# HDR-IR FAMILY

Cooled High-End Scientific Cameras.



ELIO

# 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°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.

### ADVANCED CALIBRATION

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

### HIGH DATA RATE

High-performance electronics produce full-frame thermal images at rates up to 300 fps.

# **EXAMPLES OF TYPICAL USES**

Tank Muzzle Flash Analysis



Sparkle combustion analysis



MIDWAVE SERIES			
DETECTOR SPECIFICATIONS	HDR M2 <i>k</i>	HDR M100 <i>k</i>	HDR M350
DETECTOR TYPE	InSb	МСТ	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 @ 64 × 4
TYPICAL NETD	25 mK	17 mK	20 mK
ELECTRONIC SPECIFICATIONS			
EXPOSURE TIME	$1\mu s$ to full frame rate	0.2 $\mu s$ to full frame rate	0.5 $\mu s$ to full frame rate
CAMERA CONSTRUCTION			
LENS MOUNT	Bayonet interface	Bayonet interface	Bayonet interface

MIDWAVE hd SERIES		
DETECTOR SPECIFICATIONS	HDR M100 <i>hd</i>	
DETECTOR TYPE	InSb	
SPECTRAL RANGE	1.5 μm to 5 μm	
SPATIAL RESOLUTION	1280 × 1024 pixels	
DETECTOR PITCH	15 μm	
APERTURE SIZE	F/3	
TYPICAL PERFORMANCES		
FRAME RATE	105 Hz	
MAXIMUM FRAME RATE (STATIC FILTER WHEEL MODE)	2 900 Hz @ 132 × 8	
TYPICAL NETD	20 mK	
ELECTRONIC SPECIFICATIONS		
EXPOSURE TIME	16 μs to full frame rate	
CAMERA CONSTRUCTION		
LENS MOUNT	Bayonet interface	

VERY LONG WAVE SERIES		
DETECTOR SPECIFICATIONS	HDR V300	
DETECTOR TYPE	МСТ	
SPECTRAL RANGE	7.7 μm to 11.8 μm	
SPATIAL RESOLUTION	320 × 256 pixels	
DETECTOR PITCH	30 μm	
APERTURE SIZE	F/2	
TYPICAL PERFORMANCES		
FRAME RATE	300 Hz	
MAXIMUM FRAME RATE (STATIC FILTER WHEEL MODE)	79 000 Hz @ 64 × 2	
TYPICAL NETD	25 mK	
ELECTRONIC SPECIFICATIONS		
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.



COMMON SPECS		
SENSOR COOLING	Rotary-stirling closed cycle	
STANDARD SCENE TEMPERA- TURE RANGE	Up to 1 500 °C	
WINDOWING TO INCREASE FRAME RATE	Yes	
DYNAMIC RANGE	16 bits	
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	
WEIGHT W/O LENS	< 13 kg	

### FOR MORE INFORMATION | TELOPS.COM

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### **ABOUT US**

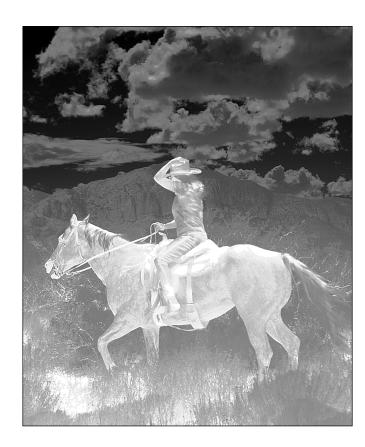
Telops is a leading supplier of highperformance scientific infrared cameras for the defence, academic, industrial, and environmental research industries. Telops also offers R&D services for optical systems technology development.

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, 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.