

Non-contact temperature measurement with precise aiming from 50 °C to 1800 °C (122 °F to 3272 °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 50 °C to 1800 °C (122 °F to 3272 °F), measuring spots up from 0.7 mm (0.03 in) and response times up from 1 ms
- Usable up to 85 °C (185 °F) ambient temperature without cooling
- Short measuring wave length of 2.3 μm reduces error of temperature readings on surfaces with low or unknown emissivity

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

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. 160 mA
Power supply	8–36 V DC
Laser 635 nm	1 mW, ON/OFF via electronic box or software

Measurement specifications

Temperature range ²⁾ (scalable via programming keys or software)	50 °C ... 400 °C (122 °F ... 752 °F) (3ML) 100 °C ... 600 °C (212 °F ... 1112 °F) (3MH) 150 °C ... 1000 °C (302 °F ... 1832 °F) (3MH1) ³⁾ 200 °C ... 1500 °C (392 °F ... 2732 °F) (3MH2) ³⁾ 250 °C ... 1800 °C (482 °F ... 3272 °F) (3MH3) ³⁾
Spectral range	2.3 μm
Optical resolution (90 % energy)	60:1 (3ML) 100:1 (3MH) 300:1 (3MH1–3MH3)
System accuracy ⁴⁾ (at ambient temp. 23 ±5 °C) (at ambient tem. 73 ±41 °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 ±41 °F)	±(0.1 % of reading +1 °C) (±[0.1 % of reading +1.8 °F])
Temperature resolution (digital)	0.1 K
Exposure time ⁵⁾ (90 % signal)	1 ms
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⁾ $T_{object} > T_{sensing\ head} + 25\text{ °C}$ (77 °F)

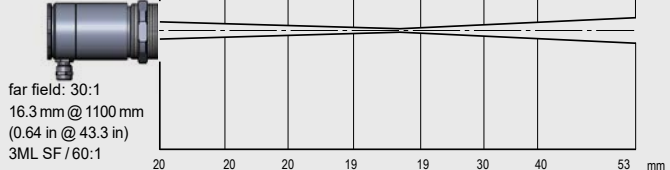
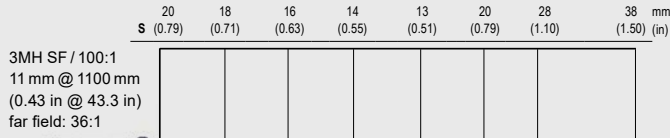
³⁾ Specification valid at $T_{object} \geq \text{start of measurement range} + 50\text{ °C}$ (122 °F)

⁴⁾ $\epsilon = 1$, response time 1 s

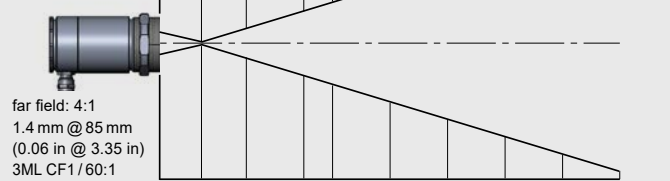
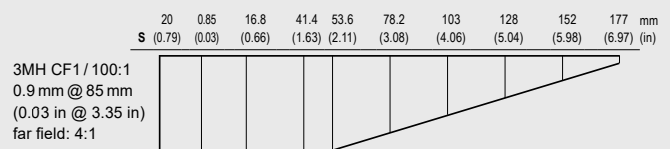
⁵⁾ With dynamic adaptation at low signal levels

optris CTlaser 3M

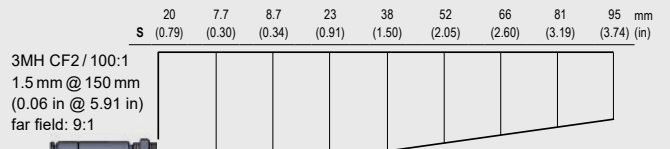
Optical parameter



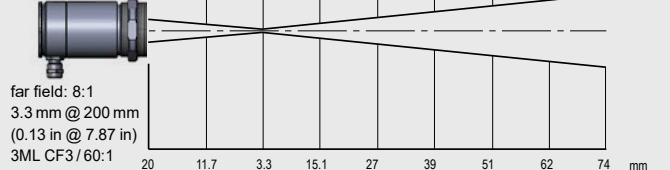
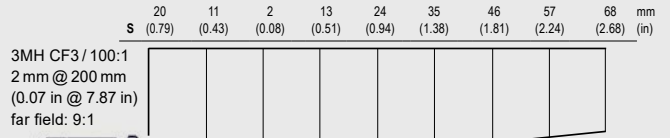
D	0	300	600	900	1200	1500	1750	2000
	(0)	(11.8)	(23.6)	(35.4)	(47.2)	(69.1)	(68.9)	(78.7)



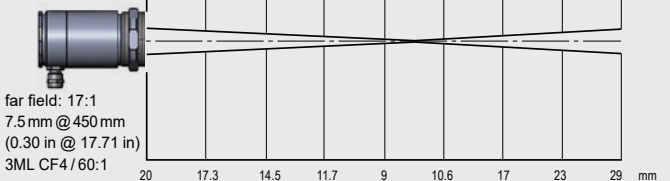
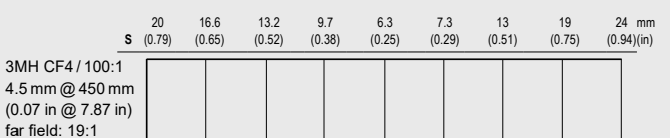
D	0	85	150	250	300	400	500	600	700	800
	(0)	(3.35)	(5.91)	(98.4)	(11.8)	(15.7)	(19.7)	(23.6)	(27.6)	(31.5)



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)



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)



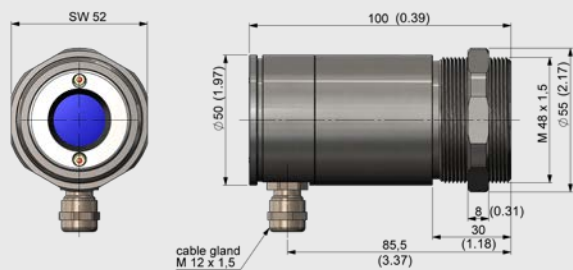
D	0	100	200	300	400	500	600	700	800
	(0)	(3.94)	(7.87)	(11.8)	(15.7)	(19.7)	(23.6)	(27.6)	(31.5)

Further optics, D:S = 300:1

... SF	3.7 mm @ 1100 mm (0.15 in @ 43.3 in)
... CF1	0.3 mm @ 85 mm (0.01 in @ 3.34 in)
... CF2	0.5 mm @ 150 mm (0.02 in @ 59.1 in)
... CF3	0.7 mm @ 200 mm (0.03 in @ 7.87 in)
... CF4	1.5 mm @ 450 mm (0.06 in @ 177 in)
... FF	12 mm @ 3600 mm (0.47 in @ 142 in)

Dimensions

Sensing head



Electronics

