



More Precision

thermoMETER // Non-contact IR temperature sensors





thermoMETER CTM3

Miniaturized temperature sensor with $2.3\mu\text{m}$ measuring wavelength for measurements from 50°C

- Measuring range from 50°C to 1800°C
- Up to 85°C ambient temperature without cooling
- For processing of metals and composite materials
- Extended compensation for measuring errors using short measuring wavelength (e.g. with emissivity changes or misadjustment)
- High compatibility with electromagnetic fields e.g. with induction welding
- Compact sensor for installation even in confined space
- Selectable and scalable analog output, optional digital interfaces

Optical specifications thermoMETER CTM3

□ = smallest spot size (mm)

Standard Focus											
3SF22	22:1	7	9	18	27	36	45	55	64	73	
3SF33	33:1	7	7	12	18	24	30	36	42	48	
3SF75H1/H2/H3	75:1	7	7	7	8	11	14	17	20	23	
distance (mm)		0	200	400	600	800	1000	1200	1400	1600	
Close Focus (integrated CF lens)											
3CF22	22:1	6.5	6	5.5	5	9.2	14.5	19.7	24.9	30.1	35.4
3CF33	33:1	6.5	5.4	4.2	3.4	6.9	11.4	15.9	20.4	24.8	29.3
distance (mm)		0	40	80	110	150	200	250	300	350	400
Close Focus (integrated CF lens)											
3CF75H1/H2/H3	75:1	6.5	3.8	1.5	4.4	8.1	11.7	15.4	19	22.6	
distance (mm)		0	60	110	150	200	250	300	350	400	

Model	CTM-3SF22-C3	CTM-3SF33-C3	CTM-3SF75H1-C3	CTM-3SF75H2-C3	CTM-3SF75H3-C3
Optical resolution ¹	22:1	33:1	75:1	75:1	75:1
Temperature range ^{2,3}	50 to 400°C	100 to 600°C	150 to 1000°C	200 to 1500°C	250 to 1800°C
Spectral range	2.3μm				
System accuracy ^{4,5}	±(0.3% of reading + 2°C)				
Repeatability ⁴	±(0.1% of reading + 1°C)				
Temperature resolution (digital)	0.1°C				
Response time ⁶	1ms (90%)				
Emissivity/gain ²	0.100 to 1.100				
Transmissivity ²	0.100 to 1.100				
Signal processing ²	peak hold, valley hold, average; extended hold function with threshold and hysteresis				
Certificate of calibration	optional				
Outputs/analog	channel 1	0/4 - 20mA, 0 to 5/10V, thermocouple J, K			
Outputs/analog	optional	relay: 2 x 60VDC/42VAC _{eff} ; 0.4A; electrically isolated			
Alarm output		open - collector (24V/ 50mA)			
Outputs/digital	optional	USB, RS232, RS485, CAN, Profibus DP, Ethernet			
Output impedances	current output	mA max. 500Ω (with 8 - 36VDC)			
	voltage output	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			
Power supply		8 to 36VDC; max. 100mA			
Protection class		IP65 (NEMA-4)			
Ambient temperature		sensor: -40°C to 85°C controller: 0°C to 85°C			
Storage temperature		sensor: -40°C to 125°C controller: -40°C to 85°C			
Relative humidity		10 to 95%, non condensing			
Vibration	sensor	IEC 68-2-6: 3 G, 11 to 200Hz, any axis			
Shock	sensor	IEC 68-2-27: 50 G, 11ms, any axis			
Weight		sensor: 40g; controller: 420g			

¹ 90% energy

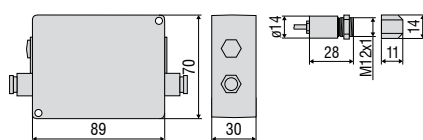
² adjustable via programming keys or software

