



More Precision.

thermoIMAGER TIM 160
Compact Thermal Imager



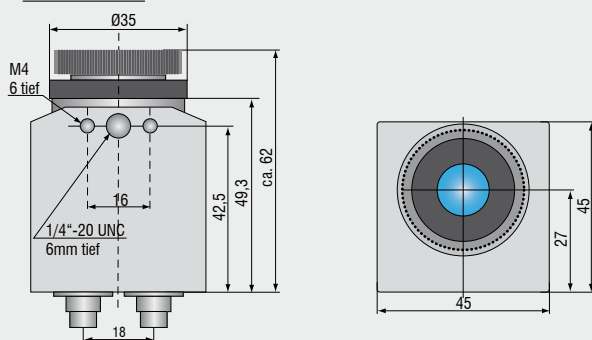


thermoIMAGER TIM160

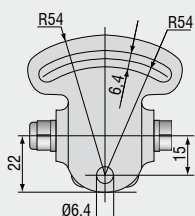
Very compact thermal imager with USB interface

- Measuring range from -20°C to 900°C
- Excellent thermal sensitivity of 0.1K (NEDT)
- Exchangeable lenses with 9° FOV, 31° FOV or 64° FOV
- Real time video capture, with 100Hz frame rate via USB 2.0 interface and slow motion playback
- Power supply and operation via USB interface
- Extremely lightweight (250g) and rugged (IP65)
- Very compact $45 \times 45 \times 62\text{mm}$
- Analogue input and output, trigger interface

