Dual Band SWIR Security Camera System

Advanced Imaging Technology in Maritime Conditions

Ultimate detection and identification IR Systems. Pairing clarity and detail to your tough imaging requirements. The Dual Band SWIR is Sensors Unlimited's pan/tilt weatherproof system designed for visibility in marine conditions. The camera features a 640 x 512 pixel, high-sensitivity,TEC stabilized InGaAs snapshot imager and utilizes Sensors Unlimited's enhancement algorithms to produce highest quality imagery especially under challenging weather conditions. The camera provides real-time daylight to low-light 24 hour imaging in the Short Wave Infrared (SWIR) wavelength spectrum for persistent surveillance, penetration through light fog, dust, smoke, and for man-overboard/search and rescue applications. On-board Automatic Gain Control (AGC) is used to address the varied gain in the challenges of day to night imaging. The compact size and low power components enable easy integration into deck, platform and mast mounted surveillance systems. Standard electronic video and control interfaces allow integration into most security and surveillance systems. A joystick and keyboard remote interface can also be used to steer the camera onto targets or other areas of interest.

APPLICATIONS

- Low-light to daytime imaging
- Surveillance with 24 hr/7 day operation
- Imaging through atmospheric obscurants
- Search and Rescue
- Collision Avoidance / Docking

SWIR CAMERA

- 640 x 512 pixel format, 25 µm pitch
- 30 fps
- Partial moonlight to day time imaging
- All solid-state InGaAs imager
- f/1.4 50mm 18.2˚ x 14.6˚ FOV

LWIR CAMERA

- 320 x 240 pixel format, 17 µm pitch
- 60 fps
- VOX Microbolometer, thermal detection

PAN/TILT UNIT

- Environmental Enclosure: Sealed, IP-66 rated
- Sunlight Viewable LCD w/Stand
- Pan range/speed: 360˚ continuous / 0.25˚ – 96˚/sec
- Tilt Range/speed: ±90/ 0.25˚ – 96˚/sec
- Built in heater
- Pressurized: Nitrogen purged at 2.5psi / Td -40˚C.
- Housings: Aluminum
- Hardware: Stainless Steel

UTC Aerospace Systems

Model No: Dual Band SWIR PT

CAMERA & ELECTRICAL SPECIFICATIONS

	SWIR	LWIR
Detector Type	InGaAs	Uncooled VOx Microbolometer
Camera: Pixel Pitch	25 µm	17 µm
Focal Plane Array Format	640 x 512 pixels	320 x 240 pixels
Optical Fill Factor	100 %	
Spectral Response	Standard, 0.9 µm to 1.7 µm	8-14 um
Quantum Efficiency	Standard, > 65 % from 1 µm to 1.6 µm	Sensitivity (NEdT) @ f/1.0 <50 mK
Noise Equivalent Irradiance[1]	< 2.1 x 10^8 photons/cm^2 • s (typical)	
Noise (RMS)[1]	< 40 electrons (typical)	
Dynamic Range[1]	1000:1 (high gain) 3500:1 (low gain)	
Non-Uniformity Corrections	non-uniformity corrections 2 point	1 point with shutters through lens
Operability[2]	> 99 %	
Analog Output Frame Rate	Buffered EIA 170 compatible video (30 fps)	NTSC 60fps
Polarity Control	BH/WH	BH/WH
Digital Zoom	2x	3x - 10x
Lens System	50 mm f/1.4, 18.2 x 14.6°	75 mm f/1.2, 40 x 30° a thermalized
Range Performance		Man - Det. / Rec.370 m / 70 m Vehicle - Det. / Rec. 930 m / 180 m

MECHANICAL

Model	PT/SWIR 640HSX
Dimensions (width x height x depth) (includes double cam option)	7.1 x 9.98 x 3.93 inches 180.4 x 253.6 x 353.8 m)
Weight	less than 22 lbs. (10 kg) with dual cameras
Communication	Analog Video, RS232, Ethernet
Presets	32 Preset Positions

ENVIRONMENTAL & POWER

Operating Temperature	-40°C to 50°C; heated at below 1°C
Storage Temperature	-54°C to 85°C
Environmental	Enclosure O-ring seals and pressurizable (5 psi max)
Heaters	Camera housing heater(s) (thermostatically controlled)
Hardware/Wiring	Stainless hardware and concealed wiring

[1] λ = 1.55 µm, exposure time = 33 ms, case temperature = 20°C, highest sensitivity gain setting, no lens, x1 digital gain with enhancement, AGC, and correction off.

[2] The fraction of pixels with responsivity deviation between +/- 35 % from the mean.

*Data in this note is pre-release and subject to change and verification.

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