MICRO-EPSILON

More Precision

thermoMETER

Non-contact IR temperature sensors

thermoMETER CTM1/M2

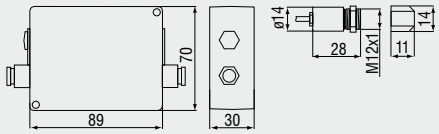
This state of the art non contact infrared temperature sensor operates with a wavelength of 1/1.6µm. This special spectral range minimises the emissivity errors on shiny targets and allows readings through glass. The integrated photon detector guarantees maximum sensitivity and extreme fast response time.

- ➔ Measuring range from 250° to 2200°C
- ➔ 1.0µm and 1.6µm wave length for measurements of metals, metal oxides, ceramic materials and shiny targets
- ➔ Short measuring wave length reduces error of temperature readings on surfaces with low or unknown emissivity
- ➔ Up to 125°C ambient temperature without cooling
- ➔ Precision optics (75:1 / 40:1) with different models for a specific focus point
- ➔ 1ms response time to capture fast events
- ➔ Fully programmable instrument for enhanced signal processing and I/O control
- ➔ Separate controller with easy accessible programming keys and multi colour LCD backlit display

Optical specifications thermoMETER CTM1/M2

□ = smallest spot size (mm)

Standard Focus optics											
1SF40/2SF40	**40:1**	7	7	10	15	20	25	30	35	40	
1SF75/2SF75	**75:1**	7	7	7	8	11	14	17	20	23	
distance in mm		*0*	*200*	*400*	*600*	*800*	*1000*	*1200*	*1400*	*1600*	
Close Focus optics (integrated CF lens)											
1CF40/2CF40	**40:1**	6.5	5.5	4.4	2.7	5.7	7.8	11.4	15	18.5	22.1
1CF75/2CF75	**75:1**	6.5	5	3.2	1.5	3.6	5.4	8.4	11.3	14.3	17.3
distance in mm		*0*	*50*	*100*	*110*	*170*	*200*	*250*	*300*	*350*	*400*



Product identification

CTM - 1 SF40 - C3

- Cable length [3m (standard) / 8m / 15m]
- Focus [SF40 / SF75 / CF40 / CF75]
- Spectral range [1µm / 1.6µm]
- thermoMETER CTM

Model	CTM-1SF40-C3	CTM-1SF75-C3	CTM-1SF75H1-C3	CTM-2SF40-C3	CTM-2SF75 -C3	CTM-2SF75H1 -C3
Optical resolution	40:1	75:1		40:1	75:1	
Temperature range [1]	485 to 1050°C	650 to 1800°C	800 to 2200°C	250 to 800°C	385 to 1600°C	490 to 2000°C
Spectral range	1.0µm			1.6µm		
System accuracy [2,3]	±(0.3% of reading +2°C)					
Repeatability [2]	±(0.1% of reading +1°C)					
Temperature resolution	±0.1°C					
Response time [4]	1ms (90%)					
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/analogue	channel 1	0/4 to 20mA, 0 to 5/10V, thermocouple J, K
	optional	relay: 2 x 60V DC/ 42V ACeff; 0.4A; optically isolated
Outputs/digital	optional	USB, RS232, RS485, CAN, Profibus DP, Ethernet
Output impedances	current output	mA max. 500Ω (8 to 36VDC)
	voltage output	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. 100mA

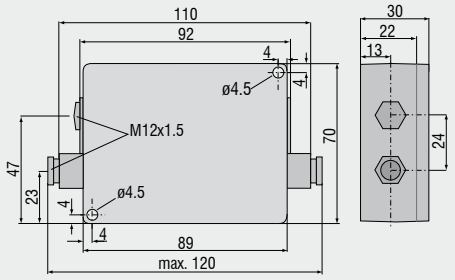
Environmental rating		IP 65 (NEMA-4)	
Ambient temperature	sensor	-20°C to 100°C	-20°C to 125°C
	controller	0°C to 85°C	
Storage temperature	sensor	-40°C to 100°C	-40°C to 125°C
	controller	-40°C to 85°C	
Relative humidity		10 to 95%, non condensing	
Vibration	sensor	IEC 68-2-6: 3 G, 11 to 200Hz, any axis	
Shock	sensor	IEC 68-2-27: 50 G, 11ms, any axis	
Weight		sensor: 40g; controller: 420g	

