

Hyperspec-VNIR™ and Hyperspec-NIR™

Integrated hyperspectral imaging sensors for industrial and life sciences applications

- ◆ **Integrated hyperspectral sensors**
- ◆ **VNIR, NIR and custom spectral ranges**
- ◆ **High spectral & spatial resolution**
- ◆ **Cost-effective spectral imaging**

Headwall Photonics Hyperspec™ family of integrated hyperspectral imaging sensors provide the foundation for utilizing hyperspectral imaging to achieve better spectral sensing and chemical imaging results for a range of mission-critical applications ranging from process monitoring to moving webs of product across conveyor lines to non-invasive medical imaging.

Following up on the success of Headwall's Hyperspec™ VS15, VS25, and VS50 hyperspectral products, the new Hyperspec-VNIR™ and Hyperspec-NIR™ sensor models deliver on Headwall's vision of applying hyperspectral imaging capabilities to new markets and applications. By applying our optical engineering and hyperspectral imaging expertise gained through years of experience working with military and defense customers, Headwall's Hyperspec™ products offer unparalleled imaging capabilities for a wide range of application needs for medical, life sciences, and industrial customers.

Both the Hyperspec-VNIR™ and Hyperspec-NIR™ models take advantage of Headwall's patented hyperspectral technology to generate aberration-corrected images characterized by 1-2 nanometer spectral resolution and unparalleled spatial resolution. These Hyperspec™ products are designed and engineered for application-specific performance and, in addition to fore-optics, include detectors and electronics which have been integrated, aligned, and tested for specific spectral regions and spatial resolution.

In order to achieve high signal-to-noise performance, all Hyperspec-VNIR™ and Hyperspec-NIR™ products utilize Headwall Photonics' world-renowned "original" holographic gratings which minimize stray light to achieve superior photometric accuracy particularly in dark background applications .

Hyperspectral Imaging For Process Manufacturing, Pharmaceutical & Life Sciences

Headwall Photonics' Hyperspec™ imaging spectrometer platform is built on a totally reflective concentric optical design. These products are based on Headwall's patented aberration-corrected imaging systems which feature the company's "original", high efficiency holographic gratings.

Application-Specific Performance Options

High Spectral & Spatial Resolution
High Frame Rate
Field of View (FOV)
Cost of Deployment

Hyperspec-VNIR™ C Series and D Series



Among the 10 Hyperspec-VNIR™ models available, there are over 100 configurations available to meet a diverse set of application requirements.

Series Performance Guide		
Spectral / Optical	C Series	D Series
λ Coverage	400 – 1000 nm	400 – 1000 nm
Spectral Bandpass ¹	1.25 nm	1.25 nm
Spectral Resolution ³	1.29 nm	2.4 nm

Hyperspec-NIR™ X Series

For the spectral wavelength range of interest, select among the five Hyperspec-NIR™ models which best optimize desired application performance for spectral and spatial resolution.

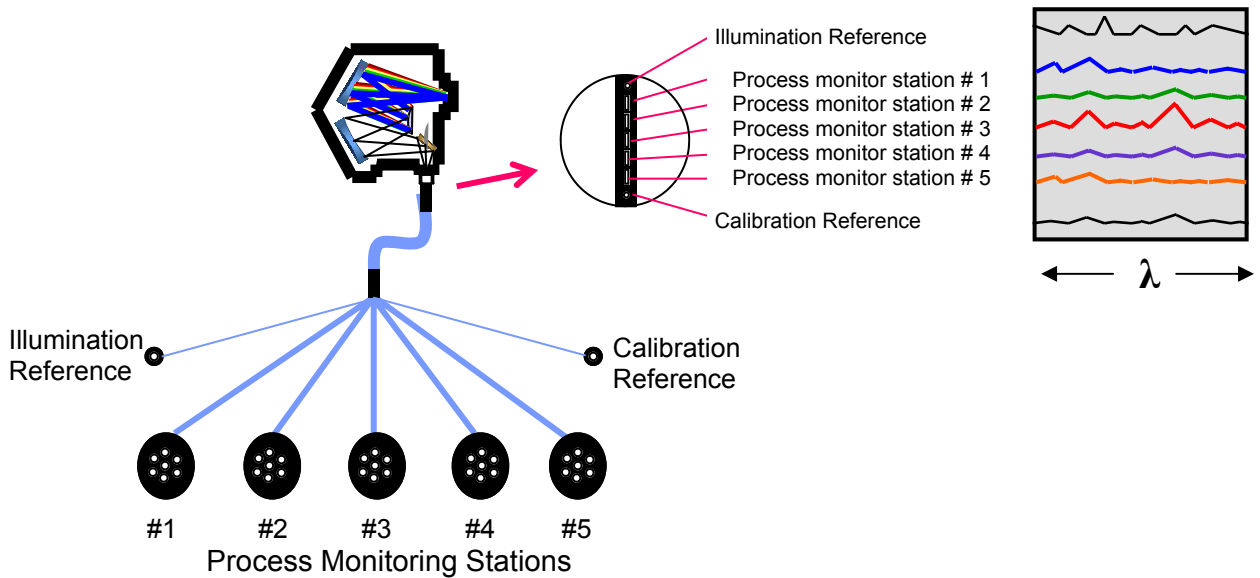
X Series Performance Overview	
Spectral / Optical	X Series
λ Coverage	900 - 1700 nm
Spectral Bandpass ¹	2 nm/pixel
Spectral Dispersion	4.8 nm/pixel
Nyquist Resolution	9.6 nm
FWHM of Slit Image	4 nm (spectral resolution based on 25 μ m slit)



