

**High-speed pyrometer
with precise aiming for
temperature measurement
from 0 °C (32°F) to 500 °C (932°F)**

Features:

- The ideal pyrometer for low temperature & high speed applications with ultra-fast exposure time of 90 μ s
- Usable up to 85 °C (185°F) ambient temperature without cooling
- Double laser aiming marks real spot location at any distance
- Optical resolution of 30:1 with selectable focus
- Short wavelengths range of 2.2 – 6 μ m makes it suitable for measurement of metals, metal oxides, ceramics or materials with unknown or changing emissivity



General specifications

Environmental rating	IP 65 (NEMA-4)
Ambient temperature ¹⁾	-20 ... 70 °C (-4°F ... 158°F) (sensing head) (50 °C [122°F] with laser ON) -20 ... 70 °C (-4°F ... 158°F) (electronics)
Storage temperature	-40 ... 85 °C (-40°F ... 185°F) (sensing head) -40 ... 85 °C (-40°F ... 185°F) (electronics)
Relative humidity	10–95 %, non-condensing
Vibration (sensor)	IEC 60068-2-6 / -64
Shock (sensor)	IEC 60068-2-27 (25 G and 50 G)
Weight	600 g (sensing head) / 420 g (electronics)

Electrical specifications

Outputs / analog (2x)	0/4–20 mA, 0–5/10 V, thermocouple K, alarm
Outputs / alarm	24 V / 50 mA (open collector)
I/O Pins (3x)	flexible programming as in- or output: external emissivity adjustment, ambient temperature compensation, uncommitted value, trigger (reset of hold functions), alarm output (open collector 24 V / 50 mA)
Relay (optional)	2 x 60 V DC / 42 V AC _{eff.} ; 0.4 A; optically isolated
Digital interfaces	built-in USB-interface Optional: RS232, RS485, Ethernet
Output impedances	mA max. 500 Ω mV min. 100 k Ω load impedance thermocouple 20 Ω
Cable length	3 m (standard) [9 ft], 8 m [26 ft], 15 m [49 ft]
Laser 635 nm	1 mW, ON/OFF via electronic box or software

Measurement specifications

Temperature range (scalable via programming keys or software)	0 °C ... 500 °C (32°F ... 932°F)
Spectral range	2.2 – 6 μ m
Optical resolution (90 % energy)	30:1
System accuracy ²⁾ [at ambient temp. 23 \pm 5 °C (73.4 \pm 41°F)]	\pm [0.3 % of reading +2 °C (1.8°F)]
Repeatability ²⁾ [at ambient temp. 23 \pm 5 °C (73.4 \pm 41°F)]	\pm [0.1 % of reading +1 °C (0.9 °F)]
Temperature coefficient ³⁾	\pm 0.05 K / K or \pm 0.03 % / K
NETD ⁴⁾	120 mK
Exposure time	90 μ s (90 % signal)
Response time	300 μ s (90 % signal)
Emissivity/ Gain (adjustable via programming keys or software)	0.100 – 1.100
Transmissivity/ Gain (adjustable via programming keys or software)	0.100 – 1.100
Signal processing (parameter adjustable via programming keys or software, respectively)	Peak hold, valley hold, peak picker, average; extended hold function with threshold and hysteresis
Software	optris CompactPlus Connect / IRmobile

¹⁾ The functioning of the LCD display may be limited in ambient temperatures below 0 °C (32 °F)

²⁾ $\epsilon = 1$, response time 1 s

³⁾ For ambient temperatures >10 °C (50 °F) or whichever is greater

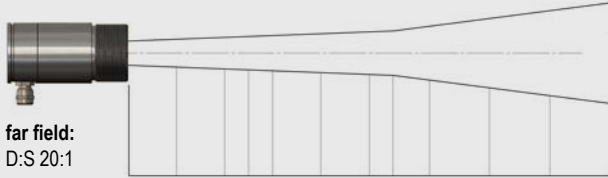
⁴⁾ At time constant 1 ms and $T_{Obj} = 50$ °C (122°F)

optris CTlaser 4ML

Optical specifications

SF - optics 30:1

36.7 mm @ 1100 mm (1.44 in @ 43.3 in)

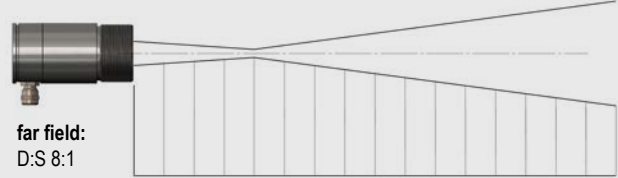


far field:
D:S 20:1

	(0.79)	(0.9)	(1.03)	(1.09)	(1.15)	(1.26)	(1.39)	(1.44)	(1.75)	(2.26)	(1.75)	(3.3)
S	20	23	26.1	27.6	29.1	32.1	35.2	36.7	44.4	57.3	70.2	83 (mm)
D	0	200	400	500	600	800	1000	1100	1250	1500	1750	2000 (mm)
	(0)	(7.87)	(15.75)	(19.69)	(23.62)	(31.5)	(39.37)	(43.3)	(49.21)	(59.05)	(68.9)	(78.74) (in)

CF3 - optics 30:1

6.7 mm @ 200 mm (0.26 in @ 7.87 in)



far field:
D:S 8:1

	(0.79)	(0.66)	(0.5)	(0.39)	(0.26)	(0.52)	(0.79)	(1.31)	(1.84)	(2.36)	(2.89)	(3.41) (in)
S	20	16.7	12.8	10	6.7	13.3	20	33.3	46.7	60	73.3	86.7 (mm)
D	0	50	100	150	200	250	300	400	500	600	700	800 (mm)
	(0)	(1.97)	(3.94)	(5.91)	(7.87)	(9.84)	(11.81)	(15.75)	(19.69)	(23.62)	(27.56)	(31.5) (in)

