

optris® CTvideo 3M

Non-contact temperature measurement of metals and ceramics from 50 °C to 1800 °C 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 0.5 mm) under all viewing conditions possible
- Manual focusing for measurement distances from 90 mm with optical resolution up to 300:1
- Response times up from 1 ms
- Usable in up to 70°C ambient temperature without cooling and automatic laser switch off at 50°C
- Short measuring wavelength of 2.3 μm decreases measuring mistakes on surfaces with low or unknown emission rate
- Compact Connect software for fast on-site sensor setup, video alignment and real-time process monitoring

General specifications

Environmental rating	IP 65 (NEMA-4)
Ambient temperature	-20 °C to 70 °C (sensing head, 50 °C with laser ON) 0 °C to 85 °C (electronics)
Storage temperature	-40 °C to 85 °C
Relative humidity	10 - 95 %, non-condensing
Vibration (sensor)	IEC 68-2-6: 3 G, 11-200 Hz, any axis
Shock (sensor)	IEC 68-2-27: 50 G, 11 ms, any axis
Weight	600 g (sensing head) 420 g (electronics)

Electrical specifications

Outputs/analog	0/4 - 20 mA, 0-5/10 V, thermocouple J, K
Alarm output	24 V/50 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°
Output impedances	mA max. 500 Ω (with 5-36 V DC) 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 (sensor-electronics)	3 m (standard), 5 m, 10 m
Cable length (USB)	5 m, extendable up to 100 m over Ethernet
Current draw	max. 160 mA
Power Supply	8-36 V DC
Laser 635 nm	1 mW, ON/OFF via electronic box or software

Measurement specifications

Temperature range ¹⁾ (scalable via programming keys or software)	50 °C to 400 °C (3ML) 100 °C to 600 °C (3MH) 150 °C to 1000 °C (3MH1) ²⁾ 200 °C to 1500 °C (3MH2) ²⁾ 250 °C to 1800 °C (3MH3) ²⁾
Spectral range	2.3 μm
Optical resolution (90 % energy)	60:1 (3ML) 100:1 (3MH) 300:1 (3MH1-3MH3)
System accuracy ³⁾ (at ambient temp. 23 ± 5 °C)	± (0.3 % of reading + 2 °C)
Repeatability (at ambient temp. 23 ± 5 °C)	± (0.1 % of reading + 1 °C)
Temperature resolution (digital)	0.1 K
Exposure time ⁴⁾ (90% signal)	1 ms
Emissivity/Gain (adjustable via programming keys or software)	0.100 - 1.100
Transmissivity/Gain (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 (incl.)	optris Compact Connect (Sensor setup, video sighting, process monitoring)

¹⁾ $T_{object} > T_{sensing\ head} + 25\text{ °C}$

²⁾ Specification valid at $T_{Object} \geq \text{start of measurement range} + 50\text{ °C}$

³⁾ $\epsilon = 1$, response time 1 s

⁴⁾ With dynamic adaptation at low signal levels

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Optical specifications

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

The sensors are available in two versions: Standard focus (SF): 200 mm till infinity
Close focus (CF) 90 mm till 250 mm

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

3ML: SF optics (60:1)								
Meas. spot size in mm	3.3	5.0	7.5	11.7	18.3	26.7	41.7	83.3
Meas. distance in mm	200	300	450	700	1100	1600	2500	5000

3ML: CF optics (60:1)							
Meas. spot size in mm	1.5	2.0	2.5	3.0	3.5	4.2	
Meas. distance in mm	90	120	150	180	210	250	

