Polytec

Application Note

Space and Satellite
Hyperspectral Imaging

For space-based applications, Headwall's family of Hyperspec™ imaging sensors offer significant and unique advantages for researchers. Given the expense and criticality of satellite deployment and space research, application requirements demand a completely reflective sensor design, the highest optical efficiency, aberration-corrected imaging performance, a very wide field of view, and athermalization of the instrument.

Designed for imaging in harsh environments, Headwall's Hyperspec™ imaging sensors are customized for high performance imaging in critical space applications while offering proven, light-weight designs.

Imaging performance is optimized with Headwall's patented, aberration-corrected sensor design that eliminates all aberrations associated with keystone and smile while maintaining high resolution and imaging performance across a very wide field of view. Hyperspec™ sensors are available for a wide range of spectral regions and optimized configurations.

Within the field of view of the sensor, hyperspectral imaging simultaneously yields precise information for all wavelengths across the complete spectral range available or, for real-time analysis, multiple regions or wavelengths of interest can be selected.

Atmospheric Sciences

Environmental Monitoring

Remote Sensing

Small Satellite Sensors

Headwall's award-winning Hyperspec™ imaging spectrometer family is built on a totally reflective concentric, f/2.0 optical design and optimized for imaging in harsh environments. All Hyperspec™ instruments are based on Headwall's patented aberration-corrected, imaging design which feature the company's "original", high efficiency holographic gratings or diamond-turned diffraction gratings. To achieve very low stray light and high signal-to-noise performance, no prism or transmissive optics are used within the spectrometer. With Headwall's unique ability to design and fabricate the diffractive optics, each fully integrated Hyperspec™ imaging sensor is manufactured with application-specific, spectral and spatial imaging performance.

Headwall Photonics offers the broadest range of spectral imaging instrumentation for demanding applications.

Hyperspectral Sensors	Spectral Range
Hyperspec® VIS	380 - 825 nm
Hyperspec® VNIR	400 - 1000 nm
Hyperspec® Extended VNIR	600 - 1600 nm
Hyperspec® NIR	900 - 1700 nm
Hyperspec® SWIR	1000 - 2500 nm
Micro-Hyperspec™ VNIR	400 - 1000 nm
Micro-Hyperspec™ NIR	900 - 1700 nm
High Efficiency Hyperspec® NIR	900 - 1700 nm
High Efficiency Hyperspec® SWIR	1000 - 2500 nm

Information on UV, MWIR, and LWIR Hyperspec® sensors are available upon request.

Raman Imaging Instruments

Raman Explorer™ 260 nm
Raman Explorer™ 532 nm
Raman Explorer™ 785nm
Raman Explorer™ 830 nm
Raman Explorer™ 1064 nm

Raman Discovery™ 532 nm
Raman Discovery™ 785 nm

About Headwall Photonics:

Headwall Photonics 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 the development of innovative spectrographs and imaging spectrometers based on optical technologies, Headwall enjoys a market leadership position through the design and manufacture of patented spectral instrumentation that is customized for application-specific performance. Headwall Photonics was formed in 2003 as the result of a management buy-out from Agilent Technologies. **For more information please call 978.353.4100 or email us at Information@HeadwallPhotonics.com.**

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