Contika

MICRO-EPSILON

More Precision

thermoMETER // Non-contact infrared temperature sensors

Two-wire IR sensor with laser sighting and integrated controller

thermoMETER CSLaser

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Miniature IR sensor with integrated controller and laser sighting

- Measuring range from -30 to 1000 °C, measuring fields from 0.5 mm and response times from 10 ms
- Optical resolution 50:1 with selectable focus settings
- Double laser sighting with 2 rays for exact measuring field marking and focusing
- Scalable 4-20 mA two-wire analog output and simultaneous alarm output
- Optional USB interface and software for programming
- Emissivity directly adjustable via rotary controller or software
- Protection against short circuit and polarity change
- Up to 85 °C ambient temperature without cooling
- Automatic laser switch-off at 50 °C
- Extensive supply voltage range: 5 - 28 VDC

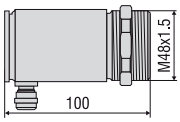
Optical specifications thermoMETER CSLaser CSL-SF50

□=smallest spot size / focal point (mm)

Standard Focus																
SF50 lens 50:1	20	20.5	21	21.5	22	22.5	23	23.5	24	29.5	35	46	57	68		
Distance in mm	0	150	300	450	600	750	900	1050	1200	1350	1500	1800	2100	2400		
Close Focus																
CF1 lens 50:1	20	9.4	6.7	1.4	10.6	25.9	41.1	56.4	71.7	87	102.3	117.6	132.9	163.4	194	224.6
CF2 lens 50:1	20	15.5	14.3	12.1	8.7	3	10.7	18.3	26	33.7	41.3	49	56.7	72	87.3	102.7
CF3 lens 50:1	20	16.8	16	14.4	12	8	4	10	16	22	28	34	40	52	64	76
CF4 lens 50:1	20	19	18.8	18.3	17.6	16.3	15.1	13.9	12.7	11.4	10.2	9	12.2	18.7	25.1	31.6
distance in mm	0	40	50	70	100	150	200	250	300	350	400	450	500	600	700	800

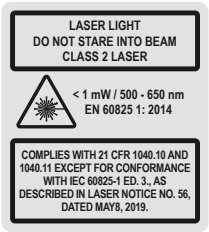
Model	CSL-SF50	CSLHS-SF50		
Optical resolution	50:1			
Temperature range [1]	-30 °C to 1000 °C	-20 °C to 150 °C		
Spectral range	8 to 14 μm			
System accuracy [3]	±1 % or ±1 °C			
Repeatability [3]	±0.5 % or ±0.5 °C			
Temperature resolution	0.1 °C	0.025 °C		
Response time (90 % signal)	150 ms			
Emissivity/gain [1]	0.100 to 1.100			
IR window correction [2]	0.100 to 1.100			
Signal processing [2]	peak hold, valley hold, average; extended hold function with threshold and hysteresis			
Outputs/analog	4 to 20 mA			
Output/alarms	0 to 30 V / 500 mA (open collector)			
Outputs/digital (optional)	mono-/bidirectional, 9.6 kBaud, 0/3 V level, USB Output/impedance			
	max. 1000 Ω (depends on supply voltage)			
Power consumption (only laser)	45 mA at 5 V / 20 mA at 12 V / 12 mA at 24 V			
Power supply	5 to 28 VDC			
Laser	class II, (635 nm), 1mW, ON/OFF via software			
Protection class	IP65 (NEMA-4)			
Ambient temperature	-20 °C to 85 °C (50 °C if Laser ON)			
Storage temperature	-40 °C to 85 °C			
Relative humidity	10 to 95 %, non-condensing			
Vibration	IEC 68-2-6: 3 G, 11 to 200 Hz, any axis			
Shock	IEC 68-2-27: 50 G, 11 ms, any axis Weight			
	600 g			

[1] adjustable via sensor or software
[2] adjustable via software
[3] ambient temperature 23 ± 5 °C; whichever is greater; ambient temperature ≥ 0 °C
[4] ε = 1, response time 1s



