



More Precision

thermoMETER
Non-contact IR temperature sensors





thermoMETER CTLaserCOMBUSTION

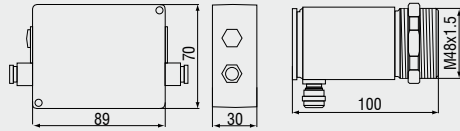
The combustion temperature sensors has been designed specially for the measurement of combustion processes. The thermoMETER CTLaser C2/C4/C6 sensors can measure the temperature of objects through flames or directly record the temperature of flame gases.

- Measuring range from 200°C to 1450°C
- Double laser aiming marks real spot location and spot size up from 1.6mm at any distance
- Usable in all modern applications where “size of spot matters”
- Optics 45:1 with selectable focus
- Usable up to 85°C ambient temperature without cooling and automatic laser switch off at 50°C
- Cooling and protection accessories for harsh environmental conditions

Optical specifications thermoMETER CTLaserCOMBUSTION

□ = smallest spot size (mm)

Standard Focus optics																	
SF45 optic	45:1	20	20.8	21.7	22.5	23.4	24.2	25	25.9	27	32.5	38.4	50	61.7	73.4		
distance in mm		0	150	300	450	600	750	900	1050	1200	1350	1500	1800	2100	2400		
Close Focus optics																	
CF1 optic	45:1	20	9.5	7	1.6	11	26.3	41.7	57	72.6	88.2	104	1196	135	165	196	227
CF2 optic	45:1	20	16	14.5	12	9	3.4	11.2	19	27	35	42.5	50.3	58	73.6	89.2	105
CF3 optic	45:1	20	17	16.2	14.5	12.3	8.4	4.5	10.7	16.8	23	29	35	41.3	53.5	65.8	78
CF4 optic	45:1	20	19.2	19	18.6	18	17	15.6	14.5	13.4	12.3	11.1	10	13.4	20	26.7	33.4
distance in mm		0	40	50	70	100	150	200	250	300	350	400	450	500	600	700	800



Product identification

CTLC - 4 SF45 - C3

Cable length [3m Standard / 8m / 15m]
 Focus [SF45 / CF1 / CF2 / CF3 / CF4]
 Spectral range [3.9 μ m / 4.24 μ m / 4.64 μ m]
 thermoMETER CTLaserCOMBUSTION

Model	CTLC-4SF45-C3	CTLC-2SF45-C3	CTLC-6SF45-C3
Optical resolution	45:1		
Temperature range ¹	200°C to 1450°C		
Spectral range	3.9 μ m	4.24 μ m	4.64 μ m
Fields of application	through flames to monitor workpieces inside ovens, to measure inside chemical reactors, to observe the brick temperature in combustion chambers	CO ₂ flame gases in combustion processes, garbage burning or processes inside chemical reactors	CO flame gases in combustion processes, garbage burning or processes inside chemical reactors
System accuracy ^{3,4}	±1%		
Repeatability ³	±0.5% or ±0.5°C		
Temperature resolution	0.1°C		
Response time (90% signal) ²	10ms		
Emissivity/gain ¹	0.100 - 1.100		
Transmissivity/gain ¹	0.100 - 1.000		
Signal processing ¹	peak hold, valley hold, average; extended hold function with threshold and hysteresis		
Outputs/analogue	channel 1 channel 2	0/4 - 20mA, 0 - 5/10V, thermocouple J, K sensing head temperature (-20°C to 180°C as 0 to 5V or 0 to 10V), alarm output	
Alarm output	24V / 50mA (open collector)		
Optional	relay: 2 x 60VDC/42VAC _{eff} ; 0.4A; optically isolated		
Outputs/digital	optional	USB, RS232, RS485, CAN, Profibus DP, Ethernet	
Output impedances	current output voltage output	mA max. 500 Ω (with 8 to 36VDC) mV min. 100k Ω load impedance ; thermocouple 20 Ω	
Inputs	programmable functional inputs for external emissivity adjustment, ambient temperature compensation, trigger (reset of hold functions)		
Cable length	3m (standard), 8m, 15m		
Power supply	8 to 36VDC; max. 160mA		
Laser	class II (635nm), 1mW, ON/OFF via controller or software		
Environmental rating	IP 65 (NEMA-4)		
Ambient temperature	sensor: -20°C to 85°C (50°C if Laser ON) ; controller: 0°C to 85°C		
Storage temperature	-40°C to 85°C		
Relative humidity	10 to 95%, non condensing		
Vibration	IEC 68-2-6: 3G, 11 - 200Hz, any axis		
Shock	IEC 68-2-27: 50G, 11ms, any axis		
Weight	sensor: 600g ; controller: 420g		