[1] adjustable via programming keys or software
[2] ± ambient temperature 23 ±5°C
[3] E=1, response time 1s
[4] with dynamic adaption at low signal levels

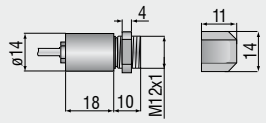
Accessories page 42 - 45

- CF lense
- Protective window
- Mounting bracket / Mounting bolt
- Air purge collar
- Right angle mirror
- Rail mount adapter for controller
- Massive housing
- Protective tube
- Laser sighting tool
- Digital-Interface kit
- Software CompactConnect
- Certificate of calibration
- Relay output module

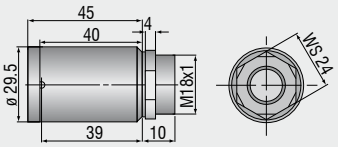
Controller



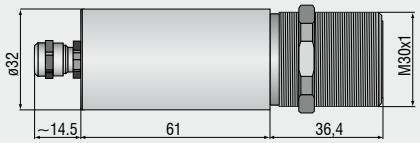
CT / CTfast / CTM1/M2/M3



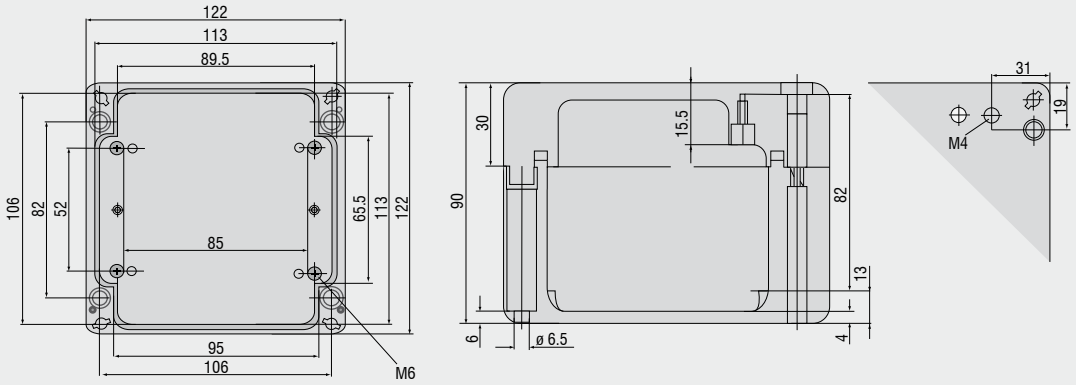
CThot / CTP7



CTM3-XL



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-tool
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 bolt with M12x1 thread
2970206	TM-MG-CT	Mounting fork, adjustable in 2 axes, with thread M12x1
2970207	TM-AP-CT	Air purge collar from 10:1 optics
2970335	TM-APS-CT	Air purge collar from 10:1 optics, stainless steel
2970208	TM-AP2-CT	Air purge collar for 2:1 optic
2970209	TM-APL-CT	Air purge collar, laminar
2970210	TM-APLCF-CT	Air purge collar, laminar, with integral CF-lens
2970357	TM-APLCFH-CT	Air purge collar, laminar, with integral CF-lens for M1/M2/M3/M5 sensors
2970386	TM-APMH-CT	Air purge collar, stainless steel for massive housing
2970211	TM-RAM-CT	Right angle mirror for 90°C measurements
2970212	TM-RAIL-CT	Rail mount adapter for CT controller
2970213	TM-COV-CT	Closed cover for controller
2970214	TM-MHS-CT	Massive housing, compact, stainless steel
2970215	TM-MHS-CF-CT	Massive housing, compact, stainless steel with integrated CF-lens
2970358	TM-MHSCFH-CT	Massive housing, compact, stainless steel with integrated CF-lens for M1/M2/M3/M5 sensors
2970216	TM-MHA-CT	Massive housing, compact, anodized aluminium
2970217	TM-MHACF-CT	Massive housing, compact, anodized aluminium with integrated CF-lens
2970359	TM-MHACFH-CT	Massive housing, compact, anodized aluminium with integrated CF-lens for M1/M2/M3 sensors
2970218	TM-MHB-CT	Massive housing, compact, brass
2970219	TM-MHBCF-CT	Massive housing, compact, brass with integrated CF-lens
2970360	TM-MHBCFH-CT	Massive housing, compact, brass with integrated CF-lens for M1/M2/M3/M5 sensors
2970220	TM-PT-CT	Protective tube, lang, brass
2970326	TM-PA-CT	Pipe adapter for sighting tube
2970327	TM-ST20-CT	Sighting tube, length 20mm
2970328	TM-ST40-CT	Sighting tube, length 40mm
2970329	TM-ST88-CT	Sighting tube, length 88mm
2970221	TM-LST-CT	Laser sighting tool for CT sensors incl. batteries (2xalkaline cells AA)
2970300	TM-LSTOEM-CT	OEM Laser pointing device, 635nm, rotation symmetrical, 3.5m cable
2970300.008	TM-LSTOEM-CT(008)	OEM Laser pointing device, 635nm, rotation symmetrical, 8m cable
2970222	TM-EX-CT	CTex-Kit: Accessory-Kit for use of the CT in hazardous locations according zone 1: PTB 01 ATEX 2053/ E II (1/2) G [EEx ia/ib] IIC/IIB, preassembled Ex-box without zener barriers, combinable with all standard CT SF sensors (except CTfast)

