

vnir



CASI-550

Airborne Hyperspectral Solutions.



VNIR Imager
Programmable, Up to 288 Bands
40.4 degree FOV, 550 Spatial Pixels
0.4 - 1.0 micron Spectral Range
Cost-Effective Hyperspectral VNIR Imager



CASI-550

Sensor Type

VNIR Pushbroom Sensor (Compact Airborne Spectrographic Imager)

Performance

Spectral Range (Continuous Coverage)	400-1000nm
# Spectral Channels	Up to 288
# Spatial Pixels	550
Total Field of View	40.4 degrees
IFOV	1.34 mRad
f/#	f/2.8
Spectral Width Sampling/Row	1.9nm
Spectral Resolution (FWHM)	2.2nm
Pixel Size	22.5x15 microns
Dynamic Range	14-bits (16384:1)
Burst Data Rate - Mega-pixels/Second	1.25 Mpix/sec
Spectral Smile/Keystone Distortion	±0.8 pixels
Peak Signal to Noise Ratio (SNR)	SNR models for various radiance conditions are available from ITRES

Dimensions, Weights, and Power

Item	Dimensions (cm)	Weight (kg)
SHU	W 25.4 H 31.8 D 14.6	7.2
ICU (Single)	W 48.3 H 17.8 D 52.3	16
15" Display	W 41.0 H 30.9 D 6.52	8
Power (SHU + ICU)	24-32VDC 7.5A (Typical)	

Environmental Constraints

Operating Temperature	Ambient 0 to +35°C (+32 to +104°F) RH 20-80% non-condensing
Maximum Altitude	3,048 m (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.
Operator Control	Via keyboard, Windows™ OS
Real-Time Display	Scene image, diagnostics, signal level display
Remote Diagnostics	Ethernet-ready remote diagnostic capability on ICU
Data Storage	Swappable mass storage

Data Processing System

- Processing software Linux and Windows-based
- Playback software (Quicklook)
- Generates 16-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 processing
- Data synchronization (GPS, attitude, and image streams)
- After bundle adjustment no need for GCPs
- Stabilized mount option

Geocorrection/Orthocorrection 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)

Spatial Resolution & Flight Altitude

- Across-track spatial resolution depends on flight altitude
For example, if 1 m pixels are desired, then flight altitude = 747.4 m AGL
- Along-track pixel dimension depends on frame rate and aircraft speed (frame rate with the CASI depends on the number of bands acquired)
For example, if 1 m pixels are desired and flight speed is 120 knots, 36 spectral bands may be acquired. At 90 knots, 48 bands are possible.