³ target temperature > sensor temperature + 25°C

⁴ at ambient temperature: 23 ± 5°C

⁵ ε = 1, response time 1s

⁶ with dynamic adaption at low signal levels



Product identification

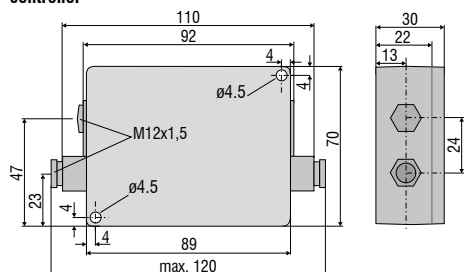
CTM-	3	SF22-	C3
Cable length [3m]			
Focus [SF22 / SF33 / SF75 / CF22 / CF33 / CF75]			
Spectral range [2.3μm]			
thermoMETER CTM			

Accessories page 40-43

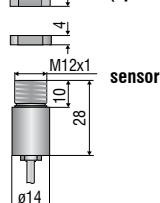
- Protective window
- Mounting bracket / Mounting bolt
- Air purge collar
- Right angle mirror
- Rail mount adapter for controller
- Massive housing
- Protective tube
- Laser sighting aid
- Digital-interface kits
- Certificate of calibration

CT / CTfast / CTM1/M2/M3

controller

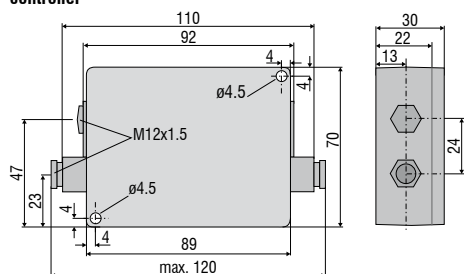


ancillary CF lens
(optional)

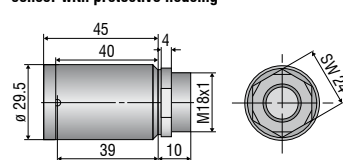


CThot / CTP-3 / CTP-7

controller

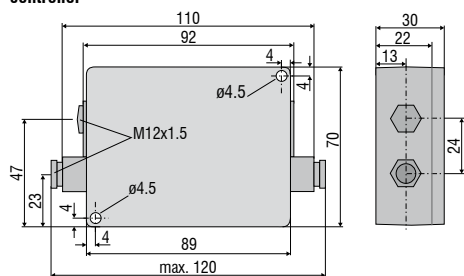


sensor with protective housing

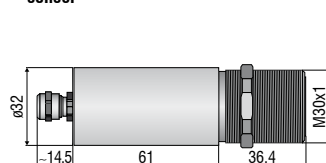


CTM3-XL

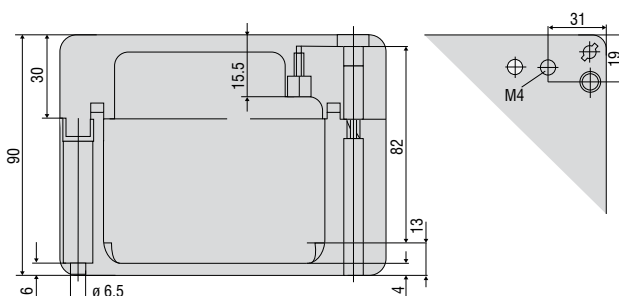
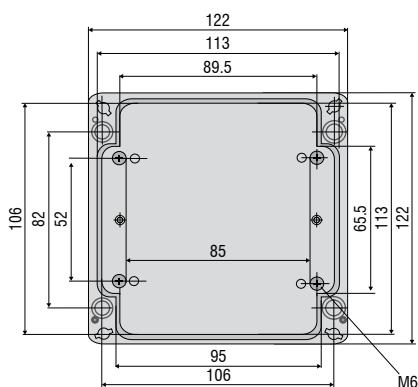
controller



