The motorized 8-filter wheel.

MULTISPECTRAL INFRARED CAMERAS.

The MS-IR infrared camera allows the scene to be split into eight different spectral bands rather than only one broadband image, thus enabling spectral signature analysis. The filter wheel is a fast-rotating mechanism designed to maximize the cameras' frame rate. Rotating speed is adjustable up to 100 Hz per filter, allowing a frame rate up to 800 fps in a synchronised mode.

KEY BENEFITS

MULTISPECTRAL CAPABILITIES

Performs 8-channel multispectral analysis using a high-speed filter wheel. In fast-rotating mode, the image acquisition is synchronised so that one image per filter is acquired. The filter wheel can also be used in static mode.

HIGH DYNAMIC RANGE

Unique Telops proprietary non-linearity correction and exposure time independent calibration algorithms ensure observation of scene targets with the highest possible contrast and accuracy.

In addition, optional fast automated attenuation filter mechanisms can be added to measure scenes with extreme temperature variations.

ADVANCED CALIBRATION

Real-time processing of infrared images including NUC, radiometric temperature, in-band radiance, automated exposure control (AEC) and enhanced high dynamic range imaging (EHDRI). With these unique features, scientists benefit from ease of use and operation flexibility while getting accurate measurements over the entire camera's operation range.

HIGH SENSITIVITY

Temperature differences as small as 20 mK are detectable.

EXAMPLE OF A TYPICAL USE

Typical Combustion MWIR Spectrum
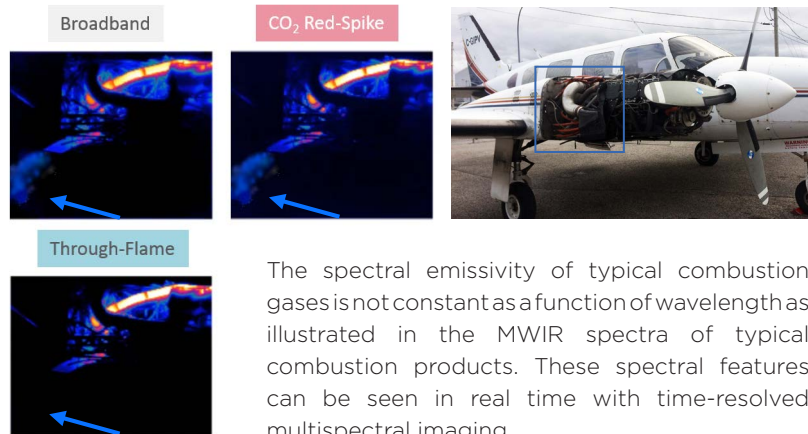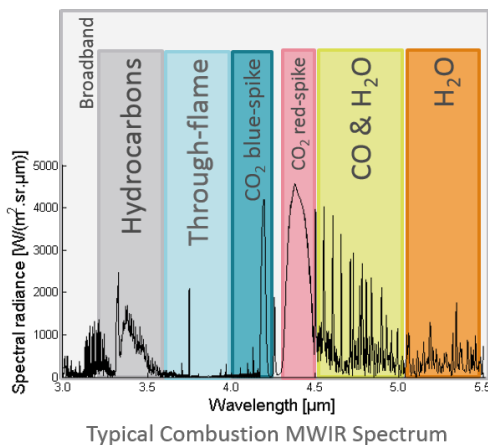
The spectral emissivity of typical combustion gases is not constant as a function of wavelength as illustrated in the MWIR spectra of typical combustion products. These spectral features can be seen in real time with time-resolved multispectral imaging.

TECHNICAL SPECIFICATIONS

MIDWAVE SERIES			
DETECTOR SPECIFICATIONS	MS M2*k*	MS M100*k*	MS M350
DETECTOR TYPE	InSb	MCT	InSb
SPECTRAL RANGE	1.5 µm to 5.5 µm	3 µm to 4.9 µm	1.5 µm to 5.4 µm
SPATIAL RESOLUTION	320 × 256 pixels	640 × 512 pixels	640 × 512 pixels
DETECTOR PITCH	30 µm	16 µm	15 µm
APERTURE SIZE	F/2.5	F/4	F/3
TYPICAL PERFORMANCES			
FRAME RATE	1 900 Hz	115 Hz	355 Hz
MAXIMUM FRAME RATE (STATIC FILTER WHEEL MODE)	90 000 Hz @ 64 × 4	120 000 Hz @ 64 × 2	4 980 Hz @ 132 × 2
TYPICAL NETD	25 mK	17 mK	20 mK
ELECTRONIC SPECIFICATIONS			
EXPOSURE TIME	1 µs to full frame rate	0.2 µs to full frame rate	0.5 µs to full frame rate
CAMERA CONSTRUCTION			
LENS MOUNT	Bayonet interface	Bayonet interface	Bayonet interface

