



# More Precision

**thermoMETER** // Non-contact infrared temperature sensors





### thermoMETER CSLaser

Miniature IR sensor with integrated controller and laser sighting

- Measuring range from -30 to 1600°C, measuring fields from 0.5mm and response times from 10ms
- Optical resolution up to 300:1 with selectable focus settings
- Double laser sighting with 2 rays for exact measuring field marking and focusing
- Scalable 4-20mA 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 - 28VDC

#### Optical specifications thermoMETER CSLaser

□ = smallest spot size / focal point (mm)

Standard Focus															
2H SF	300:1	12	10.9	9.7	8.6	7.5	6.3	5.2	4.5	3.7	5.1	7.3	9.4	13	19.4
2L SF	150:1	20	18.3	16.5	14.8	13.1	11.3	9.6	8.5	7.3	9.8	13.5	17.2	23.4	34.6
	distance in mm	0	150	300	450	600	750	900	1000	1100	1200	1350	1500	1750	2200
Close Focus															
2H CF2	300:1	12	8.2	4.3	0.5	4.7	8.8	13	17.2	21.3	25.5	29.7	38	46.3	54.7
2L CF2	150:1	20	13.7	7.3	1	8	15	22	29	36	43	50	64	78	92
2H CF3	300:1	12	9.2	6.4	3.5	0.7	3.9	7	10.2	13.4	16.6	19.8	26.1	32.4	38.8
2L CF3	150:1	20	15.3	10.7	6	1.3	6.6	12	17.3	22.6	27.9	33.3	43.9	54.6	65.2
2H CF4	300:1	12	10.8	9.7	8.5	7.3	6.2	5	3.8	2.7	1.5	3	6	9	12
2L CF4	150:1	20	18.1	16.2	14.3	12.4	10.6	8.7	6.8	4.9	3	5.6	10.7	15.8	20.9
	distance in mm	0	50	100	150	200	250	300	350	400	450	500	600	700	800
Far Focus															
2H FF	300:1	20	12	12	12	12	12	12	12	12	14.7	21.3	28	33	
2L FF	150:1	20	20.5	21	21.5	22	22.5	23	23.3	24	28.9	41.1	53.3	62.5	
	distance in mm	0	450	900	1350	1800	2250	2700	3000	3600	4000	5000	6000	6750	

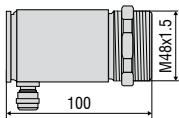
Model	CSL-SF50	CSLHS-SF50	CSLM-2LSF150	CSLM-2HSF300
Optical resolution	50:1		150:1	300:1
Temperature range <sup>1</sup>	-30°C to 1000°C	-20°C to 150°C	250°C to 800°C	385°C to 1600°C
Spectral range	8 to 14μm		1.6μm	
System accuracy <sup>3</sup>	±1% or ±1°C		±(0.3% of reading + 1°C) <sup>4</sup>	
Repeatability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

<sup>1</sup> adjustable via sensor or software

<sup>2</sup> adjustable via software

<sup>3</sup> ambient temperature 23±5°C; whichever is greater; ambient temperature ≥ 0°C

<sup>4</sup> ε = 1, response time 1s



#### 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 [1.6μm]
			thermoMETER CTLaserFAST

#### Optical specifications thermoMETER CSLaser CSL-SF50 und CSLHS-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	

#### Accessories page 54 - 55

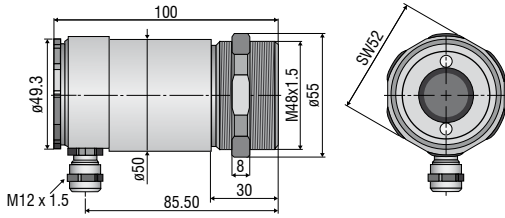
- Mounting bracket
- Air purge collar
- Rail mount adapter for controller
- Water cooled housing
- Certificate of calibration
- USB kit (TM-USBK-CS) p.55