sensor



CTex

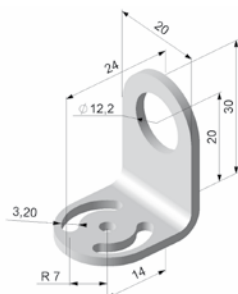


Mechanical accessories		
Art. No.	Model	
2970203	TM-FB-CT	Mounting bracket, fixed
2970325	TM-FB2-CT	Mounting bracket, adjustable in one axis, for simultaneous assembly of CT sensor and laser sighting aid
2970336	TM-FBMH-CT	Mounting bracket, adjustable in one axis, for massive housing
2970204	TM-AB-CT	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
2970211	TM-RAM-CT	Right angle mirror for measurements 90° 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 anodized aluminum 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
2970218	TM-MHB-CT	Massive housing made from brass
2970219	TM-MHBCF-CT	Massive housing made from brass with integrated ancillary CF lens
2970360	TM-MHBCFH-CT	Massive housing made from brass with integrated ancillary CF lens for M1/M2/M3/M5 sensors
2970220	TM-PT-CT	Protective tube made from brass
2970326	TM-PA-CT	Pipe adapter for the mounting of reflection protection tubes
2970327	TM-ST20-CT	Reflection protection tube; length 20mm
2970328	TM-ST40-CT	Reflection protection tube; length 40mm
2970329	TM-ST88-CT	Reflection protection tube; length 88mm
2970221	TM-LST-CT	Laser sighting aid for CT sensors incl. batteries (2xAlkaline AA)
2970300	TM-LSTOEM-CT	OEM laser sighting aid, 635nm, 3.5m cable, for connection to CT controller
2970300.008	TM-LSTOEM-CT(008)	OEM laser sighting aid, 635nm, 8m cable, for connection to CT controller
2970222	TM-EX-CT	Accessories kit for using CT in Ex areas (Zone 1: PTB 01 ATEX 2053/ E II (1/2) G [EEx ia/ib] IIC/IIIB), pre-assembled EX box, without Zener barriers, applicable in combination with CT sensors (except for CTfast)

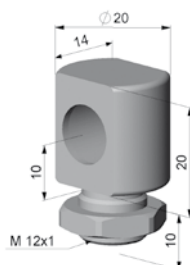
Optical accessories		
Art. No.	Model	
2970201	TM-CF-CT	Ancillary CF lens (only for SF models)
2970202	TM-PW-CT	Protective window (only for SF models)
2970297	TM-CFAG-CT	Ancillary lens with external thread
2970330	TM-CFH-CT	Ancillary lens for M1/M2/M3/M5 sensors
2970331	TM-CFHAG-CT	Ancillary lens with 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		
2970223	TM-USBK-CT	USB interface kit: USB interface, USB cable, Software CompactConnect, second cable gland for controller
2970224	TM-RS232K-CT	RS232 interface: 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-CT
2970226	TM-RS485B-CT	RS485 interface board incl. second cable gland
2970227	TM-CANK-CT	CAN-Bus interface for thermoMETER CT/ protocol: CANopen presettings: module address 20 (14H), 250kBaud, 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, software CompactConnect
2970230	TM-RI-CT	Relay interface: Two electrically isolated relays, 60VDC/ 42VAC _{RMS} , 0.4A
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



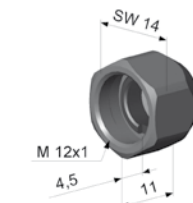
TM-FB-CT Mounting bracket, adjustable in one axis



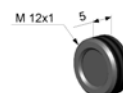
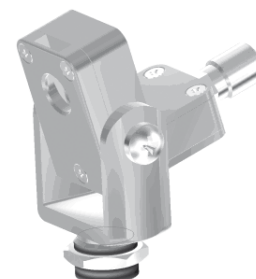
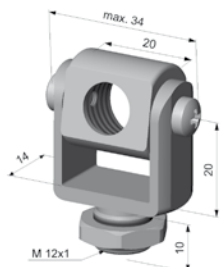
TM-AB-CT Mounting bracket, adjustable in two axes



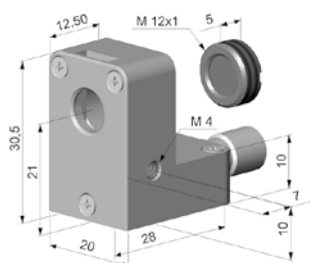
TM-MB-CT Mounting bolt with M12x1 thread adjustable in one axis



