



HRXCAM-2048

THERMAL INFRARED, HIGH-RESOLUTION, MICROSCANNED CAMERA MODULE

INO is proud to introduce its thermal infrared, high-resolution, microscanned 2048 X 1536 pixel camera module. With its open architecture, this user-friendly module offers extensive flexibility with respect to integration. The HRXCAM-2048 camera module uses a state-of-the-art uncooled microbolometer detector for high-resolution/high-sensitivity imaging in the LWIR range. The 1024 X 768 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. TEC-less operation minimizes module size and power consumption. The camera module can be configured at the factory for outdoors operation over a large thermal range at maximum sensitivity. The device incorporates a catadioptric optical objective.



MICROSCANNED LIGHTWEIGHT CATADIOPTIC OPTICS

The HRXCAM-2048 is built around catadioptric optics. Catadioptric optics are based on refractive and reflective elements. Reflective elements, such as mirrors, 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 a 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 also design and fabricate custom optics according to customer specifications and applications.

PRELIMINARY TECHNICAL SPECIFICATIONS

RESOLUTION	2048 x 1536 pixels
EFFECTIVE PIXEL PITCH	8.5 microns
EFFECTIVE FRAME RATE	12 fps
FPA	1024 x 768 pixel uncooled microbolometer, 17 micron pitch, 48 fps, Ulis UL05251
NETD (F/#:1.0, 300 K, 30 fps)	< 100 mK
READOUT MODE	Row per row
TEC-LESS OPERATION	Single detector parameter configuration for high-gain operation over a broad temperature range
OUTPUT	16-bit raw data at full frame rate on camera link
DETECTOR CONFIGURATION VIA GigE	All detector parameters can be adjusted including input voltages, gain, and integration time
TEMPERATURE	. 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	24.55 degrees
RELATIVE ILLUMINATION	85% at 6 degrees
MICROSCAN RESPONSE TIME	< 1.5 milliseconds
MANUAL 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



HRXCAM-1024 camera module

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