



More Precision

thermoMETER
Non-contact IR temperature sensors





thermoMETER CSLaser

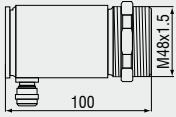
The thermoMETER CSLaser has a two-beam laser aiming feature, which marks the actual spot size at any distance. The controller is not necessary with this model, because the controller is already integrated into the sensor. This represents a major technical advantage, especially where space is limited. The sensor can be optimised for specific measurement tasks by using different lenses.

- Measuring range from -30°C to 1600°C
- Measuring spots up from 0.5mm and response times up from 10ms
- Optical resolution up to 300:1 with selectable focus
- Double laser aiming marks real spot location and spot size at any distance
- Scalable 4 - 20mA analogue output/ additional simultaneous alarm output
- Optional USB programming interface and software
- Emissivity directly adjustable on sensor or via software
- Short circuit and polarity reversal protection
- Usable up to 85°C ambient temperature without cooling and automatic laser switch off at 50°C
- Wide power range: 5 – 28V DC

Optical specifications thermoMETER CSLaser CSL-SF50 and CSLHS-SF50

□ = smallest spot size (mm)

Standard Fokus																	
SF50 optic	50:1	20	20.5	21	21.5	22	22.5	23	23.5	24	29.5	35	48	57	68		
distance in mm		0	150	300	450	600	750	900	1050	1200	1350	1500	1800	2100	2400		
Close Fokus																	
CF1 optic	50:1	20	10	8.5	1.4	11	26	41	57	72	88	103	118	133	164	194	225
CF2 optic	50:1	20	15.5	15	12	9	3	11	19	26	33	42	49	57	72	88	103
CF3 optic	50:1	20	16.5	16	14	12	8	4	10	16	21	28	33	40	52	64	76
CF4 optic	50:1	20	19.5	19	18.4	18	16.5	15	14	13	11.5	10	9	12	19	25	32
distance in mm		0	40	50	70	100	150	200	250	300	350	400	450	500	600	700	800



Product identification

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

Product identification

CSLM - 2 H SF300 Focus [SF300 / CF1 / CF2 / CF3 / CF4]
Temperature range [H]
Spectral range [8-14µm / 1.6µm]
thermoMETER CSLaser

Model	CSL-SF50	CSLHS-SF50	CSLM-2LSF150	CSLM-2HSF300
Optical resolution	50:1		150:1	300:1
Temperature range ¹	-30°C to 1000°C	-20°C to 150°C	250°C to 800°C	385°C to 1600°C
Spectral range	8 to 14µm		1.6µm	
System accuracy ³	±1% or ±1°C		±(0.3% of reading + 2°C) ⁴	
Repeatability ³	±0.5% or ±0.5°C		±(0.1% of reading + 1°C) ⁴	
Temperature resolution	0.1°C	0.025°C	0.1°C	
Response time (90% signal)	150ms		10ms	
Emissivity/Gain ¹	0.100 - 1.100			
IR window correction ²	0.100 - 1.100			
Signal processing ²	peak hold, valley hold, average; extended hold function with threshold and hysteresis			
Outputs/analogue	4 to 20mA			
Alarm output	0 to 30V / 500mA (open collector)			
Outputs/digital (optional)	uni-/ bidirectional, 9.6 kBaud, 0/3V digital level, USB			
Output impedances	max. 1000Ω (depending on supply voltage)			
Current draw (Laser)	45mA at 5V / 20mA at 12V / 12mA at 24V			
Power supply	5 to 28VDC			
Laser	class II (635nm), 1mW, ON/OFF via software			
Environmental rating	IP 65 (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: 3G, 11 to 200Hz, any axis			
Shock	IEC 68-2-27: 50G, 11ms, any axis			
Weight	600g			

¹ adjustable via programming keys or software

² adjustable via software

³ at ambient temperature 23 ±5°C; whichever is greater; temperature of the object >0°C

