Oxygen Sensor

The QGO20... is an oxygen sensor designed for acquiring the residual oxygen content of flue gases in heat generation plant burning natural gas or light fuel oil. Together with the control unit, the QGO20... monitors and controls the combustion process.

The QGO20... and this Data Sheet are intended for use by OEMs which integrate the oxygen sensor in their products.

Use

When used in connection with burner controls type LMV52... for residual oxygen control, the efficiency of combustion will be improved and oxygen emissions minimized.

The QGO20... is suited for use on all types of heat generation plant burning natural gas or light fuel oil with flue gas temperatures up to 300 °C at the point of measurement.

Supplementary documentation

Basic Documentation QGO20 ................................................................. P7842
Mounting Instructions QGO20 ............................................................... M7842 (4 319 2366 0)

Notes

Caution!
All safety, warning and technical notes given in the Basic Documentation of the QGO... (P842) also apply to this document!
Standards and certificates

Note!
Only in connection with LMV52 with PLL52!

EAC Conformity mark (Eurasian Conformity mark)

ISO 9001:2015
ISO 14001:2015
OHSAS 18001:2007

China RoHS
Hazardous substances table:
http://www.siemens.com/download?A6V10883536

Only QGO20.000D17

Mechanical design

The QGO20... consists of
- sensor tube with mounting flange made of stainless steel, and
- connecting head made of die-cast aluminium

The sensor tube contains and protects
- the measuring cell
- the cell heating element, and
- is resistant to aggressive substances contained in the flue gases of combustion plant burning natural gas or light fuel oil

The sensor’s connecting head houses a printed circuit board with the connection terminals. The cable enters through replaceable Pg11 cable glands. The cable glands can be left with the cable, thus facilitating installation and service work.

The AGO20... flue gas collector is one of the accessory items used with the QGO20...
- which is welded into the stack where the measurement shall be made, also serving as a
- mounting flange and
- flue gas guidance
**Type summary**

<table>
<thead>
<tr>
<th>Article no.</th>
<th>Type</th>
<th>Mains voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPZ:QGO20.000D17</td>
<td>QGO20.000D17</td>
<td>AC 120 V</td>
</tr>
<tr>
<td>BPZ:QGO20.000D27</td>
<td>QGO20.000D27</td>
<td>AC 230 V</td>
</tr>
</tbody>
</table>

**Accessories (must be ordered separately)**

- **Control unit** for measurement and control of the residual oxygen with PLL52
  Refer to Basic Documentation P7550
  - LMV52...

- **O2 module** CAN bus module for O2 trim control with LMV52
  See Basic Documentation P7550
  - PLL52...

- **Flue gas collectors**
  - For chimney diameters up to 400 mm
    - AGO20.001A
      Article no.: BZP:AGO20.001A
      AGO20.002A
      Article no.: BZP:AGO20.002A

- **Flange gasket** for service
  - 428021170
    Article no.: BZP:428021170

- **Display and operating unit**
  See User Documentation A7550
  - AZL52...
### Technical data

**QGO20...**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mains voltage for heating the measuring cell</td>
<td>- QGO20.000D27: AC 230 V ±15%&lt;br&gt; - QGO20.000D17: AC 120 V ±15% (only with LMV52... and PLL52...)</td>
</tr>
<tr>
<td>Mains frequency</td>
<td>50...60 Hz ±6%</td>
</tr>
<tr>
<td>Power consumption</td>
<td>Max. 90 W, typically 35 W (controlled)</td>
</tr>
<tr>
<td>Perm. mounting position</td>
<td>Refer to Mounting Instructions M7842 (4 319 2366 0)</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP40 (to be ensured through mounting)</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 0.9 kg</td>
</tr>
</tbody>
</table>

**Signal lines**

- Shielded 6-core cable
- Shielding connected to terminal GND of the PLL52...

**Proposal for cable**

- LfYCY3x2x0,2 or LfYCY3x2x0,2
- Twisted pairs

**Measuring principle**

Zirconium dioxide measuring cell as an oxygen ion conductor

**Perm. flow rate of flue gas**

(only with the AGO20...)

1...10 m/s

**Perm. types of fuel**

- Light fuel oil (EL), natural gas (H)

**Measuring range**

0.2...20.9% O₂

**Perm. cable length**

Max. 100 m

**Recommended cable length**

<10 m

**Power supply lines (mains cable)**

- Wire dia.
  - Min. 1 mm²
- Cable type
  - QGO20.000D27: e.g. NYM 3 x 1.5
  - QGO20.000D17: UL AWM Style 1015/MTW or CSA-AWM/TEW

**Required operating temperature of measuring cell**

700 °C ±50 °C

### Environmental conditions

**Storage**

- DIN EN 60721-3-1
- Climatic conditions: Class 1K3
- Mechanical conditions: Class 1M2
- Temperature range: -20...+60 °C
- Humidity: <95% r.h.

**Transport**

- DIN EN 60721-3-2
- Climatic conditions: Class 2K2
- Mechanical conditions: Class 2M2
- Temperature range: -25...+70 °C
- Humidity: <95% r.h.

**Operation**

- DIN EN 60721-3-3
- Climatic conditions: Class 3K5
- Mechanical conditions: Class 3M2
- Temperature range:
  - Flange: Max. 250 °C
  - Connecting head: Max. 70 °C
  - Flue gas: ≤300 °C
- Humidity: <95% r.h.
- Installation altitude: Max. 2,000 m above sea level

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**AGO20...**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tube</td>
<td>DN50, steel X5 CrNi 18 9</td>
</tr>
<tr>
<td>Tube length</td>
<td></td>
</tr>
<tr>
<td>- For the AGO20.001A</td>
<td>180 mm</td>
</tr>
<tr>
<td>- For the AGO20.002A</td>
<td>260 mm</td>
</tr>
<tr>
<td>Flange</td>
<td>DN50, steel X5 CrNi 18 9</td>
</tr>
</tbody>
</table>

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**Attention!**

Condensation, formation of ice and ingress of water are not permitted!
Connection diagram

Legend

- **B1** (+) Signal of oxygen measuring cell
- **B2** (+) Thermocouple voltage
- **G2** (-) Power supply temperature compensation element
- **GND** Electrical ground for shielding
- **M** (-) Electrical ground for signals B1 and B2
- **Q4** Sensor heating with mains connection
- **Q5** Sensor heating with mains connection
- **U3** (+) Signal of temperature compensation element
- **PE** Protective earth (PE)
**Dimensions**

Dimensions in mm

**QGO20.000D27**

**QGO20.000D17**

**AGO20...**

**Legend**

A  Flue gas inlet  
B  Flue gas outlet  
C  Notch on the flange marking the flue gas outlet side  
L  180 mm for the AGO20.001A  
     260 mm for the AGO20.002A  
*) Hole only present in AGO20.002A