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
\( \omega = \text{smallest spot size / focal point (mm)} \)

<table>
<thead>
<tr>
<th>Standard Focus</th>
<th>2.1</th>
<th>5</th>
<th>53.8</th>
<th>102.5</th>
<th>151.3</th>
<th>200</th>
<th>251.3</th>
<th>302.5</th>
<th>353.8</th>
<th>405</th>
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<tbody>
<tr>
<td>SF02</td>
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<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SF10</td>
<td>10.1</td>
<td>6.5</td>
<td>14.9</td>
<td>23.3</td>
<td>31.6</td>
<td>40</td>
<td>51.6</td>
<td>63.3</td>
<td>74.9</td>
<td>86.5</td>
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<tr>
<td>distance in mm</td>
<td>0</td>
<td>100</td>
<td>200</td>
<td>300</td>
<td>400</td>
<td>500</td>
<td>600</td>
<td>700</td>
<td>800</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Close Focus (integrated CF lens)</th>
<th>10.1</th>
<th>6.5</th>
<th>4.8</th>
<th>3</th>
<th>9.3</th>
<th>17.3</th>
<th>25.2</th>
<th>33.1</th>
<th>41</th>
<th>48.9</th>
<th>56.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>CF10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>distance in mm</td>
<td>0</td>
<td>15</td>
<td>30</td>
<td>50</td>
<td>75</td>
<td>100</td>
<td>125</td>
<td>150</td>
<td>175</td>
<td>200</td>
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</tr>
</tbody>
</table>

Note: Do not use any external CF lens!
<table>
<thead>
<tr>
<th>Model</th>
<th>CTH-SF02-C3H</th>
<th>CTH-SF10-C3H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optical resolution</td>
<td>2:1</td>
<td>10:1</td>
</tr>
<tr>
<td>Temperature range (^1)</td>
<td>-40 to 975 °C</td>
<td></td>
</tr>
<tr>
<td>Spectral range</td>
<td>8 to 14 µm</td>
<td></td>
</tr>
<tr>
<td>System accuracy (^2)</td>
<td>±1 % or ±1.5 °C</td>
<td>±0.5 % or ±0.5 °C</td>
</tr>
<tr>
<td>Repeatability (^2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature resolution</td>
<td>0.25 °C</td>
<td></td>
</tr>
<tr>
<td>Response time</td>
<td>100 ms</td>
<td></td>
</tr>
<tr>
<td>Emissivity/gain (^1)</td>
<td>0.100 to 1.100</td>
<td>0.100 to 1.100</td>
</tr>
<tr>
<td>Transmissivity/gain (^1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signal processing (^5)</td>
<td>peak hold, valley hold, average; extended hold function with threshold and hysteresis</td>
<td></td>
</tr>
<tr>
<td>Certificate of calibration</td>
<td>optional</td>
<td></td>
</tr>
<tr>
<td>Outputs/analog</td>
<td></td>
<td></td>
</tr>
<tr>
<td>channel 1</td>
<td>0/4 to 20 mA, 0 to 5/10 V, thermocouple J, K</td>
<td></td>
</tr>
<tr>
<td>channel 2</td>
<td>sensor temperature (-20 to 250 °C as 0 to 5 V or 0 to 10 V), alarm output</td>
<td></td>
</tr>
<tr>
<td>Outputs/analog</td>
<td>optional</td>
<td></td>
</tr>
<tr>
<td>current output</td>
<td>mA max. 500 Ω (with 5 to 36 VDC)</td>
<td></td>
</tr>
<tr>
<td>voltage output</td>
<td>min. 100 kΩ load impedance, thermocouple 20 Ω</td>
<td></td>
</tr>
<tr>
<td>Outputs/digital</td>
<td></td>
<td></td>
</tr>
<tr>
<td>optional</td>
<td>USB, RS232, RS485, CAN, Profibus DP, Ethernet</td>
<td></td>
</tr>
<tr>
<td>Input</td>
<td></td>
<td></td>
</tr>
<tr>
<td>programmable functional inputs for external emissivity adjustment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ambient temperature compensation, trigger (reset of hold functions)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable length</td>
<td>3 m (standard), 8 m, 15 m</td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td>8 to 36 VDC; max. 100 mA</td>
<td></td>
</tr>
<tr>
<td>Protection class</td>
<td>IP65 (NEMA-4)</td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>sensor: -20 °C to 250 °C; controller: 0 °C to 85 °C</td>
<td></td>
</tr>
<tr>
<td>Storage temperature</td>
<td>sensor: -40 °C to 250 °C; controller: -40 °C to 85 °C</td>
<td></td>
</tr>
<tr>
<td>Relative humidity</td>
<td>10 to 95 %, non-condensing</td>
<td></td>
</tr>
<tr>
<td>Vibration</td>
<td>IEC 68-2-6: 3 G, 11 to 200 Hz, any axis</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>sensor: 40 g (without massive housing), 200 g (with solid case); controller: 420 g</td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) adjustable via programming keys or software

\(^2\) ambient temperature 23 ±5 °C and object temperatures ≥ 20 °C; whichever is greater
Dimensions of CT series