⁴ ε = 1, response time 1s

Optical specifications thermoMETER CSLaser

□ = smallest spot size (mm)

Standard Fokus																
2H SF	300:1	20	17.8	15.5	13.2	11	8.6	6.4	4.8	3.7	5.5	8.6	11.8	17	26.6	
2L SF	150:1	20	18.3	16.5	14.8	13	11.4	9.6	8.5	7.3	9.8	13.5	17.3	23.5	34.6	
		<i>distance in mm</i>	0	150	300	450	600	750	900	1000	1100	1200	1350	1500	1750	2200
Close Fokus																
2H CF2	300:1	20	13.5	7	0.5	7.3	14	21	n.v.	34.5	n.v.	48.2	61.8	75.4	89	
2L CF2	150:1	20	13.7	7.3	1	8	15	22	n.v.	36	n.v.	50	64	78	92	
2H CF3	300:1	20	15.2	10.3	5.5	0.7	5.8	11	n.v.	21.2	n.v.	31.5	41.8	52.1	62.4	
2L CF3	150:1	20	15.4	10.7	6	1.3	6.7	12	n.v.	22.6	n.v.	33.3	44	55	65	
2H CF4	300:1	20	18	16	13.8	11.8	9.7	7.6	5.6	3.5	1.5	3.8	8.6	13.3	18	
2L CF4	150:1	20	18.1	16.3	14.4	12.5	10.6	8.7	6.8	4.9	3	5.6	10.7	12.8	21	
		<i>distance in mm</i>	0	50	100	150	200	250	300	350	400	450	500	600	700	800
Far Focus optics																
2H FF	300:1	20	19	18	17	16	15	14	13.4	12	16.5	24.4	33.4	40		
2L FF	150:1	20	20.5	21	21.5	22	22.5	23	23.4	24	29	41	53.4	62.5		
		<i>distance in mm</i>	0	450	900	1350	1800	2250	2700	3000	3600	4000	5000	6000	6750	

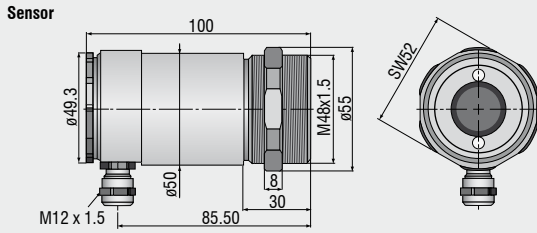


LASER RADIATION
DO NOT STARE IN THE BEAM
CLASS 2 LASER
EN60825-1:2002
P≤1mW, λ=635nm

Accessories page 56 - 57

- ▶ Mounting bracket
- ▶ Air purge collar
- ▶ Rail mount adapter for controller
- ▶ Water cooled housing
- ▶ Certificate of calibration
- ▶ USB Kit (TM-USBK-CS) page 57

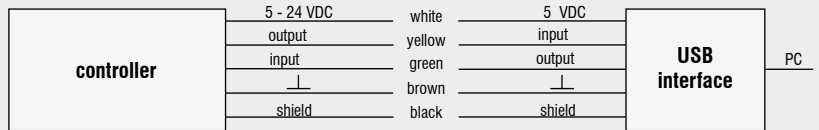
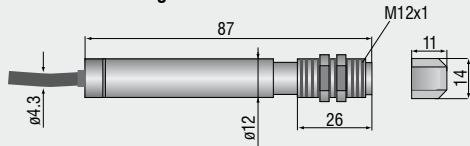
CSLaser



