



HRXCAM-1280

MICROSCANNED LIGHTWEIGHT CATADIOPTIC OPTICS

INO is proud to introduce its thermal infrared, high-resolution, micro-scanned 1280 x 960 pixel camera module. With its open architecture, this user-friendly module offers extensive flexibility with respect to integration. The HRXCAM-1280 camera module uses a state of the art uncooled micro-bolometer detector for high resolution/high sensitivity imaging in the LWIR range. The 640 x 480 pixel sensor is combined with a unique microscanned lightweight catadioptric lens.

The camera module, providing a 16-bit raw signal, is ideal for developers because it provides full access to the detector configuration parameters. TEClless operation minimizes module size and power consumption. The camera module can be configured at the factory for outdoors operation over a large thermal range with 200 °C scene dynamic range at maximum sensitivity. The device incorporated a catadioptric optical objective. Windowing capability provides flexibility in frame frequency, sensitivity and field of view.

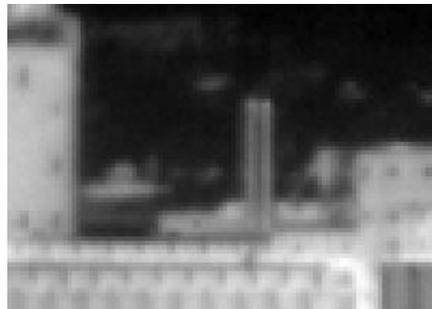
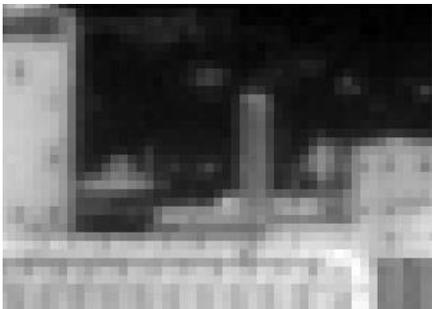


Image without microscan (left) and with microscan (right)

The HRXCAM-1280 is built around catadioptric optics. Catadioptric optics are based on refractive and reflective elements. Reflective elements such as mirror, can be made of light materials, such as aluminum, and are usually lighter than their refractive counterparts. Reflective architectures can also be intrinsically athermalized and used on wider wavebands. This requires fewer optical elements resulting in reduced weight. By using folded path, the optics can be made compact.

INO has designed catadioptric optics for wide field-of-view and large numerical aperture. These optics are designed to provide excellent infrared imaging performance with minimum weight. INO can design and fabricate custom optics according to customer specifications and applications.

MICROSCANNED LIGHTWEIGHT CATADIOPTRIC OPTICS

PRELIMINARY TECHNICAL SPECIFICATIONS	
Resolution	1280 x 960 pixels
Effective pixel pitch	12.5 microns
FPA	640 x 480 pixels uncooled microbolometers , 25 micron pitch, Ulis UL04171
NETD (#1.0, 300 K, 30 Hz)	< 100 mK
Readout mode	Row per row
TECless Operation	Single detector parameter configuration for high-gain operation over a broad temperature range
Output	16-bit raw data, Gigabit Ethernet
Detector configuration via GIGE	All detector parameters can be adjusted including input voltages, gain and integration time
Temperature	<ul style="list-style-type: none"> • Operating : -30 to 55 °C • Start : 0 to 55 °C • Storage : -40 to 80 °C
Mechanics	Integrated heat sink
Size	11.4 cm (ϕ) x 27.6 cm
Weight	1.6 kg
Power supply	12 V
Software	Control and operation software available
Waveband	8 to 14 microns
Focal length	50.0 mm
Effective F/#	F/1.05
FOV	22.6 degrees
Relative illumination	85% at 6 degrees
Microscan response time	< 1.5 milliseconds
Manuel focus range	10 meters to infinity
Optical Dimensions	72 mm diameter (78 mm with flange)
Optics mass	750 grams without front window
Athermal range	-30 °C / 60 °C

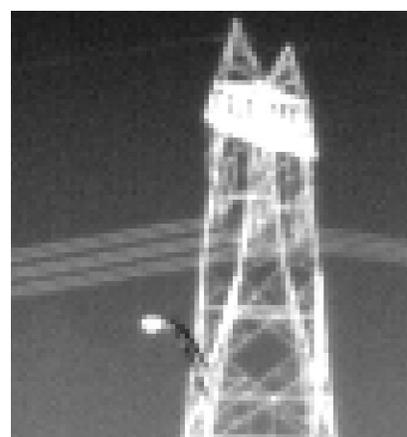
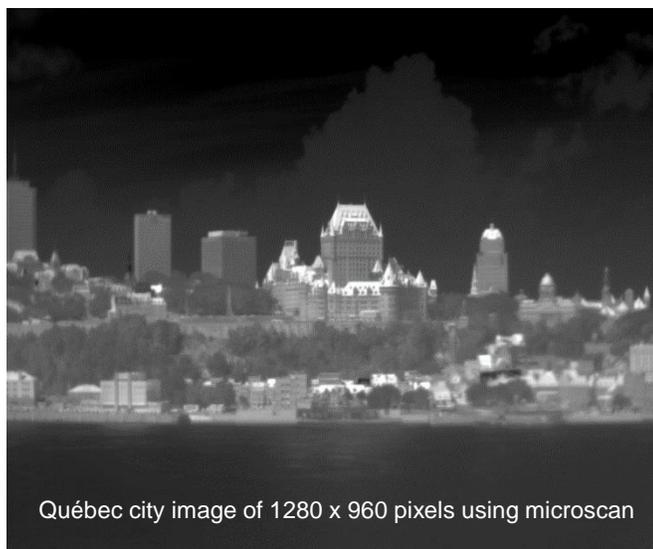


Image without microscan (top) and with microscan (bottom)