ACUROS® CQD® 640 GigE SWIR Camera

ACUROS-0640-GigE-001



The ACUROS CQD SWIR cameras are sensitive to wavelengths from 400 nm to 1700 nm and feature up to 1920 x 1080 resolution with 15 μm pixels to enable high performance at the lowest cost. The camera features low noise, highly stable performance, and up to 10 dB higher SNR compared to the competition's 5 μm pixel InGaAs cameras. It supports a range of applications, including industrial inspection, military intelligence, and advanced research, offering versatility and outstanding image quality for both low-cost and high-performance applications.

Please see the ACUROS eSWIR product line for expanded sensitivity capabilities from 400 nm to 2000 nm.

SPECIFICATIONS

Table 1. ELECTRO-OPTICAL SPECIFICATIONS

Parameter	Value/Description
Sensor	ACUROS CQD sensor
Temperature Stabilization	Single-stage thermo-electric cooler
Sensor Array Format	640 x 512
Resolution	0.33 MP (megapixel)
Spectral Band	400–1700 nm
Array Size	9.6 mm x 7.7 mm, 12.3 mm diagonal
Pixel Pitch	15 μm x 15 μm
Max Frame Rate at Full Resolution	270 fps (8 bit), 180 fps (10, 12, 14 bit)
Pixel Operability	99.9% typical, 99.75% min
Bit Depth	8, 10, 12, 14 bit selectable
Integration Type	Snapshot global shutter
Trigger	External TTL
Integration Time	100 μs to 4 s
Dynamic Range	70 dB typical
Windowing & Windowing Frame Rate	Array centered. Scales inversely to window size
Laser Beam Fringeless Operation	No (See ACUROS laser series cameras)
Binning Arrays	2 x 2, 4 x 4
Non-uniformity Correction	2-point non-uniformity correction
Temporal Dark Noise	80/70/65 e^- typical
Quantum Efficiency	See typical QE curve (Figure 4)

ORDERING INFORMATION

Part Number
ACUROS-0640-GigE-001

Features

- VGA Resolution
- TEC Cooling
- Low Noise
- Fast Frame Rate
- Visible-SWIR
- GigE Vision

Applications

- Machine Vision
- Silicon Inspection
- Automotive
- Fill-level
- Surveillance
- Hyperspectral
- Chemical Sensors
- Agricultural
- Medical Imaging
- Thermography

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Table 2. ENVIRONMENTAL & POWER SPECIFICATIONS, TYPICAL PERFORMANCE

Parameter	Value/Description
Operating Case Temperature	−20 °C to +55 °C
Power Consumption	6.5−12 W depending on TEC settings
Power Supply Voltage	6−16 V dc. POE not supported
Regulatory Compliance	CE mark

Table 3. MECHANICAL SPECIFICATIONS

Parameter	Value/Description
Dimensions Excluding Lens	6.1 x 6.1 x 10.9 cm (C-mount)
Weight Excluding Lens	600 grams with C-mount adapter
Lens Mounts	C, M42 (C-mount flange-back distance)
Power Connector	Hirose 12-pin, HR10A-10R-12PB (71)
Trigger Connector	BNC

Table 4. SOFTWARE AND USER INTERFACE

Parameter	Value/Description
Software Development Kit	Windows GUI
GenICam Compliance	Yes
Interface	GigE Vision

