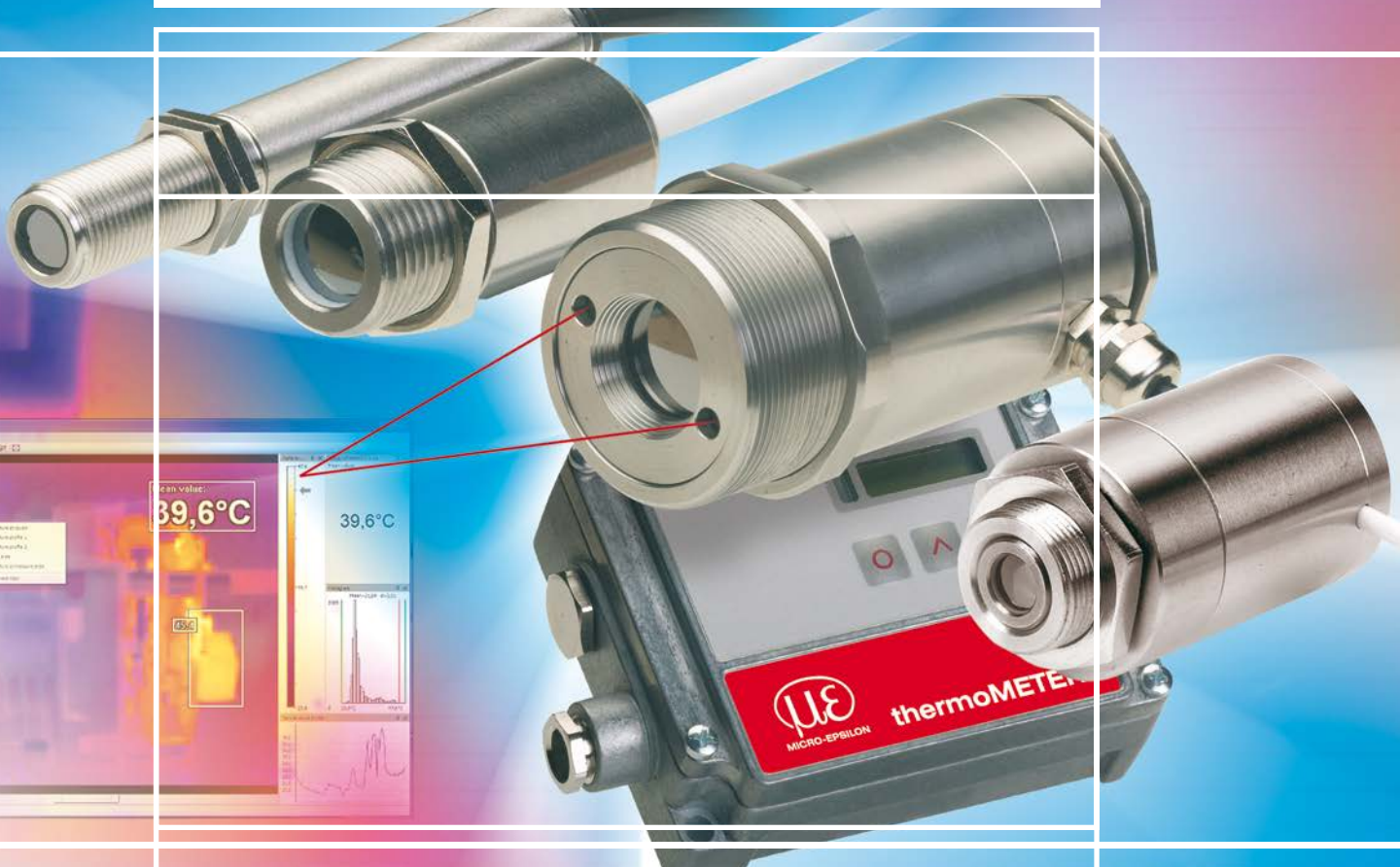




More Precision

thermoMETER
Non-contact IR temperature sensors





thermoMETER CTM3

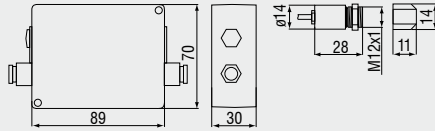
This state of the art non contact infrared temperature sensor operates with a wavelength of $2.3\mu\text{m}$. This special spectral range minimises the emissivity errors and allows readings through glass down to low temperatures of 50°C . The integrated photon detector guarantees maximum sensitivity and extreme fast response time.

