

More precision.

thermoMETER CTVideo/CSVideo // Infrared temperature sensors



Infrared temperature sensors with crosshair laser sighting and video module



thermoMETER CTVideo/CSVideo

- Parallel use of video module and crosshair laser sighting for measuring field adjustment (measuring fields from 0.5mm)
- Applicable in ambient temperatures up to 70°C without any additional cooling
- Measurements on hot metals, ceramics and composite materials
- Automatic snapshot feature for process monitoring and corresponding documentation

The video pyrometers thermoMETER CTVideo and CSVideo measure within the range from 50°C to 2200°C and are therefore ideally suited to high temperature applications. Response times from 1ms enable to integrate them fast and easily into the processes. The vario lenses allow for stepless focusing from a measurement distance of 90mm. Smallest objects from 0.5mm can therefore be measured reliably.



Software thermoMETER CTVideo and CSVideo

- Automatic snapshots (time- or temperature-dependent) for process monitoring and corresponding documentation
- Graphic display and recording of the measurement values
- Programming of sensor parameters and signal processing features
- Sensor remote monitoring



Operation modes (CS Video)

Analogue operation mode: 4-20mA and alarm interface. Setup & installation via USB cable (hot Plug & Play)



Digital operation mode: process control (Video and temperature) via software



Operation modes (CT Video)

Digital operation mode



Analogue operation mode: 0-5V, 0-10V, 0-20mA and 4-20mA parallel to USB interface

Two-wire infrared thermometer for metals and ceramics

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thermoMETER CSVideo M2



The video pyrometer thermoMETER CSVideo 2M combines the innovative crosshair laser sighting with a video module as visor assistance. It guarantees a reliable and precise measuring field adjustment in hardto-reach areas and in cases of measurement objects being so hot that the laser visor is not visible anymore.

CSVideo is equipped with an integrated controller. As the entire electronics is in the sensor, the CSVideo is particularly suitable for applications in restricted construction spaces.

Optical parameters thermoMETER CSVideo M2

 \square = smallest spot size (mm)

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Standard Focus										
SF150L	150:1	1.3	2.0	3.0	4.7	7.3	10.7	16.7	33.3	
SF300H	300:1	0.7	1.0	1.5	2.3	3.7	5.3	8.3	16.7	
distance (mm)		200	300	450	700	1100	1600	2500	5000	
Close Focus										
CF150L	150:1	0.6	0.8	1.0	1.2	1.4	1.7			
CF300H	300:1	0.3	0.4	0.5	0.6	0.7	0.8			
distance (mm)		90	120	150	180	210	250			

- The vario lenses of the CSVideo allow for stepless focusing from the desired measurement distance.
- The sensors are available in two lens versions: Standard focus (SF): adjustable from 200mm to infinity Close focus (CF): adjustable from 90mm to 250mm
- The following table contains examples of different measurement distances and the corresponding spot diameters:

- Measuring range from 250 to 1600°C
- Optical resolution 150:1 / 300:1
- Spectral range 1.6µm
- Temperature value triggering with automatic snapshot
- Software Compact Connect included
- Parallel use of video module and crosshair laser sighting
- Manual focusing for measurement distances from 90mm
- Response times from 10ms

Model CSVM-2LSF-C5 CSVM-2LCF-C5 CSVM-2HSF-C5 CSVM-2HCF-C5 300:1 300:1 Optical resolution 150:1 150:1 Temperature range 1 250°C to 800 °C 385°C to 1600°C Spectral range 1.6µm System accuracy 2,3 ±0.3% of reading +2°C Repeatability ² ±0.1% of reading +1°C 0.1K Temperature resolution Response time (90% signal) 10ms 0.100 to 1.100 Emissivity/Gain 1 Transmissivity/Gain 1 0.100 to 1.000 Signal processing 1 peak hold, valley hold, average; extended hold function with threshold and hysteresis Certificate of calibration optional Outputs/analogue 4 to 20mA max. 1000Ω (In dependence on supply voltage) Output impedances open-collector (0 to 30V / 500mA) Alarm output Outputs/digital USB 2.0, Ethernet (via optional USB server) digital (USB 2.0), 640 x 480 px, FOV 3.1° x 2.4° Video sighting Cable length (analogue + alarm) 3m, 8m, 15m Cable length (USB) 5m (incl.), 10m, 20m, 100m (via Ethernet) Current draw (laser) 45mA at 5V ; 20mA at 12V ; 12mA at 24V Power supply 5 to 28V DC class II, 635nm, 1mW, Laser ON/OFF via controller or software Laser Environmental rating IP 65 (NEMA-4), front mountable at vacuum processes (up to 10 - 3 mbar) -20°C to 70°C (50°C with Laser ON) Ambient temperature Storage temperature -40°C to 85°C Relative humidity 10 to 95%, non condensing Vibration IEC 68-2-6: 3 G, 11 up to 200Hz, any axis sensor IEC 68-2-27: 50 G, 11ms, any axis Shock sensor

