



Ratio thermometer with motorized focus, patented crosshair laser and video sighting for non-contact temperature measurement from 550 °C to 3000 °C



Features:

- Rugged and compact ratio thermometer with motorized focus and excellent optical resolution up to 150:1
- Innovative video sighting and crosshair laser for easy sensor alignment under all viewing conditions
- Switchable two-step brightness reduction filter for best viewing conditions on bright objects
- Easy on site sensor setup, video alignment and real-time process monitoring with IRmobile Android app or CompactPlus Connect software
- Integrated Smart Ratio Mode (SRM) - for demanding applications with adaptive slope requirements
- Usable up to 65 °C ambient temperature without cooling

General specifications

Environmental rating	IP 65 (NEMA-4)
Ambient temperature	0 ... 65 °C
Storage temperature	-40 ... 85 °C
Relative humidity	10–95 %, non-condensing
Vibration	IEC 60068-2-6 (sinus shaped) IEC 60068-2-64 (broadband noise)
Shock	IEC 60068-2-27 (25G and 50G)
Weight	518 g

Electrical specifications

Outputs analog	2x 0/4–20 mA
Output impedances	max. 500 Ω (with 8 – 30 V DC)
Digital Interfaces	USB, RS485 ¹⁾ , Modbus RTU ¹⁾
I/O-Pin	Programmable in-/output: selectable as alarm output (open collector 24 V/ 1 A), input for triggered signal output and peak hold function or as analog input for external emissivity or slope adjustment
Power supply	USB powered or 8 – 30 V DC ²⁾
Power consumption	2.5 W (USB) or 4 W (8 – 30 V DC)
Aiming laser	Laser 635 nm/ <1 mW/ ON/OFF via software / app

Measurement specifications

Temperature ranges	1-Channel	2-Channel
	550 ... 1800 °C 900 ... 3000 °C	600 ... 1800 °C (R1ML) 1000 ... 3000 °C (R1MH)
Spectral range	0.8 – 1.1 μm	
Optical resolution (90 % energy)	100:1 (R1ML) 150:1 (R1MH)	
Motorized focus	CFV: 200 mm to 400 mm, SFV: 350 mm to infinity; infinitely adjustable	
System accuracy ³⁾ (at T _{Amb} = 23 ± 5 °C)	± (0.5 % of reading + 2 °C)	
Repeatability ³⁾ (at T _{Amb} = 23 ± 5 °C)	± 0.3 % of reading	
Temperature resolution	0.1 K	
Response time (90 % signal) ⁴⁾	1 ms – 10 s	
Slope (adjustable via app/ software or analog input)	0.700 – 1.300	
Emissivity (adjustable via app / software or analog input)	0.050 – 1.100	
Signal processing (parameter adjustable via app / software)	1 color / 2 color mode/ attenuation monitoring/ alarms/ peak hold, valley hold, average/ extended hold function with threshold and hysteresis, Smart Ratio Mode (SRM)	
Software / App	optris CompactPlus Connect / IRmobile	

Specifications visual camera

Optical resolution	1280 x 960 pixels
FOV (HxV)	8° x 6°
Maximum image transfer rate	30 fps

1) Optional: electrically isolated
 2) USB powered unit works only in digital communication mode
 3) ε = 1. response time 1 s; no attenuation / Specification valid for 5 - 95% of measurement range
 4) With dynamic adaptation to low signal levels

optris CSvision R1M

Optical parameters

The vario optics of the CSvision 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 vario optics (SFV): adjustable 350 mm till infinity

Close-focus vario optics (CFV): adjustable 200 mm till 400 mm

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

1ML SFV (D:S = 100:1)

Spot size	mm	3.5	5	7.5	10	15	20	25	50
Measurement distance	mm	350	500	750	1000	1500	2000	2500	5000

1MH SFV (D:S = 150:1)

Spot size	mm	2.3	3.3	5.0	6.7	10	13.3	16.7	33.3
Measurement distance	mm	350	500	750	1000	1500	2000	2500	5000

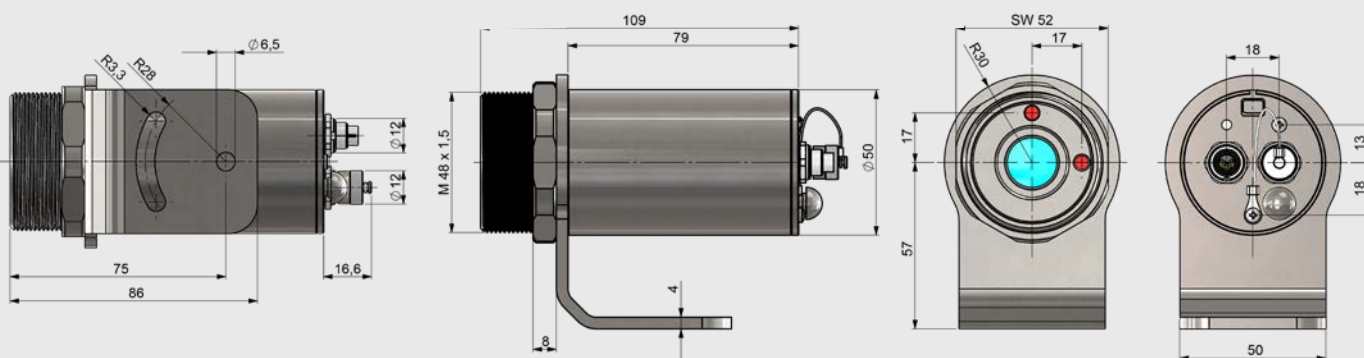
1ML CFV (D:S =100:1)

Spot size	mm	2	2.5	3	3.5	4
Measurement distance	mm	200	250	300	350	400

1MH CFV (D:S =150:1)

Spot size	mm	1.3	1.7	2.0	2.3	2.7
Measurement distance	mm	200	250	300	350	400

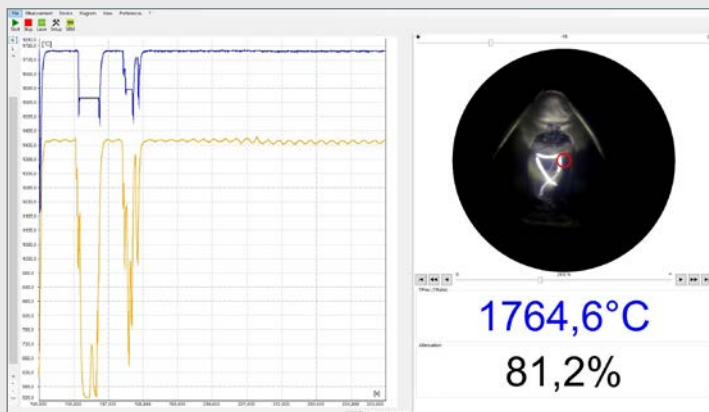
Dimensions in mm



Software / App



Built-in USB interface for an easy setup via smartphone and IRmobile app.



Software CompactPlus Connect (included) for extended setup on Windows computers.



The innovative **two-step brightness reduction filter** uncovers tiny details: here of a filament.

Zoom and rotate the image with just one finger.

That's precise alignment made easy.