- Measuring range from 50° to 1800°C
- $2.3\mu\text{m}$ 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 / 33:1 / 22:1) 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 CTM3

□ = smallest spot size (mm)

| Standard Focus optics | | | | | | | | | | | |
|---|-------------|-----|-----|-----|-----|-----|------|------|------|------|------|
| 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 in mm | | 0 | 200 | 400 | 600 | 800 | 1000 | 1200 | 1400 | 1600 | |
| Close Focus optics (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 |
| 3CF75H1/H2/H3 | 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 | 40 | 80 | 110 | 150 | 200 | 250 | 300 | 350 | 400 |



Product identification

CTM - 3 SF22 - C3

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

| 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 | 2.3 μ m | | | | |
| System accuracy ^{4,5} | \pm (0.3% of reading +2°C) | | | | |
| Repeatability ⁴ | \pm (0.1% of reading +1°C) | | | | |
| Temperature resolution (digital) | \pm 0.1°C | | | | |
| Response time ⁶ | 1ms (90%) | | | | |
| Emissivity/gain ² | 0.100 to 1.100 | | | | |
| Transmissivity/gain 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/analogue | channel 1 | 0/4 to 20mA, 0 to 5/10V, thermocouple J, K | | | |
| Outputs/analogue | optional | relay: 2 x 60 VDC/42 VAC _{eff} ; 0.4A; optically isolated | | | |
| Alarm output | | open-collector (24V / 50mA) | | | |
| Outputs/digital | optional | USB, RS232, RS485, CAN, Profibus DP, Ethernet | | | |
| Output impedances | current output voltage output | relay max. 500 Ω (8 to 36VDC) min. 100k Ω load impedance; thermocouple 20 Ω | | | |
| 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 | | | |
| Environmental rating | | IP 65 (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: 3G, 11 to 200Hz, any axis | | | |
| Shock | sensor | IEC 68-2-27: 50G, 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

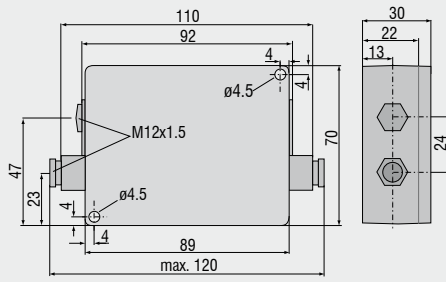
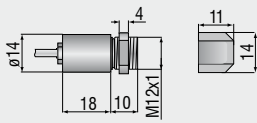
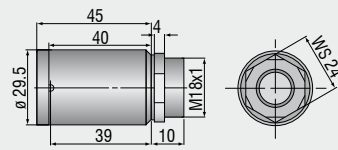
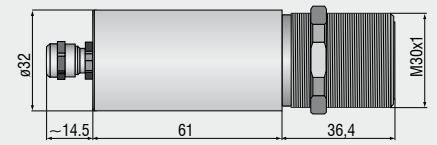
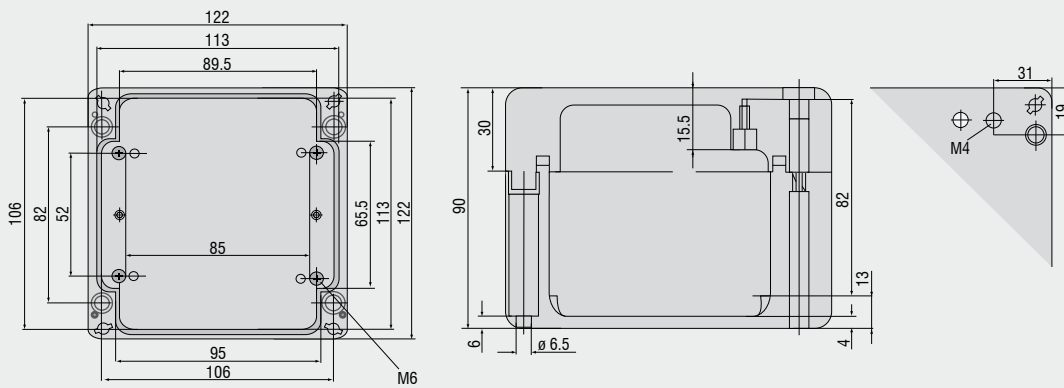
⁴ \pm ambient temperature 23 \pm 5°C

⁵ E=1, response time 1s

⁶ with dynamic adaption at low signal levels

Accessories page 42 - 45

- ▶ 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 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

| Art. No. | Model | |
|----------|-----------------|---|
| 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

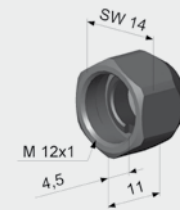
| Art. No. | Model | |
|----------|--------------|---|
| 2970231 | TM-CERT-CT | Certificate of calibration acc. ISO9001: testing procedure with defined ambient temperatures, target dimensions and distances; Test temperatures 20°C/ 100°C/ 500°C |
| 2970310 | TM-HTCERT-CT | Certificate of calibration for CTM sensors |

CTM3-XL

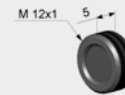
| Art. No. | Model | |
|----------|--------------|--|
| 2970352 | TM-FBXL-CT | Mounting bracket, adjustable in one axis |
| 2970353 | TM-ABXL-CT | Mounting bracket, adjustable in two axes |
| 2970354 | TM-APXL-CT | Air purge collar |
| 2970361 | TM-XLCERT-CT | Certificate of calibration |



TM-FB-CT Mounting bracket, fixed



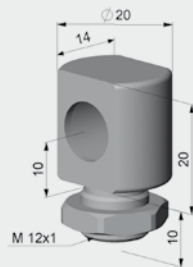
TM-CF-CT Close Focus Lens (SF sensors only)



