TELEDYNE FLIR

Neutrino LC - ISR 20-420

Neutrino SX8 – ISR 15-300

Neutrino SX12 – ISR 1200

NEUTRINO® GROUND ISR SERIES

MWIR Detector Module + CZ Lens + Advanced Camera Electronics

Made in the USA, and ITAR-free, the Neutrino Ground ISR series provides turnkey solutions for integrators developing intelligence, surveillance, and reconnaissance (ISR) systems. The cameras combine Teledyne FLIR's world-class mid-wavelength infrared (MWIR) camera modules and continuous zoom (CZ) lenses with market-leading image processing and control electronics from InVeo Designs LLC. Each camera offers high-performance imaging, a reliable long-life linear cooler, and a low switching cost to upgrade existing systems. The factory-integrated and optimized MWIR imaging systems from a single source provide market-leading performance while reducing development risk, cost, and time to market.

They incorporate multiple focal plane array (FPA) resolutions and CZ lens options, all with the same industry standard image processing and interface electronics, allowing for differing detection recognition and identification (DRI) requirements and affordability. With three configurations today and several more coming soon, Neutrino provides the imaging performance required for short-, mid-, and long-range ISR, perimeter surveillance, border surveillance, and counter-UAS (CUAS) applications.

All Neutrino Ground ISR cameras are upgradable in 2024 to run Teledyne FLIR's Prism™ AI detection, tracking, and classification models and image signal processing (ISP) libraries for super-resolution, turbulence mitigation, contrast enhancement, and more.

DRIVES HIGH SYSTEM-LEVEL PERFORMANCE

The right focal lengths, MWIR HD or SD cameras with long-life linear coolers and fully integrated CZ optics maximize DRI while providing best-in-class MTTF and warranty.

- MWIR VGA (640x512) or SXGA (1280x1024) pixel sensors provide optimal thermal sensitivity
- Optimized through-zoom focus and boresight retention enable superior autofocus and focus to range
- Upgrade in 2024 with Teledyne FLIR's AI models and ISP libraries
- Near diffraction-limited performance over range with image quality optimized from -40 °C to 71 °C

DESIGNED FOR INTEGRATORS

Industry-adopted AgileCore™ imaging electronics with integrated MWIR camera and CZ lens offer optimum performance and compatibility.

- Industry standard camera and lens control interface by InVeo Designs LLC
- Common camera interfaces with 30Hz Camera Link or Gigabit Ethernet and 1080P30 HD-SDI,720P60 HD-SDI, NTSC or PAL video
- Comprehensive integration documentation
- Dedicated application engineering and technical support team

TELEDYNE FLIR QUALITY, VALUE, AND REPUTATION

The performance, reliability, and support expected from Teledyne FLIR and the industry's most versatile HD MWIR camera portfolio.

- Long-life Linear Stirling cooler with a mean time to failure (MTTF) >27,000 hours
- Industrial-leading 2-year warranty from a single source
- Fully vertically integrated CZ lenses developed by Teledyne FLIR, formerly New England Optical Systems
- Made in the USA and classified under US Department of Commerce jurisdiction as EAR 6A003.b.4.a

