Gemini 16KTDI

The Gemini 16KTDI is designed for large-format industrial inspection, delivering a 16K high-resolution imaging solution. It covers 300 nm–1100 nm spectral range, with 92.4% QE at 460 nm. Equipped with 100G CoF interface, it supports 500 KHz line rate. The stable cooling technology suppresses thermal noise in high-speed operation, enhancing high-end equipment's precision and efficiency.

Key Features	Benefits
100G CoF Interface	High-speed single-interface bandwidth up to 100 Gbps, reliable, easy to integrate
500 KHz@16K	Doubles data throughput, significantly boosts inspection efficiency [1]
300 nm–1100 nm	Covers UV, visible, and near-infrared, peak QE up to 92.4%
High-Reliability Cooling	Maintains sensor at target temperature, ±0.5°C stability, ensures long-term reliable imaging [2]

Typical Applications

- Wafer Inspection
- Packaging Inspection
- Mask Inspection
- FPD Inspection

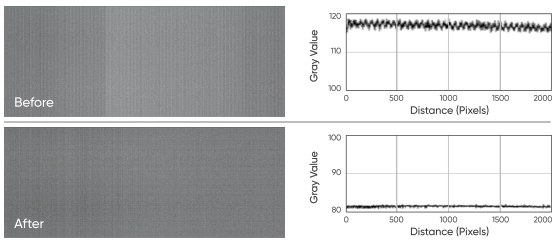
Noted Examples

[1] The Gemini 16KTDI doubles data throughput compared to the previous generation.

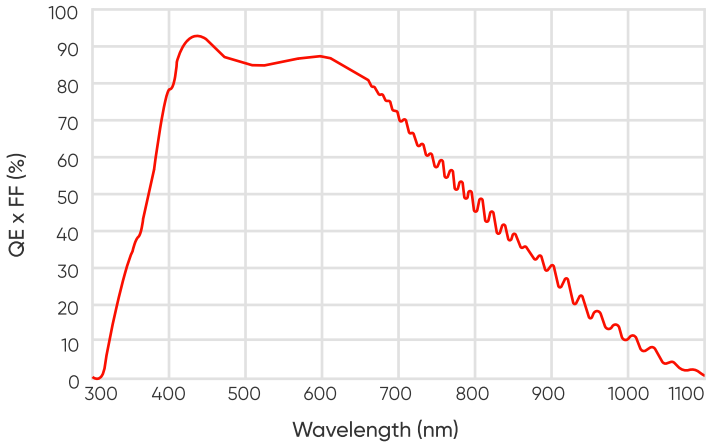
500 KHz@16K — 8208 Mpixel/s

510 KHz@9K — 4590 Mpixel/s

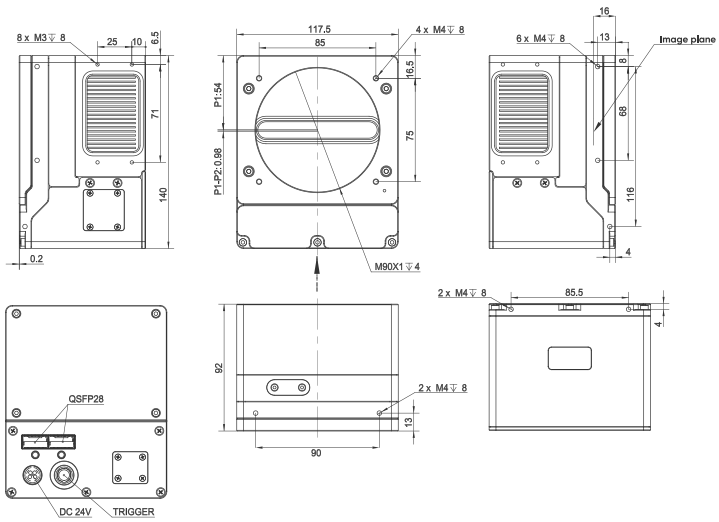
[2] The Gemini 16KTDI features stable cooling, offering excellent noise control and uniform imaging background, providing precise and reliable data for high-accuracy inspections.



Quantum Efficiency



Dimensions (Unit: mm)



Specifications

Model	Gemini 16KTDI
Sensor Type	BSI sCMOS TDI
Sensor Model	Gpixel GLT5016BSI VIS
Peak QE	Typical: VIS: 92.4%@460 nm
Spectral Range	300 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	≥ 0.99993
Anti-Blooming	≥ 50X
Full Well Capacity	Typical: 16 Ke-
Dynamic Range	Typical: 63 dB@10 bit ADC
Max. Line Rate	500 KHz@16K
Readout Noise	Typical: 12.1 e-@10 bit, 7.5 e-@12 bit
Dark Current	Typical: 540 e-/p/s@10°C (Correacted)
DSNU	Typical: 6.5 e-@10 bit,500 KHz (Correacted)
PRNU	Typical: 0.15%@10 bit (Correacted)
Cooling Method	TES Cooling, Hex Cooling
Cooling Temp.	TES Cooling: 33°C@22°C 120 L/Min; Hex Cooling: 33°C@25°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
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

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