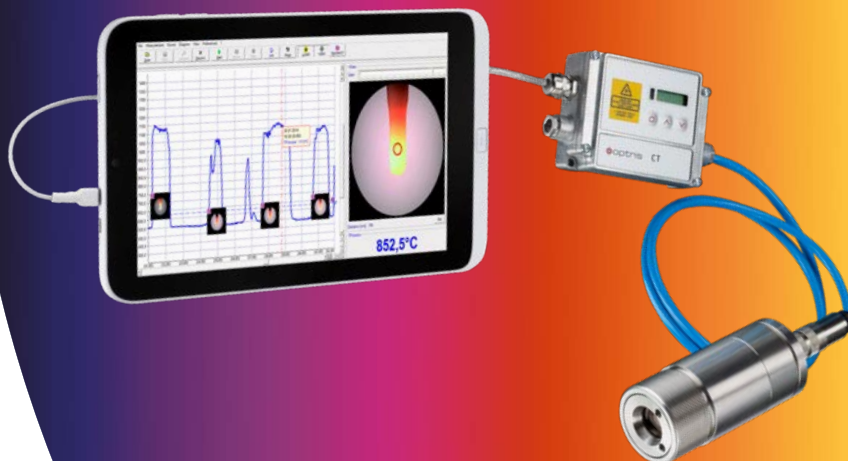




CTvideo 3M

Non-contact temperature measurement
of metals and ceramics from 50 °C to 1800 °C
with adjustable focus, patented crosshair laser
and video sighting

when temperature matters



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
- optris Compact Connect software for fast on-site sensor setup, video alignment and real-time process monitoring



Measurement specifications

Temperature ranges ¹⁾ (scalable via programming keys or software)	50 ... 400 °C (3ML) 100 ... 600 °C (3MH) 150 ... 1000 °C (3MH1) ²⁾ 200 ... 1500 °C (3MH2) ²⁾ 250 ... 1800 °C (3MH3) ²⁾
Spectral ranges	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 – 1.000
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)

General specifications

Environmental rating	IP 65 (NEMA-4)
Ambient temperature ⁵⁾	-20 ... 70 °C (sensing head, 50 °C with laser ON) -20 ... 85 °C (electronics)
Storage temperature	-40 ... 85 °C
Relative humidity	10–95 %, non-condensing
Vibration (sensor)	IEC 60068-2-6 (sinus shaped) IEC 60068-2-64 (broadband noise)
Shock (sensor)	IEC 60068-2-27 (25G and 50G)
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 8–36 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

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

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

³⁾ $\varepsilon = 1$, response time 1 s

⁴⁾ With dynamic adaptation at low signal levels

⁵⁾ The functioning of the LCD display may be limited in ambient temperatures below 0 °C