MIDWAVE *hd* SERIES	
DETECTOR SPECIFICATIONS	MS M100*hd*
DETECTOR TYPE	InSb
SPECTRAL RANGE	3 µm to 5 µm
SPATIAL RESOLUTION	1280 × 1024 pixels
DETECTOR PITCH	15 µm
APERTURE SIZE	F/3
TYPICAL PERFORMANCES	
FRAME RATE	105
MAXIMUM FRAME RATE (STATIC FILTER WHEEL MODE)	2 900 Hz @ 132 × 8
TYPICAL NETD	25 mK
ELECTRONIC SPECIFICATIONS	
EXPOSURE TIME	16 µs to full frame rate
CAMERA CONSTRUCTION	
LENS MOUNT	Bayonet interface

VERY LONG WAVE SERIES			
DETECTOR SPECIFICATIONS	MS V350	MS V300	MS V1K
DETECTOR TYPE	SLS	MCT	SLS
SPECTRAL RANGE	7.7 µm to 11.8 µm (other ranges available)	7.7 µm to 11.8 µm	7.5 µm to 11.5 µm
SPATIAL RESOLUTION	320 × 256 pixels	320 × 256 pixels	640 × 512 pixels
DETECTOR PITCH	30 µm	30 µm	25 µm
APERTURE SIZE	F/2	F/2	F/2
TYPICAL PERFORMANCES			
FRAME RATE	345 Hz	309 Hz	1 005 Hz
MAXIMUM FRAME RATE (STATIC FILTER WHEEL MODE)	14 000 Hz @ 128 × 8	79 000 Hz @ 64 × 2	31 000 Hz @ 64 × 8
TYPICAL NETD	25 mK	25 mK	30 mK
ELECTRONIC SPECIFICATIONS			
EXPOSURE TIME	0.5 µs to full frame rate	0.5 µs to full frame rate	0.5 µs to full frame rate
CAMERA CONSTRUCTION			
LENS MOUNT	Threaded interface	Threaded interface	Threaded interface

Specifications are subject to change without notice. Other configurations are available upon request.

COMMON SPECS	
SENSOR COOLING	Rotary-stirling closed cycle
STANDARD SCENE TEMPERATURE RANGE	Up to 1500 °C Other ranges available.
DYNAMIC RANGE	16 bits
MEASUREMENT ACCURACY	1 K or 1 % (°C) from -15°C to 150°C
MULTISPECTRAL FILTER WHEEL	8 × 1″ filters; static or fast-rotating mode
SIZE W/O LENS	13.8″ × 8.5″ × 9.3″ 352 mm × 216 mm × 236 mm
WEIGHT W/O LENS	< 13 kg

FOR MORE INFORMATION

infraredimaging.com

Telops is a leading supplier of high-performance scientific infrared cameras for the defence, academic, industrial, and environmental research industries. Telops also offers R&D services for optical systems technology development.

Since its beginning in 2000, Telops has distinguished itself with the quality of its technical personnel and its innovative approach to many technological challenges in the optics field. Today, the expertise of its scientists, engineers and technologists and the performances of its infrared cameras and hyperspectral imagers are internationally recognized.

Quebec City's Château Frontenac in infrared

FEATURES & OPTIONS

OUR INFRARED CAMERAS' KEY FEATURES

All our infrared cameras offer advanced features to address the most demanding research applications. They include :

- Blackbody-free permanent calibration

- Calibration up to 2500 °C (optional)

- High-speed internal memory buffer: up to 16 GB

- Gig-E

- Camera Link

- Trigger In, Trigger Out

- SDI, GPS, IRIG-B, RS232 and thermistor ports

- Automatic exposure control (AEC)

- Enhanced high-dynamic-range imaging (EHDRI)

OUR INFRARED CAMERAS' LENS OPTIONS

Telops offers a variety of lens options depending on your camera configuration using either a flanged, threaded, or bayonet mount interface.

Customized optics are available, as well as many accessories such as telescopes and microscopes.