparison (20 e⁻/pixel)

Quantum Efficiency



Dimensions (Unit: mm)



Product Name	Aries 6504
Model	A6504
Sensor Type	BSI sCMOS
Sensor Model	GSENSE6504BSI
Chrome	Mono
Spectral Range	200 nm - 1100 nm
Peak QE	95%@450 nm
Resolution	2048 (H) x 2048 (V)
Pixel Size	6.5 μm x 6.5 μm
Effective Area	13.3 mm x 13.3 mm
Frame Rate	170 fps@Dynamic mode 297 fps@Speed mode
Full-Well capacity	15 Ke-@Dynamic mode
Dynamic Range	86 dB@Dynamic mode
Readout Noise	RMS: 0.8 e ⁻ @Dynamic mode
Dark Current	≤ 0.01e ⁻ /p/s@-20°C
DSNU	0.3 e ⁻
PRNU	0.3%
Cooling Method	Liquid, Air
Cooling Temp.	Liquid: -20°C@Liquid Temperature 20°C; Air: -10°C@Ambient Temperature 25°C
Binning	2 x 2, 4 x 4
ROI	Support
Trigger Mode	Hardware, Software
Trigger Output	Readout End, Global Exposure, Exposure Start, Trigger Ready, First Row, Any Row, High, Low
Trigger Interface	SMA*4
Timestamp	Support
Data Interface	USB 3.2 Gen 2x2, CXP 12 x 2
Optical Interface	C Mount
Bit Depth	12 bit, 16 bit
Power Supply	DC 12 V
Power Cons.	60 W
Dimensions*	80 mm (H) x 80 mm (W) x 108 mm (L)
Weight	950 g
Software	Sample Pro, Mosaic V3
SDK	C / C++
Operating System	Windows 10 / 11, Ubuntu 22.04
Operating Environment	Working: Temp. 0°C~40°C, Hum. 20%~80%, Altitude 0 m~3000 m; Storage: Temp. -20°C~60°C, Hum. 20%~80%;

* The dimensions shown refer to the bare camera body only, Please see the mechanical drawing for details.

Aries 6506

The Aries 6506 is built on a back-illuminated sCMOS architecture and offers enhanced sensitivity, speed, and field of view. Its 22 mm imaging diagonal is optimized for standard microscope optics and delivers full-resolution output at up to 200 fps@5.8 MP. With multiple readout modes and a reliable high-speed interface, it excels in live-cell imaging and fast dynamic applications requiring high frame rates.



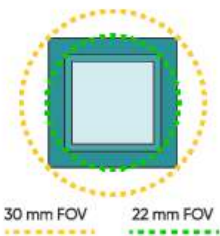
Key Features	Benefits
Extreme Sensitivity Mode	Up to 95% QE and readout noise below 0.7 e ⁻ , enabling single-photon detection.
High-throughput Imaging	22 mm FOV optimized for standard microscopes, delivering 200 fps @ 5.8 MP full resolution. [1]
High-Speed & High Dynamic Range	High-speed mode offers 1.24 Ke ⁻ or 20 Ke ⁻ full well options, balancing throughput and measurement accuracy.
GigE Interface	High-speed, lossless data transmission with flexible cabling.
Reliable and Stable Cooling	Effectively suppresses dark current and signal fluctuation, ensuring system stability.

Typical Applications

- Super-Resolution Microscopy
- Light Sheet Microscopy
- Calcium Imaging
- Live-Cell Imaging
- High-Throughput Imaging
- Fluorescence Slide Scanning

Noted Examples

[1] The Aries 6506 suits standard microscopes with a 22 mm field of view covering the center, offering better image quality. Its data throughput per frame is 2.8X that of a typical sCMOS camera.



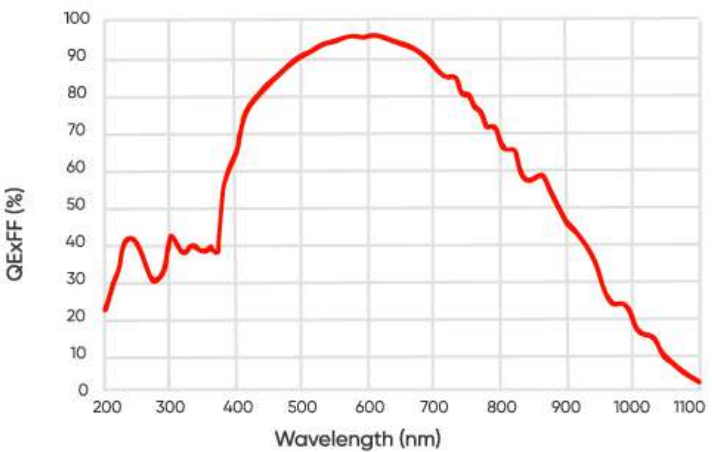
Typical sCMOS
Diagonal: 18.8 mm
Area: 13.3 mm x 13.3 mm

Aries 6506
Diagonal: 22 mm
Area: 15.7 mm x 15.7 mm

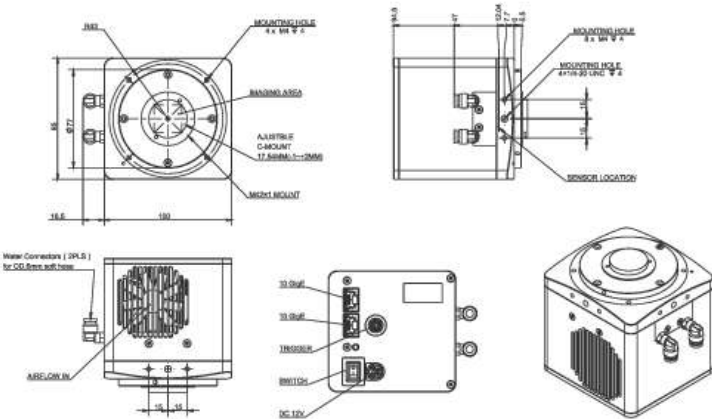
Aries 6510
Diagonal: 29.4 mm
Area: 20.8 mm x 20.8 mm

Aries 6510	1530 Mpixel/s
Aries 6506	1160 Mpixel/s
Typical sCMOS	420 Mpixel/s

Quantum Efficiency



Dimensions (Unit: mm)



Product Name	Aries 6506		
Model	A6506		
Sensor Type	BSI sCMOS		
Sensor Model	Gpixel GSENSE 6510BSI		
Peak QE	95%		
Chrome	Mono		
Array Diagonal	22 mm		
Effective Area	15.7 mm x 15.7 mm		
Resolution	2400 (H) x 2400 (V)		
Pixel Size	6.5 μm x 6.5 μm		
Readout Mode	Dynamic	Speed	Sensitivity
	HDR	High / Mid / Low gain	Standard / Low Noise
Bit Depth	16 bit	11 bit	12 bit
Frame Rate	111 fps	200 fps	117 fps / 6.9 fps
Readout Noise (median)	1.8 e ⁻	1.8 e ⁻ / 3.6 e ⁻ / 10.3 e ⁻	1.3 e ⁻ / 0.7 e ⁻
Full Well Capacity	13.7 Ke ⁻	1.24 Ke ⁻ / 4.5 Ke ⁻ / 20 Ke ⁻	1.55 Ke ⁻ / 0.69 Ke ⁻
Dynamic Range	77 dB@Dynamic-HDR		
Shutter Mode	Rolling, Global Reset		
Exposure Time	4 μs-10 s		
Cooling Method	Air Cooling, Liquid Cooling		
Cooling Temp.	Air: 0°C (Ambient 25°C), Liquid:-10°C (Water Temp. 20°C)		
Dark Current	1.3 e ⁻ /p/s@0°C; 0.6 e ⁻ /p/s@-10°C		
Image Correction	DPC		
Binning	2 x 2, 4 x 4		
ROI	Support		
Timestamp Acc.	1 μs		
Trigger Mode	Hardware, Software		
Trigger Output	High, Low, Readout End, Global Exposure, Exposure Start, Trigger Ready, First Row, Any Row, Line Output		
Trigger Interface	Hirose-6-pin		
Data Interface	2 x 10 GigE		
Optical Interface	C Mount		
Power Supply	12 V / 8.5 A		
Power Cons.	≤ 55 W		
Dimensions	95 mm (H) x 100 mm (W) x 100 mm (L)		
Weight	1350 g		
Software	Mosaic V3, Sample Pro, LabVIEW, MATLAB, Micro-Manager 2.0		
SDK	C / C++ / C# / Python		
Operating System	Windows, Linux		
Environment	Working: Temp. 0°C~40°C, HUM 10%~85%; Storage: Temp. 0°C~60°C, HUM 0%~90%		

Aries 6510

The Aries 6510 is built on a back-illuminated sCMOS architecture and offers enhanced sensitivity, speed, and field of view. Its 29.4 mm imaging diagonal significantly increases the field of view per frame and supports full-resolution output at up to 150 fps @ 10.2 MP. With versatile readout modes and a stable high-speed interface, it is ideal for high-throughput optical systems and large-area image stitching.



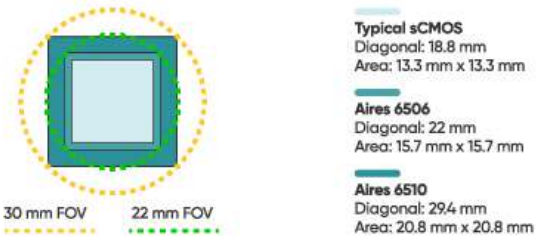
Key Features	Benefits
Extreme Sensitivity Mode	Up to 95% QE and readout noise below 0.7 e ⁻ , enabling single-photon detection.
High-throughput Imaging	29.4 mm large FOV for high-throughput optical systems, delivering 150 fps@10.2 MP full resolution. ^[1]
High-Speed & High Dynamic Range	High-speed mode offers 1.24 Ke ⁻ or 20 Ke ⁻ full well options, balancing throughput and measurement accuracy.
GigE Interface	High-speed, lossless data transmission with flexible cabling.
Reliable and Stable Cooling	Effectively suppresses dark current and signal fluctuation, ensuring system stability.

Typical Applications

- Super-Resolution Microscopy
- Light Sheet Microscopy
- Calcium Imaging
- Live-Cell Imaging
- High-Throughput Imaging
- Fluorescence Slide Scanning

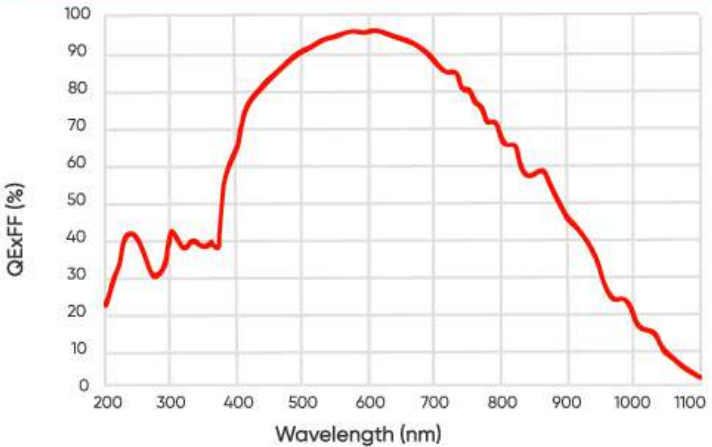
Noted Examples

[1] The Aries 6510 has a large 29.4 mm field of view, suited for high-throughput optical systems. Its data throughput per frame is 3.6X that of a typical sCMOS camera.

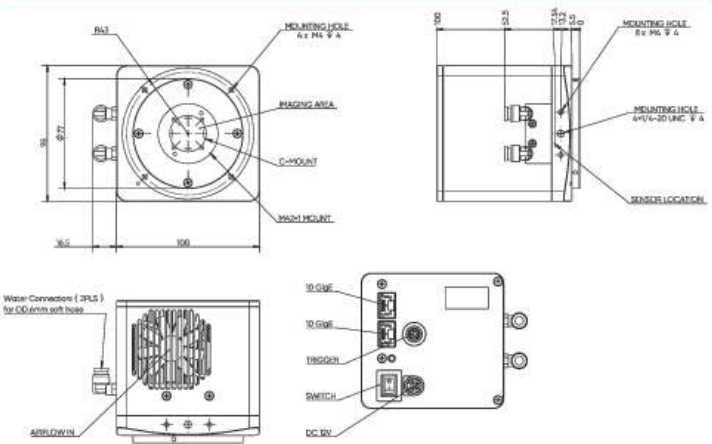


Aries 6510	1530 Mpixel/s
Aries 6506	1160 Mpixel/s
Typical sCMOS	420 Mpixel/s

Quantum Efficiency



Dimensions (Unit: mm)



Product Name	Aries 6510		
Model	A6510		
Sensor Type	BSI sCMOS		
Sensor Model	Gpixel GSENSE 6510BSI		
Peak QE	95%		
Chrome	Mono		
Array Diagonal	29.4 mm		
Effective Area	20.8 mm x 20.8 mm		
Resolution	3200 (H) x 3200 (V)		
Pixel Size	6.5 μm x 6.5 μm		
Readout Mode	Dynamic	Speed	Sensitivity
	HDR	High / Mid / Low gain	Standard / Low Noise
Bit Depth	16 bit	11 bit	12 bit
Frame Rate	83 fps	150 fps	88 fps / 5.2 fps
Readout Noise (median)	1.8 e ⁻	1.8 e ⁻ / 3.6 e ⁻ / 10.3 e ⁻	1.3 e ⁻ / 0.7 e ⁻
Full Well Capacity	13.7 Ke ⁻	1.24 Ke ⁻ / 4.5 Ke ⁻ / 20 Ke ⁻	1.55 Ke ⁻ / 0.69 Ke ⁻
Dynamic Range	77 dB@Dynamic-HDR		
Shutter Mode	Rolling, Global Reset		
Exposure Time	4 μs-10 s		
Cooling Method	Air Cooling, Liquid Cooling		
Cooling Temp.	Air: 0°C (Ambient 25°C), Liquid:-10°C (Water Temp. 20°C)		
Dark Current	1.3 e ⁻ /p/s@0°C; 0.6 e ⁻ /p/s@-10°C		
Image Correction	DPC		
Binning	2 x 2, 4 x 4		
ROI	Support		
Timestamp Acc.	1 μs		
Trigger Mode	Hardware, Software		
Trigger Output	High, Low, Readout End, Global Exposure, Exposure Start, Trigger Ready, First Row, Any Row, Line Output		
Trigger Interface	Hirose-6-pin		
Data Interface	2 x 10 GigE		
Optical Interface	T / F / C Mount		
Power Supply	12 V / 8.5 A		
Power Cons.	≤ 55 W		
Dimensions	95 mm (H) x 100 mm (W) x 100 mm (L)		
Weight	1350 g		
Software	Mosaic V3, Sample Pro, LabVIEW, MATLAB, Micro-Manager 2.0		
SDK	C / C++ / C# / Python		
Operating System	Windows, Linux		
Environment	Working: Temp. 0°C~40°C, HUM 10%~85%; Storage: Temp. 0°C~60°C, HUM 0%~90%		

Dhyana 400BSI V3

The Dhyana 400BSI V3 delivers perfect sensitivity and resolution for high NA microscope objectives, being designed lighter and low power consumption, making it ideal for integrating and fitting into small spaces.^[1]



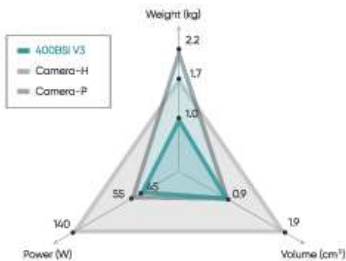
Key Features	Benefits
95% QE & Lowest Noise	High signal-to-noise ratio across UV / Visible / NIR.
6.5 μm x 6.5 μm Pixel Size	Optimal spatial sampling and sensitivity for 100X, 60X and 40X microscope.
18 mm Array Diagonal	Ideal for the microscopes that have C-mount ports.
Rolling Shutter Control Mode	Allowed to define line time delays or slit heights for scanning systems such as Light-sheet Microscopy. ^[2]
Camera Link & USB 3.0	While the USB 3.0 is quite flexible and easy to use, the CameraLink is a faster and stable option up to 100 fps@4.2 MP.
Air & Liquid Cooling	Maintains low dark noise, minimizes vibration, and aids thermal stability.

Typical Applications

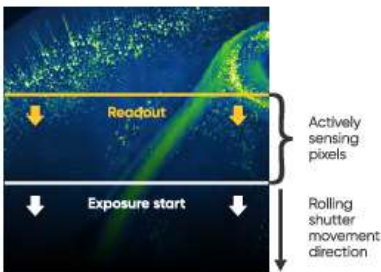
- Advanced Microscopy
- Spectral Imaging
- Astrophysical

Noted Examples

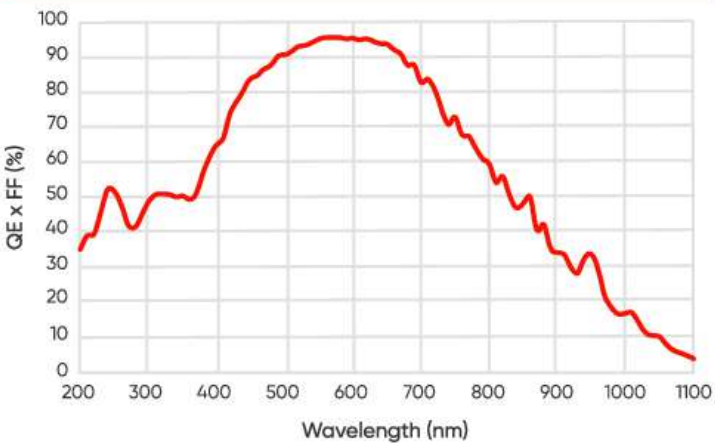
[1] Compact, lighter design low power consumption.



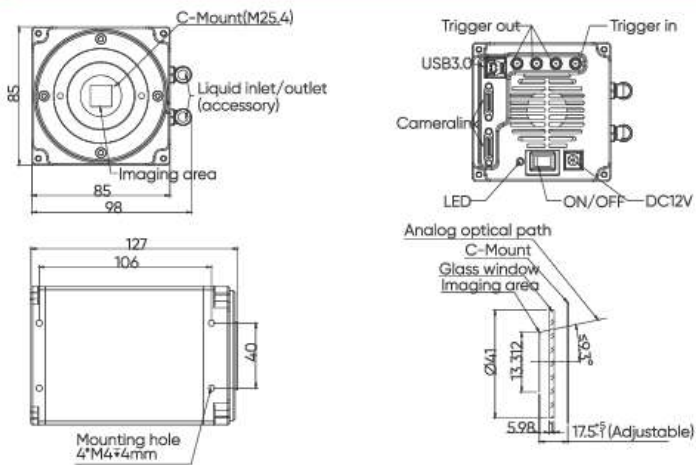
[2] The Rolling Shutter Control Mode applied in Light-sheet Microscopy.



