



More Precision.

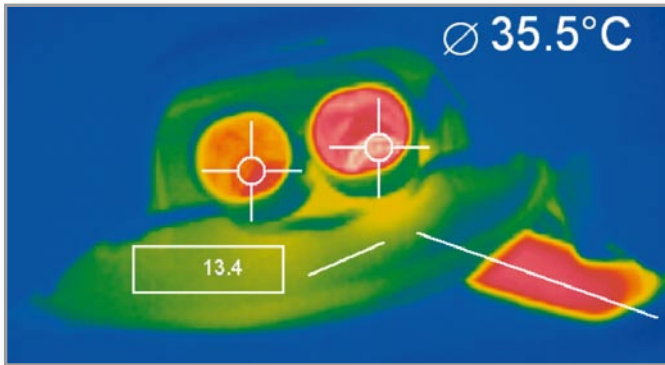
thermoIMAGER TIM
Compact Thermal Imager



thermoIMAGER TIM Features

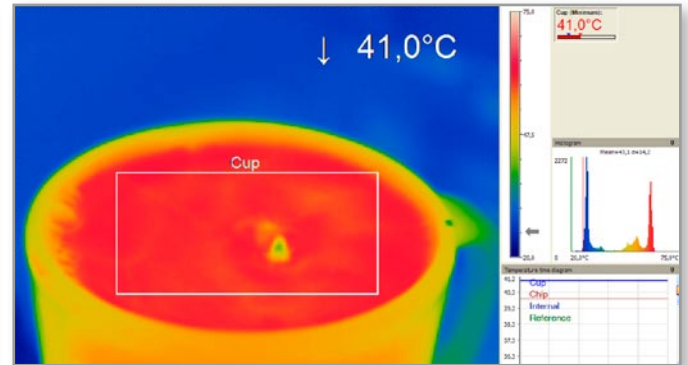
Automatic hot spot detection

Objects can be examined thermally and hot or cold positions (hot or cold spots) can be found automatically.



Fast measurements

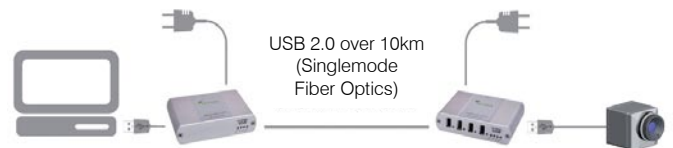
Temperature distributions at surfaces can be captured precisely within an millisecond interval.



Easy process integration

Advanced interface concepts allow the integration within networks and automated systems:

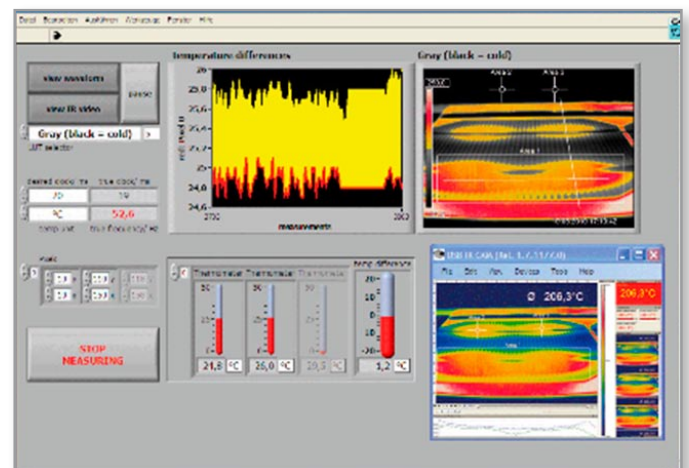
- USB cable extension up to 100m (over Ethernet) or 10km (over fibre)
- Process interface (PIF) at the camera as analog input / output (0 to 10V) and digital input (low and high-level)
- Software interface via Dynamic-link Library (DLL), Computer-Port (ComPort)
- RS232 Serial data communication
- incl. LabVIEW interface/port



