

## Headwall’s completely integrated light-weight VNIR hyperspectral sensor for small UAV applications includes on-board data-processing/storage and GPS/IMU

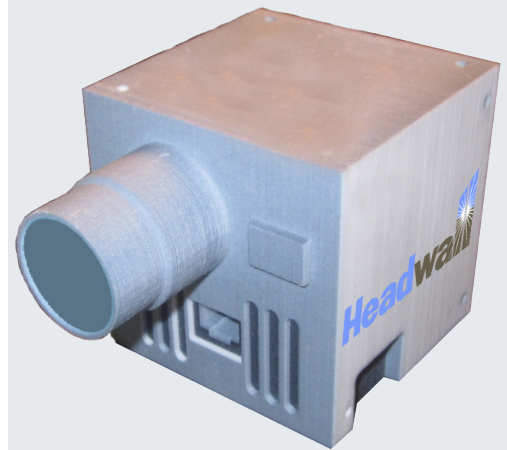
Today’s UAVs are exceptionally small and light and they demand payloads to match. Headwall’s new Nano-Hyperspec® is a completely integrated hyperspectral sensor that is designed for the VNIR (400-1000nm) spectral range. A key advantage of Nano-Hyperspec® is that it also includes integrated data collection and storage and attached GPS/IMU functionality. This allows the payload bay of the UAV to be optimized for other needs such as video or thermal imaging. Weight and space is saved, making for a more efficient airborne solution.

Headwall’s hyperspectral sensors all use our concentric imager design that features aberration correction technology. Outstanding spatial and spectral resolution, a wide field of view, and high SNR are benefits that set Headwall apart in the field of airborne hyperspectral imaging. A wide field of view with aberration correction means that swath widths are maximized and flight time is minimized. By integrating everything in one package, Headwall’s airborne solution helps save battery life allowing for more time aloft gathering data.

The integrated data-collection system has a Gig-E connection that permits quick and easy off-loading of HSI data between flights while synchronized GPS/INS data collection allows for orthorectification during post-processing.

For each hyperspectral sensor, Headwall uses its own *all-original* diffraction gratings for outstanding optical performance. Benefits include high signal-to-noise and low stray light in a small-form-factor instrument with no moving parts. This means a high degree of robustness and environmental stability...key requirements of any airborne solution.

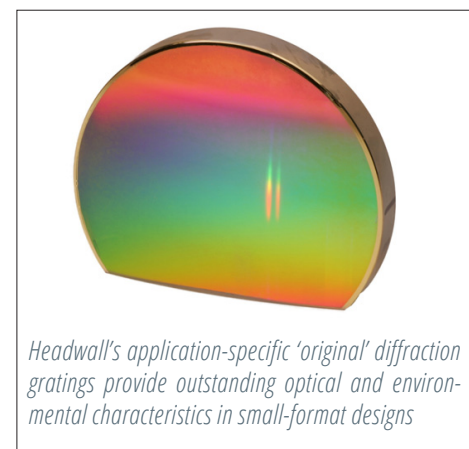
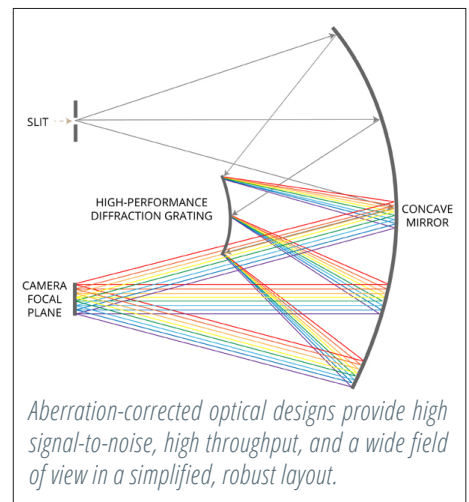
Weight	< 1.5 lb
Wavelength range	400-1000nm
Spatial Bands	640
Spectral Bands	270
Spectral resolution	2-3nm



### Application-Specific Solutions For Critical Environments

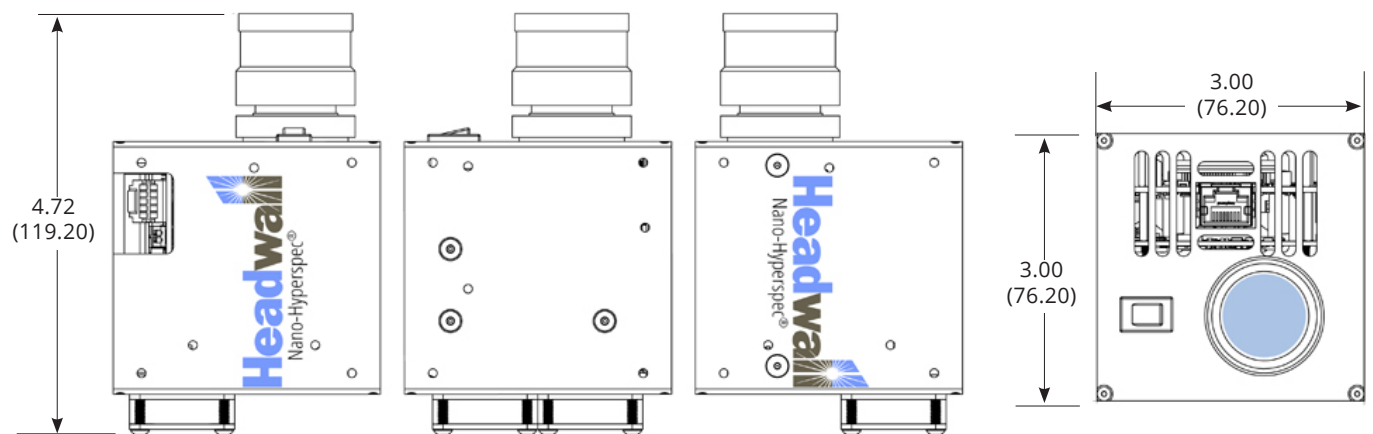
# Nano-Hyperspec® Specifications

Wavelength range (nm)	400-1000
Spatial bands	640
Spectral bands	270
Spectral resolution (nm)	2-3
Integrated 2 <sup>nd</sup> order filter	Yes
f/#	2.5
Layout	Aberration-corrected concentric imager
Slit width (µm)	20
Lens	17mm
Full field-of-view (FOV)	15.9°
Per-pixel FOV	0.025°
Camera technology	CMOS
Bit depth	12-bit
Framerate (fps - Full Frame)	> 200
Detector pixel pitch (µm)	7.4
Focal plane array format (pixels)	640 x 480
Power requirements	9-24 VDC ~10W
Storage capacity	480GB (~ 130 minutes at 100 fps)
Size (with lens) (inches)	~ 3.0 x 3.0 x 4.7 (not including GPS)
Total weight	< 1.5 lb.



## Dimensional Information

inches (mm)



**About Headwall Photonics:** Headwall is the leading designer and manufacturer of imaging spectrometers and spectral instrumentation for industrial, commercial, and government markets. Headwall's high performance spectrometers, spectral engines, and holographic diffraction gratings have been selected by OEM and end-user customers around the world for use in critical application environments. As a pioneer in advanced, patented optics technology, Headwall enjoys a market-leading position through the design and manufacture of spectral instrumentation that is customized for application-specific performance.

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