

NIRvana® 640 InGaAs SWIR CAMERA

For low-light NIR and SWIR imaging and spectroscopy

KEY FEATURES

- Unmatched signal-to-noise ratio for SWIR/NIR-II
- 900-1700 nm SWIR/NIR-II sensitivity with InGaAs
- Ultra-low dark current <40 e⁻
- Industry-leading ultra-deep cooling without liquid nitrogen
- Hermetically sealed vacuum with lifetime guarantee
- Optimized for long exposures over 10 minutes
- Cold shielding to minimize scene noise
- Large 20 µm pixel for sensitivity
- High dynamic range with <600,000 e⁻ full well capacity
- Unrivalled scientific reputation with over 10 publications in *Nature* since 2017

TYPICAL APPLICATIONS

- *In vivo* imaging
- Deep tissue imaging
- Imaging and spectroscopy of nanomaterials
- Sunspot imaging
- Singlet oxygen imaging
- Quantum dot imaging
- SWIR/NIR-II probe testing

RELIABILITY

- Three-year warranty
- Lifetime vacuum guarantee

SWIR for Science

The NIRvana 640 InGaAs SWIR camera will let you see the unseen, offering incredible sensitivity in the short-wave infrared (SWIR) region from 950 nm to 1700 nm, ensuring you can collect every photon you can, and matching your challenging SWIR samples!

The biggest barrier to sensitive, low-light SWIR imaging is dark current. Thanks to sustained deep cooling, the NIRvana 640 offers an incredibly low dark current of only 40 e⁻/p/s, enabling long exposures. Along with its low noise, the NIRvana 640 features a high >85% peak QE, large 20 µm pixels, and a proprietary cold shield, resulting in a highly sensitive InGaAs camera with proven scientific performance.



