Libra 3412UM Global Shutter Mono CMOS Camera, 12 MP, USB 3.0

Model Libra 3412UM · waveqvanta.com/products/libra-3412um-cmos-camera

A 12 MP global shutter mono camera with plug-and-play USB 3.0 for fluorescence slide scanning and NIR microscopy.



The Libra 3412UM uses a 4096 × 3072 global shutter monochrome CMOS sensor with a 350–1100 nm response and connects to a standard microscope and computer over USB 3.0. It is aimed at multi-channel fluorescence work, including tissue slide scanning, where its near-infrared sensitivity of 47% QE at 800 nm is useful.

Key features

- Global shutter exposes all pixels simultaneously, avoiding motion blur and distortion during fast stage movement
- Spectral response from 350 to 1100 nm, with 75% QE at 540 nm and 47% QE at 800 nm
- Up to 28 fps at full resolution in 8-bit mode and 18 fps in 12-bit mode over USB 3.0
- Three gain modes with median readout noise down to 1.3 e^- (12-bit, Sensitive)
- 3.4 µm pixels matched to optical systems below 40× magnification
- Acquisition and analysis software with live image stitching and depth-of-field fusion
- USB-powered (below 4 W), passively cooled, 45 × 45 × 60 mm and ~162.5 g

Specifications

Sensor Type	CMOS
Sensor	GMAX 3412
Color / Mono	Mono
Peak QE	75% @ 540 nm; 47% @ 800 nm
Spectral Range	350–1100 nm
Resolution	4096 × 3072 (12 MP)
Pixel Size	3.4 µm × 3.4 µm
Effective Area	14.0 mm × 10.5 mm
Array Diagonal	17.4 mm (1.1")
Gain Mode	High Capacity, Balanced, Sensitive
Full-Well Capacity	12-bit: 9 ke^- High Capacity, 4.5 ke^- Balanced, 0.7 ke^- Sensitive
Readout Noise	12-bit median: 3.9 e^- High Capacity, 2.6 e^- Balanced, 1.3 e^- Sensitive
Frame Rate	28 fps @ 8-bit, 18 fps @ 12-bit (full resolution)
Shutter Type	Global
Exposure Time	1 µs – 10 s
Binning	1 × 1, 2 × 2, 4 × 4 (FPGA)
ROI	Supported
Image Correction	Defect pixel correction (DPC)
Cooling Method	Passive cooling
Bit Depth	8-bit, 12-bit

Data Interface	USB 3.0
Trigger	Hardware, software; Hirose 6-pin connector
Trigger Output	Exposure Out, Readout, Trigger Ready
Optical Interface	C-mount (customization available)
Power Supply	USB bus power
Power Consumption	Below 4 W
Dimensions	45 mm (H) × 45 mm (W) × 60 mm (L)
Weight	~162.5 g
Operating Environment	Operating 0 to 40 °C, 10–85% RH; storage −10 to 60 °C, 0–90% RH
Software / SDK Support	Acquisition and analysis software; SDK: C, C++, C#, Python
Operating System	Windows, Linux

Typical applications

- Fluorescence slide scanning
- Multi-channel fluorescence imaging
- Near-infrared detection
- Tissue section scanning and stitching
- Microscopy imaging