Software Features

Automatic process and quality control

- Individual setup of alarm levels depending on the process
- BI-SPECTRAL process monitoring (IR and VIS) for easy orientation at point of measurement
- Line-scan camera function to control processes of moving measurement objects
- Definition of visual or acoustic alarms and analog data output via the process interface
- Analog and digital signal input (process parameter)
- External communication of software via Comports, DLL and LabVIEW driver



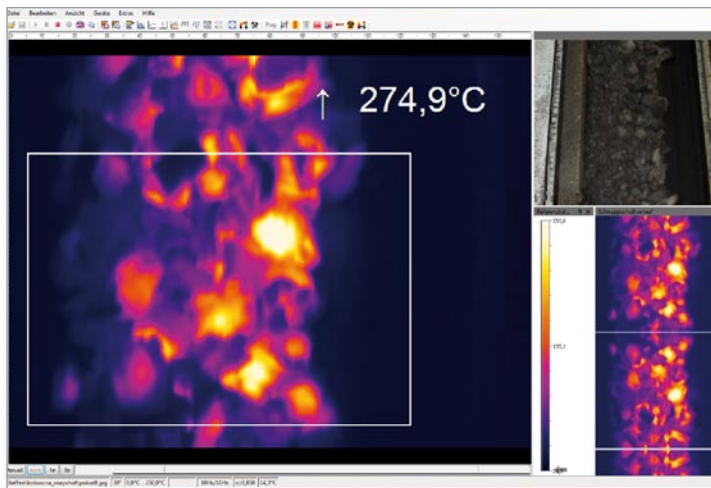
thermoIMAGER TIM 200 BI-SPECTRAL technology

With the help of BI-SPECTRAL technology, a visual image (VIS) can be combined with a thermal image (IR). Both can be finally captured time synchronously:



Monitoring modus:

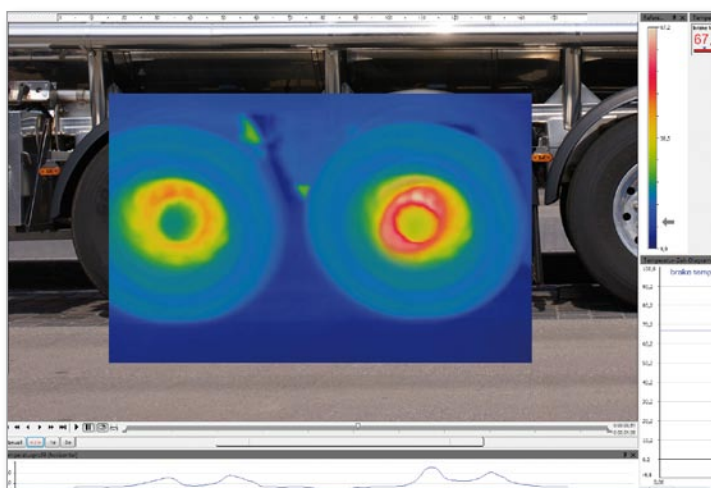
Easy orientation at point of measurement



thermoIMAGER TIM Connect Software - conveyor of living embers

Cross-fading modus:

Highlighting of critical temperatures



thermoIMAGER TIM Connect Software - tires

thermoIMAGER TIM 160



thermoIMAGER TIM 160

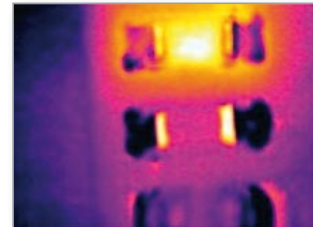
Miniature real time thermal imager with USB interface

- Measuring range from -20°C to 900°C (special edition 1500°C)
- Excellent thermal sensitivity of 0.08K (NEDT)
- Exchangeable lenses with 6°FOV, 23°FOV and 48°FOV
- Real time video recording at 120Hz frame rate with slow motion playback capability
- Power supply and operation via USB 2.0 interface
- Extremely lightweight (195g) and rugged (IP67)
- Very compact 45x45x62mm
- Analogue input and output, trigger interface
- Software developer kit and Labview driver are included as standard

