

Specification

N-5A100-Gm/CXP



CoaXPress

Key characteristics

5 Mpx
4.8 μm^2

2592
2048

105+
FPS

CMOS
Global
Shutter

1 inch
Optical
format

<4 W

<29 mm²

56 g

60 dB
DNR

- 5 Megapixel at 105+ fps
- OnSemi PYTHON5k sensor
- True Global Shutter CMOS
- Monochrome only
- Size 29 x 29 x 45 mm
- Dark and bright uniformity corrections
- CXP3/5/6 BNC 1 configurable
- Trigger over CoaXPress
- CoaxPress V1.1.1

Introduction

The N-5A100 camera is a 5 megapixel camera with CMOS global shutter technology in a 1" optical format. For developers of multi-camera systems, such as side-view cameras for 3D metrology, the N-5A100 cameras offer reduced system complexity while increasing throughput.

The frame rate of the N-5A100 cameras is such that it can match with the higher resolution top-view camera, to provide the synchronized acquisition of all cameras to maximize system throughput. By using programmable region of interest the frame rate can be further increased or used to optimize system cost.

The small camera outline enables a compact detection head outline and ensures full mobility in the system. The flexible cables and reduced number of cables via the CoaXPress interface further enhances movability while lowering cabling costs and EMC risks. N-5A100 cameras are designed to work together to simplify easy integration on system level and control the entire camera system through one user interface. Multi-camera systems using N-5A100 cameras eliminate the constraints with Camera Link- and USB 3.0 Vision-based systems.

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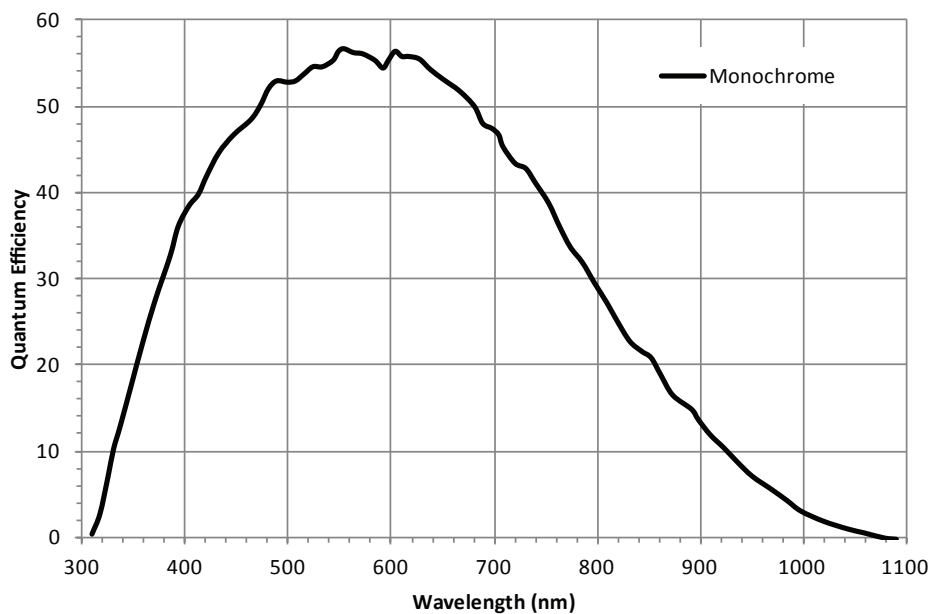
Performance

Type	ON Semiconductor PYTHON5k	
Architecture	CMOS Progressive scan Global shutter (PLS 1/5000)	
Optical format	1" format (Ø 15.8 mm)	
Pixel size	4.8 µm x 4.8 µm	
Active pixels	2592 (H) x 2048 (V)	
Microlenses	Yes	
Dynamic range	60 dB*	58 dB**
Full well	10 ke [*]	11 ke ^{**}
Dark noise	10 e [*]	14 e ^{**}
Sensitivity mono	35 LSB10/nJ/cm ² @ 550 nm	

