CASI 1500h

Wide-Array Airborne Hyperspectral VNIR Imager (0.38 – 1.05 microns)

- Smaller sensor head with embedded controller
- Programmable, Up to 288 Spectral Channels
- 40° FOV
- High Signal-to-Noise Ratio
- Continuous VNIR – SWIR Coverage with SASI-600
- Custom diffraction-limited, high performance optics

*Diffraction-limited optics ensure that every pixel is a spatially independent sample with no smearing. This gives users optimal image quality and focus.*
CASI®1500h
Same CASI-1500 High Performance, But 50% Smaller1 & Eliminates Separate Instrument Controller

Vegetation Classifications / Invasive Species / Optical Water Quality / Coral Reefs / Wetlands / Forestry / Agriculture / Change Detection / Environmental Impact Assessments / Utility Corridors

**SENSOR TYPE**

VNIR Pushbroom Sensor  
(Compact Airborne Spectrographic Imager)

**PERFORMANCE**

**Spectral Range**  
(Continuous Coverage)  
380-1050nm

**# Spectral Channels**  
Up to 288

**# Across-Track Pixels**  
1500

**Total Field of View**  
40 degrees

**IFOV**  
0.49 milliradians

**f/#**  
f/3.5

**Spectral Width**  
2.4nm

**Sampling/Row**  

**Spectral Resolution (FWHM)**  
<3.5nm

**Pixel Size**  
20x20 microns

**Dynamic Range**  
14-bits (16384:1)

**Frame Rate**  
Up to 333 frames per second

**Data Rate**  
19.2 Mb/sec

**Spectral Smile/Keystone Distortion**  
±0.35 pixels

**Peak Signal to Noise Ratio**  
SNR models for various radiance conditions are available

**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

**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

**Data Storage**  
Swapable 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/MU 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 SOFTWARE**

- Best radii pixel selection function during mosaicking
- Accepts Lidar, f/3.5, 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, integration time flexibility used to optimize for faster aircraft ground speed within typical fixed-wing survey speed range.  
Note that as the CASI is both spectrally and spatially programmable, many other band number/airspeed/pixel resolution combinations are possible.  
Four simple examples (smaller pixel resolutions possible):
- Up to 212 km² at 1.25 m spatial resolution and 144 bands (110 knots)
- Up to 230 km² at 1.0 m spatial resolution and 72 bands (150 knots)
- Up to 248 km² at 1.0 m spatial resolution and 36 bands (162 knots)
- Up to 93 km² at 0.5 m spatial resolution and 48 bands (121 knots)

**SPATIAL RESOLUTION & FLIGHT ALTITUDE**

- Resolutions between 20 cm to 1.5 m possible with typical unpressurized aircraft at 110 knots
- 1m Pixel Example (96 bands):  
  Flight altitude = 6760 ft AGL, air speed = 110 knots

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1by volume

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CASI-1500 Imagery:

CASI-1500 Imagery, Antarctica, 2011. Courtesy collaboration between British Antarctic Survey, DRDC Suffield, & ITRES

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All ITRES sensors are calibrated to traceable standards. Specifications subject to change without notice.