



More Precision

thermoMETER // Non-contact IR temperature sensors





thermoMETER CTLaserM5

Non-contact IR temperature sensor with laser sighting for exact temperature measurement of molten metals

- Measuring range 1000°C up to 2000°C
- Short measuring wavelength of 525nm minimises errors due to emissivity uncertainty and misadjustment
- Response time of 1ms
- Double laser marks the exact spot size from 1mm
- For metal processing and measurements of metal oxides and ceramics
- Optical resolution 150:1 with selectable focus
- Up to 85°C ambient temperature without cooling, automatic laser switch-off at 50°C
- Selectable and scalable analog output, optional digital interfaces

Optical specifications thermoMETER CTLaserM5

□ = smallest spot size (mm)

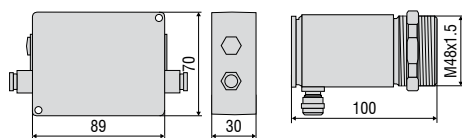
| Standard Focus | | | | | | | | | | | | | | | |
|----------------|---------------|----|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1L/2L SF | 150:1 | 20 | 18.3 | 16.5 | 14.8 | 13 | 11.4 | 9.6 | 8.5 | 7.3 | 9.8 | 13.5 | 17.3 | 23.5 | 30 |
| | distance (mm) | 0 | 150 | 300 | 450 | 600 | 750 | 900 | 1000 | 1100 | 1200 | 1350 | 1500 | 1750 | 2000 |
| Far Focus | | | | | | | | | | | | | | | |
| 1L/2L FF | 150:1 | 20 | 20.5 | 21 | 21.5 | 22 | 22.5 | 23 | 23.4 | 24 | 29 | 41 | 53.4 | 62.5 | |
| | distance (mm) | 0 | 450 | 900 | 1350 | 1800 | 2250 | 2700 | 3000 | 3600 | 4000 | 5000 | 6000 | 6750 | |

| Model | CTLM-5SF150-C3 | |
|---|---|--|
| Optical resolution | 150:1 | |
| Temperature range ¹ | 1000 to 2000°C | |
| Spectral range | 525nm | |
| System accuracy ² | ±1% of reading (≤ 1100°C) ±0.3% of reading +2°C (> 1100°C) | |
| Repeatability ² | ±0.5% of reading (≤ 1100°C) ±0.1% of reading +1°C (> 1100°C) | |
| Temperature resolution | 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/analog | channel 1 | 0/4 to 20mA, 0 to 5/10V, thermocouple J, K |
| Outputs/analog | optional | relay; 2 x 60VDC / 42VAC; 0.4A; electrically 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 |
| Protection class | | IP65 (NEMA-4) |
| Ambient temperature | | sensor: -20°C to 85°C (50°C with 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: 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 ε=1, response time 1s; at ambient temperature: 23 ±5°C

³ with dynamic adaption at low signal levels



Product identification

| | | | |
|---|---|--------|----|
| CTLM - | 5 | SF150- | C3 |
| Cable length [3m (standard) / 8m / 15m] | | | |
| Focus [SF / FF] | | | |
| Spectral range [525nm] | | | |
| thermoMETER CTLaserM | | | |

Accessories page 20 - 21

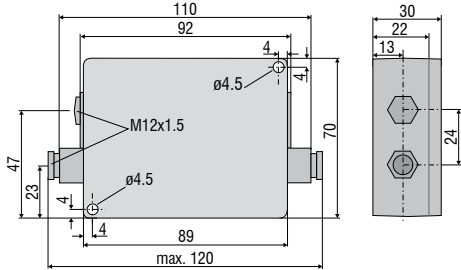
- Mounting bracket
- Air purge collar
- Rail mount adapter for controller
- Water cooled housing
- Interface kit
- Certificate of calibration



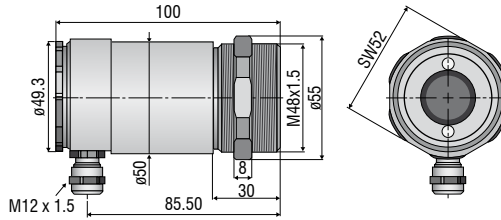
LASER LIGHT
 DO NOT STARE INTO BEAM
CLASS 2 LASER
 IEC 60825-1:2007
 1mW / 630-650nm

CTLaser / CTLaserFAST / CTLaserGLASS / CTLaserM1/M2/M3/M5 / CTLaserCOMBUSTION

Controller

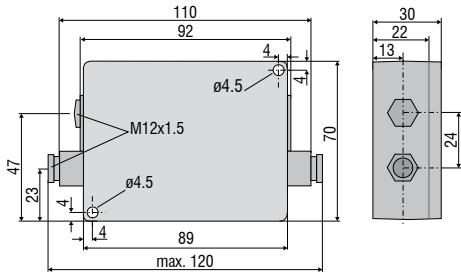


Sensor

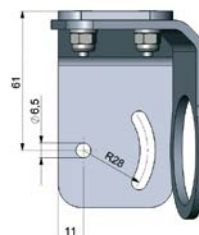
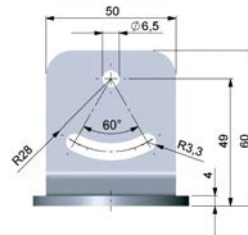
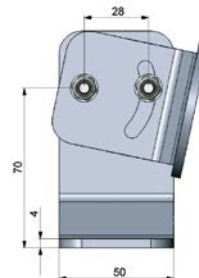
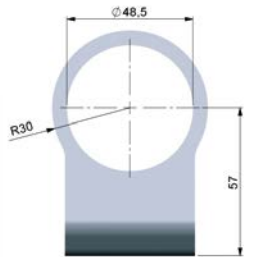
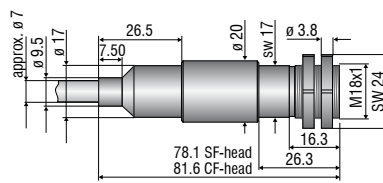


