



More Precision

thermoMETER // Non-contact infrared temperature sensors





thermoMETER CTratioM1

Glass fiber ratio pyrometer provides extremely short response time with hot objects

- Measuring range from 700°C to 1800°C
- Extremely short response times from 5ms
- Resistant to disturbances such as smoke, fog and partially concealed or moving objects
- Measurement depends only on the emissivity ratio but not on the absolute emissivity
- The measurement object can be smaller than the measurement spot
- Up to 250°C ambient temperature without cooling
- High optical resolution with selectable focal point
- Integrated sighting laser marks spot size
- Programmable 1- or/and 2-channel mode
- Separate controller with programming keys and backlit display

Optical specifications thermoMETER CTratioM1

| Standard Focus | | | | | | | | | | |
|----------------|------|-----|------|------|------|------|------|-------|------|----|
| SF40 lens | 40:1 | 6.6 | 10.6 | 21.1 | 31.3 | 41.4 | 52 | 62.6 | 73.3 | 84 |
| distance in mm | 102 | 305 | 762 | 1143 | 1524 | 1905 | 2286 | 2667 | 3048 | |
| Close Focus | | | | | | | | | | |
| CF02 lens | 2:1 | 5.1 | 6.4 | 7.7 | 23.6 | 50.1 | 77.6 | 104.1 | | |
| distance in mm | 102 | 200 | 305 | 762 | 1524 | 2286 | 3048 | | | |

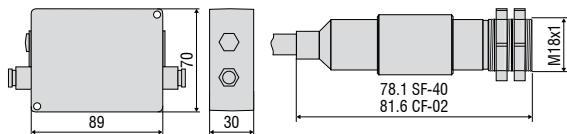
| Model | CTRM-1CF02-C3 | CTRM-1SF40-C3 |
|---|---|---------------|
| Optical resolution (95% energy) | 40:1 | |
| Temperature range | 700°C to 1800°C | |
| Spectral range | 0.7 to 1.1 μ m | |
| System accuracy ^{1,3} | \pm (1% of reading + 1°C) | |
| Repeatability ^{1,3} | \pm (0.5% of reading + 1°C) | |
| Temperature resolution (>900°C) | 0.1°C | |
| Response time (95% signal) ² | 5ms - 10s | |
| Emissivity ratio ⁴ | 0.800 to 1.200 | |
| Emissivity ⁴ | 0.100 to 1.100 | |
| Signal processing ⁴ | 1 color / 2 color mode; attenuation monitoring / alarms; peak hold, valley hold, average; extended hold function with threshold and hysteresis | |
| Outputs/analog | 0/4 - 20mA, 0 to 5/10V | |
| Outputs/analog optional | relays: 2 x 60VDC/42 VAC _{eff} ; 0.4A; electrically isolated | |
| Alarm output | 2 x open collector (24V / 1A) | |
| Outputs/digital optional | USB (only for sensor configuration) | |
| Output impedances current output | mA max. 500 Ω (with 5 to 36VDC) | |
| Output impedances voltage output | min. 100k Ω load impedance | |
| Inputs/outputs digital | 2 programmable in-/ outputs, usable as: alarm output (open collector output [24V / 1A]), digital input for triggered signal output and peak hold function | |
| Fiber cable length | 3m (standard), 6m, 10m, 15m, 22m; stainless steel armor, 400 μ m fiber diameter | |
| Power supply | 8 to 36VDC or USB; max. 200mA | |
| Optical aiming | Laser 650nm, 1mW, ON/OFF via controller or software | |
| Protection class | IP65 (NEMA-4) | |
| Ambient temperature | sensor: -20°C to 250°C (70°C if Laser ON); controller: 0°C to 85°C | |
| Storage temperature | sensor: -40°C to 250°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 | fiber cable with sensor: 375g; controller: 420g | |

¹ $\epsilon = 1$, response time 1s

² with dynamic adaption at low signal levels

³ \pm ambient temperature 23 \pm 5°C

⁴ adjustable via programming keys or software



Product identification

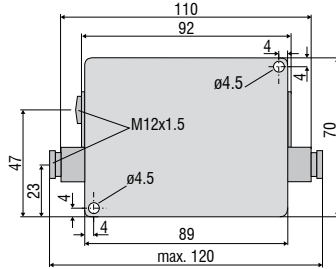
| | | | |
|--|---|-------|----|
| CTRM - | 1 | CF02- | C3 |
| Fiber cable length [3m (standard) / 6 / 10 / 15 / 22m] | | | |
| Focus [CF2 / SF40] | | | |
| Spectral range [0.7 to 1.1 μ m] | | | |
| thermoMETER CTratio | | | |



