More Precision

thermoMETER // Non-contact infrared temperature sensors
thermoMETER CSmicro

Miniature OEM infrared temperature sensor with controller integrated in the cable

- Measuring range from -40°C to 1030°C
- Applicable in ambient temperatures up to 120°C without cooling (sensor)
- Robust, silicon-coated lens
- Integrated controller with LED alarm display and intelligent sighting aid, alarm signal, temperature-code display or self-diagnostics
- Integrated controller in the cable
- Scalable analog output and simultaneous alarm output
- Protection against short circuit and polarity change
- Programmable controller
- Optional USB interface and software for programming
- Best price - ideal for OEM applications

Optical specifications thermoMETER CSmicro

\( \square = \) smallest spot size / focal point (mm)

<p>| Standard Focus | SF02 2:1 | 5 | 53.8 | 102.5 | 151.3 | 200 | 251.3 | 302.5 | 353.8 | 405 |
| SF15 15:1 | 6.5 | 11.6 | 16.6 | 21.7 | 26.7 | 35 | 43.3 | 51.6 | 59.9 |
| Close Focus (with optionally available CF lens) | CF02 2:1 | 7 | 6 | 5 | 4.1 | 3.1 | 2.5 | 3.3 | 5.4 | 7.5 | 9.5 |
| CF15 15:1 | 7 | 3.9 | 0.8 | 4.7 | 8.6 | 10.9 | 12.5 | 16.4 | 20.3 | 24.2 |
| distance in mm | 0 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 |</p>
<table>
<thead>
<tr>
<th>Model</th>
<th>CSmi-SF02-C1</th>
<th>CSmi-SF15-C1</th>
<th>CSmiHS-SF15-C4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optical resolution</td>
<td>2:1</td>
<td>15:1</td>
<td>15:1</td>
</tr>
<tr>
<td>Temperature range</td>
<td>-40°C to 1030°C&lt;sup&gt;1&lt;/sup&gt;</td>
<td>-20°C to 150°C</td>
<td></td>
</tr>
<tr>
<td>Spectral range</td>
<td>8 to 14µm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spectral accuracy</td>
<td>± 1.0% or ± 1.0°C&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repeatability</td>
<td>±0.5% or ±0.5°C&lt;sup&gt;2&lt;/sup&gt;</td>
<td>±0.3% or ±0.3°C&lt;sup&gt;3&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Temperature coefficient</td>
<td>± 0.05°C/C or ± 0.05%/°C&lt;sup&gt;4&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature resolution</td>
<td>0.15°C&lt;sup&gt;4&lt;/sup&gt;</td>
<td>0.025°C&lt;sup&gt;4&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Response time (90%)</td>
<td>30ms (adjustable up to 999s via optional programming adapter)</td>
<td>150ms (adjustable up to 999s via optional programming adapter)</td>
<td></td>
</tr>
<tr>
<td>Emissivity/Gain</td>
<td>0.100 to 1.100&lt;sup&gt;1&lt;/sup&gt;</td>
<td>0.100 to 1.100&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Transmissivity/gain</td>
<td>0.100 to 1.100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signal processing</td>
<td>peak hold, valley hold, average; extended hold function with threshold and hysteresis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions of controller</td>
<td>length 35mm; ø12mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outputs/analogue</td>
<td>0 to 5V or 0 to 10V 1/10/100 mV/°C</td>
<td>4 to 20mA</td>
<td></td>
</tr>
<tr>
<td>Max. loop resistance</td>
<td>-</td>
<td>1000Ω&lt;sup&gt;7&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Outputs/alarm</td>
<td>alarm (50mA/24V)</td>
<td>0-30V / 500mA (open collector)</td>
<td></td>
</tr>
<tr>
<td>Outputs/digital (optional)</td>
<td>mono/bidirectional, 9.6kBaud, 0/3V level, alternative USB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inputs</td>
<td>programmable functional inputs for external emissivity adjustment (0 to 5VDC), hold function or USB communication</td>
<td>programmable functional input for triggered signal output or peak hold function</td>
<td></td>
</tr>
<tr>
<td>LED functions</td>
<td>alarm display, automatic aiming aid, self-diagnostics, temperature display (via temp. code)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable length</td>
<td>1m (standard length); 0.5m between sensor and controller; 0.4m between controller and terminal device</td>
<td>4m (0.5m sensor - controller); sensor incl. massive housing TM-MHS-CT (ø29.5mm x 55mm)</td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td>9mA (5 to 30VDC)</td>
<td>4...20mA (5 to 30VDC)</td>
<td></td>
</tr>
<tr>
<td>Protection class</td>
<td>IP65 (NEMA-4) sensor head</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>sensor: -20°C to 120°C controller: -20°C to 80°C</td>
<td>sensor: -20°C to 75°C controller: -20°C to 75°C</td>
<td></td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-40°C to 85°C (sensor and controller)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relative humidity</td>
<td>10 to 95%, non-condensing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vibration</td>
<td>IEC 68-2-6: 3 G, 11 to 200Hz, any axis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>42g</td>
<td>200g</td>
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</tbody>
</table>