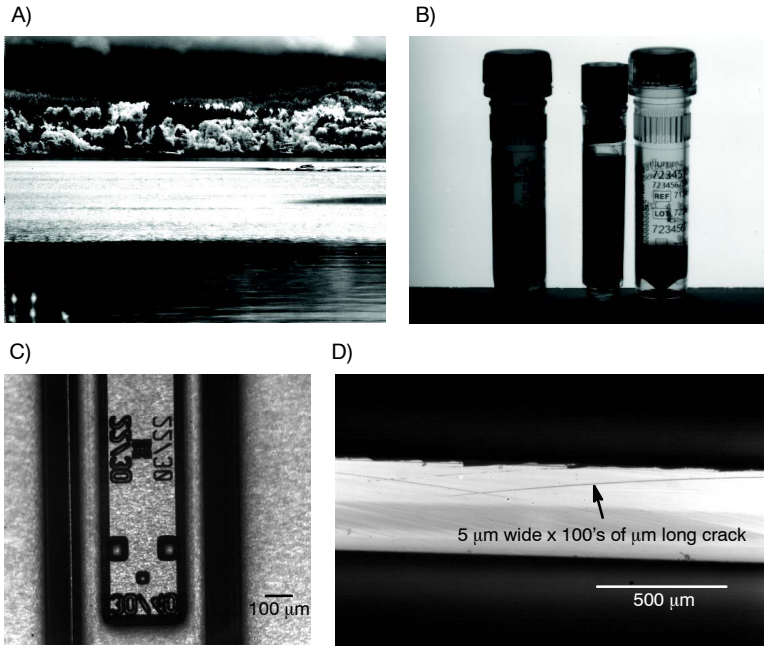


Figure 1. C-mount and M-42 Lens Mounts



Figure 2. GigE Vision Interface

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A) ACUROS 640: imaging through maritime rain event
B) ACUROS 640: imaging through pharmaceutical vial labels
C) ACUROS 1280: alignment mark in bonded wafers
D) ACUROS 1920: mag image of semiconductor chip edge

Figure 3. ACUROS CQD SWIR Camera Images

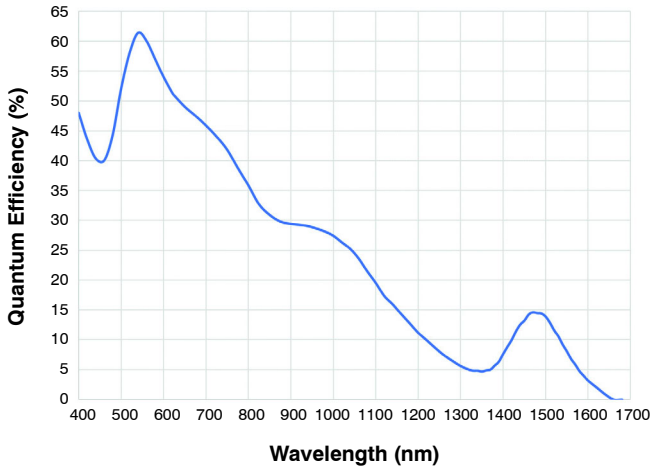


Figure 4. Typical QE Performance

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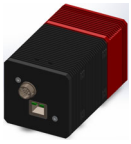
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REVISION HISTORY

Revision	Description of Changes	Date
2	Removed “eBUS SDK” from Software Development Kit due to change in licensing.	3/13/2026

