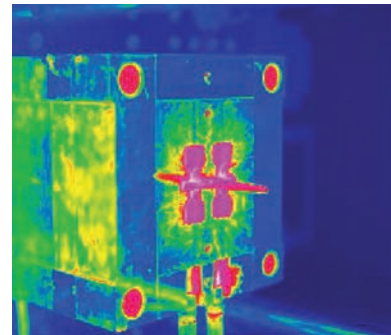**JENOPTIK**

IR-TCM 384 IR Camera Module
Thermal images with 384 × 288 pixel resolution

Reliable thermal camera module for 384×288 pixel resolution in real-time

Whether visualizing or measuring two-dimensional heat distributions, the uncooled OEM camera module IR-TCM 384 outputs stunning infrared images of 384 × 288 pixel resolution with a sharpness and distinctness so far unknown at commercial level. What's more, it does so in real-time! If configured with an optional hardware extension for resolution enhancement, it can even produce close to photo-realistic IR images with 768 × 576 pixel resolution. This can also work out very helpfully in security environments for clearly indicating persons, vehicles or other heat sources at large visual fields.

Equipped with standard interfaces as FireWire, S-/C-Video, VGA, RS232, or optionally Gigabit-Ethernet the camera module can easily be integrated into a variety of applications in little time.

Applications:
- Machine vision and process observation
- Property monitoring or aerial photography
- Thermography
- Security engineering
- Research & Development
- Fire detection
- Thermal inspection systems
- Military engineering[1]

Sensor Systems

IR-TCM 384 IR Camera Module
Thermal images with 384 × 288 pixel resolution

Specifications

	IR-TCM 384
Detector type	Uncooled microbolometer (Focal Plane Array)
Image resolution	384 × 288 pixel (768 × 576 in RE Mode)
Spectral range	7.5 µm ... 14 µm
Range for measuring / visualization[2]	-40 °C ... +300 °C I Option: up to +2000 °C
Temperature resolution	NETD < 70 mK I With filtering: NETD < 30 mK
Measurement accuracy[3]	± 1.5 K (0 °C ... 100 °C) | otherwise ± 2 K, ± 2%
Dynamic range	16 bit
Image rate	50 Hz (PAL) or 60 Hz (NTSC)
Interfaces	IEEE-1394 (FireWire), S-/C-Video, VGA, RS-232
Power supply	9 VDC ... 24 VDC
Operating temperature	-15 °C ... +50 °C
Storing temperature	-40 °C ... +70 °C
Humidity	Relative humidity 10% ... 95%, non-condensing
Shock	Operational: 25G, IEC 68-2-29
Vibration	Operational: 2G, IEC 68-2-6
Dimensions (without lens)	153 mm × 91 mm × 111 mm
Weight (with housing)	1050 g
Options	+ Opto-mechanical Resolution Enhancement for 768 × 576 pixel image resolution
	+ High temperature calibration up to 1,200 °C or 2000 °C
	+ Further interface options (e.g. Gigabit-Ethernet)
	+ Wireless remote control and image transfer by WLAN
	+ Implementable image processing functionality (e.g. image filtering, zoom, auto-image, hot- & cold-spot-detection, measurement spots, measurement value correction, etc.)
	+ CMOS video camera for combined IR-VIS imaging, including IR-VIS image merging
	+ Remote control and image capturing software
	+ Image analysis software

+ Lenses:

-	Wide angle lens:	1.0 / 12.5 mm (FOV 57° × 44°)
-	Standard lens:	1.0 / 30 mm (FOV 25° × 23°)
-	Telephoto lens 1:	1.0 / 50 mm (FOV 15° × 12°)
-	Telephoto lens 2:	1.0 / 75 mm (FOV 10° × 7.7°)
-	Telephoto lens 3:	1.0 / 130 mm (FOV 5.9° × 4.4°)

[1]) IR-TCM 384 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 & configuration for military applications is available on request. Please contact us for more information.
[2]) Overall range available for measurement or visualization. Two discrete sensitivity levels are used: -40 °C ... +120 °C and 0 °C ... +300 °C.
[3]) For measuring camera modules only.

It is our policy to constantly improve the design and specifications. Accordingly, the details represented herein cannot be regarded as final and binding.