For more information visit:
www.flir.com/neutrino

www.teledyneflir.com

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Overview	Neutrino LC - ISR 20-420	Neutrino SX8 – ISR 15-300	Neutrino SX12 - ISR1200
Size (L x W x H)	Length: 20.3 cm (8") Lens Diameter: 8.9cm (3.5")	Length: 20.3 cm (8") Lens Diameter: 9.65 cm (3.8")	Length: 63.75 cm (25.1") Lens Diameter: 29 cm (11.4")
Weight	1.2 kg (2.65 lb)	1.5 kg (3.31 lb)	14.51 kg (32 lb)
Spectral Band	3.4 to 5.1 µm Standard	3.4 to 5.1 µm Standard	3.4 to 5.0 µm
Resolution	640 x 512 Pixels	1280 x 1024 Pixels	1280 x 1024 Pixels
Pixel Pitch	15 µm	8 µm	12 µm
Lens Specifications			
Lens Type	21x Continuous Zoom Maintain Focus Through Zoom	20x Continuous Zoom Maintain Focus Through Zoom	10x Continuous Zoom Maintain Focus Through Zoom
Focal Length	20-420 mm, HFOV 27.50° to 1.30°	15-300 mm, HFOV 39.1° to 2.0°	120-1200 mm, HFOV 7.2° to 0.72°
Zoom and Focus Controls	Motorized, Zoom to Specified Angle, Preset FOV (Infinity Focus)		
F-number	f/5.5	f/4.0	f/5.0
Focus	Motorized, Focus to Specified Distance, Focus to Infinity, Commanded / Continuous Autofocus		
Shutter	Integrated Shutter for 1-Point Flat Field Correction (FFC)		
Connections & Communications			
Communication	RS-422 UART COM, up to 921,600 Baud		
Dual Simultaneous Outputs	Camera Link (Base) Output (14-bit NUC Corrected at Full Frame Format): 30 Hz, Optional Gigabit Ethernet		
	Display Output Options (10-bit (14 optional) fully processed video) • NTSC • PAL	Display Output Options (10-bit (14 optional) fully processed video) • 720p60 HD-SDI (SMPTE) • 1080p30 HD-SDI (SMPTE)	Display Output Options (10-bit (14 optional) fully processed video) • 720p60 HD-SDI (SMPTE) • 1080p30 HD-SDI (SMPTE)
Electrical & Mechanical			
Input Power	12.5VDC a@ 0.7A nominal, 1.1A peak at cooldown		24VDC @0.8A nominal. 2.2A peak at cooldown, 23 °C
Environmental & Approvals			
Operating Temperature Range	-40 °C to +71 °C (-40 °F to 160 °F)		-30 °C to +70 °C (-22 °F to 158 °F)
Storage Temperature Range	-57 °C to +80 °C (-65 °F to 176 °F)		-50 °C to +85 °C (-58 °F to 185 °F)
Imaging & Optical			
Sensor Material	HOT MWIR		InSb
Cooler	Teledyne FLIR FL-100 Linear Stirling		Cobham Carleton LC1062 Linear Stirling
Cooler MTTF	Up to 27,000 Hours		Up to 25,000 Hours
FPA Full Frame Rate	30 Hz		
Boresight Drift Through Zoom	<0.15 mm		9 Pixels (0.10 mm) + plus alignment tolerance of 10 Pixels
Min to Max Zoom Time	<2 Seconds		4 Seconds
Non Uniformity Correction [NUC]	Factory Calibrations: • Two point (gain/offset) • One-point update (optimizes offset) • Defective / noisy pixel detection • 8 Op Modes with 2 NUC tables each Operational (Run-Time) Calibrations: One-point refresh		

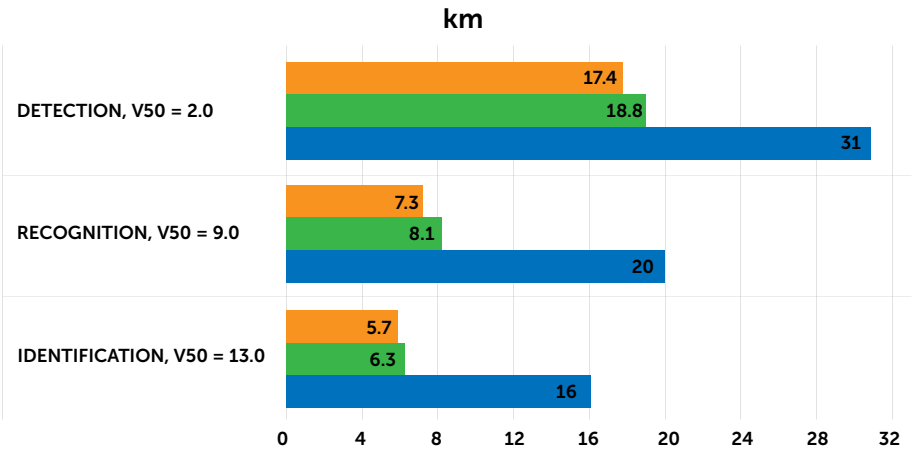
Specifications are subject to change without notice.

Neutrino SX8 - ISR 15-300

Neutrino LC - ISR 20-420

Neutrino SX12 - ISR1200

The detection, recognition, and identification (DRI) probabilities are modeled using the industry-standard NV-IPM passive sensor modeling tool. The NV-IPM model results are for the NFOV zoom position with a target dimension of 3.1 m and temperature of 4.0K. V50 is the range at which there is a 50% probability of achieving the task.



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