CS

sensor with integrated controller

CF lense

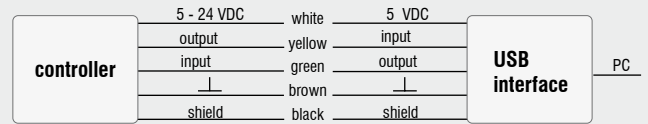
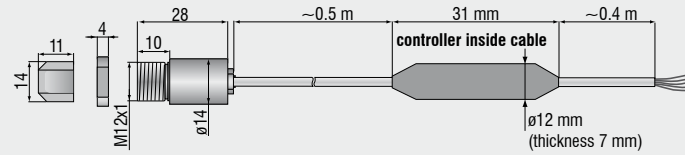


CSmicro / CSmicro 2W

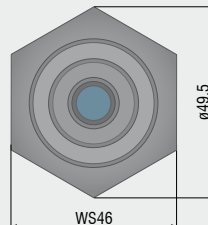
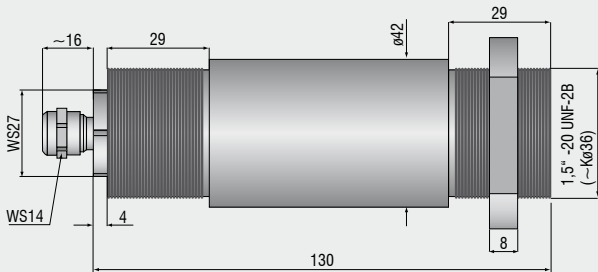
CF lense

sensor

controller inside cable



CX



Mechanical accessories CS / CSmicro / CSmicro 2W

Art. No.	Model	Description
2970279	TM-FB-CS	Mounting bracket, fixed
2970280	TM-AB-CS	Mounting bracket, adjustable
2970281	TM-MB-CS	Mounting bolt with M12x1 thread
2970282	TM-MG-CS	Mounting fork, adjustable in 2 axes, with thread M12x1
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, integrated CF-lens
2970286	TM-RAM-CS	Right angle mirror for 90°C measurements
2970287	TM-USBK-CS	USB interface kit incl. software CompactConnect

Optical accessories CS / CSmicro / CSmicro 2W

2970277	TM-CF-CS	CF-Lens for CS series
2970278	TM-PW-CS	Protective window for CS series

Calibration CS / CSmicro / CSmicro 2W

2970288	TM-CERT-CS	Certificate of calibration
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Mechanical accessories CX

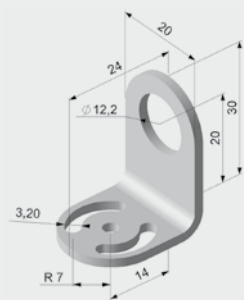
Art. No.	Model	Description
2970307	TM-AP-CX	Air purge collar, aluminium (anodized)
2970321	TM-FB-CX	Mounting bracket, adjustable in one axis, stainless steel
2970322	TM-AB-CX	Mounting bracket, adjustable in two axes, stainless steel
2970311	TM-USBK-CX	USB-Kit: USB programming adapter, Software CompactConnect

Optical accessories CX

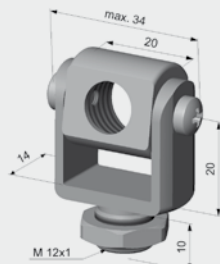
2970302	TM-CF-CX	CF-lens for thermoMETER CX
2970303	TM-PW-CX	Protective window for thermoMETER CX

Calibration CX

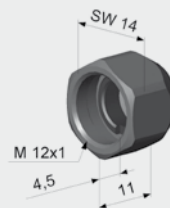
2970323	TM-CERT-CX	Certificate of calibration
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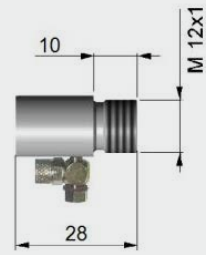
TM-FB-CS Mounting bracket, fixed



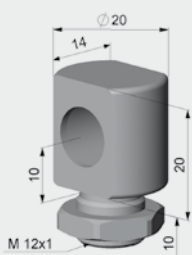
TM-MG-CS Mounting fork with M 12x1 thread adjustable in two axes



