

Precise non-contact temperature measurement with precise aiming from 250 °C to 2200 °C (482 °F to 3992 °F)

Features:

- Accurate temperature measurements of metals, secondary metal processing and ceramic materials
- Double laser aiming marks real spot location at any distance
- Optical resolution up to 300:1 with selectable focus
- Temperature ranges from 250 °C to 2200 °C (482 °F to 3992 °F), measuring spots up from 0,45 mm (0.02 in) and response times up from 1 ms
- Usable up to 85 °C (185 °F) ambient temperature without cooling and automatic laser switch off at 50 °C (122 °F)
- Short measuring wavelength of 1.0 μm or 1.6 μm



General specifications

| | |
|-----------------------------------|---|
| Environmental rating | IP 65 (NEMA-4) front mountable at vacuum processes (up to 10 ⁻³ mbar) |
| Ambient temperature ¹⁾ | -20 °C ... 85 °C (-4 °F ... 185 °F) (sensing head) (50 °C [122 °F] with laser ON) -20 °C ... 85 °C (-4 °F ... 185 °F) (electronics) |
| Storage temperature | -40 °C ... 125 °C (-4 °F ... 257 °F) (sensing head) -40 °C ... 85 °C (-40 °F ... 185 °F) (electronics) |
| Relative humidity | 10–95%, non condensing |
| Vibration | IEC 60068-2-6 (sinus shaped) IEC 60068-2-64 (broadband noise) |
| Shock | IEC 60068-2-27 (25G and 50G) |
| Weight | 600 g (21.2 oz) (sensing head) 420 g (14.8 oz) (electronics) |

Electrical specifications

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|----------------------|--|
| Output / analog | 0/4–20 mA, 0–5/ 10 V, thermocouple J, K |
| Output / alarm | 24 V / 50 mA (open collector) |
| Optional | Relay: 2 x 60 V DC / 42 V AC _{eff} ; 0.4 A; optically isolated |
| Output / digital | USB, RS232, RS485, CAN, Profibus DP, Ethernet (optional) |
| Output impedances | mA max. 500 Ω (with 8–36 V DC) mV min. 100 kΩ load impedance thermocouple 20 Ω |
| Inputs | Programmable functional inputs for external emissivity adjustment, ambient temperature compensation, trigger (reset of hold functions) |
| Cable length | 3 m (standard), 8 m, 15 m (9.8 ft [standard], 26.2 ft, 49.2 ft) |
| Current draw (laser) | Max. 100 mA |
| Power supply | 8–36 V DC |
| Laser 635 nm | 1 mW, ON/OFF via electronic box or software |

Measurement specifications

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|--|---|
| Temperature range (scalable via programming keys or software) | 485 °C ... 1050 °C (905 °F ... 1841 °F) (1ML) 650 °C ... 1800 °C (1202 °F ... 3272 °F) (1MH) 800 °C ... 2200 °C (1472 °F ... 3992 °F) (1MH1) 250 °C ... 800 °C (482 °F ... 1472 °F) (2ML) 385 °C ... 1600 °C (725 °F ... 2912 °F) (2MH) 490 °C ... 2000 °C (914 °F ... 3632 °F) (2MH1) |
| Spectral range | 1.0 μm (1M) / 1.6 μm (2M) |
| Optical resolution (90% energy) | 150:1 (1ML, 2ML) 300:1 (1MH, 1MH1, 2MH, 2MH1) |
| System accuracy ²⁾ (at ambient temp. 23 ±5 °C) (at ambient tem. 73 ±9 °F) | ±(0.3 % of reading +2 °C) (±[0.3 % of reading +3.6 °F]) |
| Repeatability (at ambient temp. 23 ±5 °C) (at ambient tem. 73 ±9 °F) | ±(0.1 % of reading +1 °C) (±[0.1 % of reading +1.8 °F]) |
| Temperature resolution | 0.1 K |
| Exposure time ³⁾ | 1 ms (90 %) |
| Emissivity/ Gain (adjustable via sensor or software) | 0.100–1.100 |
| IR window correction (adjustable via software) | 0.100–1.000 |
| Signal processing (parameter adjustable via software) | Peak hold, valley hold, average; extended hold function with threshold and hysteresis |
| Software | optris® Compact Connect |

