



thermoMETER CTlaserM1/M2

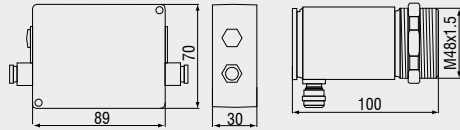
Innovative precision infrared temperature sensor marking the actual spot size on your measurement target at any distance with 1/1.6 μm wavelength for metal, ceramic and shiny targets

- Measuring range from 250°C to 1800°C
- Special short wavelength (1/1.6 μm) minimises errors caused by low emissivity for accurate temperature measurements on metal, shiny and ceramic targets
- Cooling and protection accessories for harsh environmental conditions
- Real mapping of the actual spot size, with automatic laser protection
- Precision optics (300:1 / 150:1) with different models for a specific focus point
- Extreme small measurement spot down to 0.45mm, only 1ms response time to capture fast events
- Up to 85°C ambient temperature without cooling
- Fully programmable instrument for enhanced signal processing and I/O control
- Separate controller with easy accessible programming keys and multi colour LCD backlit display

Optical specifications thermoMETER CTlaser M1/M2

□ = smallest spot size (mm)

Standard Focus optics														
1L/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
1H/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
distance in mm	0	150	300	450	600	750	900	1000	1100	1200	1350	1500	1750	2200
Close Focus optics														
1L/2L CF2 150:1	20	13.7	7.3	1	8	15	22	36	50	64	78	92		
1H/2H CF2 300:1	20	13.5	7	0.5	7.3	14	21	34.5	48.2	61.8	75.4	89		
1L/2L CF3 150:1	20	15.4	10.7	6	1.3	6.7	12	22.6	33.3	44	55	65		
1H/2H CF3 300:1	20	15.2	10.3	5.6	0.7	5.9	11	21.2	31.5	41.8	52.1	62.4		
distance in mm	0	50	100	150	200	250	300	400	500	600	700	800		
Close Focus optics														
1L/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
1H/2H CF4 300:1	20	18	16	13.8	11.8	9.7	7.6	5.6	3.5	1.4	3.8	8.6	13.3	18
distance in mm	0	50	100	150	200	250	300	350	400	450	500	600	700	800
Far Focus optics														
1L/2L FF 150:1	20	20.5	21	21.5	22	22.5	23	23.4	24	29	41	53.4	62.5	
1H/2H FF 300:1	20	19	18	17	16	15	14	13.4	12	16.5	24.4	33.4	40	
distance in mm	0	450	900	1350	1800	2250	2700	3000	3600	4000	5000	6000	6750	



Product identification

CTLM - 1 L SF150 - C3

Cable length [3 m Standard / 8 m / 15 m]
 Focus [SF / CF2 / CF3 / CF4 / FF]
 Temperature range [L / H]
 Spectral range [1 μm / 1,6 μm]
 thermoMETER CTLaserM

Model	CTLM-1LSF150-C3	CTLM-1HSF300-C3	CTLM-2LSF150-C3	CTLM-2HSF300-C3
Optical resolution	150:1	300:1	150:1	300:1
Temperature range ¹	485 to 1050°C	650 to 1800°C	250 to 800°C	385 to 1600°C
Spectral range	1 μm		1.6 μm	
System accuracy ²	±(0.3% of reading + 2°C)			
Repeatability ²	±(0.1% of reading + 1°C)			
Temperature resolution	0.1°C	0.2°C	0.1°C	0.2°C
Response time (90% signal) ³	1ms			
Emissivity/gain ¹	0.100 to 1.100			
Transmissivity/gain ¹	0.100 to 1.000			
Signal processing ¹	Peak hold, valley hold, average; extended hold function with threshold and hysteresis			
Certificate of calibration	optional			
Outputs/analogue	channel 1 channel 2 optional	0/4 to 20mA, 0 to 5/ 10V, thermocouple J, K sensor temperature (-40 to 85°C as 0 to 5V or 0 to 10V), alarm output relay: 2 x 60 VDC/ 42VAC _{eff} ; 0.4A; optically isolated		
Alarm output		open-collector (24V/ 50mA)		
Outputs/digital	optional	USB, RS232, RS485, CAN, Profibus DP, Ethernet		
Output impedances	current output voltage output	mA max. 500Ω (with 5 - 36VDC) mV min. 100kΩ load impedance thermocouple 20Ω		
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 65°C		
Storage temperature		sensor: -40°C to 85°C controller: -40°C to 85°C		
Relative humidity		10 to 95%, non condensing		
Vibration	sensor	IEC 68-2-6: 3 G, 11-200Hz, any axis		
Shock	sensor	IEC 68-2-27: 50 G, 11ms, any axis		
Weight		sensor: 600g; controller: 420g		