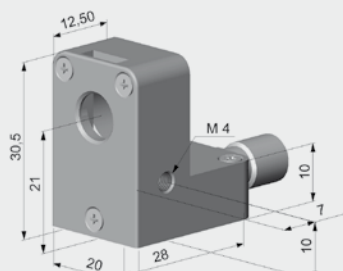
TM-CF-CS Close Focus Lens (LT sensors only)



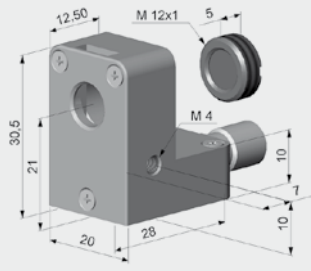
TM-AP-CS Air purge collar for 10:1 sensors



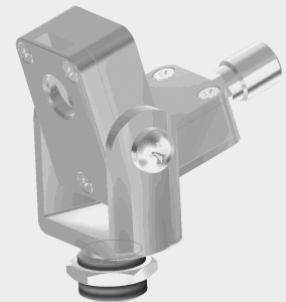
TM-MB-CS Mounting bolt with M12x1 thread adjustable



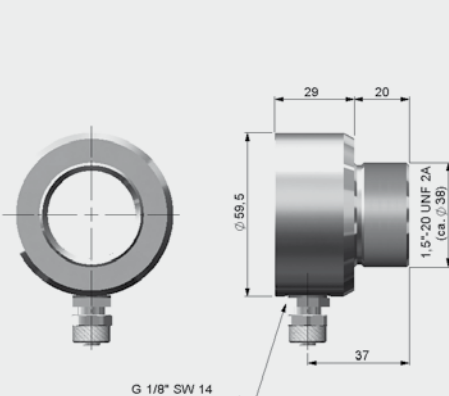
TM-APL-CS Air purge collar



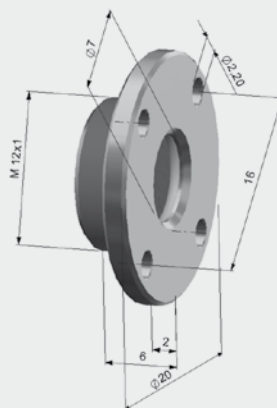
TM-APLCF-CS Air purge collar, laminar, integrated CF-lens



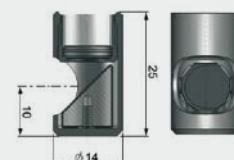
TM-APL-CS Laminar air purge collar and TM-MG-CS Mounting fork



TM-AP-CX Air purge collar CX sensors



TM-CF-CX CF-Lens
TM-PW-CX Protective window



TM-RAM-CS Right angle mirror

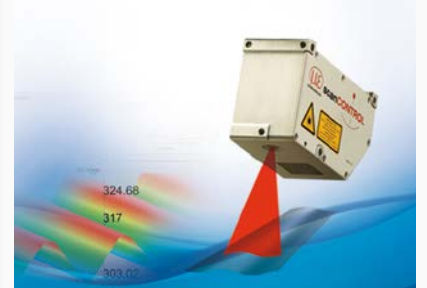
High performance sensors made by Micro-Epsilon



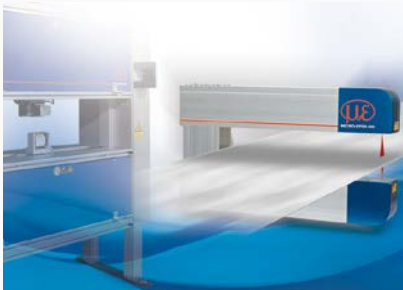
Sensors and systems for displacement and position



Sensors and measurement devices for non-contact temperature measurement



2D/3D profile sensors (laser scanner)



Measurement and inspection systems for quality assurance



Optical micrometers, fibre optic sensors and optical fibres



Colour recognition sensors, LED analysers and colour online spectrometer



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