



# ImageIR® 8100 / 9100

The New Generation SWIR Infrared Cameras

1,280  
x  
1,024  
Detector

#### Detector Format

Efficient measurement of smallest details on large-scale objects



#### HighSense

Flexible setting of temperature measurement ranges beyond factory calibration ranges



#### High Temperature Calibration

Wide temperature measuring range up to 1,700 °C



#### Measurement Accuracy

Highly accurate and repeatable measurements



#### Thermal Resolution

Precise detection of smallest temperature differences



#### Pitch Dimension

Smaller pixel sizes avoids geometrical measurement errors

The new SWIR cameras within the ImageIR® series are high-resolution, radiometrically calibrated infrared cameras with a very good price / performance ratio. They are suitable for temperature measurements from 300 °C and operate in the short-wave infrared range.

The SWIR infrared cameras ImageIR® 8100 and ImageIR® 9100 are radiometrically calibrated with (640 × 512) and (1,280 × 1,024) IR pixels in VGA and SXGA image format respectively. Both have a pixel pitch of only 5 μm which results in small detector chip diagonals. This allows a comparatively affordable, compact optical design with high imaging quality. In combination with radiometric calibration, brilliant thermographic images with high geometric and thermal resolution can thus be achieved in both formats. Combining the system with interchangeable lenses of different focal lengths allows convenient adaptation to real measurement scenarios. Here, even the smallest geometric and thermal details on large-area objects can be optimally resolved in the SXGA format.

Its modern interface concept enables convenient camera control and data acquisition in full-frame format up to 237 Hz. In combination with the control and analysis programs of the IRBIS® 3 software family, the new SWIR infrared cameras from InfraTec are a versatile tool for numerous monitoring and measurement tasks.

## Technical Specifications

Spectral range	(0.9 ... 1.7) $\mu\text{m}$
Pitch	5 $\mu\text{m}$
Detector	InGaAs
Detector format (IR pixels)	<b>ImagelR® 8100:</b> (640 × 512); <b>ImagelR® 9100:</b> (1,280 × 1,024)
Image acquisition	Snapshot
Readout mode	ITR/IWR
Temperature measuring range	(300 ... 850) °C, up to 1,700 °C
Measurement accuracy	$\pm 3$ °C or $\pm 3$ %
Temperature resolution @ (350 ... 1,000) °C	Better than 1 K
Frame rate (full/half/quarter/sub frame)*	<b>ImagelR® 8100:</b> up to 237/445/793/2,958 Hz; <b>ImagelR® 9100:</b> up to 83/181/341/2,262 Hz
Window mode	Yes
Focus	Manual
Dynamic range	Up to 12 Bit
Integration time	(21 ... 20,000) $\mu\text{s}$ , visual up to 10 s
Interfaces	GigE Vision
Trigger	2 IN/3 OUT
Tripod adapter	1/4" photo thread
Power supply	(12 ... 30) V DC, wide-range power supply (100 ... 240) V AC, PoE (802.3af)
Storage and operation temperature	(-30 ... 70) °C, (-20 ... 50) °C
Protection degree	IP40
Dimensions; weight (without lens)	(78 × 55 × 55) mm; 350 g
Further functions	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

### ImagelR® 8100

Lenses	Focal Length	FOV (°)	IFOV (mrad)
Standard lens	8 mm	(22.6 × 18.2)	0.63
Standard lens	12 mm	(15.2 × 12.2)	0.42
Telephoto lens	16 mm	(11.4 × 9.1)	0.31
Telephoto lens	25 mm	(7.3 × 5.9)	0.20
Telephoto lens	35 mm	(5.2 × 4.2)	0.14
Telephoto lens	50 mm	(3.7 × 2.9)	0.10
Telephoto lens	100 mm	(1.8 × 1.5)	0.05

### ImagelR® 9100

Lenses	Focal Length	FOV (°)	IFOV (mrad)
Wide-angle lens	8 mm	(43.6 × 35.5)	0.63
Standard lens	12 mm	(29.9 × 24.1)	0.42
Standard lens	16 mm	(22.6 × 18.2)	0.31
Telephoto lens	25 mm	(14.6 × 11.7)	0.20
Telephoto lens	35 mm	(10.4 × 8.4)	0.14
Telephoto lens	50 mm	(7.3 × 5.9)	0.10
Telephoto lens	100 mm	(3.7 × 2.9)	0.05

Compact design and low weight make the ImagelR® 8100 and ImagelR® 9100 SWIR infrared cameras ideal for integration into existing system environments. With the associated Software Development Kit (SDK), all functions of the cameras are easily accessible. Due to their robustness, they can also be used in adverse environmental conditions, for example in industry. As the cameras do not require a mechanical cooler, they are suitable for maintenance-free continuous operation. The new InfraTec SWIR cameras provide users with thermographic cameras that are equipped with high measurement accuracy as well as very good short- and long-term stability.



### Application areas

Some thermographic measurement tasks are characterised by very high temperatures and challenging materials. They can only be solved with a high degree of uncertainty in the medium (MWIR) and long-wave (LWIR) infrared range, with regard to the occurrence of measurement errors. InfraTec's SWIR infrared cameras ImagelR® 8100 and ImagelR® 9100 offer new possibilities. They expand the portfolio of thermographic temperature measurement and allow for example emissivity-optimised measurements of temperatures on metallic surfaces.

### Some examples of use

- High-temperature applications (for example hot forming processes, heat treatments)
- Metal industry (for example welding processes, press hardening, brazing, forging)
- Additive manufacturing and laser applications
- Ceramics and glass industry
- Signature recognition and measurement
- Solutions for integration

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