



Multi-Sensor Surveillance System

Advanced Imaging Technology in Maritime Conditions

Ultimate detection and identification IR Systems. Pairing clarity and detail to your tough imaging requirements. The Multi-Sensor Surveillance System is 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 total darkness 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, 12.5 μ m pitch
- 30 fps
- Partial moonlight to day time imaging
- All solid-state InGaAs imager
- f/1.4 75mm 6.1° x 4.9° FOV

LWIR CAMERA

- 640 x 480 pixel format, 17 μ m pitch
- 30 fps
- VOX Microbolometer, thermal detection
- f/1.2 50mm

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: \pm 90/ 0.25° – 96°/sec
- Built in heater
- Pressurized: Nitrogen purged / Td -40°C.
- Housings: Aluminum
- Hardware: Stainless Steel



P R E L I M I N A R Y

| CAMERA & ELECTRICAL SPECIFICATIONS | | |
|------------------------------------|--|------------------------------------|
| | SWIR | LWIR |
| Detector Type | InGaAs | Uncooled VOx Microbolometer |
| Camera: Pixel Pitch | 12.5 μm | 17 μm |
| Focal Plane Array Format | 640 x 512 pixels | 640 x 480 pixels |
| Optical Fill Factor | 100 % | |
| Spectral Response | 0.9 μm to 1.7 μm | 7.5 - 13.5 μm |
| Quantum Efficiency | 65 % from 1 μm to 1.6 μm | |
| Sensitivity | 0.95×10^9 photons/cm ² · s | @ f/1.0 < 50 mK NE Δ T |
| Noise (RMS)¹ | 35 electrons | |
| Dynamic Range¹ | 500:1 (high gain) 950:1 (low gain) | |
| Non-Uniformity Corrections | non-uniformity corrections 2 point | 1 point with shutters through lens |
| Operability² | > 99 % | |
| Analog Output Frame Rate | NTSC compatible 30fps | NTSC compatible 30fps |
| Polarity Control | | BH/WH |
| Digital Zoom | | 2x, 4x, 8x |
| Lens System | 75 mm f/1.4, 6.1 x 4.9° | 50 mm f/1.2, 40 x 30° athermalized |

| MECHANICAL | |
|---|---|
| Model | MRDB |
| Dimensions (width x height x depth) (includes double cam option) | 14.5 x 10.5 x 7 inches 368 x 267 x 178mm |
| Weight | less than 22 lbs. (10 kg) with dual cameras |
| Communication | Analog Video, RS232, Ethernet |

| ENVIRONMENTAL & POWER | |
|------------------------------|--|
| Operating Temperature | -40°C to 80°C; heated at below 1°C |
| Storage Temperature | -55°C to 95°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 $\lambda = 1.55 \mu\text{m}$, exposure time = 33 ms, case temperature = 20°C, highest sensitivity gain setting, no lens, x1 digital gain with enhancement, AGC, and correction off.

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

