



Differential Pressure Sensors

QBE63-DP...

for neutral and mildly corrosive liquids and gases

Differential pressure sensor, suitable for gases and liquids, for the measurement of positive and negative pressures and pressure differentials in HVAC systems.

- Hall-effect transducer technology
- Highly resistant to positive pressure
- Simple, robust construction for highly reliable operation
- For neutral and mildly corrosive liquids and gases
- Supply voltage AC 24 V or DC 20...30 V
- DC 0...10 V output signal
- Female-threaded G $\frac{1}{8}$ " connection

Use

The QBE63-DP... differential pressure sensors are 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 pressure being monitored acts on a measuring system comprising a diaphragm, permanent magnet and Hall-effect transducer. The measured pressure is converted electronically into a linear DC 0 ...10 V output signal.

Types

| Type | Pressure range | |
|------------|----------------|---------------|
| QBE63-DP01 | 0 ... 100 mbar | 0 ... 10 kPa |
| QBE63-DP02 | 0 ... 200 mbar | 0 ... 20 kPa |
| QBE63-DP05 | 0 ... 500 mbar | 0 ... 50 kPa |
| QBE63-DP1 | 0 ... 1 bar | 0 ... 100 kPa |

Ordering and delivery

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

Example: **1 differential pressure sensor, type QBE63-DP05**

A suitable fixing bracket is supplied with the sensor.

Any accessories required must be ordered separately.

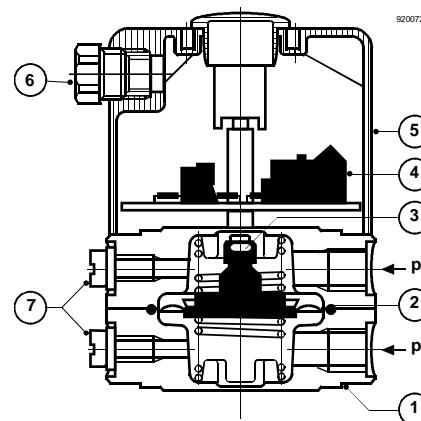
Compatibility

The QBE63-DP... differential pressure sensors can be used in conjunction with all devices or systems capable of processing the DC 0...10 V output signal.

Technology

The pressure to be monitored acts on an EPDM diaphragm which deflects a spring. As a result of the pressure and consequent movement of the diaphragm, a permanent magnet attached to the diaphragm changes its position in relation to the Hall-effect transducer on the outside of the pressure housing. The transducer delivers an electrical signal proportional to the magnetic field. This signal is linearised, temperature-compensated and amplified by the built-in electronics.

Cross-section



Key:

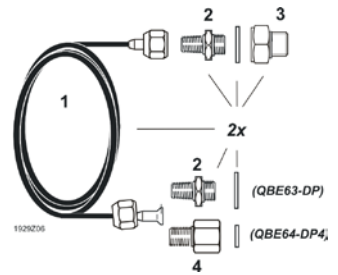
- 1) Pressure housing (measuring chamber)
 - 2) Diaphragm and spring
 - 3) Permanent magnet
 - 4) Hall-effect transducer with measuring electronics
 - 5) Cover
 - 6) Cable entry with PG9 gland
 - 7) Purging points
- p1 G¹/₈" threaded connection for higher pressure or lower vacuum
- p2 G¹/₈" threaded connection for lower pressure or higher vacuum

Mechanical design

The QBE63.DP... differential pressure sensors comprise:

- Plastic housing with Pg 9 cable gland
- Pressure casing with diaphragm and spring
- Printed circuit board with Hall-effect transducer
- Fixing bracket

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 G1/8" or G1/2" outer threading.



Mounting instructions

Mounting instructions are enclosed with the differential pressure sensor. The QBE63-DP... sensors can be connected directly with G1/8" or R1/8" screwed fittings. Special precautions must be taken on site when mounting the sensors, to ensure airtight screw connections.

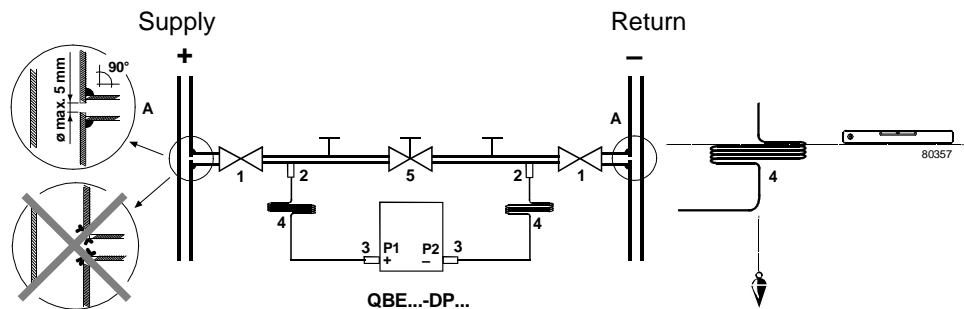
Recommended measures:

- 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 term 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.