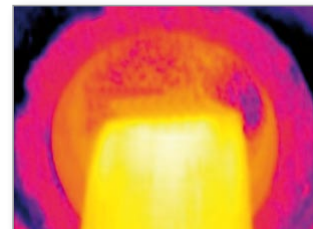
Software

- Display of the thermal image in real time (120Hz) with recording function (video, snap shot)
- Complete set up of parameters and remote control of the camera
- Detailed analysis of fast thermodynamic processes
- Output of analogue temperature or alert values via the process interface
- Digital communication via RS232 or DLL for software integration

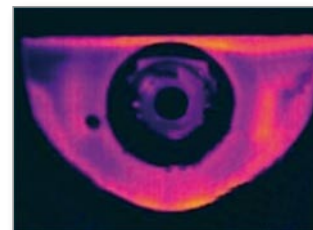
Applications - Examples



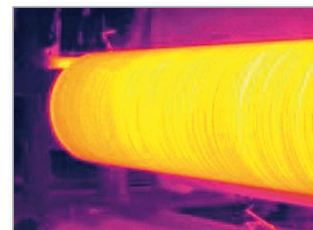
R&D electronic



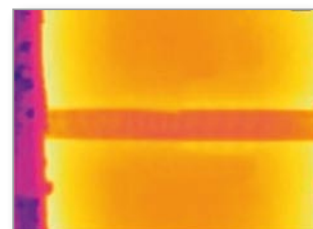
Process control extrusion



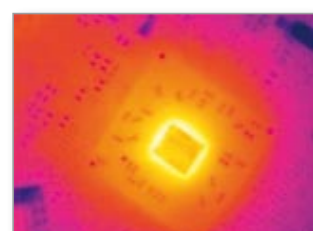
R&D mechanical components



Process control calendering



Production of solar panels



R&D electronic devices

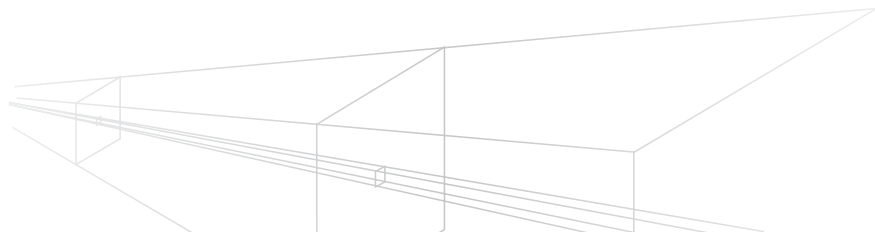
Technical data

thermoIMAGER TIM 160	
Optical resolution	160x120 pixel
Temperature ranges	-20°C to 100°C / 0°C to 250°C / 150°C to 900°C
Spectral range	7.5 to 13µm
Frame rate	120Hz
System accuracy	±2% or ±2°C
Resolution (Display)	±0.1°C
Lenses	48° / f = 4.5mm (min. distance 20mm); 23° / f = 10mm (min. distance 20mm); 6° / f = 35.5mm (min. distance 500mm)
Emissivity	0.10 to 1.00 adjustable
Thermal Sensitivity	0.1K with 48° FOV ¹⁾ / 0.08K with 23° FOV ¹⁾ / 0.3K with 6° FOV ²⁾
Detector	Focal Plane Array (FPA) - uncooled micro bolometer 25x25µm ²
Measurement modes	Flexible spot with crosshair marking, fixed measurement field with automatic display of maximum-, minimum- or average value
Colour palettes	Iron, rainbow, black-white, black-white inverted
Set up controls (via menu)	Mesurement modes, full automatic, manual, colour palettes, emissivity, file management, date/time, °C/ °F, language
Outputs/digital	USB 2.0
Process interface (electrically isolated)	0-10 V output, 0-10 V input, trigger input
Digital communication	via RS232 of PC / DLL interface
Cable length	1m (standard), 5m, 10 m, 20m
Power supply	USB powered
Tripod mount	1/4-20 UNC
Environmental rating	IP 67
Ambient temperature	0°C to 50°C (up to 240°C with cooling jacket)
Storage temperature	-40°C to 70°C
Relative humidity	20 to 80%, non-condensing
Vibration	2G, IEC 68-2-6 11-200Hz each axis
Shock	25G, IEC 68-2-29 11ms each axis
Weight	195g; incl. lens

