Technical Datasheet

QKTRD 4485



Undisturbed, Compact & Flexible

- Ratio principle
- Fiber optics
- 700–2500 °C
- Limited space

maurer optoelectronics

GRUBATEC MESS- UND REGELTECHNIK

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Two-color Pyrometer

For decades, MAURER has been delivering precise, reliable and adaptable infrared measurement technology. The QKTRD 4485 combines a compact housing, flexible fiber optic cable and interference-resistant ratio measurement: it delivers reliable readings from 700 to 2500 °C, even in the presence of smoke, steam or changing emissivity, and even at locations with limited space or high ambient temperature.

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

Compact, flexible and interference-resistant

- Ratio measurement remains reliable in the presence of smoke, steam or changing emissivity
- 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
- Target LED light marks the actual measurement spot precisely in size and position

Models QKTRD 4085 | **QKTRD 4485**

Miniature technology with a long reach

- Spectral range: 0.85 - 1.1 µm
- Short response time of 1 ms, with dynamic adjustment
- Emissivity ratio of 0.8 - 1.2, 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 and data recording/archiving

Typical Application

On a confined casting system, the QKTRD 4485 reliably measures the melt temperature via a flexible fiber optic cable, even when smoke or splashes obstruct visibility - ideal when there is no room for the pyrometer.

Measurement ranges

❶ 700 - 1600 °C
❷ 800 - 2000 °C
❸ 850 - 2500 °C

Special ranges on request

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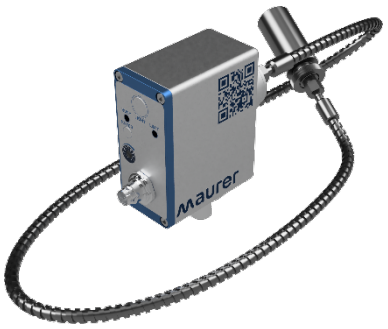
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Technical Data

Device types	QKTRD 4485
Measurement spot marking	**LED target light**
Response time	1 ms, with dynamic adjustment
Spectral range	0.85 - 1.1 µm
Measurement uncertainty	0.5 % ± 1 °C (ε = 1.Tu = 23 °C.T95 = 1 s)
Temperature dependance	0.01 % / °C
Reproducibility	0.1 %
Emissivity ratio	0.8 - 1.2 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: Ø 0.6 mm
  - Range 2: Ø 0.4 mm
  - Range 3: 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)
- Standard version: QKTRD 4085
- Special optics and measuring ranges available on request

Electrical add-ons

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

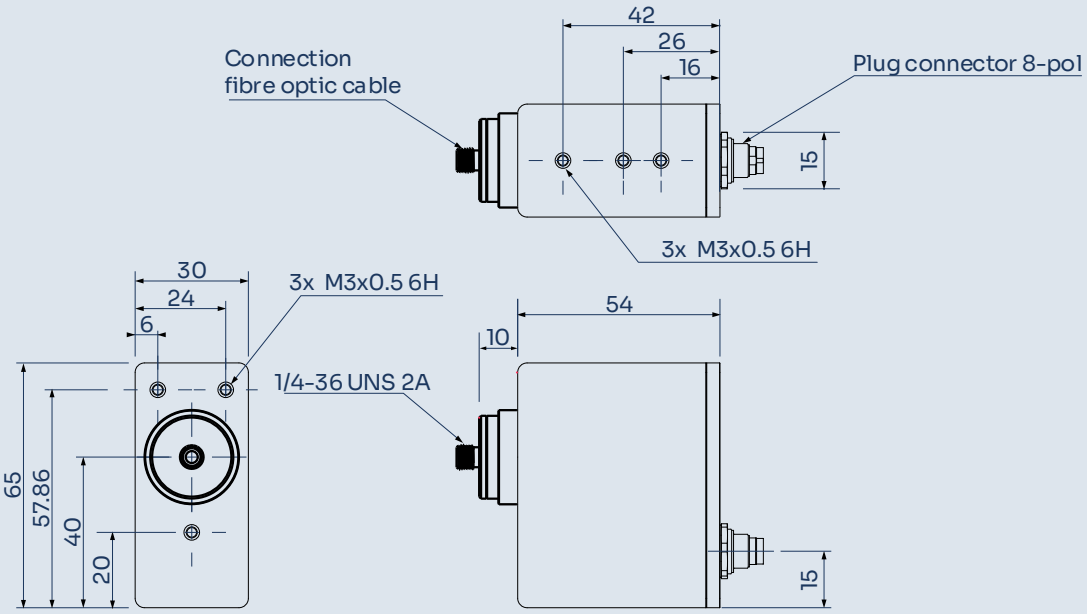
Mechanical add-ons

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

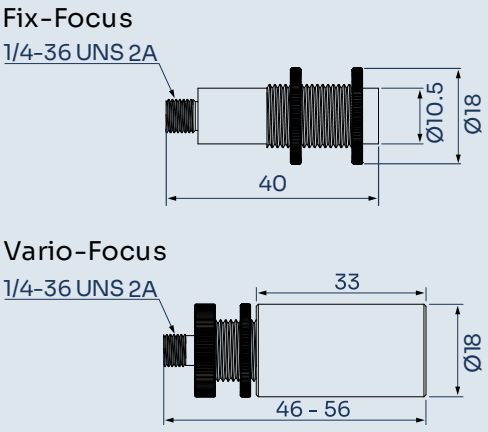
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Drawings

KTRD44x with fibre optic cable



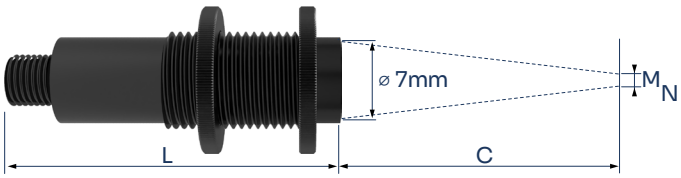
Fiber optics



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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

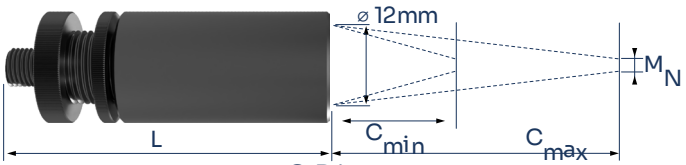
Optic: VL 150-M 12

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



Spot size $M_N = \frac{\text{C Distance}}{\text{R Ratio}}$

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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