Gemini 8KTDI

The Gemini 8KTDI is a back-illuminated TDI camera optimized for biological and industrial environments. It provides 8K resolution with a quantum efficiency of 63.9% at 266 nm, 58% at 355 nm, and a peak of 93.4% at 440 nm. Featuring a 100G CoF interface and line rates of up to 1 MHz, it integrates effective cooling and noise suppression to ensure accurate and efficient high-throughput scanning.

Key Features	Benefits
100G CoF Interface	High-speed single-interface bandwidth up to 100 Gbps, reliable, easy to integrate
1 MHz@8 K	Doubles data throughput, significantly boosts inspection efficiency [1]
180 nm-1100 nm	Covers UV, visible, and near-infrared, peak QE up to 93.4%
UV Enhancement	QE of 63.9% at 266 nm, 58% at 355 nm, enhances detection of fine defects
High-Reliability Cooling	Maintains sensor at 0°C, ±0.5°C stability, ensures long-term reliable imaging [2]

Typical Applications

- Wafer Inspection
- Packaging Inspection
- Mask Inspection
- FPD Inspection
- High-Throughput Sequencing
- Pathology Slide Scanning

Noted Examples

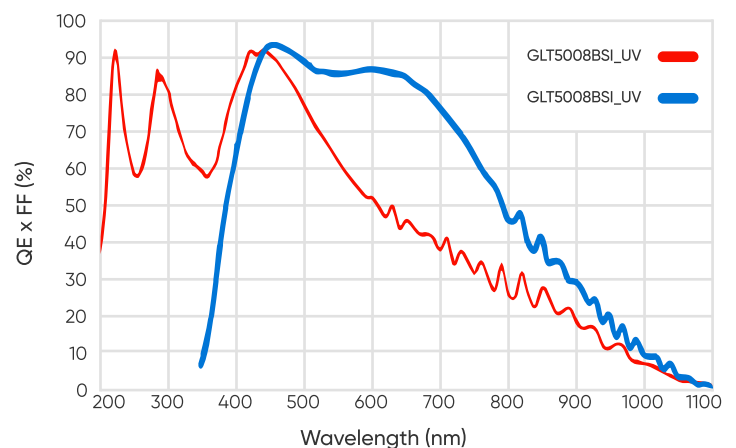1] The Gemini 8KTDI doubles data throughput compared to the previous generation.

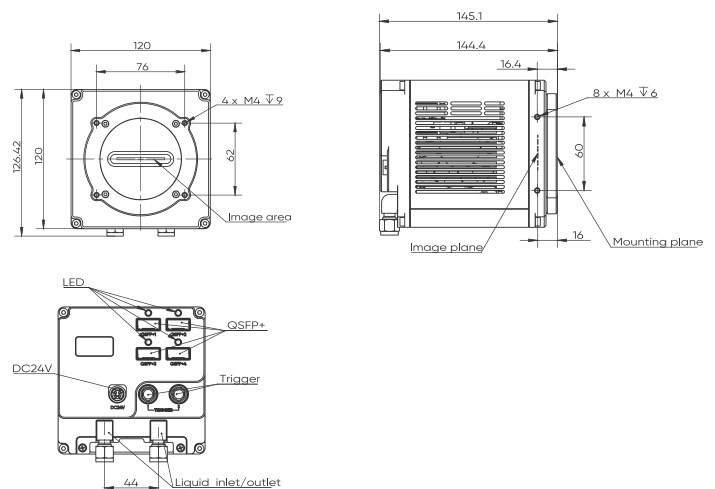| 1 MHz@8 K	8208 Mpixel/s

510 KHz@9 K	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.
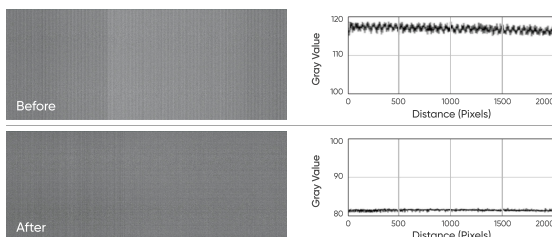
Quantum Efficiency

Dimensions (Unit: mm)

Specifications

Model	Gemini 8KTDI
Sensor Type	BSI sCMOS TDI
Sensor Model	Gpixel GLT5008BSI_UV / Gpixel GLT5008BSI_VIS
Peak QE	≥ 63.9%@266 nm, ≥ 93.4%@440 nm
Spectral Range	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	≥ 50 X
Full-Well Capacity	≥ 16 ke-
Dynamic Range	≥ 62.8 dB@10 bit ADC
Max. Line Rate	1 MHz@8 / 10 bit; 500 kHz@12 bit
Readout Noise	7.4 e-@12 bit，12.5 e-@10 bit
Dark Current	≤ 1000 e-/p/s@10℃, ≤ 7000 e-/p/s@40℃
DSNU	≤ 10.8 e-@10 bit, ≤ 5.6 e-@10 bit (Corrected)
PRNU	≤ 0.124%
Cooling Method	Air, Liquid
Cooling Temp.	Air: 10℃@22℃ Ambient; Liquid: 0℃@22℃ Water Temp.
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	QSFP+ / QSFP28
Optical Interface	M72 x 0.75, User Customization
Power Supply	72 W / 21~27 V
Dimensions	120 mm x 120 mm x 144.5 mm
Weight	＜ 3500 g
Software	SamplePro
SDK	C, C++
Operating System	Windows 10 / 11 (X64), Ubuntu 20.04 / 22.04 (X64), Euler OS (ARM64)
Operating Environment	Working: Temp. 0℃~40℃. Hum. 20%~80% Storage: Temp. -20℃~40℃. Hum. 20%~80% Working altitude: 0 m~2000 m