

Precise non-contact temperature measurement from $-50\text{ }^{\circ}\text{C}$ to $1050\text{ }^{\circ}\text{C}$



Features:

- One of the smallest infrared sensors worldwide with up to 22:1 optical resolution
- Rugged sensing head - usable up to $180\text{ }^{\circ}\text{C}$ 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:
 $0/4 - 20\text{ mA}$, $0 - 5\text{ V}$, $0 - 10\text{ V}$, thermocouple type K
- Optional EtherNet/IP, Profinet, Ethernet TCP / 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)
Operating temperature range ¹⁾	$-20\text{ }^{\circ}\text{C} \dots 180\text{ }^{\circ}\text{C}$ ($130\text{ }^{\circ}\text{C}$ to LT 02) (sensing head) $-20\text{ }^{\circ}\text{C} \dots 85\text{ }^{\circ}\text{C}$ (electronics)
Storage temperature	$-40\text{ }^{\circ}\text{C} \dots 180\text{ }^{\circ}\text{C}$ ($130\text{ }^{\circ}\text{C}$ to LT 02) (sensing head) $-40\text{ }^{\circ}\text{C} \dots 85\text{ }^{\circ}\text{C}$ (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)	$0/4 - 20\text{ mA}$, $0 - 5/10\text{ V}$, thermocouple K, alarm
Output / alarm	$24\text{ V} / 50\text{ mA}$ (open collector)
Relay outputs (optional)	2 x $60\text{ V DC} / 42\text{ V AC}_{\text{eff}}$; 0.4 A ; optically isolated
Outputs / digital	built-in USB-interface, Optional EtherNet/IP, Profinet, Ethernet TCP / Modbus TCP, Modbus RTU, RS485, RS232 interface or relay outputs (2 x optically isolated)
Output impedances	$\text{mA max. } 500\text{ }\Omega$ (with $8 - 36\text{ V DC}$) $\text{mV min. } 100\text{ k}\Omega$ load impedance thermocouple $20\text{ }\Omega$
IO Pins (3x)	flexible programming as in- or output: external emissivity adjustment, ambient tem- perature compensation, uncommitted value, trigger (reset of holdfunctions), alarm output (open collector $24\text{ V} / 50\text{ mA}$)
Cable length	1 m (standard), 3 m, 8 m, 15 m
Power	$8 - 30\text{ V DC } 1.2\text{ W}$

Measurement specifications

Measuring Temperature range (scalable via programming keys or software)	$-50\text{ }^{\circ}\text{C} \dots 600\text{ }^{\circ}\text{C}$ (LT 02) $-50\text{ }^{\circ}\text{C} \dots 800\text{ }^{\circ}\text{C}$ (LT 15) $-50\text{ }^{\circ}\text{C} \dots 1050\text{ }^{\circ}\text{C}$ (LT 22)
Spectral range	$8 - 14\text{ }\mu\text{m}$
Optical resolution (90% energy)	22:1 15:1 2:1
Smallest spot size	$0,6\text{ mm}$ @ 10 mm (LT22 + CF lens)
Measurement uncertainty ^{2), 3), 4), 5), 7)}	$\pm 1\%$ or $\pm 1\text{ }^{\circ}\text{C}$
Repeatability ^{2), 3), 4), 5), 7)}	$\pm 0.1\%$ or $\pm 0.1\text{ }^{\circ}\text{C}$
Temperature resolution (display)	0.1 K
NETD ^{4), 5), 6)}	typically: 30 mK
Response time	115 ms (90 %)
Emissivity/ Setting (adjustable via programming keys or software)	0.05 – 1.100
Transmissivity/ Setting (adjustable via programming keys or software)	0.05 – 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 / App	IR Mobile App / Optris CompactPlus Connect

1) The LCD displays capacity may be limited at ambient temperatures below $0\text{ }^{\circ}\text{C}$

2) Whichever is greater

3) $T_{\text{obj}} > 0\text{ }^{\circ}\text{C}$

4) $\epsilon = 1$

5) Response time = 200ms

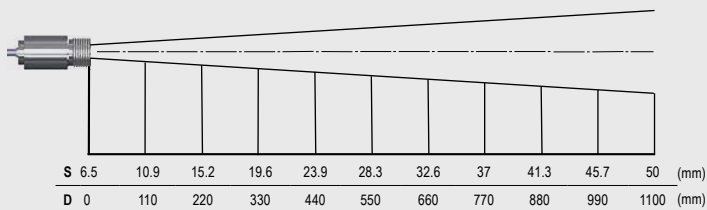
6) $T_{\text{obj}} = 25\text{ }^{\circ}\text{C}$

7) at ambient temperature $23 \pm 5\text{ }^{\circ}\text{C}$

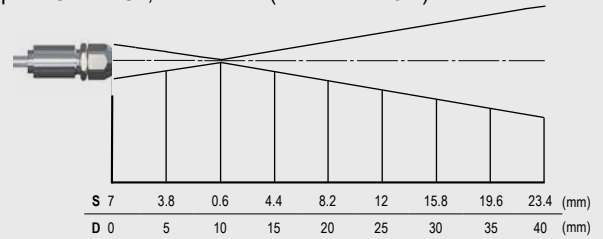
optris CTi LT

Optical specifications

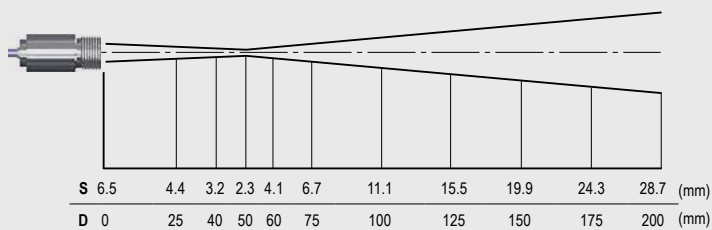
Optics CTi LT SF, D:S = 22:1



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



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



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

Dimensions (in mm)

Electronics

