

**Rugged fiber-optic ratio  
thermometer for non-contact  
temperature measurement  
from 450 °C to 3000 °C**



**Features:**

- Adjustable focus from 300 mm to infinity with excellent optical resolution up to 100:1
- Laser sighting for real spot size indication at any distance - green laser for best visibility on glowing objects
- Rugged sensing head and fibre-optic for ambient temperatures up to 315 °C without cooling
- Two 0/4-20 mA analog outputs (isolated optional)
- Fast measurement with 1 ms response time

**General specifications**

Environmental rating	IP 65 (NEMA-4)
Ambient temperature sensing head + fiber cable electronics	-20 ... 200 °C (optional to 315 °C) 0 ... 60 °C
Storage temperature sensing head + fiber cable electronics	-40 ... 200 °C -40 ... 85 °C
Relative humidity	10 – 95 %, non-condensing
Vibration (sensor)	IEC 60068-2-6 (sinus shaped), IEC 60068-2-64 (broad band noise)
Shock (sensor)	IEC 60068-2-27 (25G and 50G)
Weight	210 g (fiber cable (3 m) with head) 420 g (electronics)

**Electrical specifications**

Outputs analog	2x 0/4-20 mA (12 bit) / optional: 2x 0/4-20 mA (16 bit) isolated
Output impedances	max. 500 Ω (with 8 – 30 V DC)
Relay Output (optional)	2 x 60 V DC/ 42 V AC <sub>eff</sub> ; 0.4 A; optically isolated
Digital Interface	USB (Micro-USB, USB-C and USB-A cable included)
Digital Interfaces (optional)	RS232, RS485
I/O-Pins	Three programmable in-/outputs; selectable as alarm output (open collector 24 V/1 A), input for triggered signal output and peakhold function or as analog input for external emissivity or slope adjustment
Fiber cable length	3 m (standard), 8 m, 15 m
Power supply	8 – 30 V DC or USB powered <sup>1)</sup>
Power consumption	Max. 5 W
Aiming laser	Laser 520 nm, <1 mW, ON/OFF via electronic box or software / App

**Measurement specifications**

Temperature range	1-Channel	2-Channel
	450 ... 1400 °C	525 ... 1400 °C (1ML)
	650 ... 2000 °C	700 ... 2000 °C (1MH)
	900 ... 3000 °C	1000 ... 3000 °C (1MH1)
Spectral range	0.8 – 1.1 μm	
Optical resolution (90 % energy)	38:1 (1ML) 100:1 (1MH / 1MH1)	
Vario focus	300 mm to infinity, infinitely adjustable	
System accuracy <sup>2)</sup> (at ambient temp. 23 ±5 °C)	±(0.5 % of reading +2 °C)	
Repeatability <sup>2)</sup> (at ambient temp. 23 ±5 °C)	±0.3 % of reading	
Temperature resolution	0.1 K	
Response time (90 % signal) <sup>3)</sup>	1 ms – 10 s	
Slope (adjustable via programming keys or analog input)	0.800 – 1.200	
Emissivity (adjustable via programming keys or analog input)	0.050 – 1.000	
Signal processing (parameter adjustable via programming keys or software / App, respectively)	1 color / 2 color mode; attenuation monitoring / alarms; peak hold, valley hold, average; extended hold function with threshold and hysteresis	
Software / App	optris Ratio Connect / IRmobile App	

<sup>1)</sup> USB powered unit works only in digital communication mode

<sup>2)</sup> ε = 1, response time 1 s; no attenuation / Specification valid for 5 - 95% of measurement range

<sup>3)</sup> With dynamic adaptation to low signal levels

# optris CTratio 1M

## Software / App



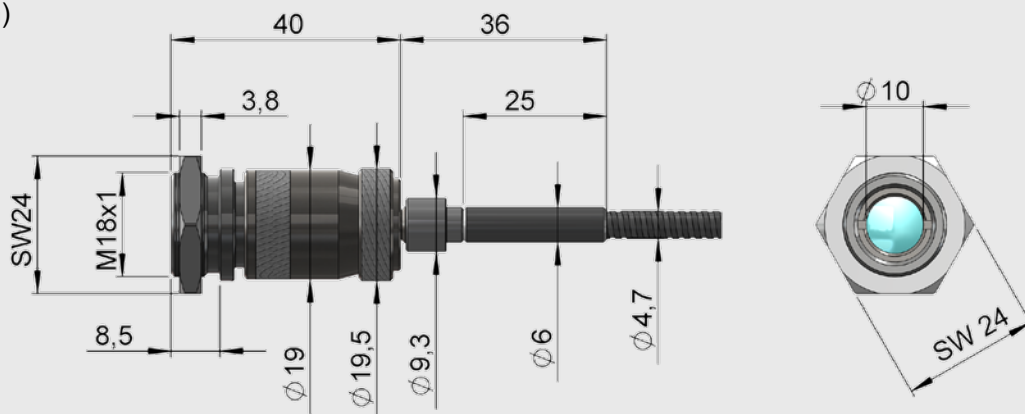
The built-in USB interface allows an easy programming via IRmobile Android app.



Windows-software: optris Ratio Connect

## Dimensions

Sensing head  
(Dimensions in mm)



Electronics  
(Dimensions in mm)

