optris CTi LThot
TECHNICAL DATA

optris infrared sensing

Precise non-contact temperature measurement from –50 °C to 1050 °C (-58 °F to 1922 °F) in rough environmental conditions

Features:

- The new infrared thermometer for hot environmental temperatures up to 250 °C (482 °F) without any need of cooling
- A varity of applications in dryers, ovens, heat treatment lines in the metal and glass industry, paper, plastic and textile manufacturing and semiconductor processing in the temperature range of –50 °C to 1050 °C (-58 °F to 1922 °F) and a response time up from 40 ms
- Selectable analog outputs:
  0/4 – 20 mA, 0 – 5 V, 0 – 10 V, thermocouple type K
- Optional EtherNet/IP, Profinet, Ethernet TCP/IP / Modbus TCP, Modbus RTU, RS485, RS232 interface
  or relay outputs (2 x optically isolated)
- Easy and flexible exchange of sensing heads

General specifications

Environmental rating	IP 65 (NEMA-4)
Ambient temperature	–20 °C ... 250 °C [–4 °F ... 482 °F] (sensing head) 0 °C ... 85 °C [32 °F ... 185 °F] (electronics)
Storage temperature	–40 °C ... 250 °C [–40 °F ... 482 °F] (sensing head) –40 °C ... 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 (25G and 50G)
Weight	200 g (1.4 oz) (sensing head incl. massive housing) / 420 g (14.8 oz) (electronics)

Electrical Specifications

Outputs / analog	0 / 4 – 20 mA, 0 – 5 / 10 V, thermocouple K, alarm
Output / alarm	24 V / 50 mA (open collector)
Optional	Relay: 2 x 60 V DC/ 42 V AC_{RMS}; 0.4 A; optically isolated
Digital Interfaces	built-in USB-interface, Optional: EtherNet/IP, Profinet, Ethernet TCP/IP / Modbus TCP, Modbus RTU, RS485, RS232 or relay outputs (2 x optically isolated)
Output impedances	mA max. 500 Ω (with 8 – 36 V DC) mV min. 100 kΩ load impedance thermocouple 20 Ω
I/O Pins (3x)	flexible programming as in- or output: external emissivity adjustment, ambient temperature compensation, uncommitted value, trigger (reset of holdfunctions), alarm output (open collector 24 V/ 50 mA)
Cable length	3 m (standard), 8 m, 15 m (9.8 ft [standard], 26.2 ft, 49.2 ft)
Power supply	8 - 30 V DC / 1.2W

Measurement specifications

Temperature range (scalable via programming keys or software / App)	–50 °C ... 1050 °C [–58 °F ... 1922 °F]
Spectral range	8 – 14 µm
Optical resolution (90 % energy)	2:1 10:1
Smallest spot size	3.0 mm @30 mm (LThot 10:1 CF1 lens)
Measurement uncertainty [2), 3), 4), 5), 7)]	±1.5 °C or ±1 % [±2.7 °F or ±1 %]
Repeatability [2), 3), 4), 5), 7)]	±0.13 °C or ±0.1 % [±0.23 °F or ±0.1 %] (LThot 2:1) ±0.16 °C or ±0.1 % [±0.29 °F or ±0.1 %] (LThot 10:1)
Temperature resolution (display)	0.1 K
NETD (typically) [4), 5), 6), 7)]	37 mK (LThot 2:1) 45 mK (LThot 10:1)
Response time (90% energy)	45 ms (LThot 2:1) 40 ms (LThot 10:1)
Emissivity / Gain (adjustable via programming keys or software / App)	0.100 – 1.100
Transmissivity / Gain (adjustable via programming keys or software / App)	0.100 – 1.100
Signal processing (parameter adjustable via programming keys or software / App)	Peak hold, valley hold, average; extended hold functions with threshold and hysteresis
Software / App	Optris CompactPlus Connect / IRmobile App

[1)] The LCD displays capacity may be limited at ambient temperatures below 0 °C
[2)] Whichever is greater
[3)] T_{obj} >32 °F
[4)] ε = 1
[5)] Response time = 200ms
[6)] T_{obj} = 77 °F
[7)] at ambient temperature 23 ± 5 °C (73,4 ± 9 °F)

