Aries 6510 BSI sCMOS Camera, 29.4 mm Diagonal, 150 fps, 0.7 e^- Noise

Model Aries 6510 · waveqvanta.com/products/aries-6510-scmos-camera

A large-field sCMOS camera for high-throughput optical systems and large-area image stitching.



The Aries 6510 pairs the back-illuminated GSENSE6510BSI sensor with a 3200 × 3200 array of 6.5 µm pixels, giving a 29.4 mm imaging diagonal. It streams full 10.2 MP frames at up to 150 fps and offers HDR, Speed and Sensitivity readout modes, with read noise as low as 0.7 e^- (median). A dual 10GigE interface, T, F or C optical mounts and air or liquid cooling make it a good fit for high-throughput imaging systems.

Key features

- 29.4 mm diagonal (20.8 mm × 20.8 mm) with 6.5 µm pixels for more sample area per frame
- Speed mode: 150 fps at full 10.2 MP with selectable full well of 1.24 ke^-, 4.5 ke^- or 20 ke^-
- 95% peak QE; read noise down to 0.7 e^- (median) in Sensitivity Low Noise mode
- Full-frame throughput of about 1530 Mpixel/s, compared with about 420 Mpixel/s for a typical 18.8 mm-diagonal sCMOS camera
- Dual 10GigE data interface with standard cabling; no frame grabber required
- Air or liquid cooling, on-board defect pixel correction and 1 µs timestamp accuracy

Specifications

Sensor Type	BSI sCMOS
Sensor	GSENSE6510BSI
Color / Mono	Mono
Peak QE	95%
Resolution	3200 × 3200
Pixel Size	6.5 µm × 6.5 µm
Effective Area	20.8 mm × 20.8 mm
Array Diagonal	29.4 mm
Readout Modes	Dynamic HDR; Speed (high / mid / low gain); Sensitivity (Standard / Low Noise)
Full-Well Capacity	13.7 ke^- (HDR); 1.24 / 4.5 / 20 ke^- (Speed); 1.55 / 0.69 ke^- (Sensitivity)
Readout Noise	Median: 0.7 e^- (Sensitivity Low Noise); 1.8 e^- (HDR and Speed high gain)
Dynamic Range	77 dB (Dynamic HDR mode)
Frame Rate	150 fps (Speed); 88 / 5.2 fps (Sensitivity), full resolution
Shutter Type	Rolling, global reset
Exposure Time	4 µs – 10 s
Binning	2 × 2, 4 × 4
ROI	Supported
Cooling Method	Air, liquid
Cooling Temperature	Air: 0 °C @ 25 °C ambient; liquid: −10 °C @ 20 °C water

Dark Current	1.3 e^-/pixel/s @ 0 °C; 0.6 e^-/pixel/s @ −10 °C
Bit Depth	16 bit (HDR), 11 bit (Speed), 12 bit (Sensitivity)
Data Interface	2 × 10GigE
Trigger	Hardware, software; Hirose 6-pin; 1 µs timestamp accuracy
Trigger Output	Exposure start, global exposure, readout end, trigger ready, first/any row, line, high/low
Optical Interface	T-mount, F-mount or C-mount
Power Supply	12 V / 8.5 A
Power Consumption	≤ 55 W
Dimensions	95 mm × 100 mm × 100 mm (H × W × L)
Weight	1350 g
Operating Environment	Working 0–40 °C, 10–85% RH; storage 0–60 °C, 0–90% RH
Operating System	Windows, Linux
Software / SDK Support	Acquisition and analysis software, LabVIEW, MATLAB, Micro-Manager 2.0; C/C++/C#/Python SDK

Typical applications

- High-throughput imaging and large-area stitching
- Fluorescence slide scanning
- Super-resolution and single-molecule microscopy
- Light-sheet microscopy
- Calcium and live-cell imaging
- High-content and confocal imaging