Libra 5514 Pro Global Shutter BSI sCMOS Camera, 670 fps at 14 MP, 100G CoF

Model Libra 5514 Pro · waveqvanta.com/products/libra-5514-pro-scmos-camera

A 14 MP global-shutter BSI sCMOS camera for high-speed, high-throughput scientific and industrial imaging.



The Libra 5514 Pro combines a back-illuminated global-shutter sCMOS sensor (4608 × 3072, 5.5 µm pixels) with 83% peak QE and median read noise below 2 e^-. The 100G CoaXPress-over-Fiber version reaches 670 fps at full 14 MP resolution, and a 40G version is also available. A compact, low-vibration body makes it straightforward to build into high-throughput imaging and inspection instruments.

Key features

- Global shutter with a BSI sCMOS sensor: 83% peak QE and median read noise below 2 e^-
- 30.5 mm diagonal (25.34 × 16.90 mm) for large samples and modern 30 mm optical systems
- 5.5 µm pixels balance resolution and sensitivity with optics above 40×
- L5514Pro-100G: 670 fps at 8/10 bit, 350 fps at 12 bit and 80 fps in 16-bit HDR mode
- L5514Pro-40G: 330 fps at 8 bit and 220 fps at 12 bit; ROI readout reaches similar frame rates to the 100G model on smaller fields
- 15 ke^- full well in HDR mode (30 ke^- binned), 77.5 dB dynamic range, exposure from 2 µs
- Air or liquid cooling; on-camera defect pixel correction and flat-field correction

Specifications

Sensor Type	BSI sCMOS
Sensor	GSPRINT5514BSI
Color / Mono	Mono
Peak QE	83%
Resolution	4608 × 3072 (14 MP)
Pixel Size	5.5 µm × 5.5 µm
Effective Area	25.34 mm × 16.90 mm
Array Diagonal	30.5 mm
Full-Well Capacity	15 ke^- (HDR); 30 ke^- (binned)
Readout Noise	< 2 e^- median (HDR and standard 12 bit, gain 4)
Dynamic Range	77.5 dB
Frame Rate (100G)	670 fps @ 8/10 bit; 350 fps @ 12 bit; 80 fps @ 16 bit HDR
Frame Rate (100G, 10 Bit)	670 fps compressed; 485 fps uncompressed (selectable in software)
Frame Rate (40G)	330 fps @ 8 bit; 236 fps @ 10 bit; 220 fps @ 12 bit; 80 fps @ 16 bit HDR
Shutter Type	Global
Exposure Time	2 µs to 10 s
Binning	2 × 2, 4 × 4
ROI	Supported

Cooling Method	Air cooling, liquid cooling
Cooling Temperature	Air: 5°C (25°C ambient); liquid: -5°C (20°C water)
Dark Current	< 1 e^-/pixel/s @ -5°C; < 5 e^-/pixel/s @ 5°C
Bit Depth	8 bit, 10 bit, 12 bit, 16 bit
Data Interface	QSFP28 100G CoF (L5514Pro-100G); QSFP+ 40G CoF (L5514Pro-40G)
Trigger	Hardware, software (Hirose 12-pin); outputs incl. global exposure, readout end
Optical Interface	T-mount, F-mount, C-mount
Power Supply	24 V / 6.67 A
Power Consumption	≤ 120 W
Dimensions	95 mm × 95 mm × 123.6 mm (camera body)
Weight	≤ 2 kg
Operating Environment	Working: 0°C to 40°C, 0–85% RH; storage: 15°C to 30°C, 35–75% RH
Software / SDK	Acquisition and analysis software, LabVIEW, MATLAB, Micro-Manager 2.0; C/C++/C# SDK

Typical applications

- High-speed slide scanning and digital pathology
- Gene sequencing
- Spatial omics
- Neuroscience and voltage imaging
- Super-resolution imaging
- Semiconductor inspection