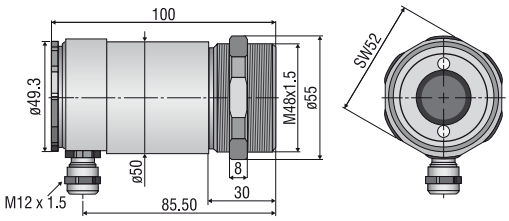
Product identification

CSL -	SF50
	Focus [SF50 / CF1 / CF2 / CF3 / CF4]
thermoMETER CSLaser	



CSLaser

sensor

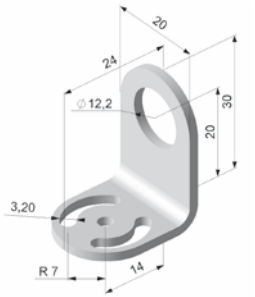


Accessories next page

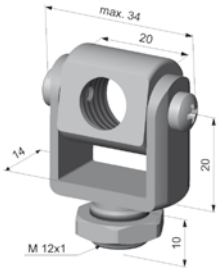
- Mounting bracket
- Air purge collar
- Rail mount adapter for controller
- Water cooled housing
- Certificate of calibration
- USB kit (TM-USBK-CS) p.55

Mechanical accessories CS		
Art. No.	Model	
2970279	Emissivity	Mounting bracket, fixed
2970280	TM-AB-CS	Mounting bracket, adjustable
2970281	TM-MB-CS	Mounting bolts with M12x1 thread
2970282	TM-MG-CS	Mounting fork, adjustable in 2 axes, with M12x1 fastening
2970283	TM-AP-CS	Air purge collar for 10:1 sensors
2970284	TM-APL-CS	Air purge collar, laminar
2970285	TM-APLCF-CS	Air purge collar, laminar with integrated ancillary CF lens
2970286	TM-RAM-CS	Right angle mirror for measurements 90 °C to the sensor axis
2970287	TM-USBK-CS	USB kit: USB programming adapter, CompactConnect software
Optical accessories CS		
2970277	TM-CF-CS	Ancillary CF lens for CS models
2970278	Aluminum	Protective window for CS models

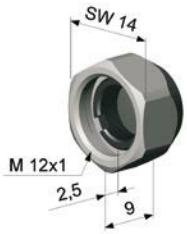
Calibration CS		
2970288	TM-CERT-CS	Certificate of calibration



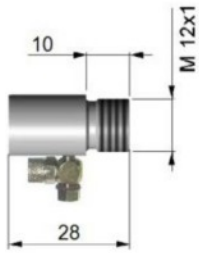
TM-FB-CS mounting bracket, fixed



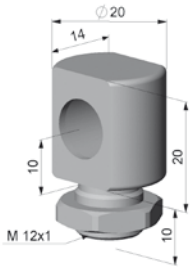
TM-MG-CS Mounting fork
with M12x1 thread, adjustable in two axes



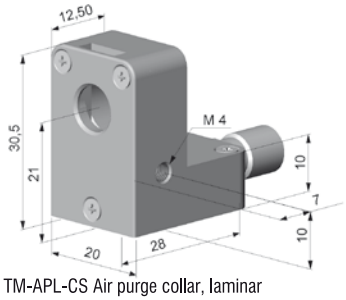
TM-CF-CS Ancillary CF lens
(only for LT models)



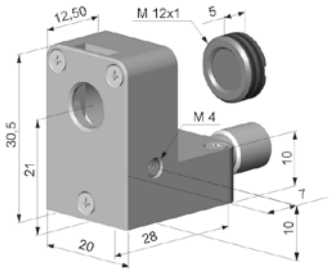
TM-AP-CS Air purge collar for
10:1 sensors