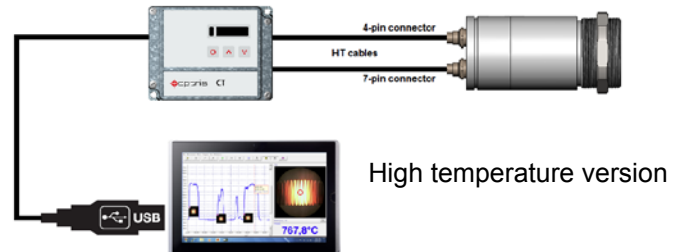
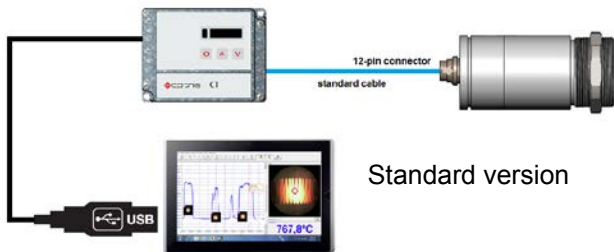
3MH: SF optics (100:1)								
Meas. spot size in mm	2.0	3.0	4.5	7.0	11.0	16.0	25.0	50.0
Meas. distance in mm	200	300	450	700	1100	1600	2500	5000

3MH: CF optics (100:1)						
Meas. spot size in mm	0.9	1.2	1.5	1.8	2.1	2.5
Meas. distance in mm	90	120	150	180	210	250

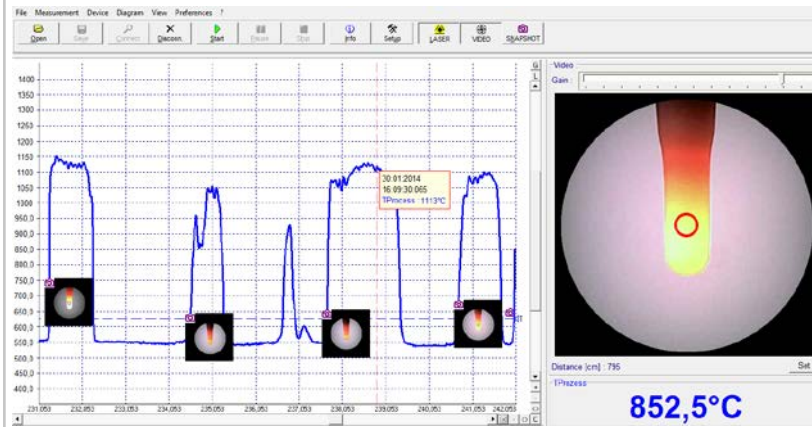
3MH1-3MH3: SF optics (300:1)								
Meas. spot size in mm	0.7	1.0	1.5	2.3	3.7	5.3	8.3	16.7
Meas. distance in mm	200	300	450	700	1100	1600	2500	5000

3MH1-3MH3: CF optics (300:1)						
Meas. spot size in mm	0.3	0.4	0.5	0.6	0.7	0.8
Meas. distance in mm	90	120	150	180	210	250

Connections



Software included

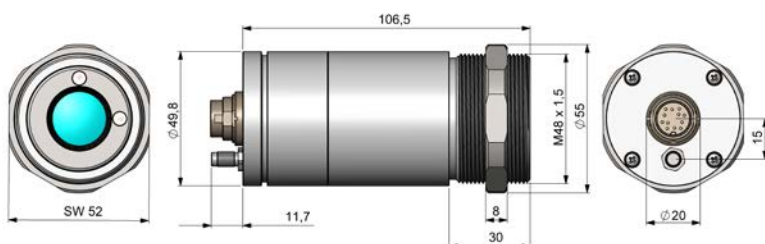


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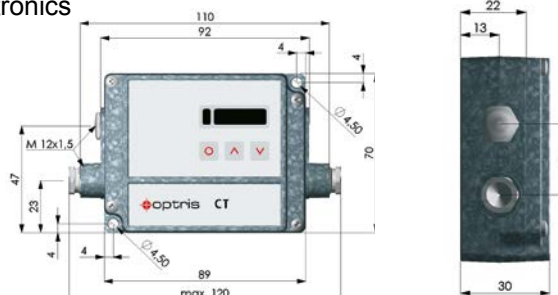
- Automatic snapshots (time- or temperature dependent) to control and document the process
- Graphic display and recording of the measurement values
- Setup of sensor parameters and signal processing functions
- Remote control of the sensor

Dimensions

Sensing head



Electronics



Specifications are subject to change without notice
CTVideo3M-DS-E2014-05-A