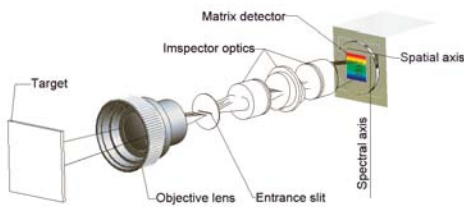


SPECTRAL CAMERAS

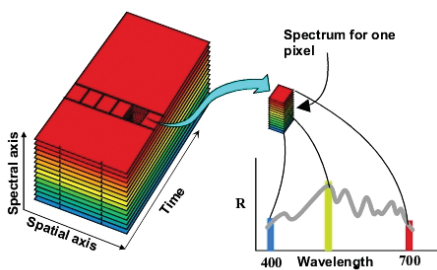


SPECTRAL CAMERAS

Spectral Camera is used to acquire the hyperspectral target image at tens or hundreds of wavelengths simultaneously. It creates new possibilities for imaging applications where spectroscopy methods can be used together with standard image processing methods. The recorded full spectrum for each pixel of the image can be used e.g. classification, material detection, accurate colour calculation or chemometrics over the full image.



Principle of Spectral Camera



Datacube; 2D Spectral Image

Application examples

- On-line color sorting and quality monitoring
- Light source and display testing
- Biomedical inspection and research
- Microscope systems
- NIR spectral imaging
- Mineral mapping

SPECIM Spectral Cameras offer a fast and high-quality solution for industrial and scientific multispectral and hyperspectral applications. Spectral Camera is an imaging spectrometer, i.e., a user-friendly integrated combination of ImSpector imaging spectrograph and an area monochrome camera.

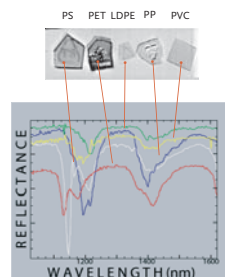
Spectral Cameras are available for the same wavelength ranges as off the shelf ImSpector imaging spectrographs. Each range uses a suitable, sensitive area scan camera which is selected by comprehensive testing. Spectral Cameras are available with different data interfaces to match closely the different applications requirements.

Compared to conventional filter based

imaging systems, Spectral Cameras provide higher spectral and spatial resolution, flexible wavelength selections in software, broader spectral coverage and shorter acquisition times.

Spectral Camera works as a line scan device providing full, contiguous spectral information for each pixel on the imaged line in one image. To form the 2D spectral image, datacube, the target has to be scanned line by line in one spatial direction.

One of the main advantages of line scan Spectral Camera is that it records the full spectrum from the target in one image. This allows the use of hyperspectral or multispectral techniques in unnumerable applications like in process control or with moving samples.



Plastic sorting



Drill core analysis

To get the optimal performance for the Spectral Camera, SPECIM can provide different accessories for the system.

Several fore objectives are available which have been selected and manufactured to provide the optimal image and spectral quality and to meet the specifications of the Spectral Camera over the different spectral ranges.

The Spectral Camera can also be delivered with collection fiber optics to convert the camera into a multiple point spectrometer. In the case of fiber optics, all the points are measured simultaneously without a moving multiplexer.

To scan the target spatially, the Spectral Camera can be delivered with a Mirror Scanner or rotating stage for static targets or outdoor measurements, or with X-stage for desktop and microscope applications.



Cased Spectral Camera NIR



Cased Uncooled Spectral Camera LWIR



OEM Spectral Camera PFH



Cased Spectral Camera HS

Spectral Cameras range

SPECTRAL CAMERAS*	UV	HS	PS	PFH	NIR	SWIR	LWIR
Range (nm)	200-400	380-800 400-1000	380-800 400-1000	380-800 400-1000	900-1700	1000-2500	8-12 μm 8-14 μm
Sensor	CCD	CCD	CCD	CMOS	InGaAs	MCT	MCT microbolometer
Pixels in full frame (spatial x spectral)	1000 x 1000	1600 x 1200	1344 x 1024	1024 x 1024	320 x 256 640x512	320 x 256	384 x 84 384 x 30
Interface	CameraLink	CameraLink	Firewire	CameraLink, USB	CameraLink, USB	LVDS	LVDS
Frame rate (full frame)	33 Hz	33 Hz	11 Hz	40 Hz	50 Hz 100 Hz 350 Hz	100 Hz	100 Hz 60 Hz

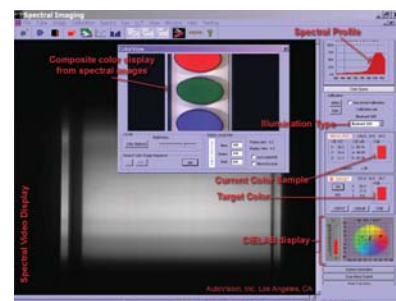
Detailed specifications sheets available for each Spectral Camera

*Subject to modifications due to technological developments

SpectralDAQ Software

SPECIM Spectral Cameras are supported by SpectralDAQ software that provides:

- data acquisition and storage
- wavelength calibration
- display in real time
- ENVI compatible formatting

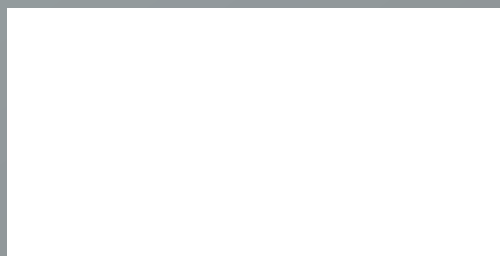


SpectralDAQ Software

SPECIM IS A WORLD LEADING COMPANY for hyperspectral imaging instruments, from UV through VNIR and SWIR up to LWIR (long wave infrared).

We provide ImSpector imaging spectrographs, Spectral Cameras and hyperspectral imaging solutions to a rapidly increasing number of industrial OEM customers and a large scientific clientele. SPECIM'S AISA FAMILY of airborne hyperspectral sensors provides market leading solutions for remote sensing, from small UAV systems to full featured commercial, research and military remote sensing tools.

Our hyperspectral products are known for the highest performance at the lowest budget in the market. They are used in an increasing range of demanding applications like color, Process Analytical Technology (PAT), life sciences, chemical imaging, military and security.



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