TM-MB-CS Mounting bolts with
M12x1 thread adjustable in one axis

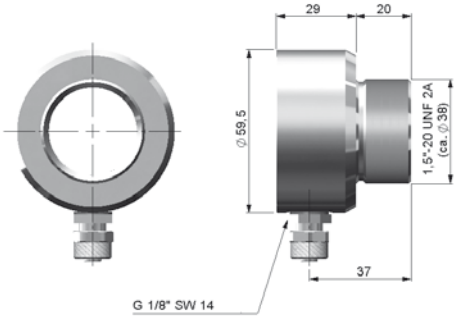


TM-APL-CS Air purge collar, laminar

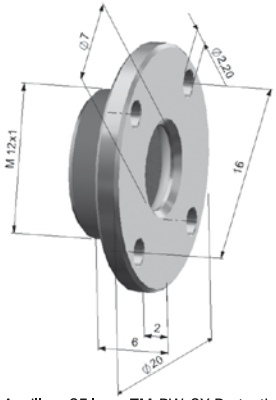


TM-APLCF-CS Air purge collar, laminar
with integrated ancillary CF lens

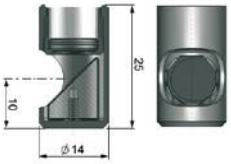
TM-APL-CS Air purge collar, laminar
TM-MG-CS Mounting fork



TM-AP-CX Air purge collar for CX sensors



TM-CF-CX Ancillary CF lens, TM-PW-CX Protective window



TM-RAM-CS Right angle mirror

Non-contact temperature measurement - precise and reliable.

Temperature measurement with Micro-Epsilon

IR temperature sensors, thermal imaging cameras and handheld pyrometers from Micro-Epsilon are designed for measuring surface temperatures from -50 °C to 3000 °C. The infrared radiation emitted by a body is used for the measurement. As this measurement is a non-contact technology, the devices perform wear-free and can therefore be reliably used in the long term. Selectable models and op- tical systems enable to install the cameras in different distances from the surface. This enables measurements to the target from a safe distance in critical operation areas.

Large range of applications

Infrared sensors, hand-held devices and IR cameras are used in a variety of applications for non-contact temperature measurement within any industry from factory automation, R&D to maintenance and process monitoring.

Proven technology

Infrared sensors developed and produced by Micro-Epsilon stand out due to their long service life, their robust construction and precise measurement results. These sensors are based on proven technologies which have been developed further by Micro-Epsilon. This is why these sensors also provide highly precise and reliable measurements in harsh environmental conditions.

Compact sensor design

For applications in restricted spaces, the sensors of the CT series are perfectly suitable. Even the standard models are considered one of the smallest sensors. For extremely tiny installation environments, miniaturized IR sensors are used.

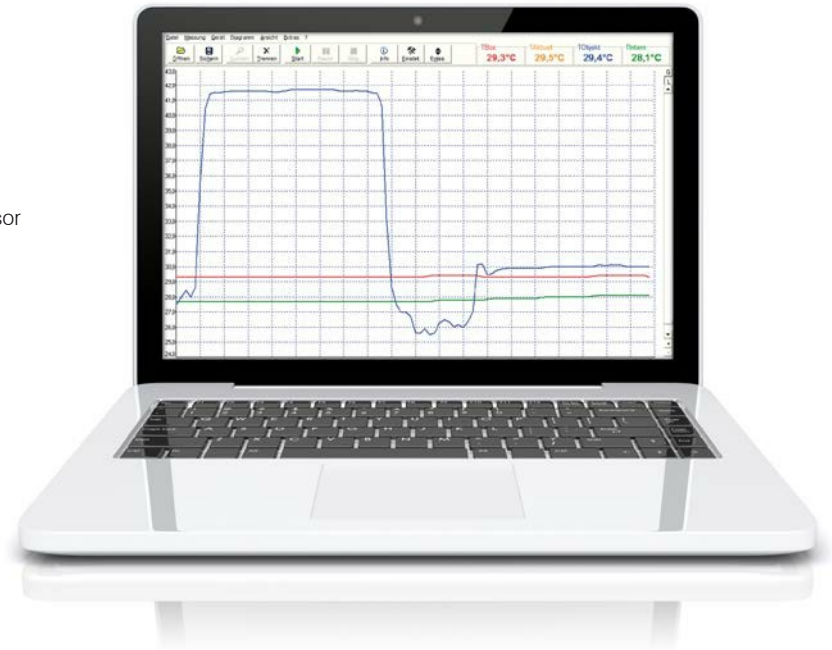
Software included

Sensors with digital interface include the specially programmed CompactConnect software for free.