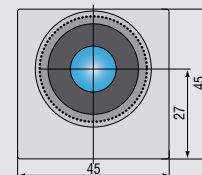
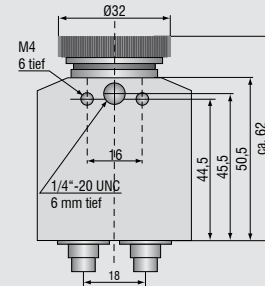
PC requirements: minimum 1.5GHz, 1GB RAM, Windows XP SP2, Windows 7

¹⁾ Caution: at distances below 200mm measurement accuracy can be out of specification

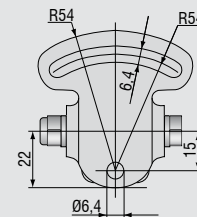
²⁾ Caution: at distances below 500mm measurement accuracy can be out of specification



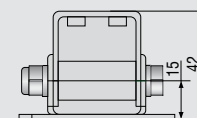
Dimensions



Accessories



TM-MB-TIM Mounting base, adjustable

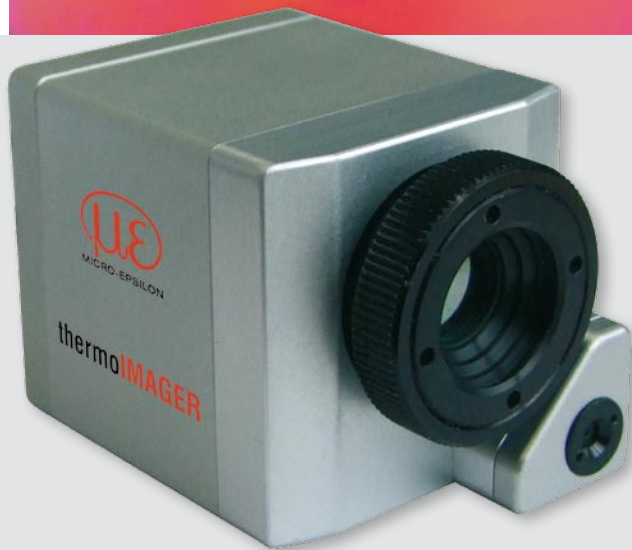


TM-PH-TIM Protective housing incl. mounting base



TM-J-TIM Cooling jacket
(length 228mm, ø89mm) with adjustable
mounting bracket TM-JAB-TIM;
recommended high temperature cable
TM-USBC5H-TIM (up to 240°C)

thermoIMAGER TIM 200



thermoIMAGER TIM 200

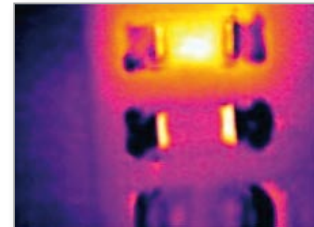
Thermal imager with BI-SPECTRAL technology

- **NEW:** BI-SPECTRAL technology
- Measuring range from -20°C to 900°C (special edition 1500°C)
- Excellent thermal sensitivity of 0.08K (NEDT)
- Exchangeable lenses with 6°FOV, 23°FOV and 48°FOV
- Thermal images in real time with 128Hz via USB 2.0 interface
- Time synchronic visual image recording (VIS) with 32Hz (640 x 480 pixel)
- Power supply and operation via USB 2.0 interface
- Extremely lightweight (215g) and rugged (IP67)
- Very compact 45x45x62mm
- Analogue input and output, trigger interface
- Software developer kit and Labview driver are included as standard

