Libra 5514 Global Shutter BSI sCMOS Camera, 330 fps at 14 MP, 40G CoF

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

A 14 MP global-shutter BSI sCMOS camera for large-field, high-frame-rate imaging over a 40G fiber link.



The Libra 5514 is built around a back-illuminated global-shutter sCMOS sensor with 4608 × 3072 pixels at 5.5 µm, giving 83% peak QE and a 30.5 mm diagonal. Its 40G CoaXPress-over-Fiber interface transfers full 14 MP frames at up to 330 fps in 8-bit mode. The camera is intended as an economical high-speed option for research systems and industrial inspection.

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) covers more of the sample per frame and reduces stitching
- Full-resolution frame rates of 330 fps (8 bit), 230 fps (10 bit), 220 fps (12 bit) and 80 fps (16-bit HDR)
- About 4620 Mpixel/s, compared with 420 Mpixel/s for a typical 4.2 MP sCMOS camera at 100 fps
- 40G CoaXPress-over-Fiber (QSFP+) with low latency, suited to multi-camera synchronized systems
- 15 ke^- full well in HDR mode (30 ke^- binned), 77.5 dB dynamic range, exposure from 2 µs
- Air or liquid cooling; defect pixel correction built in, flat-field correction optional

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	330 fps @ 8 bit; 230 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	QSFP+ (40G CoaXPress-over-Fiber)
Trigger	Hardware, software (Hirose 12-pin); outputs incl. exposure, readout end, trigger ready
Optical Interface	T-mount, F-mount, C-mount
Power Supply	24 V / 6.67 A
Power Consumption	≤ 100 W
Dimensions	95 mm × 95 mm × 123.6 mm (camera body)
Weight	1850 g
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 imaging
- Super-resolution imaging
- Semiconductor inspection