Quantum Efficiency



Dimensions (Unit: mm)



Product Name	Dhyana 400BSI V3	
Sensor Type	BSI sCMOS	
Sensor Model	Gpixel GSENSE2020BSI	
Peak QE	95%@600 nm	
Chrome	Mono	
Array Diagonal	18.8 mm	
Effective Area	13.3 mm x 13.3 mm	
Resolution	2048 (H) x 2048 (V)	
Pixel Size	6.5 μm x 6.5 μm	
Full Well Capacity	Typical: 45 Ke-	
Dynamic Range	Typical: 90 dB	
Frame Rate	12 bit Firmware	11 bit Firmware
	HDR: 43 fps@Camera Link, 43 fps@USB 3.0	HDR: 74 fps@Camera Link, 45 fps@USB 3.0
	High Speed: 100 fps@Camera Link, 60 fps@USB 3.0	High Speed: 100 fps@Camera Link, 60 fps@USB 3.0
Readout Noise	CMS (Typical): 1.1 e- (Median), 1.2 e- (RMS) HDR (Typical): 1.6 e- (Median), 1.7 e- (RMS)	
Shutter Mode	Rolling, Global Reset	
Exposure Time	6.6 μs~10 s	
DSNU	0.2 e-	
PRNU	0.3%	
Cooling Method	Air Cooling, Liquid Cooling	
Cooling Temp.	45°C below ambient (Liquid cooling)	
Dark Current	0.5 e-/p/s@-10°C	
Binning	2 x 2, 4 x 4	
ROI	Support	
Timestamp Acc.	1 μs	
Trigger Mode	Hardware, Software	
Trigger Output	Exposure Start, Global Exposure, Readout End, High, Low, Trigger Ready	
Trigger Interface	SMA	
Data Interface	USB 3.0, CameraLink	
Bit Depth	11 bit, 12 bit, 16 bit	
Optical Interface	C Mount	
Power Supply	12 V / 8 A	
Power Cons.	45 W	
Dimensions	85 mm (H) x 85 mm (W) x 127 mm (L)	
Weight	995 g	
Software	Mosaic V3, Sample Pro, LabVIEW, MATLAB, Micro-Manager 2.0	
SDK	C / C++ / C# / Python	
Operating System	Windows, Linux	
Environment	Working: Temp. 0°C~40°C, HUM 0%~85%; Storage: Temp. 0°C~60°C, HUM 0%~90%	

Dhyana 95 V2

The Dhyana 95 V2 delivers ultimate sensitivity achieving similar results compare with EMCCD camera technology without the concerns of signal drift, gain aging, multiplication gain noise (1.4X) and pain points of export control restrictions.^[1]



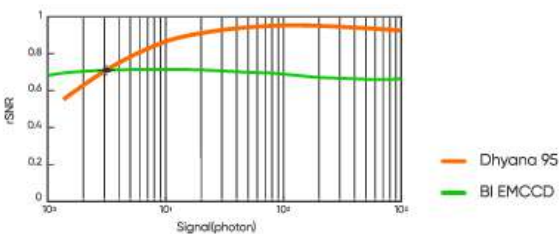
Key Features	Benefits
200 nm~1100 nm	Wide spectral response, supports UV, visible and near-infrared imaging applications.
95% QE & Lowest Noise	Higher SNR than EMCCD when the signal (photon) > 3 e ⁻ . ^[2]
11 μm x 11 μm Pixel Size	Large pixels capture 3X the light of standard 6.5 μm pixels to maximize photon detection.
100 Ke-Full-well Capacity	High dynamic range for the measurement of bright and dim signals at the same time.
CameraLink & USB 3.0	Use the flexibility of USB or if additional speed is required move to CameraLink.
Reliable and Stable Cooling	Effectively suppresses dark current and signal fluctuation, ensuring system stability.

Typical Applications

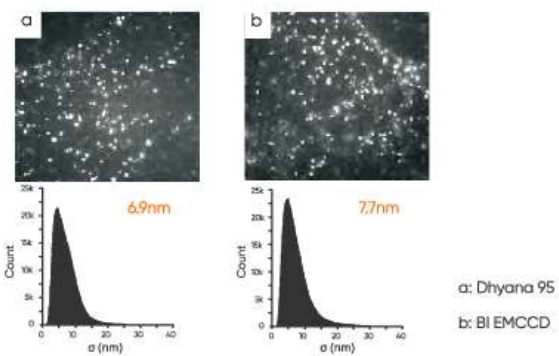
- Advanced Microscopy
- Spectral analyse
- Soft X-ray Imaging
- Astrophysical

Noted Examples

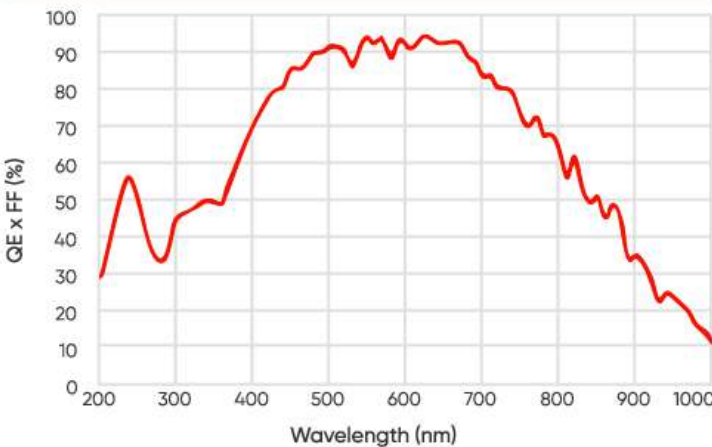
[1] The Higher SNR than EMCCD when the signal (photon) > 3 e⁻.



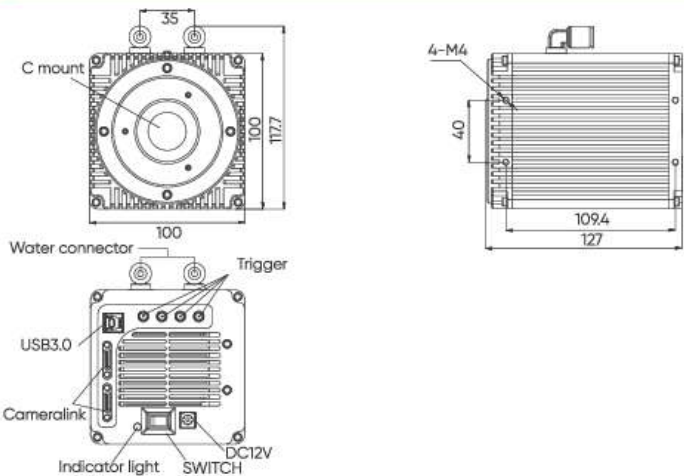
[2] Dhyana 95 V2 demonstrating higher localization accuracy than EMCCD in single-molecule localization experiments.



Quantum Efficiency



Dimensions (Unit: mm)



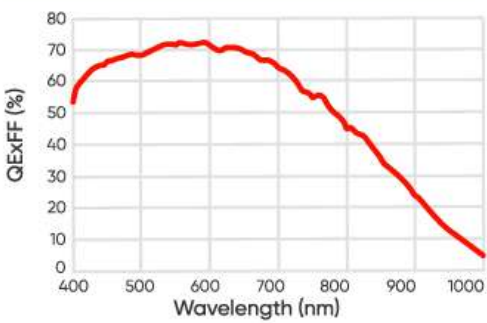
Product Name	Dhyana 95 V2
Sensor Type	BSI sCMOS
Sensor Model	Gpixel GSENSE400BSI
Peak QE	95%@560 nm
Chrome	Mono
Array Diagonal	31.9 mm
Effective Area	22.5 mm x 22.5 mm
Resolution	2048 (H) x 2048 (V)
Pixel Size	11 μm x 11 μm
Full Well Capacity	Typical: 80 Ke-@HDR, 100 Ke-@STD
Dynamic Range	Typical: 90 dB
Frame Rate	24 fps@16 bit HDR, 48 fps@12 bit STD
Readout Noise	1.6 e- (Median), 1.7 e- (RMS)
Shutter Mode	Rolling
Exposure Time	21 μs~10 s
DSNU	0.2 e-
PRNU	0.3%
Cooling Method	Air Cooling, Liquid Cooling
Cooling Temp.	45°C below ambient (Liquid cooling)
Dark Current	0.6 e-/p/s@-10°C
Binning	2 x 2, 4 x 4
ROI	Support
Timestamp Acc.	1 μs
Trigger Mode	Hardware, Software
Trigger Output	Exposure Start, Global Exposure, Readout End, High, Low, Trigger Ready
Trigger Interface	SMA
Data Interface	USB 3.0, CameraLink
Bit Depth	12 bit, 16 bit
Optical Interface	C/ F Mount
Power Supply	12 V / 8 A
Power Cons.	60 W
Dimensions	C Mount: 100 mm (H) x 118 mm (W) x 127 mm (L), F Mount: 100 mm (H) x 118 mm (W) x 157 mm (L)
Weight	1613 g
Software	Mosaic V3, Sample Pro, LabVIEW, MATLAB, Micro-Manager 2.0
SDK	C / C++ / C# / Python
Operating System	Windows, Linux
Environment	Working: Temp. 0°C~40°C, HUM 10%~85%; Storage: Temp. 0°C~60°C, HUM 0%~90%

Dhyana 400D

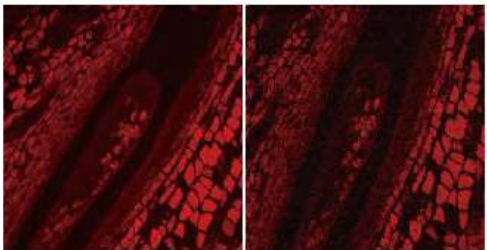
The Dhyana 400D features a front-illuminated sCMOS sensor with a peak quantum efficiency of 72% and a readout noise of only 2.0 e⁻. Combined with advanced cooling and noise reduction technology, it is suitable for most fluorescence imaging applications.



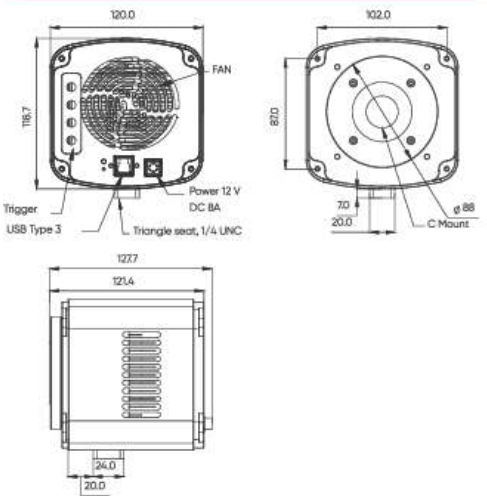
Quantum Efficiency



Application Cases



Dimensions (Unit: mm)



Specification

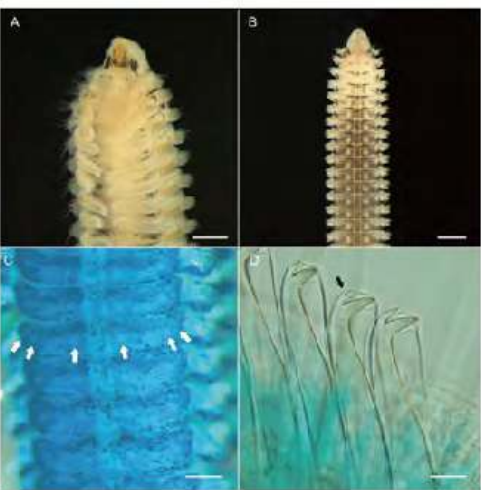
Product Name	Dhyana 400D
Sensor Type	FSI sCMOS
Sensor Model	Gpixel GSENSE2020
Peak QE	72%@595 nm
Chrome	Mono
Array Diagonal	18.8 mm
Effective Area	13.3 mm x 13.3 mm
Resolution	2048 (H) x 2048 (V)
Pixel Size	6.5 μm x 6.5 μm
Full Well Capacity	Typical: 45 Ke ⁻
Dynamic Range	Typical: 86.6 dB
Frame Rate	35 fps@16 bit
Readout Noise	2.1 e ⁻ @HG
Shutter Mode	Rolling
Exposure Time	13 μs~10 s
Cooling Method	Air Cooling
Cooling Temp.	35°C below ambient
Dark Current	0.12 e ⁻ /p/s@-10°C
Binning	2 x 2
ROI	Support
Trigger Mode	Hardware, Software
Trigger Output	Exposure Start, Global Exposure, Readout End
Trigger Interface	SMA
Data Interface	USB 3.0
Bit Depth	12 bit, 16 bit
Optical Interface	C Mount
Power Supply	12 V / 8 A
Power Cons.	60 W
Dimensions	120 mm (H) x 119 mm (W) x 121 mm (L)
Weight	1853 g
Software	Mosaic V3, LabVIEW, MATLAB, Micro-Manager 2.0
SDK	C / C++ / C# / Python
Operating System	Windows, Linux
Environment	Working: Temp. 0°C~40°C, HUM 10%~85%

Dhyana 400DC

The Dhyana 400DC is a front-illuminated color sCMOS camera, combining scientific-grade sensitivity with accurate color reproduction. It offers a large field of view and excellent dynamic range, enabling high-quality color imaging even under low-light conditions.

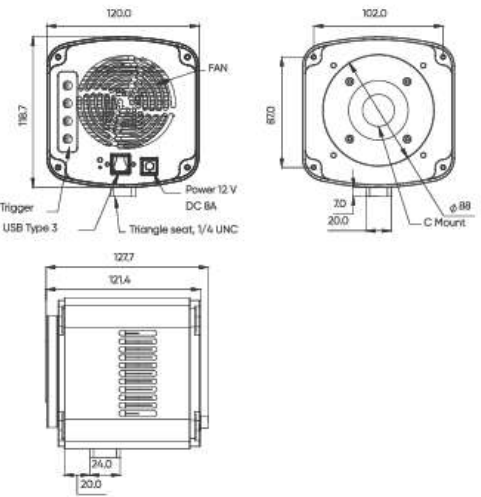


Application Cases



Images (A-D) acquired with the Dhyana 400DC, showing a newly identified algal species under different dark-field/bright-field illumination conditions.

Dimensions (Unit: mm)



Specification

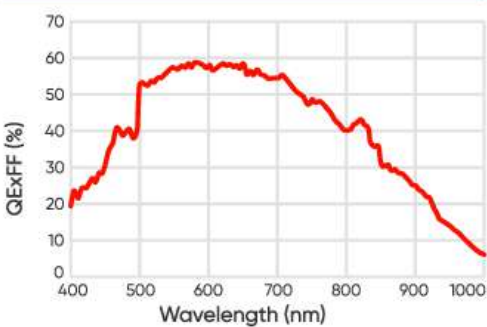
Product Name	Dhyana 400DC
Sensor Type	FSI sCMOS
Sensor Model	Gpixel GSENSE2020s
Chrome	Color
Array Diagonal	18.8 mm
Effective Area	13.3 mm x 13.3 mm
Resolution	2048 (H) x 2048 (V)
Pixel Size	6.5 μm x 6.5 μm
Full Well Capacity	Typical: 45 Ke ⁻
Dynamic Range	Typical: 86.6 dB
Frame Rate	22 fps@8 bit, 16 fps@16 bit
Readout Noise	1.7 e ⁻
Shutter Mode	Rolling
Exposure Time	21 μs~10 s
Cooling Method	Air Cooling
Cooling Temp.	35°C below ambient
Dark Current	0.12 e ⁻ /p/s@-10°C
Binning	2 x 2
ROI	Support
Trigger Mode	Hardware, Software
Trigger Output	Exposure Start, Global Exposure, Readout End
Trigger Interface	SMA
Data Interface	USB 3.0
Bit Depth	16 bit
Optical Interface	C Mount
Power Supply	12 V / 8 A
Power Cons.	50 W
Dimensions	120 mm (H) x 119 mm (W) x 121 mm (L)
Weight	1853 g
Software	Mosaic V3, LabVIEW, MATLAB, Micro-Manager 2.0
SDK	C / C++ / C# / Python
Operating System	Windows, Linux
Environment	Working: Temp. 0°C~40°C, HUM 10%~85%

Dhyana 401A-G

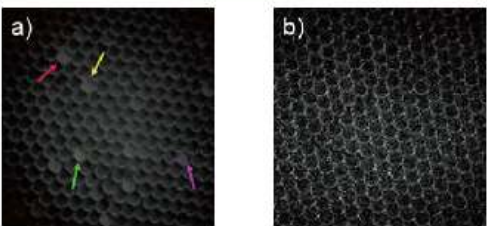
The Dhyana 401A-G is a compact front-illuminated sCMOS camera with 11 μm pixels and excellent dynamic range, capable of capturing strong and weak signals simultaneously. Its cost-effective design makes it ideal for instrument integrators and applications in complex light environments.



Quantum Efficiency

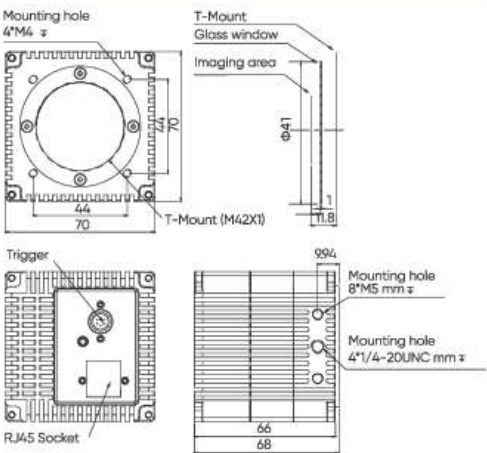


Application Cases



a) - Dhyana 401A (11 μm Pixel) b) - CCD (5 μm Pixel)

Dimensions (Unit: mm)



Specification

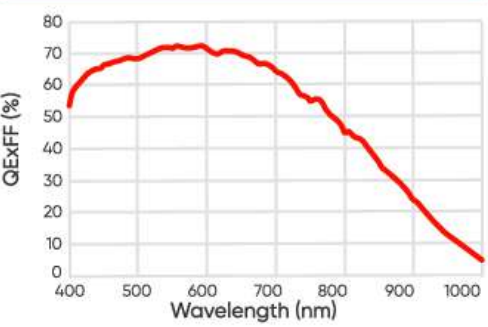
Product Name	Dhyana 401A-G
Sensor Type	FSI sCMOS
Sensor Model	Gpixel GSENSE400
Peak QE	58%@600 nm
Chrome	Mono
Array Diagonal	32 mm
Effective Area	22.5 mm x 22.5 mm
Resolution	2048 (H) x 2048 (V)
Pixel Size	11 μm x 11 μm
Full Well Capacity	Typical: 91 Ke-
Dynamic Range	95 dB
Frame Rate	20 fps
Readout Noise	Typical: 1.5 e- (Median)
Shutter Mode	Rolling
Exposure Time	21 μs ~1 s
Binning	2 x 2
ROI	Support
Trigger Mode	Hardware, Software
Trigger Output	Exposure Start, Readout End
Trigger Interface	Hirose
Data Interface	GigE
Bit Depth	12 bit, 16 bit
Optical Interface	M42
Power Supply	12 V / 2 A
Power Cons.	6 W
Dimensions	70 mm (H) x 70 mm (W) x 68 mm (L)
Weight	540 g
Software	Sample Pro
SDK	C / C++ / C#
Operating System	Windows, Linux
Environment	Temp. 0°C~40°C, HUM 10%~85%

Dhyana 401D / 201D

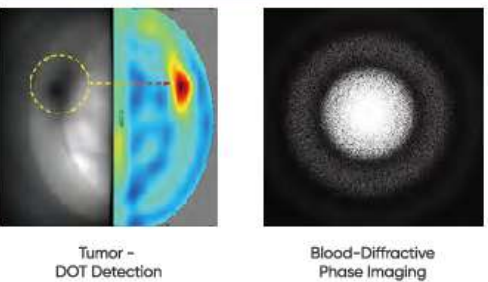
The Dhyana 401D and 201D are compact front-illuminated sCMOS cameras, ideal for instrument system integrators seeking cost-effective solutions. They feature 72% high quantum efficiency and 2.1 e- low readout noise, making them well-suited for general low-light imaging applications.



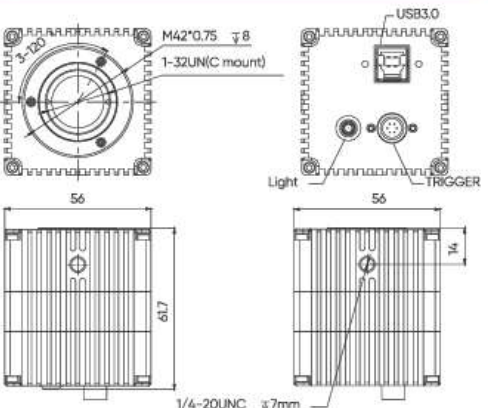
Quantum Efficiency



Application Cases



Dimensions (Unit: mm)



Specification

Product Name	Dhyana 401D	Dhyana 201D
Sensor Type	FSI sCMOS	
Sensor Model	Gpixel GSENSE2020	Gpixel GSENSE2011
Peak QE	72%@595 nm	
Chrome	Mono	
Array Diagonal	18.8 mm	15.3 mm
Effective Area	13.3 mm x 13.3 mm	13.3 mm x 7.5 mm
Resolution	2048 (H) x 2048 (V)	2048 (H) x 1152 (V)
Pixel Size	6.5 μm x 6.5 μm	
Full Well Capacity	Typical: 43 Ke-	Typical: 45 Ke-
Frame Rate	40 fps@16 bit 45 fps@8 bit	70 fps@16 bit 80 fps@8 bit
Readout Noise	Typical: 2.1 e- (Median)	
Shutter Mode	Rolling	
Exposure Time	10 μs ~10 s	
Binning	2 x 2, 4 x 4	
ROI	Support	
Trigger Mode	Hardware, Software	
Trigger Output	Exposure Start, Readout End, Trigger Ready	Exposure Start, Readout End,
Trigger Interface	Hirose	
Data Interface	USB 3.0	
Bit Depth	8 bit, 12bit, 16 bit	
Optical Interface	C Mount	
Power Supply	12 V / 8 A	
Power Cons.	< 4 W	
Dimensions	56 mm (H) x 56 mm (W) x 61.7 mm (L)	
Weight	305 g	
Software	Mosaic V3, LabVIEW, MATLAB, Micro-Manager 2.0, Sample Pro	
SDK	C / C++ / C# / Python	
Operating System	Windows, Linux	
Environment	Temp. 0°C~40°C, HUM 10%~85%	

Aries 1517

The Aries 1517 is a new-generation large BSI sCMOS astronomical camera developed by Tucsen using vacuum cooling technology. Compared with conventional CCD cameras, it offers a more compact, lightweight design and lower power consumption to meet key astronomical imaging requirements, including wide field of view, high dynamic range, and long-exposure, while greatly simplifying system integration.



