



Differential Pressure Sensor

QBE3000-D..
QBE3100-D..

for neutral and mildly corrosive liquids and gases

Differential pressure sensor, suitable for gases or liquids, for the measurement of pressure differentials in HVAC systems.

- Ceramic measuring system
- Robust construction for highly reliable operation
- For neutral and mildly corrosive liquids and gases
- Supply voltage AC 24 V / DC 18...33 V or DC 11...33 V
- DC 0...10 V output signal or DC 4...20 mA
- Male-threaded G¹/₈" connection
- Delivery includes 2 screwed fittings for copper pipes, 6 mm diameter

Use

The differential pressure sensor is particularly suitable for use in HVAC systems for continuous monitoring of the level or flow rate of neutral or mildly corrosive gases or liquids.

The sensor can be used as:

- Control sensor
- Measured value transmitter for building automation and control systems

Type summary

| Type | Article number | Pressure range | | Output signal |
|--------------|----------------|----------------|----------|---------------|
| | | [bar] | [MPa] | |
| QBE3000-D1 | S55720-S173 | 0...1 | 0...0.10 | DC 0...10 V |
| QBE3000-D1.6 | S55720-S174 | 0...1.6 | 0...0.16 | DC 0...10 V |
| QBE3000-D2.5 | S55720-S175 | 0...2.5 | 0...0.25 | DC 0...10 V |
| QBE3000-D4 | S55720-S176 | 0...4 | 0...0.40 | DC 0...10 V |
| QBE3000-D6 | S55720-S186 | 0...6 | 0...0.60 | DC 0...10 V |
| QBE3000-D10 | S55720-S177 | 0...10 | 0...1 | DC 0...10 V |
| QBE3000-D16 | S55720-S178 | 0...16 | 0...1.6 | DC 0...10 V |
| QBE3100-D1 | S55720-S179 | 0...1 | 0...0.10 | DC 4...20 mA |
| QBE3100-D1.6 | S55720-S180 | 0...1.6 | 0...0.16 | DC 4...20 mA |
| QBE3100-D2.5 | S55720-S181 | 0...2.5 | 0...0.25 | DC 4...20 mA |
| QBE3100-D4 | S55720-S182 | 0...4 | 0...0.40 | DC 4...20 mA |
| QBE3100-D6 | S55720-S187 | 0...6 | 0...0.60 | DC 4...20 mA |
| QBE3100-D10 | S55720-S183 | 0...10 | 0...1 | DC 4...20 mA |
| QBE3100-D16 | S55720-S184 | 0...16 | 0...1.6 | DC 4...20 mA |

Ordering and delivery

When ordering, please specify the quantity, product name and type code.

Example: 1 differential pressure sensor QBE3000-D1

A suitable fixing bracket is supplied with the sensor.

Any accessories required must be ordered separately.

Compatibility

Differential pressure sensors can be used in conjunction with all devices or systems capable of processing the DC 0...10 V or DC 4...20 mA output signal.

Technology

The pressure to be monitored acts on a ceramic sensor element. The ceramic element has the following significant advantages

- Very low susceptibility to temperature
- Resistance to high temperature
- No mechanical ageing or creepage

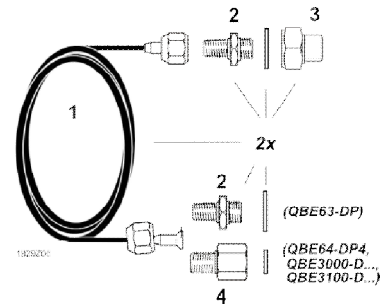
The sensor signal is linearised, temperature-compensated and amplified by the sensor electronics.

Mechanical design

The differential pressure sensor comprises the following:

- Sensor cover with DIN 175301-803-A connecting cable and gland
- Pressure sensor casing with ceramic element, screw connections and burglarproof screw
- Printed circuit board
- Pressure connections G $\frac{1}{8}$ ", external threaded with unscrewed fittings for copper pipe, 6 mm diameter
- Fixing bracket, enclosed loose, with sensor
- Plug DIN 175301-803-A unattached

AQB2002 Mounting kit for remote mounting with 1 m copper capillary line, both ends prefabricated ready for connection. Thread adapters and terminal nuts made of brass. Pressure connection with G $\frac{1}{8}$ " or G $\frac{1}{2}$ " outer threading.



Instructions

Mounting

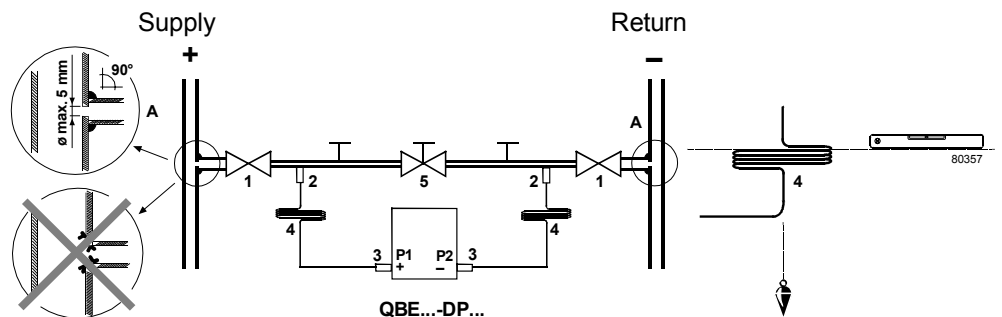
Mounting instructions are enclosed with the differential pressure sensor. It can be connected directly with G $\frac{1}{8}$ " screwed fittings. Special precautions must be taken on site when mounting the sensors to ensure airtight screw connections.

