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GO-5100M-USB

Technical Datasheet

See the possibilities

IMX250

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:	IMX250	**SHUTTER:**	Global Shutter
FORMAT:	2/3"	**FRAME RATE:**	74 fps
PIXEL SIZE:	3.45 x 3.45 µm	**INTERFACE:**	USB3 Vision (PoUSB)
LENS MOUNT:	C-Mount	**RESOLUTION MP:**	5.1 MP
SPECTRUM:	Monochrome (Visible + NIR)	**RESOLUTION WxH:**	2464 x 2056 px

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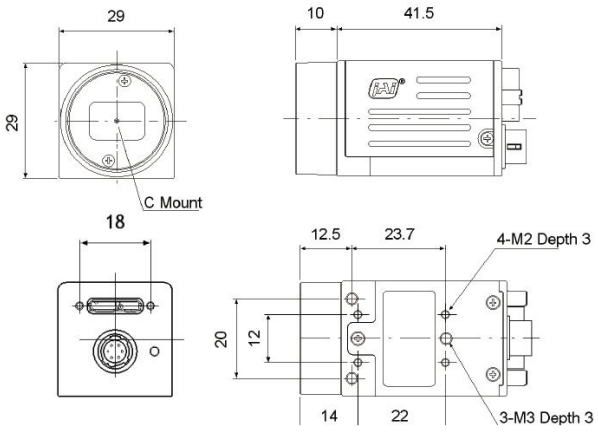
Specifications	GO-5100-USB
Sensor	2/3" CMOS global shutter (IMX250)
System clock	74.25 MHz (for pulse generator)
Frame rate, full frame	74 frames/sec. @ 8-bit
Active area	8.5 mm (h) x 7.09 mm (v), 11.1 mm diagonal
Cell size	3.45 µm x 3.45 µm
Active pixels	2464 (h) x 2056 (v)
Read-out modes	
Full ROI (mono)	2464 (h) x 2056 (v) up to 74 fps H: 16 to 2464 pixels in 16 pixel steps V: 1 to 2056 lines in 1 line steps
ROI (color)	H: 16 to 2464 pixels in 16 pixel steps V: 2 to 2056 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 3.65 p (λ = 525 nm) 4.10 p (λ = 525 nm) 40.34 dB 40.21 dB
Traditional SNR*	>60 dB (0 dB gain, 10-bit)
Video signal output	8/10/12-bit monochrome
Video modes	Normal, Single ROI, Multi ROI, Sequencer, Delayed Readout
Gain	Manual/auto 0 dB to +24 dB
Gamma	0.45 to 1.0 (9 steps)
Shading correction	Flat shading
Blemish compensation	256 pixels
256 pixels	Opto In (1), Pulse Generator, Software, NAND Out (2), Action (2)
Exposure modes	Timed/EPS, Trigger Width, Auto
Electronic shutter	Timed: 14.7 µs to 8 sec. in 1 µs steps Trigger Width: 14.7 µs to ∞ sec. in 1 µs steps
Auto Level Control (ALC)	Shutter range from 100 µs to 13.427 ms, gain range from 0 dB to +24 dB. Tracking speeds and max. values adjustable.
Pre-processing functions	Polarization angle, polarization ratio, polarized light only, diffused light only, average light, pseudo color over monochrome, pseudo color over gray image
Operating temp. (ambient)	-5°C to +45°C (20 to 80% non-condensing)**
Storage temp. (ambient)	-25°C to +60°C (20 to 80% non condensing)
Vibration	10G (20 Hz to 200 Hz, XYZ directions)
Shock	80G
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%. 4.2 W typical @ +12 V Bus power: 4.35 W typical @ +5 V
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-5100M-USB GO-5100C-USB	Monochrome camera with USB3 Vision Color camera with USB3 Vision

*Traditional SNR is based on random noise in a single frame, where EMVA SNR measurements consider more comprehensive noise sources and variance over time. For a more complete description, see the manual.

†12-bit output available in video processing bypass mode. See manual for details.

Dimensions



Outside size tolerance ± 0.3 mm

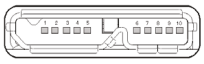
Connector pin-out

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

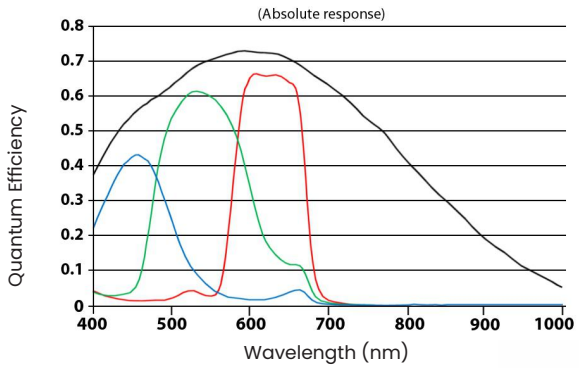
USB 3.0 Interface`



Micro B type - ZX3600-B-10P or equiv.

No	I/O	Name	Note
1	I	VBUS IN	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



Note: color response includes IR-cut filter (half value 670 nm)

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Product Highlights

- 5.1-megapixel 2/3″ CMOS imager (global shutter)
- Up to 74 fps at full resolution
- 3.45 µm square pixels
- Small size (29 x 29 x 41.5 mm, excluding lens mount)
- 8/10-bit output in a choice of monochrome or raw Bayer color
- Exposure control from 7 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