Temperature measurement of metals regardless of emissivity

Piros S Ratio-pyrometer Q series
600 °C up to 2500 °C
Piros pyrometers are non-contact measuring thermometers with analog outputs. Due to their measuring principle the ratio pyrometers of the Q series allow temperature measurement regardless of emissivity.

For temperature measurement of metals we offer the stationary design OKS Q in various versions with measurement ranges between 600 °C and 2,500 °C.

The sensors have been designed for control and monitoring tasks in many varied industries:

- steel works and rolling mills
- forging works
- furnace construction
- welding
- casting

We recommend the use of our questionnaire for application analysis so that the user does not necessarily need to cope with the theory of radiation measurement.

The following criteria are relevant for the selection of the correct sensor:

- size and material of the object
- minimum/maximum object temperature
- distance from sensor to the desired measuring area
- ambient temperature

**Highlights at a glance**

- Stainless steel housing with M40 thread
- Plug connection with S10 plug (M18)

**Temperature range:**

- 600 °C up to 1400 °C for metal
- 700 °C up to 1800 °C for metal
- 800 °C up to 2500 °C for metal

**Electrical connection:**

- 24 V DC
- 0/4 - 20 mA output signal
- RS 485 interface (galvanically isolated) for parameterization and measuring data transmission with PC software

**Technical data:**

- spectral range of 0,7 - 1,1 µm
- response times from 5 ms
- measuring areas from 1,5 mm diameter
- only 10% covering of the measuring spot necessary (OKS L Q18.194 S10)
- measuring failure 0,5%
- emissivity and ratio correction adjustable
- MODBUS RTU
- Laser pilot light
- maximum value memory
- fiber optic cable versions up to 250 °C ambient temperature

The integrated RS 485 interface allows via software the display and adaption of the following parameters:

- temperature display °C / °F
- measuring range settings
- emissivity
- ratio correction
- maximum value memory
- setting time (95% time)
- 0/4-20 mA analog output

Settings can be carried out using a laptop / PC with the aid of a software and a RS 485 interface adapter. The software runs under Windows. The user guidance system is multilingual and largely selfexplanatory. Besides parameterization, the software also offers the opportunity to evaluate and keep records of the measurement data.

An extensive accessories programme rounds off the product range and permits the adaptation to different applications.
Pyrometer of the OKS Q series for temperature measurement of metals are available in different versions. The ratio pyrometers allow accurate measurements even on metal objects with changing surface properties and different emissivity. The pyrometer OKS L Q18.194 S10 enables precise temperature measurement even if the measuring spot is covered by 10%. It is especially suitable for objects with varying position, e.g. pouring cast steel.

All devices are equipped with a plug connection. Separate connection cables are available in different lengths.

**Advantages of the Q series**
- temperature measurement independent of emissivity
- short response times
- high accuracy
- BUS solution with up to 32 devices
- spectral range 0.7 - 1.1 µm

Different optics ensure the optimal adjustment of the measuring spot to the object size. The table below shows the size of the measuring spot in relation to the object distance.

**Type overview**

**OKS 2 (focus point at „a“ = 290 mm measuring distance)**

<table>
<thead>
<tr>
<th>art.-no.</th>
<th>type</th>
<th>measuring distance „a“ [mm]</th>
<th>0</th>
<th>100</th>
<th>200</th>
<th>290</th>
<th>400</th>
<th>500</th>
<th>600</th>
</tr>
</thead>
<tbody>
<tr>
<td>6924A</td>
<td>OKS 2 Q14.194 S10</td>
<td>600 °C up to 1400 °C</td>
<td>11,8</td>
<td>9,8</td>
<td>7,8</td>
<td>6,0</td>
<td>13</td>
<td>19</td>
<td>25</td>
</tr>
<tr>
<td>6924D</td>
<td>OKS 2 Q18.194 S10</td>
<td>700 °C up to 1800 °C</td>
<td>11,8</td>
<td>8,8</td>
<td>5,7</td>
<td>3,0</td>
<td>8,6</td>
<td>14</td>
<td>19</td>
</tr>
<tr>
<td>6924G</td>
<td>OKS 2 Q25.194 S10</td>
<td>800 °C up to 2500 °C</td>
<td>11,8</td>
<td>8,2</td>
<td>4,7</td>
<td>1,5</td>
<td>6,5</td>
<td>11,1</td>
<td>15,7</td>
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**OKS 3 (focus point at „a“ = 650 mm measuring distance)**