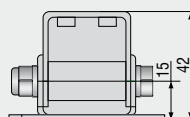
Dimensions



Accessories



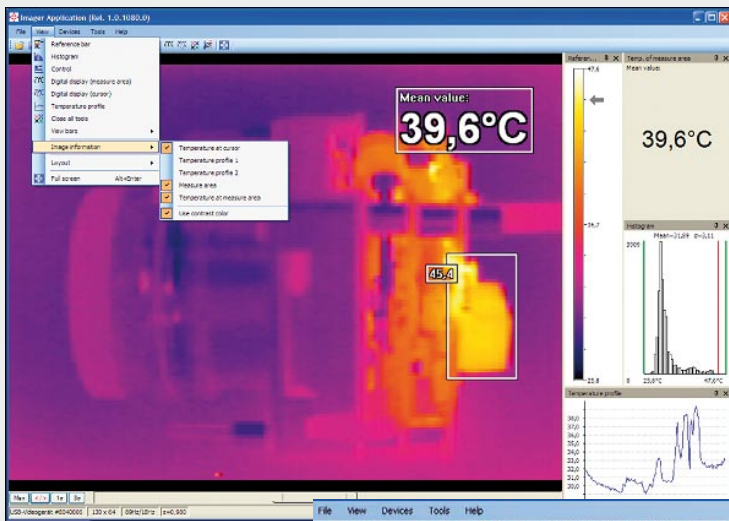
TM-MB-TIM Mounting base, adjustable



TM-PH-TIM Protective housing incl. mounting base

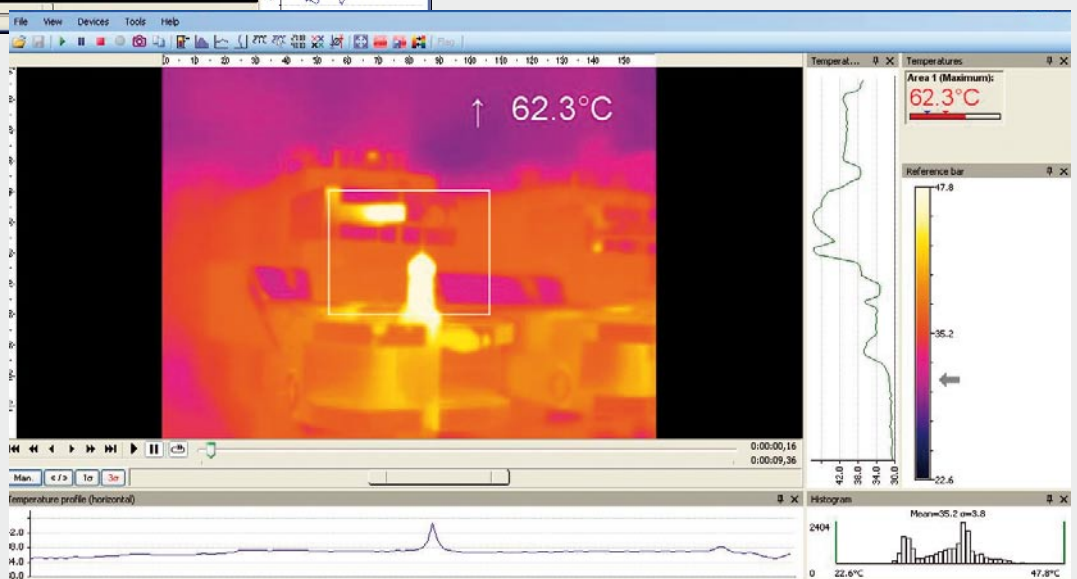


TM-J-TIM Cooling jacket (length 228mm , $\varnothing 89\text{mm}$) with adjustable mounting bracket TM-JAB-TIM; recommended high temperature cable TM-USBC5H-TIM (up to 200°C)



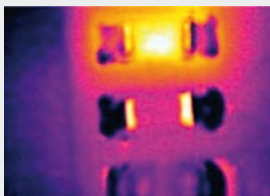
Software

- Display of the thermal image in real time (100 Hz) with recording function (video, snap shot)
- Complete set up of parameters and remote control of the camera
- Detailed analysis of fast thermodynamic processes
- In-process and offline analysis
- Process interface supports analogue and digital output
- Free software development kit for individual programming

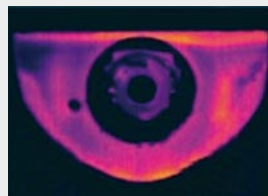


In-process monitoring, e.g. linecamera with hotspot detection

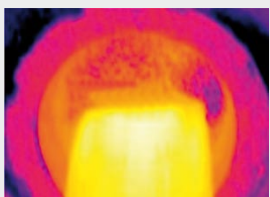
Applications



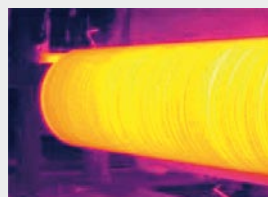
R&D electronic



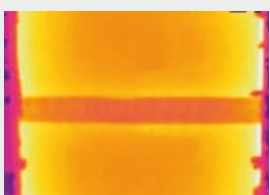
R&D mechanical components



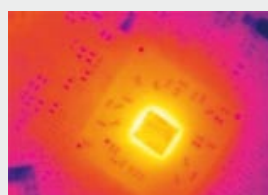
Process control extrusion



Process control calendering



Production of solar panels



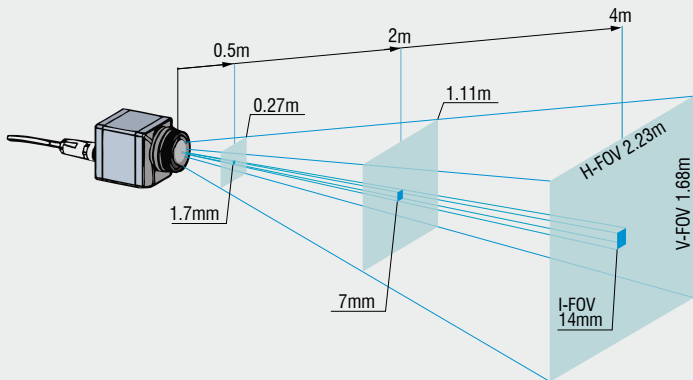
R&D electronic devices

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



Dependence between field of view (FOV) and distance (lens 31° x 23°)



Objective 64° x 50° wide angle; focal distance 5.7 mm; min distance 0.02m

| | | | | | | | | | | | | |
|---------------|----|-------|-------|-------|-------|-------|------|------|------|------|-------|-----|
| HFOV | m | 0.019 | 0.119 | 0.369 | 0.619 | 1.494 | 2.49 | 4.5 | 7.5 | 12.5 | 37.5 | 125 |
| VFOV | m | 0.015 | 0.09 | 0.277 | 0.464 | 1.121 | 1.87 | 3.7 | 5.6 | 9.4 | 28.1 | 94 |
| IFOV | mm | 0.121 | 0.746 | 2.308 | 3.871 | 9.338 | 15.6 | 31.2 | 46.8 | 78 | 234.3 | 781 |
| Distance in m | | 0.02 | 0.1 | 0.3 | 0.5 | 1.2 | 2 | 4 | 6 | 10 | 30 | 100 |