* Sensor specification

** Typical value

Quantum Efficiency



Functionality

Image acquisition	Continuous - Controlled
Integration time control	Programmable between 41 µs and 100 ms in steps of 1 µs
Gain	Digital fine gain selectable between 1x and 32x in steps of 0.001
Video Processing	User programmable Look Up Table in output stream (10 bit) correction - Horizontal and vertical binning - Cross Hair overlay
Region of interest	Size and position programmable Region of Interest (ROI) – Increased frame speed via ROI – Multiple band ROI readout
Defect pixel correction	On/Off switchable – Readout and editing of defect pixel map – Factory calibrated
Test mode	Internal test pattern generator available for checking of the complete digital image chain
Mirroring	The output can be reversed in the horizontal and vertical direction
Uniformity correction	User calibratable dark field and bright field uniformity correction
Miscellaneous functions	1 factory set and 1 user set for storage of camera settings – Camera type, build state and serial number can be read via software

Interfacing

Video

Video output	CoaXPress V1.1.1 CXP3/5/6 BNC 1 configurable
External Sync	CoaXPress controlled
Output resolution	8 / 10 bit
Connector	BNC (figure 1)

Camera Control Protocol

Interface	GenICam via CoaXPress
Throughput	20Mbps
Protocol	GenTL

I/O

Output	Not applicable
Input	Trigger over CoaXPress
Connector	BNC (CoaXPress, figure 1)

Power

Input voltage	24 Vdc PoCXP
Power dissipation	<4 W @ 24 Vdc full continuous operation at maximal framespeed.
Power connector	BNC (CoaXPress, figure 1)

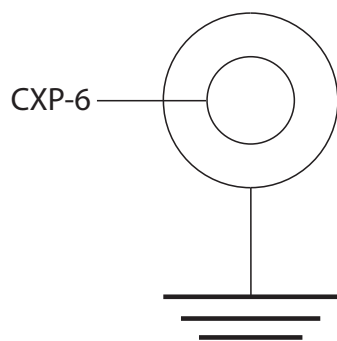


Figure 1: Single CXP BNC

Mechanical

Mounting	3x M3 mounting holes on the two unlabeled sides of the camera
Lensmount	C-mount
Outline	See figure 2
Weight	56 g ± 5 %