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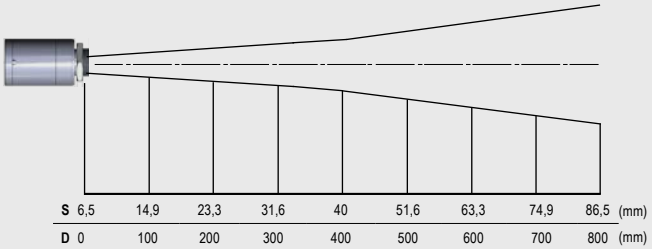
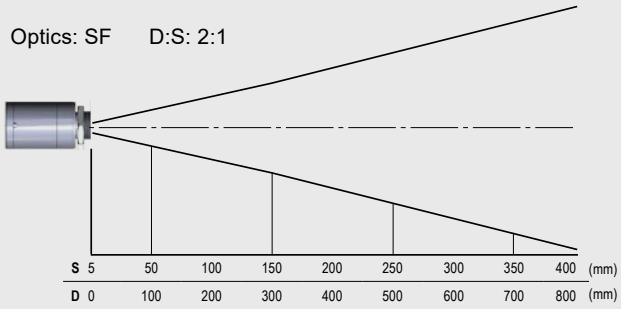
Optical specifications

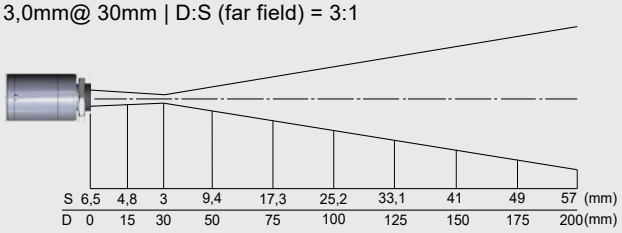
Optics: SF D:S: 10:1



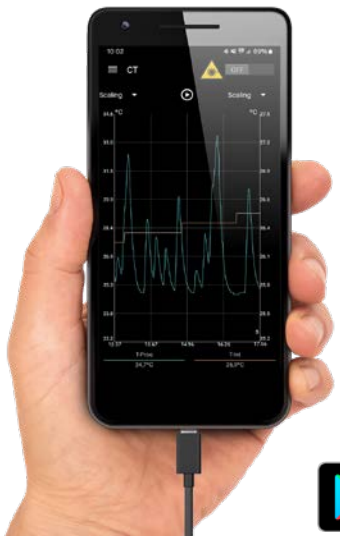
Optics: SF D:S: 2:1



Optics: CF1 | D:S: 10:1
3,0mm@ 30mm | D:S (far field) = 3:1



More optical data: https://optris.com/us/optris-calculator/



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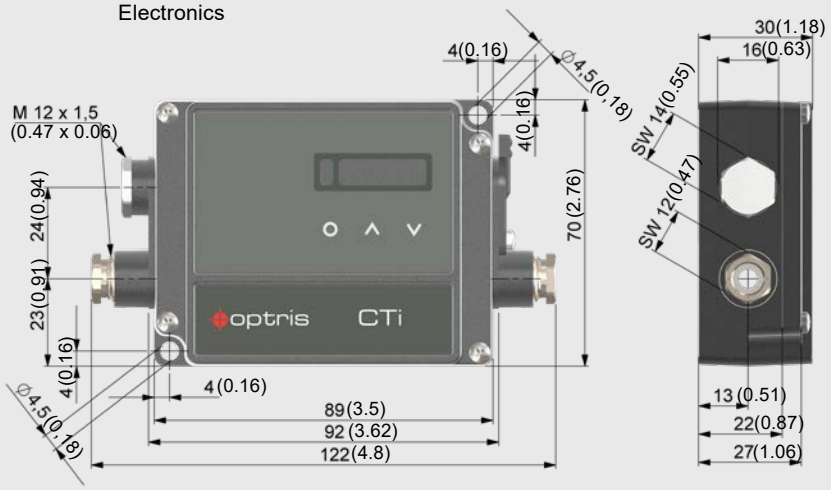
Dimensions in mm (in)

Electronics



Sensing head
(standard)