NEUTRINO® SWaP SERIES

HOT FPA Technology SWaP+C Optimized MWIR Camera Module

The Neutrino LC and newly-released Neutrino SX8 provide best-in-class MWIR imagery and data in a small, lightweight package. Based on Teledyne FLIR's High Operating Temperature (HOT) FPA technology, SWaP series camera modules are designed for ruggedized products requiring long life, low-power consumption, and quiet, low-vibration operation. Both are ideal for small gimbals and airframes, handheld devices, security cameras, targeting devices, and asset monitoring applications.

- VGA and SXGA formats in comparable SWaP envelope
- ITAR Free
- Linear cooler offers low power & quick cool-down time necessary for handheld devices

The Neutrino SWaP Series is simply the best technical solution available. With nearly off-the-shelf delivery, real price competitiveness and well-known product support and product reliability, it offers the lowest risk solution.

APPLICATIONS

UNMANNED AERIAL SYSTEMS (UAS)

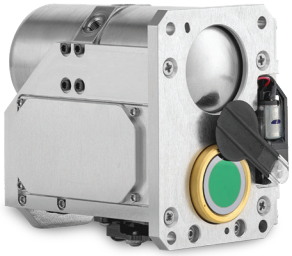
COUNTER-UAS

AIRBORNE INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE (ISR)

GROUND ISR & SECURITY

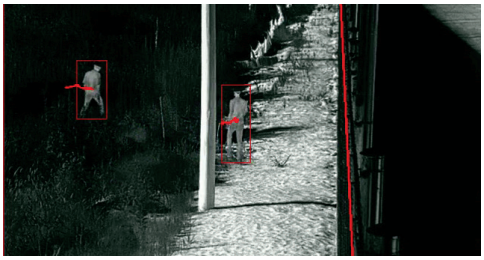
MILITARY DISMOUNT SYSTEMS

TARGETING



Neutrino SX8

Neutrino LC



MULTIPLE RESOLUTION SWaP OPTIMIZED MWIR CAMERA CORES

VGA/15µ and SXGA/8µ High Operating Temperature (HOT) FPA based cameras in comparable SWaP envelope offers low power consumption, rugged construction and a wide operating temperature.

- Low power consumption with <8 or <12W cooldown and <4 or <8 W steady state @23°C
- Rugged construction and wide operational temperature range of -40°C to +71°C
- Quiet and low vibration operation

DESIGNED FOR INTEGRATORS

Small, light, and powerful, the Neutrino SWaP Series camera modules come with common interfaces and support documentation/ accessories to shorten time-to-market and reduce project risk.

- Built-in support for physical and protocol-level industry standards (e.g. USB2)
- Full suite of hardware accessories
- Classified under US Department of Commerce jurisdiction as EAR 6A003.b.4.a

PERFORMANCE, RELIABILITY, AND SUPPORT

Best-in-class image quality, superior SWaP performance, high reliability/lifetime, and Teledyne FLIR's well-known product support.

- Industry's most advanced SWaP+C optimized image processing
- Increased reliability and low-vibration FLIR linear micro-cooler
- Comprehensive product documentation
- Highly qualified Technical Services team available to support integration

For More Information Visit:
www.teledyneflir.com/neutrino

www.teledyneflir.com

05/14/2021 REV1

SPECIFICATIONS BY MODEL

	Neutrino SX8	Neutrino LC
Sensor Technology	HOT MWIR	HOT MWIR
Sensor Size	1280 x 1024, 8µm pitch	640 x 512, 15 µm pitch
Spectral Band	3.4 to ≥ 5.1 µm Standard	3.4 to ≥ 5.1 µm Standard
Senstivity (NEdT)	< 38mK (50% well fill at TBB=30°C flood mode)	< 25 mK (50% well fill at T_{BB}=30°C flood mode)
Frame Rate Options	1-60 Hz, configurable	1-60 Hz, configurable
Time to Image	<5 min @ 23°C ambient (goal)	<4 min @ 23°C ambient
Physical Attributes		
Size (L x W x H)	7.9 x 5.3 x 6.1 cm (3.1 x 2.1 x 2.4 in)	7.4 x 4.6 x 6.1 cm (2.9 x 1.8 x 2.4 in)
f/number	f/4, f/3, & f/2.5 options	f/5.5 Standard, f/4, & f/2.5 options
Cold Aperture Height	19.4 mm from FPA	19.7 mm from FPA (f/5.5) & 19.4 (f/4 & f/2.5)
Weight	<420 grams (<15 oz)	<380 grams (<13.4 oz)
FPA Control		
ROIC	ISC1601	ISC0403
Direct Injections, Snapshot, Progressive	Yes	Yes
Programmable Integration Time	Yes (0.01ms - 16ms) at 60Hz	Yes (0.01 ms – 16 ms) at 60Hz
Well Capacity	2.6 x 10^6 electrons	7 x 10^6 electrons
ROIC Modes	Free Run, Readout Priority, & Integration Priority	Free Run, Readout Priority, & Integration Priority
External Sync	Master or Slave	Master or Slave
Image Processing & Display Controls		
NTSC/PAL	N/A	Yes (accessory board required)
Image Optimization/AGC	Linear, Histogram Equalization, DDE	Linear, Histogram Equalization, DDE
Invert/Revert	Yes	Yes
Color Palettes/LUTs	Yes, RGB888 mode	Yes, RGB888 mode
Symbology	Yes, RGB888 mode	Yes, RGB888 mode
Continuous Zoom	Yes, up to 8x	Yes, up to 8x
Digital Video		
Parallel (24-bit/16-bit/8-bit)	Yes	Yes
Camera Link	Yes	Yes (accessory board required)
USB	Yes	Yes
Interfacing		
Primary Electrical Connector	80-pin SAMTEC, ST4-40-2.50-L-D-P-TR	80-pin Hirose, DF40C-80DS
Input Power	+5.0 VDC Camera, +12 VDC Cryocooler	+3.3 VDC Camera, +12 VDC Cryocooler
Power Dissipation	<12 W cooldown, <8 W steady state @ 23°C	<8 W cooldown, <4 W steady state @ 23°C
Communication	UART (115.2K baud)	USB or UART (921.6k baud)
Discrete I/O Control	Yes, three available	One discrete, custom configurable at factory
User Configurability via SDK & GUI	Yes	Yes
Environmental		
Operating Temperature Range	-40°C to +71°C (-40°F to +160°F)	-40°C to +71°C (-40°F to +160°F)
Non-Operating Temperature Range	-57°C to +80°C (-70.6°F to +176°F)	-54°C to +80°C (-65°F to +176°F)
Operational Altitude	~12 km (40,000 ft)	~12 km (40,000 ft)
Humidity	Non-condensing between 5% – 95%	Non-condensing between 5% – 95%
Vibration	5.8 grams, 3-axis, 1 hr each	5.8 grams, 3-axis, 1 hr each
Shock (goal)	Lateral 190 g @ .55 ms Vertical 320 g @ .55 ms Axial 550 g @ .8 ms (goal)	Lateral 190 g @ .55 ms Vertical 320 g @ .55 ms Axial 550 g @ .8 ms

Specifications are subject to change without notice. For the most up-to-date specs, go to www.teledyneflir.com

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