

## Precise non-contact temperature measurement of metal from 50 °C to 1800 °C

### Features:

- Miniaturized Infrared Thermometer with 2.3 µm wave length range for measurements of metals, of secondary metal processing, metal oxides and ceramic materials
- Very small sensing head of 14 mm diameter and 28 mm length fits everywhere and is usable up to 85 °C ambient temperature without cooling
- Temperature measuring ranges from 50 °C to 1800 °C and exposure times starting from 1 ms
- Short wave length range of 2.3 µm to reduce error of reading with measurements on materials with unknown emissivity



### General Specifications

|                      |                                                                    |
|----------------------|--------------------------------------------------------------------|
| Environmental rating | IP 65 (NEMA-4)                                                     |
| Ambient temperature  | -20 °C ... 85 °C (sensing head)<br>0 °C ... 85 °C (electronics)    |
| Storage temperature  | -40 °C ... 125 °C (sensing head)<br>-40 °C ... 85 °C (electronics) |
| Relative humidity    | 10–95 %, non-condensing                                            |
| Vibration (sensor)   | IEC 60068-2-6 (sinus shaped)<br>IEC 60068-2-64 (broadband noise)   |
| Shock (sensor)       | IEC 60068-2-27 (25G and 50G)                                       |
| Weight               | 40 g (sensing head)<br>420 g (electronics)                         |

### Electrical Specifications

|                   |                                                                                                                                        |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Outputs / analog  | 0/4–20 mA, 0–5/10 V, thermocouple J, K, alarm                                                                                          |
| Outputs / alarm   | 24 V/ 50 mA (open collector)                                                                                                           |
| Optional          | Relay: 2 x 60 V DC/ 42 V AC <sub>eff</sub> ; 0.4 A;<br>optically isolated                                                              |
| Outputs / digital | USB, RS232, RS485, CAN, Profibus DP, Ethernet (optional)                                                                               |
| Output impedances | mA max. 500 Ω (with 8–36 V DC)<br>mV min. 100 kΩ load impedance<br>thermocouple 20 Ω                                                   |
| Inputs            | Programmable functional inputs for external emissivity adjustment, ambient temperature compensation, trigger (reset of hold functions) |
| Cable length      | 3 m                                                                                                                                    |
| Power Supply      | 8–36 V DC                                                                                                                              |
| Current draw      | Max. 100 mA                                                                                                                            |

### Measurement Specifications

|                                                                                         |                                                                                                                                                                                    |
|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Temperature ranges<br>(scalable via programming keys or software) <sup>1)</sup>         | 50 °C ... 400 °C (3ML)<br>100 °C ... 600 °C (3MH)<br>150 °C ... 1000 °C (3MH1) <sup>4)</sup><br>200 °C ... 1500 °C (3MH2) <sup>4)</sup><br>250 °C ... 1800 °C (3MH3) <sup>4)</sup> |
| Spectral ranges                                                                         | 2.3 µm                                                                                                                                                                             |
| Optical resolution<br>(90 % energy)                                                     | 22:1 (3ML)<br>33:1 (3MH)<br>75:1 (3MH1–3MH3)                                                                                                                                       |
| System accuracy <sup>2)</sup><br>(at ambient temp. 23 ± 5 °C)                           | ±(0.3 % of reading + 2 °C)                                                                                                                                                         |
| Repeatability<br>(at ambient temp. 23 ± 5 °C)                                           | ±(0.1 % of reading + 1 °C)                                                                                                                                                         |
| Temperature resolution                                                                  | 0.1 K                                                                                                                                                                              |
| Exposure time <sup>3)</sup>                                                             | 1 ms (90 %)                                                                                                                                                                        |
| Emissivity / Gain<br>(adjustable via programming keys or software)                      | 0.100–1.100                                                                                                                                                                        |
| Transmissivity / Gain<br>(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                                                                                                                                                            |

<sup>1)</sup>  $T_{object} > T_{sensing head} + 25 °C$

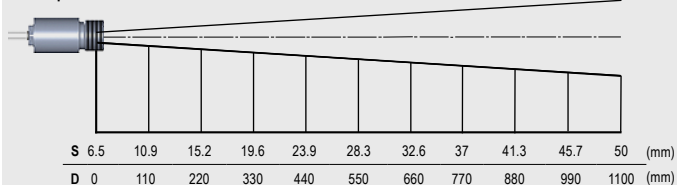
<sup>2)</sup>  $\varepsilon = 1$ , response time 1 s

<sup>3)</sup> With dynamic adaptation at low signal levels

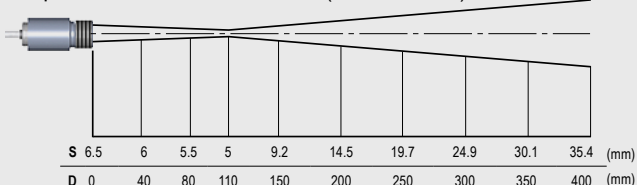
<sup>4)</sup> Specification valid at  $T_{object} \geq \text{start of measurement range} + 50 °C$