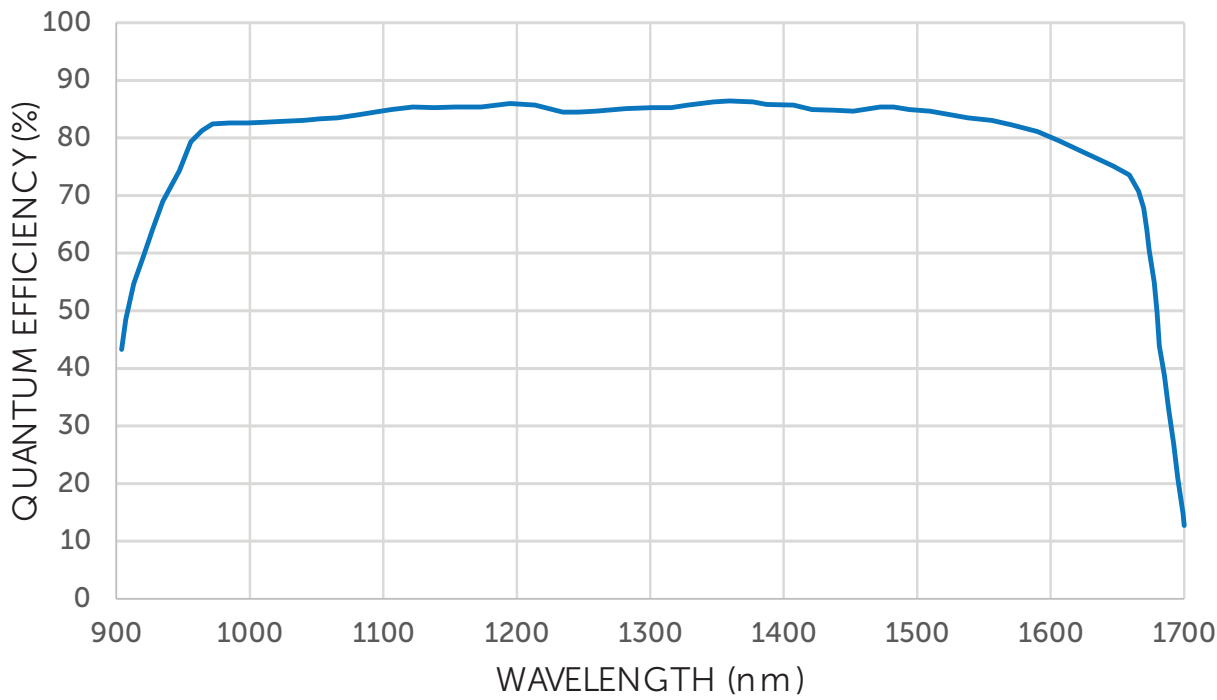
NIRvana 640 SPECIFICATIONS

SPECIFICATIONS	Camera Performance
Sensor	2D InGaAs FPA
Blemish Specification	Grade A: < 2% defects
Active Array Size	640 x 512 (0.3 megapixel)
Pixel Area	20 μm x 20 μm (400 μm^2)
Sensor Area	12.8 mm x 10.24 mm (16.39 mm diagonal)
Quantum Efficiency	> 80% from 1000-1600 nm (peak QE 85% at ~1350 nm)
Spectral Response	900 – 1700 nm
Full Well Capacity	45,000 e ⁻ (high gain mode); 600,000 e ⁻ (high capacity mode)
Nominal Gain	1 e ⁻ /count (high capacity mode); 14 e ⁻ /count (high capacity mode)
Typical Read Noise	40 e ⁻ /p/s @ -85 °C (high gain); 150 e ⁻ /p/s @ -80 °C (high capacity)
Response Nonlinearity (for exposures > 20 ms)	< 2% (high gain mode)
Dark Current	40 e ⁻ /p/s @ -85 °C (high gain); 150 e ⁻ /p/s @ -80 °C (high capacity)
Cooling Options	-85 °C air + liquid circulation (high gain); -80 °C air only (high capacity)
Thermostating Precision	±0.05 °C across entire temperature range
Cold Shield	f#/1.5; Light cone angle θ = 20°C
Optical Mount	C-Mount, Spectrometer Mount
Output Interface	GigE
Digitization	16-bit
Binning and ROI Options	Software only
Shutter	Global shutter
Exposure Time Range	< 2 μs to 10 minutes
Window Material	Fused silica (AR coated)
Operating Temperature Range	0 °C to 30 °C
Camera Weight	9.5 lbs, 4.3 kg
Camera Dimensions	187.96 x 147.32 x 147.32 mm (L x W x D)
Certification	CE

