optris CT LT
TECHNICAL DATA

optris infrared measurements

Precise non-contact temperature measurement from –50 °C to 975 °C

Features:

- One of the smallest infrared sensors worldwide with 22:1 optical resolution
- Rugged and usable up to 180 °C ambient temperature without cooling
- Separate electronics with easy accessible programming keys and LCD backlit display
- Selectable analog output: 0/4 – 20 mA, 0 – 5 V, 0 – 10 V, thermocouple type K or J
- Optional USB, RS485, RS232 interface, relay outputs (2 x optically isolated), Profibus DP, Ethernet
- Installation of up to 32 sensors in one network (with RS485)
- CTex: Explosion proof version (ATEX)

General specifications

Environmental rating	IP 65 (NEMA-4)
Ambient temperature[1)]	–20 °C ... 180 °C (130°C to LT02) (sensing head) –20 °C ... 85 °C (electronics)
Storage temperature	–40 °C ... 130 °C (sensing head) –40 °C ... 85 °C (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	40 g (sensing head) / 420 g (electronics)

Electrical Specifications

Outputs / analog	Channel 1: 0/4 – 20 mA, 0 – 5/ 10 V, thermocouple J, K Channel 2: sensind head temperature (–20 °C ... 180 °C as 0 – 5 V or 0 – 10 V), alarm output
Output / alarm	24 V / 50 mA (open collector)
Optional	Relay: 2 x 60 V DC/ 42 V AC_{eff}; 0.4 A; optically isolated
Outputs / digital (optional)	USB, RS232, RS485, Profibus DP, Ethernet
Output impedances	mA max. 500 Ω (with 8 – 36 V DC) mV min. 100 kΩ load impedance thermocouple 20 Ω
Inputs	Programmable functional inputs for external emissivity adjustment, ambient temperature compensation, trigger (reset of hold functions)
Cable length	1 m (standard), 3 m, 8 m, 15 m
Power Supply	8 – 36 V DC
Current draw	Max. 100 mA

Measurement specifications

Temperature range (scalable via programming keys or software)	–50 °C ... 975 °C (LT22) –50 °C ... 600 °C (LT15) –50 °C ... 600 °C (LT02)
Spectral range	8 – 14 µm
Optical resolution (90 % energy)	22:1 (precision glass optics) 15:1 (precision glass optics) 2:1 (with flat front window)
CF-lens (optional)	0.6 mm @ 10 mm (with LT22) 0.8 mm @ 10 mm (with LT15) 2.5 mm @ 23 mm (with LT02)
System accuracy[2),3)] (at ambient temp. 23 ±5 °C)	±1 % or ±1 °C
Repeatability[2),3)] (at ambient temp. 23 ±5 °C)	±0.5 % or ±0.5 °C
Temperature resolution (display)	0.1 K
NETD[3),4)]	0.05 K (LT22 / LT15) 0.1 K (LT02)
Response time	150 ms (95 %)
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, average; extended hold function with threshold and hysteresis
Software	optris Compact Connect

[1)] The LCD displays capacity may be limited at ambient temperatures below 0 °C
[2)] Whichever is greater
[3)] At object temperatures >0 °C, ε = 1
[4)] At time constant 200 ms and T_{Obj} 25 °C

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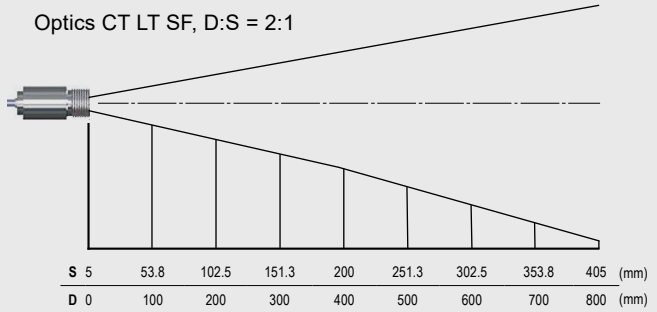
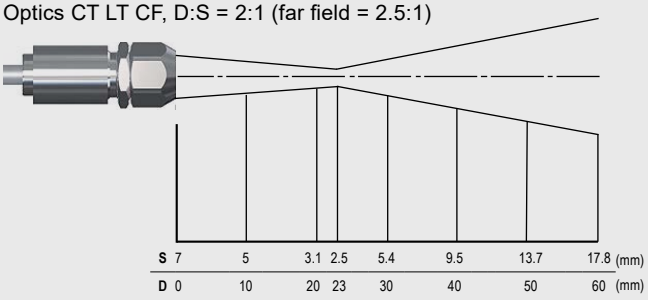
Optical specifications