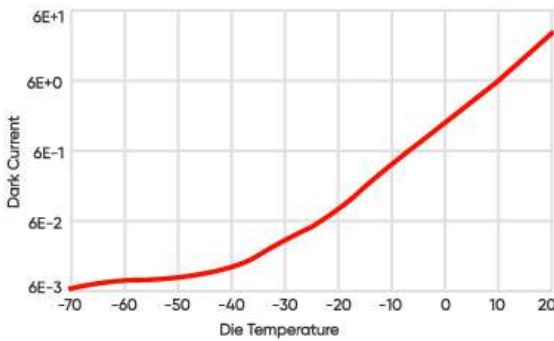
Key Features	Benefits
BSI sCMOS Architecture	92% peak QE, 1.2 e- readout noise, and 200 nm~1100 nm wide spectral response.
87 mm Large Format	Greatly reduces multi-camera mosaicing and improves single-exposure coverage efficiency.
15 μm large Pixel Size	Enhances photon collection and resolves under-sampling in long-focus optical systems.
81.4 Ke- Full Well Capacity	Paired with 16-bit lossless output, ensuring excellent linearity over wide photon flux.
0.023 e-/p/s Dark Current@-40°C	4.3X lower than previous large sCMOS, enhancing long-exposure imaging capability.
Vacuum Cooling Technology	Effectively isolates environmental interference for long-term stable operation. ^[1]
< 100 W Power Consumption	Only half that of the equivalent large CCD, reducing demands for field deployments.

Typical Applications

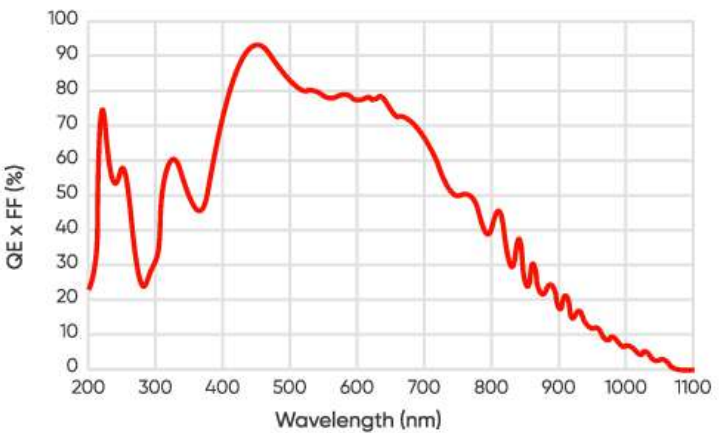
- Large-area sky survey
- Deep-space low-light imaging
- Precision photometry
- Astronomical spectroscopy
- Variable star monitoring

Noted Examples

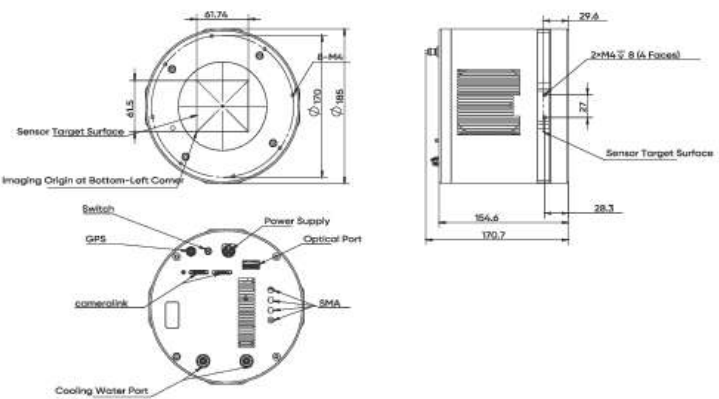
[1] The Aries 1517 supports customized cooling depth. As shown, when cooled to -70°C, the dark current can be as low as 0.008 e-/pixel/s.



Quantum Efficiency



Dimensions (Unit: mm)



Product Name	Aries 1517
Model	A1517
Sensor Type	BSI sCMOS
Sensor Model	GSENSE1517BSI
Chrome	Mono
Peak QE	92%@450 nm
Spectral Range	200 nm - 1000 nm
Resolution	4116 (H) x 4100 (V)
Pixel Size	15 μm x 15 μm
Effective Area	61.74 mm x 61.5 mm
Frame Rate	4 fps
Full-Well capacity	67 Ke-@High Dynamic; 81.4 Ke-@Standard Low Gain; 16 Ke-@Standard High Gain
Dynamic Range	94.7 dB@High Dynamic; 80.6 dB@Standard Low Gain; 81.9 dB@Standard High Gain
Readout Noise	1.2 e-@High Dynamic; 7.6 e-@Standard Low Gain; 1.3 e-@Standard High Gain
Dark Current	0.023 e-/p/s @-40°C
DSNU	0.3 e-
PRNU	0.3%
Cooling Method	Air, Liquid
Cooling Temp.	Air: -40°C@Ambient Temperature 10°C; Liquid: -50°C@Liquid Temperature 10°C
Binning	1 x 1, 2 x 2, 4 x 4
Shutter Mode	Rolling
ROI	Support
Exposure Time	61.35 μs ~ 3600 s
GPS	Support
Timestamp	Support
Trigger Mode	Hardware, Software, Grabber
Trigger Output	Readout End, Global Exposure, Exposure Start, Trigger Ready, High, Low, Any Row, First Row
Trigger Interface	SMA
Data Interface	CoF, CameraLink
Optical Interface	User Customization
Bit Depth	14 bit, 16 bit
Power Supply	DC 24 V
Power Cons.	< 100 W
Dimensions	φ 185 mm x 169.1 mm
Weight	9 kg
Software	Sample Pro
SDK	C, C++
Operating System	Windows 7 / 10, Ubuntu 18.04, Customization
Operating Environment	Working: Temp. -40°C~50°C, Hum. 0%~85%, Altitude 0 m~6000 m; Storage: Temp. -40°C~60°C, Hum. 0%~95%;

Dhyana 6060 / 6060BSI

The Dhyana 6060 / 6060BSI brings the speed and dynamic range to large format imaging missing from previous CCD technology.^[1] With a massive 86 mm diameter, high quantum efficiency and 10 μm pixels size, it is well suited to scientific applications in areas such as Astronomy and Physics.



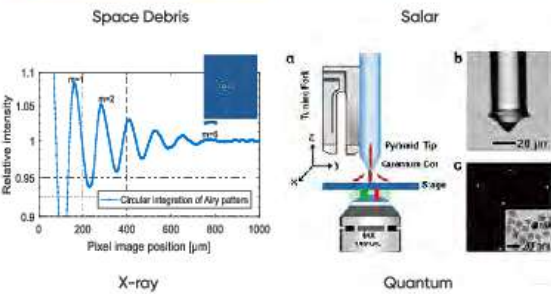
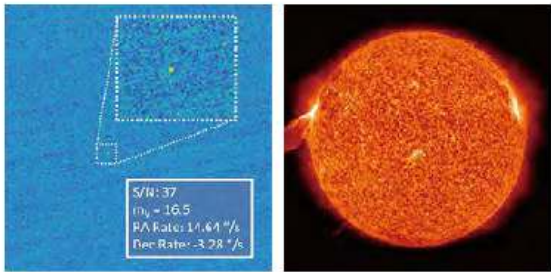
Key Features	6060	6060BSI	Benefits
Field of View	61.4 mm x 61.4 mm	61.4 mm x 61.4 mm	Very large field of view from 36 MP, 10 μm pixel size sensor.
Quantum Efficiency	72 % QE	95% QE	High photon collection efficiency for lower illumination intensity.
Frame Rate	44 fps	26.4 fps	Faster data rates than the previous CCD technology.
Full-Well Capacity	123 Ke-	102 Ke-	High dynamic range for the measurement of bright and dim signals at the same time.
Cooling Method	Air & Liquid	Air & Liquid	Maintains low dark noise, minimizes vibration, and aids thermal stability.

Typical Applications

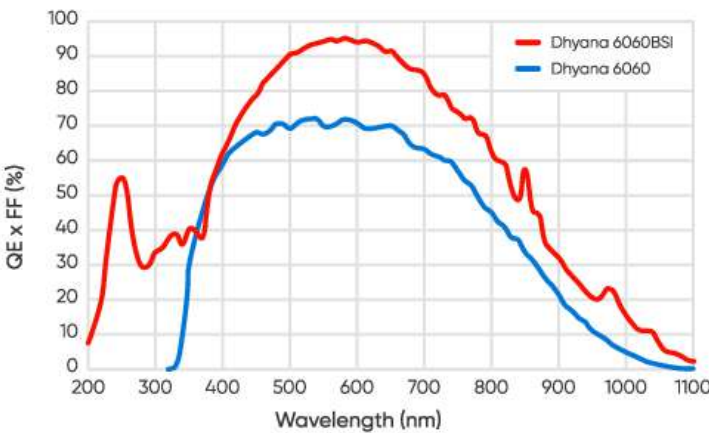
- Space Debris Detection
- Solar Astronomy
- Quantum Optics

Noted Examples

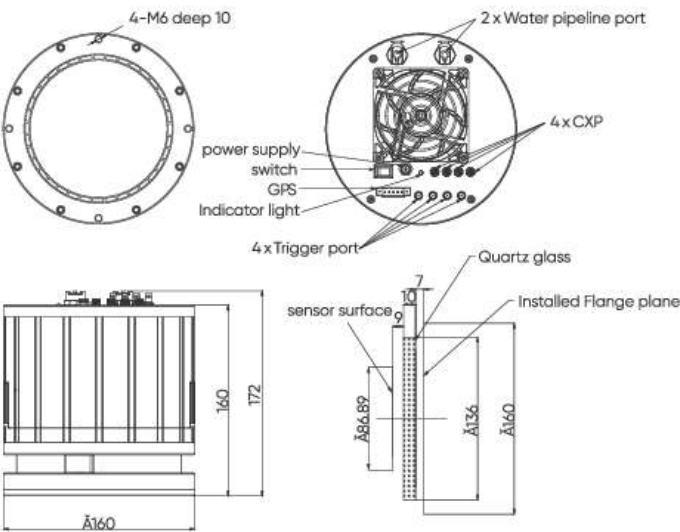
[1] Large-area sCMOS technology can be used in a wide range of applications previously limited by CCD technology.



Quantum Efficiency



Dimensions (Unit: mm)



Product Name	Dhyana 6060	Dhyana 6060BSI
Sensor Type	FSI sCMOS	BSI sCMOS
Sensor Model	Gpixel GSENSE6060	Gpixel GSENSE6060BSI
Peak QE	72%@550 nm	95%@580 nm
Chrome	Mono	
Array Diagonal	86.8 mm	
Effective Area	61.4 mm x 61.4 mm	
Resolution	6144 (H) x 6144 (V)	
Pixel Size	10 μm x 10 μm	
Full Well Capacity	Typical: 123 Ke-	Typical: 102 Ke-
Dynamic Range	Typical: 91 dB	Typical: 90 dB
Frame Rate	44 fps@12 bit STD, 19 fps@16 bit HDR 14 fps@14 bit STD	26.4 fps@12 bit STD, 11.3 fps@16 bit HDR 8.6 fps@14 bit STD
Readout Noise	Typical: 3 e- (Median)	
Shutter Mode	Rolling	
Exposure Time	7 μs~300 s	12 μs~300 s
DSNU	1.5 e-	
PRNU	0.2%	
Cooling Method	Air Cooling, Liquid Cooling	
Cooling Temp.	45°C below ambient (Liquid cooling)	
Dark Current	Air: 0.25 e-/p/s, Liquid: 0.15 e-/p/s	
Binning	2 x 2, 4 x 4	
ROI	Support	
Timestamp Acc.	1 μs	
GPS	Support	
Trigger Mode	Hardware, Software	
Trigger Output	Exposure Start, Global Exposure, Readout End, High, Low	
Trigger Interface	SMA	
Data Interface	CXP 12 x 4	
Bit Depth	12 bit, 14 bit, 16 bit	
Optical Interface	User Customization	
Power Supply	12 V / 10 A	
Power Cons.	< 100 W	
Dimensions	φ 160 mm x 164 mm	
Weight	4 kg	
Software	Mosaic V3, Sample Pro, MAXIMDL, LabVIEW, MATLAB, EPICS	
SDK	C / C++ / C# / Python	
Operating System	Windows, Linux	
Environment	Working: Temp. -35°C~40°C, HUM 0%~95%; Storage: Temp. -35°C~60°C, HUM 0%~95%	

Dhyana 4040 V2 / 4040BSI

The Dhyana 4040 V2 / 4040BSI brings the speed and dynamic range to large format imaging missing from previous CCD technology.^[1] With a 52 mm diameter, high quantum efficiency and 9 μm pixels size, it is well suited to scientific applications in areas such as Astronomy and Physics.



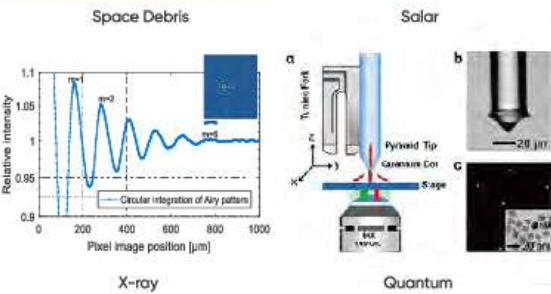
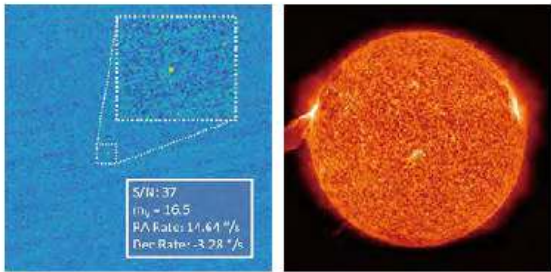
Key Features	4040 V2	4040BSI	Benefits
Field of View	36.9 mm x 36.9 mm	36.9 mm x 36.9 mm	Large field of view from 16 MP, 9 μm pixel size sensor.
Quantum Efficiency	74% QE	90% QE	High photon collection efficiency for lower illumination intensity.
Frame Rate	16.5 fps	16.5 fps	Faster data rates than the previous CCD technology.
Full-well Capacity	70 Ke-	39 Ke-	High dynamic range for the measurement of bright and dim signals at the same time.
Cooling Method	Air & Liquid	Air & Liquid	Maintains low dark noise, minimizes vibration, and aids thermal stability.

Typical Applications

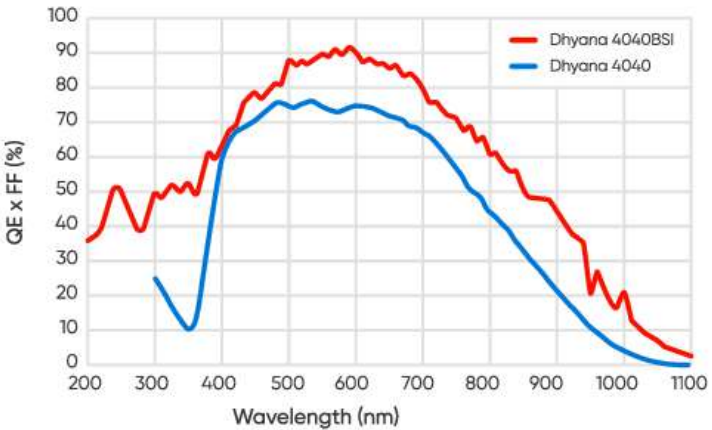
- Space Debris Detection
- Solar Astronomy
- Quantum Optics

Noted Examples

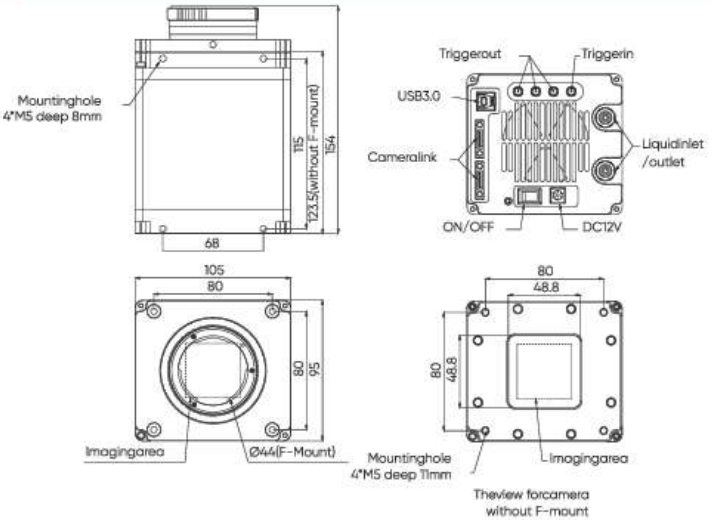
[1] Large-area sCMOS technology can be used in a wide range of applications previously limited by CCD technology.



Quantum Efficiency



Dimensions (Unit: mm)



Product Name	Dhyana 4040 V2	Dhyana 4040BSI
Sensor Type	FSI sCMOS	BSI sCMOS
Sensor Model	Gpixel GSENSE4040	Gpixel GSENSE4040BSI
Peak QE	74%@600 nm	90%@550 nm
Chrome	Mono	
Array Diagonal	52.1 mm	
Effective Area	36.9 mm x 36.9 mm	
Resolution	4096 (H) x 4096 (V)	
Pixel Size	9 μm x 9 μm	
Full Well Capacity	Typical: 70 Ke-	Typical: 39 Ke-
Dynamic Range	Typical: 86 dB	Typical: 85 dB
Frame Rate	16.5 fps@CameraLink, 9.7 fps@USB 3.0	
Readout Noise	Typical: 3.6 e-	Typical: 2.3 e-
Shutter Mode	Rolling	
Exposure Time	10 μs~3600 s	
DSNU	0.5 e-	
PRNU	0.2%	
Cooling Method	Air Cooling, Liquid Cooling	
Cooling Temp.	45°C below ambient (Liquid cooling)	
Dark Current	Air: 0.15 e-/p/s, Liquid: 0.1 e-/p/s	1.2 e-/p/s
Binning	2 x 2, 4 x 4	
ROI	Support	
Timestamp Acc.	1 μs	
GPS	8 ns	
Trigger Mode	Hardware, Software	
Trigger Output	Exposure Start, Global Exposure, Readout End, High, Low	
Trigger Interface	SMA, CameraLink CC1	
Data Interface	USB 3.0, CameraLink	
Bit Depth	12 bit, 16 bit	
Optical Interface	F Mount / User Customization	
Power Supply	12 V / 8 A	
Power Cons.	< 45 W	
Dimensions	105 mm (H) x 95 mm (W) x 123.5 mm (L)	
Weight	2 kg	
Software	Mosaic V3, Sample Pro, MAXIMDL, LabVIEW, MATLAB	
SDK	C / C++ / C# / Python	
Operating System	Windows, Linux	
Environment	Working: Temp. -25°C~40°C, HUM 0%~95%; Storage: Temp. -35°C~60°C, HUM 0%~95%	

Dhyana XF95 / XV95

The Dhyana XF95 features a high quantum efficiency (QE) of nearly 100% within the 80 eV to 1000 eV range, utilizing advanced BSI sCMOS technology without an anti-reflection coating. This innovation enhances soft X-ray and EUV imaging performance while providing greater resistance to radiation damage. [1]



Key Features	Benefits
~100% Peak QE@80 eV-1000 eV	Excellent soft X-ray and extreme ultraviolet imaging performance.
100 Ke- Full Well Wapacity	High dynamic range for the measurement of bright and dim signals at the same time.
48 fps@4.2 MP	Dozens of times the speed of CCD cameras.
Reliable and Stable Cooling	Effectively suppresses dark current and signal fluctuation, ensuring system stability.

