Industry and Mechanical Engineering

Precise temperature distribution measurement and visualization with our IR-TCM HD Infrared Cameras.

SHARING EXCELLENCE

The IR-TCM HD thermal camera series for stationary applications.

Highly accurate temperature distribution measurement is of paramount importance across a large array of industries. From the fields of electronics, automobile manufacturing, solar panel production to plant monitoring and security technology (to name only a few), reliable quantification of temperature distribution has a huge impact on success and failure rates of an operation. This is where IR-TCM HD infrared cameras come in. These uncooled thermography cameras measure temperature distributions and reliably visualize even the smallest differences in temperature. What makes the IR-TCM HD thermal cameras so remarkable is their high level of measuring accuracy and ease of system integration, so they are ideal for stationary use in demanding applications, such as in automation technology. And thanks to the various built-in interfaces of the IR-TCM HD infrared cameras, you can easily integrate them into current systems you are using – via WLAN, DVI-D, or GigE Vision. Since our cameras have such a wide range of industry applications, we made sure they are compatible with most systems.

Total accuracy instills total confidence.
Engineered to gauge the slightest of temperature differences.

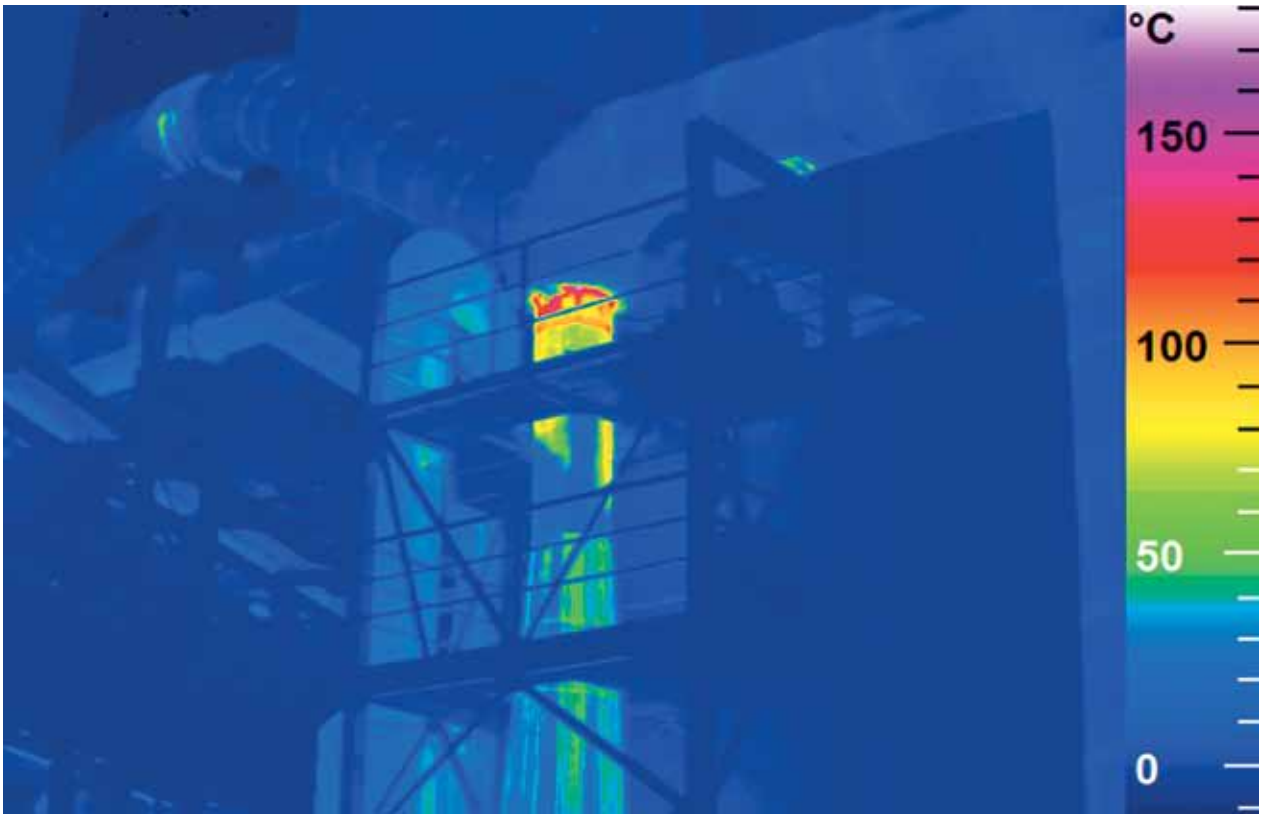
Reliable measurement and visualization for success you can measure.