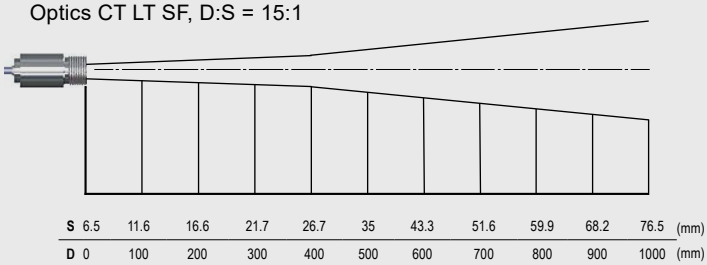
Optics CT LT SF, D:S = 2:1



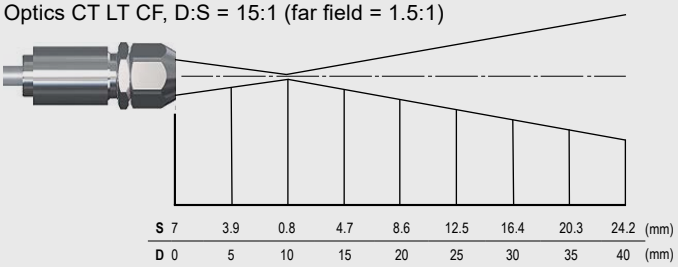
Optics CT LT CF, D:S = 2:1 (far field = 2.5:1)



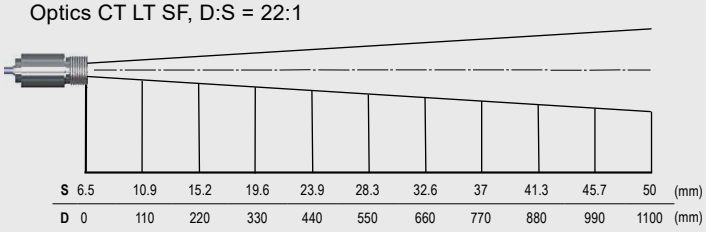
Optics CT LT SF, D:S = 15:1



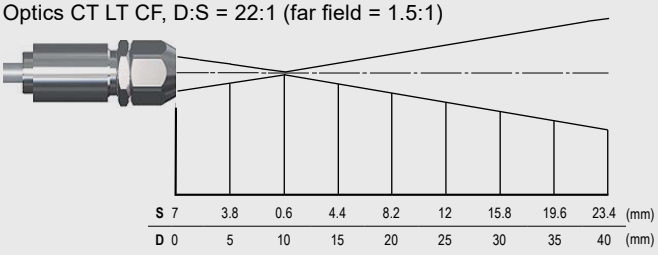
Optics CT LT CF, D:S = 15:1 (far field = 1.5:1)



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

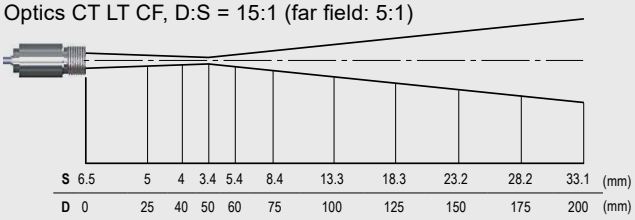


Optics CT LT CF, D:S = 22:1 (far field = 1.5:1)

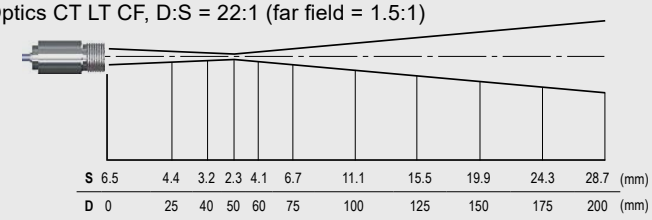


Versions with built-in CF lenses, head length: 32 mm

Optics CT LT CF, D:S = 15:1 (far field: 5:1)

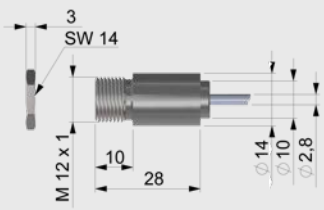


Optics CT LT CF, D:S = 22:1 (far field = 1.5:1)

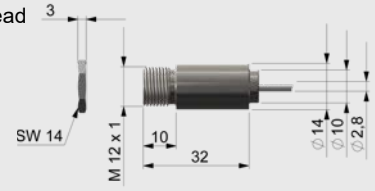


Dimensions

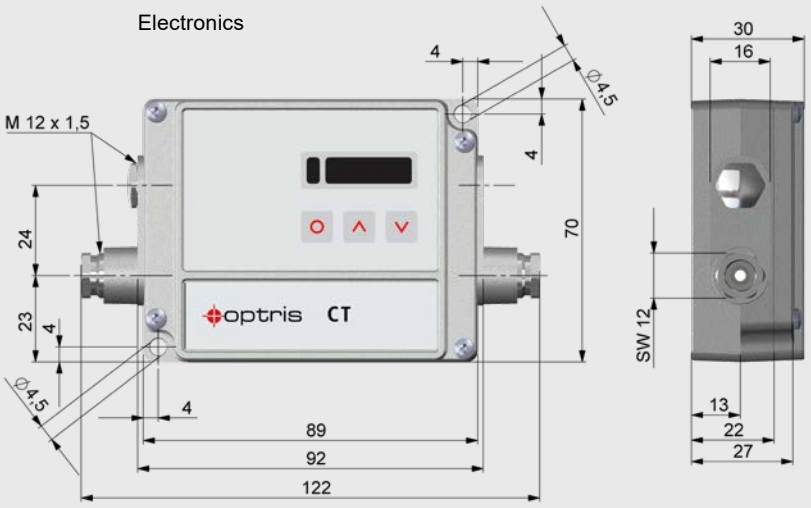
Sensing head (standard)



Sensing head (built-in CF lenses)



Electronics



Specifications are subject to change without notice · CT LT-DS-EN2018-07-B