



More Precision

thermoMETER // Non-contact infrared temperature sensors

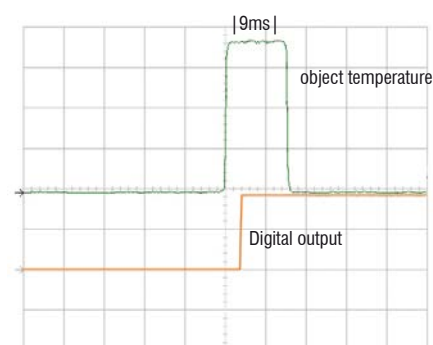




thermoMETER CTfast

IR temperature sensor with extremely short response time

- Measuring range from -50 °C to 975 °C
- One of the smallest infrared sensors worldwide with extremely short response times from 3 ms (50 % signal) to 6ms (90 % signal)
- Up to 120 °C ambient temperature without cooling
- Fast and scalable analog output with intelligent real-time data processing
- Separate controller with programming keys and backlit display



Switching output with a threshold of 50 % of the signal (SF15 model)

Optical specifications thermoMETER CTfast

□ = smallest spot size / focal point (mm)

Standard Focus

| | | | | | | | | | | | | | |
|----------------|------|-----|------|------|------|------|-----|------|------|------|-----|------|------|
| SF15 | 15:1 | 6.5 | 11.6 | 16.6 | 21.7 | 26.7 | 35 | 43.3 | 51.6 | 59.9 | | | |
| SF25 | 25:1 | 6.5 | 7.3 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 |
| distance in mm | | 0 | 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 | 1100 |

Close Focus (with optionally available CF lens)

| | | | | | | | | | | | | | |
|----------------|------|-----|-----|-----|-----|-----|------|------|------|------|------|--|--|
| CF15 | 15:1 | 7 | 3.9 | 0.8 | 4.7 | 8.6 | 12.5 | 16.4 | 20.3 | 24.2 | | | |
| distance in mm | | 0 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | | | |
| CF25 | 25:1 | 6.5 | 3.5 | 0.5 | 4 | 7.5 | 11 | 15.4 | 19.8 | 24.1 | 28.5 | | |
| distance in mm | | 0 | 4 | 8 | 12 | 16 | 20 | 25 | 30 | 35 | 40 | | |

| Model | CTF-SF15-C3 | CTF-SF25-C3 |
|--|--|--|
| Optical resolution | 15:1 | 25:1 |
| Temperature range ¹⁾ | -50 °C to 975 °C | |
| Spectral range | 8 to 14 μm | |
| System accuracy ²⁾ | $\pm 1\%$ or $\pm 2\%$ °C | |
| Repeatability ²⁾ | $\pm 0.75\%$ or $\pm 0.75\%$ °C | |
| Temperature resolution ^{3), 4)} | 0.2 °C | 0.4 °C |
| Response time ⁵⁾ | 9 ms (90 %) at analog output 4 ms (50 %) at digital output | 6 ms (90 %) at analog output; 3 ms (50 %) at digital output |
| Emissivity/gain ¹⁾ | 0.100 to 1.100 | |
| Transmissivity/gain ¹⁾ | 0.100 to 1.100 | |
| Signal processing ¹⁾ | peak hold, valley hold, average; extended hold function with threshold and hysteresis | |
| Certificate of calibration | optional | |
| Outputs/analog | 0/4 to 20 mA, 0 to 5/10 V, thermocouple J, K | |
| Alarm output | open collector (24 V / 50 A) | |
| Outputs/digital | standard: 0/10 V (10 mA); optional: relays 2 x 60 VDC/42 VAC; 0.4 A; electrically isolated | |
| Digital Interface | optional | USB, RS232, RS485, Modbus RTU, Profibus DP, Ethernet |
| Output impedances | current output | mA max. 500 Ω (with 8 to 36 VDC) |
| | voltage output | min. 100 k Ω load impedance, thermocouple 20 Ω |
| Inputs | programmable functional inputs for external emissivity adjustment ambient temperature compensation, trigger (reset of hold functions) | |
| Cable length | 1 m, 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 120 °C; controller: 0 °C to 85 °C | |
| Storage temperature | sensor: -40 °C to 120 °C; controller: -40 °C to 85 °C | |
| Relative humidity | 10 to 95 %, non-condensing | |
| Vibration | sensor | IEC 68-2-6: 3 G, 11-200 Hz, any axis |
| Shock | sensor | IEC 68-2-27: 50 G, 11 ms, any axis |
| Weight | sensor: 40 g; controller: 420 g | |

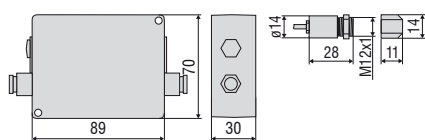
¹⁾ adjustable via programming keys or software

²⁾ ambient temperature 23 ± 5 °C; whichever is greater with dynamic noise compression

