



Data Sheet

NANO-HYPERSPEC®

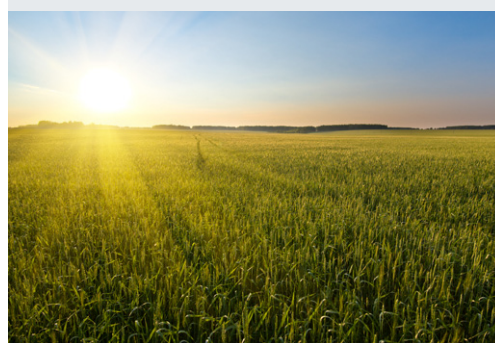
Small, light airborne hyperspectral sensor

Headwall's completely integrated light-weight VNIR hyperspectral sensor for small UAV applications includes onboard data-acquisition/storage

Today's UAVs are exceptionally small and light and demand high performance payloads to match. Headwall's Nano-Hyperspec® is a completely integrated hyperspectral sensor designed for the VNIR (400-1000nm) spectral range. Nano-Hyperspec includes an integrated data acquisition and storage subsystem of 480 GB and direct-attach capabilities for optional GPS/IMU. This allows the payload bay of the UAV to be optimized for extended flight times and endurance. Weight and size are minimized, making Nano-Hyperspec the industry's most efficient airborne sensor solution. A supplemental airborne package is available that contains an advanced GPS/IMU and Headwall's Hyperspec® III software.

Headwall's hyperspectral sensors use a 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. By integrating storage within the sensor package, battery life and flight-swath efficiency are both maximized. Nano-Hyperspec has a Gig-E connection that permits quick and easy off-loading of hyperspectral data. As part of Headwall's optional airborne package, synchronized GPS/IMU data collection allows for orthorectification during post-processing. LiDAR capabilities can also be added to any Nano-Hyperspec application package upon request.

Application-Specific Solutions For Critical Environments

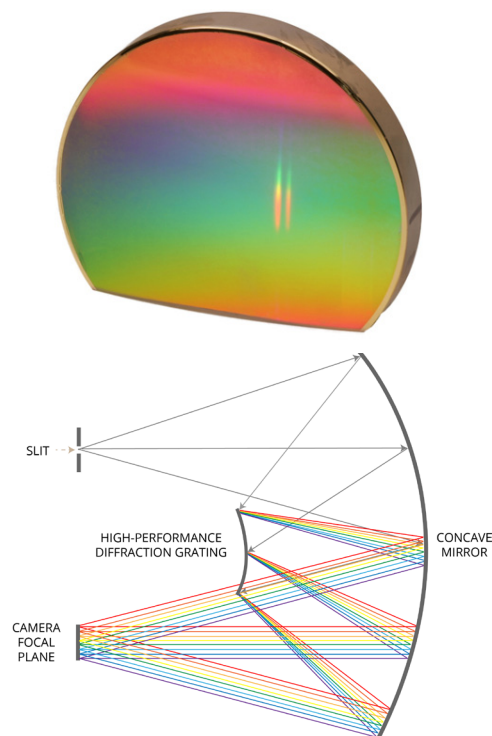


- 640 Spatial Bands
- 270 Spectral bands
- Weight: 1.2 Lb.
- Power: 13W Max.
- Supplemental Airborne Package with GPS/IMU and Hyperspec® III software available

Nano-Hyperspec®

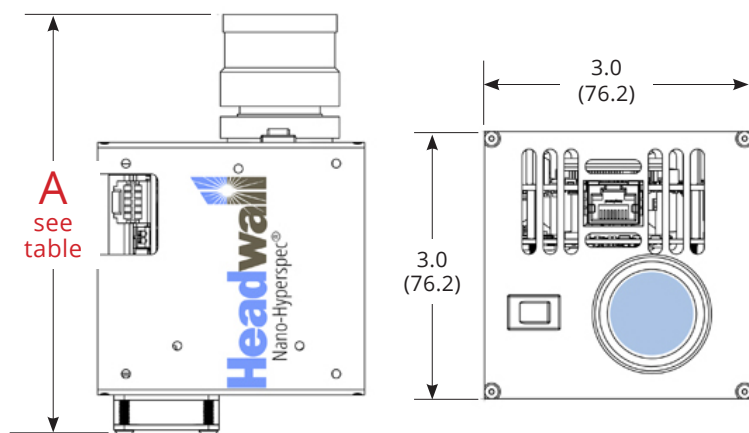
Wavelength range	400-1000 nm
Spatial bands	640
Spectral bands	270
Dispersion/Pixel (nm/pixel)	2.2
FWHM Slit Image	6 nm
Integrated 2 nd order filter	Yes
f/#	2.5
Layout	Aberration-corrected concentric
Entrance Slit width	20 µm
Camera technology	CMOS
Bit depth	12-bit
Max Frame Rate (Hz)	300
Detector pixel pitch	7.4 µm
Max Power (W)	13
Storage capacity	480GB (~130 minutes at 100 fps)
Weight without lens, GPS (lb / kg)	1.2 / 0.5

Headwall's hyperspectral sensors deliver aberration-corrected imaging characterized by high spatial and spectral resolution, a wide field of view, and very high signal throughput. Headwall's own application-specific diffraction gratings are fundamental to these key specifications, which are crucial for airborne hyperspectral sensors. Headwall's all-reflective, concentric sensor design is robust and thermally stable.



Dimensional Information

inches (mm)



Lens Options

Focal Length	Angular FOV (deg.)	Weight (g)	Dimension A inches (mm)
4.8mm	50.7	90	5.1 (130)
8mm	32.2	90	4.7 (120)
12mm	21.1	99	5.1 (131)
17mm	15.3	85	4.7 (120)
23mm	12.0	94	4.8 (122)
35mm	7.8	92	4.7 (120)

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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