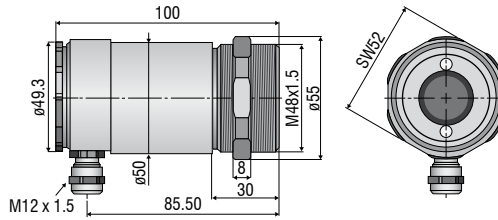
LASER LIGHT
DO NOT STARE INTO BEAM
CLASS 2 LASER
DIN EN 60825-1:2007
1mW / 630-650nm

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

Controller

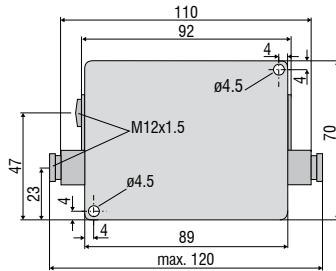


Sensor

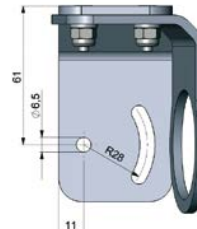
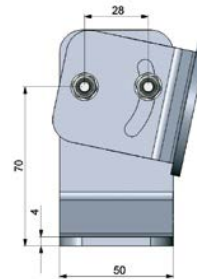
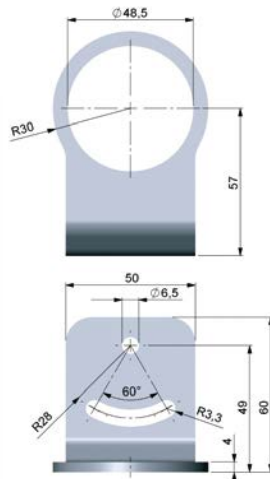
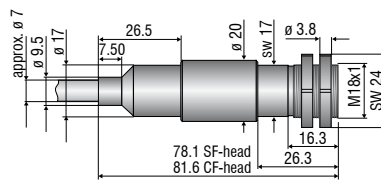


CTratioM1

Controller

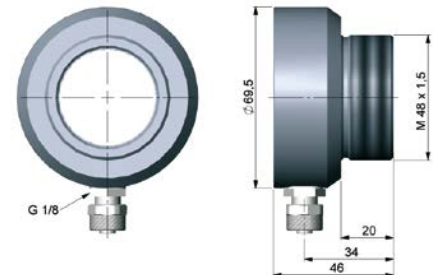
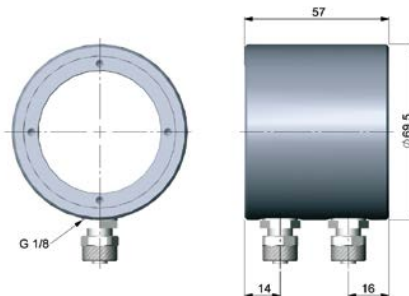


Sensor



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 M48x1.5 on 20UN-2A screw including mounting nut |

High temperature accessories

| | | |
|---------|---------------|---|
| 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

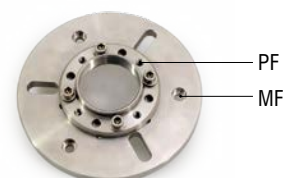
| | | |
|---------|------------------|---|
| 2970245 | TM-USBK-CTL | USB interface, computer cable, CompactConnect software second cable gland for controller |
| 2970246 | TM-RS232K-CTL | RS232 interface, computer cable, CompactConnect software, second cable gland for controller |
| 2970338 | TM-RS485USBK-CTL | RS485-USB-adapter, incl. PC cable, CompactConnect software 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 Presets: module address20 (14H), 250kBaud, 0-60°C |
| 2970250 | TM-PFBDPK-CTL | Profibus-DPV1 interface with plug-in connection |
| 2970251 | TM-ETHNK-CTL | Ethernet-Kit: interface board, external Ethernet adapter, CompactConnect software, 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 (up to 180°C) with connector (3m) |
| 4800254.008 | TM-CB8C-CTL | Sensor cable with connector (8m) |
| 4800254.008H | TM-CB8HC-CTL | High-temperature sensor cable (up to 180°C) with connector (8m) |
| 4800254.015 | TM-CB15C-CTL | Sensor cable with connector (15m) |
| 4800254.015H | TM-CB15HC-CTL | High-temperature sensor cable (up to 180°C) with connector (15m) |



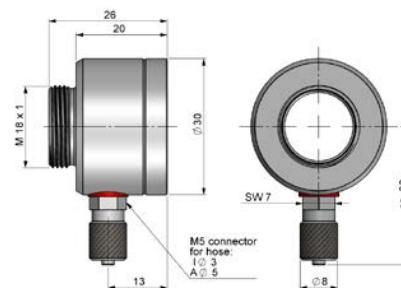
TM-J-CTL Cooling jacket (length 228mm, ø 89mm) with adjustable mounting bracket TM-JAB-CTL; suitable for ambient temperatures up to 180°C



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 |
| 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