

High-speed pyrometer for temperature measurement from 0 °C to 500 °C



Features:

- Miniaturized Infrared Thermometer with ultra-fast exposure time of 110 µs
- Small-sized head of 14 mm diameter and 28 mm length fits everywhere and is usable up to 70 °C without cooling
- Short wavelengths range of 2.2 – 6.0 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)
Operating Temperature	0 °C ... 70 °C (sensing head) 0 °C ... 70 °C (electronics)
Storage temperature	–40 °C ... 85 °C (sensing head) –40 °C ... 85 °C (electronics)
Operating air humidity range	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	40 g (sensing head) 420 g (electronics)

Electrical specifications

Outputs / analog (2x)	0/4 – 20 mA, 0 – 5/10 V, thermocouple K, alarm
Output / 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 _{RMS} ; 0.4 A; optically isolated
Digital interfaces	built-in USB-interface, Optional: USB, RS232, RS485, EtherNet/IP, Profinet, Ethernet TCP/IP, Modbus TCP, Modbus RTU
Output impedances	mA max. 500 Ω mV min. 100 kΩ load impedance thermocouple 20 Ω
Cable length	3 m, 8 m, 15 m
Power Supply	8 – 30 V DC / 5 V USB / max. 1.2 W

Software

Software /	optris CompactPlus Connect /
App	optris IRmobile

Measurement specifications

Measuring temperature range	0 °C ... 500 °C
Spectral range	2.2 ... 6.0 µm
Optical resolution (90 % energy)	10:1
CF-lense (optional)	5.0 mm at 50 mm
System accuracy (at ambient temp. 23 ± 5 °C)	±(0.3 % of reading + 2 °C)
Repeatability (at ambient temp. 23 ± 5 °C)	±(0.1 % of reading + 1 °C)
Measurement uncertainty ¹⁾ , ²⁾ , ³⁾ , ⁶⁾	± (2,0 °C + 0,3%) w/o head exchange ± (2,0 °C + 0,3%) with head exchange
Repeatability ³⁾ , ⁴⁾ , ⁵⁾ , ⁶⁾	± 0.16 K
Short-term stability ²⁾ , ³⁾ , ⁴⁾	typically: 0.05 K/h
NETD ³⁾ , ⁴⁾ , ⁵⁾ , ⁶⁾	typically: 70 mK
Temperature coefficient ¹⁾ , ²⁾ , ³⁾	± 0,05 K/K or ± 0,03 %/K
Exposure time	110 µs
Response time	320 µs
Emissivity / Gain (adjustable via programming keys or software)	0.05...1.100
Transmissivity / Gain (adjustable via programming keys or software)	0.05...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

¹⁾ whichever is greater

²⁾ Response time = 200 ms (90%)

³⁾ e = 1.000

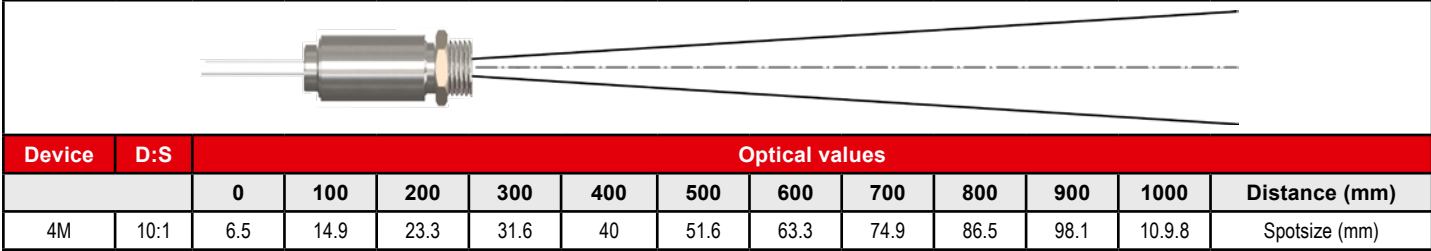
⁴⁾ Tobj = Tmin + 50 °C

⁵⁾ Response time = 1 ms (90%)