Weight ¹ adjustable via programming keys or software

² at ambient temperature 23 \pm 5°C; whichever is greater

³ temperature of the object >0°C



600g

Infrared video thermometer for metals and ceramics

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thermoMETER CTVideo M1/M2



- Measuring range from 250 to 2200°C

- Optical resolution 150:1 / 300:1
- Spectral range 1.0 and 1.6μm
- Response time 1ms
- Temperature value triggering with automatic snapshot
- Software Compact Connect included
- Parallel use of video module and crosshair laser sighting
- Manual focusing for measurement distances from 90mm

The infrared video thermometers CTVideo M1/M2 allow a parallel use of video sighting and crosshair laser aiming for an optimal measuring field adjustment even in processes with limited access. Due to the short wave-length of 1.0 μ m and 1.6 μ m, the sensor reliably measures temperatures of metals or ceramics and reduces possible measuring errors with surfaces with low or unknown emissivity.

Optical parameters thermoMETER CTVideo M1/M2

 \square = smallest spot size (mm)

Standard Focus										
SF150L	150:1	1.3	2.0	3.0	4.7	7.3	10.7	16.7	33.3	
SF300H/H1	300:1	0.7	1.0	1.5	2.3	3.7	5.3	8.3	16.7	
distance (mm)		200	300	450	700	1100	1600	2500	5000	
Close Focus										
CF150L	150:1	0.6	0.8	1.0	1.2	1.4	1.7			
CF300H/H1	300:1	0.3	0.4	0.5	0.6	0.7	0.8			
distanc	90	120	150	180	210	250				

- The vario lenses of the CTVideo allow for stepless focusing from the desired measurement distance.
- The sensors are available in two lens versions: Standard focus (SF): adjustable from 200mm to infinity Close focus (CF): adjustable from 90mm to 250mm
- The following table contains examples of different measurement distances and the corresponding spot diameters:

CTVM-1LSF-C3 CTVM-1HSF-C3 CTVM-1H1SF-C3 CTVM-2LSF-C3 CTVM-2HSF-C3 CTVM-2H1SF-C3 150:1 300:1 300:1 150:1 300:1 300:1 485°C to 1050°C 250°C to 800°C 490°C to 2000°C 650°C to 1800°C 800°C to 2200°C 385°C to 1600°C 1.0µm 1.6µm $\pm 0.3\%$ of reading $+2^{\circ}C$ $\pm 0.1\%$ of reading $+1^{\circ}C$ 0.2K 0.2K 0.1K 0.2K 0.2K 0.1K 1ms 0.100 to 1.100 0.100 to 1.000

Signal processing 1		peak hold, valley hold, average; extended hold function with threshold and hysteresis
Certificate of calibration		optional
Outputs/analogue		0/4 - 20mA, 0-5/10V thermocouple J, K
Output impedances		mA max. 500Ω (with 8-36 V DC) mV min. 100kΩ load impedance thermocouple 20Ω
Inputs		programmable functional inputs for external emissivity adjustment, ambient temperature compensation, trigger (reset of hold functions)
Alarm output		open-collector (24V / 50mA)
Outputs/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 (sensor-electronics)		3m (Standard), 5m, 10m
Cable length (USB)		5m, extendable up to 100m over Ethernet
Current draw		max. 160mA
Power Supply		8-36V DC
Laser		class II, 635nm, 1mW, Laser ON/OFF via controller or software
Environmental rating		IP 65 (NEMA-4), front mountable at vacuum processes (up to 10 - 3 mbar)
Ambient temperature		-20°C to 85°C (50°C with Laser ON)
Storage temperature		-40°C to 85°C
Relative humidity		10 to 95%, non condensing
Vibration	sensor	IEC 68-2-6: 3 G, 11 up to 200Hz, any axis
Shock	sensor	IEC 68-2-27: 50 G, 11ms, any axis
Woight	sensing head	600g
weight	electronics	420g

