GO-2400C-USB
Technical Datasheet

IMX174

JAI®
See the possibilities

USB3 VISION

Apex Series

JAI's Go Series delivers an exceptional blend of small size, high versatility, and excellent performance, all at an entry-level price, making the cameras a perfect starting point for a wide range of machine vision applications.
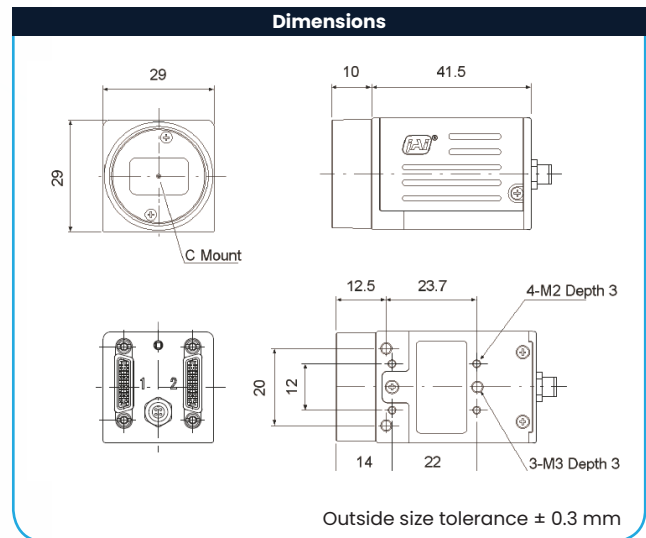
CMOS technology, low-noise pixels, global shutters, sequencer functions, and other advanced features help ensure image quality and operational flexibility beyond entry-level expectations.
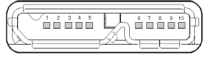
Specification Highlights

SENSOR:	IMX174		**SHUTTER:**	Global Shutter
FORMAT:	1/1.2"		**FRAME RATE:**	159 fps
PIXEL SIZE:	5.86 x 5.86 μm		**INTERFACE:**	USB3 Vision (PoUSB)
LENS MOUNT:	C-Mount		**RESOLUTION MP:**	2.4 MP
SPECTRUM:	Color (Visible)		**RESOLUTION WxH:**	1936 x 1216 px

Specifications		GO-2400-USB
Sensor		1/1.2" CMOS global shutter (IMX174)
System clock		74.25 MHz (for pulse generator)
Frame rate (Full frame)		159 frames/sec. @ 8-bit
Active area		11.3 mm (h) x 7.13 mm (v), 13.4 mm diagonal
Cell size		5.86 µm (h) x 5.86 µm (v)
Active pixels		1936 (h) x 1216 (v)
Read-out modes		
Full ROI (mono)		1936 (h) x 1216 (v) up to 159 fps H: 16 to 1936 pixels in 16 pixel steps V: 1 to 1216 lines in 1 line steps
ROI (color)		H: 16 to 936 pixels in 16 pixel steps V: 2 to 1216 lines in 2 line steps
Binning		1x2, 2x1, 2x2 (monochrome only)
EMVA 1288 Parameters Absolute sensitivity (mono) Absolute sensitivity (color) Maximum SNR (mono) Maximum SNR (color)		12-bit output format 9.44 p (λ = 525 nm) 10.86 p (λ = 525 nm) 45.16 dB 45.23 dB
Traditional SNR*	mono color	>60 dB (0 dB gain) >60 dB (0 dB gain, green)
Video signal output	mono color	8/10/12-bit monochrome† 8/10/12-bit raw Bayer†
Gain control		Manual/auto 0 dB to +24 dB
Gamma		0.45, 0.6, 1.0 or 256-point LUT
White balance (GO-2400C)		Manual, one-push auto, or continuous (3000K to 9000K)
Synchronization		Internal
Video modes		Normal, Single ROI, Multi ROI, Sequence (Trigger & Command)
Trigger input		Opto In, Pulse Generator, Software, NAND Out (2),User Output (2), Action Commands (2)
Trigger modes		EPS, Trigger Width, Sequencer
Electronic shutter Timed exposure Auto shutter		 19.7 µs to 8 sec in 1 µs steps 100 µs to 8 sec
Auto level control (ALC)		Shutter range from 100 µs to 8 sec, gain range from 0 dB to +24 dB Tracking speeds and max values adjustable
Pre-processing functions		Flat-field correction, color shading correction (GO-2400C), blemish compensation (256 pixels)
Operating temperature		-5ºC to +45ºC
Storage temperature		-25ºC to +60ºC
Humidity		20 – 80% non-condensing
Vibration		10 G (20 Hz to 200 Hz XYZ)
Shock		80 G
Regulations		CE (EN61000-6-2, EN61000-6-3), FCC Part 15 Class B, RoHS/WEEE
Power	6-pin connector USB 3.0	12V to 24V DC ± 10 %. 4.08 W @ 12V Bus power: 4.4 W @ 5V
Lens mount		C-mount
Dimensions (H x W x L)		29 mm x 29 mm x 41.5 mm (excl. lens mount)
Weight		46 g

