

# 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. <sup>[1]</sup> |
| 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

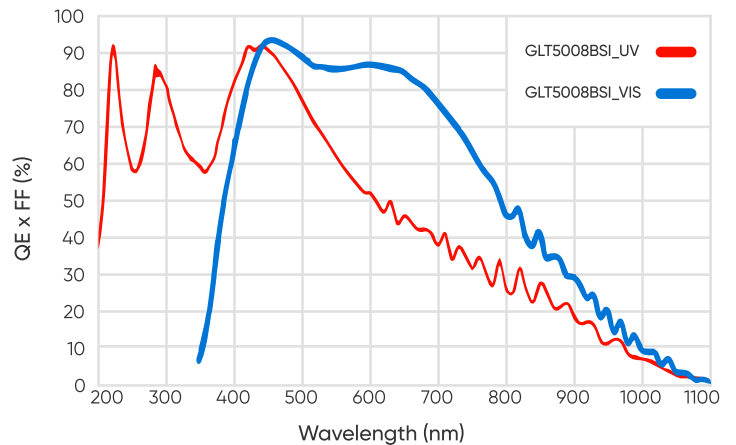
- Semiconductor Inspection
- Chip Packaging Inspection
- FPD Inspection
- Lithium Battery Inspection
- Web Inspection

## Noted Examples

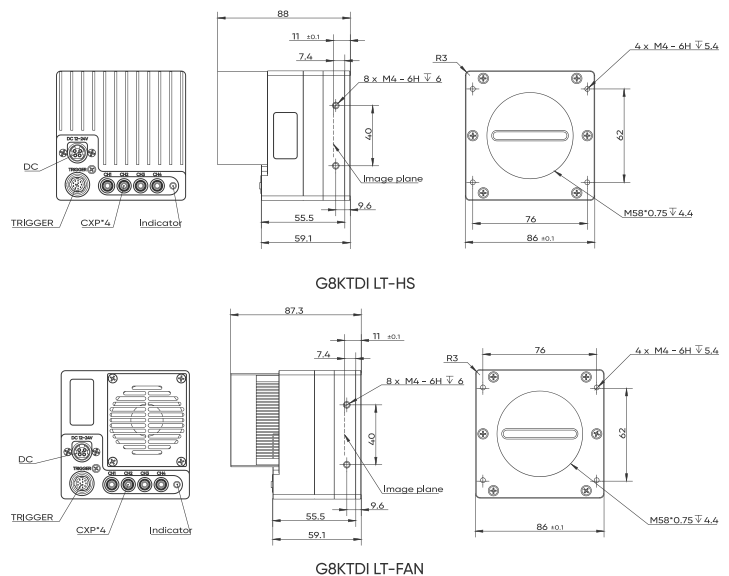
[1] Gemini 8KTDI LT (high-performance version): 68% smaller, 75% lighter, ~51% lower power consumption than the 8KTDI.

| 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)



# Specifications

|                    |  |                       |                       |
|--------------------|--|-----------------------|-----------------------|
| 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 $\mu$ m x 5 $\mu$ m  |                       |                       |
| 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                | $\geq 0.999993$  |                       |                       |
| Anti-Blooming      | $\geq 50X$   |                       |                       |
| 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.      | $\leq 25^{\circ}\text{C}@22^{\circ}\text{C}$   | /                     | /                     |
| 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%;<br>Storage: Temp. -20°C~60°C, Hum. 20%~80%;<br>Working altitude: 0 m~2000 m |                       |                       |

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

