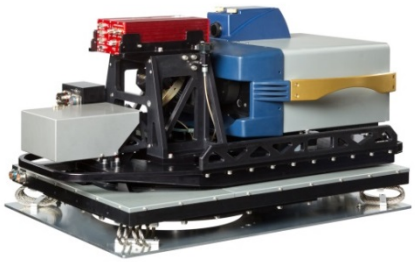
Hyper-Cam Thermal Airborne Hyperspectral Imaging

# Hyper-Cam Airborne

## Hyperspectral Imaging from an Airplane

The Hyper-Cam, a hyperspectral imaging camera, mounted on the Telops' airborne platform, enables the production of hyperspectral maps of an area surveyed from an airplane.



## Features & Benefits

- High sensitivity: Excellent signal-to-noise ratio (SNR) allowing detection of weak signals
- Spectral resolution is flexible and is user-selected to any value up 1 $cm^{-1}$ providing tens to hundreds of spectral bands
- Two (2) acquisition modes: mapping and targeting
- Dual-use for airborne and ground applications (useful for ground truthing)
- Provides georeferenced data
- Visible images acquired simultaneously with IR hyperspectral data
- Compatible with midwave (3-5 µm) and longwave (8-12 µm) Hyper-Cam sensors

## Applications

Acquiring hyperspectral images from an airplane allows to map vast areas and obtain important spectral information. Applications include:

**Target Detection, Identification and Surveillance**

The Hyper-Cam Airborne is ideal for wide area mapping, surveillance or target interrogation due to enhanced resolution and sensitivity.

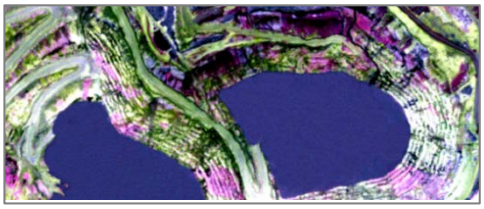
*Surveillance of urban areas*

**Geology, Mining and Oil & Gas Exploration**

Mine face imaging using a Hyper-Cam Airborne allows to map the mineral content of a mine face from a distance and identify mineral concentrations and streaks. Detection of natural gas leaks from the air enables exploration of larger areas.

**Environmental Monitoring**

Hyperspectral data from an airborne configuration allows to detect and identify multiple substances simultaneously. Used to detect pipeline leaks or monitor substances in urban pollution, the Hyper-Cam Airborne is an imperative tool in environmental monitoring.



*Identification of minerals based on their spectral features*

**Agriculture and Vegetation Surveys**

Soil and vegetation characterization can be easily performed on large areas.

| Parameter | Description | Units | Value |
|---|---|---|---|
| **IMAGING CHARACTERISTICS (USING THE HYPER-CAM)** | | | |
| Spectral range | Midwave (MWIR) and longwave (LWIR) | µm | 3-5 and 8-12 |
| Geolocation accuracy | @1000 m altitude with internal GPS | m | 5 (2*) |
| Ground pixel size @1000 m | Standard (6.4° × 5.1°) | m | 0.35 |
| | Using the 0.25× telescope (25° × 20°) | m | 1.4 |
| Aircraft speed | Typical cruising speed | kn | 110 |
| Aircraft altitude from sea level | Maximum operating altitude using unpressurized aircraft | m | 3000 |

*High accuracy option

| | | | |
|---|---|---|---|
| **PHYSICAL CHARACTERISTICS** | | | |
| Mass - Airborne sensing module | Airborne sensing module mass, excluding Hyper-Cam sensor | kg | 77 |
| Dimensions – Airborne sensing module | Airborne sensing module dimensions (length × width × height) | mm × mm × mm (in × in × in) | 953 × 584 × 470 (37.5 × 23 × 18.5) |
| Airborne sensing module footprint | Compatibility with existing aircraft aperture & fixation characteristics of analog airborne visible camera | - | Leica PAV Series |
| Mass-Electronic equipment rack | Electronic equipment rack mass, including all rack mounted components | kg | 68 |
| Dimensions – Equipment rack | Electronic equipment rack dimensions (width × depth × height) | mm × mm × mm (in × in × in) | 591 × 566 × 613 (23.2 × 22.3 × 24.2 |
| Operating Temperature Range | Operating temperature range | °C | 0 - 40 |

| | | | |
|---|---|---|---|
| **ELECTRICAL POWER** | | | |
| Input voltage | Range of input voltages, available from the aircraft under which the Hyper-Cam airborne system can operate | V | 21 – 31 VDC |
| Steady-state power consumption | Typical Airborne module steady-state power consumption, including Hyper-Cam sensor | W | 680 |
| Peak power consumption | Airborne module peak power consumption, including Hyper-Cam sensor | W | 740 |

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