

**High-speed pyrometer  
with precise aiming for  
temperature measurement  
from 0 °C to 500 °C**

**Features:**

- The ideal pyrometer for low temperature & high speed applications with ultra-fast exposure time of 90 µs
- Usable up to 70 °C 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 <sup>1)</sup>	-20 ... 70 °C (sensing head, 50 °C with laser ON) -20 ... 70 °C (electronics)
Storage temperature	-40 ... 85 °C (sensing head) -40 ... 85 °C (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 <sub>eff.</sub> 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), 8 m, 15 m
Laser 635 nm	1 mW, ON/OFF via electronic box or software
Power Supply	8 – 30 V DC / 5 V USB / max. 2 W

**Measurement specifications**

Temperature range (scalable via programming keys or software)	0 °C ... 500 °C
Spectral range	2.2 – 6 µm
Optical resolution (90 % energy)	30:1
System accuracy <sup>2)</sup> (at ambient temp. 23 ± 5 °C)	±(0.3 % of reading + 2 °C)
Repeatability <sup>2)</sup> (at ambient temp. 23 ± 5 °C)	±(0.1 % of reading + 1 °C)
Temperature coefficient <sup>3)</sup>	±0.05 K / K or ±0.03 % / K
NETD <sup>4)</sup>	180 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 / App	optris CompactPlus Connect / IRmobile

<sup>1)</sup> The functioning of the LCD display may be limited in ambient temperatures below 0 °C

<sup>2)</sup> ε = 1, response time 1 s

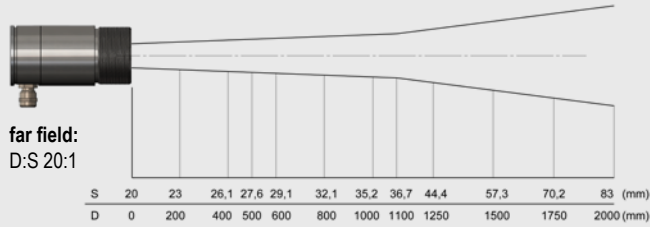
<sup>3)</sup> For ambient temperatures > 10 °C or whichever is greater

<sup>4)</sup> At time constant 1 ms and T<sub>Obj</sub> = 50 °C

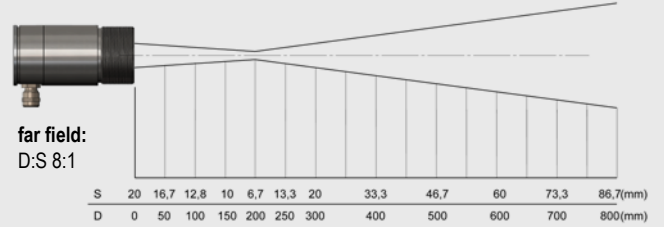
# optris CTlaser 4ML

## Optical specifications

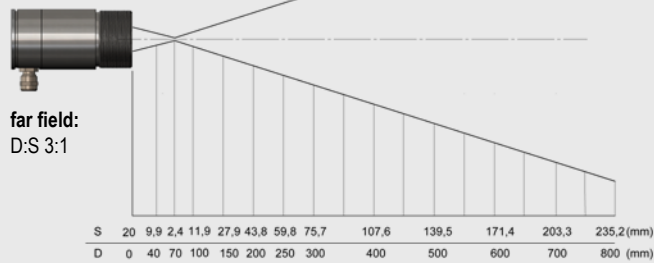
**SF - optics 30:1**  
36.7 mm @ 1100 mm



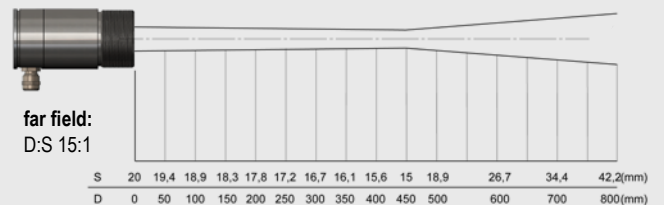
**CF3 - optics 30:1**  
6.7 mm @ 200 mm



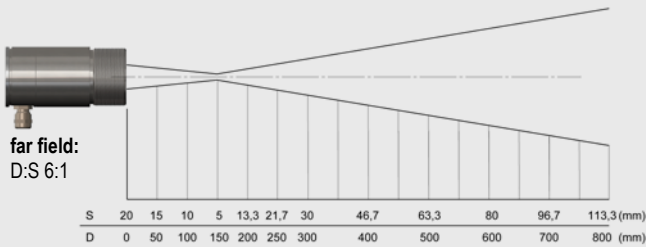
**CF1 - optics 30:1**  
2.4 mm @ 70 mm



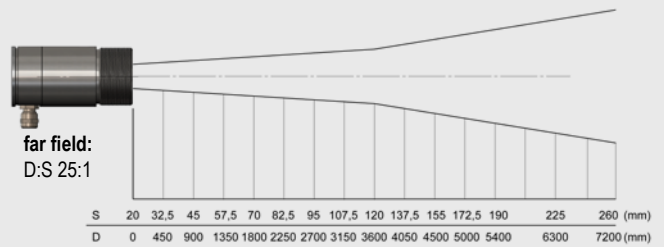
**CF4 - optics 30:1**  
15 mm @ 450 mm



**CF2 - optics 30:1**  
5 mm @ 150 mm



**FF - optics 30:1**  
120 mm @ 3600 mm

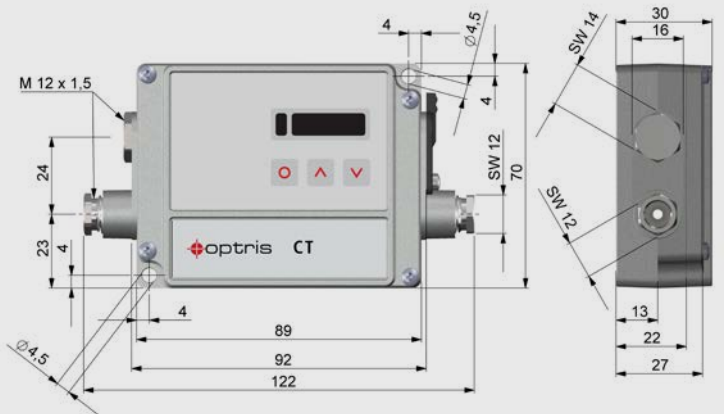


## Dimensions

### Sensing head



### Electronics



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