Typical Applications

- Soft X-ray Scattering / Spectroscopy
- Extreme Ultraviolet Spectroscopy
- Layered Diffraction Imaging
- High Harmonic Generation Radiation

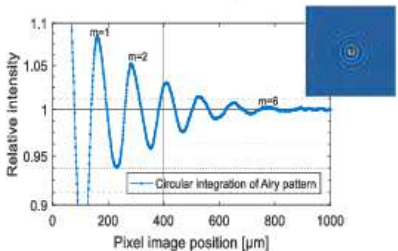
Noted Examples

[1] "Backside-illuminated sCMOS technology is very attractive for cost-adapting to specific applications, and overall shows good dynamic range, which can significantly reduce acquisition time for imaging applications compared to commonly used classical backside-illuminated CCD cameras."

---Journal of Synchrotron Radiation, 2020.

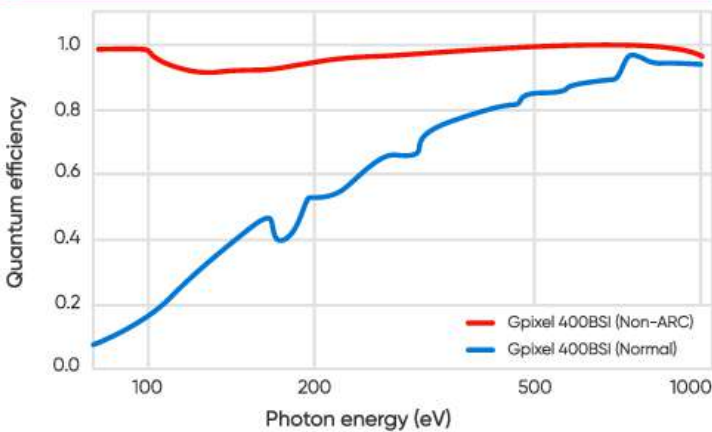


Beamline hutch at SOLEIL Synchrotron, France

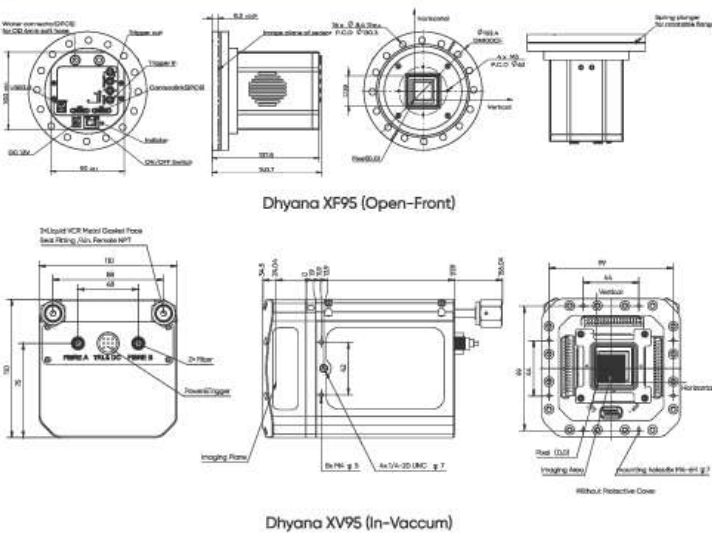


Diffraction pattern of 186 eV beam captured with Dhyana camera

Quantum Efficiency



Dimensions (Unit: mm)



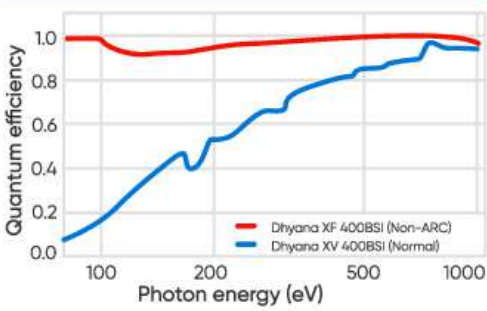
Product Name	Dhyana XF95 (Open-Front)	Dhyana XV95 (In-Vacuum)
Model	XF95	XV95
Sensor Type	Non Anti-Reflection Coating / Standard BSI sCMOS	
Sensor Model	GSENSE 400BSI-PS / GSENSE 400BSI	
Peak QE	~100%	
Chrome	Mono	
Array Diagonal	31.9 mm	
Effective Area	22.5 mm x 22.5 mm	
Resolution	4.2 MP, 2048 (H) x 2048 (V)	
Pixel Size	11 μm x 11 μm	
Full Well Capacity	Typical: 85 Ke-	
Dynamic Range	90 dB	
Frame Rate	HDR: 24 fps; STD: 48 fps	
Readout Noise	Typical: 1.6 e- (Median)	
Shutter Mode	Rolling	
Exposure Time	21 μs~300 s	
Linearity	> 99%	
DSNU	0.2 e-	
PRNU	0.3%	
Bit Depth	12 bit, 16 bit	
Cooling Method	Air Cooling, Liquid Cooling	Liquid Cooling
Cooling Temp.	-30°C@25°C (Ambient Temp.), -50°C@20°C (Water Temp.)	-45°C@20°C (Water Temp.)
Dark Current	0.3 e-/p/s@-40°C chip Temp.	
Vacuum Compatibility	10 ⁻⁷ Pa (Max)	10 ⁻⁶ Pa
Binning	2 x 2, 4 x 4	
ROI	Support	
Timestamp Acc.	1 μs	
Trigger Mode	Hardware, Software	
Trigger Output	Exposure Start, Simulated Global, Readout End, High, Low	
Trigger Interface	SMA	Hirose
Data Interface	CameraLink, USB 3.0-Over-Fiber	USB 3.0-Over-Fiber
Flange Size	DN100CF / User Customization	Feedthrough DN100CF / Customization
Power Supply	12 V / 8 A	AC Power
Power Cons.	< 65 W	< 65 W (incl. ctrl. box)
Dimensions	152.4 mm (H)x 152.4 mm (W)x 140.7 mm (L)	110 mm (H)x 110 mm (W)x 191 mm (L)
Weight	~3700 g	~2600 g (camera body)
Software	Mosaic V3, Sample Pro, LabVIEW, MATLAB, Micro-Manager 2.0	
SDK	C / C++ / C#	C / C++ / C# / Python
Operating System	Windows, Linux	
Environment	Temp.: 0°C~40°C; HUM 0%~70%, non-condensing; Bake-out Temp.: < 70°C	

Dhyana XF / XV400BSI

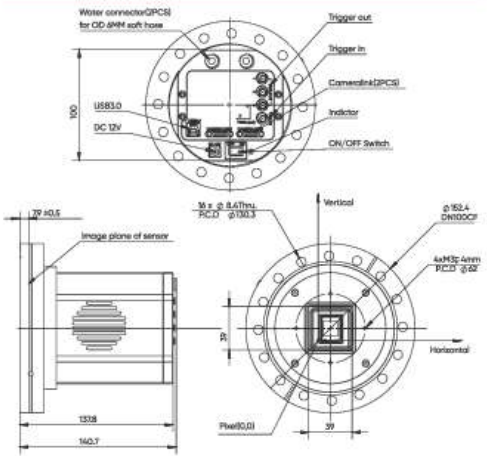
The Dhyana XF / XV 400BSI series soft X-ray camera offers high-precision imaging with 6.5 μm pixels, balancing high SNR and resolution. Its 45 Ke⁻ full well capacity ensures a wide dynamic range, handling both strong and weak signals. This delivers key advantages in soft X-ray experiments like scattering studies.



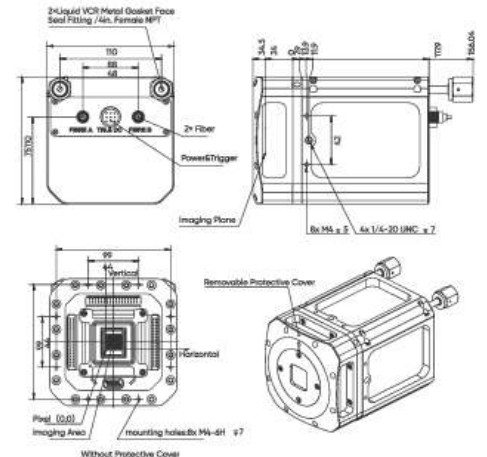
Quantum Efficiency



Dimensions (Unit: mm)



Dhyana XF 400BSI (Open-Front)



Dhyana XV 400BSI (In-Vacuum)

Specification

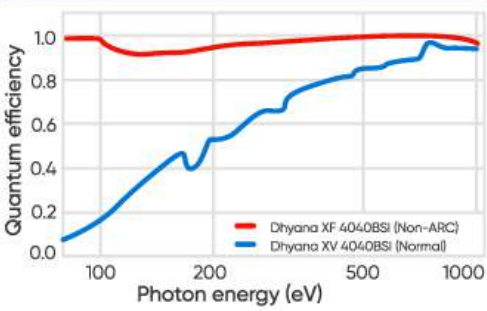
Product Name	Dhyana XF400BSI	Dhyana XV400BSI
Model	XF400BSI	XV400BSI
Sensor Type	Non Anti-Reflection Coating / Standard BSI sCMOS	
Peak QE	~100%	
Array Diagonal	18.8 mm	
Effective Area	13.3 mm x 13.3 mm	
Resolution	2048 (H) x 2048 (V)	
Pixel Size	6.5 μm x 6.5 μm	
Full Well Capacity	Typical: 45 Ke ⁻	
Dynamic Range	90 dB	
Spectral Range	80~1000 eV / 200~1100 nm	
Frame Rate	40 fps@USB 3.0, 100 fps@Camera Link	40 fps@USB 3.0
Readout Noise	Typical: 1.1 e ⁻ (Median)@CMS	
Shutter Mode	Rolling, Global Reset	
Exposure Time	6.6 μs ~300 s	
Linearity	> 99%	
DSNU	0.2 e ⁻	
PRNU	0.3%	
Bit Depth	11 bit, 12 bit, 16 bit	
Cooling Method	Liquid Cooling, Air Cooling	Liquid Cooling
Cooling Temp.	60°C below ambient	
Dark Current	0.5 e ⁻ /p/s@-40°C chip temp.	
Vac. Compatibility	10 ⁻⁷ Pa (Max)	10 ⁻⁶ Pa (Max)
Binning	2 x 2, 4 x 4	
ROI	Support	
Timestamp Acc.	1 μs	
Trigger Interface	SMA	Hirose
Data Interface	CameraLink, USB 3.0	USB 3.0
Flange Size	DN100CF	Feedthrough DN100CF
Power Supply	12 V / 8 A	AC Power
Power Cons.	≤ 65 W	
Weight	~3900 g	~2600 g
Software	Mosaic V3, Sample Pro, LabVIEW, MATLAB, EPICS	
SDK	C / C++ / C# / Python (XV Series only)	

Dhyana XF/ XV4040BSI

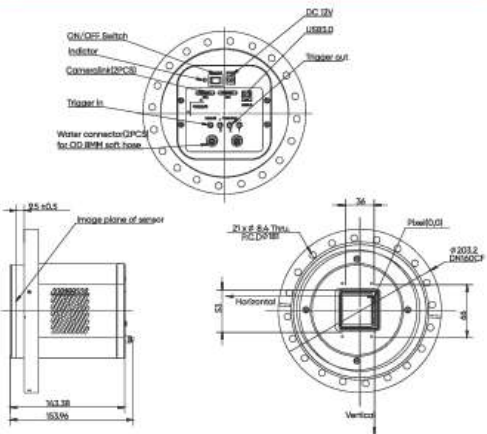
The Dhyana XF / XV 4040BSI series soft X-ray camera features a large-area sensor for high-precision, high-resolution, and wide-field research. It captures larger areas in a single shot, minimizing stitching errors, making it ideal for materials science, nanotechnology, and semiconductor inspection.



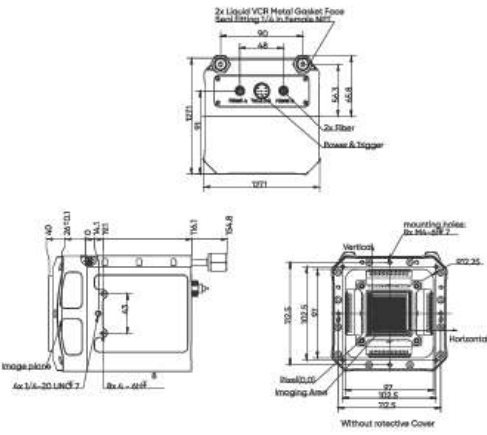
Quantum Efficiency



Dimensions (Unit: mm)



Dhyana XF 4040BSI (Open-Front)



Dhyana XV 4040BSI (In-Vacuum)

Specification

Product Name	Dhyana XF4040BSI	Dhyana XV4040BSI
Model	XF4040BSI	XV4040BSI
Sensor Type	Non Anti-Reflection Coating / Standard BSI sCMOS	
Peak QE	~100%	
Array Diagonal	52.1 mm	
Effective Area	36.9 mm x 36.9 mm	
Resolution	4096 (H) x 4096 (V)	
Pixel Size	9 μm x 9 μm	
Full Well Capacity	Typical: 37 Ke ⁻	
Dynamic Range	80 dB	
Spectral Range	80~1000 eV / 200~1100 nm	
Frame Rate	16.5 fps@Camera Link, 9.7 fps@USB 3.0	9.7 fps@USB 3.0
Readout Noise	Typical: 2.8 e ⁻ (Median)	
Shutter Mode	Rolling	
Exposure Time	10 μs ~3600 s	
Linearity	> 99%	
DSNU	0.5 e ⁻	
PRNU	0.2%	
Bit Depth	12 bit, 16 bit	
Cooling Method	Liquid Cooling, Air Cooling	Liquid Cooling
Cooling Temp.	60°C below ambient	
Dark Current	0.02 e ⁻ /p/s@-40°C	0.01 e ⁻ /p/s@-45°C
Vac. Compatibility	10 ⁻⁷ Pa (Max)	10 ⁻⁶ Pa (Max)
Binning	2 x 2, 4 x 4	
ROI	Support	
Timestamp Acc.	1 μs	
Trigger Interface	SMA	Hirose, USB 3.0
Data Interface	CameraLink, USB 3.0	CameraLink, USB 3.0
Flange Size	DN160CF	Feedthrough DN100CF
Power Supply	12 V / 8 A	AC Power
Power Cons.	≤ 95W	≤ 63 W
Weight	~4300 g	~3100 g
Software	Mosaic V3, Sample Pro, LabVIEW, MATLAB, EPICS	
SDK	C / C++ / C# / Python (XV Series only)	

Dhyana 2100

The Dhyana 2100 is designed to deliver an unprecedented combination of maximum speed and high resolution with an sCMOS sensor. It achieves an impressive 450 fps at a full resolution of 5120 x 4096, providing high-speed data even under low-light conditions.



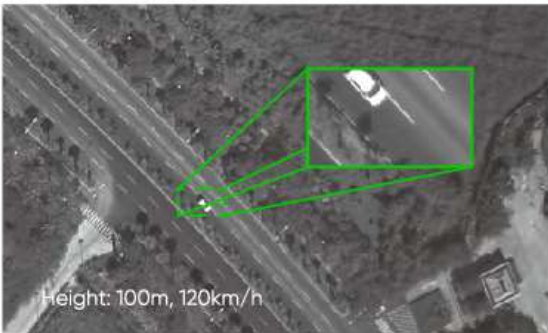
Key Features	Benefits
450 fps@21 MP	To allow the observation of fine details at high speed. [1]
Fast Binning Mode	Up to 975 fps@12 bit with high sensitivity and high dynamic range. [2]
Global Shutter	High image quality standard with no artifacts and no distortion.
Air & Liquid Cooling	Maintains low dark current, minimizes vibration, and aids thermal stability.

Typical Applications

- Wafer Inspection
- FPD Inspection
- High-speed Aerial Photography
- Voltage Sensitive Imaging
- Cardiac Imaging

Noted Examples

[1] High-Speed using global shutter provides clear images from objects moving at speed.

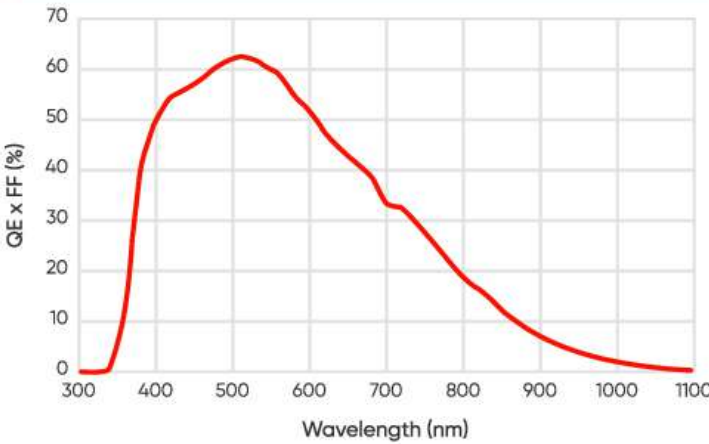


[2] Speed Comparison in Fast Binning Mode.

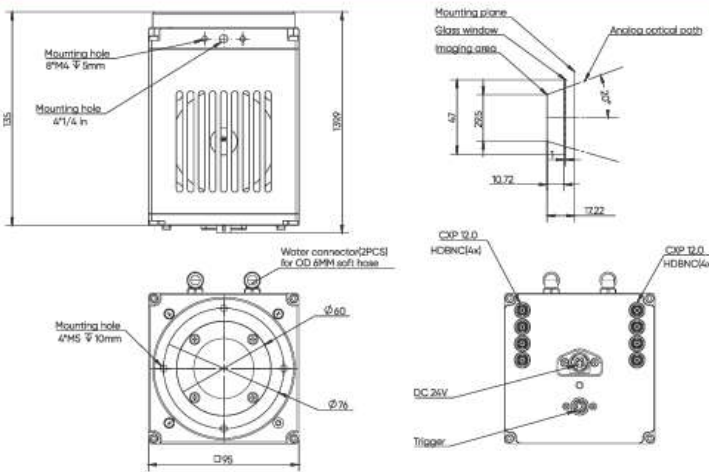
1 x 1 Binning
(5120 x 4096) 250 fps

2 x 2 Binning
(2560 x 2048) 975 fps

Quantum Efficiency



Dimensions (Unit: mm)



Product Name	Dhyana 2100
Sensor Type	FSI CMOS
Sensor Model	Gpixel GSPRINT4521
Peak QE	63%@520 nm
Chrome	Mono
Array Diagonal	29.5 mm
Effective Area	23.04 mm x 18.43 mm
Resolution	5120 (H) x 4096 (V)
Pixel Size	4.5 μ m x 4.5 μ m
Full Well Capacity	Typical: 28 Ke- (12 bit Gain 0), 120 Ke- (binned)
Dynamic Range	Typical: 68.8 dB (12 bit Gain 2)
Frame Rate	Full Mode: 450 fps@8 bit, 300 fps@10 bit, 250 fps@12 bit Base Mode: 225 fps@8 bit, 150 fps@10 bit, 150 fps@12 bit Fast Binning: 975 fps@12 bit
Readout Noise	Typical: 3.5 e-@12 bit Gain 3
Shutter Mode	Global
Exposure Time	4 μ s~10 s
DSNU	2.0 e-@12 bit Gain3
PRNU	Typical: 0.15%@12 bit Gain 0; Typical: 0.45%@12 bit Gain 3
Cooling Method	Air Cooling, Liquid Cooling
Cooling Temp.	Air: 25°C below ambient; Liquid: 30°C below liquid
Binning	2 x 2, 4 x 4, 8 x 8
ROI	Support
Trigger Mode	Hardware, Software
Trigger Output	Exposure Start, Readout End
Trigger Interface	Hirose
Data Interface	Full Mode: CXP 12 x 8; Base Mode: CXP 12 x 4
Bit Depth	8 bit, 10 bit, 12 bit
Optical Interface	M58 / F Mount / User Customization
Power Supply	24 V / 6.67 A
Power Cons.	$\leq$ 120 W
Dimensions	95 mm (H) x 95 mm (W) x 140 mm (L) (Without Water-Cooling Connectors)
Weight	< 1850 g
Software	Sample Pro
SDK	C / C++
Operating System	Windows, Linux
Environment	Working: Temp. 0°C~40°C, HUM 10%~85%; Storage: Temp. 0°C~60°C, HUM 0%~90%

Libra 5514 Pro

The Libra 5514 Procamera features a BSI global shutter sensor and a 100G CoF high-speed interface, enabling 670 fps@14 MP for high-throughput imaging. It offers a peak QE of 83% and 5.5 μm pixels for outstanding sensitivity. Compact and low-vibration, it ensures stable and reliable high-speed capture for scientific imaging and industrial inspection.



