optris CSvision R1M
TECHNICAL DATA

optris · **infrared measurements**

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	600 ... 1800 °C	(R1ML)
	900 ... 3000 °C	1000 ... 3000 °C	(R1MH)

Spectral range	0.8 – 1.1 µm
Optical resolution (90 % energy)	100:1 (R1ML) 150:1 (R1MH)
Motorized focus	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

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Optical parameters

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

The following table shows examples of measurement distances and the corresponding measurement spot sizes.

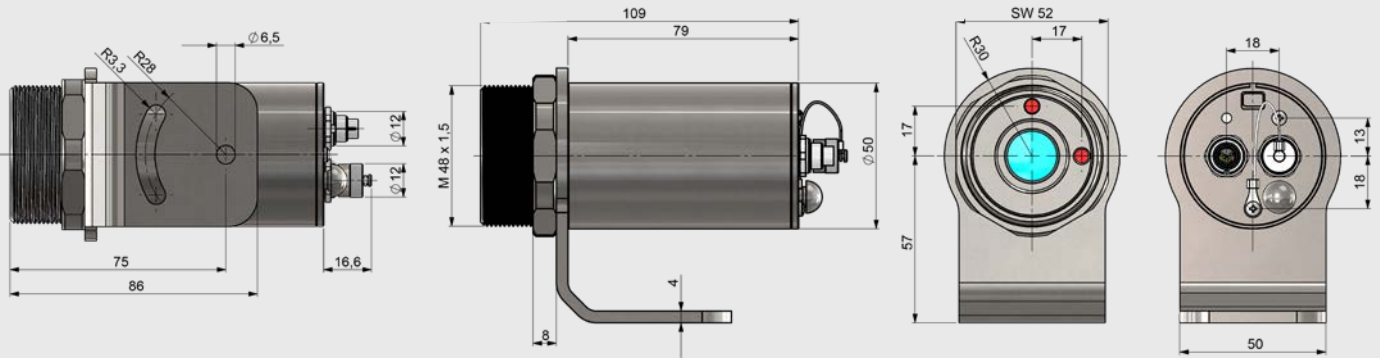Alternatively you can use the optris Spot size calculator or the optris optic calculator app.

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)

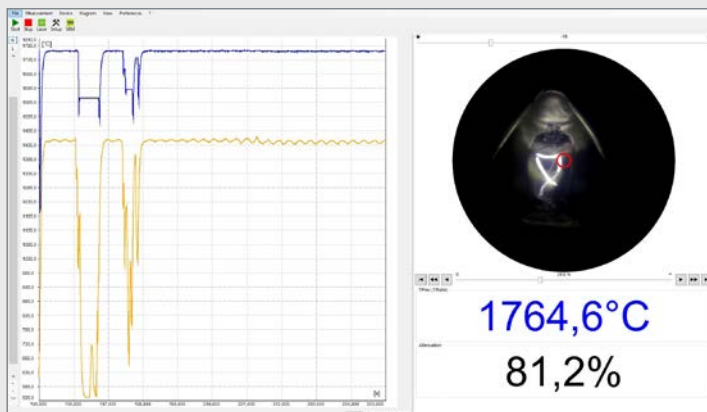| Spot size	mm	2.3	3.3	5.0	6.7	10	13.3	16.7	33.3
Measurement distance	mm	350	500	750	1000	1500	2000	2500	5000

Dimensions in mm

Software / App

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

GET IT ON Google Play

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

1764,6°C
81,2%

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.