

# SPECTRAL CAMERA *HS*

Hyperspectral camera operating in the VIS and VNIR ranges of 380-800 nm and 400-1000 nm. With its high spatial and spectral resolution, high image rate, and rugged structure, Spectral Camera, HS is an excellent tool for both industry and science.



Cased Spectral Camera HS



OEM Spectral Camera HS

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

The Spectral Camera HS consists of ImSpector, V8E or V10E for the wavelength range 380-800 nm or 400-1000 nm, respectively and a sensitive high speed interlaced CCD detector. 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.

The Spectral Camera HS provides outstanding performance at affordable cost. Spatial resolution of 1600 pixels, image rate up to 120 images/s, and adjustable spectral sampling make it a tool which can meet the highest industrial and scientific hyperspectral imaging requirements.

## Applications

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



Flat panel display measurement with a multiple point solution

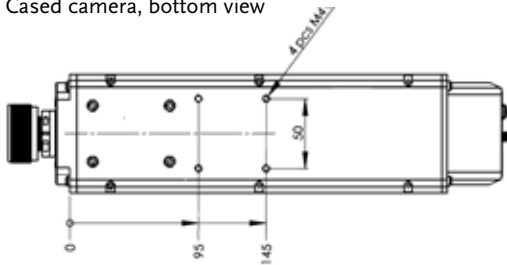
## Performance Specifications

SPECTRAL CAMERA HS	V8E	V10E
Optical characteristics		
Spectrograph	V8E	V10E
Spectral range	380-800	400-1000
Spectral resolution (30 μm)	2.0nm	2.8nm
Spectral sampling	0.55 - 4.4 nm/pixel *)	0.72 - 5.8 nm/pixel *)
Spatial resolution	RMS spot size <9μm	
Aberrations	Insignificant asigmatism, keystone or smile	
Numerical aperture	F/2.4	
Slit width options	30 μm (18, 50, 80, 150 μm)	
Effective slit length	11.84 mm	
Total efficiency (typical)	> 50% independent on polarization	
Stray light	< 0,5% /halogen lamp, 590nm LPF)	
Electrical characteristics		
Sensor	interline CCD	
Pixels in full frame	1600 (spatial) x 1200 (spectral)	
Active pixels	1600 (spatial) x 840 (spectral)	
Pixel pitch	7.4 μm	
Camera output	Digital 12 bit	
Interface	Base camera link	
Camera control	Camera link	
Frame rate	33 fps (full frame) up to 120 fps (ROI)	
Exposure time range	0.1 - 100 ms	
Power consumption	< 5W	
Input voltage	12V (OEM), 24V (cased)	
Environmental characteristics		
Storage	-20... +50 °C	
Operating	+5... +40 °C non-condensating	

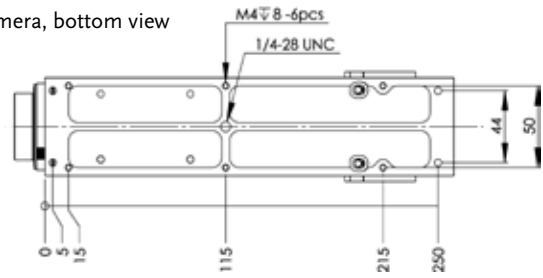
Mechanical characteristics		
	OEM	Cased
Size (L x W x H)	260 x 70 x 79 mm	330 x 85 x 90 mm
Body	Anodized aluminium with mounting screw holes	
Lens mount	Standard C-mount	
User adjustments	None	
Shutter	Optional	Yes, with USB control

\*) Adjustable by spectral binning.

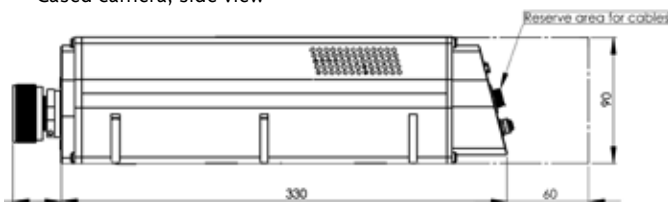
Cased camera, bottom view



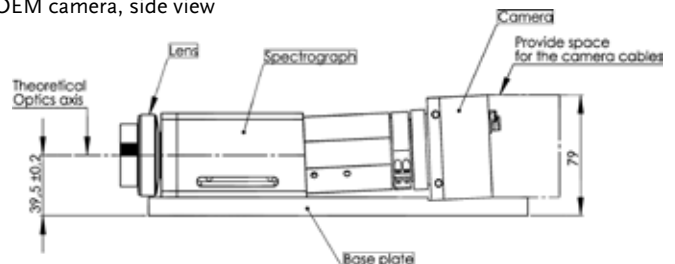
OEM camera, bottom view



Cased camera, side view



OEM camera, side view



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

Several fore objective lenses 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 broad spectral ranges.

The Spectral Camera can also be delivered with collection fiber optics. This converts the camera into a multiple point spectrometer. In the case of fiber optics, all the points are measured simultaneously without a moving multiplexer. Due to the simultaneous measurement with one system, no cross calibration is required.

The Spectral Camera can be delivered with a Mirror Scanner or rotating stage for scanning static targets and outdoor scenes, or with X-stage sample mover for desktop and microscope applications.

## SPECTRALDAQ SOFTWARE

SPECIM Spectral Camera HS is supported by SpectralDAQ software, which allows:

- data acquisition
- camera control
- basic visualization in real time

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