thermoMETER // Non-contact infrared temperature sensors
More Precision
thermoMETER CSmicro 2W
Miniature OEM two-wire IR temperature sensor with controller integrated in the cable
- Measuring range from -40°C to 1600°C
- Applicable in ambient temperatures up to 180°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 2W
\[ d = \text{smallest spot size / focal point (mm)} \]

### Standard Focus

<table>
<thead>
<tr>
<th>Lens</th>
<th>Spot Size</th>
<th>Distance (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SF15</td>
<td>6.5</td>
<td>11.6</td>
</tr>
<tr>
<td>SF22</td>
<td>6.5</td>
<td>10.5</td>
</tr>
<tr>
<td>SF40</td>
<td>6.5</td>
<td>10.7</td>
</tr>
<tr>
<td>SF75</td>
<td>6.5</td>
<td>8.1</td>
</tr>
</tbody>
</table>

### Close Focus (with optionally available CF lens)

<table>
<thead>
<tr>
<th>Lens</th>
<th>Spot Size</th>
<th>Distance (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CF15</td>
<td>7</td>
<td>3.9</td>
</tr>
<tr>
<td>CF22</td>
<td>7</td>
<td>3.8</td>
</tr>
</tbody>
</table>

### Close Focus (integrated CF lens in the sensor head)

<table>
<thead>
<tr>
<th>Lens</th>
<th>Spot Size</th>
<th>Distance (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CF40</td>
<td>6.5</td>
<td>4.4</td>
</tr>
<tr>
<td>CF75</td>
<td>6.5</td>
<td>3.8</td>
</tr>
</tbody>
</table>

\[ d = \text{smallest spot size / focal point (mm)} \]
<table>
<thead>
<tr>
<th>Model</th>
<th>CSmi2W-SF15-C1</th>
<th>CSmi2W-SF15H-C1</th>
<th>CSmi2W-SF22H-C1</th>
<th>CSmi2WM-2SF40-C1</th>
<th>CSmi2WM-2SF75-C1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optical resolution</td>
<td>15:1</td>
<td>22:1</td>
<td>40:1</td>
<td>75:1</td>
<td></td>
</tr>
<tr>
<td>Temperature range</td>
<td>-40°C to 1030°C</td>
<td>250°C to 800°C</td>
<td>385°C to 1600°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spectral range</td>
<td>8 to 14µm</td>
<td></td>
<td></td>
<td>1.6µm</td>
<td></td>
</tr>
<tr>
<td>System accuracy</td>
<td>±1.0% or ±1.0°C</td>
<td>±(0.3% of reading +2°C)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repeatability</td>
<td>±0.5% or ±0.5°C</td>
<td>±(0.1% of reading +1°C)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature coefficient</td>
<td>± 0.05°C/°C or ± 0.05%/°C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature resolution</td>
<td>0.1°C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response time (90%)</td>
<td>30ms</td>
<td>150ms</td>
<td></td>
<td>10ms</td>
<td></td>
</tr>
<tr>
<td>Emissivity/Gain</td>
<td>0.100 to 1.100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transmissivity/gain</td>
<td>0.100 to 1.100</td>
<td></td>
<td></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>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions of controller</td>
<td>length 35mm; ø12mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outputs/analog</td>
<td>4 to 20mA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. loop resistance</td>
<td>1000Ω</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outputs/alarm</td>
<td>0-30V / 500mA (open collector)</td>
<td></td>
<td></td>
<td></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>
<td></td>
<td></td>
</tr>
<tr>
<td>Inputs</td>
<td>programmable functional input for triggered signal output or peak hold function</td>
<td></td>
<td></td>
<td></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>
<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></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td>4...20mA (5 to 30VDC)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection class</td>
<td>IP65 (NEMA-4) sensor head</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>sensor: -20°C to 120°C controller: -20°C to 75°C</td>
<td>sensor: -20°C to 180°C controller: -20°C to 75°C</td>
<td>sensor: -20°C to 125°C controller: -20°C to 75°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-40°C to 85°C (sensor and controller)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relative humidity</td>
<td>10 to 95%, non-condensing</td>
<td></td>
<td></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>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>42g</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 adjustable via software
2 adjustable via 0 to 5VDC input or software
3 adjustable via 0 to 5VDC input or software
4 ambient temperature 23±5°C; whichever is greater; object temperature > 0°C
5 ε = 1, response time 1s, object temperature >450°C
6 with object temperature <100°C, time constant from >0.2s
7 with object temperature > 20°C, time constant from >0.2s
8 depends on supply voltage

