



ImageIR® 9800

LWIR Thermography Camera For High-Resolution Outdoor Measurements

**1,280
x
1,024**
Detector

Detector Format

Detector Format: High resolution thermal images for monitoring large areas

**±1
%**

Measurement Accuracy

Highly accurate and repeatable measurements

**1,280
x
1,024**
180 Hz

IR-Frame Rate

Analysis of extreme temperature changes and gradients in full frame

**≤ 30
mK**

Thermal Resolution

Precise detection of smallest temperature differences @30°C: 0.03 K

**12 µm
Pitch**

Pitch Dimension

Smaller pixel sizes avoid geometrical measurement errors

t_{int}

Shortest Integration Time

Accurate temperature measurements of fast processes

LWIR

Spectral Range

Measurement in the range of (7.7 ... 12.5) µm

The new ImageIR® 9800 is the ideal device for high-resolution thermographic measurements on highly dynamic processes, even at low object temperatures.

The radiometrically calibrated infrared camera operating in the long-wave atmospheric window (LWIR) delivers razor-sharp images and distortion-free sequences even with short integration times and low radiation intensity. This is made possible, among other things, by a cooled focal plane array photon detector with (1,280 × 1,024) IR pixels and a pitch of 12 µm.

A major challenge for many standard infrared cameras is monitoring the condition of wind turbine rotor blades during operation. The ImageIR® 9800, which operates in the LWIR spectral range between (7.7 ... 12.5) µm with a cooled photon detector, masters this task with bravura: This camera is capable of reliably capturing highly dynamic processes that require the shortest integration times, even at low radiation intensities (for example, low temperatures on the measurement object). Combined with appropriate telephoto lenses, InfraTec's new ImageIR® series model also allows temperature measurements to be taken on objects located at long distances.

Technical Specifications

Spectral range	(7.7 ... 12.5) μm
Pitch	12 μm
Detector	T2SLS
Detector format (IR pixels)	(1,280 \times 1,024)
Image acquisition	Snapshot
Readout mode	IWR
Aperture ratio	f/2.4
Detector cooling	Stirling cooler
Temperature measuring range	(-40 ... 1,500) $^{\circ}\text{C}$, up to 3,000 $^{\circ}\text{C}^*$
Measurement accuracy	$\pm 1^{\circ}\text{C}$ or $\pm 1\%$
Temperature resolution @ 30 $^{\circ}\text{C}$	Better than 0.03 K
Frame rate (full / half / quarter / sub frame)*	Up to 180 Hz / 354 Hz / 672 Hz / 5,800 Hz
Window mode	Yes
Focus	Manually, motorised or automatic*
Dynamic range	14 bit
Integration time	(100 ... 20,000) μs
Rotating aperture wheel and filter wheel*	Up to 7 positions
Interfaces	10 GigE
Trigger	4 IN / 2 OUT, TTL
Analogue signals*, IRIG-B*	2 IN / 2 OUT, yes
Tripod adapter	1/4" and 3/8" photo thread, 2 \times M5
Power supply	24 V DC
Storage and operation temperature	(-40 ... 70) $^{\circ}\text{C}$, (-20 ... 40) $^{\circ}\text{C}$
Protection degree	IP54, IEC 60529
Dimensions; weight	(277 \times 123 \times 160) mm; 4 kg (without lens)
Further Functions	HDR*, Multi Integration Time*, HighSense*
Analysis and evaluation software	IRBIS® 3, IRBIS® 3 view, IRBIS® 3 plus*, IRBIS® 3 professional*, IRBIS® 3 control*, IRBIS® 3 online*, IRBIS® 3 process*, IRBIS® 3 active*, IRBIS® 3 mosaic*, IRBIS® 3 vision*

* Depending on model

Lenses	Focal length (mm)	FOV ($^{\circ}$)	IFOV (mrad)
Wide-angle lens	13	(61.1 \times 50.6)	0.9
Standard lens	25	(34.2 \times 27.6)	0.5
Telephoto lens	50	(17.5 \times 14.9)	0.2
Telephoto lens	100	(8.8 \times 7.0)	0.12
Supertelephoto lens	200	(4.4 \times 3.5)	0.06

The ImageIR® 9800 allows full-frame images to be captured at frame rates of 180 Hz. In sub-frame mode, the frame rate can be increased to more than three times this value. Due to extremely short integration times and snapshot mode, images remain sharp and distortion-free even when test objects move at high relative speeds within the image field. During this process, all detector pixels are exposed simultaneously instead of sequentially line by line. All of this, in turn, is essential for accurate, unadulterated thermographic temperature measurement. An accurate analysis of fast-moving objects is supported by a wide range of trigger

options for precise, repeatable time- or process-controlled data recording. This new high-end InfraTec camera also reveals its strengths in tasks such as analysing combustion gases or exhaust gas flows from vehicles at a great distance. The HDR function allows the ImageIR® 9800 a faultfree and continuous imaging of extremely large temperature gradients and changes between -40 $^{\circ}\text{C}$ and 3,000 $^{\circ}\text{C}$. An integrated aperture/filter wheel automatically provides the spectral filters appropriate for the respective measuring range.

Comprehensive Thermography Software for Even More Options

Infrared cameras from InfraTec are supplied with IRBIS®, a powerful control and evaluation software developed in-house. It is available in various configurations and is part of InfraTec's complete thermography solution. The IRBIS® software allows for intuitive and convenient camera operation as well as efficient data acquisition directly to the hard drive of a control computer. It also

offers numerous analysis functions and tools for clear presentation of the generated measurement data and output in various formats (image, video, data). The modular concept of the software makes it possible to tailor the program features to customer requirements and application focus, enabling universal use for a wide range of applications.

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株式会社アイ・アール・システム

〒206-0041 東京都多摩市愛宕4-6-20

TEL: 042-400-0373 FAX: 042-400-0374 e-mail: office@irsystem.com

<https://www.irsystem.com>

