

## thermoIMAGER Microscope lens

High resolution thermal imagers with microscope lens



### Precise temperature measurement of very small parts

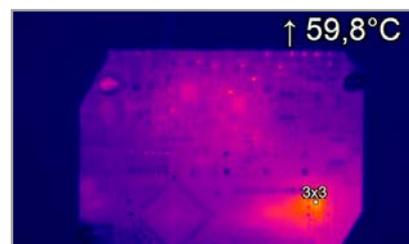
In order to recognize the slightest of temperature differences, the TIM 640 VGA thermal imaging camera is available with a microscope lens. In addition to overall images and videos, even detailed macro shooting of individual components is possible. The scope of supply includes a thermal imaging camera (TIM 640 VGA), a suitable microscope lens, PIF and USB connection cables and a high quality tripod. Comprehensive evaluation software is also provided, offering numerous features such as analysis and display of rapidly changing temperatures and recording of radiometric images and videos (up to 125 Hz). The data can be exported and evaluated with other programs.

### High resolution

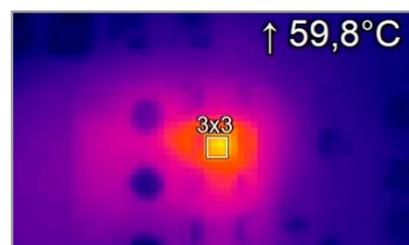
The microscope lens enables macro shooting of individual components based on a spatial resolution of up to  $28 \mu\text{m}$ . The distance between the camera and the object to be measured can be up to 100 mm. Within this range, flexible camera positioning is possible. Due to the large working distance, electrical function tests can be carried out whilst measuring the temperature. The synchronous measurement procedure for electrical parameters is therefore not influenced by the camera position.

### Upgrade your thermoIMAGER camera

Thermal imaging cameras from Micro-Epsilon are equipped with exchangeable lenses. Therefore, the TIM 640 VGA thermal imaging camera can be upgraded with a microscope lens.



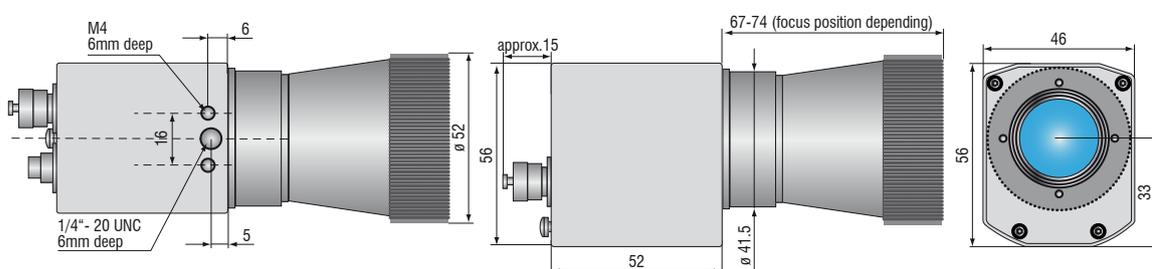
Overall record of a PCB with TIM 640 VGA - standard lens



Individual components, magnified without microscope lens



Individual components, magnified with microscope lens



# thermoIMAGER Microscope lens

Model	TIM 640 VGA	
Optical resolution	640 x 480 pixels @ 32 Hz 640 x 120 pixels @ 125 Hz	
Temperature ranges (scalable)	-20 °C to 100 °C, 0 °C to 250 °C, (20)150 °C to 900 °C <sup>1)</sup>	
Spectral range	7.5 to 13 $\mu$ m	
Frame rate	32 Hz (switchable to 125 Hz)	
System accuracy	$\pm 2$ °C or $\pm 2$ %, whichever is greater	
Field of view (FOV)	12° x 9° (F=1.1) / f= 44 mm	
Smallest spot size (IFOV)	28 $\mu$ m	
Min. field of view (MFOV)	85 $\mu$ m <sup>2)</sup>	
Focus adjustment	80 to 100 mm	
Thermal sensitivity (NETD)	120 mK	
Detector	FPA - uncooled micro bolometer	
Outputs/digital	USB 2.0	
Standard process interface (PIF)	0-10 V input, digital input (max. 24 V), 0-10 V output	
Industry process interface (PIF) (option)	2x 0 - 10 V inputs, digital input (max. 24 V), 3x 0(4) - 20 mA outputs, 3x relays (0 - 30 V/ 400 mA), fail-safe relay	
Cable length (USB)	1 m (standard), 3 m, 5 m, 10 m, 20 m	
Power supply	USB powered	
Tripod mount	1/4-20 UNC	
Protection class	IP67	
Ambient temperature range	0 °C to 50 °C	
Storage temperature	-40 °C to 70 °C	
Relative humidity	20 to 80 %, non-condensing	
Shock / Vibration <sup>3)</sup>	IEC 60068-2	
Dimensions <sup>3)</sup>	TIM camera	46 mm x 56 mm x 90 mm
	Microscope lens	52 mm x 74 mm
Emissivity	0.100 ... 1.100	

<sup>1)</sup> For the range (20)150 up to 900 °C, the accuracy specification applies from 150 °C

<sup>2)</sup> MFOV on TIM 640 VGA 3 x 3 pixels

<sup>3)</sup> For more information see operating instructions

## Scope of supply

### Standard

- TIM 640 VGA with microscope lens (12° x 9°)
- Tripod mount for fine adjustment of camera focus
- PIF cable incl. terminal block (1 m)
- USB cable 1 m
- TIMConnect Software
- Hard-shell case for camera and accessories

For the TIM 640 VGA camera, an upgrade kit without cameras is optionally available. For optical calibration, please send us the camera.

