



# More Precision

**thermoMETER** // Non-contact infrared temperature sensors





### thermoMETER CThot

Housed IR temperature sensor for harsh ambient conditions

- Measuring range from -40 °C to 975 °C
- Up to 250 °C ambient temperature without cooling
- Pressure-resistant sensor head up to 10 bar (autoclave applications)
- Integrated high temperature cable
- For a number of applications in dryers, kilns, heat treatment in the processing of metals, plastics, textiles and in the semiconductor industry
- Narrow-focused lenses enable diagonal alignment to the target (avoids influence by material thickness)
- Selectable and scalable analog output, optional digital interfaces

#### Optical specifications thermoMETER CThot

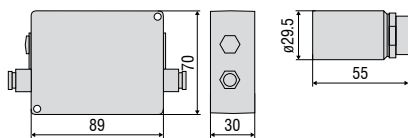
□ = smallest spot size / focal point (mm)

| Standard Focus |      |     |      |      |      |     |      |      |      |      |
|----------------|------|-----|------|------|------|-----|------|------|------|------|
| SF10           | 10:1 | 6.5 | 14.9 | 23.3 | 31.6 | 40  | 51.6 | 63.3 | 74.9 | 86.5 |
| distance in mm |      | 0   | 100  | 200  | 300  | 400 | 500  | 600  | 700  | 800  |

| Model                             |                | CTH-SF10-C3H                                                                                                                             |
|-----------------------------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Optical resolution                |                | 10:1                                                                                                                                     |
| Temperature range <sup>1)</sup>   |                | -40 °C to 975 °C                                                                                                                         |
| Spectral range                    |                | 8 to 14 µm                                                                                                                               |
| System accuracy <sup>2)</sup>     |                | ±1 % or ±1.5 °C                                                                                                                          |
| Repeatability <sup>2)</sup>       |                | ±0.5 % or ±0.5 °C                                                                                                                        |
| Temperature resolution            |                | 0.25 °C                                                                                                                                  |
| Response time                     |                | 100 ms                                                                                                                                   |
| Emissivity/gain <sup>1)</sup>     |                | 0.100 to 1.100                                                                                                                           |
| Transmissivity/gain <sup>1)</sup> |                | 0.100 to 1.100                                                                                                                           |
| Signal processing <sup>1)</sup>   |                | peak hold, valley hold, average; extended hold function with threshold and hysteresis                                                    |
| Certificate of calibration        |                | optional                                                                                                                                 |
| Outputs/analog                    | channel 1      | 0/4 to 20 mA, 0 to 5/10 V, thermocouple J, K                                                                                             |
|                                   | channel 2      | sensor temperature (-20 to 250 °C as 0 to 5 V or 0 to 10 V), alarm output                                                                |
| Outputs/analog                    | optional       | relays: 2 x 60 VDC/42 VAC <sub>eff</sub> ; 0.4 A; electrically isolated                                                                  |
| Ausgänge/digital                  | optional       | USB, RS232, RS485, Modbus RTU, Profibus DP, Ethernet                                                                                     |
| Output impedances                 | current output | mA max. 500 Ω (with 5 to 36 VDC)                                                                                                         |
|                                   | voltage output | min. 100 kΩ load impedance, thermocouple 20 Ω                                                                                            |
| Inputs                            |                | programmable functional inputs for external emissivity adjustment<br>ambient temperature compensation, trigger (reset of hold functions) |
| Cable length                      |                | 3 m (standard), 8 m, 15 m                                                                                                                |
| Power supply                      |                | 8 to 36 VDC; max. 100 mA                                                                                                                 |
| Protection class                  |                | IP65 (NEMA-4)                                                                                                                            |
| Ambient temperature               |                | sensor: -20 °C to 250 °C; 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 to 200 Hz, any axis                                                                                                  |
| Shock                             | sensor         | IEC 68-2-27: 50 G, 11 ms, any axis                                                                                                       |
| Weight                            |                | sensor: 40 g (without massive housing), 200 g (with solid case); controller: 420 g                                                       |

<sup>1)</sup> adjustable via programming keys or software

<sup>2)</sup> ambient temperature 23 ±5 °C and object temperatures ≥ 20 °C; whichever is greater



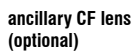
## Product identification

| CTH- | SF10- | C3H                                                         |
|------|-------|-------------------------------------------------------------|
|      |       | Length high temperature cable [3 m (standard) / 8 m / 15 m] |
|      |       | Focus [SF10]                                                |
|      |       | thermoMETER CThot                                           |

