Libra 3412M Air-Cooled Global Shutter Mono CMOS Camera, 12 MP, 10 GigE

Model Libra 3412M · waveqvanta.com/products/libra-3412m-cmos-camera

A 12 MP global shutter mono camera with 10 GigE output, built for integration into scanning and imaging instruments.



The Libra 3412M combines a 4096 × 3072 global shutter mono CMOS sensor with a 10 GigE interface and air cooling in a compact housing intended for instrument builders. Its 350–1100 nm response, with 47% QE at 800 nm, suits multi-channel fluorescence and near-infrared work, and it reaches 98 fps at full resolution in 8-bit mode.

Key features

- Global shutter exposes every pixel at the same time, so moving samples are recorded without rolling-shutter distortion
- Full-resolution frame rates of 98 fps (8-bit), 65 fps (10-bit) and 62 fps (12-bit) over 10 GigE
- About 3× the full-resolution speed of the USB 3.0 version of this sensor format (98 fps vs 28 fps)
- Spectral response from 350 to 1100 nm, with 75% QE at 540 nm and 47% QE at 800 nm
- Air cooling holds the sensor at 10 °C (25 °C ambient), for a dark current of 0.5 e^-/pixel/s
- Three gain modes (High Capacity, Balanced, Sensitive) with median readout noise down to 1.6 e^-
- 3.4 µm pixels matched to optical systems below 40× magnification; supported in Micro-Manager 2.0 and a C/C++/C#/Python SDK

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: 3.6 e^- High Capacity, 2.4 e^- Balanced, 1.6 e^- Sensitive
Frame Rate	98 fps @ 8-bit, 65 fps @ 10-bit, 62 fps @ 12-bit (full resolution)
Shutter Type	Global
Exposure Time	1 µs – 10 s
Binning	1 × 1, 2 × 2, 4 × 4 (FPGA)
ROI	Supported
Cooling Method	Air cooling

Cooling Temperature	10 °C @ 25 °C ambient
Dark Current	0.5 e^-/pixel/s @ 10 °C
Bit Depth	12-bit (High Depth), 10-bit (Standard), 8-bit (Speed)
Data Interface	10 GigE
Trigger	Hardware, software; Hirose 12-pin connector
Trigger Output	High, Low, Exposure Out, Readout, Trigger Ready
Optical Interface	C-mount
Power Supply	12 V / 8 A
Power Consumption	30 W
Dimensions	60 mm (H) × 60 mm (W) × 100 mm (L)
Weight	~489 g
Operating Environment	Operating 0 to 40 °C, 10–85% RH; storage −10 to 60 °C, 0–85% RH
Software / SDK Support	Acquisition and analysis software, Micro-Manager 2.0; SDK: C, C++, C#, Python
Operating System	Windows, Linux

Typical applications

- Pathology slide scanning
- Multi-channel fluorescence imaging
- Near-infrared microscopy
- Industrial inspection
- OEM instrument integration