INO

COMPLETE TERAHERTZ OFFER

MICROXCAM-384I-THZ

SOLUTION OVERVIEW

INO's MICROXCAM-384i THz camera is the core instrument at the forefront of concealed object or hidden defect detection. The broadband detection capabilities render our solution a versatile tool for fundamentals research in THz field. Offering unmatched penetration depth, our MICROXCAM-384i THz camera allow you to see through materials such as fabric, ceramics, plastic, leather, and cardboard.

- 384 x 288 pixels, uncooled microbolometer detector
- 35 µm pixel pitch
- 50 Hz, real time imaging
- Broadband sensitivity, 90 GHz to 20 THz

TYPICAL APPLICATIONS :

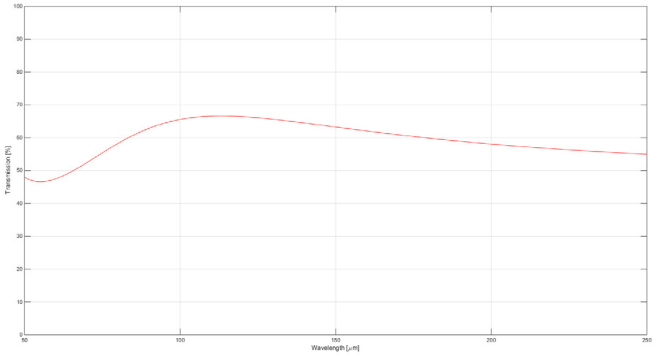
- Beam profiling and optical alignment
- Package inspection
- Manufacturing
- Security and surveillance
- Detection of hidden weapons
- Vision through camouflage
- Quality control, process management
- Spectroscopy
- Submillimeter astronomy
- Dental and medical imaging
- Food inspection

CAMERA OPTIONS

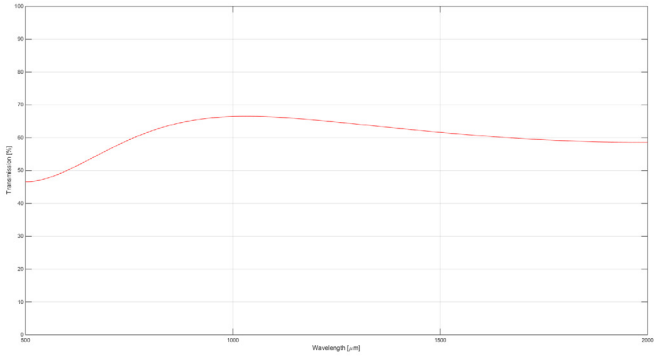
AR Coating :

- Is applied to the external detector window and optics
- Highly recommended to increase transmitted power to the detector
- Can achieve up to 67% transmission at specific wavelengths
- Reduces potential interference of the reflected beams with the transmitted signal beams

Detector window transmission optimized for 118 um



Detector window transmission optimized for 1000um



INO MICROXCAM-384i THz Typical AR coating curves

CAMERA OPTIONS (CONTINUED)

Microshutter:

- Facilitates the offset correction to compensate background fluctuations
- Recommended if you use the camera in an environment where the temperature could vary or if the camera is not readily accessible

IR Filters:

- Used to directly block IR signal that is within the field of view that would otherwise be picked up by the detector
- Long-pass filter; 30 µm cut-off

