MASI600

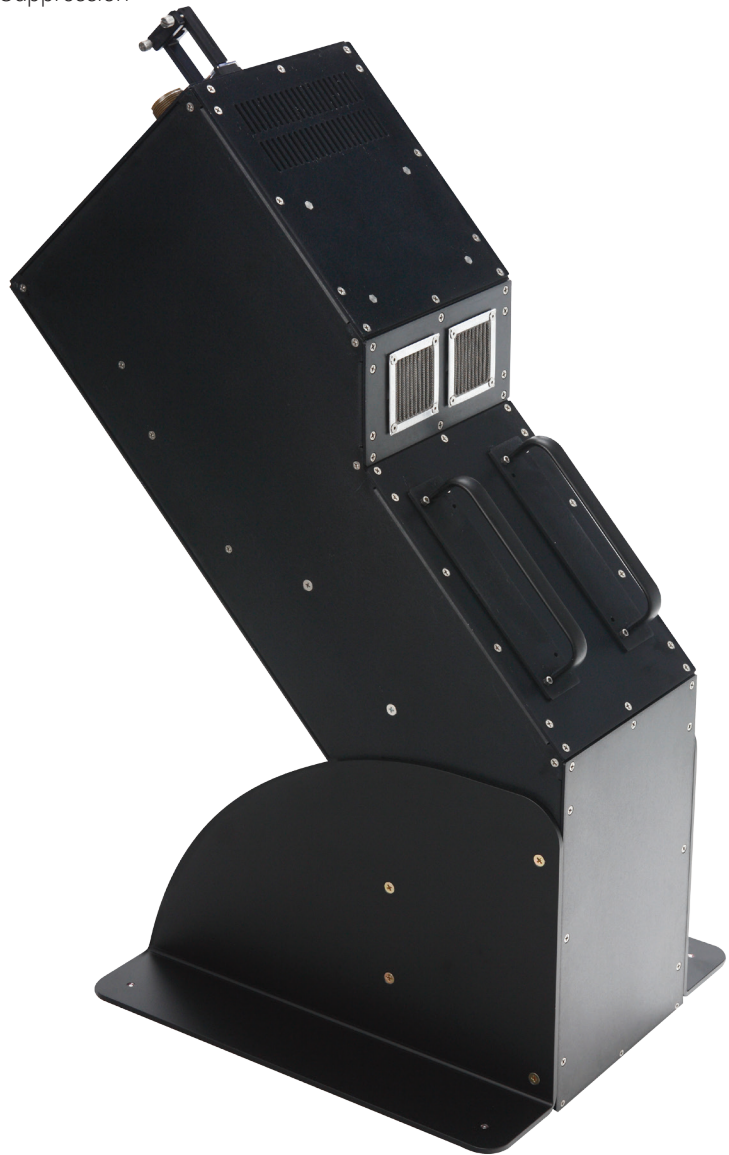Airborne Hyperspectral MWIR Imager (3-5 microns)

64 Spectral Channels

40° FOV

High Signal-to-Noise Ratio

Internally Cooled Array - High SNR with Electronic Noise Suppression

Custom diffraction-limited, high-performance optics[1]

itres

HYPERSPECTRAL & THERMAL REMOTE SENSING

[1]Diffraction-limited optics ensure that every pixel is a spatially independent sample with no smearing. This gives users optimal image quality and focus.

MASI600

Biochemical Gas Detection / Invasive Species / Surface Landmine Detection / Unexploded Ordnance / Pipeline Leakage / Mineral Composition / Structural Geology / Oil Slick Mapping

SENSOR TYPE

MWIR Pushbroom Sensor
(Midwave IR Airborne Spectrographic Imager)

PERFORMANCE

Spectral Range (Continuous Coverage)	3.0-5.0 microns
# Spectral Channels	64
# Spatial Pixels	640
Total Field of View	40 degrees
IFOV	1.14 milliradians
f/#	f/2
Spectral Resolution (FWHM)	32 nm (approx)
Dynamic Range	14-bits (16384:1)
Frame Rate	60 frames per second
Spectral Smile/ Keystone Distortion	<0.35 pixels
Peak Signal to Noise Ratio	SNR models for various radiance conditions are available.

