Technical Datasheet

KTRD 4465



Reaches Every Measurement Point

- Compact device
- Fiber optics
- 100–1200 °C
- Limited space

maurer optoelectronics

GRUBATEC MESS- UND REGELTECHNIK

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Kompakt Pyrometer

For decades, MAURER has been delivering precise, reliable and adaptable infrared measurement technology. The KTRD 44xx series combines the MAURER miniature housing with a flexible fiber optic cable for measurement points that would otherwise be unreachable. The electronics stay outside the heat zone, the fiber optic cable is heat-resistant up to 150 °C, and the FSMA connector allows the fiber optic cable and optics to be changed easily.

Steel | Iron | Non-ferrous metals | Wire | Ceramics | Rolling | Induction | Soldering | Welding | Forming | Vacuum furnaces

Compact, flexible, heat-resistant

- Combination of miniature housing and flexible fiber optic cable for the thightes spaces
- Electronics stay outside the heat zone,fiber optic cable is heat-resistant up to 150 °C
- Three spectral ranges for different materials and temperature windows
- FSMA connector allows the fiber optic cable and optics to be changed easily

Models KTRD 4465 | KTRD 4475 | KTRD 4485

Miniature technology with a long reach

- Spectral range: 2.1 µm
- Short response time between 1 and 5 ms
- Emissivity of 100 - 10 %, adjustable directly on the device or via interface
- LED target light, precisely matching actual measurement spot in size & position
- With fiber optic cable and optics for exact alignment even in confined spaces
- Usable with digital and analog output
- 1 switching output (open collector)
- Operating voltage 24 V DC
- Free software (IR-LOG) for parameterization, data recording and archiving

Typical Application

On a confined soldering system, the KTRD 4465 transmits the measurement signal via a flexible fiber optic cable to the evaluation unit, since the pyrometer itself cannot be mounted directly next to the hot solder joint due to the limited space.

Measurement ranges

❶ 100 - 300 °C
❷ 150 - 400 °C
❸ 200 - 600 °C
❹ 250 - 800 °C
❺ 100 - 500 °C
❻ 150 - 800 °C
❼ 200 - 1200 °C

Special ranges on request

Technical Data

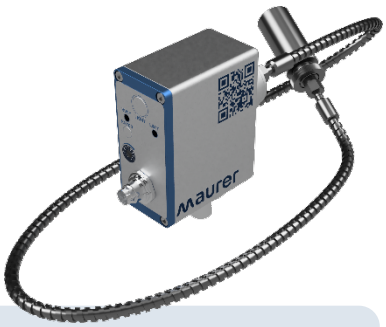
Device types	KTRD 4465
Measurement spot marking	**LED target light**
Response time	1 ms or 5 ms, depending on Measurement range
Spectral range	2,1 µm
Measurement uncertainty	0,5 % ± 1 °C (ε = 1, Tu = 23 °C, T95 = 1 s)
Temperature dependance	0,01 % / °C
Reproducibility	0,1 %
Emissivity	100 - 10 % adjustable on the device or via interface
Resolution	< 0.1 % at the analog output < 0.1 °C at the interface
Analog output	0 - 20 mA or 4 - 20 mA (max. load 500 Ω) adjustable via interface or software
Switching output	24 V / 100 mA (open coll.)
Interface	RS 232 ± 50 V isolated
Device connector	8-pin connector
Operating temperature	0 - 60 °C, Waveguide and optics up to 150 °C
Storage temperature	-10 °C - 70 °C
Permissible humidity	35 - 85 % RH (no condensation)
Supply voltage	24 V DC ± 10 %
Power consumption	< 100 mA
Dimensions (WxHxD) / Weight	30 x 65 x 80 mm / 0.15 kg without fiber optic cable
IP code	IP65
Others	Max. memory, dual memory, adjustable time and threshold value, reset after time, external contact, via software, on new measured object

Wave guide

- Fiber diameter per measurement range
  - Range 1,2,5,6: Ø 0.6
  - Range 2,7: Ø 0.4 mm
  - Range 4: Ø 0.2 mm
- Quartz fiber optic cable in a metal protective sheath
- FSMA connectors on both ends for connection to the pyrometer and front optics
- Special lengths and other fibers available on request
- Ambient temperature max. 150°C
- Minimum bend radius = 200 x fiber diameter

Additional options

- Interfaces: RS 485 ± 70 V isolated (7-pin connector)
- Version with optics on the device: KTRD 4065
- High-speed version: KTRD 4465-HS
- Special optics and measuring ranges available on request



Electrical add-ons

- Evaluation unit AED 1012
- PC box (USB connection set)
- Various connection cables

