SIEMENS

1 909

QBE2002-P…
Pressure Sensors QBE2102-P…

for liquid and gaseous media

- **Piezo-resistive measuring system**
- **DC 0 ...10 V or DC 4…20 mA output signal**
- **Measurement unaffected by changes in temperature**
- **High temperature stability**
- **No mechanical aging or creepage**
- **External thread G½"**
- **Excellent EMC characteristics**

Use

The pressure sensors are suitable for the measurement of static and dynamic positive pressure in HVAC plant, particularly in hydraulic and pneumatic systems using liquid or gaseous media (steam applications).

Technical design

The pressure sensors operate on the piezo-resistive measuring principle. The ceramics diaphragm (thick-film hybrid technology) acquires the pressure through direct contact with the medium. The measurement is converted electronically into a linear output signal of DC 0...10 V or DC 4…20 mA.

Type summary

Type reference	*Pressure range*			*Output signal*
QBE2002-P1	0...1 bar	0...100 kPa	0...14.5 psi	0…10 V
QBE2002-P2	0...2 bar	0...200 kPa	0...29.0 psi	0…10 V
QBE2002-P4	0...4 bar	0...400 kPa	0...58.0 psi	0…10 V
QBE2002-P5	0...5 bar	0...500 kPa	0...72.5 psi	0…10 V
QBE2002-P10	0...10 bar	0...1.0 MPa	0...145.0 psi	0…10 V
QBE2002-P16	0...16 bar	0...1.6 MPa	0...232.0 psi	0…10 V
QBE2002-P20	0...20 bar	0...2.0 MPa	0...290.0 psi	0…10 V
QBE2002-P25	0...25 bar	0...2.5 MPa	0...362.6 psi	0…10 V
QBE2002-P40	0...40 bar	0...4.0 MPa	0...580.0 psi	0…10 V
QBE2002-P60	0...60 bar	0...6.0 MPa	0...870.0 psi	0…10 V
QBE2102-P4	0...4 bar	0...400 kPa	0...58.0 psi	4…20 mA
QBE2102-P5	0...5 bar	0...500 kPa	0...72.5 psi	4…20 mA
QBE2102-P10	0...10 bar	0...1.0 MPa	0...145.0 psi	4…20 mA
QBE2102-P16	0...16 bar	0...1.6 MPa	0...232.0 psi	4…20 mA
QBE2102-P20	0...20 bar	0...2.0 MPa	0...290.0 psi	4…20 mA

Ordering

When ordering, please give name and type reference, e.g.:
Pressure sensor **QBE2002-P1**
Any accessories required must be ordered separately.

Equipment combinations

The pressure sensors can be combined with all devices or systems capable of processing the DC 0 ...10 V or DC 4…20 mA output signal from the pressure sensor.

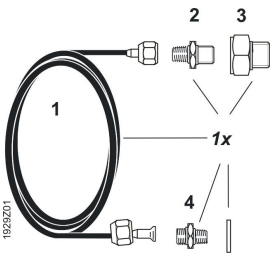
Mechanical design

The pressure sensors are compact units and cannot be dismantled. No changes or adjustments are possible.

Accessories

AQB22.1 Fixing bracket for sensor (for remote mounting). For dimensions, refer to "Dimensions"

AQB2001 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.

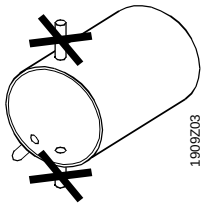


Mounting notes

Mounting Instructions are enclosed with the sensor.
The sensors are designed for direct connection to screwed fittings with G½" threads.
Appropriate measures must be taken to ensure a leak-proof fitting.
To provide for test measurements without leakage of the medium, it is strongly recommended that an appropriate test adapter and shutoff device be fitted.

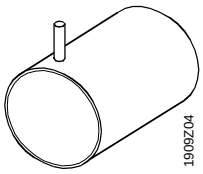
Pressure measurement with liquids

The tapping point should be at the side, near the bottom of the pipe. Do not measure the pressure from the top of the pipe (where it may be affected by airlocks) or the bottom (where it may be affected by dirt).
Always evacuate the system.