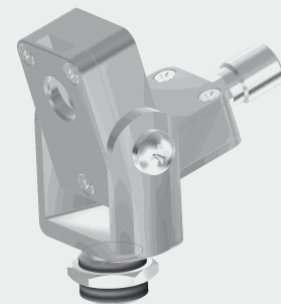
TM-CFAG-CT CF lens with external thread resp.
TM-PWAG-CT Protective window with external thread



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



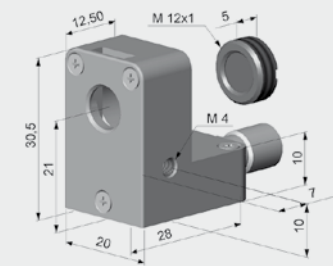
TM-MB-CT Mounting bolt with M12x1 thread adjustable



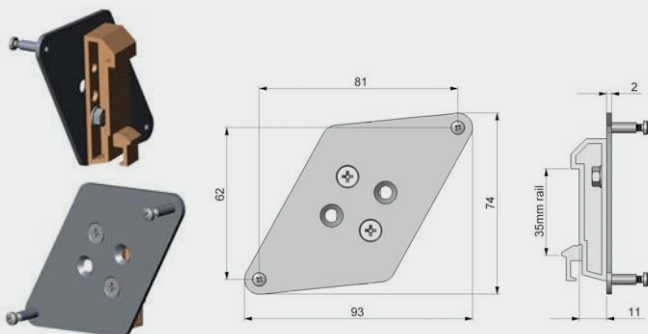
TM-APL-CT Laminar air purge collar and
TM-MG-CT Mounting fork



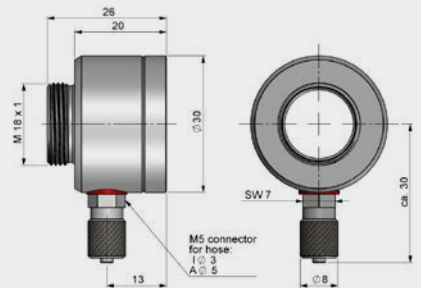
TM-MG-CT Mounting fork with M 12x1 thread adjustable in two axes



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



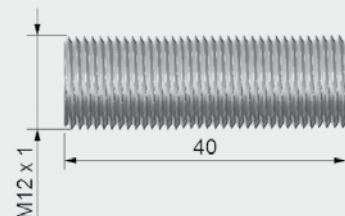
TM-RAIL-CT Rail mount adapter for controller



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



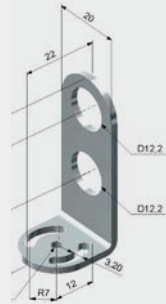
TM-PA-CT Pipe adapter for sighting tube



TM-ST40-CT Sighting tube



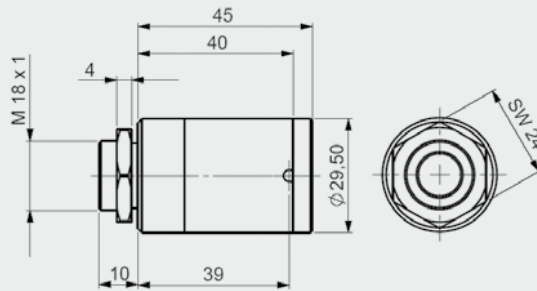
TM-LST-CT
Laser-Sighting tool



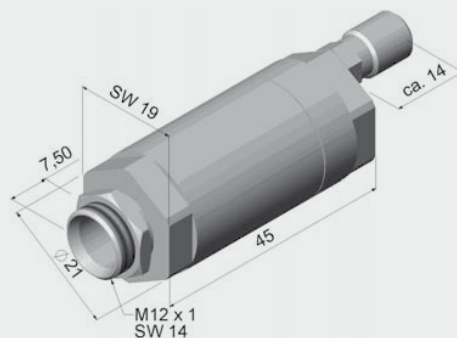
TM-FB2-CT
Laser-Sighting mounting bracket



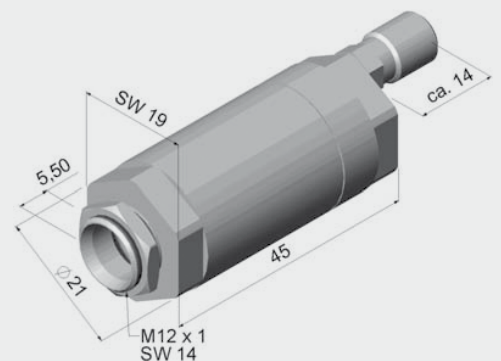
TM-RAM-CT
Right angle mirror



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



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

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.

High performance sensors made by Micro-Epsilon



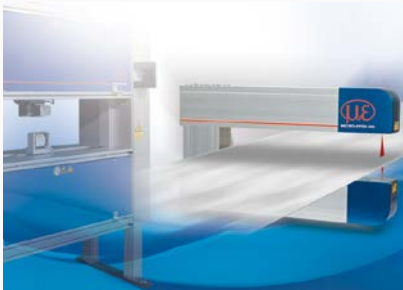
Sensors and systems for displacement and position



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



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