- Graphic display and recording of temperature readings for subsequent analysis and documentation
- Complete set up of parameters and remote control of the sensor
- Sophisticated signal processing features
- Output scaling and parameter set up of functional inputs

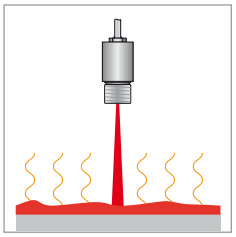
System requirements

- Windows XP / Vista / Windows 10
- USB 2.0 interface
- Hard drive with at least 30 MB of free disk space
- At least 128 MB of RAM
- CD-ROM drive



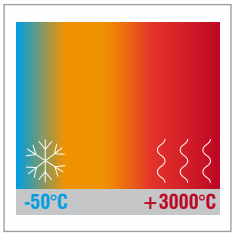
Non-contact measurement of the surface temperature

Each Micro-Epsilon IR sensor model incorporates different technologies that have a common denominator: non-contact temperature measurement. Due to this non-contact technology, measurement objects can be detected precisely and wear-free without physical influences.



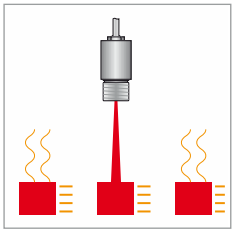
Large temperature measuring range

IR sensors from Micro-Epsilon are suitab- le for use across a wide measuring range. From low temperatures prevalent in cooling chains or laboratories, to the highest tem- peratures in hot melting materials or blast furnaces - the portable thermoMETER hand- held products measure these temperatures precisely.



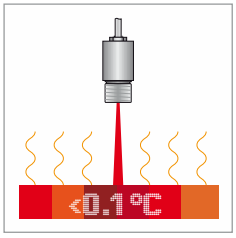
High speed measurements

For moving objects e.g. in transportation lines, thermoMETER sensors with extremely fast response times are available. These response times can only be achieved using high quality components.



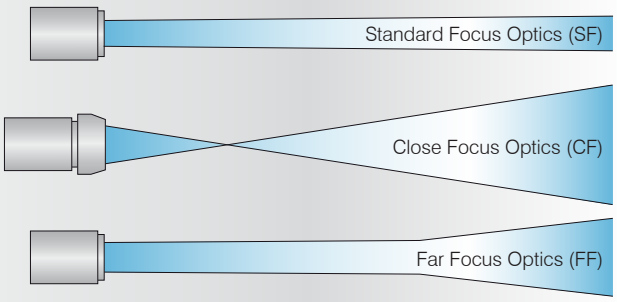
Precise and stable measurements

The thermoMETER product group is renowned for its high accuracy and high resolution. Particularly in temperature-critical applications, IR sensors from Micro-Epsilon are the preferred choice for easy, precise measurements.



thermoMETER lenses

The measurement spot size with the desired working distance is a critical factor. In order to enable the ideal choice for any appli- cation, a large number of different lenses is available. These differ with respect to the relation between the target distance and the spot diameter.



SF lenses (Standard Focus) have an almost linear relation while the CF lenses (Close Focus) have a smaller measurement spot in sensor-close distances. FF lenses (Far Focus) are especially suitable for large distances from the measurement object with a comparatively small measurement spot.

Detection of smallest measurement objects

Often, conventional IR sensors can not detect tiny, temperature-critical parts e.g. on chips and circuit boards. Due to the comprehensive range of optical systems, even smallest measurement objects <1mm can be detected precisely.

Freely selectable distance from the measurement object

Depending on the application environment and the available installation space, the measurement distance of thermoMETER is freely selectable. Due to the large number of different lens types, small measurement diameters can also be detected with large distances.