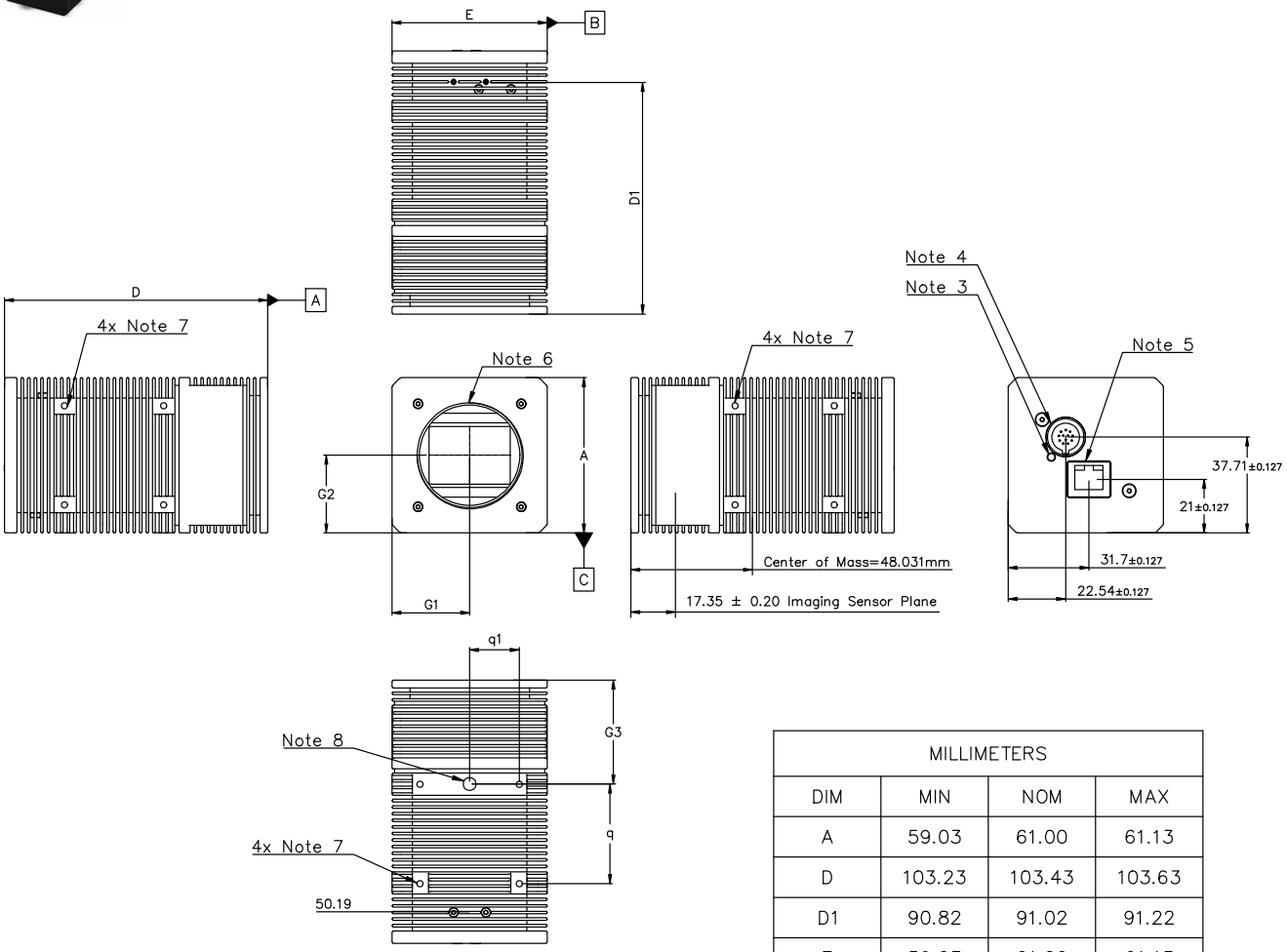
This document has undergone updates prior to the inclusion of this revision history table. The changes tracked here only reflect updates made on the noted approval dates.

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CASE 810AA
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DATE 12 SEP 2025



MILLIMETERS			
DIM	MIN	NOM	MAX
A	59.03	61.00	61.13
D	103.23	103.43	103.63
D1	90.82	91.02	91.22
E	59.03	61.00	61.13
G1	30.37	30.50	30.63
G2	30.37	30.50	30.63
G3	40.70	40.83	40.96
q	38.98	39.11	39.24
q1	19.37	19.50	19.63

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M. 2018.
2. CONTROLLING DIMENSION: MILLIMETER
3. POWER INDICATOR
4. HIROSE 12 PIN CONNECTOR
5. GigE CONNECTOR
6. M42 MOUNT DEPTH ↧ 9.8
7. M3X0.5 DEPTH ↧ 3.0
8. 1/4−20 UNC DEPTH ↧ 5.08

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