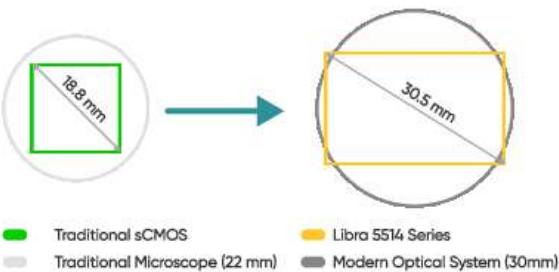
Key Features	Benefits
Global Shutter + BSI sCMOS	High speed, large full well, and high sensitivity deliver superior quantitative imaging performance for high-speed & low-light applications.
30.5 mm Large Format	2.5X wider FOV than typical 6.5 μm sCMOS. [1]
5.5 μm Pixel Size	Optimized for optical systems above 40X to achieve resolution-sensitivity balance.
670 fps@14 MP	More than 22X the throughput of conventional BSI sCMOS cameras. [2]
100G/40G CoF Interface	Single interface bandwidth up to 100 Gbps / 40 Gbps, faster and easy integration.

Typical Applications

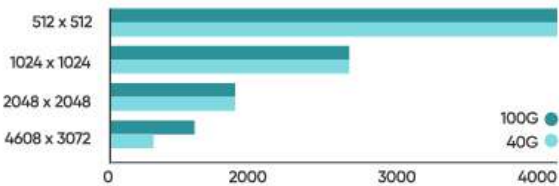
- High-throughput imaging
- Neuroscience imaging
- Spatial omics analysis
- Super-resolution imaging
- Gene sequencing
- Semiconductor inspection

Noted Examples

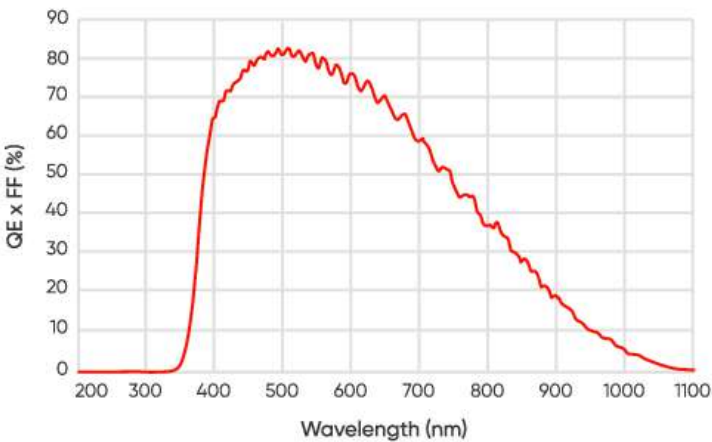
[1] Traditional sCMOS cameras use an 18.8 mm format, the Libra 5514 Pro is better aligned with modern optical design trends.



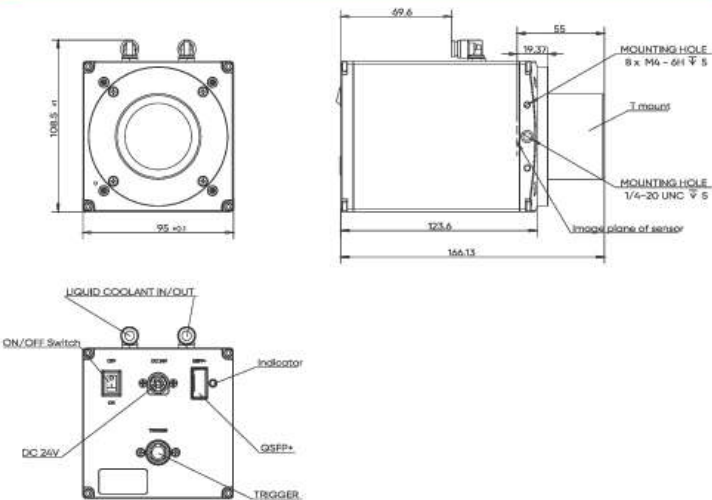
[2] The Libra 5514 Pro series includes 100G and 40G models. The 100G offers maximum throughput, while the 40G achieves similar frame rates via ROI for partial imaging.



Quantum Efficiency



Dimensions (Unit: mm)



Product Name	Libra 5514 Pro	
Model	L5514Pro-100G	L5514Pro-40G
Sensor Type	BSI sCMOS	
Sensor Model	GSPRINT5514BSI	
Peak QE	83%	
Chrome	Mono	
Array Diagonal	30.5 mm	
Effective Area	25.34 mm x 16.90 mm	
Resolution	4608 (H) x 3072 (V)	
Pixel Size	5.5 μm x 5.5 μm	
Readout Mode	Speed 8 bit / 10bit; Standard 12 bit; HDR 16 bit	
Bit Depth	8 bit, 10 bit, 12 bit, 16 bit	
Frame Rate	670 fps@Speed 8bit / 10 bit*	330 fps@Speed 8 bit
	350 fps@Standard 12 bit	236 fps@Speed 10 bit
	80 fps@HDR 16 bit	220 fps@Standard 12 bit
		80 fps@HDR 16 bit
Readout Noise (median)	< 2 e- (HDR & Standard 12 bit Gain 4)	
Full Well Capacity	15 Ke-@HDR; 30 Ke-@After Binned	
Dynamic Range	77.5 dB	
Shutter Mode	Global	
Exposure Time	2 μs -10 s	
Cooling Method	Air Cooling, Liquid Cooling	
Cooling Temp.	Air cooling: 5°C (ambient 25°C), Liquid cooling: -5°C (Water Temp. 20°C)	
Dark Current	< 1 e-/p/s@-5°C; < 5 e-/p/s@5°C	
Image Correction	DPC, FFC	
Binning	2 x 2, 4 x 4	
ROI	Support	
Timestamp Acc.	1 μs	
Trigger Mode	Hardware, Software	
Trigger Output	High, Low, Readout End, Global Exposure, Exposure Start, Readout, Trigger Ready	
Trigger Interface	Hirose-12-pin	
Data Interface	QSFP 28 (100G CoF)	QSFP+ (40G CoF)
Optical Interface	T / F / C Mount	
Power Supply	24 V / 6.67 A	
Power Cons.	$\leq$ 120 W	
Dimensions*	95 mm (H) x 95 mm (W) x 123.6 mm (L)	
Weight	$\leq$ 2 kg	
Software	Mosaic V3, Sample Pro, LabVIEW, MATLAB, Micro-Manager 2.0	
SDK	C / C++ / C#	
Operating System	Windows, Linux	
Environment	Working: Temp. 0°C~40°C, HUM 0%~85%; Storage: Temp. 15°C~30°C, HUM 35%~75%	

*In Speed 10 bit mode, the compressed frame rate is 670 fps and the uncompressed rate is 485 fps. The data format is selectable in software.
* The dimensions shown refer to the bare camera body only, Please see the mechanical drawing for details

Libra 5514

The Libra 5514 series are the first high-throughput sCMOS cameras designed with a back-illuminated global shutter architecture, delivering 83% peak QE and 5.5 μm pixels for exceptional sensitivity. A 40G CoF interface enables 8 bit image transfer at 330 fps. Compact and low-vibration, they excel in demanding scientific imaging and industrial inspection.



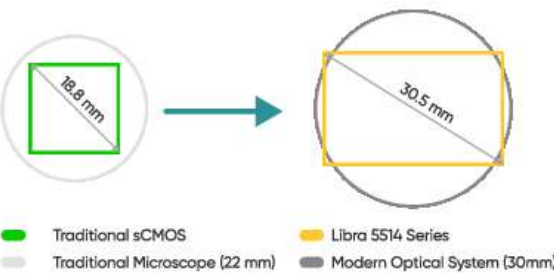
Key Features	Benefits
Global Shutter + BSI sCMOS	High speed, large full well, and high sensitivity deliver superior quantitative imaging performance for high-speed & low-light applications.
30.5 mm Large Format	2.5X wider FOV than typical 6.5 μm sCMOS. ^[1]
5.5 μm Pixel Size	Optimized for optical systems above 40X to achieve resolution-sensitivity balance.
330 fps@14 MP	More than 11X the throughput of conventional BSI sCMOS cameras. ^[2]
40G CoF Interface	Single interface bandwidth up to 40 Gbps, faster and easy integration.

Typical Applications

- High-throughput imaging
- Neuroscience imaging
- Spatial omics analysis
- Super-resolution imaging
- Gene sequencing
- Semiconductor inspection

Noted Examples

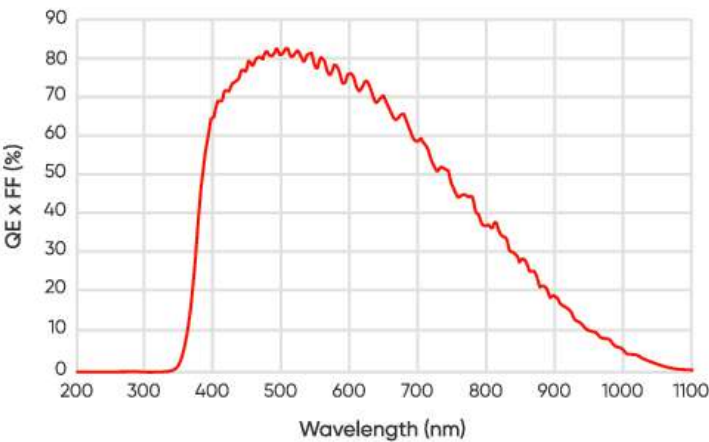
[1] Traditional sCMOS cameras use an 18.8 mm format, the Libra 5514 is better aligned with modern optical design trends.



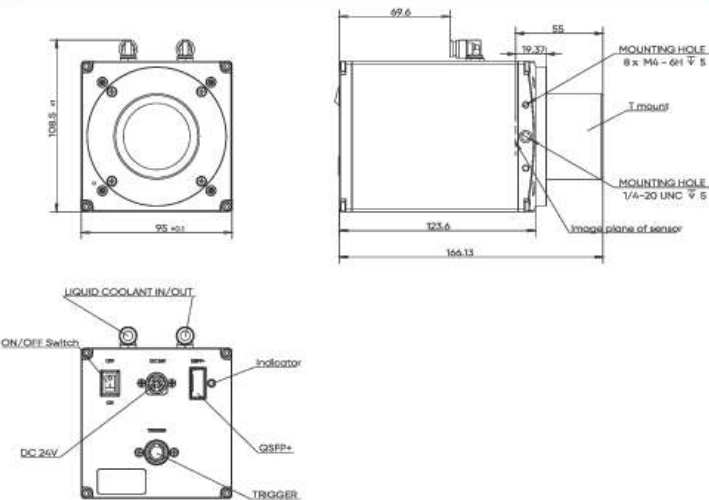
[2] Libra 5514 delivers more than 11X higher throughput by overcoming sensitivity, speed, and full well capacity trade-offs of traditional sCMOS.



Quantum Efficiency



Dimensions (Unit: mm)



Product Name	Libra 5514			
Model	L5514			
Sensor Type	BSI sCMOS			
Sensor Model	GSPRINT5514BSI			
Peak QE	83%			
Chrome	Mono			
Array Diagonal	30.5 mm			
Effective Area	25.34 mm x 16.90 mm			
Resolution	4608 (H) x 3072 (V)			
Pixel Size	5.5 μm x 5.5 μm			
Readout Mode	Standard 8 bit	Standard 10 bit	Standard 12 bit	HDR
Bit Depth	8 bit	10 bit	12 bit	16 bit
Frame Rate	330 fps	230 fps	220 fps	80 fps
Readout Noise (median)	< 2 e- (HDR & Standard 12 bit Gain 4)			
Full Well Capacity	15 Ke-@HDR; 30 Ke-@After Binned			
Dynamic Range	77.5 dB			
Shutter Mode	Global			
Exposure Time	2 μs-10 s			
Cooling Method	Air Cooling, Liquid Cooling			
Cooling Temp.	Air cooling: 5°C (ambient 25°C), Liquid cooling: -5°C (Water Temp. 20°C)			
Dark Current	< 1 e-/p/s@-5°C; < 5 e-/p/s@5°C			
Image Correction	DPC (FFC Optional)			
Binning	2 x 2, 4 x 4			
ROI	Support			
Timestamp Acc.	1 μs			
Trigger Mode	Hardware, Software			
Trigger Output	Low, High, Readout End, Exposure, Exposure Start, Readout, Trigger Ready			
Trigger Interface	Hirose-12-pin			
Data Interface	QSFP+ (40G CoF)			
Optical Interface	T / F / C Mount			
Power Supply	24 V / 6.67 A			
Power Cons.	≤ 100 W			
Dimensions*	95 mm (H) x 95 mm (W) x 123.6 mm (L)			
Weight	1850 g			
Software	Mosaic V3, Sample Pro, LabVIEW ,MATLAB, Micro-Manager 2.0			
SDK	C / C++ / C#			
Operating System	Windows, Linux			
Environment	Working: Temp. 0°C~40°C, HUM 0%~85%; Storage: Temp. 15°C~30°C, HUM 35%~75%			

* The dimensions shown refer to the bare camera body only, Please see the mechanical drawing for details

Libra 3405M / 3412M

The Libra 3405M / 3412M are developed with global shutter CMOS sensors, offering both high speed and high resolution. They feature a wide spectral range of 350 nm–1100 nm, providing superior performance for multi-channel fluorescence imaging. Their compact design also facilitates seamless integration into instrument systems.



Key Features	Benefits
Global Shutter	High-speed, artifact-free imaging, ideal for high-throughput slide scanning.
350 nm–1100 nm wide spectrum	High sensitivity in low light and NIR, ideal for multi-channel fluorescence.
3.4 μm Pixel Size	Optimized for < 40X optical systems, enables higher resolution for cellular and tissue imaging.
10 GigE Interface	Provides higher data throughput and more stable transmission than USB 3.0.[1]
Compact Design	Facilitates seamless integration into instrument systems.

Typical Applications

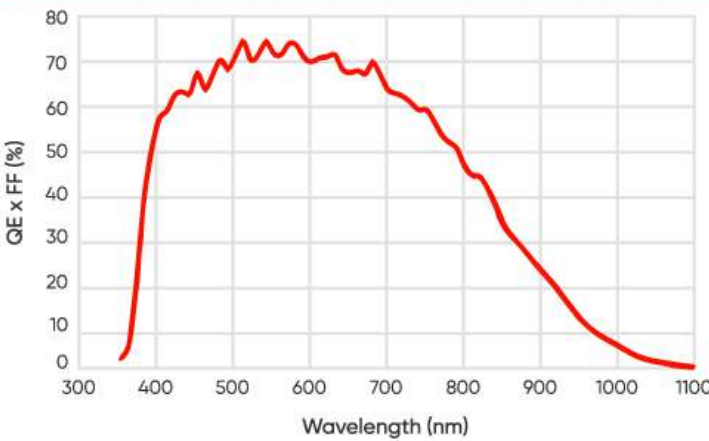
- Pathology Slide Scanning
- Microscopy Imaging
- Industrial Inspection

Noted Examples

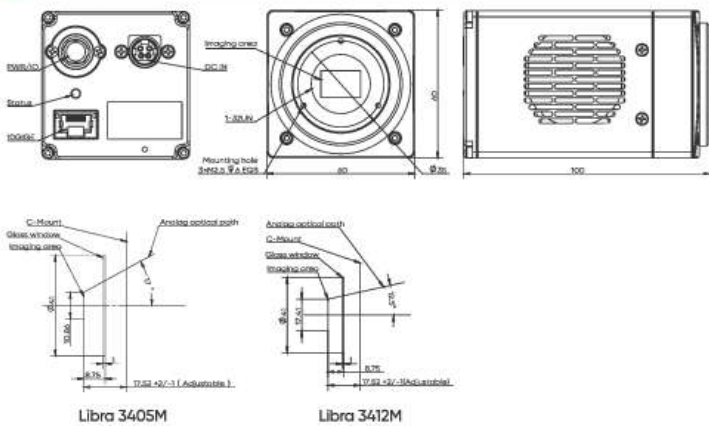
[1] The maximum full-resolution speed is 163 fps for the Libra 3405M and 98 fps for the Libra 3412M, about three times faster than the USB 3.0 version.

Libra 3412	GigE	98 fps
	USB 3.0	28 fps
Libra 3405	GigE	164 fps
	USB 3.0	65 fps

Quantum Efficiency



Dimensions (Unit: mm)



Product Name	Libra 3405M	Libra 3412M
Model	L3405M	L3412M
Sensor Type	CMOS	
Sensor Model	Gpixel GMAX 3405	Gpixel GMAX 3412
Chrome	Mono	
Array Diagonal	10.9 mm (2/3")	17.4 mm (1.1")
Effective Area	8.3 mm x 7.0 mm	14.0mm x 10.5mm
Pixel Size	3.4 μm x 3.4 μm	
Resolution	2448 (H) x 2048 (V)	4096 (H) x 3072 (V)
Peak QE	75%@540 nm; 47%@800 nm	
Gain Mode	HighCapacity, Balanced, Sensitive	
Full Well Capacity	12bit: High Capacity 8.9 Ke-, Balanced 4.2 Ke-, Sensitive 0.48 Ke-	12bit: High Capacity 9 Ke-, Balanced 4.5 Ke-, Sensitive 0.7 Ke-
Frame Rate	12 bit 10 bit 8 bit	12 bit 10 bit 8 bit
	100 fps 163 fps 163 fps	62 fps 65 fps 98 fps
Readout Noise	12 bit (Median): 3.7 e-@High Capacity, 2.3 e-@Balanced, 1.4 e-@Sensitive	12 bit (Median): 3.6 e-@High Capacity, 2.4 e-@Balanced, 1.6 e-@Sensitive
Shutter Mode	Global	
Exposure Time	1 μs~10 s	
Image Correction	DPC	
ROI	Support	
Binning (FPGA)	1x1 , 2x2 , 4x4	
Cooling Method	Air cooling	
Cooling Temp.	10°C@Ambient 25°C	
Dark Current	0.5 e-/p/s@10°C	
Trigger Mode	Hardware, Software	
Trigger Output	High, Low, Exposure out, Readout, Trigger Ready	
Trigger Interface	Hirose-12-Pin	
Data Interface	10 GigE	
Bit Depth	High Depth (12 bit), Standard (10 bit), Speed (8 bit)	
Optical Interface	C Mount	
Power Supply	12 V / 8 A	
Power Cons.	30 W	
Dimensions	60 mm (H) x 60 mm (W) x 100 mm (L)	
Weight	~489 g	
Software	Mosaic V3, Sample Pro, Micro-Manager 2.0	
SDK	C / C++ / C# / Python	
Operating System	Windows, Linux	
Environment	Working: Temp. 0°C~40°C, HUM 10%~85%; Storage: Temp. -10°C~60°C, HUM 0%~85%	

Libra 3405C / 3412C

The Libra 3405C / 3412C are developed with global shutter CMOS sensors, offering both high speed and high resolution. They feature a wide spectral range of 350 nm–1100 nm, providing superior performance for multi-channel fluorescence imaging. Their compact design also facilitates seamless integration into instrument systems.



Key Features	Benefits
Global Shutter	High-speed, artifact-free imaging, ideal for high-throughput slide scanning.
3.4 μm Pixel Size	Optimized for < 40X optical systems, enables higher resolution for cellular and tissue imaging.
10 GigE Interface	Provides higher data throughput and more stable transmission than USB 3.0.[1]
Compact Design	Facilitates seamless integration into instrument systems.