## Optical Specifications

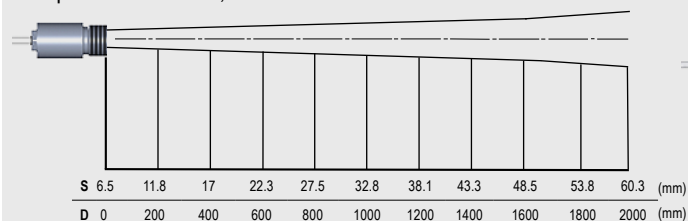
Optics CT 3ML SF, D:S = 22:1



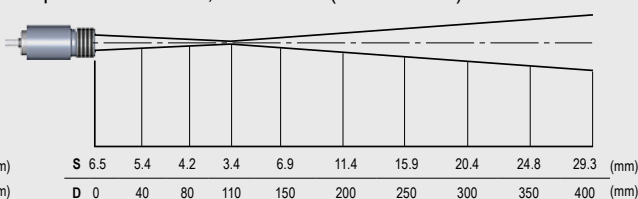
Optics CT 3ML CF, D:S = 22:1 (far field = 9:1)



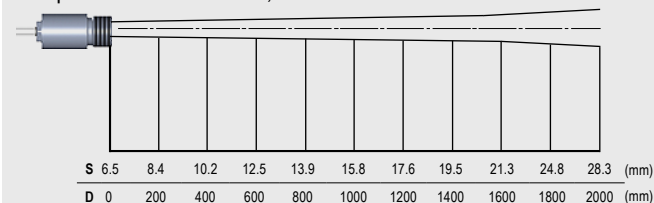
Optics CT 3MH SF, D:S = 33:1



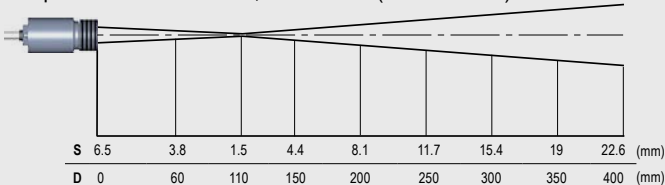
Optics CT 3MH CF, D:S = 33:1 (far field 11:1)



Optics CT 3MH1-H4 SF, D:S = 75:1

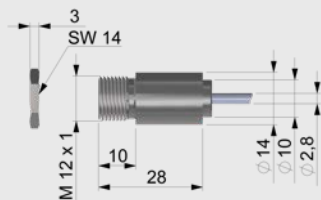


Optics CT 3MH1-H4 CF, D:S = 75:1 (far field 40:1)

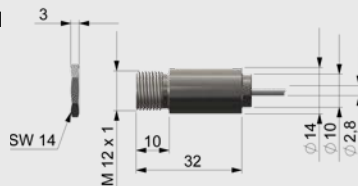


## Dimensions

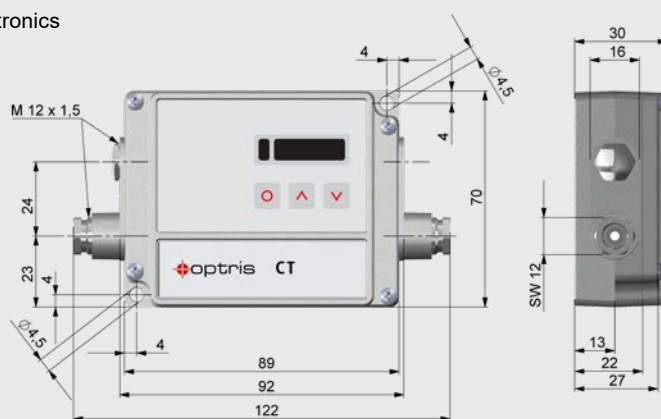
Sensing head (standard)



Sensing head (built-in CF-lens)

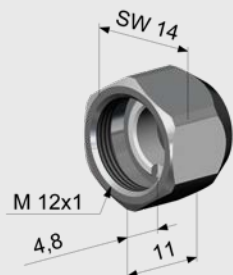


Electronics

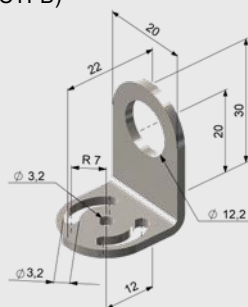


## Accessories (examples)

CF-lens (ACCTCFHT)



Mounting bracket, fixed (ACCTFB)



Air purge collar with integrated CF-lens (ACCTAPLCFHT)