¹ adjustable via controller or software

² E=1, response time 1s; ± ambient temperature: 23 ± 5°C

³ with dynamic adaptation at low signal levels

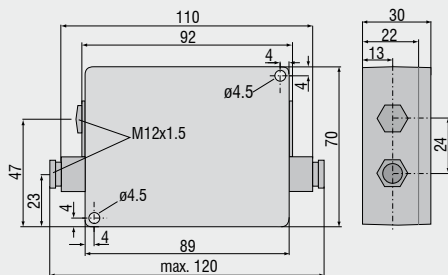
Accessories page 28 - 29

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

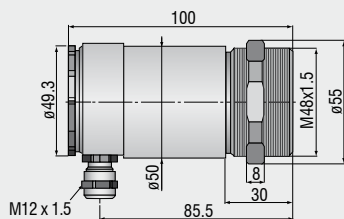


LASER RADIATION
 DO NOT STARE IN THE BEAM
 CLASS 2 LASER
 EN60825-1:2002
 P≤1mW; λ=630-650nm

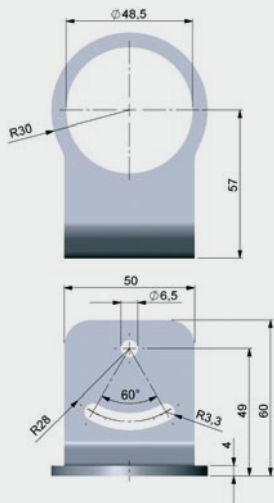
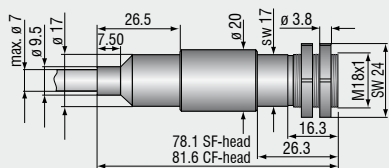
Controller



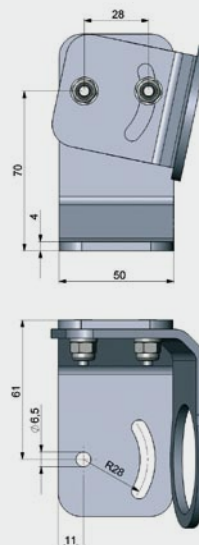
CTLaser / CTLaserFAST / CTLaserGLASS / CTLaserM1/M2 / CTLaserM3 / CTLaserCOMBUSTION



CTratioM1



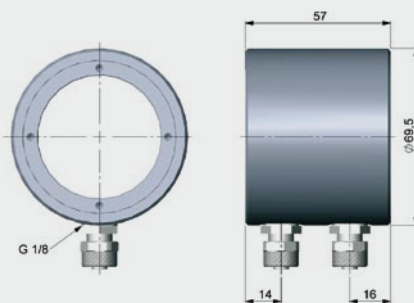
TM-FB-CTL Mounting bracket (fixed);
included with CTL sensors



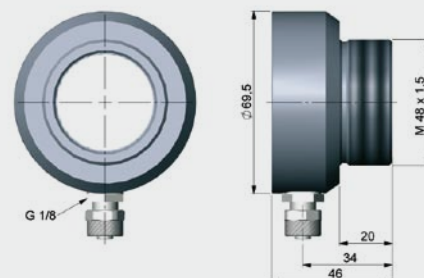
TM-AB-CTL Mounting bracket (adjustable)



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