## Accessories page 20 - 23

- Rail mount adapter for controller
- Digital-interface kits
- Certificate of calibration

**controller**

**controller**

**Mechanical accessories**

| Art. No.    | Model             |                                                                                                         |
|-------------|-------------------|---------------------------------------------------------------------------------------------------------|
| 2970203     | TM-FB-CT          | Mounting bracket, fixed                                                                                 |
| 2970325     | TM-FB2-CT         | Mounting bracket, adjustable in one axis, for simultaneous assembly of CT sensor and laser sighting aid |
| 2970336     | TM-FBMH-CT        | Mounting bracket, adjustable in one axis, for massive housing                                           |
| 2970204     | TM-AB-CT          | Mounting bracket, adjustable in 2 axes                                                                  |
| 2970205     | TM-MB-CT          | Mounting bolts with M12x1 thread                                                                        |
| 2970206     | TM-MG-CT          | Mounting fork, adjustable in 2 axes, with M12x1 fastening                                               |
| 2970207     | TM-AP-CT          | Air purge collar for sensors from 10:1 lens                                                             |
| 2970335     | TM-APS-CT         | Air purge collar for sensors from 10:1 lens made from stainless steel                                   |
| 2970208     | TM-AP2-CT         | Air purge collar for sensor with 2:1 lens                                                               |
| 2970209     | TM-APL-CT         | Air purge collar, laminar                                                                               |
| 2970210     | TM-APLCF-CT       | Air purge collar, laminar with integrated ancillary CF lens                                             |
| 2970357     | TM-APLCFH-CT      | Air purge collar, laminar with integrated ancillary CF lens for M sensors                               |
| 2970386     | TM-APMH-CT        | Air purge collar made from stainless steel for massive housing                                          |
| 2970463     | TM-TAS-CT         | Pivoted joint for CT sensors                                                                            |
| 2970211     | TM-RAM-CT         | Right angle mirror for measurements 90 °C to the sensor axis                                            |
| 2970212     | TM-RAIL-CT        | Rail mount adapter for CT controller                                                                    |
| 2970213     | TM-COV-CT         | Closed cover for controller                                                                             |
| 2970214     | TM-MHS-CT         | Massive housing made from stainless steel                                                               |
| 2970215     | TM-MHSCF-CT       | Massive housing made from stainless steel with integrated ancillary CF lens                             |
| 2970358     | TM-MHSCFH-CT      | Massive housing made from stainless steel with integrated ancillary CF lens for M sensors               |
| 2970216     | TM-MHA-CT         | Massive housing made from anodized aluminum                                                             |
| 2970217     | TM-MHACF-CT       | Massive housing made from stainless steel with integrated ancillary CF lens                             |
| 2970359     | TM-MHACFH-CT      | Massive housing made from anodized aluminum with integrated ancillary CF lens for M sensors             |
| 2970326     | TM-PA-CT          | Pipe adapter for the mounting of reflection protection tubes                                            |
| 2970327     | TM-ST20-CT        | Reflection protection tube, length 20 mm                                                                |
| 2970328     | TM-ST40-CT        | Reflection protection tube, length 40 mm                                                                |
| 2970329     | TM-ST88-CT        | Reflection protection tube, length 88 mm                                                                |
| 2970221     | TM-LST-CT         | Laser sighting aid for CT sensors incl. batteries (2xAlkaline AA)                                       |
| 2970300     | TM-LSTOEM-CT      | OEM laser sighting aid, 635 nm, 3.5 m cable, for connection to CT controller                            |
| 2970300.008 | TM-LSTOEM-CT(008) | OEM laser sighting aid, 635 nm, 8 m cable, for connection to CT controller                              |

**Optical accessories**

| Art. No. | Model       |                                                      |
|----------|-------------|------------------------------------------------------|
| 2970201  | TM-CF-CT    | Ancillary CF lens (only for SF models)               |
| 2970202  | TM-PW-CT    | Protective window (only for SF models)               |
| 2970297  | TM-CFAG-CT  | Ancillary lens with external thread                  |
| 2970330  | TM-CFH-CT   | Ancillary lens for M sensors                         |
| 2970331  | TM-CFHAG-CT | Ancillary lens with external thread for M sensors    |
| 2970299  | TM-PWAG-CT  | Protective window with external thread               |
| 2970332  | TM-PWH-CT   | Protective window for M sensors                      |
| 2970333  | TM-PWHAG-CT | Protective window with external thread for M sensors |

