SPECTRAL CAMERA *LWIR*

SPECIM has extended its family of hyperspectral cameras into the thermal region, LWIR from 8 to 14 um. SPECIM offers three camera models which meet the diverse requirements in industrial, security and airborne applications.

Uncooled Spectral Camera LWIR

Uncooled Cameras

SPECIM's uncooled LWIR Spectral Cameras are compact solutions at a budget price. Working over a broad range of 8-14 microns and with an approximate weight of 2.5kg, they are versatile tools for various uses.

The high sensitivity camera model (HS) works with 30 spectral bands of 200 nm each. It is designed for highly accurate industrial temperature measurements where both the target temperature and emissivity need to be measured. It can also provide highly compact solutions for thermal remote sensing from UAVs and by portable instruments.

The high resolution model (HR), with spectral sampling of 70 nm and total of 85 bands, offers a high performance solution for applications where the targets emit higher than normal ambient temperatures or where an IR source is used to illuminate the sample. Examples include gas emission analysis and infrared chemical imaging.

Cooled Camera

For the most demanding remote sensing and security applications, SPECIM has integrated a state of art temperature stabilized LWIR imaging spectrograph with the highest sensitivity cooled MCT camera. This device covers the spectral range of 8 to 12 microns with high spectral selectivity of 42 bands (sampling of 96 nm) and extensive speed of up to 100 images/s.

SPECIM can integrate the cooled LWIR camera to our AISA data acquisition system, and offer our customers a full featured thermal airborne hyperspectral imaging system.

Applications

Geological mapping
Mineral classification
Volcanology
Ground and coastal water temperature
Camouflage detection
Gas detection
Flame analysis
Land cover type recognition

Performance Specifications

SPECTRAL CAMERA LWIR			
Optical characteristics	**COOLED**	**UNCOOLED HR**	**UNCOOLED HS**
Spectrograph	L120M	L140M	L140MP
Spectral range	8 - 12 µm	8-14 µm	8 - 12 (14) µm
Spectral bands	84	85	30
Spectral resolution	100 nm**	100 nm **	400 nm
Spectral sampling/band	48	70 nm	200 nm
Spatial pixels	384 pixels		
Field of view	24 °	30 °	
Spatial sampling	0.063 °	0.079 °	
Aberrations	Insignificant astigmatism, smile or keystone < 0.1 pixels		
Swath width	0.425 x altitude		
Ground resolution at 1000 m altitude	1.1 m		
Optics temperature	Stabilized	Uncooled	
Electrical characteristics			
Camera	MCT camera	LWIR uncooled microbolometers	
Numerical aperture	F/2.0	F/1.0	
Pixel size	24 x 24 µm	35 x 35 µm	
Cooling	Stirling-cycle cooler	Uncooled	
Camera output	14-bit LVDS	14-bit LVDS	
Frame grabber	NI-PCI 1422 or 1424 National Instruments		
Frame rate	up to 100 fps	60 fps	
Shutter/internal calibration	Yes		
Power consumption	< 200 W	3.5 W	
SNR Target 300 K	* 8 µm 450 * 10 µm 580 * 12 µm 230		
NESR (mW/m2srµm) Target 300 K	* 8 µm 21 mW/m2srµm * 10 µm 18 mW/m2srµm * 12 µm 40 mW/m2srµm		
NETD/ spectral pixel	* 0.2K		
Mechanical characteristics			
Size	ca. 220 x 200 x 220 mm	~(55x130x125) mm	~(55x145x140) mm
Weight	8.5 kg	2.5 kg	2.5 kg
Body	Anodized aluminium and painted steel		
Environmental characteristics			
Storage	- 20 ... +50 °C		
Operating	+ 5 ... +40 °C, non-condensing		

* x 2 software binning
** Diffraction limited

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