Optical accessoires

Art. No.	*Model*	
2970201	TM-CF-CT	CF-lens (SF sensors only)
2970202	TM-PW-CT	Protective window (SF sensors only)
2970297	TM-CFAG-CT	Lens with external thread
2970330	TM-CFH-CT	Lens for M1/M2/M3 sensors
2970331	TM-CFHAG-CT	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 incl. computer cable, software CompactConnect
2970224	TM-RS232K-CT	RS232 interface kit incl. computer cable, software CompactConnect
2970338	TM-RS485USBK-CT	RS485-USB-adapter, incl. PC cable, software CTconnect, terminal block, for use with TM-485B-CT
2970227	TM-CANK-CT	CAN-Bus interface for optris CT/ protocol: CANopen Presettings: module address 20 (14H), 250kBaud, 0-60°C
2970228	TM-PFBDPK-CT	Profibus-DPv1 interface for CT selectable with DIN M12 or SUB-D connection
2970229	TM-ETHNK-CT	Profibus-DPv1 interface for CT selectable with DIN M12 or SUB-D connection
2970230	TM-RI-CT	Relay interface: Two optically isolated relays, 60VDC/ 42VACRMS, 0,4A
2970226	TM-RS485B-CT	RS485 interface

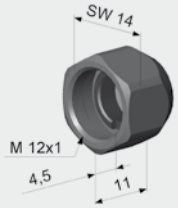
Calibration

2970231	TM-CERT-CT	Certificate of calibration acc. ISO9001: testing procedure with defined ambient temperatures, target dimensions and distances; Test temperatures 20°C/ 100°C/ 500°C
2970310	TM-HTCERT-CT	Certificate of calibration for CTM sensors

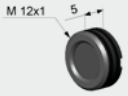
CTM3-XL

2970352	TM-FBXL-CT	Mounting bracket, adjustable in one axis
2970353	TM-ABXL-CT	Mounting bracket, adjustable in two axes
2970354	TM-APXL-CT	Air purge collar
2970361	TM-XLCERT-CT	Certificate of calibration

TM-FB-CT Mounting bracket, fixed

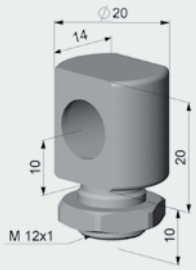


TM-CF-CT Close Focus Lens (SF sensors only)

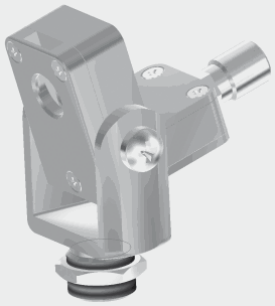


TM-CFAG-CT CF lens with external thread resp.
TM-PWAG-CT Protective window with external thread

