



### 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 analogue output, optional digital interfaces

#### Optical specifications thermoMETER CTLaserM5

□ = smallest spot size (mm)

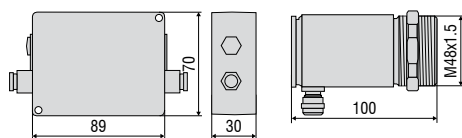
| Standard Focus |       |    |      |      |      |      |      |      |      |      |      |      |      |      |      |
|----------------|-------|----|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1L/2L SF       | 150:1 | 20 | 18.3 | 16.5 | 14.8 | 13   | 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 <sup>1</sup>          | 1000 to 2000°C  |  |
| Spectral range                          | 525nm   |  |
| System accuracy <sup>2</sup>            | ±1% of reading (≤ 1100°C)   ±0.3% of reading +2°C (> 1100°C)                          |  |
| Repeatability <sup>2</sup>              | ±0.5% of reading (≤ 1100°C)   ±0.1% of reading +1°C (> 1100°C)                        |  |
| Temperature resolution                  | 0.2°C   |  |
| Response time (90% signal) <sup>3</sup> | 1ms   |  |
| Emissivity/gain <sup>1</sup>            | 0.100 to 1.100  |  |
| Transmissivity/gain <sup>1</sup>        | 0.100 to 1.000  |  |
| Signal processing <sup>1</sup>          | 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 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<br>voltage output  | mA max. 500Ω (with 5 - 36VDC)<br>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   |

<sup>1</sup> Adjustable via controller or software

<sup>2</sup> ε=1, response time 1s; at ambient temperature: 23 ±5°C

<sup>3</sup> 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

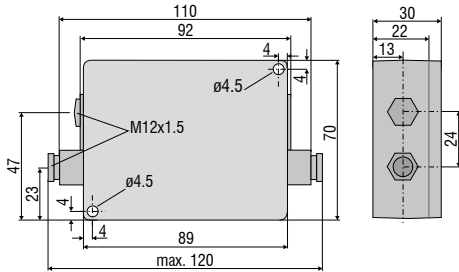
- Mounting bracket
- Air purge collar
- Rail mount adapter for controller
- Water cooled housing
- Interface kit
- Certificate of calibration



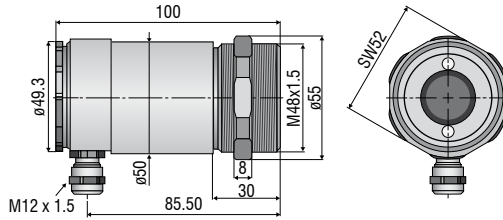
**LASER LIGHT**  
DO NOT STARE INTO BEAM  
**CLASS 2 LASER**  
IEC 60825-1:2007  
1mW / 630-650nm

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

**Controller**

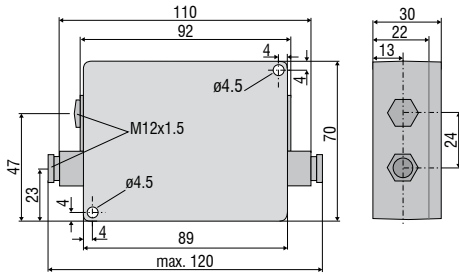


**Sensor**

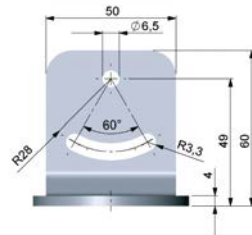
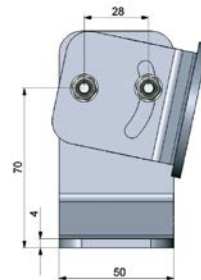
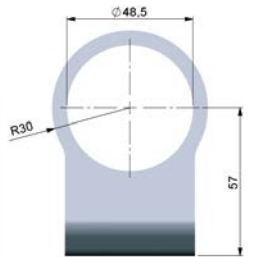
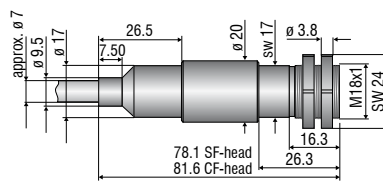


**CTratioM1**

**Controller**



**Sensor**

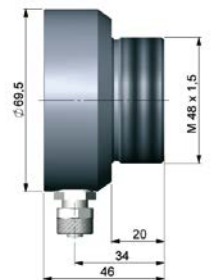
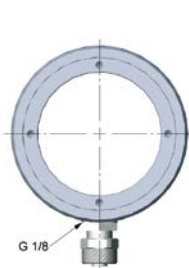


TM-FB-CTL Mounting bracket (fixed);  
included in CTL scope of supply

TM-AB-CTL Mounting bracket (adjustable)

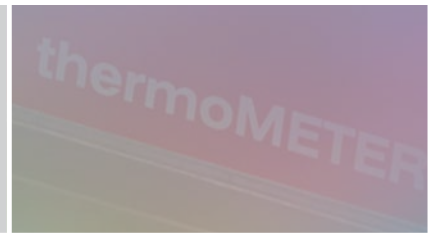


TM-W-CTL Water cooled housing and  
air purge collar TM-AP-CTL,  
mounted on adjustable mounting bracket TM-AB-CTL



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 |

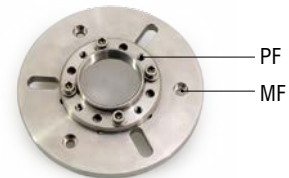
| Calibration |               |  |
|-------------|---------------|--|
| 2970253     | TM-CERT-CTL   | Certificate of calibration                                       |
| 2970324     | TM-HTCERT-CTL | Certificate of calibration for CTLaser M1-/M2-/M3-/M5-/G-sensors |

| 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 <sub>eff</sub> 0.4A   |

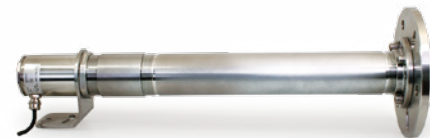
| Sensor cables and high temperature cables for CTLaser |               |  |
|---|---------------|--|
| 2970374   | TM-CONK-CTL   | Connector-Kit for cables with connector          |
| 4800254.003   | TM-CB3C-CTL   | Sensor cable with connector (3m)                 |
| 4800254.003H  | TM-CB3HC-CTL  |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



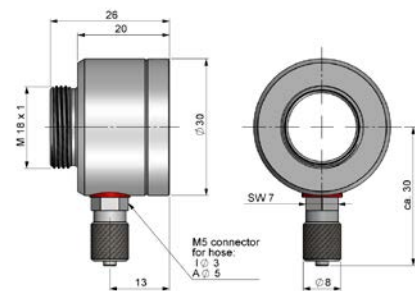
TM-J-CTL cooling jacket (length 228mm, ø 89mm) with adjustable mounting bracket TM-JAB-CTL; suitable for ambient temperatures up to 180°C



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/CSVideo**  
IR temperature sensors with  
crosshair laser sighting and video output



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