

More Precision.



optris® CT ratio 1M

Glass fiber ratio thermometer from 700°C to 1800°C



FEATURES

- 5 ms fast temperature measurements of hot objects
- Due to ratio principle insensitive to certain dust and partially observed targets; in general suppression of object emissivity changes
- Rugged sensing head withstands 250°C without cooling
- High optical resolution up to 80:1 with variable focus optics
- Built in laser marks even 1,3 mm small spot size
- Programmable 1 or 2 color mode

General specifications

Environmental rating	IP 65 (NEMA-4)
Ambient temperature	sensing head: -20 - 250°C electronics: 0 - 85°C
Storage temperature	sensing head: -40 - 250°C electronics: -40 - 85°C
Relative humidity	10 - 95 %, non condensing
Vibration (sensor)	IEC 68-2-6: 3 G, 11-200 Hz, any axis
Shock (sensor)	IEC 68-2-27: 50 G, 11 ms, any axis
Weight	fiber cable with head 400g electronics 420 g

Electrical specifications

Outputs/analog	0/4 - 20 mA, 0 - 5/10 V
Output impedances	mA max. 500Ω (with 5 - 36 V DC) mV min. 100 kΩ load impedance
Outputs/digital (optional)	USB, RS232, RS485, CAN, Profibus DP, Ethernet
Alarm output	2 x open - collector (24 V/1 A)
Optional	relay: 2 x 60 V DC/42 V AC _{eff} ; 0.4 A; optically isolated
Glass fiber cable length	2 m (standard), 3 m, 6 m, 10 m, 22 m stainless steel armour, 400 μm fiber dia
Current draw	max. 160 mA
Power supply	8 - 36 V DC or USB powered
Optical aiming	Laser 635 nm, 1mW, ON/OFF via electronic box or software

Measurement specifications

Temperature range	700°C - 1800°C
Spectral range	0,7 - 1,1 μm
Optical resolution (95% Energy) CF	up to 60:1
Optical resolution (95% Energy) SF	up to 80:1
System accuracy ¹⁾ (at ambient temperature 23 ± 5°C)	± (0,5% of reading + 1°C)
Repeatability ¹⁾ (at ambient temperature 23 ± 5°C)	± (0,2% of reading + 1°C)
Temperature resolution (> 900°C)	0,1 K
Exposure time (95% signal) ²⁾	5 ms - 10 s
Slope (adjustable via programming keys or software)	0.800 - 1.200
Emissivity (adjustable via programming keys or software)	0.100 - 1.000
Signal processing (parameter adjustable via programming keys or software, respectively)	1 color / 2 color mode; attenuation monitoring / alarms; peak hold, valley hold, average; extended hold function with threshold and hysteresis

¹⁾ E = 1, response time 1s

²⁾ with dynamic adaptation at low signal levels

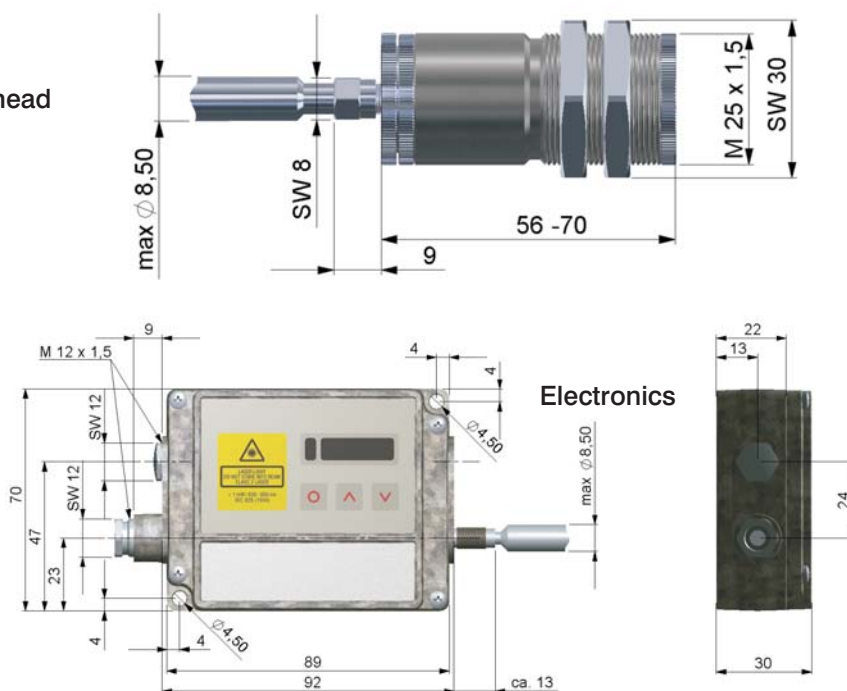
Optical specification

sensor length	(mm)	70	67	63	60	58	57	56
spot size	(mm)	1,3	1,7	2,1	2,8	3,6	4,2	5,0
focus control @ distance	(mm)	65	85	110	150	200	240	300

sensor length (mm)	69,5	68,0	66,5	65,0	64,4	64,0	63,5	63,2	63,0
spot size (mm)	3,0	3,7	5,0	7,2	9,2	12,0	18,0	24,0	31,0
focus control @ distance (mm)	250	300	400	600	800	1000	1500	2000	2500

distance (mm)	0	50	100	150	200	250	300	400	500	600	700	800
spot size (mm)	9	8,4	7,7	7	6,4	5,7	5	9,7	14,4	19	24	29

Sensing head



The screenshot shows the NI-MATLAB environment. On the left, a Simulink block diagram is visible, featuring a 'Scope' block. On the right, the 'Scope' window is open, displaying a plot of the signal. The plot shows a blue waveform that starts at 0, rises to a peak of approximately 1.5, then drops to a minimum of about -1.5, and finally settles around 0.5. The x-axis is labeled 'Time (s)' and ranges from 0 to 2.0. The y-axis is labeled 'Signal' and ranges from -2.0 to 2.0. The Scope window also includes a 'Data Cursor' tool and a 'Data Cursor' table.

- Software for easy sensor setup and remote controlling, supports multi tasking
- Graphic display for temperature trends and automatic data logging for analysis and documentation with 5 ms response time
- Adjustment of signal processing functions and programming of outputs and functional inputs of the sensor
- The software CompactConnect allows to customize the sensor to application needs of the user