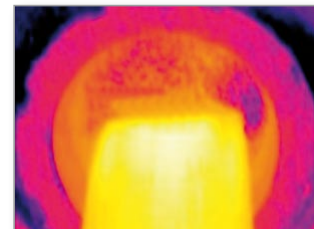
Software

- Display of the thermal image (128Hz) and the real time image (32 Hz) in real time with recording function (video, snap shot)
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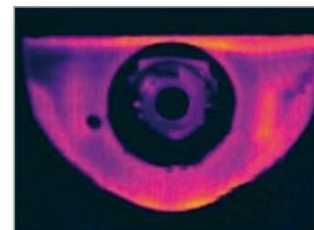
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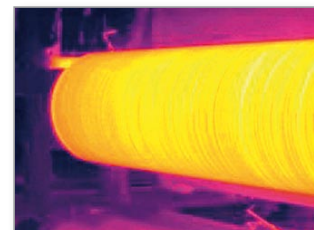
R&D electronic



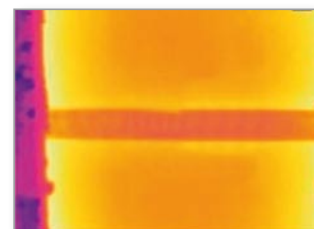
Process control extrusion



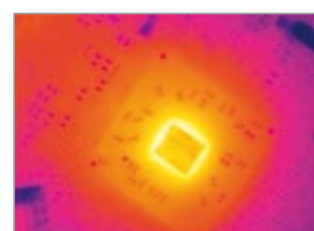
R&D mechanical components



Process control calendaring



Production of solar panels



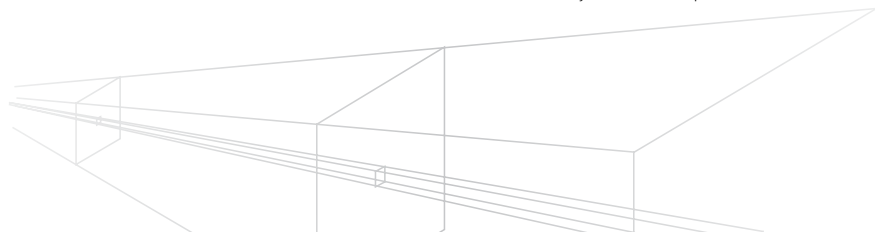
R&D electronic devices

Technical data

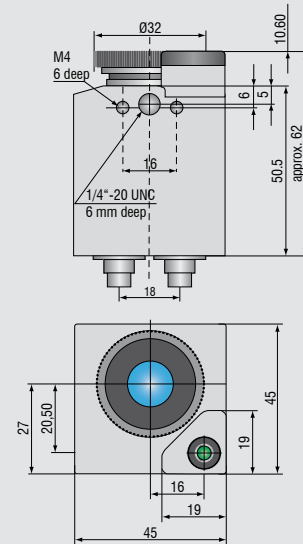
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Colour palettes	Iron, rainbow, black-white, black-white inverted
Set up controls (via menu)	Mesurement modes, full automatic, manual, colour palettes, emissivity, file management, date/time, °C/ °F, language
Data of visual camera	Optical resolution: 640 x 480 Pixel Frame rate: 32Hz Lenses (FOV): 54° x 40°
Outputs/digital	USB 2.0
Process interface (electrically isolated)	0-10 V output, 0-10 V input, trigger input
Digital communication	via RS232 of PC / DLL interface
Cable length	1m (standard), 5m, 10 m, 20m
Power supply	USB powered
Tripod mount	1/4-20 UNC
Environmental rating	IP 67
Ambient temperature	0°C to 50°C (up to 240°C with cooling jacket)
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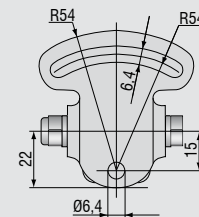
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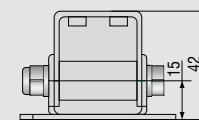
Dimensions