¹⁾ The functioning of the LCD Display may be limited in ambient temperatures below 0 °C

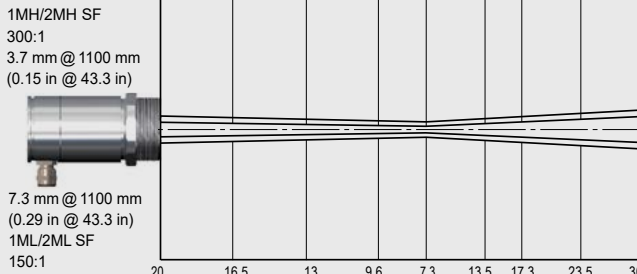
²⁾ ε = 1, Exposure time 1 s

³⁾ With dynamic adaptation at low signal levels

optris CTlaser 1M/2M

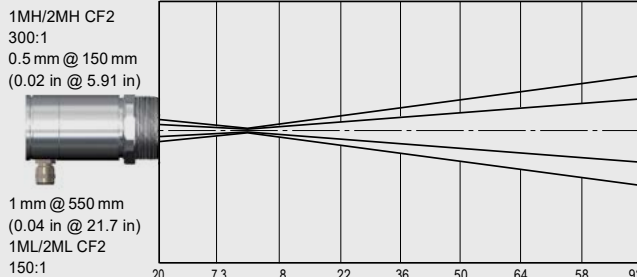
Optical parameter

| | | | | | | | | |
|----------|--------|--------|--------|--------|--------|--------|--------|-------------|
| 12 | 9.8 | 7.5 | 5.2 | 3.7 | 7.3 | 9.4 | 13 | 16.6 |
| S (0.47) | (0.39) | (0.30) | (0.20) | (0.15) | (0.29) | (0.37) | (0.51) | (0.65) (in) |



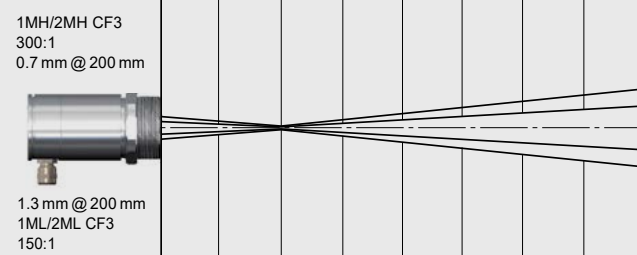
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|----------|--------|--------|--------|--------|--------|--------|--------|-------------|
| 20 | 16.5 | 13 | 9.6 | 7.3 | 13.5 | 17.3 | 23.5 | 30 |
| S (0.79) | (0.65) | (0.51) | (0.38) | (0.29) | (0.53) | (0.68) | (0.93) | (1.18) (in) |
| D 0 | 300 | 600 | 900 | 1100 | 1350 | 1500 | 1750 | 2000 |
| (0) | (11.8) | (23.6) | (35.4) | (43.4) | (53.1) | (59.0) | (68.9) | (78.7) (in) |

| | | | | | | | | |
|----------|--------|--------|--------|--------|--------|--------|--------|-------------|
| 12 | 4.4 | 4.5 | 13 | 21.4 | 30 | 38 | 46.4 | 54.8 |
| S (0.47) | (0.17) | (0.18) | (0.51) | (0.84) | (1.18) | (1.50) | (1.83) | (2.16) (in) |



