



CORNING

## Airborne Hyperspectral Remote Sensing for Small Manned and Unmanned Aircraft

Miniaturization of Hyperspectral Imaging (HSI) sensors and data acquisition capability enables deployment with low-cost aircraft - manned and unmanned. Powerful software/algorithms enable prompt or even real-time processing of HSI data. Corning provides turnkey imaging and navigation solutions to both government and industry.

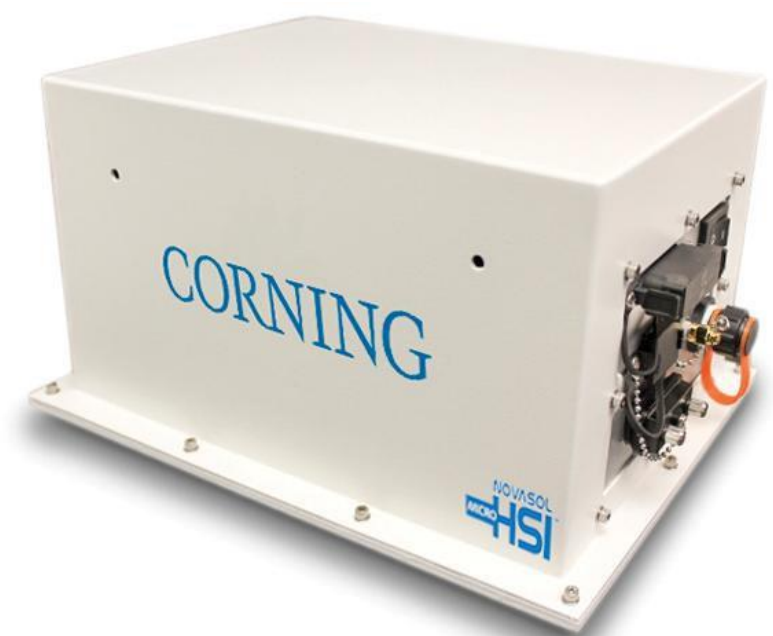
Applications for these systems range from surveillance, tracking, mineral and other natural resource exploration, agriculture, homeland defense, and environmental monitoring to search and rescue, military reconnaissance, and urban planning.

Corning integrates end-to-end systems including custom or standard fore-optics, sensors, navigation/stabilization systems and application software, including a flexible user interface. The HSI system can be configured with any vis-NIR or SWIR high performance HSI sensors, or a combination of multiple sensors, including commercially sourced or customer furnished electro-optic and infrared panchromatic cameras.

Available Spectral Data Processors offer the following capabilities:

- Supervised Matched Filtering
- Anomaly Detection
- Library Matched Filtering
- Change Detection
- Spatial Filtering
- Atmospheric Correction
- Non-uniformity correction and Calibration

Corning offers end-to-end systems providing discriminating capabilities for multi-mission activities in support of defense, security, and environmental monitoring. Our modular approach to sensor system integration and processing allows for customization to a range of applications. Our experienced team is ready to meet the needs of military and commercial projects requiring high performance spectral imaging.



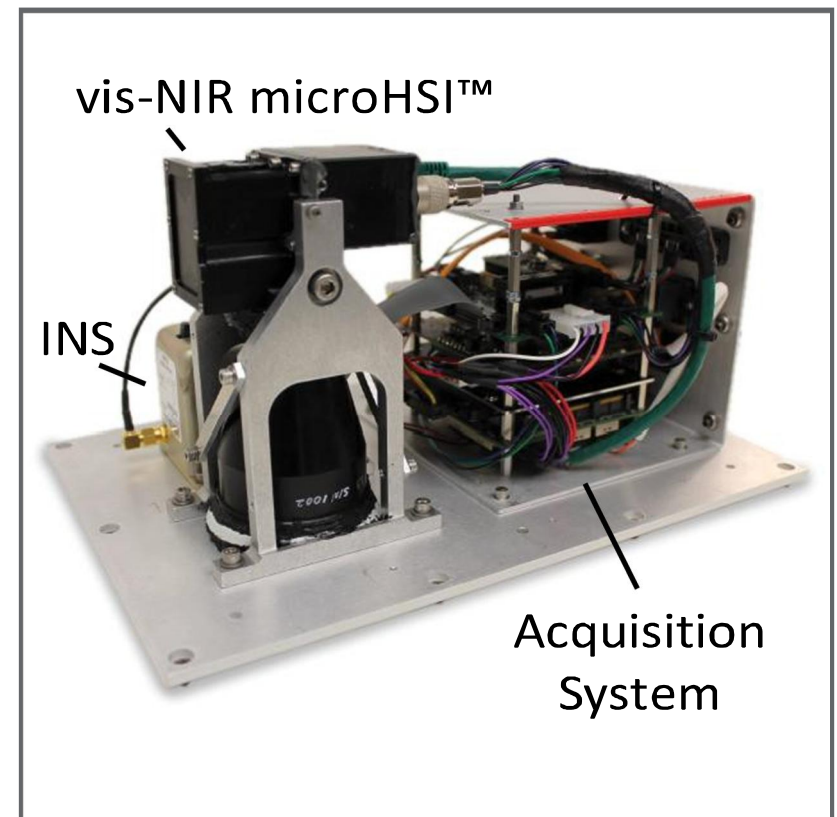
Selectable [Hyperspectral Airborne Remote-sensing Kit \(SHARK\)](#)

# SHARK

Selectable Hyperspectral Airborne Remote-sensing Kit



Corning® microHSI™ Sensor



## What do users of remote-sensing imagery products want?

Surveys conducted by the American Society for Photogrammetry and Remote-Sensing (ASPRS) provide a clear picture of what users of remote-sensing imagery products want.