Ordering Information

GO-2400M-USB GO-2400C-USB	Monochrome camera with USB3 Vision Color camera with USB3 Vision

Dimensions

29   10   41.5

29

C Mount

12.5   23.7   4-M2 Depth 3

20   12

1   2

14   22   3-M3 Depth 3

Outside size tolerance ± 0.3 mm

Connector pin-out

DC In / Trigger

HIROSE HR10A-7R-6PB(73)

Pin	Signal
1	+12V to +24V DC input
2	Opto In 1
3	Opto Out 1
4	Opto Out 2
5	Opto Common
6	GND

USB 3.0 Interface`

HIROSE HR10A-7R-6PB(73)

No	I/O	Name	Note
1	I	Power	Power (VBUS)
2	I/O	DM	USB2.0 Differential pair (−)
3	I/O	DP	USB2.0 Differential pair (+)
4	−	OTG ID	USB OTG ID for identifying lines
5	−	GND	GND
6	O	FX3 SSTXM	USB3.0 Signal Transmission line (−)
7	O	FX3 SSTXP	USB3.0 Signal Transmission line (+)
8	−	GND	GND
9	I	FX3 SSRXP	USB3.0 Signal Receiving line (−)
10	I	FX3 SSRXM	USB3.0 Signal Receiving line (+)

Spectral response

Quantum Efficiency (% with cover glass) vs Wavelength (nm)

Monochrome ——
Red ——   Green ——   Blue ——
Note: color response includes IR-cut filter (half value 670 nm)
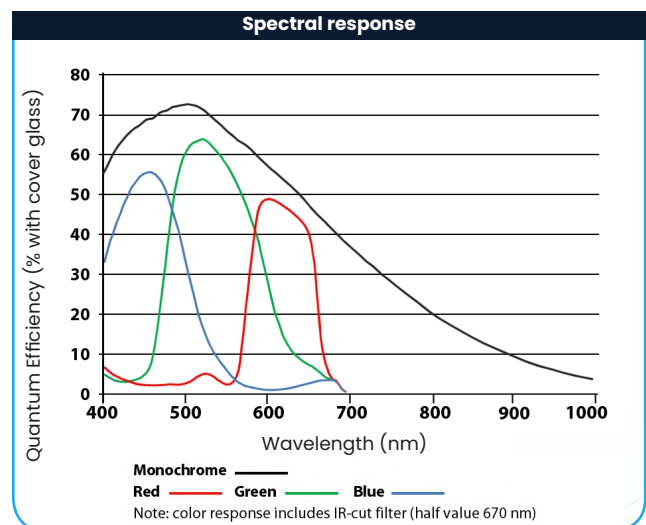
*Traditional SNR is based on random noise in a single frame, where EMVA SNR measuremnts consider more comprehensive noise sources and variance over time. For a more complete description, see the manual.

†12-bit output available in IP Bypass mode. See manual for details.

Product Highlights

- 2.35-megapixel 1/1.2" CMOS imager (global shutter)
- Up to 159 fps at full resolution
- 5.86 μm square pixels
- Small size (29 x 29 x 41.5 mm, excluding lens mount)
- 8/10-bit* output in choice of monochrome or raw Bayer models
- Exposure control from 6 μs to 8 seconds in 1 μs steps
- 2X binning for increased sensitivity (monochrome only)
- Single and multi-ROI modes for flexible windowing and use of smaller optics
- Automatic Level Control (ALC) for dynamic lighting conditions
- Accepts power over USB3 Vision interface or via separate 6-pin connector
- C-mount lens mount

Additional Product Images