



# More Precision

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





### thermoMETER CSLaser

Miniature IR sensor with integrated controller and laser sighting

- Measuring range from -30 to 1000 °C, measuring fields from 1.4 mm and response times from 150 ms
- Optical resolution up to 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

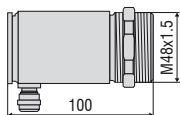
CF1 lens	50:1	20	9.4	6.7	1.4	10.6	25.9	41.1	56.4	71.7	87	102.3	117.6	132.9	163.4	194	224.6
CF2 lens	50:1	20	15.5	14.3	12.1	8.7	3	10.7	18.3	26	33.7	41.3	49	56.7	72	87.3	102.7
CF3 lens	50:1	20	16.8	16	14.4	12	8	4	10	16	22	28	34	40	52	64	76
CF4 lens	50:1	20	19	18.8	18.3	17.6	16.3	15.1	13.9	12.7	11.4	10.2	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
Optical resolution	50:1
Temperature range <sup>1)</sup>	-30 °C to 1000 °C
Spectral range	8 to 14 $\mu$ m
System accuracy <sup>3)</sup>	$\pm 1$ % or $\pm 1$ °C
Repeatability <sup>3)</sup>	$\pm 0.5$ % or $\pm 0.5$ °C
Temperature resolution	0.1 °C
Response time (90 % signal)	150 ms
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 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 $\Omega$ (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), 1 mW, 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

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

<sup>2)</sup> adjustable via software

<sup>3)</sup> ambient temperature  $23 \pm 5$  °C; whichever is greater; ambient temperature  $\geq 0$  °C



#### Product identification

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

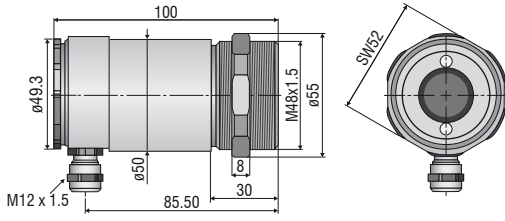
#### Accessories page 32 - 33

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



**CSLaser**

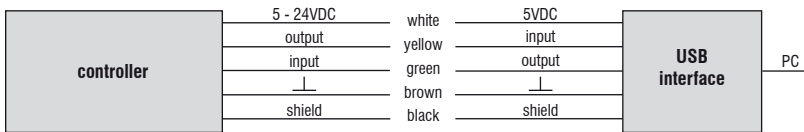
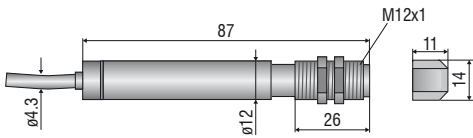
sensor



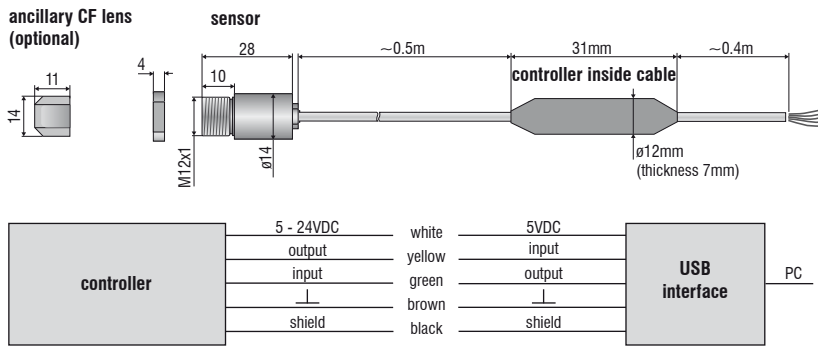
**CS**

sensor with integrated controller

ancillary CF lens (optional)



CSmicro / CSmicro 2W



## Infrared thermal imagers from Micro-Epsilon



### **thermoIMAGER TIM** Compact thermal imaging cameras for industrial temperature monitoring

- Temperature range from -20 °C to 1900 °C
- Ideal for OEM
- Real-time thermography using license-free software
- Protective housing for harsh environments
- Special variants for the glass, metal and plastics industries