The IR-TCM HD infrared cameras measure surface temperatures in real time, enabling you to use the data effectively and immediately for monitoring or controlling a huge range of industrial processes. Thanks to the highest image resolution on the market of up to 3.1 IR megapixels, even the slightest difference in temperature can be detected. This high resolution is achieved by combining microbolometer arrays with opto-mechanical resolution enhancement technology – delivering the most sensitive sensor technology on the market. With IR-TCM HD infrared thermography cameras, even wide measuring ranges can be captured in a fully non-contact and extremely reliable process. As the technology is based on uncooled microbolometer arrays combined with established technology, the thermography cameras require practically no maintenance. The exceptionally stable construction and robust, industrial-strength housing reduce life cycle costs to an absolute minimum thanks to the superior protection.

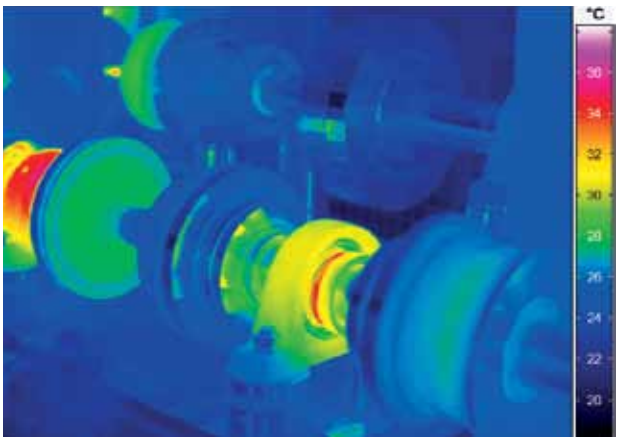
IR-TCM HD

The benefits speak for themselves.

- **Broad scope of application:** Thanks to high spatial resolution, maximum precision, and the highest level of measuring accuracy, the cameras can be used for a wide range of applications.
- **Easy integration into individual system solutions:** Highly flexible, due to the wide range of connection options available, e.g. WLAN, DVI-D, or GigE Vision.
- **Long service life and reduced life cycle cost:** With stable housing, uncooled camera technology requires practically no maintenance.
- **Flexible adaptation to customer needs and requirements:** Since they are modular, you can choose from a wide range of high-quality infrared optical systems.
- **Non-contact and extremely reliable process:** Even wide measuring ranges can be recorded with total discretion and consistency.
- **State-of-the-art accuracy:** Visualization and measurement of even the slight differences in temperature, captured in high resolution.
- **Lightning fast:** Radiometric imaging in real time allows for accelerated processes and rapid response.



The sensitive thermal sensor technology detects faintest thermal abnormalities



Maximum temperature imaging: up to 3.1 IR megapixels

Reliably visualize even the smallest differences in temperature

Fields of application

- Industrial and scientific research & development
- Predictive and preventive maintenance
- Process control and machine vision
- Aerial imaging
- Environmental monitoring
- Solar power plant monitoring
- Security engineering and fire detection
- Site surveillance
- Thermal inspection systems
- Military engineering[1]
- Automation technology

IR-TCM HD Basic Stationary LWIR Infrared Camera.
Professional thermography camera for system integration.

