

# SPECTRAL CAMERA <sup>PS</sup>

Hyperspectral camera operating in the VIS and VNIR ranges of 380-800 nm and 400-1000 nm. With high spatial and spectral resolution, high sensitivity, low noise, low-cost standard interface, and rugged structure, Spectral Camera PS is an excellent tool for scientific applications in the laboratory and field.



Cased Spectral Camera PS



OEM Spectral Camera PS with E-series spectrograph (top), and with standard spectrograph



## Applications

- Color control and sorting
- Scanning of art works
- Flat panel display measurement
- Printing testing
- Counterfeit detection
- Life science applications
- Plant and vegetation research
- Environmental monitoring
- Hyperspectral microscopy

**S**pectral Camera is an imaging spectrometer. It is an integrated combination of SPECIM ImSpector imaging spectrograph and an area monochrome camera. It works as a push-broom type line scan camera and provides full, contiguous spectral information for each pixel.

Spectral Camera PS consists of an imaging spectrograph for the wavelength 380-800 nm or 400-1000 nm, and a sensitive high speed interlaced CCD detector. Spectral Camera PS can be equipped either with a SPECIM standard series imaging spectrograph (V8 or V10) as a low cost model, or with an enhanced series spectrograph

(V8E or V10E) for applications which require high image quality. The transmission diffraction grating and lens optics used in the spectrograph provide a high quality, low distortion image that is designed to fulfill the most demanding specifications.

Spectral Camera PS provides outstanding performance at affordable cost. Spatial resolution of 1344 pixels, image rate up to 62 images/s, and adjustable spectral sampling make it a tool which can meet the high scientific hyperspectral imaging requirements.

## ACCESSORIES

SPECIM provides various accessories for the Spectral Cameras to broaden their applicability.

- Several **fore objective lenses** with different FOVs are available which have been designed to provide the optimal image and spectral quality across the full spectral range of the Spectral Camera.
- The Spectral Camera can also be delivered with **collection fiber optics** to convert the camera into a multiple point spectrometer. All the points are measured simultaneously without a moving multiplexer.
- The Spectral Camera can be delivered with a **Mirror Scanner or rotating stage** for scanning static targets and outdoor scenes, or with a **linear sample mover (X-stage)** for desktop and microscope applications.



Spectral Camera PS mounted on a rotary stage on top of a tripod

## Performance Specifications

SPECTRAL CAMERA PS	V8E	V10E	V8	V10
<b>Optical characteristics</b>				
Spectrograph	V8E	V10E	V8	V10
Spectral range	380-800 nm	400-1000 nm	380-800 nm	400-1000 nm
Spectral resolution with default slit	2.0nm	2.8 nm	6 nm	6.8 nm
Spectral sampling	0.48 - 3.86 nm / pixel *)	0.63 - 5.06 nm / pixel *)	0.43 - 3.4 nm / pixel *)	0.63 - 5.0 nm / pixel *)
Spatial resolution, (RMS spot radius)	< 9 µm		< 30 µm	< 40 µm
Aberrations	Insignificant astigmatism, keystone and smile		Smile <45 µm, keystone < 40 µm	
Numerical aperture	F/2.4		F/2.8	
Slit width options	Default 30 µm, others 18, 50, 80, 150 µm		Default 50 µm, others 25, 80, 150 µm	
Effective slit length	8.98 mm		8.98 mm	
Total efficiency (typical)	> 50% independent on polarization			
Stray light	< 0,5% /halogen lamp, 590nm LPF			
<b>Electrical characteristics</b>				
Sensor	Interline CCD			
Pixels in full frame	1392 (spatial) x 1040 (spectral)			
Active pixels (spatial x spectral)	1392 x 870	1392 x 950	1392 x 990	
Pixel pitch	6.45 µm			
Camera output	Digital 12 bit			
Interface	Firewire			
Camera control	Firewire			
Frame rate	11 fps (full frame), up to 62 fps (1 x 8 binning)			
Exposure time range	1 µm - 120 s			
Power consumption	< 5W			
Input voltage	12V (OEM), 24V (cased)			
<b>Environmental characteristics</b>				
Storage	-20... +50 °C			
Operating	+5... +40 °C non-condensing			

<b>Mechanical characteristics</b>			
	V8E/V10E Cased	V10E/V8E OEM	V8/V10 OEM
Size (L x W x H)	330 x 85 x 90 mm	241 x 73 x 79 mm	220 x 60 x 70
Body	Anodized aluminium with mounting screw holes		
Lens mount	Standard C-mount		
User adjustments	None		
Shutter with USB control	Yes	Optional	No

## SPECTRALDAQ SOFTWARE

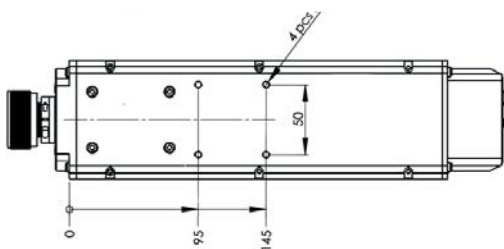
Spectral Camera PS is supported by our SpectralDAQ software, which allows:

- data acquisition and saving data in the hard disk
- camera parameters settings
- control of a Mirror Scanner, a rotary stage and a linear sample mover
- basic image visualization in real time

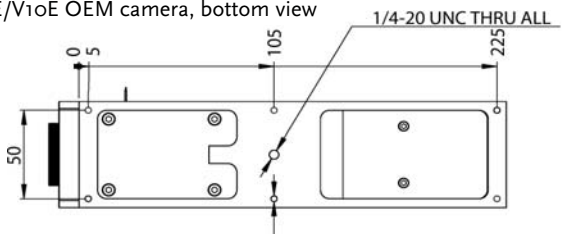
Datacubes are saved in ENVI compatible format that allows further processing by several software packages for hyperspectral data processing.

\*) Adjustable by spectral binning.

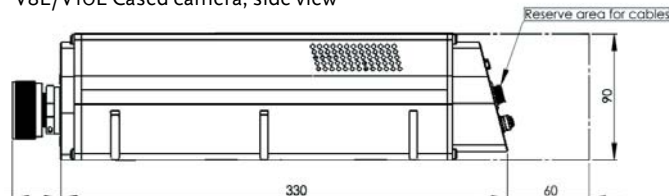
V8E/V10E Cased camera, bottom view



V8E/V10E OEM camera, bottom view



V8E/V10E Cased camera, side view



V8E/V10E OEM camera, side view