CTratioM1

Controller

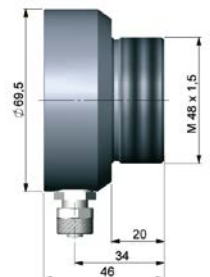
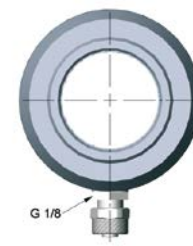
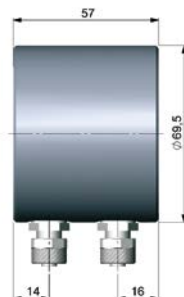
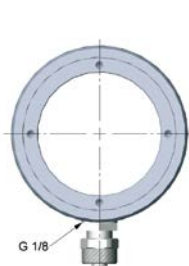


Sensor



TM-FB-CTL Mounting bracket (fixed); included in CTL scope of supply

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 for CTLaser | | |
|--|---------------|---|
| 2970366 | TM-J-CTL | Cooling jacket (length 228mm, ø89mm) (conversion kit TM-CONK-CTL is required) |
| 2970374 | TM-CONK-CTL | Conversion kit for CTL on 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 | Reflection protection tube M48x1.5, 300mm length |
| 2970371 | TM-PA-CTL | Pipe adapter M48x1.5 |
| 2970372 | TM-RM-CTL | Furnace wall mount accessory for CTL (TM-MF-CTL, TM-AST300-CTL and TM-PA-CTL) |
| 2970412 | TM-PF-CTL | Pipe flange M48x1.5 for directly mounting a CTL sensor |
| 2970487 | TM-CJA-CTL | Cooling Jacket Advanced - universal cooling jacket for CSLaser, CTLaser and CTVideo / CSVideo up to 315°C |

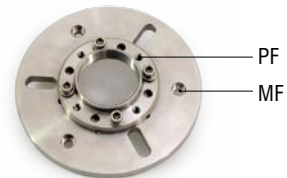
| Calibration | | |
|-------------|---------------|--|
| 2970253 | TM-CERT-CTL | Certificate of calibration |
| 2970324 | TM-HTCERT-CTL | Certificate of calibration for CTLaser M1-/M2-/M3-/M5-/G-sensors |

| Interfaces | | |
|------------|------------------|---|
| 2970245 | TM-USBK-CTL | USB interface, computer cable, software CompactConnect second cable gland for controller |
| 2970246 | TM-RS232K-CTL | RS232 interface, computer cable, software CompactConnect second cable gland for controller |
| 2970338 | TM-RS485USBK-CTL | RS485-USB-adapter, incl. PC cable, Software CompactConnect and CTmulti, second cable gland for use with interface board TM-RS485B-CTL |
| 2970248 | TM-RS485B-CTL | RS485 interface board incl. second cable gland |
| 2970249 | TM-CANK-CTL | CAN-Bus interface; protocol: CANopen Presettings: module address20 (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, second cable gland |
| 2970252 | TM-RI-CTL | Relay interface: two electrically isolated relays, 60VDC/ 42VAC _{eff} 0.4A |

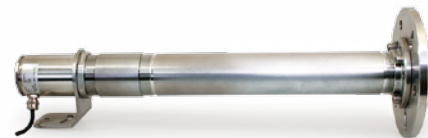
| Sensor cables and high temperature cables for CTLaser | | |
|---|---------------|--|
| 2970374 | TM-CONK-CTL | Connector-Kit for cables with connector |
| 4800254.003 | TM-CB3C-CTL | Sensor cable with connector (3m) |
| 4800254.003H | TM-CB3HC-CTL | High-temperature sensor cable with adapter (3m) |
| 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) |



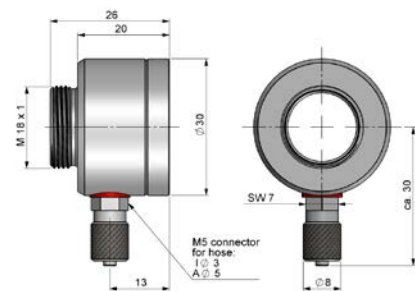
TM-J-CTL cooling jacket (length 228mm, ø 89mm) with adjustable mounting bracket TM-JAB-CTL; suitable for ambient temperatures up to 180°C



TM-PF-CTL and TM-MF-CTL mounting flange M48x1,5 for directly mounting a CTL sensor



TM-RM-CTL Furnace wall mount accessory for CTLaser / 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, stainless steel, adjustable in one axis |
| 2970395 | TM-AP-CTR | Air purge collar, stainless steel |
| 2970373 | TM-RM-CTR | Furnace wall mount, stainless steel |
| 2970351 | TM-CERT-CTR | Certificate of calibration |

Further IR temperature measurement devices from Micro-Epsilon



thermoIMAGER TIM
Compact USB thermal imaging cameras
for precise thermography



thermoMETER CTVideo/CSVidéo
IR temperature sensors with crosshair laser
sighting and video output



thermoMETER Handheld
Innovative handheld pyrometer with laser
sighting for inspection and maintenance