**LASER LIGHT**  
DO NOT STARE INTO BEAM  
CLASS 2 LASER  
DIN EN 60825-1:2007  
1mW / 630-650nm

**CSLaser**

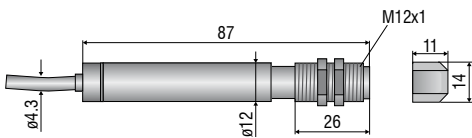
sensor



**CS**

sensor with integrated controller

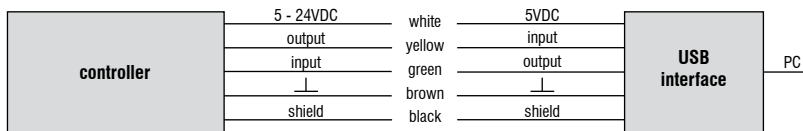
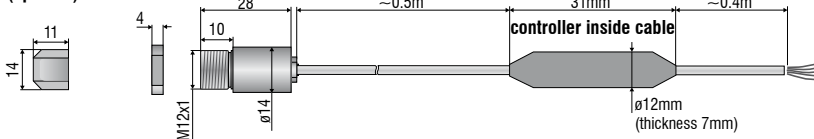
ancillary CF lens (optional)



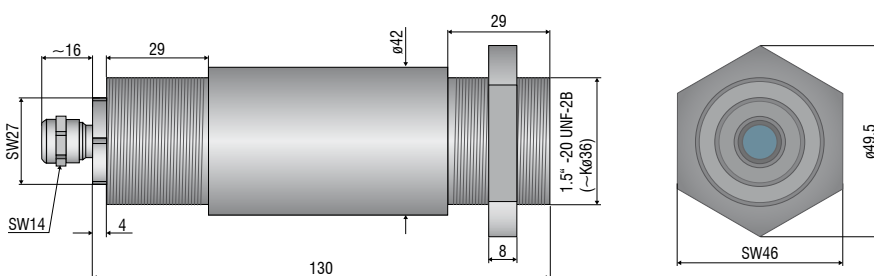
**CSmicro / CSmicro 2W**

ancillary CF lens (optional)

sensor



**CX**





**Mechanical accessories CS / CSmicro / CSmicro 2W**

Art. No.	Model	Description
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 / CSmicro / CSmicro 2W**

2970277	TM-CF-CS	Ancillary CF lens for CS models
2970278	Aluminum	Protective window for CS models

**Calibration CS / CSmicro / CSmicro 2W**

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

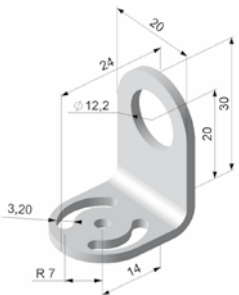
Art. No.	Model	Description
2970307	TM-AP-CX	Air purge collar, aluminum (anodized)
2970321	TM-FB-CX	Mounting bracket, adjustable in 1 axis, stainless steel
2970322	TM-AB-CX	Mounting bracket, adjustable, in 2 axes, stainless steel
2970311	TM-USBK-CX	USB kit: USB programming adapter, CompactConnect software

**Optical accessories CX**

2970302	TM-CF-CX	Ancillary CF lens for CX models
2970303	TM-PW-CX	Protective window for CX models

**Calibration CX**

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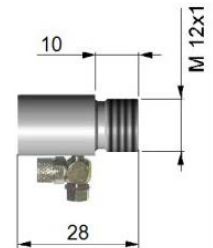
TM-FB-CS mounting bracket, fixed



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



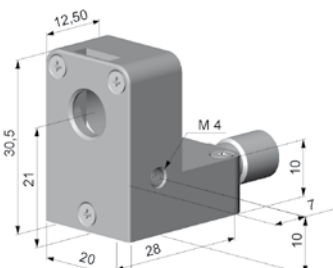
TM-CF-CS Ancillary CF lens (only for LT models)



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



## Further IR temperature measurement devices from Micro-Epsilon



**thermoIMAGER TIM**  
Compact USB thermal imaging cameras  
for precise thermography



**thermoMETER CTVideo/CSVideo**  
Infrared temperature sensors with crosshair  
laser sighting and video output



**thermoMETER Handheld**  
Innovative handheld pyrometer with laser  
sighting for inspection and maintenance