optris CTi LT
TECHNICAL DATA

optris infrared measurements

Precise non-contact temperature measurement from –50 °C to 1050 °C



Features:

- One of the smallest infrared sensors worldwide with up to 22:1 optical resolution
- Rugged sensing head - usable up to 180 °C ambient temperature without cooling
- Two-piece design with easy accessible programming keys and LCD backlit display
- Built-in USB interface for simple sensor setup via mobile phone or PC
- 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 67 (NEMA-4)
Operating temperature range[1)]	–20 °C ... 180 °C (120 °C for LT 02) (sensing head) –20 °C ... 85 °C (electronics)
Storage temperature	–40 °C ... 180 °C (120 °C for LT 02) (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 (25G and 50G)
Weight	40 g (sensing head) / 420 g (electronics)

Electrical Specifications

Output / analog (2x)	0 / 4 – 20 mA, 0 – 5 / 10 V, thermocouple K, alarm
Output / alarm	24 V / 50 mA (open collector)
Relay outputs (optional)	2 x 60 V DC/ 42 V AC_{RMS}; 0.4 A; optically isolated
Digital Interfaces	built-in USB-interface, Optional: EtherNet/IP, Profinet, EtherCAT, 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 hold functions), alarm output (open collector 24 V/ 50 mA)
Cable length	1 m (standard), 3 m, 8 m, 15 m
Power supply	8 - 30 V DC / 1.2W

Measurement specifications

Measuring Temperature range (scalable via programming keys or software / App)	-50 °C ... 650 °C (LT02) -50 °C ... 800 °C (LT15) -50 °C ... 1050 °C (LT22)
Spectral range	8 – 14 µm
Optical resolution (90% energy)	22:1 15:1 2:1
Smallest spot size	0.6 mm @10 mm (LT22 + CF lens)
Measurement uncertainty [2), 3), 4), 5), 7)]	±1 % or ±1 °C
Repeatability [2), 3), 4), 5), 7)]	±0.2 °C or ± 0.1 % (LT02) ±0.1 °C or ± 0.1 % (LT15) ±0.15 °C or ± 0.1 % (LT22)
Temperature resolution (display)	0.1 K
NETD (typically) [4), 5), 6), 7)]	25 mK (LT 02 & LT 15) 35 mK (LT 22)
Response time (90%)	40 ms (LT02) 115 ms (LT15 & LT22)
Emissivity / Gain (adjustable via programming keys or software / App)	0.05 – 1.100
Transmissivity / Gain (adjustable via programming keys or software/ App)	0.05 – 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 / IR Mobile App

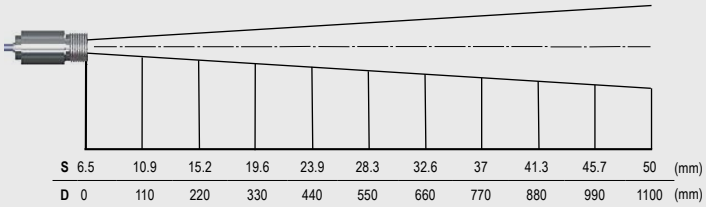
1) The LCD displays capacity may be limited at ambient temperatures below 0 °C
2) Whichever is greater
3) T_{obj} >0 °C
4) ε = 1
5) Response time = 200ms
6) T_{obj} = 25 °C
7) at ambient temperature 23 ± 5 °C

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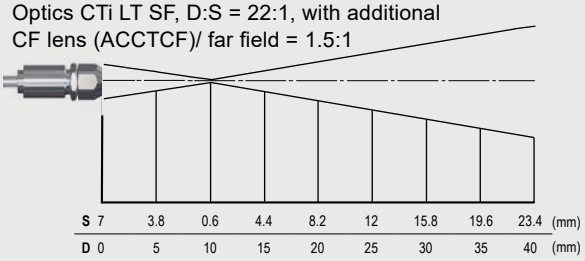
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Optical specifications

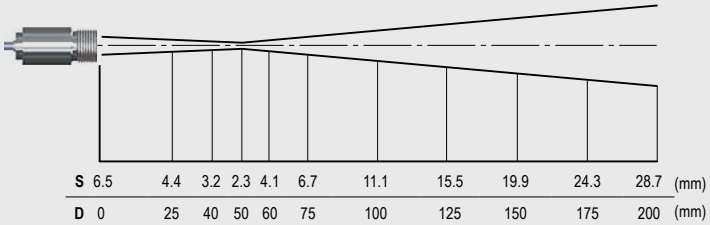
Optics CTi LT SF, D:S = 22:1



Optics CTi LT SF, D:S = 22:1, with additional CF lens (ACCTCF)/ far field = 1.5:1



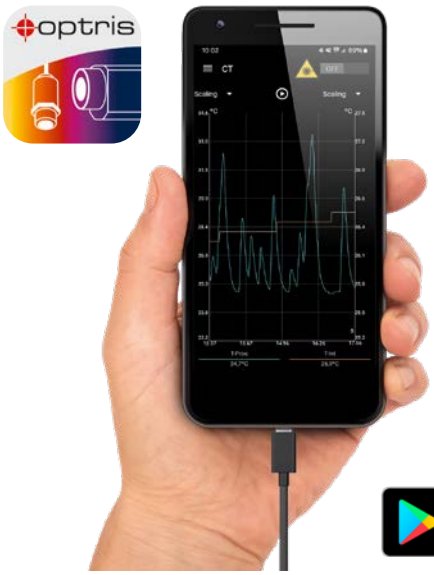
Optics CTi LT CF, D:S = 22:1 (far field = 6:1)



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



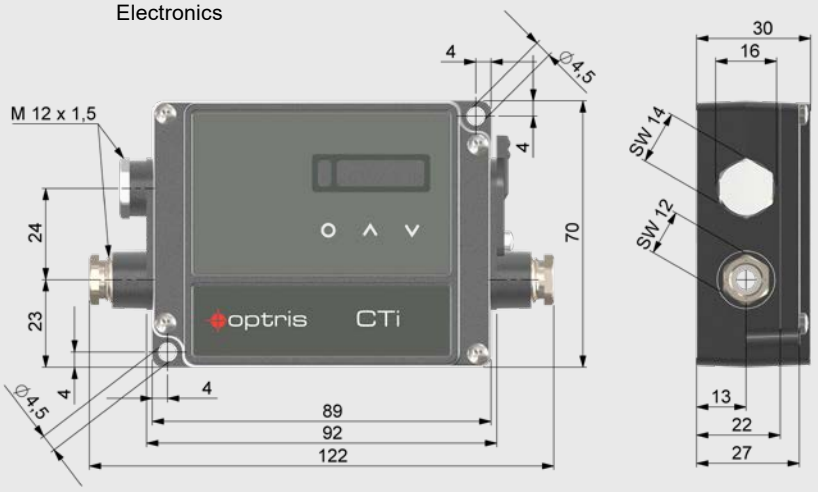




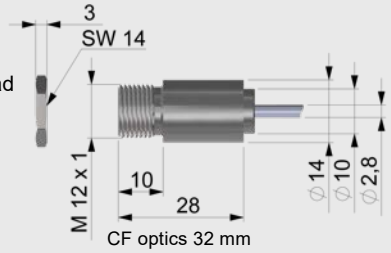
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Dimensions (in mm)

Electronics



Sensing head (standard)



CF optics 32 mm