

Our platform-flexible Multi-Modal Sensor Pod (MMSP) houses three sensor capabilities in one compact pod:

- Wide-Area Motion Imagery
- Wide-Area Hyperspectral
- High-Resolution Inspection

By combining these three sensor modalities, operators can access multi-layered correlated information, in real time, without requiring additional mission payloads or adversely impacting airborne endurance.

- DEFENSE
- LAW ENFORCEMENT
- BORDER SECURITY

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Multi-Modal Sensor Pod

WIDE-AREA MOTION IMAGERY, HYPERSPECTRAL, AND INSPECTION SENSING FROM ONE COMPACT POD



▶ PAYLOAD SIZE, WEIGHT, AND POWER

- Pod Size:
- Pod Weight:
- Pod Power:
- GCS Size:
- 43 in L x 27 in W x 27 in H (110 cm x 70 cm x 70 cm) < 250 lbs (115 kg)

Large-format camera with custom fore optic

63 in L x 16 in W x 19 in H (160 cm x 40 cm x 48 cm)

- GCS Weight:
- GCS Power:

WIDE-AREA MOTION IMAGERY (WAMI) PERFORMANCE

< 100 lbs (45 kg)

< 600 W

 $< 1 \, \text{kW}$

- Collection Sensor:
- Pointing and Stabilization: Low SWaP, two-axis gimbal
- Areas of Coverage: 2.2 sq km at 5,000 ft (1,500 m) AGL
 - 8.7 sq km at 10,000 ft (3,000 m) AGL
- Image Refresh Rate: 2 Hz
- GSDs:
- 0.2 m at 5,000 ft (1,500 m) AGL
- 0.4 m at 10,000 ft (3,000 m) AGL
- EO silicon sensor with custom electronics
- > 50 Mpx EO focal plane array

WIDE-AREA HYPER-SPECTRAL IMAGERY (HSI) PERFORMANCE

- Collection Sensor:
- Coverage Rate:
 - te: >150 sq km/hour at 10,000 ft (3,000 m) AGL 1.0 m at 5,000 ft (1,500 m) AGL
- GSDs:
- 2.0 m at 10,000 ft (3,000 m) AGL

fore optic

- VIS-SWIR InGaAs sensor
- Array Size:
- Spectrograph:

Collection Sensor:

• Coverage Rate:

Camera Type:

• Array Size:

• GSDs:

• Camera Type:

HIGH-RESOLUTION INSPECTION SENSOR (IS) PERFORMANCE

640 x 480 VIS-SWIR focal plane array

f/2.4 Offner imaging spectrometer

Ultra-high-definition camera with integrated fore optic and splitter

Single-slit spectrometer with VIS-SWIR camera and custom

- > 150 sq km/hour at 10,000 ft (3,000 m) AGL
- 5 cm at 5,000 ft (1,500 m) AGL
- 10 cm at 10,000 ft (3,000 m) AGL
- CMOS silicon sensor
- 12 Mpx EO focal plane array

- Camera Type: EO silico
- Array Size:

Multi-Modal Sensor Pod

EMBEDDED PROCESSOR SYSTEM PERFORMANCE

- Cross-sensor Cueing:
- WAMI Image Streams:
- WAMI Tracks. Watchboxes, Alerts:
- HSI Detections and Identifications:
- HSI-Derived Images:
- IS Images:
- IS Multiplexed Image Streams:
- Imagery Transmission:

Auto-cueing (tasking) of IS via WAMI alerts and HSI detections

Unique streaming video windows (up to 10 depending on datalink bandwidth) Over full scene

Real-time anomaly/signature detections (compared to onboard library)

- Pseudo-color images for HSI detected items of interest
- High-resolution images for WAMI and HSI auto-cued items/locations of interest Multiplexed motion videos for multiple user-defined locations
- Onboard, control centers, mobile devices Provided over internally, fully integrated datalink Onboard Data Archive: Configured for > 4 hrs, expandable to 8 hrs

MMSP SENSOR ATTRIBUTES AND AUTONOMOUS TASKING

Wide-Area Motion Imagery (WAMI) Sensor

- Persistent wide-area (city-sized) imagery collection and recording
- Full situational awareness
- Detection of all significant movers simultaneously
- Tracking of all significant movers simultaneously
- Multiple windows to view and analyze multiple events and locations simultaneously
- Real-time forensic analysis of multiple events

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HSI discovers item of interest Tasks WAMI for forensic analysis

WAMI forensics uncovers unknown relationships



Inspection Sensor (IS)

- High-resolution monochrome image collection and recording
- Images of multiple areas of interest across a wide area

Wide-Area Hyperspectral Imagery (HSI) Sensor

- Imagery, with continuous spectral content, of multiple locations across a wide area
- Spectral range: 500 1700 nm
- Real-time comparison to onboard library of spectra of interest for item discovery/ classification
- Processing of up to 1 million spectra per second (with \geq 130 bands per spectra)
- Immediate differentiation between "similar-looking" items

