spectral camera eNIR

SPECIM is proudly presenting a hyperspectral camera operating in the wavelength range of 600 - 1600 nm. The extended NIR range Spectral Camera provides new possibilities for a variety of applications in field, laboratory and industry.

Spectral Camera eNIR OEM

SPECIM´s Spectral Camera is an integrated combination of an ImSpector imaging spectrograph and an area monochrome camera. It works as a push-broom type line scan camera providing full, contiguous spectral information for each pixel in the line.

SPECIM now offers Spectral Camera model for the extended NIR range in order to meet various application requirements. This camera provides 320 pixel spatial resolution and image rate of 100 Hz. Spectral Camera eNIR model consists of an ImSpector V16M imaging spectrograph for the wavelength region 600 - 1600 nm and a temperature stabilized VisNIR CMOS/InGaAs camera. The ImSpector V16M is based on the new optical design of the imaging spectrographs, developed by Specim (Patent pending). The design combines the reflective mirror optics and refractive lens optics with the transmission diffraction grating. This new design provides the smallest aberrations available in the spectral imaging devices in the market together with supreme throughput. The optics is designed to match perfectly with the sensor used.

The maintenance free cooling unit is designed to keep the detector temperature stable throughout a wide ambient temperature range. At the moment the Spectral Camera eNIR is available as an uncased OEM model.

Applications

Vegetation research
Food analysis
Semiconductors

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Performance Specifications

SPECTRAL CAMERA eNIR	
Optical characteristics	
Spectrograph	ImSpector V16M*
Spectral range	600-1600 nm
Spectral resolution	7 nm (30µm slit)
Spectral sampling/pixel	4 nm
Spatial resolution	rms spot radius < 25 µm
Aberrations	Insignificant astigmatism, smile < 0.3 µm, keystone < 1.6 µm
Numerical aperture	F/2.4
Slit width options	30 µm
Effective slit length	9.6mm
Total efficiency (typical)	> 50%, independent of polarization
Stray light	< 0.5% (halogen lamp, 1400 nm notch filter)
Electrical characteristics	
Camera	TE-cooled InGaAs-CMOS photodiode array
Pixels in image frame	320 (spatial) x 256 (spectral)
Active pixels	320 (spatial) x 240 (spectral)
Pixel size	30 x 30 µm
Cooling	Forced convection cooling
Camera output	12-bit, USB2, CameraLink
Frame rate	100 fps (maximum full frame)
Exposure time range	1 µs – 500 ms
Power consumption	< 4 W, Cooler ~30 W
Input voltage	12 V
Environmental characteristics	
Storage	- 20 ... +85 °C
Operating	+ 5 ... +40 °C, non-condensing

Mechanical characteristics	
	OEM
Size (L x W x H)	250 x 275 x 87 mm
Weight	3.4 kg
Body	Anodized aluminium and painted steel with mounting screw holes
Lens mount	M42 universal thread (Pentax)
User adjustments	None
Shutter	Optional

***Patent pending**

ACCESSORIES

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

- Wavelength optimised fore objective lenses with different FOVs are available. These 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 X-stage sample mover for desktop and microscope applications.

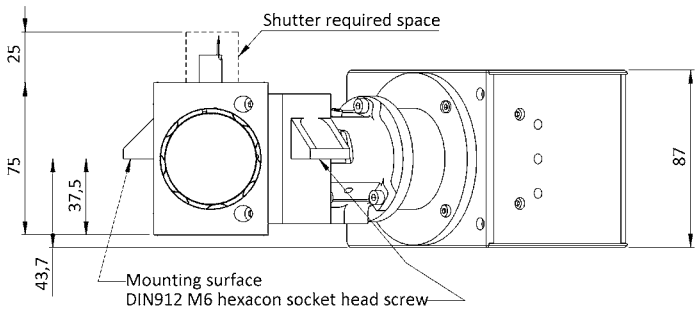
SPECTRALDAQ SOFTWARE

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

- data acquisition and saving data in the hard disk
- camera parameters settings
- basic visualization in real time

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

Front view



Top view