spectral camera LWIR

SPECIM presents its thermal hyperspectral cameras in the LWIR region 8 to 12 µm. Two camera models have been specially designed to meet diverse requirements in industrial, research and security applications.

Spectral Camera LWIR HS with uncooled detector

Spectral Camera OWL with cryo-cooled MCT detector

SPECIM´s LWIR Spectral Cameras are push-broom type line scan cameras that provide full, contiguous hyperspectral data for each pixel along the imaged line. To respond to a wide range of applications and requirements, SPECIM has developed 2 models of LWIR Spectral Cameras: HS (with uncooled detectors), and C (with cooled detector).

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HS MODEL

Spectral Cameras LWIR HS integrates an uncooled detector and optics. It is a compact (only 3.5kg) and versatile tool for a wide variety of applications.

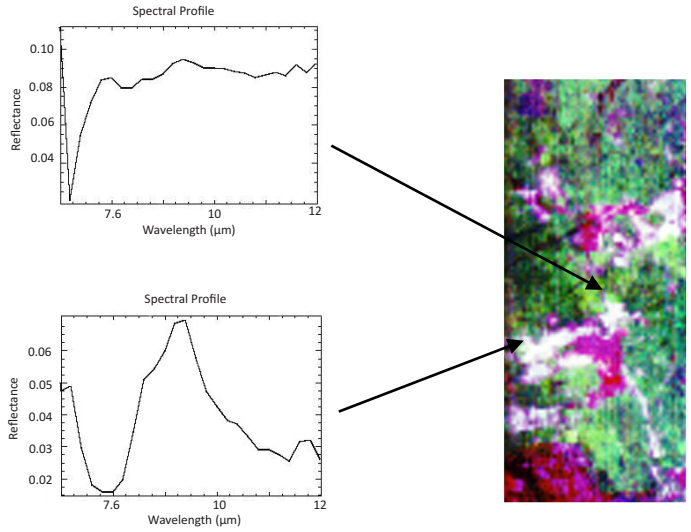
HS (high sensitivity model) covers the spectral range 8-12 µm. It has 30 spectral bands and spectral sampling of 200 nm. With a good sensitivity and moderate spectral resolution, HS is suitable for many industrial and Chemical Imaging applications.

SPECTRAL CAMERA OWL

For the most demanding ground-based remote sensing and security applications, SPECIM has integrated a state-of-the-art temperature stabilized LWIR imaging spectrograph with the highest sensitivity cooled MCT detector. Spectral Camera OWL covers the spectral range 8 to 12 µm with high spectral selectivity of 84 bands (sampling of 48 nm) and extensive speed of up to 100 images/s.

Applications

Geological mapping
Mineral classification
Volcanology
Water temperature
Camouflage detection
Gas detection
Flame analysis
Land cover type recognition



Mineral sample scanned with Spectral Camera LWIR HS. The plots show examples of reflectance spectra.

Performance Specifications

SPECTRAL CAMERA LWIR	OWL	HS
Optical characteristics		
Spectral range	8 - 12 µm	8 - 12 µm
Spectral bands	84	30
Spectral resolution	100 nm**	400 nm
Spectral sampling/band	48 nm	150 nm
Spatial pixels	384 pixels	
Field of view	With fore lens L43***: 24° With fore lens L32***: 32.2°	With fore lens L41*** 32.2°
Spatial sampling	L43 0.063° / L32 0.084°	0.084 °
Aberrations	Insignificant astigmatism, smile or keystone < 0.1 pixels	
Optics temperature	Stabilized	Uncooled
Electrical characteristics		
Detector	MCT	LWIR uncooled microbolometers
Numerical aperture	F/2.0	F/1.0
Pixel size	24 x 24 µm	25 x 25 µm
Cooling	Stirling-cycle cooler	Uncooled
Camera output	14-bit LVDS	GigE Pleora
Frame grabber	NI-PCI 1422 or 1424 National Instruments	-
Frame rate	up to 100 fps	60 fps
Shutter/internal calibration	Yes / Optional	No
Power consumption	< 200 W + 400 W (calibrator)	3 - 5 W
SNR	Target 300 K * 8 µm 450 * 10 µm 580 * 12 µm 230	Target 400 K * 8 µm 240 * 10 µm 210 * 12 µm 180
NESR (mW/m2srµm)	* 8 µm 21 * 10 µm 18 * 12 µm 40	* 8 µm 270 * 10 µm 310 * 12 µm 800
NETD/ spectral pixel	0.2K	1K
Mechanical characteristics		
Size (mm)	255 x 285 x 223	100 x 143 x 185
Weight (kg)	13.1.	3.5
Body	Anodized aluminium and painted steel	
Environmental characteristics		
Storage	- 20 ... +50 ºC	
Operating	+ 5 ... +40 ºC, non-condensing	

* x 2 software binning

** Diffraction limited

*** Other fore lenses available upon request. Fore lenses can be replaced by the customer.

Specifications subject to change without prior notice