



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 the flame itself.

- Measuring range from 200°C to 1450°C
- Double laser aiming marks real spot location and spot size up from 1.6 mm 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

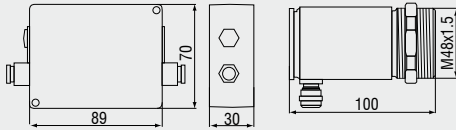
□ = smallest spot size (mm)

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



Model	CTLC-4SF45-C3	CTLC-2SF45-C3	CTLC-6SF45-C3
Optical resolution	45:1	45:1	45:1
Temperature range ¹	200°C to 1450°C		
Spectral range	3.9 μm	4.24 μm	4.64 μm
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 85°C as 0 to 5V or 0 to 10V), alarm output	
Alarm output	24V / 50mA (open collector)		
Optional	relay: 2 x 60 V DC/42 V AC _{err} ; 0.4 A; 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 36 V DC) mV min. 100 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: 3 G, 11 - 200Hz, any axis		
Shock	IEC 68-2-27: 50 G, 11ms, any axis		
Weight	sensor: 600g ; controller: 420g		

¹ adjustable via programming keys or software² with dynamic adaption at low signal levels³ at ambient temperature 23 ± 5°C; whichever is greater; temperature of the object > 0°C⁴ ϵ = 1, response time 1s

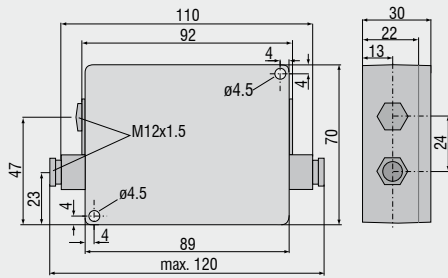
Accessories page 28 - 29

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

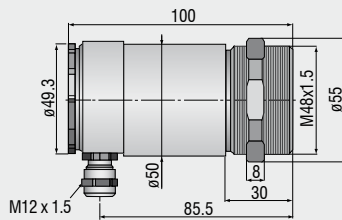


LASER RADIATION
 DO NOT STARE IN THE BEAM
 CLASS 2 LASER
 EN60825-1:2002
 P ≤ 1mW; λ = 630-650nm

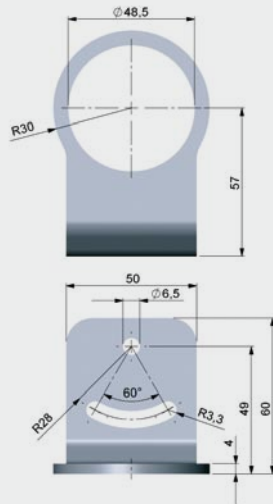
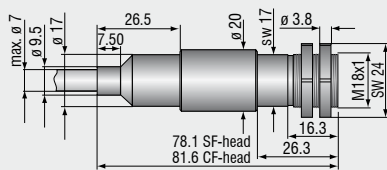
Controller



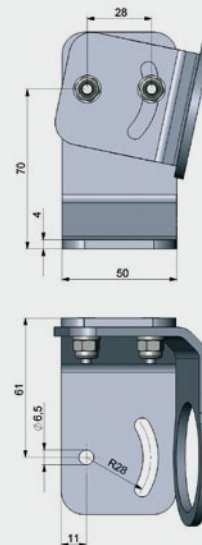
CTLaser / CTLaserFAST / CTLaserGLASS / CTLaserM1/M2 / CTLaserM3 / CTLaserCOMBUSTION



CTratioM1



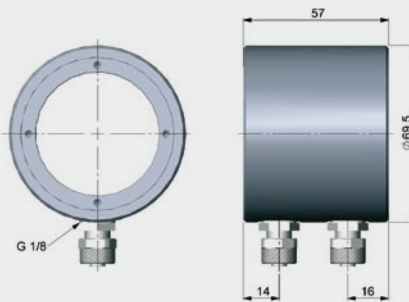
TM-FB-CTL Mounting bracket (fixed);
included with CTL sensors



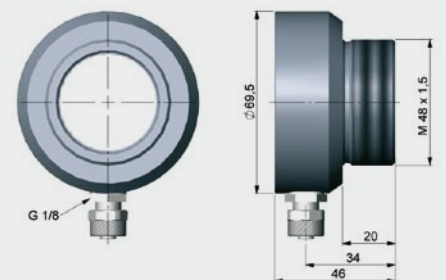
TM-AB-CTL Mounting bracket (adjustable)



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



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

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 mounting a CTL sensor
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)



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

Calibration

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

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/ 42VACRMS, 0.4A



TM-RM-CTL Furnace wall mount accessory for CTlaser / CTratio: TM-MF-CTL, TM-AST300-CTL und TM-PA-CTL

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)

CTratio

Art. No.	Model	
2970348	TM-FB-CTR	Mounting bracket, adjustable in one axis
2970349	TM-AB-CTR	Mounting bracket, adjustable in two axes
2970395	TM-AP-CTR	Air purge collar
2970373	TM-RM-CTR	Furnace wall mount accessory for CTratio