CF1 - optics 30:1

2.4 mm @ 70 mm (0.09 in @ 2.76 in)



far field:
D:S 3:1

	(0.79)	(0.39)	(0.69)	(0.47)	(1.1)	(1.72)	(2.35)	(2.98)	(4.23)	(5.49)	(6.87)	(8)	(9.26) (in)
S	20	9.9	2.4	11.9	27.9	43.8	59.8	75.7	107.6	139.5	171.4	203.3	235.2 (mm)
D	0	40	70	100	150	200	250	300	400	500	600	700	800 (mm)
	(0)	(1.57)	(2.76)	(3.94)	(5.9)	(7.87)	(9.84)	(11.81)	(15.74)	(19.69)	(23.62)	(27.56)	(31.5) (in)

CF4 - optics 30:1

15 mm @ 450 mm (0.59 in @ 17.72 in)

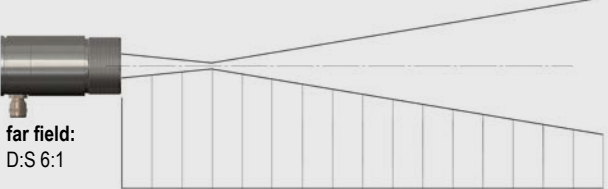


far field:
D:S 15:1

	(0.79)	(0.76)	(0.74)	(0.72)	(0.69)	(0.68)	(0.66)	(0.63)	(0.61)	(0.59)	(0.74)	(1.05)	(1.35)	(1.66) (in)
S	20	19.4	18.9	18.3	17.8	17.2	16.7	16.1	15.6	15	18.9	26.7	34.4	42.2 (mm)
D	0	50	100	150	200	250	300	350	400	450	500	600	700	800 (mm)
	(0)	(1.97)	(3.94)	(5.9)	(7.87)	(9.84)	(11.81)	(13.78)	(15.75)	(17.72)	(19.69)	(23.62)	(27.56)	(31.5) (in)

CF2 - optics 30:1

5 mm @ 150 mm (0.2 in @ 5.9 in)

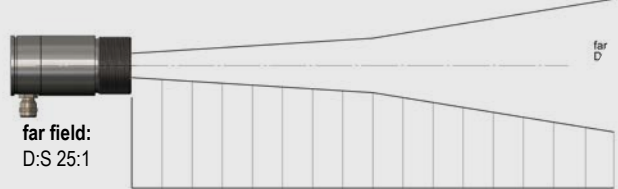


far field:
D:S 6:1

	(0.79)	(0.59)	(0.39)	(0.2)	(0.52)	(0.85)	(1.18)	(1.84)	(2.49)	(3.15)	(3.81)	(4.46) (in)
S	20	15	10	5	13.3	21.7	30	46.7	63.3	80	96.7	113.3 (mm)
D	0	50	100	150	200	250	300	400	500	600	700	800 (mm)
	(0)	(1.97)	(3.94)	(5.9)	(7.87)	(9.84)	(11.81)	(15.75)	(19.69)	(23.62)	(27.56)	(31.5) (in)

FF - optics 30:1

120 mm @ 3600 mm (4.72 in @ 141.7 in)

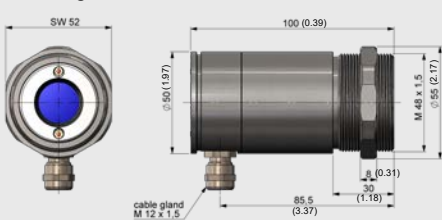


far field:
D:S 25:1

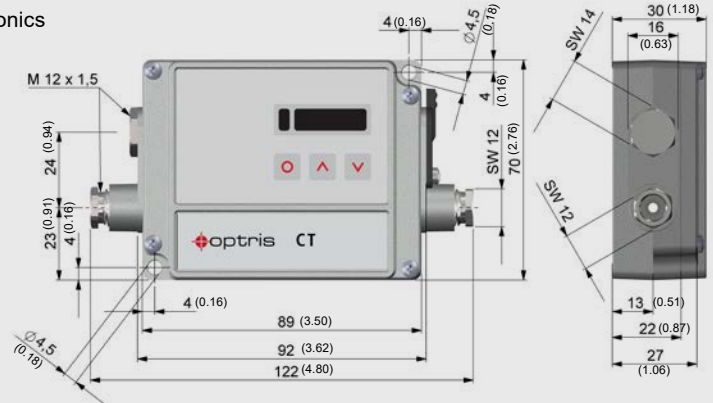
	(0.79)	(1.28)	(1.77)	(2.26)	(2.76)	(3.25)	(3.74)	(4.23)	(4.72)	(5.41)	(6.1)	(6.79)	(7.48)	(8.86)	(10.24) (in)
S	20	32.5	45	57.5	70	82.5	95	107.5	120	137.5	155	172.5	190	225	260 (mm)
D	0	450	900	1350	1800	2250	2700	3150	3600	4050	4500	5000	5400	6300	7200 (mm)
	(0)	(17.7)	(35.4)	(53.1)	(70.9)	(88.6)	(106.3)	(124)	(141.7)	(159.4)	(177.2)	(196.9)	(212.6)	(248)	(283.4) (in)

Dimensions in mm (in)

Sensing head



Electronics



The CT 4ML can be directly connected to a PC or smartphone.