<table>
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<th>type</th>
<th>measuring distance „a“ [mm]</th>
<th>0</th>
<th>200</th>
<th>400</th>
<th>650</th>
<th>800</th>
<th>1000</th>
<th>1500</th>
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<tbody>
<tr>
<td>6924B</td>
<td>OKS 3 Q14.194 S10</td>
<td>600 °C up to 1400 °C</td>
<td>10,8</td>
<td>11,5</td>
<td>12,2</td>
<td>13</td>
<td>18,5</td>
<td>26</td>
<td>44</td>
</tr>
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<td>6924E</td>
<td>OKS 3 Q18.194 S10</td>
<td>700 °C up to 1800 °C</td>
<td>10,8</td>
<td>9,2</td>
<td>8,2</td>
<td>6,5</td>
<td>10,5</td>
<td>16</td>
<td>29</td>
</tr>
<tr>
<td>6924H</td>
<td>OKS 3 Q25.194 S10</td>
<td>800 °C up to 2500 °C</td>
<td>10,8</td>
<td>8,6</td>
<td>6,3</td>
<td>3,5</td>
<td>6,8</td>
<td>11,2</td>
<td>15,7</td>
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**OKS 4 (focus point at „a“ = 1500 mm measuring distance)**

<table>
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<tr>
<th>art.-no.</th>
<th>type</th>
<th>measuring distance „a“ [mm]</th>
<th>0</th>
<th>500</th>
<th>750</th>
<th>1000</th>
<th>1250</th>
<th>1500</th>
<th>2000</th>
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<tr>
<td>6924C</td>
<td>OKS 4 Q14.194 S10</td>
<td>600 °C up to 1400 °C</td>
<td>10,4</td>
<td>17</td>
<td>20</td>
<td>24</td>
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<td>6924F</td>
<td>OKS 4 Q18.194 S10</td>
<td>700 °C up to 1800 °C</td>
<td>10,4</td>
<td>11,9</td>
<td>12,7</td>
<td>13,5</td>
<td>14,2</td>
<td>15</td>
<td>24</td>
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<tr>
<td>6924I</td>
<td>OKS 4 Q25.194 S10</td>
<td>800 °C up to 2500 °C</td>
<td>10,4</td>
<td>9,4</td>
<td>8,9</td>
<td>8,5</td>
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<td>13,5</td>
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**OKS L (ratio pyrometer with fiber optic cable)**

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<th>measuring distance „a“ [mm]</th>
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<th>100</th>
<th>300</th>
<th>800</th>
<th>1000</th>
<th>2000</th>
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<th>4000</th>
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<tbody>
<tr>
<td>6920Z</td>
<td>OKS L Q18.194 S10</td>
<td>700 °C up to 1800 °C</td>
<td>5,0</td>
<td>6,5</td>
<td>10,4</td>
<td>22,2</td>
<td>27,5</td>
<td>55,0</td>
<td>83,0</td>
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*) 10% covering is sufficient for a precise measurement
Piros S Pyrometer Q series

Piros OKS accessories

<table>
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<tr>
<th>accessory description</th>
<th>type</th>
<th>art.-no.</th>
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<tbody>
<tr>
<td>connection cable 2 m *)</td>
<td>ST S10/12-2</td>
<td>9847H</td>
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<tr>
<td>connection cable 5 m *)</td>
<td>ST S10/12-5</td>
<td>9847D</td>
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<tr>
<td>interface converter RS 485 to USB</td>
<td>SIC 485 UD</td>
<td>9861E</td>
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<tr>
<td>mounting bracket adjustable</td>
<td>DAK 305</td>
<td>6913E</td>
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<tr>
<td>mounting bracket fixed</td>
<td>DAK 304</td>
<td>6913D</td>
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<tr>
<td>air purge unit</td>
<td>DAK 303</td>
<td>6913C</td>
</tr>
<tr>
<td>cooling jacket with air purge</td>
<td>DAK 302</td>
<td>6913B</td>
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<td>cable protection cape</td>
<td>DAK 329</td>
<td>6913X</td>
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<td>protection tube 100 mm lengths</td>
<td>DAK 319</td>
<td>6913L</td>
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<td>protection tube 300 mm lengths</td>
<td>DAK 320</td>
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<td>vacuum flange</td>
<td>DAK 322</td>
<td>6913O</td>
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</table>

*) Further cable lengths on request

Furthermore we offer suitable protective cable hoses for the Pyrometer with cooling jacket.
Accessories for ratio pyrometer OKS L Q18 on request.

Proven applications for Proxitron Pyrometer are for example:

- temperature monitoring at presses
- object temperature in furnaces
- preheating
- hardening
- soldering
- rolling
- furnace construction
- research and development
- monitoring of swaying cast steel

Other Pyrometer versions are available for special applications. Please let us know your requirements. We will be pleased to advise you!