

**Two-wire infrared thermometer
for temperature measurements
of metals and ceramics
from 50 °C (122 °F) to 600 °C (1112 °F)
with adjustable focus,
patented crosshair laser and
video sighting**



Features:

- Parallel use of video sighting and crosshair laser for easy sensor alignment (measuring spots up from 0.9 mm [0.04 in]) under all viewing conditions possible
- Manual focusing for measurement distances from 90 mm (3.5 in)
- Response times up from 20 ms
- Standard two-wire interface for reliable data transfer and easy integration into a PLC
- Usable up to 70 °C (158 °F) ambient temperature without cooling
- Easy onsite sensor setup, video alignment and real-time process monitoring with IRmobile Android app or Compact Connect software

Measurement specifications

Temperature ranges ¹⁾ (scalable via programming keys or software)	50 ... 350 °C (3ML) [122 ... 662 °F] 100 ... 600 °C (3MH) [212 ... 1112 °F]
Spectral ranges	2.3 µm
Optical resolution (90 % energy)	60:1 (3ML) 100:1 (3MH)
System accuracy ²⁾ (at ambient temp. 23 ± 5 °C [73 ± 41 °F])	± (0.3 % of reading + 2 °C [4 °F])
Repeatability ²⁾ (at ambient temp. 23 ± 5 °C [73 ± 41 °F])	± (0.1 % of reading + 1 °C [2 °F])
Temperature resolution (digital)	0.1 K
Response time ³⁾ (90 % signal)	20 ms
Emissivity / Gain (adjustable via programming keys or software)	0.100 – 1.100
Transmissivity / Gain (adjustable via programming keys or software)	0.100 – 1.000
Signal processing (parameter adjustable via programming keys or software, respectively)	Peak hold, valley hold, average; extended hold function with threshold and hysteresis
Software / App	Compact Connect and IRmobile App

General specifications

Environmental rating	IP 65 (NEMA-4) front mountable at vacuum processes (up to 10 ⁻³ mbar)
Ambient temperature	-20 ... 70 °C (50 °C with laser ON) -4 ... 158 °F (122 °F with laser ON)
Storage temperature	-40 ... 85 °C [-40 ... 185 °F]
Relative humidity	10–95 %, non-condensing
Vibration (sensor)	IEC 60068-2-6 (sinus shaped), IEC 60068-2-64 (broad band noise)
Shock (sensor)	IEC 60068-2-27 (25G and 50G)
Weight	600 g [1.32 lb]

Electrical specifications

Output / analog	4–20 mA
Loop resistance	Max. 1000 Ω ⁴⁾
Output / alarm	0-30 V / 500 mA (open collector)
Output / digital	USB 2.0 Ethernet (via optional USB server)
Video sighting	digital (USB 2.0), 640 x 480 px, FOV 3.1° x 2.4°
Cable length (analog + alarm)	3 m [9.8 ft], 8 m [26.2], 15 m [49.2 ft]
Cable length (USB)	5 m [16.4 ft] (incl.), 10 m [32.8 ft], 20 m [65.6 ft], 100 m [328.1 ft], (over Ethernet)
Current draw (laser)	45 mA at 5 V 20 mA at 12 V 12 mA at 24 V
Power supply	5–28 V DC

¹⁾ $T_{\text{Object}} > T_{\text{sensing head}} + 25 \text{ °C [77 °F]}$

²⁾ $\epsilon = 1$, response time 1 s

³⁾ With dynamic adaptation at low signal levels

⁴⁾ In dependence on supply voltage

Optical parameters

The vario optics of the CSvideo allows a smooth focusing of the optics to the desired distance.

