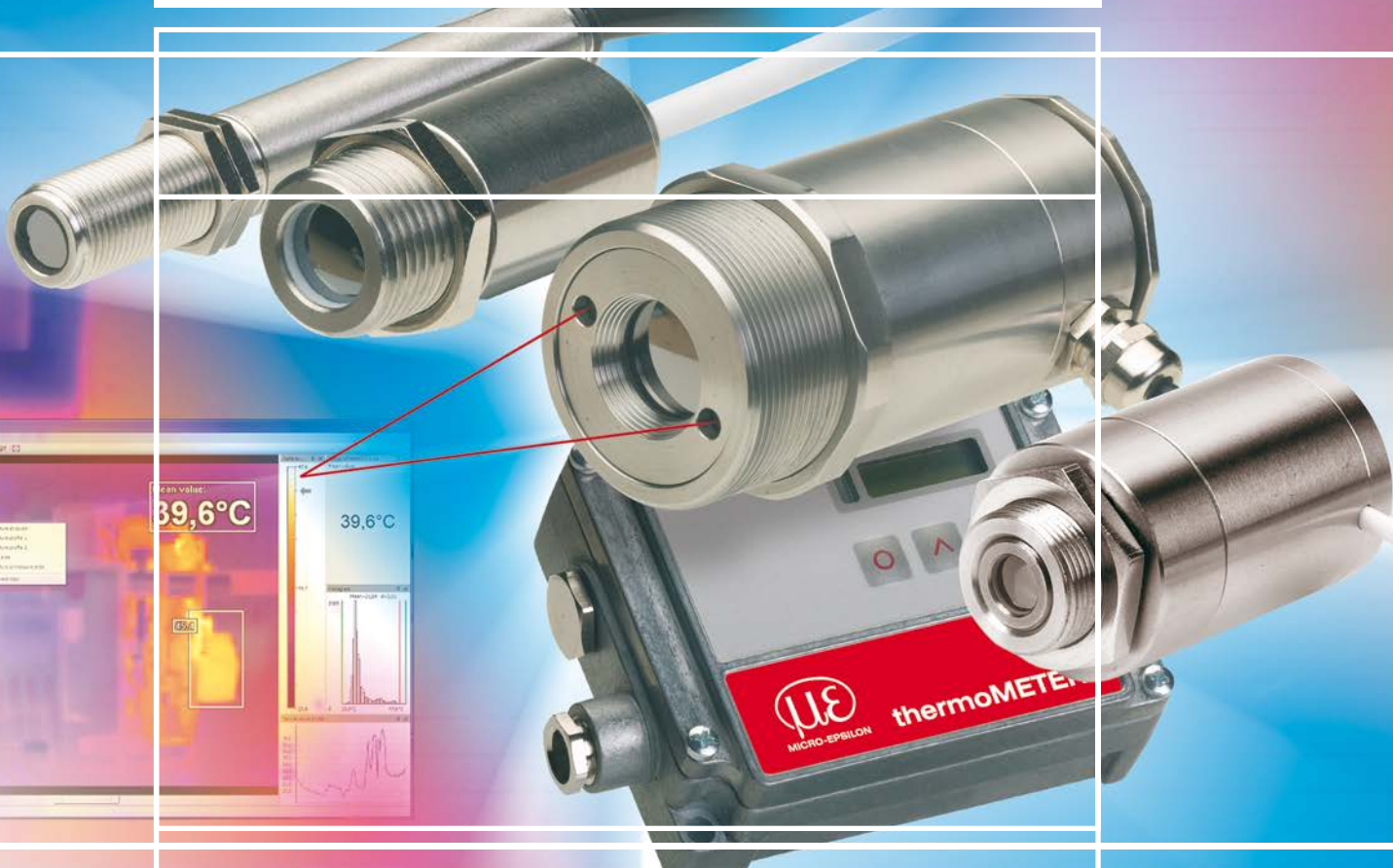




More Precision

thermoMETER
Non-contact IR temperature sensors





thermoMETER CTLaserM5

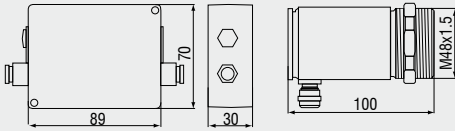
Precise non-contact temperature measurement of liquid metals from 1000°C to 2000°C

- Measuring range from 1000°C to 2000°C
- Short measuring wavelength of 525nm minimises errors due to emissivity uncertainty and atmospheric vapour effects
- Response time of 1ms
- Extreme small measurement spot down to 1mm
- For metallurgical processes and for measurements of metal oxides and ceramics
- Optical resolution up to 150:1 with selectable focus
- Up to 85°C ambient temperature without cooling, automatic laser switch off at 50°C
- Double laser aiming marks real spot location at any distance

Optical specifications thermoMETER CTLaserM5

□ = 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	30
<i>distance in mm</i>		0	150	300	450	600	750	900	1000	1100	1200	1350	1500	1750	2000
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	
<i>distance in mm</i>		0	450	900	1350	1800	2250	2700	3000	3600	4000	5000	6000	6750	



