

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	$\pm 0.5^{\circ}\text{C}$ 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

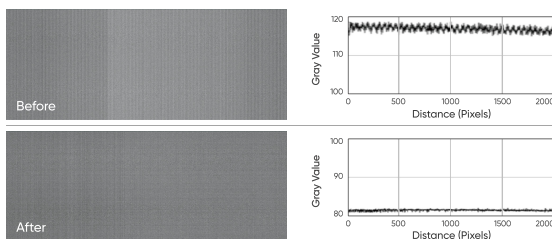
Noted Examples

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

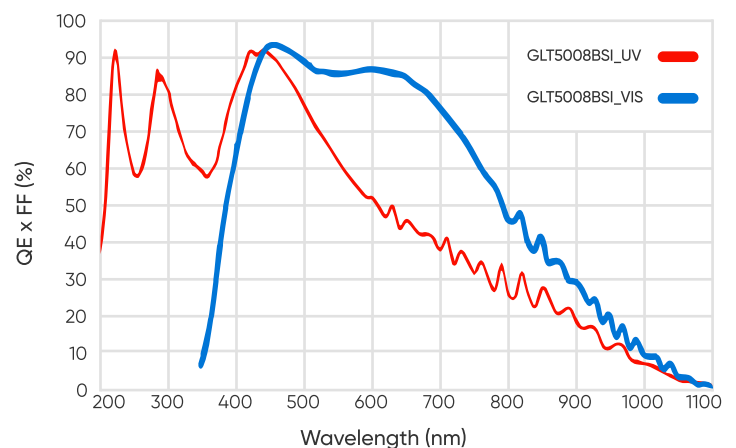
1 MHz@8K **8208 Mpixel/s**

510 KHz@9K **4590 Mpixel/s**

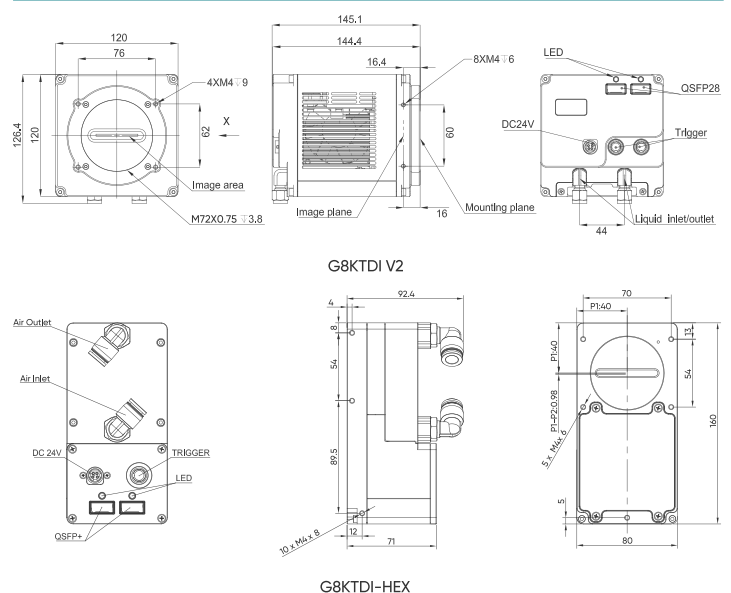
[2] The Gemini 8KTDI features stable cooling, offering excellent noise control and uniform imaging background, providing precise and reliable data for high-accuracy inspections.



Quantum Efficiency



Dimensions (Unit: mm)



Specifications

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	$\geq 50X$		
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		

*Specifications in this manual are subject to changes without prior notice.



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