CT / CTfast / CTM1/M2/M3

CThot / CTP-3 / CTP-7

CTM3-XL

CTex
### Accessories and Software of CT series

#### Mechanical accessories

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>2970203</td>
<td>TM-FB-CT</td>
</tr>
<tr>
<td>2970325</td>
<td>TM-FB2-CT</td>
</tr>
<tr>
<td>2970336</td>
<td>TM-FBMH-CT</td>
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<tr>
<td>2970204</td>
<td>TM-AB-CT</td>
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<tr>
<td>2970205</td>
<td>TM-MB-CT</td>
</tr>
<tr>
<td>2970206</td>
<td>TM-MG-CT</td>
</tr>
<tr>
<td>2970207</td>
<td>TM-AP-CT</td>
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<tr>
<td>2970208</td>
<td>TM-AP2-CT</td>
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<tr>
<td>2970209</td>
<td>TM-APL-CT</td>
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<td>2970210</td>
<td>TM-APLCF-CT</td>
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<tr>
<td>2970366</td>
<td>TM-APIMH-CT</td>
</tr>
<tr>
<td>2970211</td>
<td>TM-RAM-CT</td>
</tr>
<tr>
<td>2970212</td>
<td>TM-RAIL-CT</td>
</tr>
<tr>
<td>2970213</td>
<td>TM-COV-CT</td>
</tr>
<tr>
<td>2970214</td>
<td>TM-MHS-CT</td>
</tr>
<tr>
<td>2970215</td>
<td>TM-MHSOF-CT</td>
</tr>
<tr>
<td>2970216</td>
<td>TM-MHA-CT</td>
</tr>
<tr>
<td>2970217</td>
<td>TM-MHACOF-CT</td>
</tr>
<tr>
<td>2970219</td>
<td>TM-MHBCF-CT</td>
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<td>2970220</td>
<td>TM-MHBCFH-CT</td>
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<tr>
<td>2970221</td>
<td>TM-PFBDPK-CT</td>
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<tr>
<td>2970222</td>
<td>TM-RI-CT</td>
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</table>

#### Optical accessories

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>2970201</td>
<td>TM-CF-CT</td>
</tr>
<tr>
<td>2970202</td>
<td>TM-PW-CT</td>
</tr>
<tr>
<td>2970297</td>
<td>TM-CFAG-CT</td>
</tr>
<tr>
<td>2970330</td>
<td>TM-CFH-CT</td>
</tr>
<tr>
<td>2970331</td>
<td>TM-CFHAG-CT</td>
</tr>
<tr>
<td>2970332</td>
<td>TM-PWH-CT</td>
</tr>
<tr>
<td>2970333</td>
<td>TM-PWHAG-CT</td>
</tr>
<tr>
<td>2970233</td>
<td>TM-EX-CT</td>
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</tbody>
</table>

#### Interfaces

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>2970223</td>
<td>TM-USBK-CT</td>
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<tr>
<td>2970224</td>
<td>TM-RS232K-CT</td>
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<tr>
<td>2970338</td>
<td>TM-RS485USBK-CTL</td>
</tr>
<tr>
<td>2970226</td>
<td>TM-RS485B-CT</td>
</tr>
<tr>
<td>2970227</td>
<td>TM-CANK-CT</td>
</tr>
<tr>
<td>2970228</td>
<td>TM-PFBDPK-CT</td>
</tr>
<tr>
<td>2970229</td>
<td>TM-ETHNK-CT</td>
</tr>
<tr>
<td>2970230</td>
<td>TM-RI-CT</td>
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</table>

#### Calibration

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Model</th>
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</thead>
<tbody>
<tr>
<td>2970231</td>
<td>TM-CERT-CT</td>
</tr>
<tr>
<td>2970310</td>
<td>TM-HTCERT-CT</td>
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</tbody>
</table>

#### CTM3-XL

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>2970352</td>
<td>TM-FBXL-CT</td>
</tr>
<tr>
<td>2970353</td>
<td>TM-ABXL-CT</td>
</tr>
<tr>
<td>2970354</td>
<td>TM-APXL-CT</td>
</tr>
<tr>
<td>2970361</td>
<td>TM-XLCERT-CT</td>
</tr>
</tbody>
</table>
**Accessories for CT series**

- TM-MB-CT: Mounting bolt with M12x1 thread, adjustable in one axis
- TM-APLCF-CT: Ancillary CF lens/protective window - integrable variant for laminar air purge collar
- TM-APMH-CT: Air purge collar made from stainless steel for massive housing
- TM-MG-CT: Mounting fork with M12x1 thread, adjustable in two axes
- TM-AB-CT: Mounting bracket, adjustable in two axes
- TM-MB-CT: Mounting bolt with M12x1 thread, adjustable in one axis
- TM-FB-CT: Mounting bracket, adjustable in one axis
- TM-CF-CT: Ancillary CF lens (only for SF models)
- TM-APAG-CT: Ancillary CF lens with external thread
- TM-PWAG-CT: Protective window with external thread
- TM-RAIL-CT: Rail mount adapter for controller
- TM-APL-CT: Air purge collar, laminar and
- TM-MG-CT: Mounting fork
- TM-APLCF-CT: Ancillary CF lens/protective window - integrable variant for laminar air purge collar
- 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
Accessories for CT series

- **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-MHB-CT** Massive housing, brass
- **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
Further IR temperature measurement devices from Micro-Epsilon

**thermoIMAGER TIM**
Compact USB thermal imaging cameras for precise thermography

**thermoMETER CTVideo/CSVideo**
Infrared temperature sensors with crosshair laser sighting and video output

**thermoMETER Handheld**
Innovative handheld pyrometer with laser sighting for inspection and maintenance