Product identification

<table>
<thead>
<tr>
<th>CSmi2W - SF15- C1</th>
<th>Cable length [1m (standard) / 3m / 8m / 15m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus [SF / CF]</td>
<td>thermoMETER CSmi2W (TwoWire)</td>
</tr>
</tbody>
</table>

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

.sensor

CS

sensor with integrated controller

ancillary CF lens (optional)

CS Micro / CS Micro 2W

ancillary CF lens (optional)

sensor

CX

controller

USB interface

PC

controller

USB interface

PC

5 - 24VDC

white

green

black

brown

yellow

5VDC

output

input

shield

5VDC

output

input

shield

5 - 24VDC

white

green

black

brown

yellow

5VDC

output

input

shield

5VDC

output

input

shield

5VDC

output

input

shield

5VDC

output

input

shield
### Mechanical accessories CS / CSmicro / CSmicro 2W

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

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<tr>
<td>2970277</td>
<td>TM-CF-CS</td>
<td>Ancillary CF lens for CS models</td>
</tr>
<tr>
<td>2970278</td>
<td>Aluminum</td>
<td>Protective window for CS models</td>
</tr>
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### Calibration CS / CSmicro / CSmicro 2W

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<tr>
<th>Art. No.</th>
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<tbody>
<tr>
<td>2970288</td>
<td>TM-CERT-CS</td>
<td>Certificate of calibration</td>
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### Mechanical accessories CX

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<tbody>
<tr>
<td>2970307</td>
<td>TM-AP-CX</td>
<td>Air purge collar, aluminum (anodized)</td>
</tr>
<tr>
<td>2970321</td>
<td>TM-FB-CX</td>
<td>Mounting bracket, adjustable in 1 axis, stainless steel</td>
</tr>
<tr>
<td>2970322</td>
<td>TM-AB-CX</td>
<td>Mounting bracket, adjustable, in 2 axes, stainless steel</td>
</tr>
<tr>
<td>2970311</td>
<td>TM-USBK-CX</td>
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<tr>
<td>2970302</td>
<td>TM-CF-CX</td>
<td>Ancillary CF lens for CX models</td>
</tr>
<tr>
<td>2970303</td>
<td>TM-PW-CX</td>
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</tr>
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**Mechanical accessories CS / CSmicro / CSmicro 2W**

- **Art. No.:** 2970279
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  - **Description:** Mounting bracket, adjustable

- **Art. No.:** 2970281
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  - **Description:** Mounting bolts with M12x1 thread

- **Art. No.:** 2970282
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- **Art. No.:** 2970283
  - **Model:** TM-AP-CS
  - **Description:** Air purge collar for 10:1 sensors

- **Art. No.:** 2970284
  - **Model:** TM-APL-CS
  - **Description:** Air purge collar, laminar

- **Art. No.:** 2970285
  - **Model:** TM-APLCF-CS
  - **Description:** Air purge collar, laminar with integrated ancillary CF lens

- **Art. No.:** 2970286
  - **Model:** TM-RAM-CS
  - **Description:** Right angle mirror for measurements 90°C to the sensor axis

- **Art. No.:** 2970287
  - **Model:** TM-USBK-CS
  - **Description:** USB kit: USB programming adapter, CompactConnect software

**Optical accessories CS / CSmicro / CSmicro 2W**

- **Art. No.:** 2970277
  - **Model:** TM-CF-CS
  - **Description:** Ancillary CF lens for CS models

- **Art. No.:** 2970278
  - **Model:** Aluminum
  - **Description:** Protective window for CS models

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**Calibration CS / CSmicro / CSmicro 2W**

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**Mechanical accessories CX**

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  - **Description:** Mounting bracket, adjustable, in 2 axes, stainless steel

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  - **Description:** USB kit: USB programming adapter, CompactConnect software

**Optical accessories CX**

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  - **Model:** TM-PW-CX
  - **Description:** Protective window for CX models

**Calibration CX**

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**Accessories and software CS series**

- **Art. No.:** 55

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**Accessories and software CS series**

- **Art. No.:** 55
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