¹ adjustable via programming keys or software

² with dynamic adaption at low signal levels

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

⁴ ϵ = 1, response time 1s

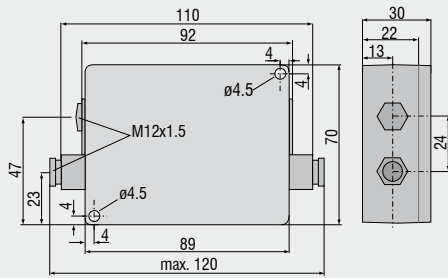
Accessories page 22 - 23

- ▶ Mounting bracket
- ▶ Air purge collar
- ▶ Rail mount adapter for controller
- ▶ Water cooled housing
- ▶ Interface kit
- ▶ Software CompactConnect
- ▶ Certificate of calibration

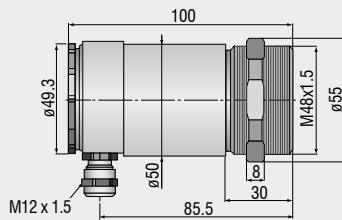


LASER RADIATION
 DO NOT STARE IN THE BEAM
 CLASS 2 LASER
 EN60825-1:2002
 P ≤ 1mW; λ = 630-650nm

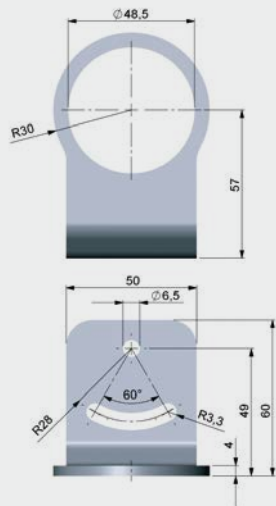
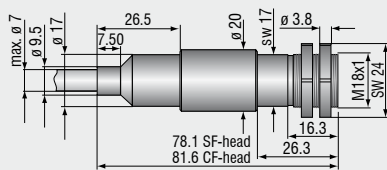
Controller



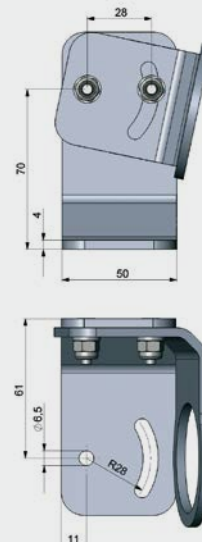
CTLaser / CTLaserFAST / CTLaserGLASS / CTLaserM1/M2 / CTLaserM3 / CTLaserM5 / CTLaserCOMBUSTION



CTratioM1



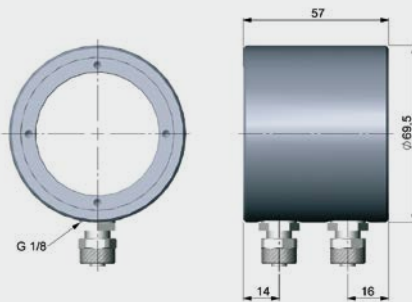
TM-FB-CTL Mounting bracket (fixed); included with CTL sensors



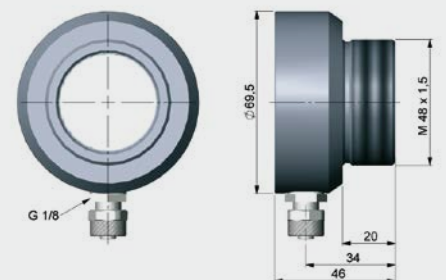
TM-AB-CTL Mounting bracket (adjustable)



TM-W-CTL Water cooled housing and air purge collar TM-AP-CTL, mounted on adjustable mounting bracket TM-AB-CTL



TM-W-CTL Water cooled housing



TM-AP-CTL Air purge collar

Mechanical accessories

Art. No.	Model	
2970238	TM-AB-CTL	Mounting bracket, adjustable, stainless steel
2970239	TM-AP-CTL	Air purge collar, stainless steel
2970240	TM-W-CTL	Water cooled housing, stainless steel, for ambient temperatures up to 175°C
2970241	TM-RAIL-CTL	Rail mount adapter for CTlaser controller
2970242	TM-COV-CTL	Closed cover for controller
2970243	TM-MN-CTL	Mounting nut, stainless steel (spare)
2970244	TM-FB-CTL	Mounting bracket, fixed, stainless steel (spare)
2970298	TM-A20UN-CTL	Screw adapter M48x1 on 20UN-2A screw including mounting nut