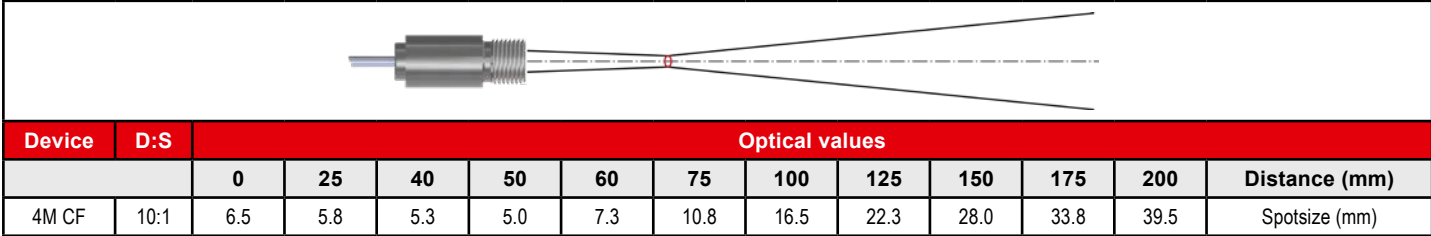
⁶⁾ at ambient temp. (23 ± 5) °C

optris CTi 4ML

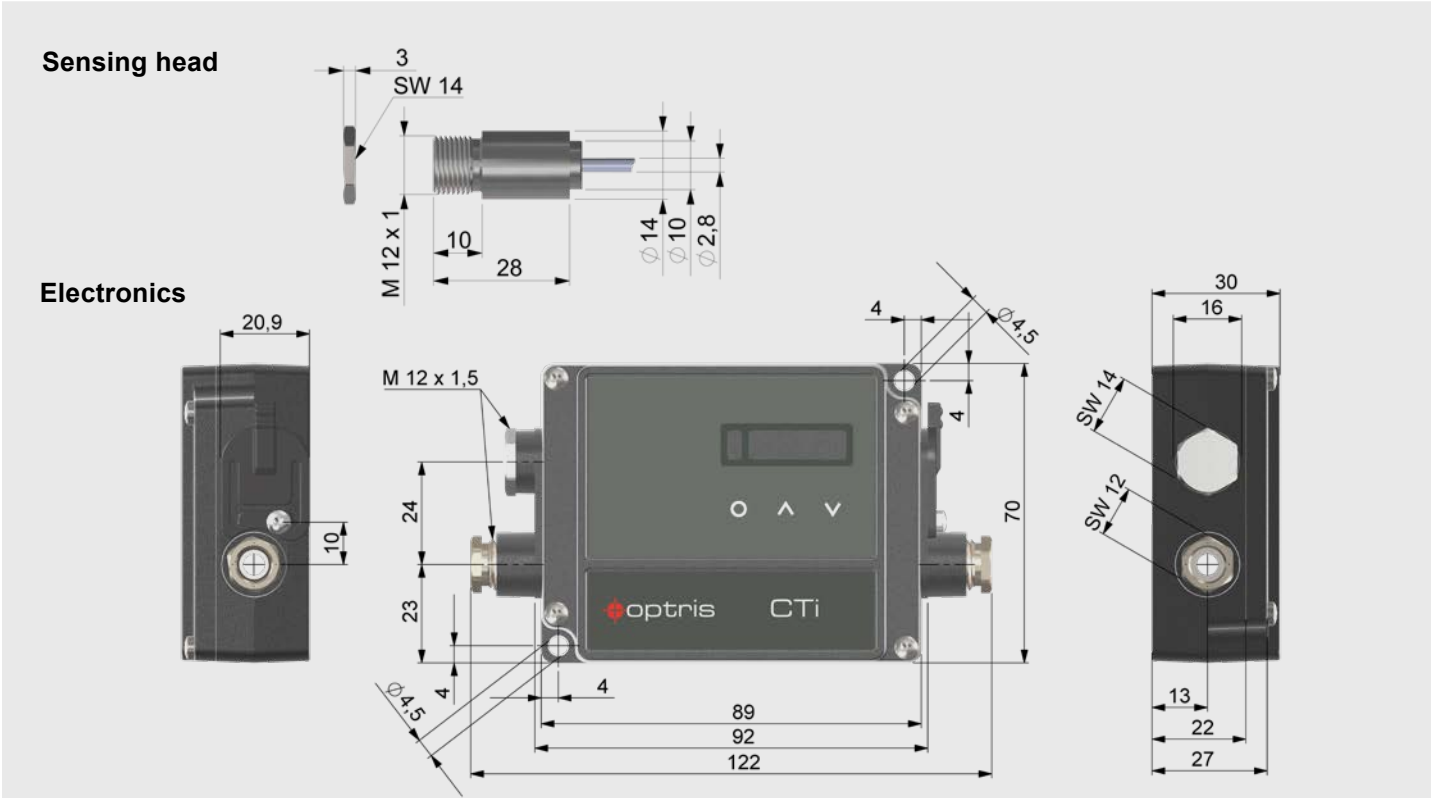
Optical specifications - Standard Focus (SF)



Optical specifications - Close Focus (CF)



Dimensions (in mm)



Software / App

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