Objective 31° x 23° wide angle; focal distance 10 mm; min distance 0.02m

| | | | | | | | | | | | | |
|---------------|----|-------|------|------|------|------|------|-----|-----|-----|------|-----|
| HFOV | m | 0.006 | 0.05 | 0.16 | 0.27 | 0.67 | 1.11 | 2.3 | 3.4 | 5.6 | 16.8 | 56 |
| VFOV | m | 0.004 | 0.04 | 0.12 | 0.21 | 0.50 | 0.84 | 1.7 | 2.5 | 4.2 | 12.6 | 42 |
| IFOV | mm | 0.03 | 0.30 | 1.00 | 1.70 | 4.20 | 7 | 14 | 21 | 35 | 105 | 350 |
| Distance in m | | 0.02 | 0.1 | 0.3 | 0.5 | 1.2 | 2 | 4 | 6 | 10 | 30 | 100 |

Objective 9° x 7° wide angle; focal distance 35.5 mm; min distance 0.3m

| | | | | | | | | | | | | |
|---------------|----|------|-----|------|------|------|------|-----|-----|-----|-----|------|
| HFOV | m | - | - | 0.04 | 0.07 | 0.18 | 0.31 | 0.6 | 1 | 1.6 | 4.8 | 15.8 |
| VFOV | m | - | - | 0.03 | 0.05 | 0.14 | 0.23 | 0.5 | 0.7 | 1.2 | 3.6 | 11.9 |
| IFOV | mm | - | - | 0.30 | 0.50 | 1.20 | 2 | 4 | 6 | 10 | 30 | 99 |
| Distance in m | | 0.02 | 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

| Modell | thermoIMAGER TIM160 |
|---|--|
| Optical resolution | 160x120 pixel |
| Temperature ranges | -20°C to 100°C / 0°C to 250°C / 250°C to 900°C |
| Spectral range | 7.5 to 13µm |
| Frame rate | 100Hz |
| System accuracy | ±2% or ±2°C |
| Resolution (Display) | 0.1°C |
| Lenses | 64° f = 5.7mm (minimum distance 20 mm) 31° / f = 10 mm (minimum distance 20 mm) 9° / f = 36 mm (minimum distance 300 mm) |
| Emissivity | 0.10 to 1.00 adjustable |
| Thermal Sensitivity | 0.1 °C with 64° / 0.1 °C with 31° FOV / 0.3 K with 9° FOV |
| Detector | Focal Plane Array (FPA) - uncooled micro bolometer 35x35µm 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, color palettes, emissivity, file management, date/time, °C/ °F, language |
| Outputs/digital | USB 2.0 |
| Process interface (electrically isolated) | 0-10V output 0-10V input, trigger input |
| Cable length | 1m (standard), 5m, 20m |
| Power supply | USB powered |
| Tripod mount | 1/4-20 UNC |
| Environmental rating | IP 67 |
| Ambient temperature | 0°C to 50°C (up to 200°C with cooling jacket) |
| Storage temperature | -40°C to 70°C |
| Relative humidity | 20 to 80%, non-condensing |
| Vibration | 2G, IEC 68-2-6 |
| Shock | 25G, IEC 68-2-29 |
| Weight | 250g; incl. lens |

PC requirements: PC requirements. 1.5GHz, 1GB RAM, Windows XP SP 2, Vista or Windows 7

Scope of supply TIM160

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

Scope of supply TIM160/DK

- ▶ TIM process camera including 9°, 31°, 64° optics
- ▶ Certificate of calibration, matched with the optics
- ▶ Tripod mount 200 to 1000 mm
- ▶ Rugged transport case
- ▶ Operation manual
- ▶ USB cable 1m and 10 m
- ▶ Processing and analysing software

Non contact IR-temperature sensors at a glance

High-Performance infrared temperature sensor with double laser aiming

thermoMETER CTlaser -
Precise infrared sensors
with laser aiming
Measuring range -40 ... 1800°C



Compact infrared temperature sensor for OEM applications

thermoMETER CS/CX -
For OEM applications
Measuring range from -30 ... 900°C



Infrared temperature sensor for general purpose applications

thermoMETER CT -
The general purpose series
Measuring range -40 ... 1800°C



For handheld application, inspection and maintenance

thermoMETER Handhelds
Measuring range -35 ... 900°C