High temperature accessories

2970366	TM-J-CTL	Cooling jacket (length 228mm, ø89mm) (connection kit TM-CONK-CTL is required)
2970374	TM-CONK-CTL	Connection kit: sensor with axial cable exit, for integration in cooling jacket
2970368	TM-JAB-CTL	Adjustable mounting bracket for cooling jacket
2970369	TM-MF-CTL	Mounting flange M48x1.5 for TM-PF-CTL
2970370	TM-AST300-CTL	Sighting tube M48x1.5, 300 mm length
2970371	TM-PA-CTL	Pipe adapter M48x1.5
2970372	TM-RM-CTL	Furnace wall mount accessory for CTlaser (TM-MF-CTL, TM-AST300-CTL and TM-PA-CTL)
2970412	TM-PF-CTL	Pipe flange M48x1.5 for direct mounting a CTL sensor

Calibration

2970253	TM-CERT-CTL	Certificate of calibration
2970324	TM-HTCERT-CTL	Certificate of calibration for CTlaser M1-/M2-/M3-/M5-/G-sensors

Interfaces

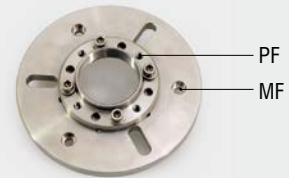
2970245	TM-USBK-CTL	USB interface kit incl. computer cable, software CompactConnect
2970246	TM-RS232K-CTL	RS232 interface kit incl. computer cable, software CompactConnect
2970338	TM-RS485USBK-CTL	RS485-USB-adapter, incl. PC cable, RS485 board, software CTconnect, terminal block, for use with TM-485B-CTL
2970248	TM-RS485B-CTL	RS485 interface board
2970249	TM-CANK-CTL	CAN-Bus interface for optris CT/ protocol: CANopen Presettings: module address 20 (14H), 250kbaud, 0-60°C
2970250	TM-PFBDPK-CTL	Profibus-DPV1 interface for CT selectable with DIN M12 or SUB-D connection
2970251	TM-ETHNK-CTL	Ethernet-Kit: interface board, external Ethernet adapter, software CompactConnect
2970252	TM-RI-CTL	Relay interface: Two optically isolated relays, 60VDC/ 42VAC _{RMS} , 0.4A

Sensor cables and high temperature cables

2970374	TM-CONK-CTL	Connector-Kit for cables with connector
4800254.003	TM-CB3C-CTL	Sensor cable with adapter (3m)
4800254.003H	TM-CB3HC-CTL	High-temperature sensor cable with adapter (3m)
4800254.008	TM-CB8C-CTL	Sensor cable with adapter (8m)
4800254.008H	TM-CB8HC-CTL	High-temperature sensor cable with adapter (8m)
4800254.015	TM-CB15C-CTL	Sensor cable with adapter (15m)
4800254.015H	TM-CB15HC-CTL	High-temperature sensor cable with adapter (15m)



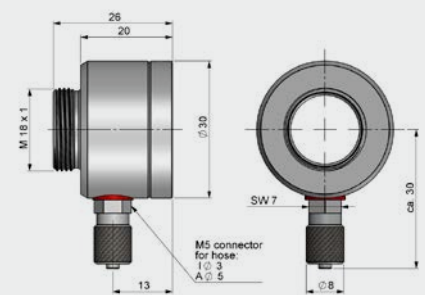
TM-J-CTL Cooling jacket (length 228mm, ø89mm) with adjustable mounting bracket TM-JAB-CTL; up to 315°C ambient temperature



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



TM-RM-CTL Furnace wall mount accessory for CTlaser / resp. CTratio: TM-MF-CTL, TM-PF-CTL, TM-AST300-CTL and TM-PA-CTL



TM-AP-CTR Air purge collar

CTratio

Art. No.	Model	
2970348	TM-FB-CTR	Mounting bracket, adjustable in one axis
2970395	TM-AP-CTR	Air purge collar
2970373	TM-RM-CTR	Furnace wall mount accessory for CTratio
2970351	TM-CERT-CTR	Certificat of calibration

High performance sensors made by Micro-Epsilon



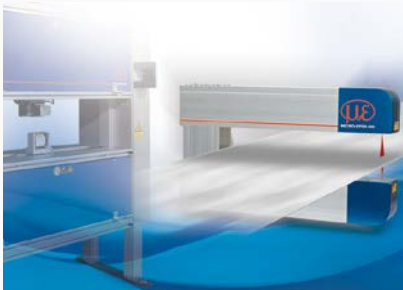
Sensors and systems for displacement and position



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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