Technical specifications	IR-TCM HD Basic
Detector type	Uncooled microbolometer (focal plane array, ITAR-free)
Image resolution (pixels)	640 × 480
Image rate (@ detector resolution)	30 Hz
Subframe modes & frame rates (optional)	384 × 288 (60 Hz)
Spectral range	From 7.5 µm to 14 µm
Temperature measurement range[2]	From -40°C to +600°C
Temperature resolution (NETD)	≤ 40 mK
Measurement accuracy	± 2.0 K or ± 2.0%
Dynamic range	16-bit
Interface options for image transfer	GigE Vision, DVI-D, C-Video, WLAN (optional)
Interface options for camera control	GigE Vision, RS-232, Trigger, Bluetooth (optional)
Power supply	From 12 V DC to 24 V DC
Operating temperature range	Switch-on: from -15°C to +55°C Operating: from -25°C to +55°C
Storage temperature	From -40°C to +70°C
Humidity	Relative humidity from 10% to 95%, non-condensing
Shock	Operational: 25G, IEC 68-2-29
Vibration	Operational: 2G, IEC 68-2-6
Protection class	IP54 (bayonet lens mount) or IP67 (threaded lens mount)
Dimensions (housing, without lens)	190 mm × 90 mm × 100 mm (L × W × H)
Weight	1.0 kg (with standard lens)
Measurement functions (selection)	Multiple measurement spots & ROIs, hot/cold spot detection, isotherms, differences
Automatic functions (selection)	Focus, image, level, range, NUC, lens recognition, image optimization, alarm sequence
Correction functions	Emissivity (manual or material table), transmissivity, ambient temperature, humidity (optional)

[1] IR-TCM HD 1024 is designed and intended for standard civil applications in the fields of industrial automation and R&D, security engineering, and emergency services. Special module design and configuration for military applications is available on request. Please contact us for more information.

[2] Overall range available for measurement and visualization. Two discrete sensitivity levels are used.

Available lenses with IP54 bayonet mount or IP67 thread mount	Type	f / Focal length	HFOV × VFOV	Minimum focus distance
	Wide angle	1.0 / 10 mm	57 deg × 44 deg	0.2 m
	Standard	1.0 / 20 mm	33 deg × 24 deg	0.3 m
	Telephoto	1.0 / 40 mm	16 deg × 12 deg	0.6 m

IR-TCM HD 640 Stationary LWIR Infrared Camera.
Precision thermography with up to 1280 × 960 IR pixels resolution.

Technical specifications	IR-TCM HD 640	IR-TCM HD 640 RE	
Detector type	Uncooled microbolometer (focal plane array, ITAR-free)		
Image resolution [pixels]	640 × 480	1280 × 960 (RE mode[3])	640 × 480
Image rate (@ detector resolution)	60 Hz		60 Hz
Subframe modes & frame rates (optional)	384 × 288 (120 fps) 640 × 120 (240 fps)		
Spectral range	From 7.5 µm to 14 µm		
Temperature measurement range[2]	From -40°C to +1,200°C, high-temperature option: up to 2,000°C		
Temperature resolution (NETD)	≤ 30 mK		
Measurement accuracy	± 1.5 K or ± 1.5%		
Dynamic range	16-bit		
Interface options for image transfer	GigE Vision, DVI-D, C-Video, WLAN		
Interface options for camera control	GigE Vision, RS-232, trigger, analog output, digital I/O, WLAN, Bluetooth		
Power supply	From 12 V DC to 24 V DC		
Operating temperature range	Switch-on: from -15°C to +55°C Operating: from -25°C to +55°C		
Storage temperature	From -40°C to +70°C		
Humidity	Relative humidity: from 10% to 95%, non-condensing		
Shock	Operational: 25G, IEC 68-2-29		
Vibration	Operational: 2G, IEC 68-2-6		
Protection class	IP54 (bayonet lens mount) or IP67 (threaded lens mount)		
Dimensions (housing, without lens)	190 mm × 90 mm × 94 mm (L × W × H)		
Weight (housing, without lens)	1.15 kg		
Measurement functions (selection)	Multiple measurement spots & ROIs, hot/cold spot detection, isotherms, differences, profiles		
Automatic functions (selection)	Focus, image, level, range, NUC, lens recognition, image optimization, alarm sequence		
Correction functions	Emissivity (manual or material table), transmissivity, ambient temperature, humidity (optional)		

1) IR-TCM HD 640 is designed and intended for standard civil applications in the fields of industrial automation and R&D, security engineering, and emergency services. Special module design and configuration for military applications is available on request. Please contact us for more information.
2) Overall range available for measurement and visualization. Three discrete sensitivity levels are used.
3) RE: Opto-mechanical Resolution Enhancement technology

