'nnovative Infrared Imaging



HIGH-DYNAMIC-RANGE INFRARED CAMERAS.

The HDR-IR infrared cameras cover extended scene temperature ranges. These cameras maximize camera sensitivity for any static or dynamic scene. With their unique AEC+ (fast ND-Swap capability), these cameras find the best exposure time depending on the scene, and allow to resolve targets up to $2\,500\,^{\circ}\text{C}$ automatically.

KEY BENEFITS

ULTRA 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. Fast automated attenuation filters are also included to measure scenes with extreme temperature variations.

HIGH DATA RATE

High-performance electronics produce full-frame thermal images at rates up to 1 900 fps.

ADVANCED CALIBRATION

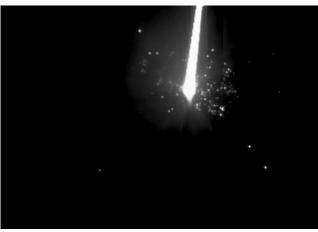
Real-time processing of infrared images including NUC, radiometric temperature, automated exposure control (AEC) and enhanced high-dynamic-range imaging (EHDRI).

EXAMPLES OF TYPICAL USES

Tank Muzzle Flash Analysis



Sparkle combustion analysis



	MIDWAVE SERII	ES		
DETECTOR SPECIFICATIONS	HDR M350	HDR M100 <i>k</i>	HDR M2K	
DETECTOR TYPE	Cooled InSb	Cooled MCT	Cooled InSb	
SPECTRAL RANGE	3 μm to 5.4 μm	3 μm to 4.9 μm	1.5 μm to 5.4 μm	
SPATIAL RESOLUTION	640 × 512 pixels	640 × 512 pixels	320 × 256 pixels	
DETECTOR PITCH	15 μm	16 μm	30 μm	
OPTICAL APERTURE	F/3	F/4	F/2.5	
TYPICAL PERFORMANCES				
MAXIMUM FRAME RATE IN FULL WINDOW	355 Hz	115 Hz	1 900 Hz	
MAXIMUM FRAME RATE IN SUBWINDOW (STATIC FILTER WHEEL MODE)	4 980 Hz @ 64 × 4	120 000 Hz @ 64 × 2	90 000 Hz @ 64 × 4	
TYPICAL NETD	20 mK	17 mK	25 mK	
ELECTRONIC SPECIFICATIONS				
MINIMUM EXPOSURE TIME	0.5 μs to full frame rate	0.2 μs to full frame rate	1 μs to full frame rate	
CAMERA CONSTRUCTION				
LENS MOUNT	Bayonet interface	Bayonet interface	Bayonet interface	

MIDWAVE	MIDWAVE hd SERIES			
DETECTOR SPECIFICATIONS	HDR M100hd			
DETECTOR TYPE	Cooled InSb			
SPECTRAL RANGE	3 μm to 5 μm			
SPATIAL RESOLUTION	1280 × 1024 pixels			
DETECTOR PITCH	15 μm			
OPTICAL APERTURE	F/3			
TYPICAL PERFORMANCES				
MAXIMUM FRAME RATE IN FULL WINDOW	105 Hz			
MAXIMUM FRAME RATE IN SUBWINDOW (STATIC FILTER WHEEL MODE)	2 900 Hz @ 132 × 8			
TYPICAL NETD	20 mK			
ELECTRONIC SPECIFICATIONS				
MINIMUM EXPOSURE TIME	1 μs to full frame rate			
CAMERA CONSTRUCTION				
LENS MOUNT	Bayonet interface			

VERY LONG WAVE SERIES				
DETECTOR SPECIFICATIONS	HDR V300			
DETECTOR TYPE	Cooled MCT			
SPECTRAL RANGE	7.7 µm to 11.8 µm			
SPATIAL RESOLUTION	320 × 256 pixels			
DETECTOR PITCH	30 μm			
OPTICAL APERTURE	F/2			
TYPICAL PERFORMANCES				
MAXIMUM FRAME RATE IN FULL WINDOW	309 Hz			
MAXIMUM FRAME RATE IN SUBWINDOW (STATIC FILTER WHEEL MODE)	79 000 Hz @ 64 × 2			
TYPICAL NETD	25 mK			
ELECTRONIC SPECIFICATIONS				
MINIMUM EXPOSURE TIME	0.5 μs to full frame rate			
CAMERA CONSTRUCTION				
LENS MOUNT	Threaded interface			

Specifications are subject to change without notice.

Other configurations are available upon request.

SENSOR COOLING Rotary-stirling closed cycle STANDARD SCENE TEMPERATURE RANGE Up to 1 500 °C WINDOWING TO INCREASE FRAME RATE DYNAMIC RANGE 16 bits MEASUREMENT ACCURACY 17 K or 1 % (°C) from -15°C to 150°C SIZE W/O LENS 18 MEASUREMENT ACCURACY 19 MEASUREMENT ACCURACY 10 MEASUREMENT ACCURACY 10 MEASUREMENT ACCURACY 10 MEASUREMENT ACCURACY 11 MEASUREMENT ACCURACY 12 MEASUREMENT ACCURACY 13 MEASUREMENT ACCURACY 14 MEASUREMENT ACCURACY 15 MEASUREMENT ACCURACY 16 MEASUREMENT ACCURACY 17 MEASUREMENT ACCURACY 18 MEASUREMENT ACCURACY 19 MEASUREMENT ACCURACY 18 MEASUREMENT AC	COMMON SPECS		
TURE RANGE WINDOWING TO INCREASE FRAME RATE DYNAMIC RANGE MEASUREMENT ACCURACY SIZE W/O LENS Up to 1 500 °C Yes 16 bits 1 K or 1 % (°C) from -15°C to 150°C 13.8" × 8.5" × 9.3" 352 mm × 216 mm × 236 mm	SENSOR COOLING	Rotary-stirling closed cycle	
PRAME RATE DYNAMIC RANGE 16 bits MEASUREMENT ACCURACY 1 K or 1 % (°C) from -15°C to 150°C 13.8" × 8.5" × 9.3" 352 mm × 216 mm × 236 mm		Up to 1 500 °C	
MEASUREMENT ACCURACY 1 K or 1 % (°C) from -15°C to 150°C SIZE W/O LENS 13.8" × 8.5" × 9.3" 352 mm × 216 mm × 236 mm		Yes	
from -15°C to 150°C 13.8" × 8.5" × 9.3" 352 mm × 216 mm × 236 mm	DYNAMIC RANGE	16 bits	
SIZE W/O LENS 352 mm × 216 mm × 236 mm	MEASUREMENT ACCURACY		
WEIGHT W/O LENS < 13 kg	SIZE W/O LENS		
	WEIGHT W/O LENS	< 13 kg	

ABOUT US

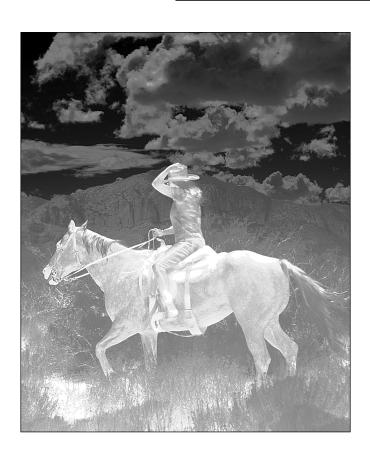
Telops is a leading supplier of highperformance scientific infrared cameras for the defence, academic, industrial, and environmental research industries. Telops also offers R&D services for optical systems technology development.

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 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 32 GB (optional)
- 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.