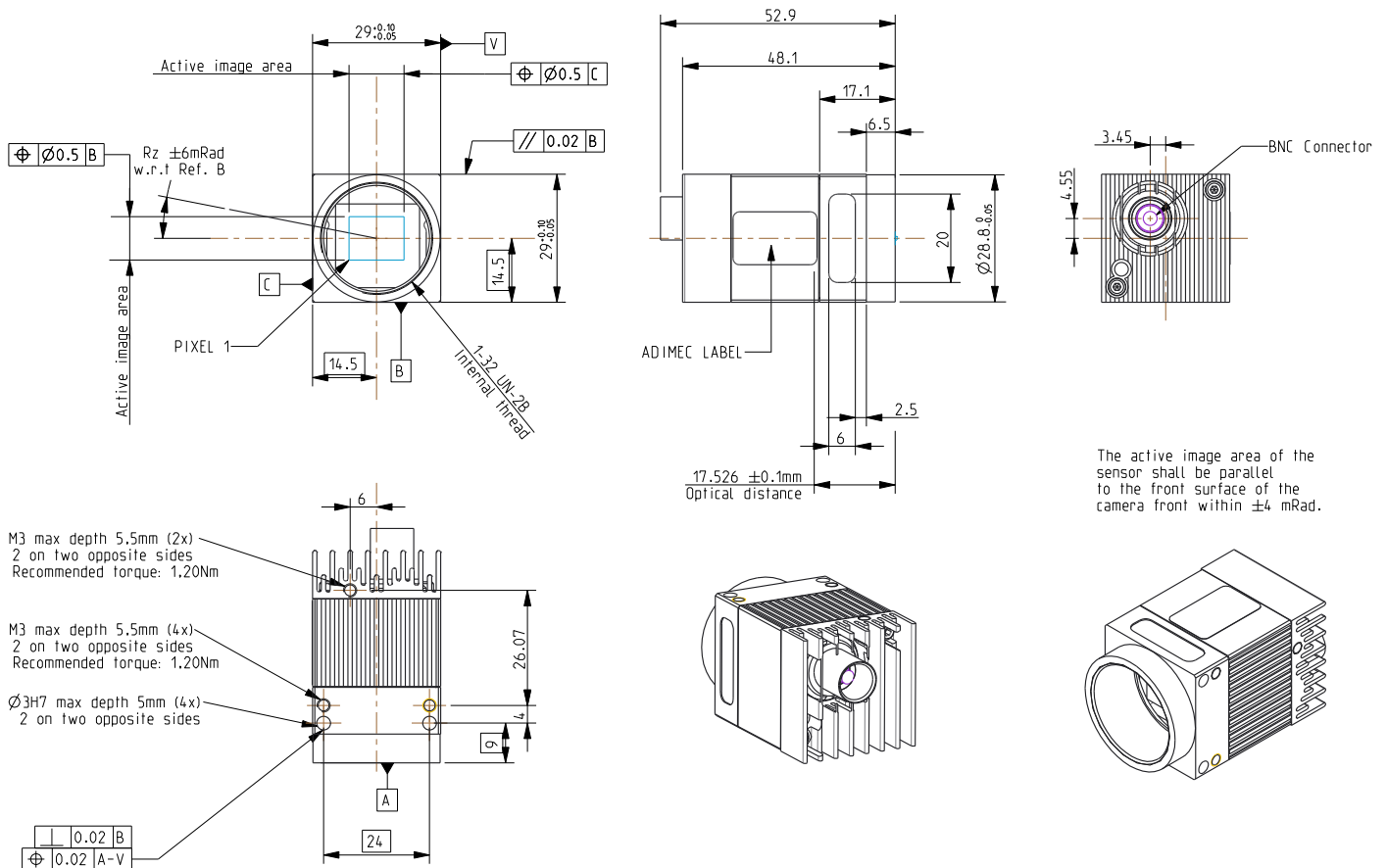


Figure 2: Mechanical outline

Sensor Mounting Accuracy

XY-centering	± 0.1 mm
Rotation	± 6 mRad
Optical distance	17.526 ± 0.1 mm
Perpendicularity	± 4 mRad

Compliance & Reliability

RoHS

Directive	2011/65/EU
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CE-mark

Electromagnetic compatibility	2014/30/EU: EN61000-6-4 and EN61000-6-2
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ESD	Contact discharge +/- 4 kV; Air discharge +/- 8 kV
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Workmanship	In accordance with IPC-J-STD-001 class 2 and inspected according IPC-A-610 class 2
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Reliability

MTBF	> 75,000h @ 30°C
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Multi Camera Metrology Solution

Environmental

Operating

Temperature	-10 °C to +30 °C
Humidity (relative)	20 % to 75 %
Shock	35 g, half sine shape, 1 ms duration
Vibration	0 - 15 Hz sinusoidal: 9 g, 0 - 2000 Hz random: 8.4 g rms X, 8.6 g rms Y, 12.6 g rms Z

Storage

Temperature	-10 °C to +70 °C
Humidity (relative)	≤ 90 %
Shock	35 g, half sine shape, 1 ms duration
Vibration	0 - 15 Hz sinusoidal: 9 g, 0 - 2000 Hz random: 8.4 g rms X, 8.6 g rms Y, 12.6 g rms Z

Camera Types

	Interface connector	I/O connector	Sensor	Type	Max. fps @ Full resolution
N-5A100-Gm/CXP-6	1 x BNC	Not applicable	NOIPxSN5000A-LTI	Mono	105+ fps

Adimec

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