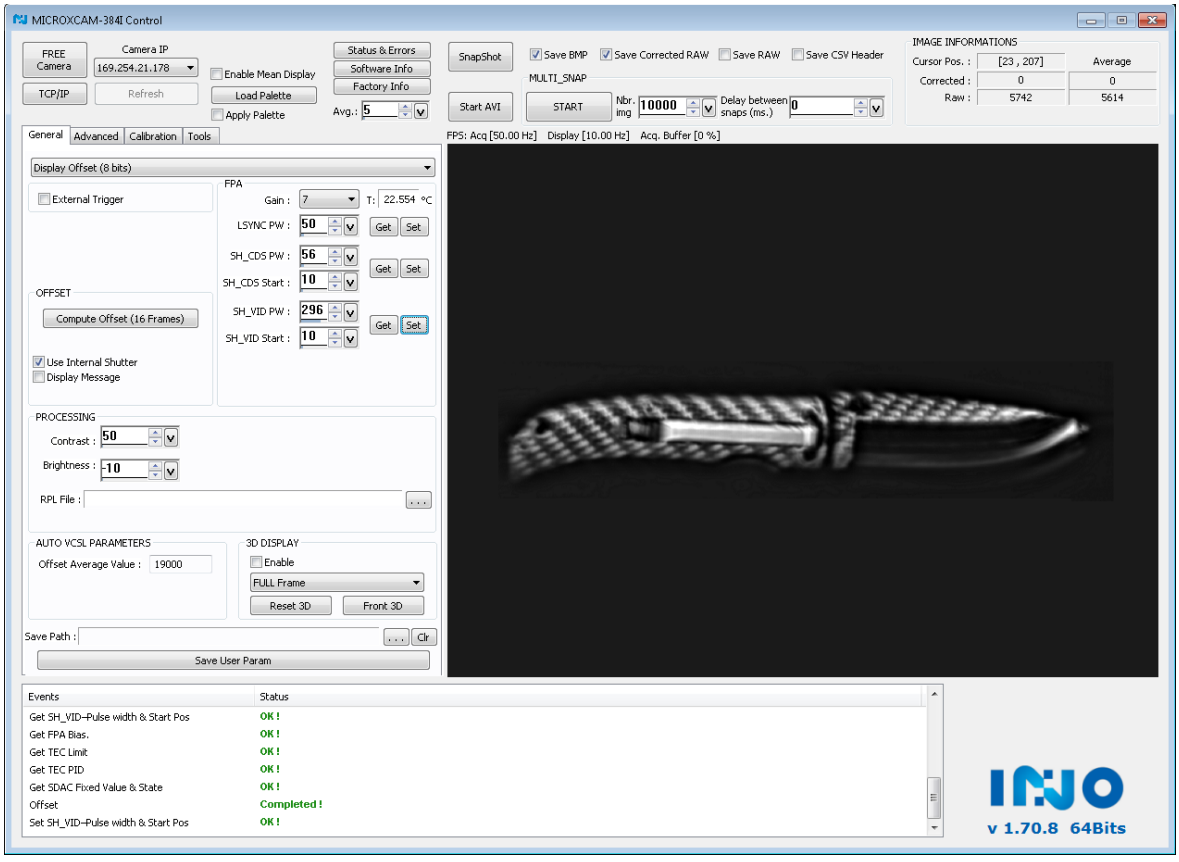
CAMERA FEATURES

Software:

- Microxcam Control Software is included with the camera
- The camera can communicate to the software via GigE

Allows users to:

- Set camera parameters
- Correct image data (gain and offset)
- Calibrate the camera (gain correction factor and bad pixel replacement)
- Save an image snapshot or multisnap to disk
- Record a video in AVI format (8 bits)