Recommended measures

Use standard T-fittings or drill and de-bur measuring holes, each 5 mm diameter, for the pressure tapping points (A). An isolating bypass (5) can be fitted, to avoid overloading the pressure sensor on one side while making adjustments. For inspection purposes, measuring circuits can be fitted with a measuring-T at the sensor head.

Important note

Mounting for use with liquids:
 Always mount the sensor lower than the pressure measuring points
 Mount on a vibration-free surface
 Always evacuate the system



- Key:
- A Measuring holes
 - 1 Isolating valves
 - 2 T-joints
 - 3 Connection pieces (from mounting kit AQB2002)
 - 4 Copper pipes (from mounting kit AQB2002)
 - 5 Isolating bypass

Remote mounting

For remote mounting, the sensor can be operated together with the AQB pressure mounting kit in ambient temperatures of up to 70 °C for medium temperatures of up to 180 °C. Care must be taken in this case to ensure that the cooling efficiency of the copper pipe is not reduced by additional heat sources or by restrictions to the air circulation.

Disposal



The devices are considered electronics devices for disposal in terms of European Directive 2012/19/EU and may not be disposed of as domestic waste.

- Dispose of the device via the channels provided for this purpose.
- Comply with all local and currently applicable laws and regulations.

Technical data

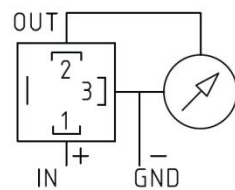
| | | |
|----------------------------------|--|---|
| | Power supply | Low voltage (SELV) |
| | Operating voltage QBE3000-D.. | AC 24 V ± 15 %, 50/60 Hz or DC 18...33 V |
| | Power consumpt. (at nom. pressure) | <5 mA at AC 24 V |
| | Operating voltage QBE3100-D.. | DC 11...33 V |
| | Power consumpt. (at nom. pressure) | <20 mA |
| | Frequency | 50/60 Hz at AC 24 V |
| | External supply line protection | Fuse slow max. 10 A or Circuit breaker max. 13 A Characteristic B, C, D according to EN 60898 or Power source with current limitation of max. 10 A |
| | Output signal | Short-circuit proof and proof polarity reversal |
| | QBE3000-D.. | DC 0...10 V |
| | Working resistance | > 10 kΩ |
| | QBE3100-D.. | DC 4...20 mA |
| | Working resistance | $\leq \frac{\text{Power supply} - 11 \text{ V}}{0.02 \text{ A}}$ [Ohm] |
| Product data | Differential pressure range | Refer to "Type summary" |
| | Measuring element | Ceramic |
| | Measuring accuracy | Factory calibrated |
| | Sum of linearity, hysteresis and repeatability | <±0.5 % FS (FS = Full Scale) |
| | Zero point, Full scale | <±0.4 % FS |
| | TC zero point | <±0.04 % FS/K |
| | TC sensitivity | <±0.015 % FS/K |
| | Long-term stability DIN EN 60770 | ±0.5 % FS |
| | Resolution | 0.1 % FS |
| | Overload on one side P1 / P2 | ≤ 2 × nominal pressure |
| | System pressure at nom. pressure range | (simultaneous P1 and P2) |
| | ≤ 6 bar | 25 bar |
| | ≥ 10 bar | 50 bar |
| Bursting pressure | 1.5 × system pressure | |
| Dynamic response: | | |
| Response time | <5 ms | |
| Load alternation | <50 Hz | |
| Suitable media | Air, mildly corrosive gases, liquids | |
| Admissible temperature of medium | -15...85 °C | |
| Maintenance | No maintenance required | |
| Degree of protection | Protection degree of housing | IP65 according to EN 60529, mounted and tightened |
| | Protection class | III according to EN 60730-1 |
| Connections | Connecting cable | Plug DIN EN 175301-803-A, plug with seals and PG9 cable glands included |
| | Pressure connections | Male-threaded G ¹ / ₈ ", With screwed fittings for copper pipes, 6 mm diameter |

| | | |
|-----------------------------|---|---|
| Mountings | Mounting bracket | For mounting in ducts, on walls or ceilings, in contr.panels |
| | Orientation | Any (factory-calibrated with pressure connections at bottom) |
| Environmental conditions | Perm. ambient temperature | |
| | Operation | -15...85 °C |
| | Storage/Transport | -40...85 °C |
| | Perm. ambient humidity | <90 % r. h. (non-condensing) |
| Directives and Standards | Product standard | EN-61326-1 Electrical equipment for measurement, control and laboratory use. |
| | EU Conformity (CE) | CA1T1923xx ^{*)} |
| | RCM Conformity | 8000078879 ^{*)} |
| Environmental compatibility | The product environmental declaration CE1E1922*) contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal). | |
| Materials | Pressure casing, cover | Aluminium (AlMgSi1) |
| | Parts in contact with medium | Stainless steel 1.4305 / AISI 303, ceramic element, CuZn nickel plated |
| | Sealant | FPM (fluoroelastomer) |
| | Mounting bracket | Stainless steel (1.4305) |
| | Mounting kit AQB2002 | See "Accessories" |
| Weight | Differential Pressure Sensor | 545 g |
| | Including accessories and packaging | 660 g |

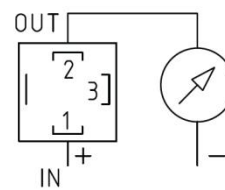
*) The documents can be downloaded from <http://siemens.com/bt/download>.

Connection terminals

Voltage output:



Current output:



| | | |
|-----|----|---|
| IN | G | Operating voltage AC 24 V or DC 18...33 V or DC 11...33 V |
| OUT | U | Output signal DC 0...10 V (reference point GND) |
| | I | Output signal DC 4...20 mA |
| GND | G0 | Ground |

Dimensions

Dimensions in mm