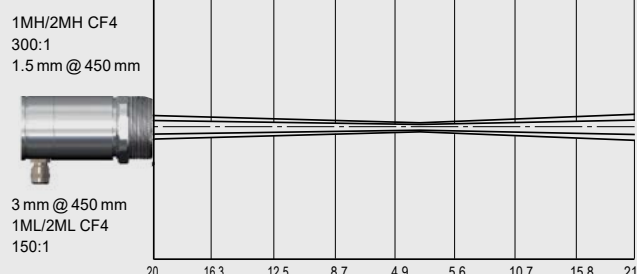
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|----------|--------|--------|--------|--------|--------|--------|--------|-------------|
| 20 | 7.3 | 8 | 22 | 36 | 50 | 64 | 58 | 92 |
| S (0.79) | (0.29) | (0.31) | (0.87) | (1.42) | (1.97) | (2.52) | (2.28) | (3.62) (in) |
| D 0 | 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 |
| (0) | (3.94) | (7.87) | (11.8) | (15.7) | (19.7) | (23.6) | (27.6) | (31.5) (in) |

| | | | | | | | | |
|----------|--------|--------|--------|--------|--------|-------|--------|-------------|
| 12 | 6.4 | 0.7 | 7.1 | 13.4 | 19.8 | 26.1 | 32.5 | 38.8 |
| S (0.47) | (0.25) | (0.03) | (0.28) | (0.53) | (0.78) | (1.0) | (1.03) | (1.53) (in) |



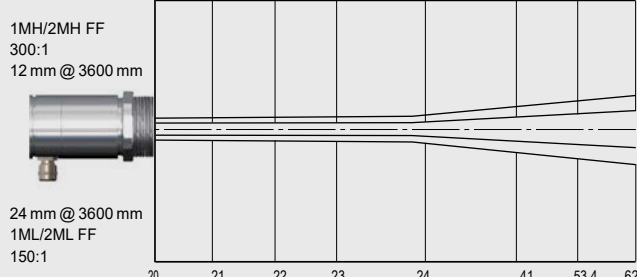
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|----------|--------|--------|--------|--------|--------|--------|--------|-------------|
| 20 | 10.7 | 1.3 | 12 | 22.6 | 33.3 | 44 | 55 | 65 |
| S (0.79) | (0.42) | (0.05) | (0.47) | (0.89) | (1.31) | (1.73) | (2.17) | (2.56) (in) |
| D 0 | 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 |
| (0) | (3.94) | (7.87) | (11.8) | (15.7) | (19.7) | (23.6) | (27.6) | (31.5) (in) |

| | | | | | | | | |
|----------|--------|--------|--------|--------|--------|--------|--------|-------------|
| 12 | 9.7 | 7.4 | 5 | 2.7 | 3 | 6 | 9 | 12 |
| S (0.47) | (0.38) | (0.30) | (0.20) | (0.11) | (0.12) | (0.24) | (0.35) | (0.47) (in) |



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|----------|--------|--------|--------|--------|--------|--------|--------|-------------|
| 20 | 16.3 | 12.5 | 8.7 | 4.9 | 5.6 | 10.7 | 15.8 | 21 |
| S (0.79) | (0.64) | (0.49) | (0.34) | (0.19) | (0.22) | (0.42) | (0.62) | (0.83) (in) |
| D 0 | 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 |
| (0) | (3.94) | (7.87) | (11.8) | (15.7) | (19.7) | (23.6) | (27.6) | (31.5) (in) |

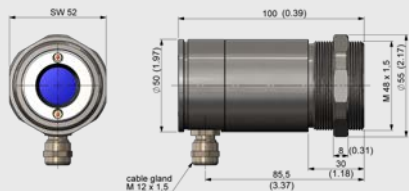
| | | | | | | | |
|----------|--------|--------|--------|--------|--------|--------|-------------|
| 12 | 12 | 12 | 12 | 12 | 21.3 | 28 | 33 |
| S (0.47) | (0.47) | (0.47) | (0.47) | (0.47) | (0.84) | (1.10) | (1.30) (in) |



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|----------|--------|--------|---------|---------|---------|---------|--------------|
| 20 | 21 | 22 | 23 | 24 | 41 | 53.4 | 62.5 |
| S (0.79) | (0.83) | (0.87) | (0.91) | (0.94) | (1.61) | (2.10) | (2.46) (in) |
| D 0 | 900 | 1800 | 2700 | 3600 | 5000 | 6000 | 6730 |
| (0) | (35.4) | (70.8) | (106.3) | (141.7) | (196.8) | (236.2) | (264.6) (in) |

Dimensions

Sensing head



Electronics

