



**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 μs
- 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 μm 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 (sinus shaped) IEC 60068-2-64 (broadband noise)
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 kΩ 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 μm
Optical resolution (90 % energy)	30:1
System accuracy ²⁾ [at ambient temp. 23 ±5 °C (73.4± 41°F)]	±[0.3 % of reading +2 °C (1.8°F)]
Repeatability ²⁾ [at ambient temp. 23 ±5 °C (73.4± 41°F)]	±[0.1 % of reading +1 °C (0.9 °F)]
Temperature coefficient ³⁾	±0.05 K / K or ±0.03 % / K
NETD ⁴⁾	120 mK
Exposure time	90 μs (90 % signal)
Response time	300 μs (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⁾ ε = 1, response time 1 s

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

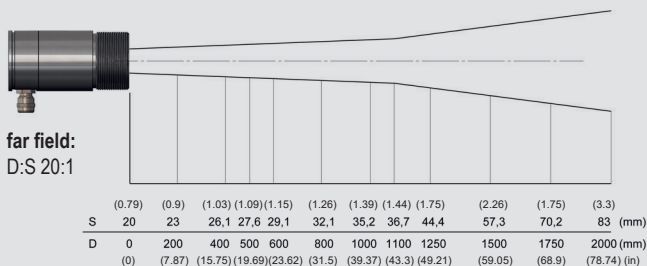
⁴⁾ At time constant 1 ms and T_{obj} = 50 °C (122°F)

optris CTlaser 4ML

Optical specifications

SF - optics 30:1

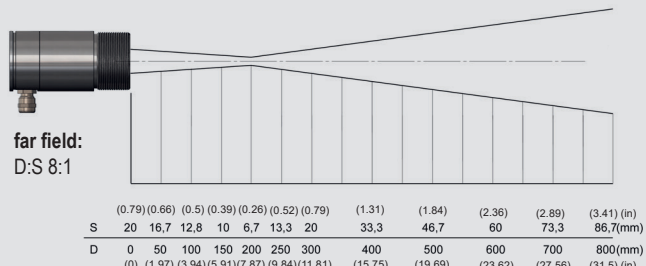
36.7 mm @ 1100 mm (1.44 in @ 43.3 in)



far field:
D:S 20:1

CF3 - optics 30:1

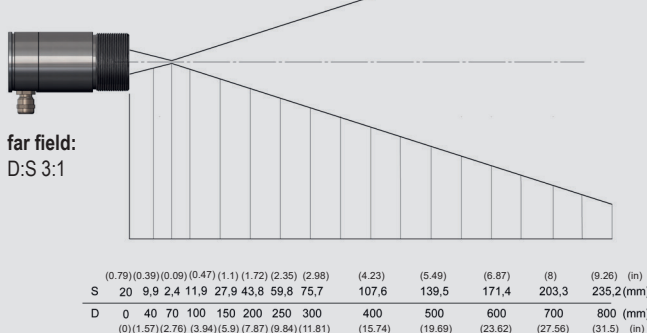
6.7 mm @ 200 mm (0.26 in @ 7.87 in)



far field:
D:S 8:1

CF1 - optics 30:1

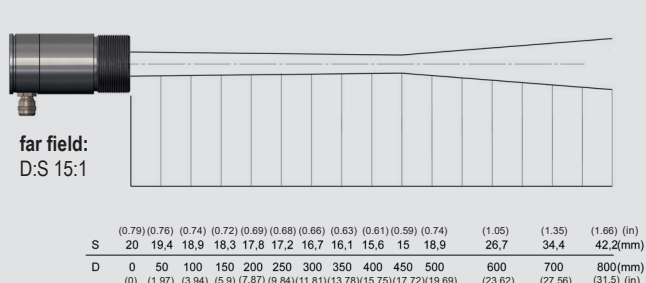
2.4 mm @ 70 mm (0.09 in @ 2.76 in)



far field:
D:S 3:1

CF4 - optics 30:1

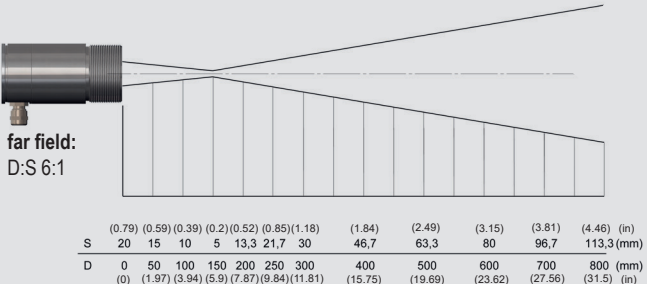
15 mm @ 450 mm (0.59 in @ 17.72 in)



far field:
D:S 15:1

CF2 - optics 30:1

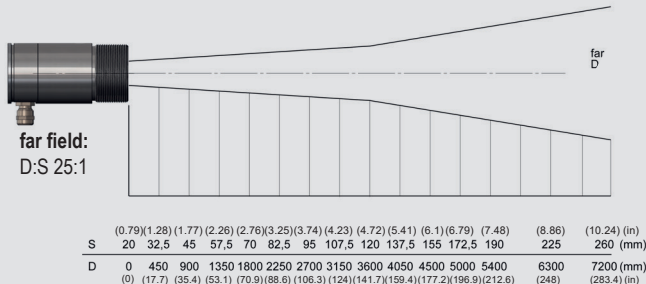
5 mm @ 150 mm (0.2 in @ 5.9 in)



far field:
D:S 6:1

FF - optics 30:1

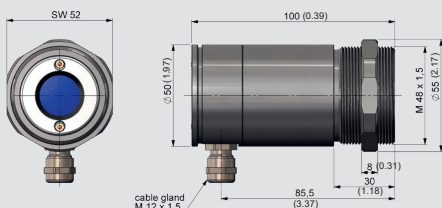
120 mm @ 3600 mm (4.72 in @ 141.7 in)



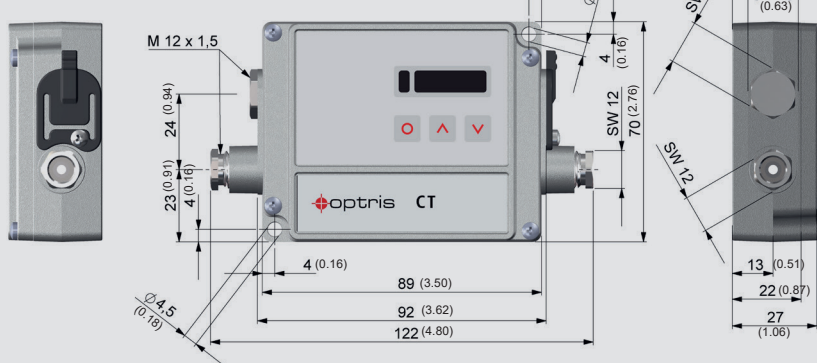
far field:
D:S 25:1

Dimensions in mm (in)

Sensing head



Electronics



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