¹ adjustable via programming keys or software ² at ambient temperature 23 ±5°C; whichever is greater

 3 temperature of the object $>0^{\circ}C$

Model

Optical resolution

Spectral range

Temperature range 1

System accuracy 2,3 Repeatability ²

Temperature resolution

Emissivity/Gain 1

Transmissivity/Gain 1

Response time (90% signal)



Infrared video thermometer for metals and ceramics





The infrared video thermometer CTVideo M3 allows a parallel use of video sighting and crosshair laser aiming for an optimal measuring field adjustment even in processes with limited access. Due to the short wave-length of 2.3μ m, the sensor reliably measures temperatures of metals or composite material and reduces possible measuring errors with surfaces with low or unknown emissivity.

Optical parameters thermoMETER CTVideo M3 = smallest spot size (mm)

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Standard Focus										
SF-60L		60:1	3.3	5.0	7.5	11.7	18.3	26.7	41.7	83.3
SF100H		100:1	2.0	3.0	4.5	7.0	11.0	16.0	25.0	50.0
SF300H1/H2/H	13	300:1	0.7	1.0	1.5	2.3	3.7	5.3	8.3	16.7
distance (mm)			200	300	450	700	1100	1600	2500	5000
Close Focus										
CF-60L		60:1	1.5	2.0	2.5	3.0	3.5	4.2		
CF100h		100:1	0.9	1.2	1.5	1.8	2.1	2.5		
CF300H1/H2/H	-13	300:1	0.3	0.4	0.5	0.6	0.7	0.8		
distance (mm)			90	120	150	180	210	250		

- The vario lenses of the CTVideo allow for stepless focusing from the desired measurement distance.
- The sensors are available in two lens versions: Standard focus (SF): adjustable from 200mm to infinity Close focus (CF): adjustable from 90mm to 250mm
- The following table contains examples of different measurement distances and the corresponding spot diameters:

- Measuring range from 50 to 1800°C
- Optical resolution 60:1/100:1/300:1
- Spectral range 2.3µm
- Response time 1ms
- Temperature value triggering with automatic snapshot
- Software Compact Connect included
- Parallel use of video module and crosshair laser sighting
- Manual focusing for measurement distances from 90mm



1 adjustable via programming keys or software

² at ambient temperature 23 \pm 5°C; whichever is greater ³ temperature of the object \geq 0°C

³ temperature of the object >0°C



Water cooled housing







57

2,69.5

TM-W-CTL Water cooled housing Hose connection: 6x8mm Thread (Fitting): G 1/8 inches

Air purge collar



TM-AP-CTL Air purge collar Hose connection: 6x8mm Thread (Fitting): G 1/8 inches







TM-FB-CTL Mounting bracket (fixed); included in delivery



TM-AB-CTL Mounting bracket (adjustable)

Rail mount adapter for controller



TM-RAIL-CTL Rail mount adapter

Furnace wall mount



TM-RM-CTL Furnace wall mount accessory for $\mbox{ TM-MF-CTL}, \mbox{ TM-PF-CTL}, \mbox{ TM-AST300-CTL} \mbox{ and \mbox{ TM-PA-CTL}}$

Mounting flange



TM-PF-CTL and TM-MF-CTL Mounting flange M48x1,5 for direct mounting a sensor

thermoMETER

High performance sensors made by Micro-Epsilon



Sensors and systems for displacement and position



Optical micrometers, fibre optic sensors and fibre optics



Sensors and measurement devices for non-contact temperature measurement



Colour recognition sensors, LED analyzers and colour online spectrometer



2D/3D profile sensors (laser scanner)



Measurement and inspection systems