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

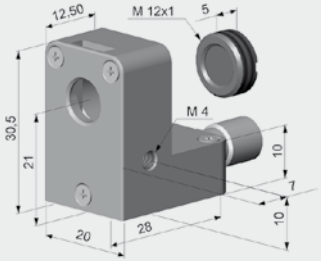


TM-MB-CT Mounting bolt with
M12x1 thread adjustable

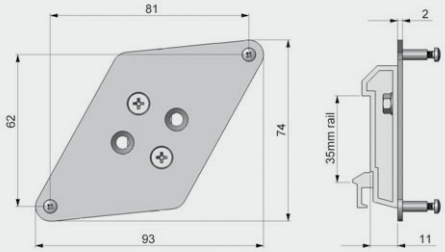


TM-APL-CT Laminar air purge collar and
TM-MG-CT Mounting fork

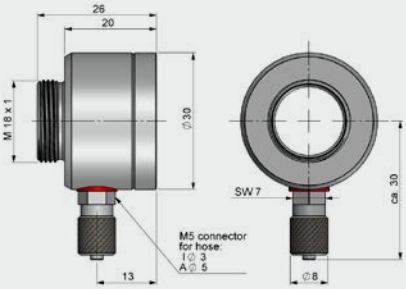
TM-MG-CT Mounting fork witth M 12x1 thread adjustable in two axes



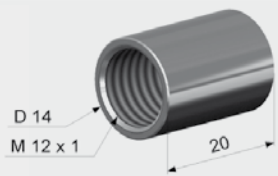
TM-APLCF-CT
CF lense/ protective window - integral
option for air purge collar



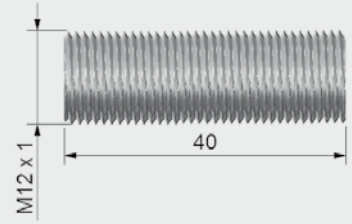
TM-RAIL-CT Rail mount adapter for controller



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

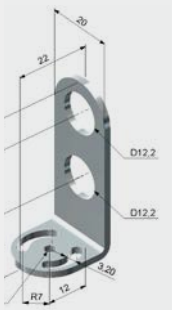


TM-PA-CT Pipe adapter for sighting tube



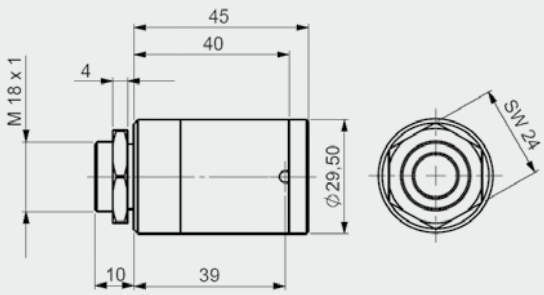
TM-ST40-CT Sighting tube

TM-LST-CT
Laser-Sighting tool



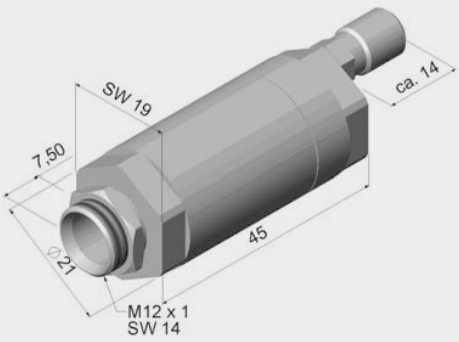
TM-FB2-CT
Laser-Sighting mounting bracket

TM-RAM-CT
Right angle mirror

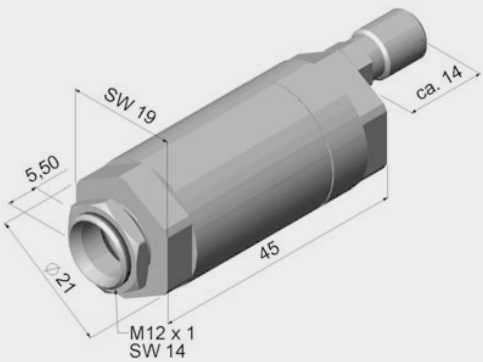


TM-MHS-CT Massive housing, compact, stainless steel
TM-MHA-CT Massive housing, compact, aluminium
TM-MHB-CT Massive housing, compact, brass

The lens must be kept clean at all times from dust, smoke, fumes and other contaminants in order to avoid reading errors. These effects can be reduced by using an air purge collar.



TM-AP-CT
Standard air purge collar for
10:1 / 15:1 / 22:1 optics



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

High performance sensors made by Micro-Epsilon

Sensors and systems for displacement and position

Sensors and measurement devices for non-contact temperature measurement

2D/3D profile sensors (laser scanner)

Measurement and inspection systems for quality assurance

Optical micrometers, fibre optic sensors and optical fibres

Colour recognition sensors, LED analysers and colour online spectrometer

Modifications reserved / Y9761229-D031014SGO

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