Typical Applications

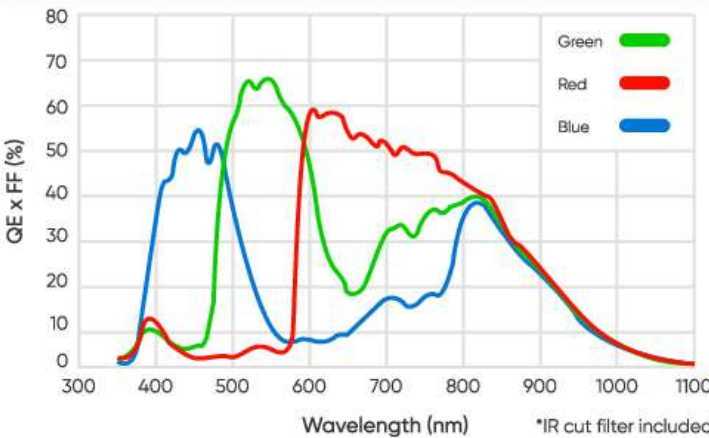
- Pathology Slide Scanning
- Microscopy Imaging
- Industrial Inspection

Noted Examples

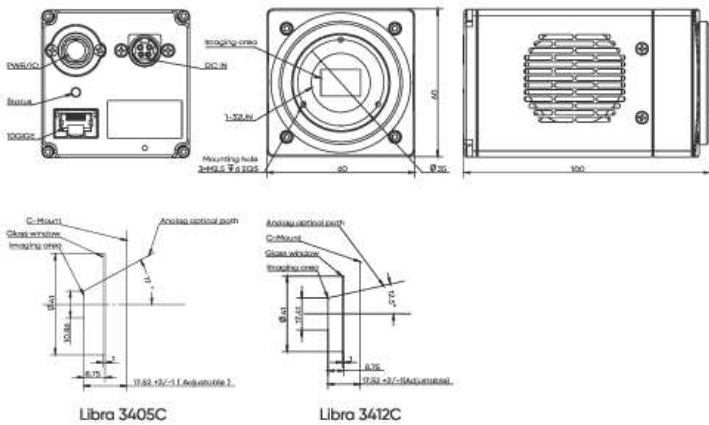
[1] The maximum full-resolution speed is 163 fps for the Libra 3405C and 96 fps for the Libra 3412C, about three times faster than the USB 3.0 version.

Libra 3412	GigE	96 fps
	USB 3.0	28 fps
Libra 3405	GigE	164 fps
	USB 3.0	65 fps

Quantum Efficiency



Dimensions (Unit: mm)



Product Name	Libra 3405C			Libra 3412C		
Model	L3405C			L3412C		
Sensor Type	CMOS					
Sensor Model	Gpixel GMAX 3405			Gpixel GMAX 3412		
Chrome	Color					
Array Diagonal	10.9 mm (2/3")			17.4 mm (1.1")		
Effective Area	8.3 mm x 7.0 mm			14.0mm x 10.5mm		
Pixel Size	3.4 μm x 3.4 μm					
Resolution	2448 (H) x 2048 (V)			4096 (H) x 3072 (V)		
Peak QE	Please refer to the quantum efficiency curve for details					
Gain Mode	HighCapacity, Balanced, Sensitive					
Full Well Capacity	12bit: High Capacity 8.9 Ke-, Balanced 4.2 Ke-, Sensitive 0.48 Ke-			12bit: High Capacity 9 Ke-, Balanced 4.5 Ke-, Sensitive 0.7 Ke-		
Frame Rate	12 bit	10 bit	8 bit	12 bit	10 bit	8 bit
	100 fps	162 fps	163 fps	62 fps	65 fps	96 fps
Readout Noise	12 bit (Median): 3.7 e-@High Capacity, 2.3 e-@Balanced, 1.4 e-@Sensitive			12 bit (Median): 3.8 e-@High Capacity, 2.5 e-@Balanced, 1.6 e-@Sensitive		
Shutter Mode	Global					
Exposure Time	1 μs~10 s					
AI White Balance	Support					
Image Correction	DPC					
ROI	Support					
Binning (FPGA)	1x1 , 2x2 , 4x4					
Cooling Method	Air cooling					
Cooling Temp.	10°C@Ambient 25°C					
Dark Current	0.5 e-/p/s@10°C					
Trigger Mode	Hardware, Software					
Trigger Output	High, Low, Exposure out, Readout, Trigger Ready					
Trigger Interface	Hirose-12-Pin					
Data Interface	10 GigE					
Bit Depth	High Depth (12 bit), Standard (10 bit), Speed (8 bit)					
Optical Interface	C Mount					
Power Supply	12 V / 8 A					
Power Cons.	32 W					
Dimensions	60 mm (H) x 60 mm (W) x 100 mm (L)					
Weight	~489 g					
Software	Sample Pro, Mosaic V3					
SDK	C / C++ / C# / Python					
Operating System	Windows, Linux					
Environment	Working: Temp. 0°C~40°C, HUM 10%~85%, Storage: Temp. -10°C~60°C, HUM 0%~90%					

Libra 3405UM / 3412UM

The Libra 3405UM / 3412UM feature global shutter monochrome CMOS sensors, delivering high speed and high resolution imaging. Covering a wide spectral range of 350 nm–1100 nm, they provide excellent performance for multi-channel fluorescence applications. With a USB 3.0 interface, these cameras offer plug-and-play operation with high-speed, low-latency data transfer, enabling direct connection to standard microscopes and computers for efficient workflows.



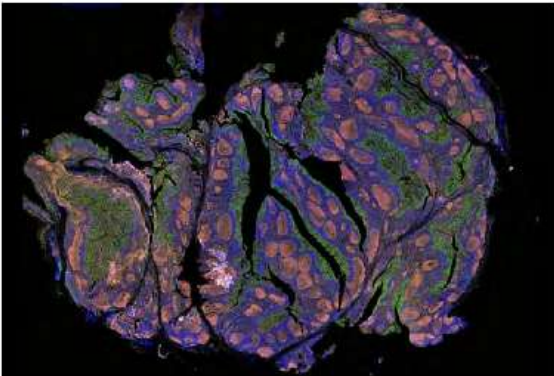
Key Features	Benefits
Global Shutter	High-speed, artifact-free imaging, ideal for high-throughput slide scanning.
350 nm–1100 nm Wide Spectrum	Suitable for multi-channel fluorescence and near-infrared detection.
3.4 μm Pixel Size	Optimized for < 40X optical systems, enables higher resolution for cellular and tissue imaging.
USB 3.0 Interface	Plug-and-play, enabling highly efficient microscopy workflows.
Mosaic V3 Software	Provides advanced image processing and real-time quantitative analysis to boost lab efficiency.

Typical Applications

- Fluorescence Slide Scanning ^[1]
- Microscopy Imaging

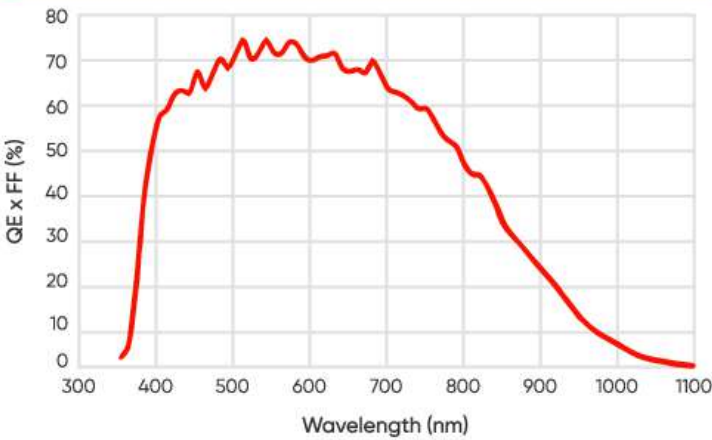
Noted Examples

[1]The Libra 3405UM / 3412UM deliver high-resolution imaging with excellent NIR sensitivity, ideal for tissue fluorescence slide scanning applications.

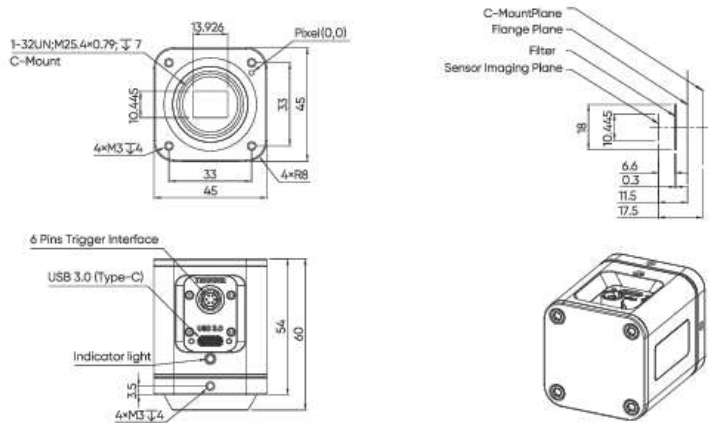


Fluorescence section scanning and stitching example of mouse gastric tissue

Quantum Efficiency



Dimensions (Unit: mm)



Product Name	Libra 3405UM	Libra 3412UM
Model	L3405UM	L3412UM
Sensor Type	CMOS	
Sensor Model	Gpixel GMAX 3405	Gpixel GMAX 3412
Chrome	Mono	
Array Diagonal	10.9 mm (2/3")	17.4 mm (1.1")
Effective Area	8.3 mm x 7.0 mm	14.0mm x 10.5mm
Pixel Size	3.4 μm x 3.4 μm	
Resolution	2448 (H) x 2048 (V)	4096 (H) x 3072 (V)
Peak QE	75%@540 nm; 47%@800 nm	
Gain Mode	High Capacity, Balanced, Sensitive	
Full Well Capacity	12bit: High Capacity 8.7 Ke-, Balanced 4.3 Ke-, Sensitive 0.5 Ke-	12bit: High Capacity 9 Ke-, Balanced 4.5 Ke-, Sensitive 0.7 Ke-
Frame Rate	12 bit 45 fps 8 bit 65 fps	12 bit 18 fps 8 bit 28 fps
Readout Noise 12 bit (Median)	3.6 e-@High Capacity, 2.3 e-@Balanced, 1.6 e-@Sensitive	3.9 e-@High Capacity, 2.6 e-@Balanced, 1.3 e-@Sensitive
Shutter Mode	Global	
Exposure Time	1 μs~10 s	
Image Correction	DPC	
ROI	Support	
Binning (FPGA)	1x1, 2x2, 4x4	
Cooling Method	Passive Cooling	
Trigger Mode	Hardware, Software	
Trigger Output	Exposure out, Readout, Trigger Ready	
Trigger Interface	Hirose-6-Pin	
Data Interface	USB 3.0	
Bit Depth	8 bit, 12 bit	
Optical Interface	C Mount / Customization	
Power Supply	USB	
Power Cons.	< 4 W	
Dimensions	45 mm (H) x 45 mm (W) x 60 mm (L)	
Weight	~162.5 g	
Software	Sample Pro, Mosaic V3	
SDK	C / C++ / C# / Python	
Operating System	Windows, Linux	
Environment	Working: Temp. 0°C~40°C, HUM 10%~85%, Storage: Temp. -10°C~60°C, HUM 0%~90%	

Libra 3405UC / 3412UC

The Libra 3405UC / 3412UC feature global shutter color CMOS sensors, delivering high-speed, high-resolution imaging, and provide excellent performance for multi-channel fluorescence applications. Equipped with a USB 3.0 interface, they offer plug-and-play operation and direct connection to standard microscopes and computers for efficient workflows.



Key Features	Benefits
Global Shutter	High-speed, artifact-free imaging, ideal for high-throughput slide scanning. ^[1]
3.4 μm Pixel Size	Optimized for < 40X optical systems, enables higher resolution for cellular and tissue imaging.
USB 3.0 Interface	Plug-and-play, enabling highly efficient microscopy workflows.
Mosaic V3 Software	Provides advanced image processing and real-time quantitative analysis to boost efficiency.

Typical Applications

- Fluorescence Scanning
- Pathology Slide Scanning
- Bright Field Image
- Industrial Inspection

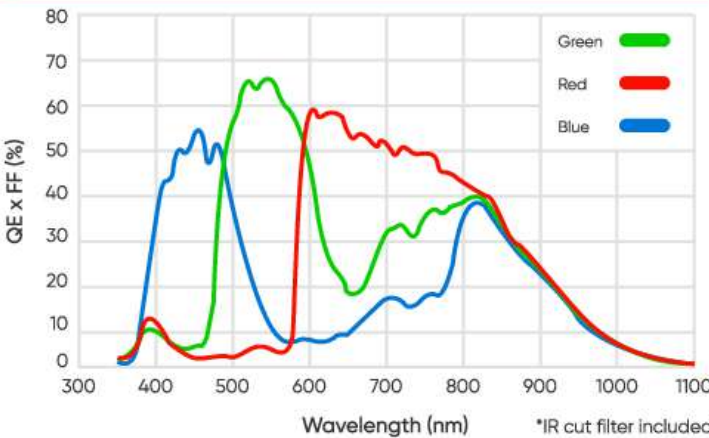
Noted Examples

[1] High speed and artifact-free, suitable for high-speed snapshot and other application scenarios.

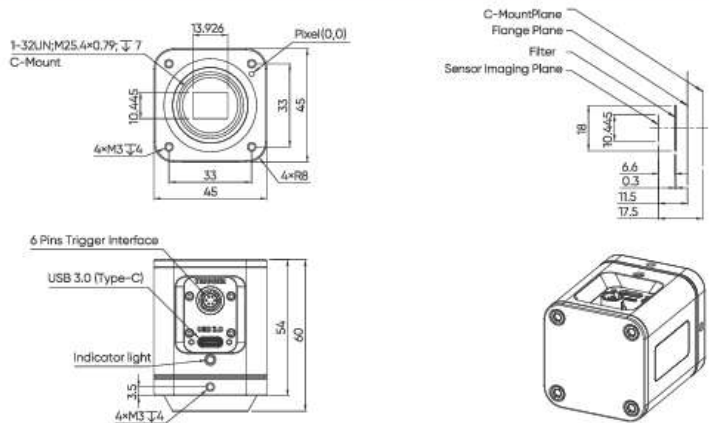


Pathology slide scanning

Quantum Efficiency



Dimensions (Unit: mm)



Product Name	Libra 3405UC	Libra 3412UC
Model	L3405UC	L3412UC
Sensor Type	CMOS	
Sensor Model	Gpixel GMAX 3405	Gpixel GMAX 3412
Chrome	Color	
Array Diagonal	10.9 mm (2/3")	17.4 mm (1.1")
Effective Area	8.3 mm x 7.0 mm	14.0mm x 10.5mm
Pixel Size	3.4 μm x 3.4 μm	
Resolution	2448 (H) x 2048 (V)	4096 (H) x 3072 (V)
Peak QE	Please refer to the quantum efficiency curve for details	
Gain Mode	High Capacity, Balanced, Sensitive	
Full Well Capacity	12bit: High Capacity 8.7 Ke-, Balanced 4 Ke-, Sensitive 0.5 Ke-	12bit: High Capacity 9 Ke-, Balanced 4.4 Ke-, Sensitive 0.7 Ke-
Frame Rate	12 bit 8 bit 44 fps 65 fps	12 bit 8 bit 18 fps 27 fps
Readout Noise 12 bit (Median)	3.7 e-@High Capacity, 2.1 e-@Balanced, 1.7 e-@Sensitive	3.9 e-@High Capacity, 2.6 e-@Balanced, 1.8 e-@Sensitive
Shutter Mode	Global	
Exposure Time	1 μs~10 s	
AI White Balance	Support	
Image Correction	DPC	
ROI	Support	
Binning	1x1, 2x2, 4x4	
Cooling Method	Passive Cooling	
Trigger Mode	Hardware, Software	
Trigger Output	Exposure, Readout, Trigger Ready	
Trigger Interface	Hirose-6-Pin	
Data Interface	USB 3.0	
Bit Depth	8 bit, 12 bit	
Optical Interface	C Mount / Customization	
Power Supply	USB	
Power Cons.	< 4 W	
Dimensions	45 mm (H) x 45 mm (W) x 60 mm (L)	
Weight	~162.5 g	
Software	Sample Pro, Mosaic V3	
SDK	C / C++ / C# / Python	
Operating System	Windows, Linux	
Environment	Working: Temp. 0°C~40°C, HUM 10%~85%, Storage: Temp. -10°C~60°C, HUM 0%~90%	

Libra UV

The Libra UV is a UV global shutter CMOS camera for high-speed, high-resolution semiconductor inspection. It's proven in processes like patterned wafer inspection, mask alignment, and wafer bonding. With strong UV sensitivity, it's also promising for biospectral analysis, medical, and electronics testing.



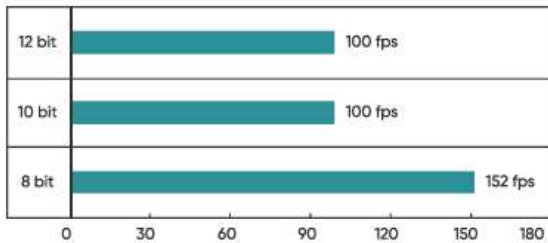
Key Features	Benefits
UV Enhancement	Covers 200 nm to 1000 nm, with quantum efficiency up to 48% at 365 nm.
Global Shutter	Enables clear capture of fast-moving samples.
High-Speed & High-Resolution	Up to 100 fps@12 bit and 152 fps@8 bit at full 8.1 Megapixel resolution. ^[1]
10 GigE Interface	High-speed and stable transmission, uncompressed data, flexible wiring.
Compact Design	Facilitates seamless integration into instrument systems.

Typical Applications

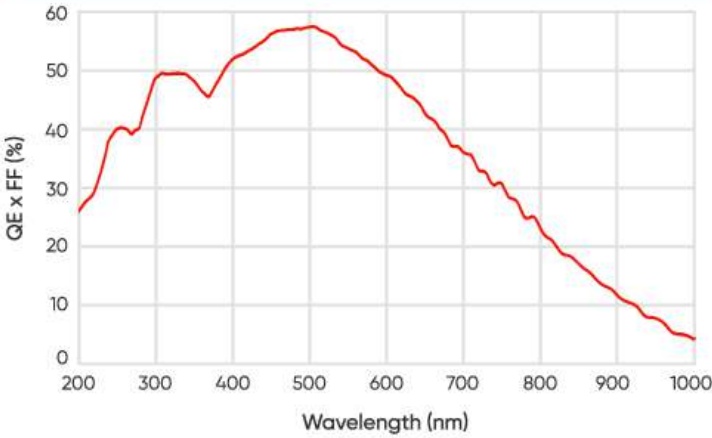
- Semiconductor Inspection
- Material Classification
- Infrastructure Testing

Noted Examples

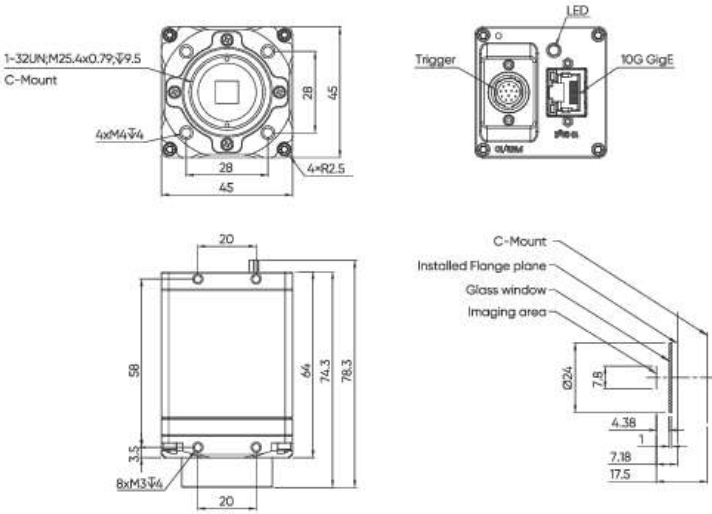
[1] The Libra UV utilizes Global Shutter technology and a 10 GigE interface to achieve transfer speeds of up to 100 fps@12 bit and 152 fps@8 bit at full 8.1 megapixel resolution, demonstrating a significant advantage in high-speed performance.



