



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

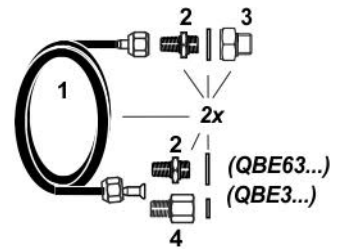
The sensor signal is linearised, temperature-compensated and amplified by the sensor electronics.

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.

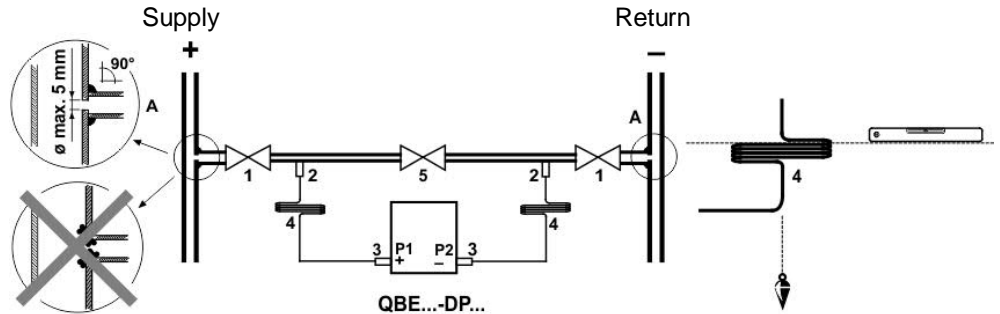
Recommended measures

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 device is considered an electronic device for disposal in accordance with the European Guidelines and may not be disposed of as domestic garbage.

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

Technical data

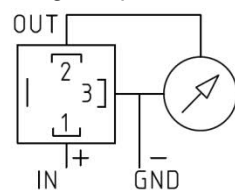
Power supply	Low voltage (SELV)
Operating voltage QBE3000-D..	AC 24 V \pm 15 %, 50/60 Hz or DC 18...33 V
Power consumpt. (at nom. pressure)	<5 mA at AC 24 V
Operating voltage QBE3100-D..	DC 11...33 V
Power consumpt. (at nom. pressure)	<20 mA
Frequency	50/60 Hz at AC 24 V
External supply line protection	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 k Ω
QBE3100-D..	DC 4...20 mA
Working resistance	$\leq \frac{\text{Power supply} - 11 \text{ V}}{0.02 \text{ A}}$ [Ohm]
Differential pressure range	Refer to "Type summary"
Measuring element	Ceramic
Measuring accuracy	Factory calibrated
Sum of linearity, hysteresis and repeatability	< \pm 0.5 % FS (FS = Full Scale)
Zero point, Full scale	< \pm 0.4 % FS
TC zero point	< \pm 0.04 % FS/K
TC sensitivity	< \pm 0.015 % FS/K
Long-term stability DIN EN 60770	\pm 0.5 % FS
Resolution	0.1 % FS
Overload on one side P1 / P2	$\leq 2 \times$ nominal pressure
System pressure at nom. pressure range	(simultaneous P1 and P2)
≤ 6 bar	25 bar
≥ 10 bar	50 bar
Bursting pressure	1.5 x 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
Protection degree of housing	IP65 according to EN 60529, mounted and tightened
Protection class	III according to EN 60730-1
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

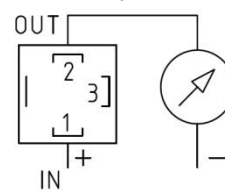
*) The documents can be downloaded from <http://siemens.com/bt/download>.

Connection terminals

Voltage output:



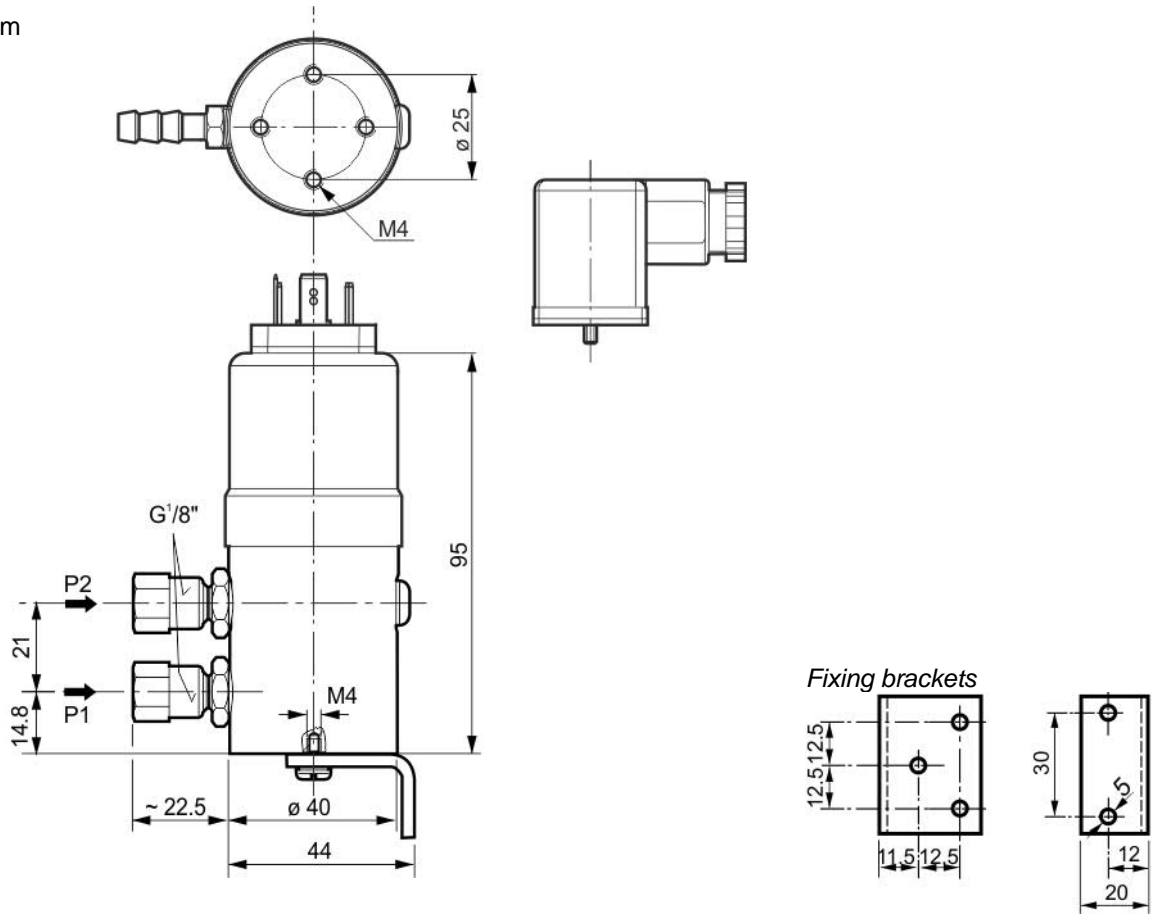
Current output:



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



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