Mechanical add-ons

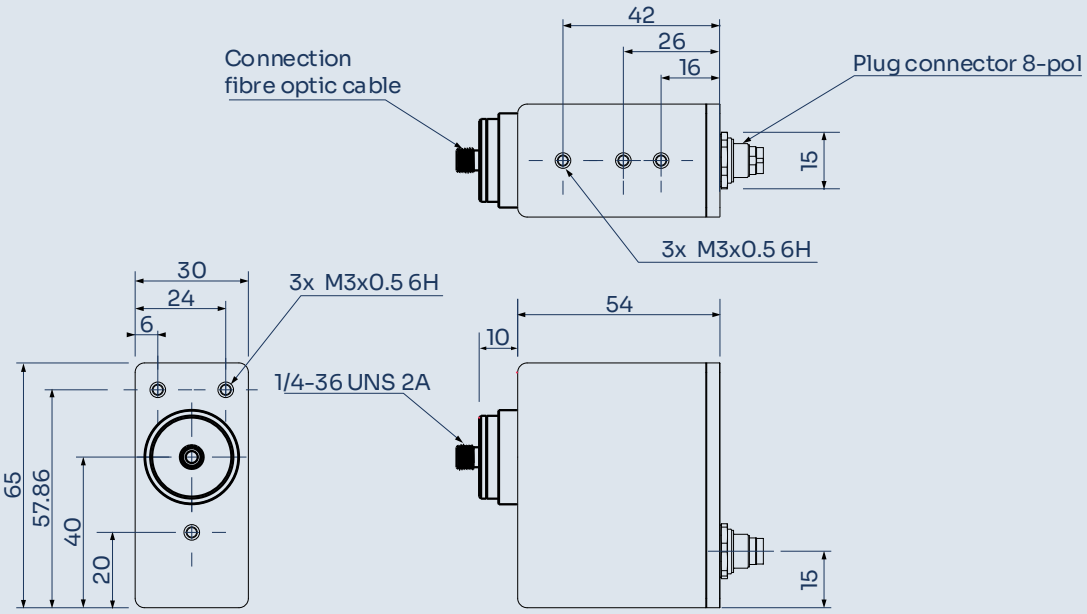
- Mounting bracket
- 90° beam deflector
- Air-purge attachment
- Cooling plate

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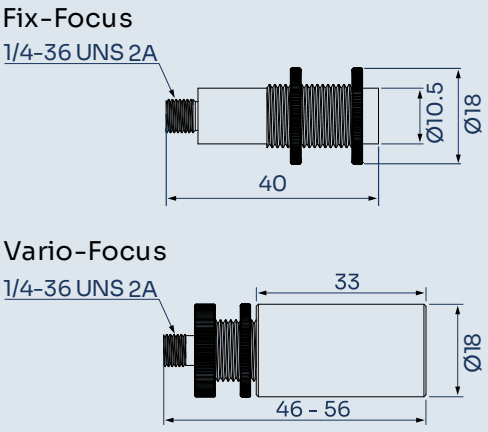
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Drawings

KTRD44x housing with fibre optic cable



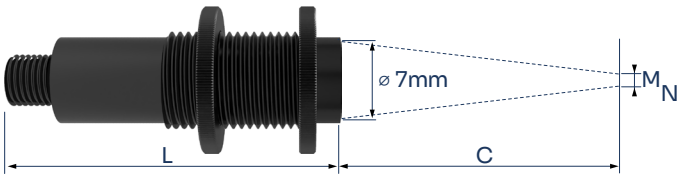
Fiber optics



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Optics

Fix-Focus



Legend	
L	Length of optics
C	Distance from optics
Mn	Nominal spot size

Optic: VL 50-M 12

Faser D [µm]	C [mm]	L [mm]	Mn [mm]
200	50	38	0,7
400			1,4
600			2

Optic: VL 100-M 12

Faser D [µm]	C [mm]	L [mm]	Mn [mm]
200	100	40	1
400			2
600			3

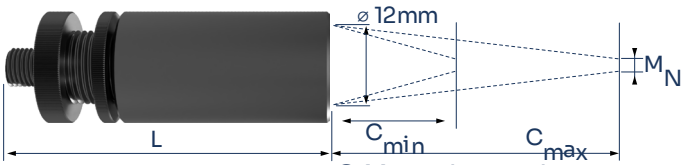
Optic: VL 150-M 12

Faser D [µm]	C [mm]	L [mm]	Mn [mm]
200	150	38	1,4
400			2,7
600			4

Optic: VL 200-M 12

Faser D [µm]	C [mm]	L [mm]	Mn [mm]
200	200	38	2
400			4
600			6

Vario-focus



$$\text{Messfleck } M_N = \frac{\text{C Messabstand}}{\text{R Ratio}}$$

Legend	
L	Length of optics
Cmin	Minimum distance from optics
Cmax	Maximum distance from optics
Mn	Nominal spot size

Optic: VL-VA N - Cmin=64mm / Cmax=160mm

Faser D [µm]	Ratio	C [mm]	L [mm]	Mn [mm]
200	138	64	56	0,5
		160	46	1,2
400	69	64	56	0,9
		160	46	2,3
600	46	64	56	1,4
		160	46	3,5

Optic: VL-VA T - Cmin=100mm / Cmax=5000mm

Faser D [µm]	Ratio	C [mm]	L [mm]	Mn [mm]
200	150	100	56	0,4
		5000	46	1,1
400	75	100	56	0,9
		5000	46	2,1
600	50	100	56	1,3
		5000	46	3,2

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