High-Alt

TASI600

Airborne Hyperspectral Thermal Imager (8-11.5 microns)

32 Spectral Channels

40° FOV, 600 Spatial Imaging Pixels

Measure Apparent Emissivity

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.

TASI600

Mineral Composition / Stratigraphy & Structural Geology / Rock Types / Soil Classes / Detection of Metals, Plastics, and other Anthropogenic Materials / Buried Landmine Detection / Oil Slick Mapping / Vulcanology / See "Through" Vegetation and Thin Ground Cover

SENSOR TYPE

TIR Pushbroom Sensor
(Thermal Airborne Spectrographic Imager)

PERFORMANCE

Spectral Range (Continuous Coverage)	8.0-11.5 micron
# Spectral Channels	32
# Across-Track Pixels	600
Total Field of View	40 degrees
IFOV	1.2 milliradians
f/#	f/1.5
Spectral Width Sampling/Row	0.110 microns
Pixel Size	30 x 30 microns
Dynamic Range	14-bits (16384:1)
Frame Rate	Up to 200 frames per second
Data Rate	22.5 Mb/sec
Spectral Smile/ Keystone Distortion	±0.35 pixels
Peak Signal to Noise Ratio	SNR models for various radiance conditions are available

TASI-600 Imagery:
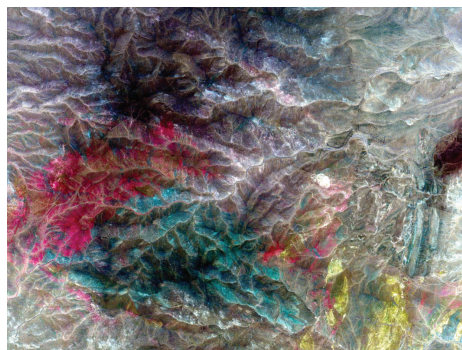
TASI-600 hyperspectral thermal night image, 2m, Yerington, Nevada (R: 9149 nm, G:10354nm B:11449nm)

DIMENSIONS, WEIGHTS, AND POWER

ITEM	W / H / D (CM) / WT. (KG)
SHU	30.0 / 85.0 / 20.0 / 40
ICU	48.3 / 17.8 / 52.3 / 16
15" Display	42.3 / 32.2 / 10.3 / 10
SHU Cable Length	3 metres
Power	24-32 VDC, 7.5A (typical)

ENVIRONMENTAL CONSTRAINTS

Operating Temperature	Ambient 0 to +35°C (+32 to +104°F) RH 20-80% non-condensing
Maximum Altitude	5,485 m (18,000 ft) ASL* (unpressurized, non-condensing)
Storage Temperature	Optimum -20 to +60°C (-4 to +120°F) RH 10-90% non-condensing

* Data quality not guaranteed above 3,048 m (10,000 ft) ASL

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
- Bundle adjustment software (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 40 km² at 0.75 m spatial resolution (86 knots)
- Up to 70 km² 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