# onsemi

## ACUROS<sup>®</sup> CQD<sup>®</sup> 640 USB3 eSWIR Camera

## ACUROS-0640-USB3-002

The ACUROS CQD extended SWIR (eSWIR) cameras have sensitivity from 400 nm to 2000 nm. This novel, wide bandwidth capability opens up new applications for chemical sensing, surveillance imaging, plastic sorting, and more. Acuros eSWIR cameras have unmatched SNR without the need for expensive cooling systems.

#### 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	400–2000 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, 10, 12, 14 bit)			
Pixel Operability	99.9% typical, 99.75% min			
Bit Depth	8, 10, 12 bit selectable			
Integration Type	Snapshot global shutter			
Trigger	External TTL			
Integration Time	100 μs to 4 s			
Dynamic Range	65 dB typical			
Windowing & Windowing Frame Rate	Array centered. Scales inversely to window size			
Binning Arrays	2 x 2, 4 x 4			
Non-uniformity Correction	2-point non-uniformity correction			
Temporal Dark Noise	80/70/65 e <sup>-</sup> typical			
Detectivity	See typical detectivity curve (Figure 4)			



#### **ORDERING INFORMATION**

Part Number ACUROS-0640-USB3-002

#### Features

- VGA Resolution
- TEC Cooling
- Low Noise
- Fast Frame Rate
- Visible-eSWIR
- USB3 Vision

#### Applications

- Hydrocarbon Detection
- Chemical Sensing
- Medical Imaging
- Plastic Sorting
- Hyperspectral
- High Resolution
- Thermal Imaging
- Surveillance
- Machine Vision
- Silicon Inspection
- Instrumentation

### ACUROS-0640-USB3-002

#### 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	
Regulatory Compliance	CE mark	

#### Table 3. MECHANICAL SPECIFICATIONS

Parameter	Value/Description	
Dimensions Excluding Lens	6.1 x 6.1 x 9.7 cm (C-mount)	
Weight Excluding Lens	590 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 & Pleora eBUS SDK (Linux, Windows, macOS)	
GenICam Compliance	Yes	
Interface	USB3 Vision	

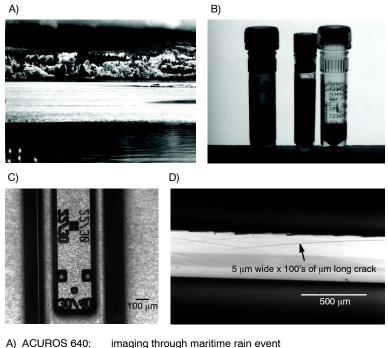


Figure 1. C-mount and M-42 Lens Mounts



Figure 2. USB3 Vision Interface

#### ACUROS-0640-USB3-002



imaging through maritime rain event
imaging through pharmaceutical vial labels
alignment mark in bonded wafers
mag image of semiconductor chip edge



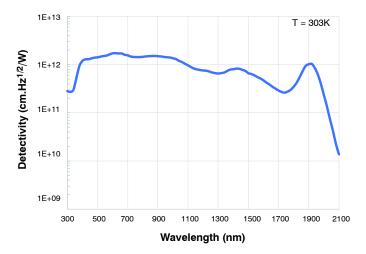
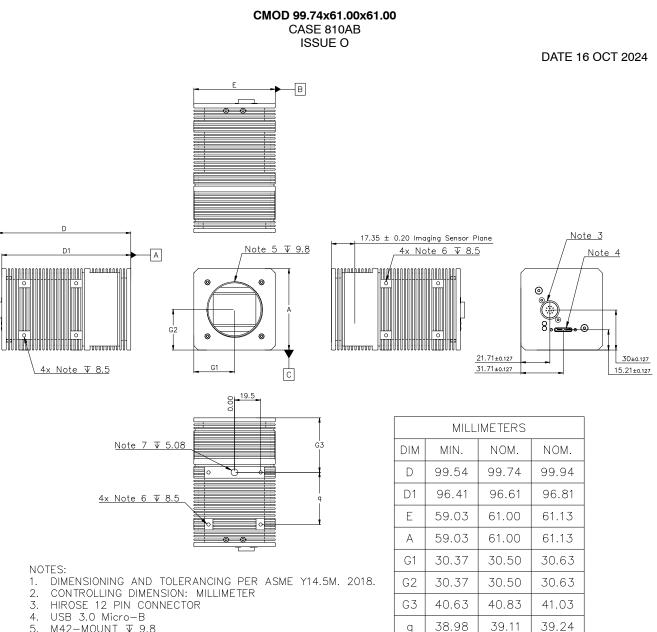


Figure 4. Typical Detectivity Performance

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- 5. M42-MOUNT ▼ 9.8
- 6. M3X0.5 DEPTH ▼ 8.5
- 7. 1/4-20 UNC DEPTH ▼ 5.08

2018.	D1	96.41	96.61	96.81
	E	59.03	61.00	61.13
	А	59.03	61.00	61.13
	G1	30.37	30.50	30.63
	G2	30.37	30.50	30.63
	G3	40.63	40.83	41.03
	q	38.98	39.11	39.24
	q1	19.37	19.50	19.63

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