DIMENSIONS, WEIGHTS, AND POWER

ITEM	W / H / D (CM) / WT. (KG)
SHU	18.3 / 73.4 / 37.9 / 19.6
ICU	48.3 / 17.8 / 52.3 / 16
15" Display	42.3 / 32.2 / 10.3 / 10
Power	24-32 VDC 8A (Typical)

ENVIRONMENTAL CONSTRAINTS

Operating Temperature	Ambient 0 to +35°C (+32 to +104°F) RH 20-80% non-condensing
Maximum Altitude	3,048m (10,000 ft) ASL (unpressurized, non-condensing environment)
Storage Temperature	Optimum -20 to +60°C (-4 to +120°F) RH 10-90% non-condensing

OPERATION

Display	15" sunlight readable, 1024x768 resolution. High altitude display available.
Operator Control	Via keyboard, Windows™ OS
Real-Time Display	Scene Image, automated sensor health diagnostics, signal level display
Remote Diagnostics	Ethernet-ready remote diagnostic capability on ICU
Data Storage	Swappable mass storage
Multiple Sensor Operation	Up to 5 ITRES imagers may be simultaneously operated via MuSIC™ System

DATA PROCESSING SYSTEM

- Processing software Linux or Windows-based
- Playback software (Quicklook)
- Generates 16-32 bit BIP format data compatible with ENVI (BIL, BSQ formats possible)
- ASCII format ancillary QC data output — clocking, attitude, logging, GPS, and sensor health monitoring information
- Outputs diagnostic information
- Selectable band output

GEOCORRECTION SYSTEM

- GPS/IMU integration to POS AV (other systems available)
- Data synchronization (GPS, attitude, and image streams)
- Precision positional accuracy
- After bundle adjustment no need for GCPs
- Stabilized mount option

GEOCORRECTION/ORTHOCORRECTION/MOSAICKING SOFTWARE

- Best nadir pixel selection function during mosaicking
- Accepts Lidar, Ifsar, and USGS DEM inputs
- Nearest neighbor algorithm used — maintains radiometric fidelity
- Separately stores ancillary data (e.g. pointing vector, DEM)

MOSAIC HOURLY COVERAGE

Real-world operational assumptions: 35% sidelap, 3.5 minute turns, zig-zag flight direction, 60 Hz frame rate. Finer/coarser pixel resolutions possible.

- Up to 42 km^2 at 0.75 m spatial resolution (86 knots)
- Up to 75 km^2 at 1 m spatial resolution (115 knots)

SPATIAL RESOLUTION & FLIGHT ALTITUDE

- Resolutions between 1 m to 3.5 m possible with typical unpressurized aircraft at 110 knots
- 1m Pixel Example: Flight altitude = 2704 ft AGL, Air speed = 110 knots required flight speed is 120 knots

MASI-600 Imagery:
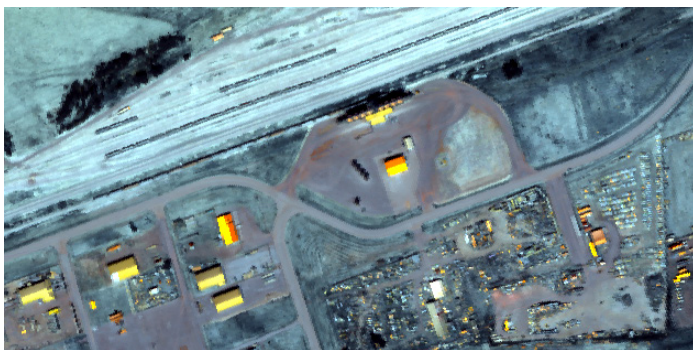
MASI Image, 1m Resolution
Fort Macleod & rail yard
Midwave bands displayed (RGB): R:3578nm (band 19), G:3984nm (band 32), B:4515nm (band 49)