Product identification

CTLM - 5 SF150 - C3

Cable length [3m Standard / 8m / 15m]
 Focus [SF / FF]
 Spectral range [525nm]
 thermoMETER CTLaserM

Model		CTLM-5SF150-C3
Optical resolution		150:1
Temperature range ¹		1000 to 2000°C
Spectral range		525nm
System accuracy ²		±(0.3% of reading +2°C)
Repeatability ²		±(0.1% of reading +1°C)
Temperature resolution		0.2°C
Response time (90% signal) ³		1ms
Emissivity/gain ¹		0.100 to 1.000
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	0/4 to 20mA, 0 to 5/ 10V, thermocouple J, K
Outputs/analogue optional		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 85°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: 3G, 11-200Hz, any axis
Shock	sensor	IEC 68-2-27: 50G, 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

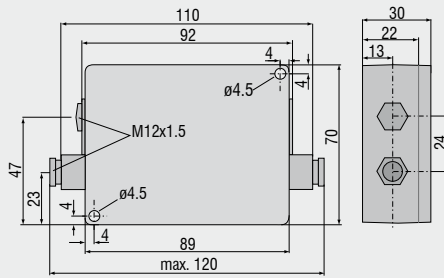
Accessories page 22 - 23

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

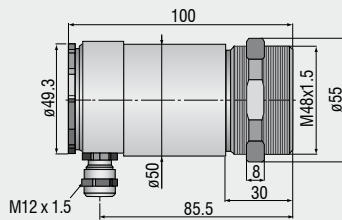


LASER RADIATION
 DO NOT STARE IN THE BEAM
 CLASS 2 LASER
 EN60825-1:2002
 P≤1mW; λ=630-650nm

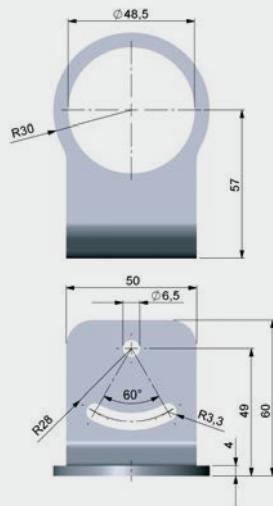
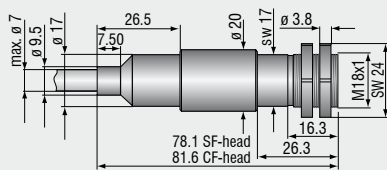
Controller



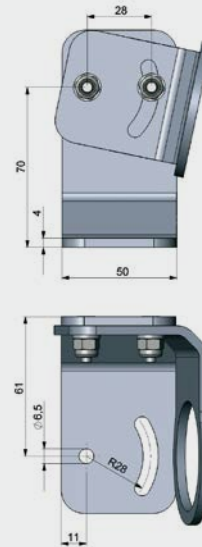
CTLaser / CTLaserFAST / CTLaserGLASS / CTLaserM1/M2 / CTLaserM3 / CTLaserM5 / CTLaserCOMBUSTION



CTratioM1



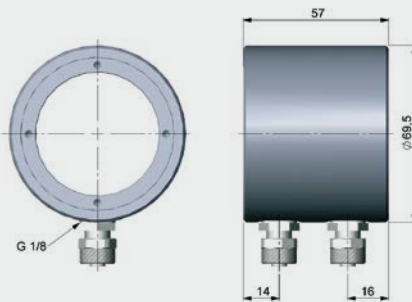
TM-FB-CTL Mounting bracket (fixed); included with CTL sensors



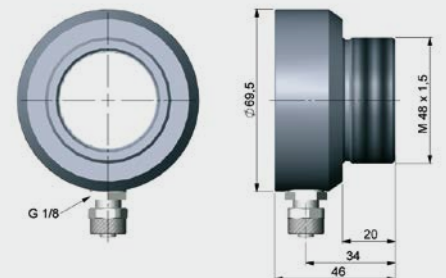
TM-AB-CTL Mounting bracket (adjustable)



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

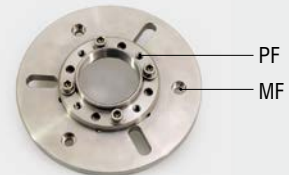
2970245	TM-USBK-CTL	USB interface kit incl. computer cable, software CompactConnect
2970246	TM-RS232K-CTL	RS232 interface kit incl. computer cable, software CompactConnect
2970338	TM-RS485USBK-CTL	RS485-USB-adapter, incl. PC cable, RS485 board, software CTconnect, terminal block, for use with TM-485B-CTL
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)



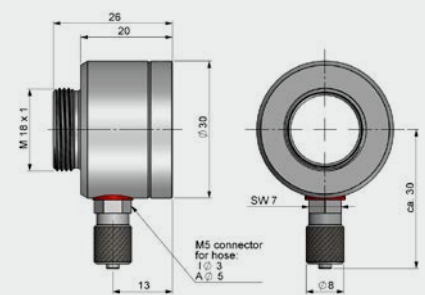
TM-J-CTL Cooling jacket (length 228mm, ø89mm) with adjustable mounting bracket TM-JAB-CTL; up to 315°C ambient temperature



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	Certificate 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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