³⁾ temperature of the object ≥ 20 °C

⁴⁾ with dynamic adaption at low signal levels

⁵⁾ with time constant of 100 ms with adaptive averaging T_{obj} 25 °C



Product identification

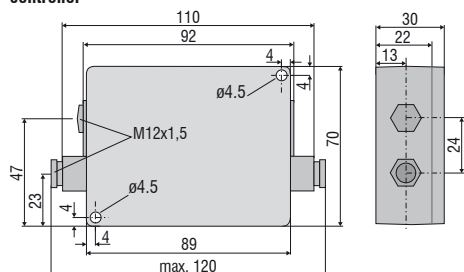
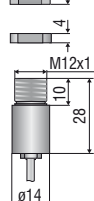
| CTF- | SF15- | C3 |
|------|-------|--|
| | | Cable length [1 m / 3 m (standard) / 8 m / 15 m] |
| | | Focus [SF15 / SF25] |
| | | thermoMETER CTFast |

Accessories page 40 - 43

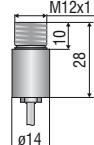
- Ancillary CF lens
- Protective window
- Mounting bracket / mounting bolt
- Air purge collar
- Right angle mirror
- Rail mount adapter for controller
- Massive housing
- Protective tube
- Laser sighting aid
- Digital-interface kits
- Certificate of calibration

CT / CTfast / CTM1/M2/M3

controller

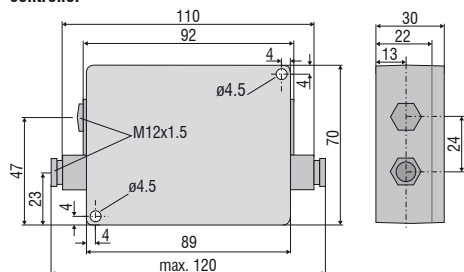
ancillary CF lens
(optional)

sensor

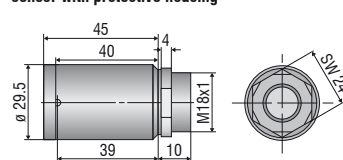


CThot / CTP-3 / CTP-7

controller

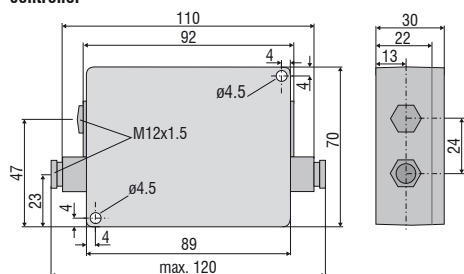


sensor with protective housing

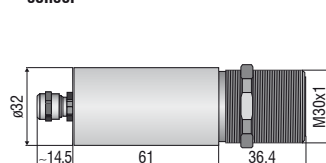


CTM3-XL

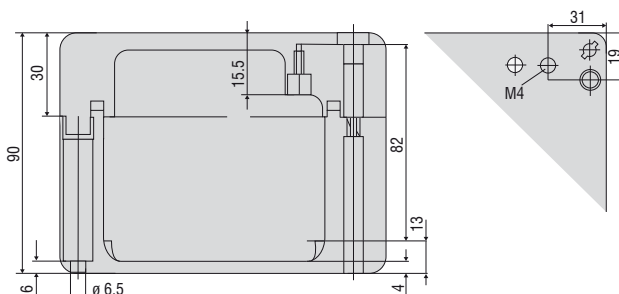
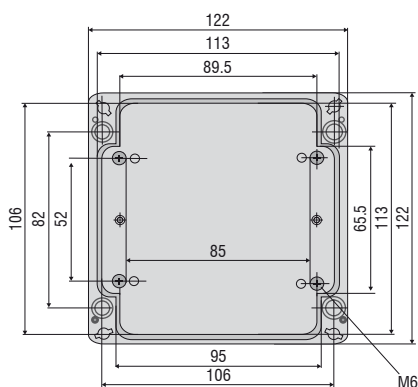
controller



sensor



CTex



| 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 M1/M2/M3/M5 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 M1/M2/M3/M5 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 M1/M2/M3/M5 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 M1/M2/M3/M5 sensors |
| 2970331 | TM-CFHAG-CT | Ancillary lens with external thread for M1/M2/M3/M5 sensors |
| 2970299 | TM-PWAG-CT | Protective window with external thread |
| 2970332 | TM-PWH-CT | Protective window for M1/M2/M3/M5 sensors |
| 2970333 | TM-PWHAG-CT | Protective window with external thread for M1/M2/M3/M5 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-CTL | 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 |
| 2970227 | TM-CANK-CT | CAN-Bus interface for thermoMETER CT/ protocol: CANopen presets: module address 20 (14H), 250 kBaud, 0-60 °C |
| 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 _{eff} , 0.4 A |

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

| CTM3-XL | | |
|---------|--------------|--|
| 2970352 | TM-FBXL-CT | Mounting bracket, adjustable in one axis |
| 2970353 | TM-ABXL-CT | Mounting bracket, adjustable in 2 axes |
| 2970354 | TM-APXL-CT | Air purge collar, stainless steel |
| 2970361 | TM-XLCERT-CT | Certificate of calibration |



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)



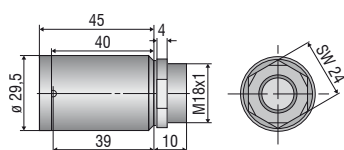
TM-FB2-CT
Mounting bracket for sensor and laser sighting aid



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 2450 °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