NIRvana 640 SPEED TABLES

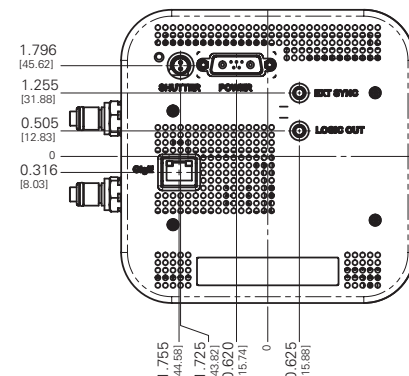
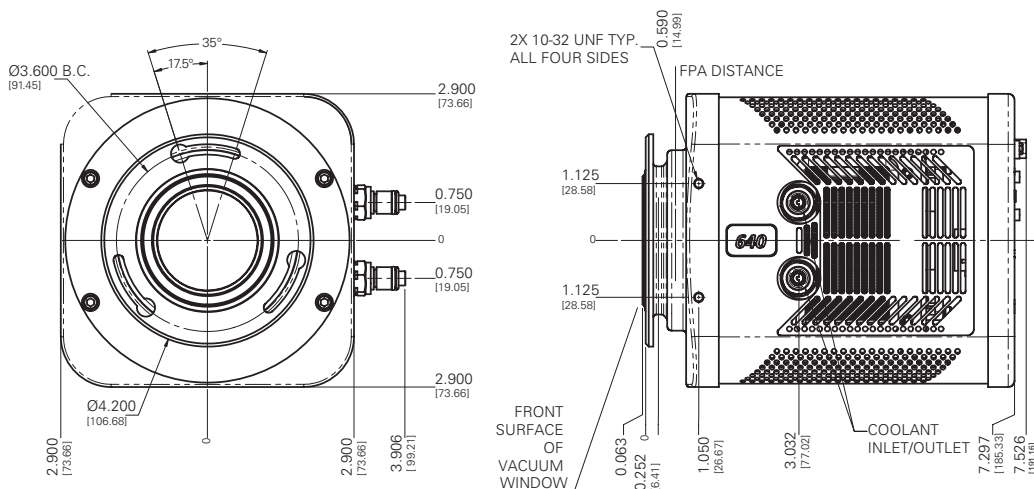
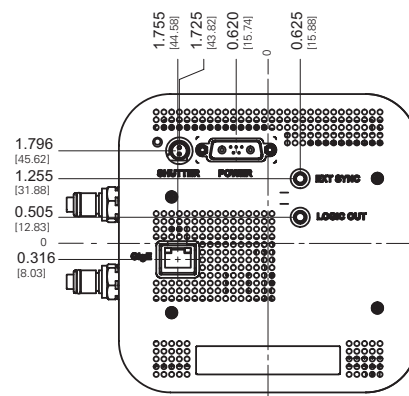
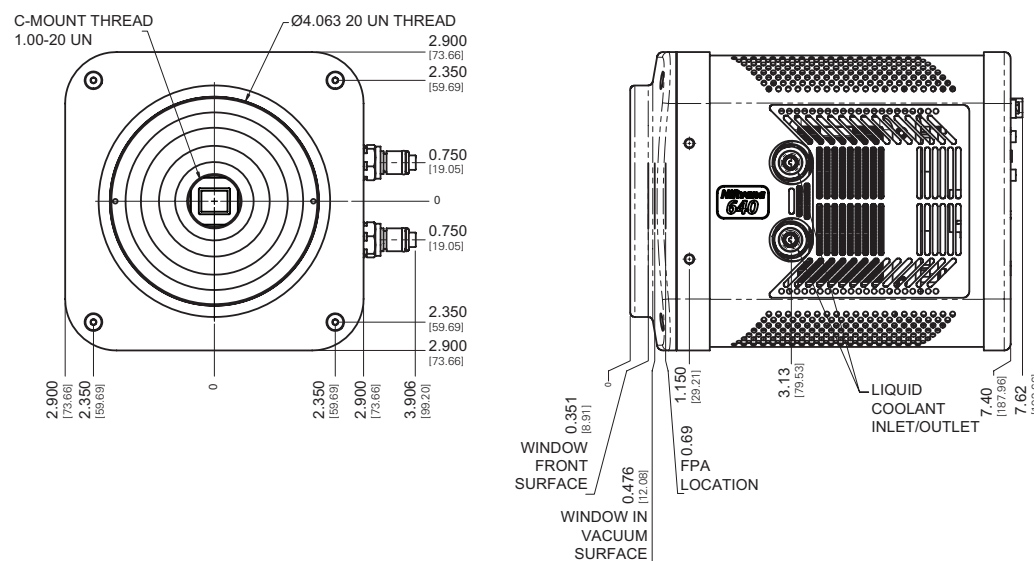
Camera Scan Rates			
Specifications	10 MHx	5 MHx	2 MHx
Frame Rate	110 fps	55 fps	22 fps

NIRvana 640 QE CURVE



NIRVANA 640 ACCESSORIES

ACCESSORIES (Included)	ACCESSORIES (Optional)
GigE Data Cable	Additional optical adapters
Power Supply (12V/10A DC)	
PICAM drivers/software	
Quick start guide	
Performance and gain test data	

NIRVANA 640 (C-MOUNT ADAPTER) DIMENSIONAL OUTLINES (Unit: mm)

NIRVANA 640 (SPECTROMETER ADAPTER) DIMENSIONAL OUTLINES (Unit: mm)

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Specifications in this datasheet are subject to change.
 Refer to the Teledyne Princeton Instruments website for most current specifications.

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