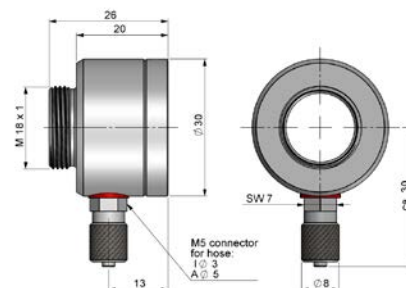
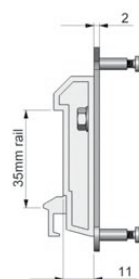
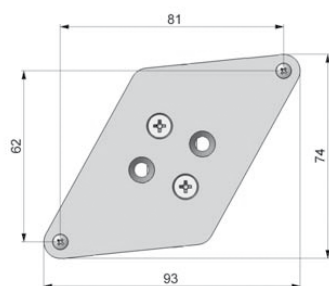
TM-CF-CT Ancillary CF lens (only for SF models)

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 fork

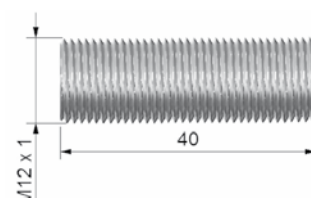
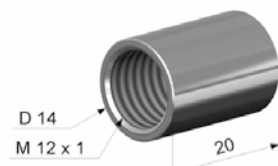
TM-MG-CT Mounting fork with M12x1 thread, adjustable in two axes

TM-APLCF-CT
Ancillary CF lens/protective window - integrable variant
for laminar air purge collar

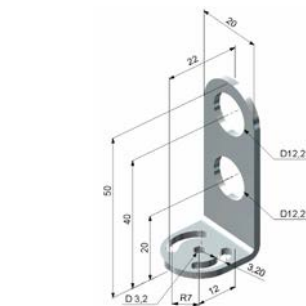
TM-RAIL-CT Rail mount adapter for controller

TM-APMH-CT Air purge collar made from stainless steel
for massive housing

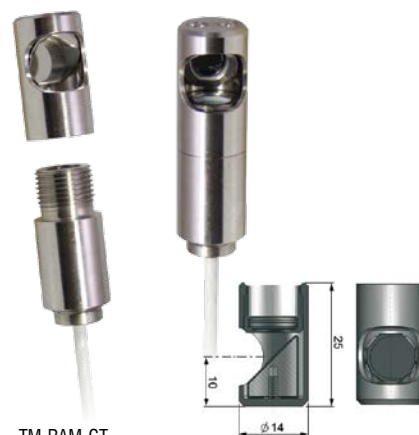
TM-PA-CT Pipe adapter for reflection protection tube



TM-ST40-CT Reflection protection tube



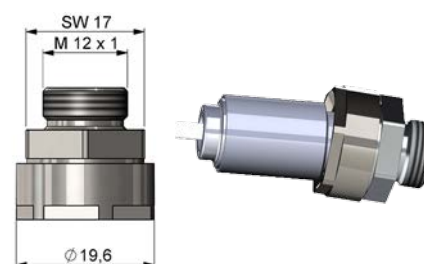
TM-FB2-CT
Mounting bracket for sensor and laser sighting aid



TM-RAM-CT
Right angle mirror



Technical drawing of a 1/2" x 18mm x 45mm ball bearing. The drawing shows a side view with dimensions: outer diameter 45mm, inner diameter 40mm, total length 45mm, inner bore length 39mm, and a 4mm wide outer ring. The inner bore is labeled M18x1. A cross-section view shows a 24mm wide slot.



TM-TAS-CT Pivoted joint for CT sensors



Technical drawing of a Tee fitting. Dimensions shown: SW 19, 7.50, 45, M12 x 1 SW 14, ca. 14.

Technical drawing of a Tee fitting (1/2" NPT x 1/2" NPT). The drawing shows the fitting with dimensions: overall length 45, outer diameter 21, and a hexagonal section with a width of 19 and a height of 5.50. The fitting is labeled M12 x 1 SW 14.

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

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