**Interfaces**

|         |                 |                                                                                                                                                                           |
|---------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2970729 | TM-USBK-CT      | USB-Interface board, cable with Micro-USB plug and adapter for USB-C and USB-A, CompactConnect software (as download), Quick reference, second cable gland for controller |
| 2970224 | TM-RS232K-CT    | RS232 interface: RS232 interface, computer cable, CompactConnect software, second cable gland for controller                                                              |
| 2970338 | TM-RS485USBK-CT | RS485-USB-adapter, incl. PC cable, CompactConnect software and CTmulti, second cable gland for use with interface board TM-RS485B-CT                                      |
| 2970226 | TM-RS485B-CT    | RS485-interface board incl. second cable gland                                                                                                                            |
| 2970228 | TM-PFBDPK-CT    | Profibus-DPV1 interface for thermoMETER CT with plug-in connection                                                                                                        |
| 2970229 | TM-ETHNK-CT     | Ethernet-Kit: interface board, external Ethernet adapter, CompactConnect software, second cable gland                                                                     |
| 2970230 | TM-RI-CT        | Relay interface: two electrically isolated relays, 60 VDC/ 42 VAC <sub>eff</sub> , 0.4 A                                                                                  |
| 2970719 | TM-MBRTU-CT     | Modbus-RTU-interface board incl. second cable gland                                                                                                                       |

**Calibration**

|         |              |                                            |
|---------|--------------|--------------------------------------------|
| 2970231 | TM-CERT-CT   | Certificate of calibration                 |
| 2970310 | TM-HTCERT-CT | Certificate of calibration for CTM sensors |





TM-FB-CT Mounting bracket, adjustable in one axis



TM-AB-CT Mounting bracket, adjustable in two axes



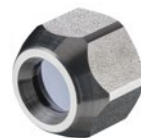
TM-MB-CT mounting bolt with M12x1 thread adjustable in one axis



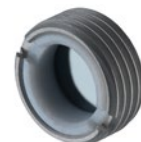
TM-MG-CT Mounting fork with M12x1 thread, adjustable in two axes



TM-RAIL-CT rail mount adapter for controller

TM-KF40GE-CT KF40 Flange with Ge window  
TM-KF40B270-CT KF40 Flange for CTM-1,-2,-3 with B270 window

TM-CF-CT Ancillary CF lens (only for SF models)

TM-CFAG-CT Ancillary CF lens with external thread  
TM-PWAG-CT Protective window with external threadTM-APL-CT Air purge collar, laminar and  
TM-MG-CT Mounting forkTM-APLCF-CT  
Ancillary CF lens/protective window - integrable variant  
for laminar air purge collarTM-APMH-CT  
Air purge collar made from stainless steel  
for massive housing

TM-PA-CT Pipe adapter for reflection protection tube



TM-ST40-CT Reflection protection tube





TM-LST-CT Laser sighting aid, battery-operated  
(2x Alkaline AA), for alignment of CT sensors  
(dimensions identical to CT sensor)



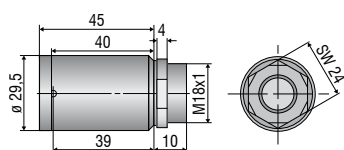
TM-FB2-CT  
Mounting bracket for sensor and laser sighting aid



TM-RAM-CT  
Right angle mirror



TM-MHS-CT Massive housing, stainless steel  
TM-MHA-CT Massive housing, aluminum



TM-TAS-CT Pivoted joint for CT sensors



Dirt and deposit on the lens like smoke, steam and high air humidity (condensation) are avoided or reduced by using an air purge collar.



TM-AP-CT  
Standard air purge collar for 10:1 / 15:1 / 22:1 lenses  
TM-APS-CT  
Air purge collar, stainless steel



TM-AP2-CT  
Standard air purge collar for 2:1 lens

## Infrared thermal imagers from Micro-Epsilon



### **thermoIMAGER TIM** Compact thermal imaging cameras for industrial temperature monitoring

- Temperature range from -20 °C to 1900 °C
- Ideal for OEM
- Real-time thermography using license-free software
- Protective housing for harsh environments
- Special variants for the glass, metal and plastics industries