Accessories



TM-MB-TIM Mounting base, adjustable



TM-PH-TIM Protective housing incl. mounting base



TM-J-TIM Cooling jacket
(length 228mm, ø89mm) with adjustable
mounting bracket TM-JAB-TIM;
recommended high temperature cable
TM-USBC5H-TIM (up to 240°C)

The right optics for many applications

- Standard-, tele- and wide angle lens for different applications
- High quality germanium lenses and a special antireflective coating
- Factory calibrated lenses allowing the easy exchange of optics without recalibration

Objective 48° x 37° wide angle; focal distance 4.5 mm; min distance 0.02m											
HFOV	m	0.09	0.27	0.44	1.07	1.78	3.56	5.3	8.9	26.7	88.9
VFOV	m	0.07	0.20	0.33	0.80	1.33	2.67	4.0	6.7	20.0	66.7
IFOV	mm	0.56	1.67	2.78	6.67	11.11	22.22	33.3	55.6	166.7	555.6
Distance in m		0.1	0.3	0.5	1.2	2	4	6	10	30	100

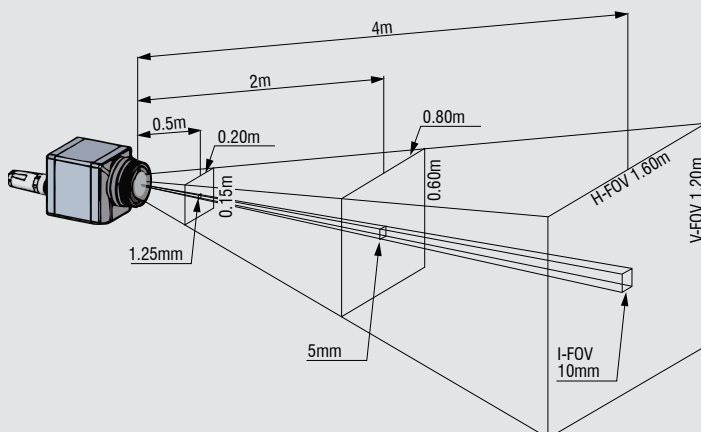
Objective 23° x 17° wide angle; focal distance 10 mm; min distance 0.02m											
HFOV	m	0.04	0.12	0.20	0.48	0.80	1.60	2.40	4.00	12.00	40.00
VFOV	m	0.03	0.09	0.15	0.36	0.60	1.20	1.80	3.00	9.00	30.00
IFOV	mm	0.25	0.75	1.25	3.00	5.00	10.00	15.00	25.00	75.00	250.00
Distance in m		0.1	0.3	0.5	1.2	2	4	6	10	30	100

Objective 6° x 5° wide angle; focal distance 35.5 mm; min distance 0.5m											
HFOV	m	-	-	0.06	0.14	0.23	0.45	0.7	1.1	3.4	11.3
VFOV	m	-	-	0.04	0.10	0.17	0.34	0.5	0.8	2.5	8.5
IFOV	mm	-	-	0.35	0.85	1.41	2.82	4.2	7.0	21.1	70.4
Distance in m		0.1	0.3	0.5	1.2	2	4	6	10	30	100

FOV = Field of view; HFOV = Horizontal field of view; VFOV = Vertical field of view; IFOV = Indicated field of view

Precise measurement values can be calculated on
www.micro-epsilon.com/optikkalkulator

Dependence between field of view (FOV) and distance (lens 23° x 17°)



Scope of supply TIM 160/200

- ▶ TIM process camera including one selected lens
- ▶ Operation manual
- ▶ USB cable 1m
- ▶ Processing and analysing software
- ▶ Tripod mount
- ▶ PIF cable 1m

Scope of supply TIM 160/200 /DK

- ▶ TIM process camera including 6°, 23°, 48° optics
- ▶ Certificate of calibration, matched with the optics
- ▶ Tripod mount 200 to 1000mm
- ▶ Rugged transport case
- ▶ Operation manual
- ▶ USB cable 1m and 10m
- ▶ Processing and analysing software
- ▶ PIF cable 1m



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