- High spectral resolution (many spectral bands)
- High spatial resolution
- High temporal resolution - current, up-to-date imagery
- High geolocation accuracy
- High ground area coverage
- All at a reasonable cost

## How do remote-sensing imagery products compare with what users want?

|                           | Satellite<br>(ex. IKONOS II)   | Legacy Airborne Systems<br>(ex. NASA AVIRIS)                          | Miniaturization Enabled Platforms   |  |
|---------------------------|--|---|---|--|
|                           |  |   | Small Single Engine A/C   | Small UAV  |
| Spectral Resolution       | visible - 4 bands  | visible or infrared<br>> 200 bands                                    | visible - 60 bands<br>SWIR - 102 bands  | visible - 60 bands<br>SWIR - 85 bands  |
| Spatial Resolution        | 1 meter (1 band)<br>4 meters (4 bands)   | 4 - 20 meters<br>altitude dependent                                   | 0.5 meter or better   | 0.5 meter or better  |
| Temporal Resolution       | 14 days<br>1-3 days possible<br>off-axis   | significant time<br>overhead for contracting<br>and tasking processes | real-time or near<br>real-time  | real-time or near<br>real-time   |
| Geolocation Accuracy      | > 10 meters  | > 5 meters  | < 2 meters  | < 2 meters   |
| Precise Ground Coverage   | 100 km <sup>2</sup> minimum<br>purchase for new<br>imagery   | reasonable precise<br>coverage with low<br>altitude aircraft          | precisely what<br>is needed   | precisely what is<br>needed  |
| Cost Impact Consideration | 100 km <sup>2</sup> minimum<br>purchase<br>up-charges for timely<br>tasking, geolocation,<br>accuracy, guaranteed<br>minimum, cloud cover,<br>etc. | high hourly cost<br>high minimum charge                               | low aircraft<br>operating cost<br>automated<br>pre-processing reduces<br>analyst cost | very low aircraft<br>operating cost<br>automated<br>pre-processing reduces<br>analyst cost |

## Corning HSI systems are applicable to a wide variety of intelligence and remote-sensing missions:

### Commercial Remote-sensing

- Mineral/Petroleum exploration
- Precision agriculture
- Waste/Recycling management
- Terrain/Vegetation/Urban characterization

### Military-Civil Light Aircraft and UAV Applications

- Search and rescue
- Disaster mitigation
- Environmental assessment and monitoring
- Humanitarian assistance

### Flexible Commercial Terms

- Service
- Lease
- Purchase

Corning HSI systems - providing the best in actionable information for users of imaging products; a world of business opportunities for airborne imaging service providers.

## Corning® Hyperspectral Imaging Products

| Sensor               |   | Spectrum (nm) | Bands           | Frame Rate (Hz) | Swath (pixels) | Weight (kg) | Standard IFOV (μrad) |
|----------------------|---|---------------|-----------------|-----------------|----------------|-------------|----------------------|
| vis-NIR microHSI™    | A | 400 - 800     | 120, 3.3 nm     | 86              | 680            | 0.45        | 385/770              |
|                      | B | 400 - 1000    | 180, 3.3 nm     | 66              | 680            | 0.45        | 385/770              |
|                      | C | 380 - 880     | 150, 3.3 nm     | 76              | 680            | 0.45        | 385/770              |
| alpha-vis microHSI™  | A | 400 - 800     | 40 bands        | 1280            | 1280           | 2.0         | 67                   |
|                      | B | 350 - 1000    | 60 bands        | 800             | 1280           | 2.1         | 67                   |
| SWIR microHSI™ 640   | A | 850 - 1700    | 170 bands, 5 nm | 320             | 640            | 3.5         | 409                  |
|                      | B | 600 - 1700    | 170 bands, 5 nm | 220             | 640            | 3.5         | 409                  |
| SWIR microHSI™ 640C  | A | 850 - 1700    | 170 bands, 5 nm | 95              | 640            | 1.1         | 409                  |
|                      | B | 600 - 1700    | 170 bands, 5 nm | 73              | 640            | 1.1         | 409                  |
| alpha-SWIR microHSI™ | A | 900 - 1700    | 160 bands, 5 nm | > 100           | 640            | 1.1         | 250                  |
| extra-SWIR microHSI™ | A | 964 - 2500    | 256 bands, 6 nm | > 100           | 320            | 2.6         | 492                  |

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For more information, visit our website:  
[www.corning.com/advanced-optics](http://www.corning.com/advanced-optics)

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