Available lenses and converters with IP54 bayonet mount or IP67 thread mount

Type	f / Focal length	HFOV × VFOV	Minimum focus distance
Super wide angle	1.0 / 7.5 mm	125 deg × 93 deg	0.2 m
Wide angle	1.0 / 15 mm	62 deg × 51 deg	0.5 m
Standard	1.0 / 30 mm	31 deg × 23 deg	0.3 m
Telephoto	1.0 / 60 mm	15 deg × 11 deg	2.0 m
Super telephoto	1.0 / 120 mm	7.5 deg × 5.7 deg	4.0 m
M 0.2× Close-up lens for Standard lens		IFOV: 119 µm	Working distance: 137 mm
M 0.5× Close-up lens for Standard lens		IFOV: 47 µm	Working distance: 47 mm
M 0.5× Close-up lens for Telephoto lens		IFOV: 50 µm	Working distance: 100 mm

IR-TCM HD 1024 Stationary LWIR Infrared Camera.

Accurate thermal imaging with up to 2048 × 1536 IR pixels resolution.

Technical specifications	IR-TCM HD 1024	IR-TCM HD 1024 RE	
Detector type	Uncooled microbolometer (focal plane array, ITAR-free)		
Image resolution (pixels)	1024 × 768	2048 × 1536 (RE mode[3])	1024 × 768
Image rate (@ detector resolution)	30 Hz		30 Hz
Subframe modes & frame rates (optional)	640 × 480 (60 fps), 384 × 288 (120 fps), 1024 × 96 (240 fps)		
Spectral range	From 7.5 µm to 14 µm		
Temperature measurement range[2]	From -40°C to +1,200°C High-temperature option: up to 2,000°C		
Temperature resolution (NETD)	≤ 40 mK		
Measurement accuracy	± 1.5 K or ± 1.5%		
Dynamic range	16-bit		
Interface options for image transfer	GigE Vision, DVI-D, C-Video, WLAN		
Interface options for camera control	GigE Vision, RS-232, trigger, analog output, digital I/O, WLAN, Bluetooth		
Power supply	From 12 V DC to 24 V DC		
Operating temperature range	Switch-on: from -15°C to +55°C Operating: from -25°C to +55°C		
Storage temperature	From -40°C to +70°C		
Humidity	Relative humidity: from 10% to 95%, non-condensing		
Shock	Operational: 25G, IEC 68-2-29		
Vibration	Operational: 2G, IEC 68-2-6		
Protection class	IP54 (bayonet lens mount) or IP67 (threaded lens mount)		
Dimensions (housing, without lens)	190 mm × 90 mm × 94 mm (L × W × H)		
Weight (housing, without lens)	1.15 kg		
Measurement functions (selection)	Multiple measurement spots & ROIs, hot/cold spot detection, isotherms, differences, profiles		
Automatic functions (selection)	Focus, image, level, range, NUC, lens recognition, image optimization, alarm sequence		
Correction functions	Emissivity (manual or material table), transmissivity, ambient temperature, humidity (optional)		

1) IR-TCM HD 1024 is designed and intended for standard civil applications in the fields of industrial automation and R&D, security engineering, and emergency services. Special module design and configuration for military applications is available on request. Please contact us for more information.
2) Overall range available for measurement and visualization. Three discrete sensitivity levels are used.
3) RE: Opto-mechanical Resolution Enhancement technology

Available lenses and converters with IP54 bayonet mount or IP67 thread mount

Type	f / Focal length	HFOV × VFOV	Minimum focus distance
Super wide angle	1.0 / 7.5 mm	136 deg × 101 deg	0.2 m
Wide angle	1.0 / 15 mm	68 deg × 51 deg	0.5 m
Standard	1.0 / 30 mm	32 deg × 25 deg	0.3 m
Telephoto	1.0 / 60 mm	16 deg × 12 deg	2.0 m
Super telephoto	1.0 / 120 mm	8.1 deg × 6.2 deg	4.0 m
M 0.2× Close-up lens for Standard lens		IFOV: 81 µm	Working distance: 137 mm
M 0.5× Close-up lens for Standard lens		IFOV: 32 µm	Working distance: 47 mm
M 0.5× Close-up lens for Telephoto lens		IFOV: 35 µm	Working distance: 100 mm

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