Quantum Efficiency



Dimensions (Unit: mm)



Product Name	Libra UV
Sensor Type	CMOS
Sensor Model	SONY IMX487
Spectrum	Visible/UV
Chrome	Mono
Peak QE	56%@500 nm, 48%@365 nm
Array Diagonal	11 mm (2/3")
Effective Area	7.8 mm x 7.8 mm
Resolution	2856 (H) x 2848 (V)
Pixel Size	2.74 μ m x 2.74 μ m
Gain	Supports analog gain (1 ~15.7) and digital gain (15.8 ~ 126)
Frame Rate	152 fps@8 bit, 100 fps@10 bit, 100 fps@12 bit
Full Well Capacity	10 bit: 9000 e-@gain 1, 580 e-@gain 15.7; 12 bit: 9250 e-@gain 1, 555 e-@gain 15.7
Readout Noise	10 bit: 3.9 e- (RMS)@gain 1, 2.1 e- (RMS)@gain 15.7; 12 bit: 2.4 e- (RMS)@gain 1, 1.5 e- (RMS)@gain 15.7
Dynamic Range	10 bit: 65 dB@gain 1, 49.1 dB@gain 15.7; 12 bit: 72 dB@gain 1, 52 dB@gain 15.7
Shutter Mode	Global
Exposure Time	8 bit: 2 μ s~10 s; 10, 12 bit: 3 μ s~10 s
DSNU	0.38 e-
PRNU	0.52%
Image Correction	DPC
ROI	Support
Binning	Bin 1 x 2 (Avg and Sum), Bin 2 x 1 (Avg and Sum), Bin 2 x 2 (Sum)
Timestamp Acc.	1 μ s
Trigger Mode	Hardware, Software
Trigger Output	High, Low, Trigger Ready, Readout, Exposure Out
Trigger Interface	Hirose-12-Pin
Data Interface	10 GigE
Bit Depth	8 bit, 10 bit, 12 bit
Optical Interface	C Mount
Power Supply	12 V / 2 A, PoE support
Power Cons.	$\leq$ 12 W
Dimensions	45 mm (H) x 45 mm (W) x 74.3 mm (L)
Software	Sample Pro
SDK	C / C++ / C# / Python
Operating System	Windows, OpenEuler
Environment	Working: Temp. 0°C~40°C, HUM 10%~85%, Storage: Temp. -10°C~60°C, HUM 0%~85%

Libra 536

The Libra 536 is a global-shutter camera designed for high-speed, high-resolution imaging applications. Equipped with a global-shutter sensor and a high-bandwidth 10 GigE interface, the camera delivers 8.1-megapixel full-resolution imaging at up to 152 fps, making it an excellent fit for semiconductor manufacturing workflows such as wafer inspection and advanced packaging.



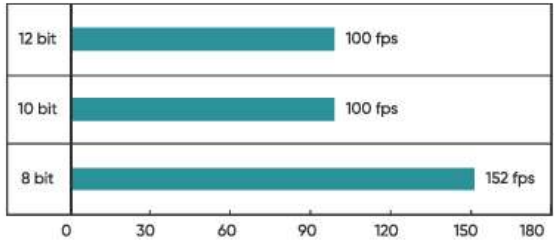
Key Features	Benefits
Global Shutter	High-speed, artifact-free imaging for clear capture of fast-moving targets.
High-speed and high-resolution	At 8.1 MP full resolution, the maximum speed can reach 100 fps@12 bit and 152 fps@8 bit. [1]
10 GigE Interface	High-speed, stable transmission without frame loss, flexible for remote and multi-camera setups.
Compact Design	Conducive to the integration of the instrument system.

Typical Applications

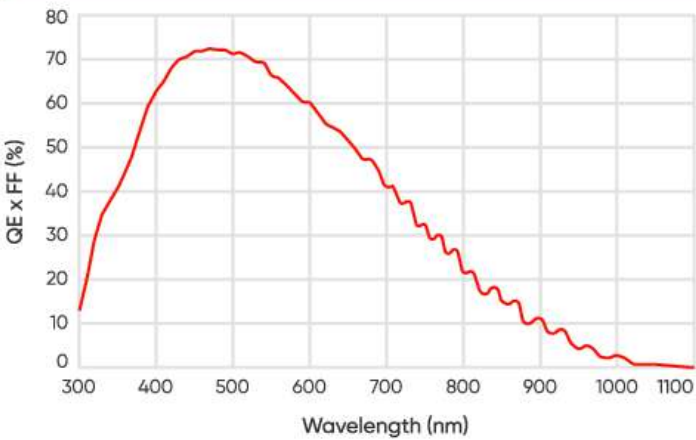
- Semiconductor Inspection
- Material Classification
- Slide Scanning
- Life Sciences

Noted Examples

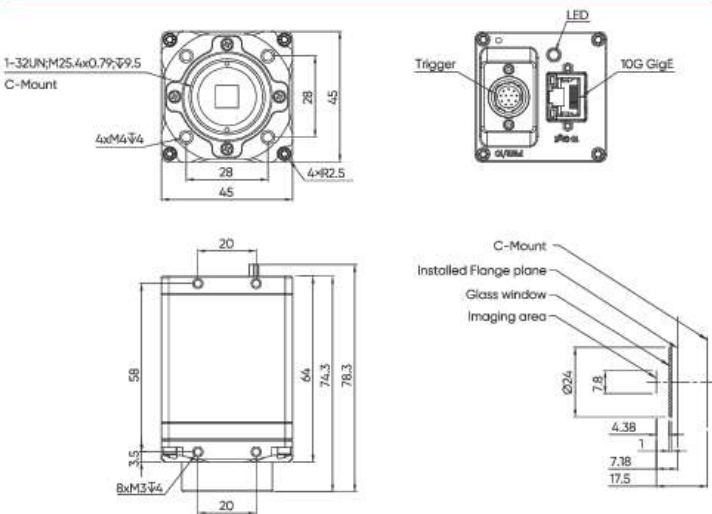
[1] The Libra 536 utilizes Global Shutter technology, and the 10 GigE interface achieves a transfer speed of up to 100 fps@12 bit and 152 fps@8 bit at 8.1million full resolution pixels.



Quantum Efficiency



Dimensions (Unit: mm)



Product Name	Libra 536
Sensor Type	CMOS
Sensor Model	SONY IMX536
Spectrum	Visible
Chrome	Mono
Peak QE	72%@470 nm
Array Diagonal	11 mm (2/3")
Effective Area	7.8 mm x 7.8 mm
Resolution	2856 (H) x 2848 (V)
Pixel Size	2.74 μ m x 2.74 μ m
Gain	Supports analog gain (1 ~15.7) and digital gain (15.8 ~ 126)
Frame Rate	152 fps@8 bit, 100 fps@10 bit, 100 fps@12 bit
Full Well Capacity	10 bit: 9000 e-@gain 1, 580 e-@gain 15.7; 12 bit: 9250 e-@gain 1, 555 e-@gain 15.7
Readout Noise	10 bit: 3.8 e- (RMS)@gain 1, 2.0 e- (RMS)@gain 15.7; 12 bit: 2.5 e- (RMS)@gain 1, 1.4 e- (RMS)@gain 15.7
Dynamic Range	10 bit: 65 dB@gain 1, 49.1 dB@gain 15.7; 12 bit: 72 dB@gain 1, 52 dB@gain 15.7
Shutter Mode	Global
Exposure Time	8 bit: 2 μ s~10 s; 10, 12 bit: 3 μ s~10 s
DSNU	0.38 e-
PRNU	0.52%
Image Correction	DPC
ROI	Support
Binning	Bin 1 x 2, Bin 2 x 1, Bin 2 x 2
Timestamp Acc.	1 μ s
Trigger Mode	Hardware, Software
Trigger Output	Exposure Out, Readout, Trigger Ready, High, Low
Trigger Interface	Hirose-12-Pin
Data Interface	10 GigE
Bit Depth	8 bit, 10 bit, 12 bit
Optical Interface	C Mount
Power Supply	12-24 V, PoE support
Power Cons.	$\leq$ 12 W
Dimensions	45 mm (H) x 45 mm (W) x 74.3 mm (L)
Software	Sample Pro
SDK	C / C++ / C# / Python
Operating System	Windows, Linux
Environment	Working: Temp. 0°C~40°C, HUM 10%~85%, Storage: Temp. -10°C~60°C, HUM 0%~85%

Libra 16 / 22 / 25

The Libra 16/22/25 series are designed by Tucsen to meet the growing demand of imaging fields in microscopy. These large-format monochrome cooled cameras are tailored for scientific and industrial applications.



Key Features	Benefits
Large Format Design	16 mm, 22 mm and 25 mm options for large field-of-view microscopy. ^[1]
High SNR Performance	92% QE and 1.0 e ⁻ read noise for high SNR imaging.
High-speed Trigger	Synchronizes with illumination devices to enable high-speed, multi-channel imaging.
Mosaic V3 Compatibility	Supports advanced analysis and smart image processing.

Typical Applications

- Fluorescence Imaging
- Tissue Slide Scanning
- High-Throughput Imaging
- Live-Cell Imaging

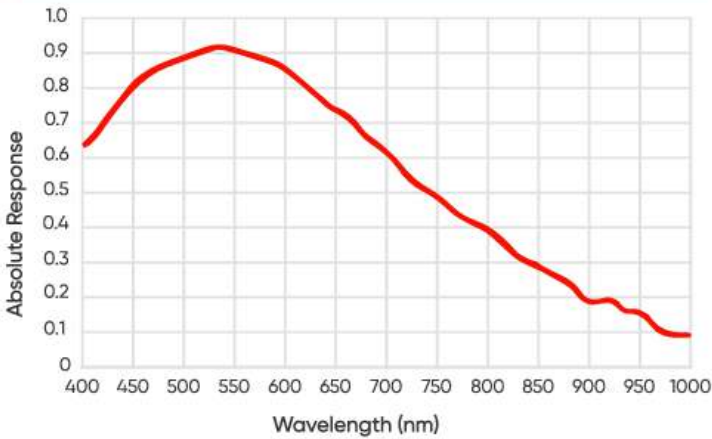
Noted Examples

[1] Libra 16: Suitable for standard C-mount field of view;
Libra 22: Compatible with mainstream fluorescence microscopy systems;
Libra 25: Designed for ultra-wide field microscopy systems.

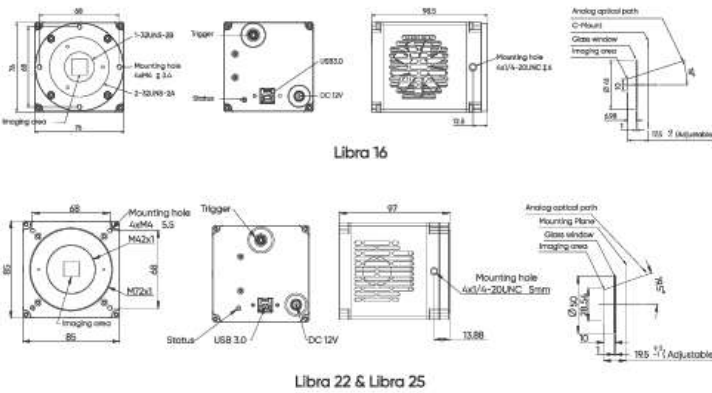


Model	Libra 16	Libra 22	Libra 25
Diagonal	16 mm	22 mm	25 mm
Resolution	1500x1500	2048x2048	2600x2048
Optical Interface	C mount	C mount	T/F mount

Quantum Efficiency



Dimensions (Unit: mm)



Product Name	Libra 16	Libra 22	Libra 25
Sensor Type	BSI CMOS Sensor		
Chrome	Mono		
Pixel Size	7.52 μm@High Sensitivity Mode, 3.76 μm@High resolution mode		
Array Diagonal	16 mm	22 mm	25 mm
Resolution	1500 x 1500	2048 x 2048	2600 x 2048
Effective Area	11.28 mm x 11.28 mm	15.40 mm x 15.40 mm	19.55 mm x 15.40 mm
Peak QE	92%@530 nm		
Dark Current	< 0.01 e ⁻ /p/s		
Bit Depth	14 bit / 16 bit		
Full Well Capacity	3 Ke ⁻ (High Gain) / 48 Ke ⁻ (Low Gain)		
Readout Noise	1.0 e ⁻ (High Gain)		
Frame Rate	59 fps@HS	38 fps@HS	32 fps@HS
Shutter Mode	Rolling		
Binning	2 x 2, 4 x 4		
Exposure Time	6 μs~60 s		
Image Correction	DPC, DSNU, PRNU		
ROI	Support		
Cooling Method	TEC (Air Cooling)		
Cooling Temp.	Stable cooling to 0°C		
Trigger Mode	Hardware, Software		
Trigger Output	Exposure start, Global, Readout End, High, Low		
Trigger Interface	Hirose-6-Pin		
SDK	C / C++ / C#		
Software	Mosaic V3, Sample Pro, Micro-Manager 2.0		
Data Interface	USB 3.0		
Optical Interface	C Mount	C Mount	T / F Mount
Power Supply	12 V / 6 A		
Power Cons.	14 W	25 W	25 W
Dimensions (mm)	76 (H) x 76 (W) x 98.5 (L)	85 (H) x 85 (W) x 97 (L)	85 (H) x 85 (W) x 97 (L)
Weight	835 g	945 g	945 g
Operating System	Windows, Linux		
Environment	Working: Temp. 0°C~40°C, HUM 0%~85%, Storage: Temp. 0°C~60°C, HUM 0%~90%		

FL 9BW / 9BW LT

The FL 9BW and 9BW LT are cooled CMOS cameras designed for long-exposure imaging. They not only incorporate the high sensitivity and low noise advantages of the latest sensor technologies but also leverage Tucson's extensive experience in cooling chamber design and advanced image processing. These cameras can capture clean and uniform images with exposure times of up to 60 minutes.



Key Features	Benefits
Scientific Grade CMOS	92% peak QE, 0.9 e- readout noise and no glow.
< 0.0005 e-/p/s Dark Current	Equivalent to the cooled CCD for long exposure imaging.
16000 : 1 Dynamic Range	More than 4X that of the CCD.
Pixel Correction Technology	High background quality ensures more accurate quantitative analysis. ^[1]
Flexible Binning Mode	Improving the sensitivity and dynamic range capability.
High Reliability Cooling Chamber	Cooled to -25°C@Room Temp. (25°C), no condensation or other problems.
Compact Design	Conducive to instrument system integration.

Typical Applications

- Chemiluminescence
- Bioluminescence
- dPCR
- Fluorescence imaging

Noted Examples

[1] The FL 9BW has excellent background uniformity, as it has basically eliminated the bad factors such as amplifier glow and bad pixels.

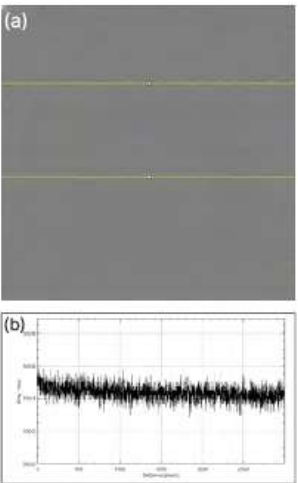
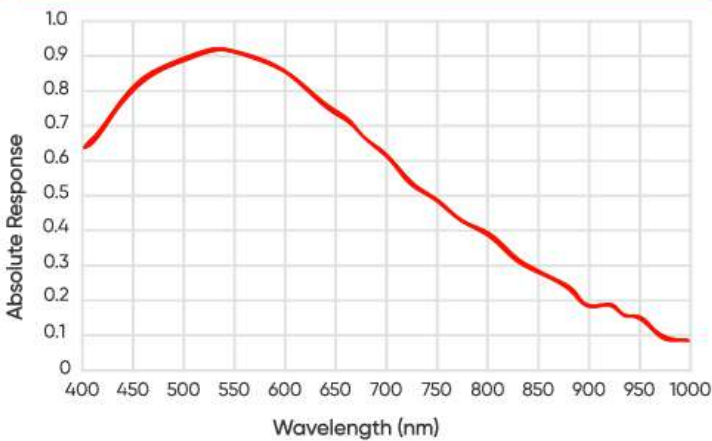
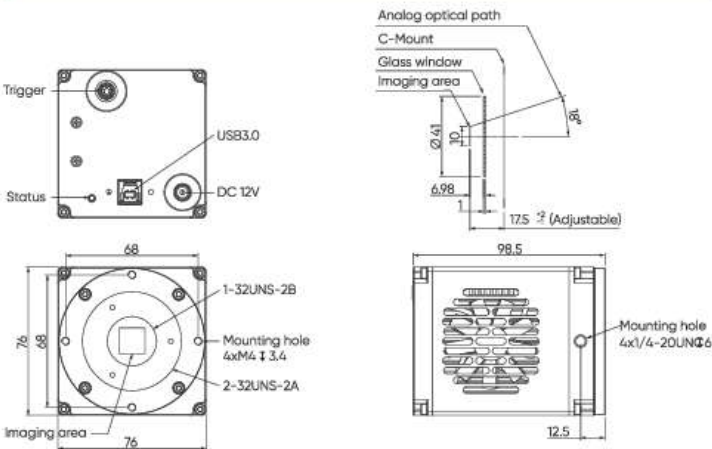


Figure (a) is the background image taken by FL 26BW with 600s exposure. Figure (b) is the grayscale intensity curve corresponding to the yellow region, showing excellent background uniformity.

Quantum Efficiency



Dimensions (Unit: mm)



Product Name	FL 9BW		FL 9BW LT	
Sensor Type	BSI CMOS			
Sensor Model	SONY IMX533CLK-D			
Chrome	Mono			
Array Diagonal	15.96 mm (1")			
Effective area	11.28 mm x 11.28 mm			
Pixel Size	3.76 μm × 3.76 μm			
Resolution	3000 × 3000, 9 MP			
Peak QE	92%@540 nm			
Dark Current	< 0.0005 e-/p/s			
Gain Mode	Gain 0 HFWC	Gain 1 Balance	Gain 2 High Sensitivity 1	Gain 3 High Sensitivity 2
Full Well Capacity	48 Ke-@bin 1	16 Ke-@bin 1	7.8 Ke-@bin 1	3.1 Ke-@bin 1
Readout Mode	Standard, Low-Noise			
Readout Noise (LowNoise)	2.5 e-@Gain 0	1.0 e-@Gain 1	0.85 e-@Gain 2	0.7 e-@Gain 3
Frame Rate	19 fps@Standard Mode, 12 fps@Low Noise Mode			
Shutter Mode	Rolling			
Exposure Time	15 μs~60 min			
Image Correction	DPC			
ROI	Support			
Binning	2 x 2, 3 x 3, 4 x 4, 6 x 6, 8 x 8, 12 x 12, 16 x 16, 24 x 24			
Cooling Method	Air Cooling			
Cooling Temp.	-25°C@Room Temp. (25°C)		Locked at 0°C	
Trigger Mode	Hardware, Software			
Trigger Output	Exposure Start, Global, Readout End, High, Low			
Trigger Interface	Hirose-6-pin			
SDK	C / C++ / C# / Python			
Data Interface	USB 3.0			
Software	Mosaic V3, Sample Pro, LabVIEW, MATLAB, Micro-Manager 2.0			
Optical Interface	C-Mount / Customizable			
Bit Depth	14 bit, 16 bit			
Power Supply	12 V / 6 A			
Power Cons.	≤ 46 W			
Dimensions	76 mm (H) x 76 mm (W) x 98.5 mm (L)			
Weight	835 g			
Operating System	Windows, Linux			
Environment	Working: Temp. 0°C~40°C, HUM 10%~85% Storage: Temp. -10°C~60°C, HUM 0%~85%			

FL 26BW

The FL 26BW is a cooled CMOS camera designed for long exposure imaging. It not only incorporates high sensitivity and low noise advantages from latest sensor technologies, but also leverages Tucson's many years experiences on cooling chamber design and advanced image processing. FL 26BW is able to capture clean and even images for up to 60 minutes exposure time.



Key Features	Benefits
SONY BSI CMOS	92% peak QE, 0.9 e- readout noise and no glow.
< 0.0005 e-/p/s Dark Current	Equivalent to the cooled CCD for long exposure imaging.
16000 : 1 Dynamic Range	More than 4X that of the CCD, greatly expanding the signal detection range.
Pixel Correction Technology	High background quality ensures more accurate quantitative analysis. [1]
Flexible Binning Mode	Improving the sensitivity and dynamic range capability.
High Reliability Cooling Chamber	Cooled to -25°C@Ambient 22°C, no condensation or other problems.
Compact Design	Conducive to instrument system integration.