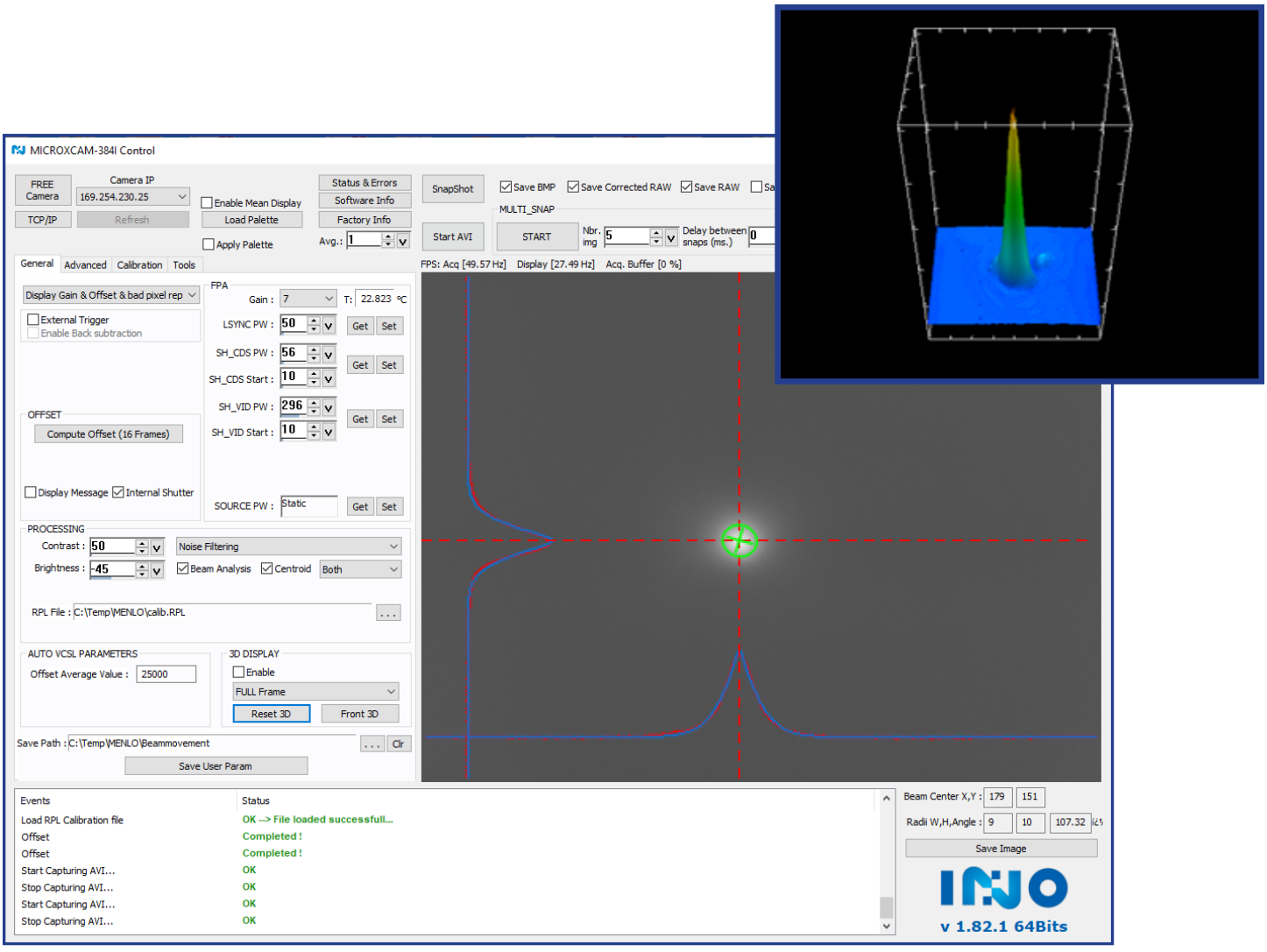
INO MICROXCAM-384i THz camera software

BEAM PROFILING

A set of features are available for beam profiling applications showing characteristics such as center position, radii, width, height, tilt angle. Furthermore, we can add a gaussian fit to the image.

EXTERNAL TRIGGER

For customers wishing to initiate the capture of an image via an external periodic signal, has an SMA input gold-coated connector at the back of the unit.



INO MICROXCAM-384i THz camera bream profiling

NOISE EQUIVALENT POWER (NEP)

The NEP is a measure of the sensitivity of the uncooled microbolometer detector. The typical NEP for specific wavelengths is given below.

TECHNICAL SPECIFICATIONS[1], [2]

FREQUENCY (THZ)	MDP (pW)	NEP pw/sqrt(Hz)
4.25	11.2	0.11
2.52	19.9	0.18
1.89	19.1	0.18
0.762	13.3	0.12
0.693	13.9	0.12
0.397	34.6	0.31
0.198	34.0	0.32

[1]The values above are for a detector with an optimized AR coated window. For windows without the AR coating, NEP values are 10-20% higher.

[2]Marc Terroux, Pierre Talbot, Francis Généreux, Linda Marchese, El-Hassane Oulachgar, Alain Bergeron, "NEP characterization and analysis method for THz imaging devices," Proc. SPIE 11745, Passive and Active Millimeter-Wave Imaging XXIV, 117450L (12 April 2021)

SYSTEM REQUIREMENTS

- OS: Windows XP service pack 2 or more recent
- Display Monitor: Minimum resolution of 1280x1024 pixels is recommended to use the Software
- GigE Ethernet card

TWO MODES OF OPERATION

- Transmission: The object under test is placed between the THz illumination system and the camera
- Reflection: The THz illumination system is located on the same side as the camera with respect to the object under test

ILLUMINATION SOURCES

INO THz illumination systems make the perfect match for our camera and provide you with a bigger light surface ideal for a variety of applications.

SOLUTION OVERVIEW

- Two frequencies available: 0.28 or 0.5 THz
- Compact light surface: 3 x 4 inches, near flat-top illumination
- 0.28 THz ≈4 mW, 0.5 THz ≈1.25 mW, Custom
- Matches aspect ratio of the FPA
- Compatible with reflection & transmission modes
- Calibration procedure

LENS

F/ 0.7

- High Resistivity Float Zone Silicon (HRFZ-Si)
- Images objects from 60 cm to infinity
- 44 mm focal length
- Field of View:
- H-FOV: 17.36 degrees
- V-FOV: 13.06 degrees
- D-FOV: 21.61 degrees

MACRO

- Perfect polymer to increase resolution over a defined area
- Focal length: 48 mm
- Working distance: ~ 22mm
- Field of view of 10x13mm

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