Optical parameters

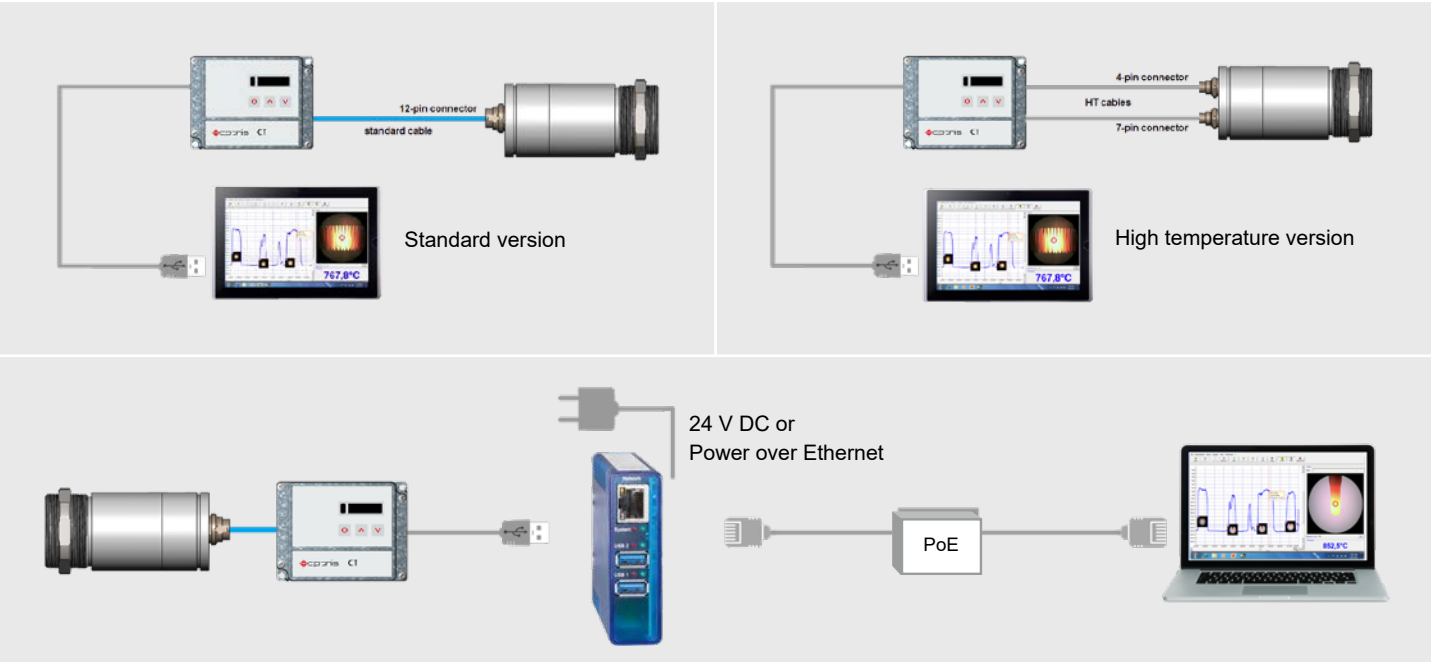
The vario optics of the CTvideo allows a smooth focusing of the optics to the desired distance.

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 till infinity
Close focus (CF): 90 mm till 250 mm

	3ML: SF optics (60:1)								3ML: CF optics (60:1)					
Meas. spot size in mm	3.3	5.0	7.5	11.7	18.3	26.7	41.7	83.3	1.5	2.0	2.5	3.0	3.5	4.2
Meas. distance in mm	200	300	450	700	1100	1600	2500	5000	90	120	150	180	210	250
	3MH: SF optics (100:1)								3MH: CF optics (100:1)					
Meas. spot size in mm	2.0	3.0	4.5	7.0	11.0	16.0	25.0	50.0	0,9	1.2	1.5	1.8	2.1	2.5
Meas. distance in mm	200	300	450	700	1100	1600	2500	5000	90	120	150	180	210	250
	3MH1-3MH3: SF optics (300:1)								3MH1-3MH3: CF optics (300:1)					
Meas. spot size in mm	0.7	1.0	1.5	2.3	3.7	5.3	8.3	16.7	0,3	0.4	0.5	0.6	0.7	0.8
Meas. distance in mm	200	300	450	700	1100	1600	2500	5000	90	120	150	180	210	250

Connection modes



Software included

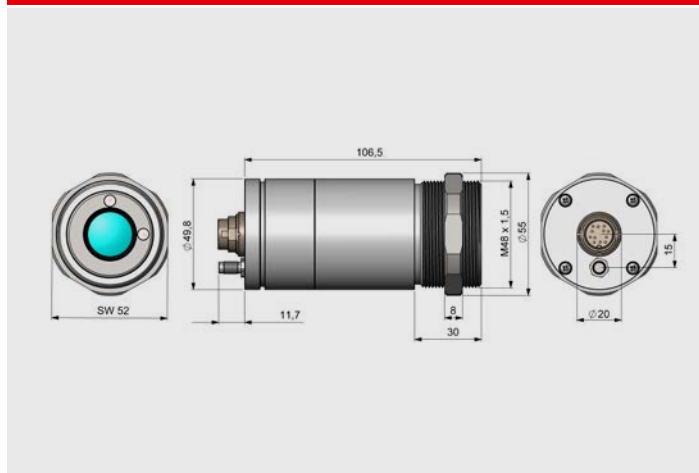
- Automatic snapshots (time- or temperature dependent) to control and document the process
- Graphic display and recording of the measurement values
- Setup of sensor parameters and signal processing functions
- Remote control of the sensor

optris CTvideo 3M

TECHNICAL DATA



Dimensions sensing head



Dimensions electronics