<sup>1</sup> adjustable via software
<sup>2</sup> adjustable via 0 to 5VDC input or software
<sup>3</sup> ambient temperature ±5°C, whichever is greater; object temperature > 0°C
<sup>4</sup> ambient temperature ±5°C, whichever is greater; object temperature >20°C
<sup>5</sup> with object temperature <100°C; time constant from >0.2s
<sup>6</sup> with object temperature > 20°C; time constant from >0.2s
<sup>7</sup> depends on supply voltage

### Accessories page 54 - 55
- Ancillary CF lens
- Protective window
- Mounting bracket / mounting bolt
- Air purge collar
- Right angle mirror
- USB kit
Dimensions of CS series

CS Laser

CS

Sensor with integrated controller

Ancillary CF lens (optional)

CS Micro / CS Micro 2W

Ancillary CF lens (optional)

Sensor

Controller

USB interface

CX

Controller
Mechanical accessories CS / CSmicro / CSmicro 2W

Art. No. | Model |
--- | --- |
2970279 | Emissivity Mounting bracket, fixed |
2970280 | TM-AB-CS Mounting bracket, adjustable |
2970281 | TM-MB-CS Mounting bolts with M12x1 thread |
2970282 | TM-MG-CS Mounting fork, adjustable in 2 axes, with M12x1 fastening |
2970283 | TM-AP-CS Air purge collar for 10:1 sensors |
2970284 | TM-APL-CS Air purge collar, laminar |
2970285 | TM-APLCF-CS Air purge collar, laminar with integrated ancillary CF lens |
2970286 | TM-RAM-CS Right angle mirror for measurements 90°C to the sensor axis |
2970287 | TM-USBK-CS USB kit: USB programming adapter, CompactConnect software |

Optical accessories CS / CSmicro / CSmicro 2W

Art. No. | Model |
--- | --- |
2970277 | TM-CF-CS Ancillary CF lens for CS models |
2970278 | TM-CF-CS Aluminum Protective window for CS models |

Calibration CS / CSmicro / CSmicro 2W

Art. No. | Model |
--- | --- |
2970288 | TM-CERT-CS Certificate of calibration |

Mechanical accessories CX

Art. No. | Model |
--- | --- |
2970307 | TM-AP-CX Air purge collar, aluminum (anodized) |
2970321 | TM-FB-CX Mounting bracket, adjustable in 1 axis, stainless steel |
2970322 | TM-AB-CX Mounting bracket, adjustable, in 2 axes, stainless steel |
2970311 | TM-USBK-CX USB kit: USB programming adapter, CompactConnect software |

Optical accessories CX

Art. No. | Model |
--- | --- |
2970302 | TM-CF-CX Ancillary CF lens for CX models |
2970303 | TM-PW-CX Protective window for CX models |

Calibration CX

Art. No. | Model |
--- | --- |
2970323 | TM-CERT-CX Certificate of calibration |
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