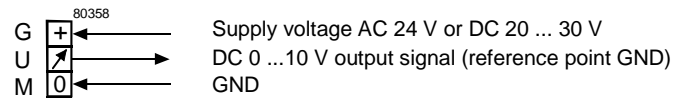
Technical data

| | | | |
|----------------------------------|---|---|--------------------------------------|
| Electrical interface | Power supply | Low voltage (SELV, PELV) | |
| | Supply voltage | AC 24 V +15 / -10 %, 50/60 Hz or DC 20...30 V | |
| | Current consumption | <35 mA | |
| | 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 | | DC 0...10 V, short-circuit-proof and proof against polarity reversal | |
| | Working resistance | ≥ 10 kΩ | |
| Product data | Differential pressure range | Operating range, see "Types" | |
| | Measuring element | Hall-effect transducer | |
| | Measuring accuracy | | |
| | Sum of linearity, hysteresis, and repeatability | <± 1.5 % FS (FS = Full Scale) | |
| | Zero point, Full scale | <± 1.0 % FS | |
| | Temperature drift | 0.08 % FS / K (20 °C in relation to zero point) | |
| | Overload capacity | | 10 bar (sensor range up to 200 mbar) |
| | | | 20 bar (sensor range from 500 mbar) |
| | Burst pressure | 30 bar | |
| | Dynamic response: | | |
| Response time | <10 ms | | |
| Load alternation | <10 Hz | | |
| Suitable media | Air or mildly corrosive gases and liquids | | |
| Admissible temperature of medium | -10...+80 °C | | |
| Maintenance | No maintenance required | | |
| Degree of protection | Protection degree of housing | IP65 according to EN 60529 (with cover fitted) | |
| | Protection class | III according to EN 60730-1 | |
| | Combustion class | UL 94 | |
| Connections | Cover | HB | |
| | Connection terminals | 3 screw-terminals, 1.5 mm ² | |
| | Cable entry | Pg 9 cable gland | |
| Mounting | Pressure connections | Female-threaded G1/8" | |
| | Mounting bracket | For mounting in ducts, on walls or ceilings and in control panels | |
| Environmental conditions | Orientation | Any (factory-calibrated with pressure connections at bottom) When used with liquids: purging points at top | |
| | Perm. ambient temperature | | |
| | Operation | -10... +80 °C | |
| | Storage/Transport | -40... +80 °C | |
| Perm. ambient humidity | <90 % r. h. (non-condensing) | | |

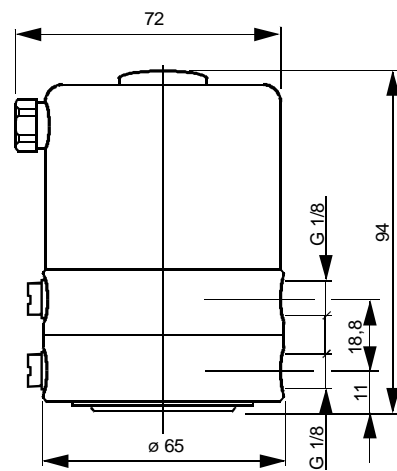
| | | |
|-----------------------------|---|---|
| Directives and Standards | Product standard | EN 61326-1 Electrical equipment for measurement, control and laboratory use. EMC requirements. General requirements. |
| | EU Conformity (CE) | CA1Ta920xx ^{*)} |
| | RCM Conformity | 8000078879 ^{*)} |
| Environmental compatibility | The product environmental declaration CE1E1920*) contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal). | |
| Materials | Pressure casing | Nickel-plated brass |
| | Cover | Plastic (ABS without fibre-glass) |
| | Cable gland | Polystyrol |
| | Diaphragm | EPDM (ethylene propylene rubber) |
| | Mounting bracket | Galvanised steel |
| Weight | Mounting kit AQB2002 | See "Accessories" |
| | Including packaging | 0.86 kg |

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

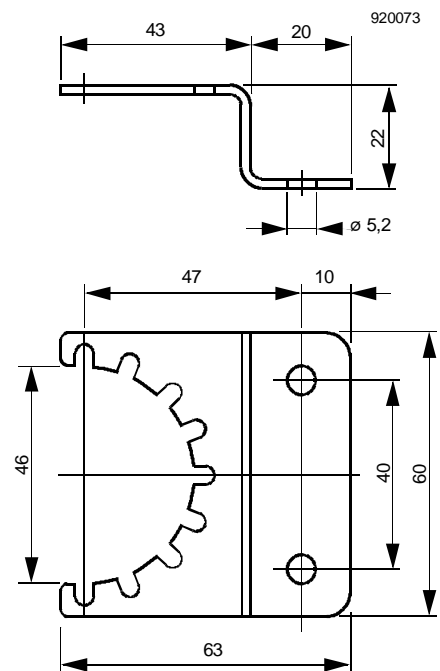
Connection terminals



Dimensions



Fixing bracket



Dimensions in mm