

### **Data Sheet**

Hyperspec<sup>®</sup> Data Processing Unit

The Hyperspec<sup>®</sup> Data Processing Unit (HDPU) is optimized for hyperspectral imaging applications by providing dedicated, high-speed processing resources for image acquisition and the analysis and interrogation of the spectral and spatial imaging datacube.

Hyperspectral sensing allows for the identification of all objects within the field of view of the sensor based on the inherent chemical composition or spectral fingerprint of the sample or target. Often classified as 'push-broom' technology, hyperspectral imagers such as Headwall's Hyperspec® family of sensors acquire critical and valuable spectral and spatial data that can be rapidly processed and analyzed.

In critical hyperspectral imaging applications, scene scanning across a wide or continuous field of view can often result in very large data files comprised of all of the spectral and spatial data; these hyperspectral datacubes can grow to be several gigabytes in size. Additionally, many applications, such as airborne hyperspectral surveys or moving web applications (paper, textiles, or films), require extremely rapid data acquisition and analysis to extract spectral features of interest.

Headwall Photonics has designed a specialized, high-speed computer data system called the Hyperspectral Data Processing Unit (HDPU). It utilizes a powerful central processing unit (CPU) to achieve extremely fast data capture, transfer, and processing speeds. A solid state, high capacity hard drive supports this high speed by providing unrivalled read/write times to and from the disk. The full complement of 8GB of RAM assures rapid processing of application-specific algorithms and the classification or search for particular spectral signatures or threshold conditions within the scene.

The system can be readily configured for wireless access and control of Hyperspec sensors.

## **Application-Specific Solutions For Critical Environments**



#### **Applications:**

- Laboratory research
- Process monitoring •
- Agriculture research & crop management
- Civil & environmental engineering •
- Environmental analysis & monitoring •
- Food safety & inspection •
- Medical & health sciences •
- Remote sensing Waste recycling & sorting
- Custom configurations available for military & defense applications

#### **Key Benefits:**

- Rapid collection & processing of hyperspectral data at full video rates
- Packaged for cost-effective field deployment
- Full integration with Hyperspec® sensors
- Easy to set up and use. •

The Hyperspec<sup>®</sup> Data Processing Unit (HDPU) is a robust configuration specifically designed and integrated to rapidly acquire and process hyperspectral datacubes. This HDPU system is available with all Hyperspec sensor configurations and is optimized with the following components:

Intel Core i7 3.4 GHz processor
8 GB DDR3 RAM
High-speed SATA III solid-state disk drive
USB 2.0 & 3.0
Dual 10/100/1000 Mb/s Ethernet ports
Hyperspec software for sensor sontrol and high-speed hyperspectral data acquisition
Optional netbook computer

Specialized hyperspectral processing software is a critical element of the Headwall HDPU system. This software provides for rapid scanning of the scene, creation of the hyperspectral datacube, sensor control, and is integrated with Headwall's Hyperspec image analysis and display software. Software functionality of the system is all integrated into customized user interfaces and allows for the export of hyperspectral data in industry standard file format.

The high-speed Hyperspectral Data System is housed in a rugged enclosure that contains all components and the power supply. Headwall Photonics loads all hyperspectral processing software and delivers a pre-configured and tested hyperspectral data system. The HDPU is designed for either the laboratory or process line as well as for use with field-based applications and deployments.



# Headwall Photonics is the leading designer and manufacturer of imaging spectrometers.

Optimized for every application, Hyperspec<sup>®</sup> imaging spectrometers offer industry leading spectral imaging performance.



Hyperspec <sup>®</sup> UV-VIS	300 - 600 nm
Hyperspec <sup>®</sup> Vis	380 - 825 nm
Hyperspec <sup>®</sup> VNIR	400 - 1000 nm
Hyperspec <sup>®</sup> Extended VNIR	550 - 1650 nm
Hyperspec <sup>®</sup> NIR	900 - 1700 nm
Hyperspec <sup>®</sup> SWIR	1000 - 2500 nm
High Efficiency Hyperspec® NIR	900 - 1700 nm
High Efficiency Hyperspec <sup>®</sup> SWIR	1000 - 2500 nm

Information on MWIR and LWIR Hyperspec® sensors is available upon request.

#### **Raman Imaging Instruments**

Raman Explorer<sup>™</sup> 248 nm Raman Explorer<sup>™</sup> 532 nm Raman Explorer<sup>™</sup> 532/685 nm dual excitation Raman Explorer<sup>™</sup> 632.8 nm Raman Explorer<sup>™</sup> 785 nm

. Raman Explorer™ 830 nm Raman Explorer™ 1064 nm



Raman Discovery<sup>™</sup> 532 nm Raman Discovery<sup>™</sup> 785 nm

Visit www.headwallphotonics.com for more information on end-user and OEM spectral imaging solutions.

#### **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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