The following tables show examples of measurement distances and the corresponding measurement spot sizes:

The sensors are available in two versions:

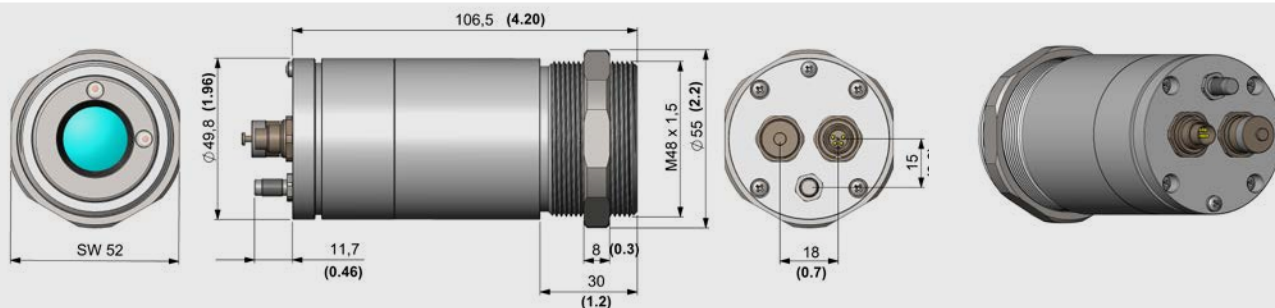
Standard focus (SF): 200 mm (7.9 in) till infinity

Close focus (CF): 90 mm till 250 mm (3.5 in till 9.8 in)

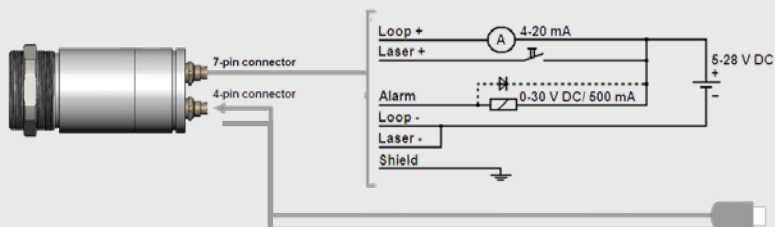
Alternatively you can use the [optris Spot size calculator](#) or the [optris calculator app](#).

	3ML: SF optics (60:1)								3ML: CF optics (60:1)					
Meas. spot size in mm (in)	3.3 (0.13)	5.0 (0.20)	7.5 (0.30)	11.7 (0.46)	18.3 (0.72)	26.7 (1.05)	41.7 (1.64)	83.3 (3.28)	1.5 (0.06)	2.0 (0.1)	2.5 (0.10)	3.0 (0.1)	3.5 (0.14)	4.2 (0.17)
Meas. distance in mm (in)	200 (7.9)	300 (11.8)	450 (17.7)	700 (27.6)	1100 (43.3)	1600 (63.0)	2500 (98.4)	5000 (196.9)	90 (3.5)	120 (4.7)	150 (5.9)	180 (7.1)	210 (8.3)	250 (9.8)
	3MH: SF optics (100:1)								3MH: CF optics (100:1)					
Meas. spot size in mm (in)	2.0 (0.1)	3.0 (0.1)	4.5 (0.18)	7.0 (0.28)	11.0 (0.43)	16.0 (0.63)	25.0 (0.99)	50.0 (1.97)	0.9 (0.04)	1.2 (0.05)	1.5 (0.06)	1.8 (0.07)	2.1 (0.08)	2.5 (0.10)
Meas. distance in mm (in)	200 (7.9)	300 (11.8)	450 (17.7)	700 (27.6)	1100 (43.3)	1600 (63.0)	2500 (98.4)	5000 (196.9)	90 (3.5)	120 (4.7)	150 (5.9)	180 (7.1)	210 (8.3)	250 (9.8)

Dimensions sensing head in mm (in)



Connection modes



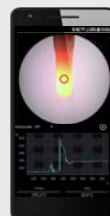
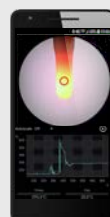
Analog operation mode:

4 – 20 mA and alarm interface
Setup & installation by IRmobile App
via USB cable (Plug & Play)



The Optris IRmobile app supports

- PI and Xi series and all pyrometers
- Android devices from version 5.0 or higher



Digital operation mode:

process control (video and temperature)
via IRmobile App

Ethernet via USB Server