Process Monitoring

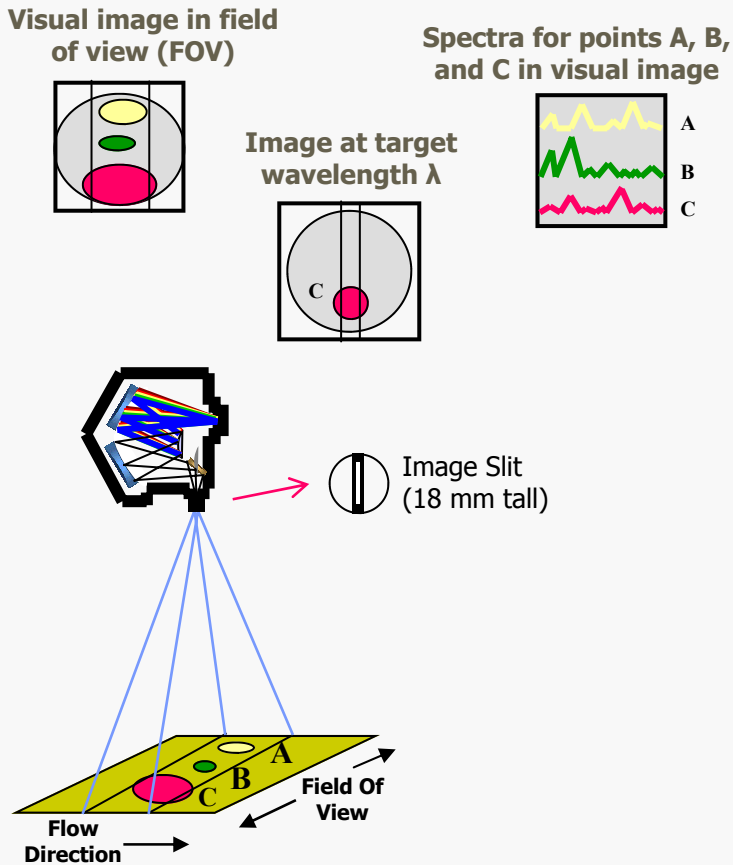
Multi-Point / Multi-Probe Analysis

Individual spectra generated for each station



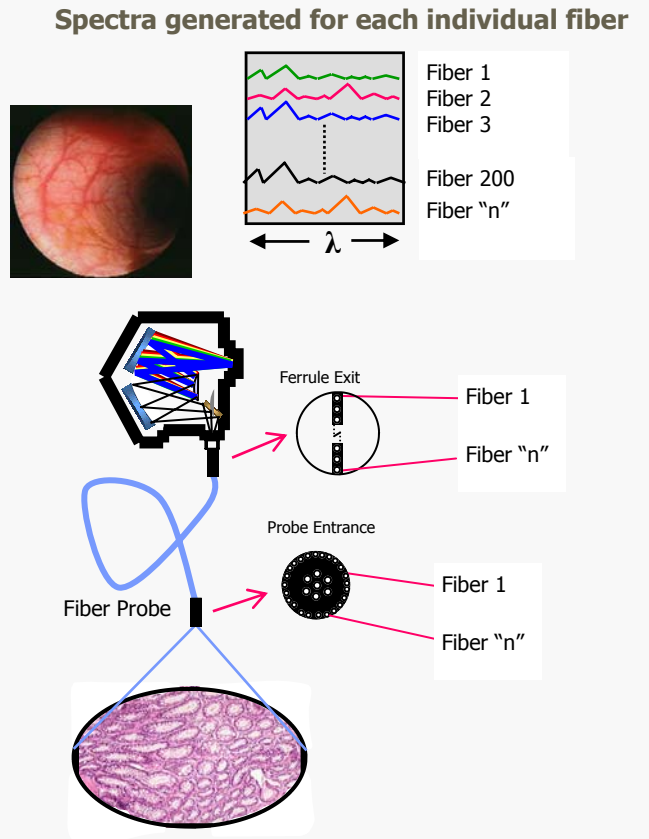
Conveyor / Moving Web

Process Flow Scanning



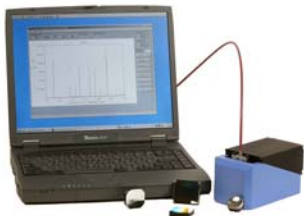
Microscopy & Medical Imaging

Large Area Fiber Bundle



Headwall Photonics is the market leader in the design and high volume manufacture of imaging spectrometers for hyperspectral imaging for OEM and end-user customers. The company's products consist of the following:

- ◆ Integrated hyperspectral imaging sensors
- ◆ Raman imaging spectrographs
- ◆ Multi-spectral, multi-channel imaging spectrometers
- ◆ Application-specific OEM spectrometers
 - Single-channel instruments
 - Dual-beam instruments
- ◆ High efficiency, original holographic gratings



Headwall Photonics' Hyperspec™ imaging spectrometers have been the recipient of numerous industry awards for engineering innovation and technical excellence. Some recent recognition:

For more information contact:

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AE50 Award

American Society of Agricultural
and Biological Engineers



R&D 100 Award

R&D Magazine