Typical Applications

- Chemiluminescence
- Bioluminescence
- dPCR
- Fluorescence Imaging

Noted Examples

[1] The FL 26BW has excellent background uniformity, as it has basically eliminated the bad factors such as amplifier grow and bad pixels.

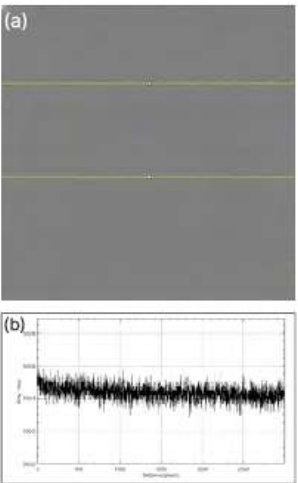
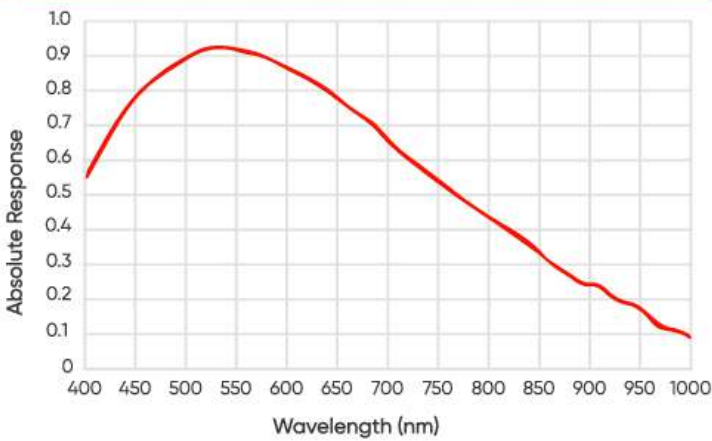
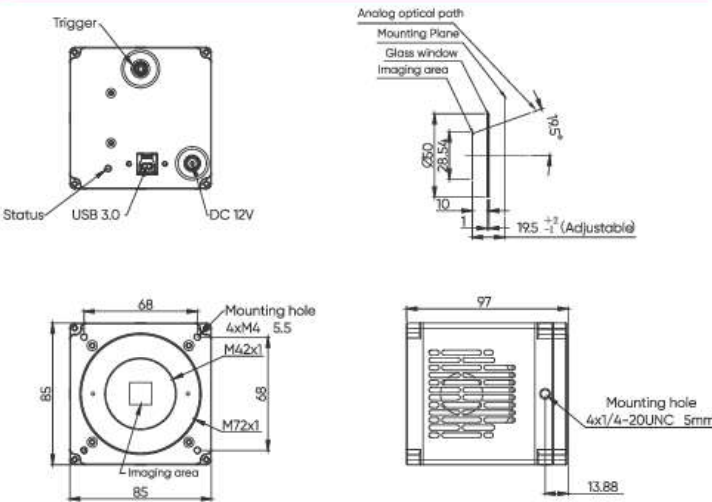


Figure (a) is the background image taken by FL 26BW with 600s exposure. Figure (b) is the grayscale intensity curve corresponding to the yellow region, showing excellent background uniformity.

Quantum Efficiency



Dimensions (Unit: mm)



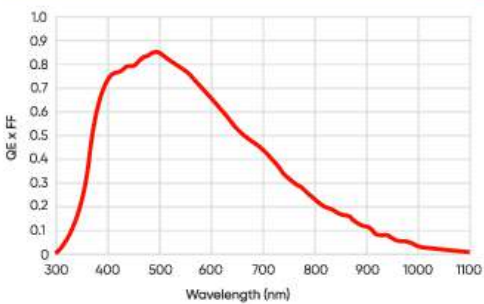
Product Name	FL 26BW			
Sensor Type	BSI CMOS			
Sensor Model	SONY IMX571BLR-J			
Chrome	Mono			
Array Diagonal	28.3 mm (1.8")			
Effective area	23.4 mm x 15.6 mm			
Pixel Size	3.76 μm x 3.76 μm			
Resolution	6240 x 4168			
Peak QE	92%@530 nm			
Dark Current	< 0.0005 e-/p/s			
Bit Depth	16 bit			
Gain Mode	Gain 0	Gain 1	Gain 2	Gain 3
Full Well Capacity	49 Ke-	15.7 Ke-	7.8 Ke-	3 Ke-
Readout noise	2.7 e-	1.0 e-	0.95 e-	0.85 e-
Frame Rate	6.5 fps@6240 x 4168 (Standard), 3.4 fps@6240 x 4168 (Low Noise), 35.5 fps@3120 x 2084 (Sensor Bin)			
Shutter Mode	Rolling, Global Reset			
Exposure Time	34 μs ~60 min			
Image Correction	DPC			
ROI	Support			
Binning	2 x 2, 3 x 3, 4 x 4, 5 x 5, 6 x 6, 8 x 8, 16 x 16			
Cooling Method	Air Cooling			
Cooling Temp.	-25°C@Ambient 22°C			
Trigger Mode	Hardware, Software			
Trigger Output	Exposure Start, Global, Readout End, High Level, Low Level			
Trigger Interface	Hirose-6-Pin			
SDK	C / C++ / C# / Python			
Software	Mosaic V3, Sample Pro, LabVIEW, MATLAB, Micro-Manager 2.0			
Data Interface	USB 3.0			
Optical Interface	M42 / Customizable			
Power Supply	12 V / 8 A			
Power Cons.	$\leq$ 50 W			
Dimensions	85 mm (H) x 85 mm (W) x 97 mm (L)			
Weight	945 g			
Operating System	Windows, Linux			
Environment	Working: Temp. 0°C~40°C, HUM 10%~85%, Storage: Temp. -10°C~60°C, HUM 0%~85%			

FL 20 / 20BW

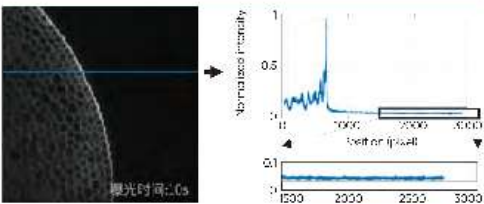
The FL 20 series are cooled CMOS cameras designed for low-magnification fluorescence microscopy. Advanced cooling and noise-reduction technology significantly minimize thermal noise, capturing cleaner fluorescence background images, ideal for high-quality documentation and publication.



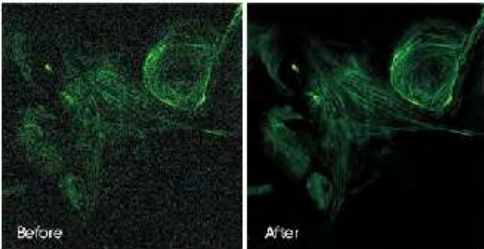
Quantum Efficiency



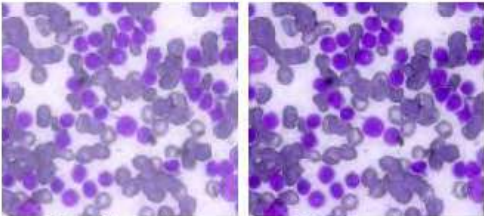
Application Cases



Dark current as low as 0.001 e-/pixel/s



Real-time 3D noise reduction for a cleaner fluorescence background



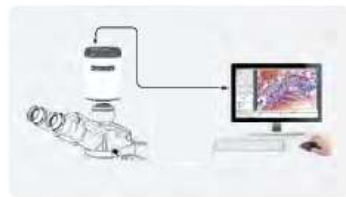
Before Sharpening After Sharpening
Real-time sharpening for higher-quality color images

Specification

Product Name	FL 20BW	FL 20
Sensor Type	SONY BSI CMOS (IMX183C)	
Chrome	Mono	Color
Array Diagonal	15.86 mm (1")	
Effective area	13.1 mm x 8.8 mm	
Pixel Size	2.4 μm x 2.4 μm	
Peak QE	84%	
Shutter Mode	Rolling	
Resolution	5472 (H) x 3648 (V), 20 MP	
Frame Rate	16 fps	14 fps
Readout Noise	0.6 e-	< 1 e-
Dark Current	0.001 e-/p/s	
Full Well Capacity	16 Ke-	
Bit Depth	8 bit, 16 bit	
Exposure Time	3 μs~3600 s	
Binning	Support	
Software	Mosaic V3	
Image Format	TIF, JPG, PNG, DICOM	
Multi-Camera	Supports 4 Cameras Simultaneously in SDK	
SDK	C / C++ / C# / Directshow / Twain	
Data Interface	USB 3.0	
Optical Interface	C Mount	
Power Supply	12 V	
Dimensions	85 mm (H) x 85 mm (W) x 112 mm (L)	
Weight	980 g	
Operating System	Windows, Linux	
Environment	Working: Temp. 0°C~40°C, HUM 10%~85%	

TrueChrome Series

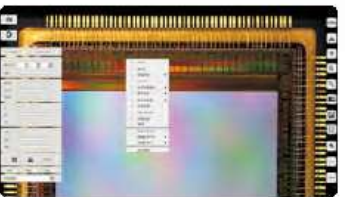
The TrueChrome series HDMI cameras operate without a computer, allowing "capture-process-measure-save-export" directly via mouse. Some models also feature high-speed USB 3.0 interfaces, fully compatible with Tucsen Mosaic professional image processing software.



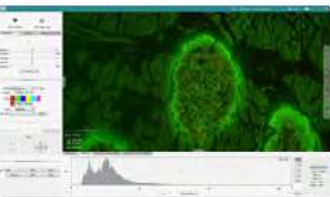
No need for a computer



Autofocus



Fast shooting and measurement



Compatible with Mosaic V3

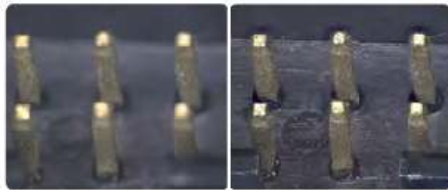
Product Name	TrueChrome 4K Pro / WiFi	TrueChrome PDAF	TrueChrome Metrics III	HD Lite
Sensor Type	SONY CMOS (Color)			
Array Diagonal	13.33 mm	5.95 mm (Type 1/2.8)	6.46 mm	6.54 mm
Preview Resolution	1920 × 1080; 3840 × 2160	1920 × 1080	1920 × 1080	2592 × 1944
Capture Resolution	1920 × 1080; 3840 × 2160	1920 x 1080@USB 2.0 3264 x 1836@HDMI	3264 × 1840	2592 x 1944
Pixel Size	2.9 μm x 2.9 μm	1.6 μm x 1.6 μm	2.9 μm × 2.9 μm	2.0 μm x 2.0 μm
Effective area	11.1 mm x 6.3 mm	5.2 mm x 2.9 mm	5.6 mm x 3.1 mm	5.1 mm x 3.8mm
Exposure Time	1 ms~10 s	1 ms~5 s	1 ms~10 s	1 ms~2 s
Frame Rate	25 fps@USB 3.0 30 fps@HDMI 30 fps@LAN	50 fps@USB 2.0 50 fps@HDMI	30 fps@USB 2.0 Compress 26 fps@HDMI Uncompress 30 fps@HDMI	15 fps@USB 2.0 15 fps@HDMI
Video Recording	30 fps@3840 × 2160	30 fps@SD Card 49 fps@PC 1920 x 1080	25 fps@1080P	15 fps@1080P
Image Format	HDMI: JPG/TIF USB: JPG/PNG/TIF/DICOM LAN: JPG/PNG/TIF/DICOM	HDMI: JPG/TIF PC: TIF/JPG/PNG/DICOM	HDMI: JPG/TIF PC: TIF/JPG/PNG/DICOM	HDMI: JPG/TIF PC: TIF/JPG/PNG/DICOM
SD Format	FAT 32			
Shutter Mode	Rolling			
Color Temp.	1800 K~10000 K			
Multi-Camera	Supports 4 Cameras Simultaneously in SDK			
Software	HDMI: Embedded software; PC: Mosaic V3			
Optical Interface	C Mount			
Data Interface	HDMI,USB 3.0,USB 2.0,LAN	HDMI, USB2.0, SD card		
Dimensions (mm)	105.7 (H) x 78 (W) x 70.8 (L)	97.7 (H) x 78 (W) x 70.8 (L)	90.7 (H) x 78 (W) x 70.8 (L)	90.7 (H) x 74 (W) x 67.2 (L)
Weight	505 g	534 g	448 g	265 g
Power Cons.	2.4 W			
Weight	CPU: Intel i5, 4 cores or above, RAM: 8G or above			
Operating System	Win 10 (64 Bit), Mac			
Environment	Temperature: -10°C~45°C ; Humidity: 10%~85%			

Mlchrome Series

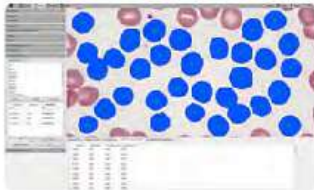
The Mlchrome series offers a range of professional microscopy cameras for brightfield and fluorescence imaging. Equipped with USB 3.0, they fully support Tucsen Mosaic software, including real-time image stitching and depth-of-field fusion, enhancing workflow efficiency.



Real-time Image Stitching



Real-time Depth Fusion



Automatic Counting

Product Name	Mlchrome 5 Pro	Mlchrome 20	Mlchrome 16	Mlchrome 6
Sensor Type	SONY CMOS (Color)			
Array Diagonal	11.1 mm	15.86 mm	7.77 mm	8.92 mm
Resolution	2448 (H) x 2048 (V)	5472 (H) x 3648 (V)	4608 (H) x 3456 (V)	3072 (H) x 2048 (V)
Pixel Size	3.45 μm x 3.45 μm	2.4 μm x 2.4 μm	1.34 μm x 1.34 μm	2.4 μm x 2.4 μm
Effective area	8.4 mm x 7.1 mm	13.1 mm x 8.8 mm	6.2 mm x 4.6 mm	7.4 mm x 4.9 mm
Exposure Time	124 μs~15 s	18 μs~15 s	22 μs~26 s	11 μs~12 s
Frame Rate	35.9 fps@2448 x 2048	14.5 fps@5472 x 3648	12 fps@4608 x 3456	41 fps@3072 x 2048
	88.8 fps@1224 x 1024	53.1 fps@2736 x 1824	15 fps@4608 x 2736	
		67.3 fps@1824 x 1216	19 fps@3648 x 2736	
Shutter Mode	Global Shutter	Rolling	Rolling	Rolling
Bit Depth	8 bit, 16 bit			
Binning	2 x 2, 3 x 3, 4 x 4			
Color Temp.	2000 K~15000 K			
Software	Mosaic V3			
Image Format	TIF, JPG, PNG, DICOM			
Multi-Camera	Supports 4 Cameras Simultaneously in SDK			
SDK	C / C++ / C# / Directshow / Twain			
Optical Interface	C Mount			
Power Cons.	3 W			
Data Interface	USB 3.0			
Dimensions	68 mm (H) x 68 mm (W) x 46 mm (L)			
Weight	330 g			
PC Configuration	CPU: Intel Core i5 or higher (Quad-core or higher), RAM: 8GB or higher			
Operating System	Win 10 / 11 (64 Bit), Mac			
Environment	Working: Temp. -10°C~45°C, HUM 10%~85%			

GT Series

The GT series USB 2.0 cameras use Tucsen's innovative graphics acceleration technology, significantly increasing frame rates while preserving original image output, making them an economical choice for basic microscopy imaging.

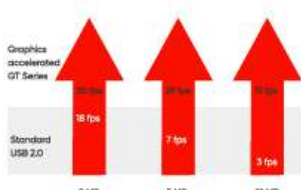
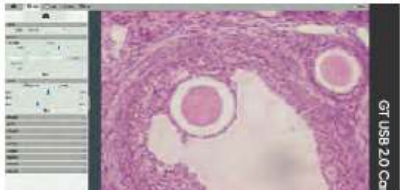


Image Acceleration Technology



Smooth and Clear Display

VS



Image Distortion & Latency

Product Name	GT 12	GT 5.0	GT 2.0
Sensor Type	SONY CMOS (Color)		
Array Diagonal	7.77 mm	6.52 mm	6.23 mm
Resolution	4000 (H) x 3000 (V)	2560 (H) x 1920 (V)	1920 (H) x 1080 (V)
Pixel Size	1.34 μm x 1.34 μm	2.0 μm x 2.0 μm	2.8 μm x 2.8 μm
Effective area	5.4 mm x 4.0 mm	5.1 mm x 3.8 mm	5.4 mm x 3.0 mm
Frame Rate	15 fps	29 fps	30 fps
Shutter Mode	Rolling		
Exposure Time	1 μs~1 s 941 ms		
Multi-Camera	Supports 4 Cameras Simultaneously in SDK		
Image Format	TIF, JPG, PNG, DICOM		
Operating System	Windows 7, 10 (32 Bit / 64 Bit), Mac		
Software	Mosaic V3		
SDK	C / C++ / C# / Directshow / Twain		
Power Cons.	2 W		
Optical Interface	C Mount		
Data Interface	USB 2.0		
PC Configuration	CPU: Intel Core i5 or higher (Quad-core or higher), RAM: 8GB or higher		
Dimensions	68 mm (H) x 68 mm (W) x 42.5 mm (L)		
Weight	236 g		
Environment	Working: Temp. 0°C~40°C, HUM 10%~85%		

Mosaic V3 Software

1) Precision Imaging Control

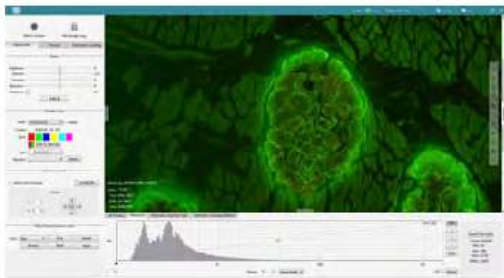
Precise control, processing, and analysis of imaging parameters.

2) Advanced Image Processing

Comprehensive real-time analysis tools and computational imaging functions.

3) Customizable Interface

Create custom layouts and workflows tailored to your tasks.



SDK for Developers

Tucsen SDK is a powerful development tool, enabling easy integration across multiple platforms.

- 1) SDK dynamic library files, development instruction and MFC/C# sample source code.
- 2) Windows, Mac and Linux support using the same interface to develop.
- 3) GenICam support using standard protocol and general port and function calling.
- 4) C/C++/C#/Python support.
- 5) Multi-camera support, integration and development.
- 6) Rapid support of newly released product features.



Third-Party Software

Tucsen supports a wide variety of third-party software packages, enabling compatibility with numerous markets and applications.

- 1) Scientific Software: Micro-Manager, MATLAB, LabVIEW, ImagePro*, VisiTron*
- 2) Astrophysics Software: MAXIMDL, EPICS*
- 3) Medical Imaging Protocols: DirectShow, TWAIN

Note: *Support is limited to specific models and requires assistance from the software provider.

OEM / ODM

Tucsen has extensive experience in OEM/ODM services for scientific cameras. We supply tens of thousands of products to clients annually, which are applied in various markets worldwide. Our services cover new product development, product upgrading, and cost control, enabling us to help clients address issues in fields such as production quality, scientific research, and medical applications. As your premium partner, we are dedicated to providing valuable support.



Benefits

1) Take First-Mover Advantage

We introduce industry-leading technologies every year, such as sCMOS, BSI TDI, large formats, and soft X-ray variations. By rapidly incorporating the latest technology, we help our partners expand their product capabilities, giving them a first-mover advantage in their own markets.

3) Save Switching Time and Costs

We can provide rapid customization by leveraging a series of core technical platforms developed through 10 years of OEM project experience. We understand your space limitations, software needs, and technical and quality requirements.

2) Maintain Quality Consistency

We manage our business efficiently to deliver consistent results. Our advanced manufacturing facilities and China-based supply chains ensure you can be worry-free even in tight supply and demand situations.

4) Efficient Support

We offer a global support network, ensuring you can access information in your own time zone. These teams work quickly and efficiently with our factory teams to provide answers to your questions regarding product functionality or delivery/shipment status.

