



### Non-contact temperature measurement of CO<sub>2</sub> and CO flame gases up to 1650 °C (2912 °F)



#### Features:

- Accurate temperature measurement of CO<sub>2</sub> (F2) or CO (F6) flame gases in the range of 200 °C (392 °F) up to 1650 °C (2912 °F) in combustion processes, garbage burning or processes inside chemical reactors
- Double laser aiming marks real spot location and spot size up from 1.6 mm (0.06 in) at any distance
- Optics 45:1 with selectable focus, compact sensor head size
- Usable up to 85 °C (185 °F) ambient temperature without cooling and automatic laser switch off at 50 °C (122 °F)
- Cooling and protection accessories for harsh environmental conditions
- Calibrated under inert gas atmosphere (Argon)

#### General specifications

|                      |                                                                                                                                           |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Environmental rating | IP 65 (NEMA-4) front mountable at vacuum processes (up to 10 <sup>-3</sup> mbar)                                                          |
| Ambient temperature  | -20 °C ... 85 °C (-4 °F ... 185 °F) (sensing head)<br>(50 °C [122 °F] with laser ON)<br>-20 °C ... 85 °C (-4 °F ... 185 °F) (electronics) |
| Storage temperature  | -40 °C ... 125 °C (-4 °F ... 257 °F) (sensing head)<br>-40 °C ... 85 °C (-40 °F ... 185 °F) (electronics)                                 |
| Relative humidity    | 10–95 %, non condensing                                                                                                                   |
| Vibration            | IEC 60068-2-6 (sinus shaped)<br>IEC 60068-2-64 (broadband noise)                                                                          |
| Shock                | IEC 60068-2-27 (25G and 50G)                                                                                                              |
| Weight               | 600 g (21.2 oz) (sensing head)<br>420 g (14.8 oz) (electronics)                                                                           |

#### Electrical specifications

|                   |                                                                                                                                        |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Output / analog   | 0/4–20 mA, 0–5/ 10 V, thermocouple J, K                                                                                                |
| Output / alarm    | 24 V / 50 mA (open collector)                                                                                                          |
| Optional          | Relay: 2 x 60 V DC/ 42 V AC <sub>eff</sub> ; 0.4 A; optically isolated                                                                 |
| Output / 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 thermocouple 20 Ω                                                      |
| Inputs            | Programmable functional inputs for external emissivity adjustment, ambient temperature compensation, trigger (reset of hold functions) |
| Cable length      | 3 m (standard), 8 m, 15 m<br>(9.8 ft [standard], 26.2 ft, 49.2 ft)                                                                     |
| Power supply      | 8–36 V DC                                                                                                                              |
| Current draw      | max. 160 mA                                                                                                                            |
| Laser 635 nm      | 1 mW, ON/OFF via electronic box or software                                                                                            |

#### Measurement specifications

|                                                                                 |                                                                                                                                      |
|---------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Temperature range<br>(scalable via programming keys or software)                | 200 °C ... 1450 °C (F2 / F6)<br>(392 °F ... 2642 °F [F2 / F6])<br>400 °C ... 1650 °C (F2H / F6H)<br>(752 °F ... 2912 °F [F2H / F6H]) |
| Spectral range                                                                  | 4.24 μm (F2)<br>4.64 μm (F6)                                                                                                         |
| Optical resolution<br>(90 % energy)                                             | 45:1                                                                                                                                 |
| System accuracy<br>(at ambient temp. 23 ±5 °C)<br>(at ambient tem. 73.4 ±41 °F) | ±1 % <sup>1) 2)</sup>                                                                                                                |
| Repeatability<br>(at ambient temp. 23 ±5 °C)<br>(at ambient tem. 73.4 ±41 °F)   | ±0.5 % or +0.5 °C <sup>2)</sup><br>(±0.5 % or +0.9 °F <sup>2)</sup> )                                                                |
| Temperature resolution (digital)                                                | 0.1 K                                                                                                                                |
| Exposure time <sup>3)</sup> (90 % signal)                                       | 10 ms                                                                                                                                |
| Emissivity/ Gain (adjustable via sensor or software)                            | 0.100–1.100                                                                                                                          |
| IR window correction<br>(adjustable via software)                               | 0.100–1.000                                                                                                                          |
| Signal processing (parameter adjustable via software)                           | Peak hold, valley hold, average; extended hold function with threshold and hysteresis                                                |
| Software                                                                        | optris Compact Connect                                                                                                               |

<sup>1)</sup> At ambient temperatures >300 °C (572 °F)

<sup>2)</sup> ε = 1, response time 1 s

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