Pressure measurement with condensing gases

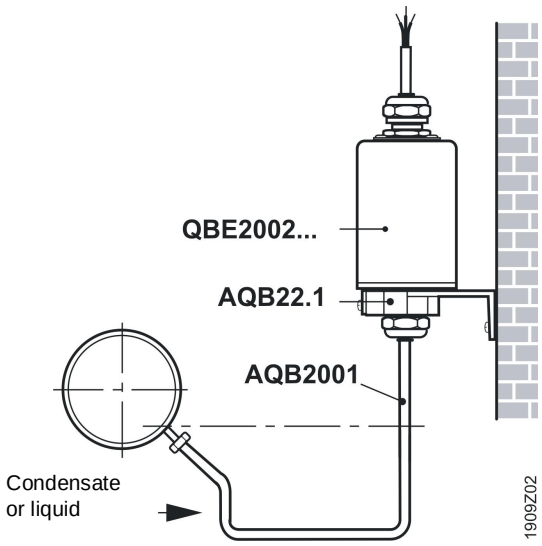
The tapping point should be at the top so that no condensate reaches the sensor.



Remote mounting

If the temperature of medium is lower than −40 °C or higher than +80 °C, the sensor should be fitted remotely, taking care that no condensate can reach the sensor.

For remote mounting, a fixing bracket AQB22.1 and mounting kit AQB2001 can be delivered (refer to "Accessories").



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. The admissible pressure is limited to 93 bar for temperatures >120 °C.

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

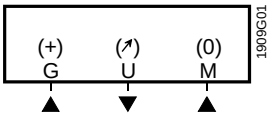
Electrical interface	Power supply	with extra-low voltage only (SELV)
	Supply voltage (QBE2002…)Current consumption	AC 24 V ±15%, 50...60 Hz or DC 18...33 V< 6 mA
	Supply voltage (QBE2102…) Current consumption	DC 11…33 V <20 mA
	External supply line protection	Fuse slow max. 10 A or Circuit breaker max. 13 A Characteristic B, C, D according to EN 60898 or Power source with current limitation of max. 10 A
	Output signal QBE2002…	DC 0 ...10 V, R_{Load} >10 kΩ (not galvanically separated, 3-wire connection, short-circuit proof and protected against polarity reversal)
	Output signal QBE2102…	DC 4…20 mA , $R_{Load} \leq \frac{\text{Operating voltage} - 11\ V}{0.02\ A}$ Ohm (not galvanically separated, 2-wire connection, short-circuit proof and protected against polarity reversal)
Functional data	Application range	refer to "Type summary"
	Accuracy: Total of linearity, hysteresis and reproducibility Zero point, Full scale	(FS = Full Scale) <±0.4 % FS <±0.6 % FS
	Temperature drift: TC zero point TC sensitivity	balancing in bar <±0.04 % FS/K <±0.015 % FS/K
	Response time	<5 ms
	Nominal pressure	relative pressure as in "Type summary" (measurement of difference from ambient pressure)
	Max. admissible pressure	2 x scale end value of measuring range (FS)
	Rupture pressure	3 x scale end value of measuring range (FS)
	Media Admissible temperature of medium	neutral and slightly corrosive liquids and gases (suited for use with oil-contacting media) −40...+80 °C
	Maintenance	maintenance-free
	Mounting position	Optional

Degree of protection	Protection degree of housing	IP65 according to EN 60529
	Protection class	III according to EN 60730
Connections	Connecting cable	PVC, length 1.5 m, 3 x 0.25 mm^2 stranded wires
	Screwed fitting	external thread G½", inside thread M5
Environmental conditions	Operation to Climatic conditions Temperature Humidity	IEC 60 721-3-3 class 3K7 −40...+80 °C insensitive to condensation
	Storage / transport Climatic conditions Temperature Humidity	IEC 60 721-3-2 class 2K4 −40...+80 °C insensitive to condensation
Directives and Standards	Product standard	EN 61326-1 Electrical equipment for measurement, control and laboratory use. EMC requirements. General requirements
	EU Conformity (CE)	CE1T1909xx *)
	RCM Conformity	8000078879
Environmental compatibility	The product environmental declaration CE1E1909*) contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).	
Materials	Base	stainless steel (1.4305)
	Measuring element	ceramics diaphragm
	Cover	stainless steel (1.4305)
	Sealant	FPM fluor-caoutchouc spec.
	Fixing bracket AQB22.1	die-cast aluminium
	Mounting kit AQB2001	see "Accessories"
Weight	Including packaging	0.265 kg

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

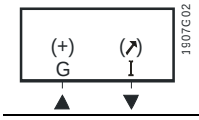
Internal diagram

QBE2002…



BT terminal marking	*Color of core*	*Meaning*
G (+)	Brown	Supply voltage AC 24 V or DC 18...33 V
U (↗)	Green	Output signal DC 0...10 V (signal ground GND)
M (0)	White	GND

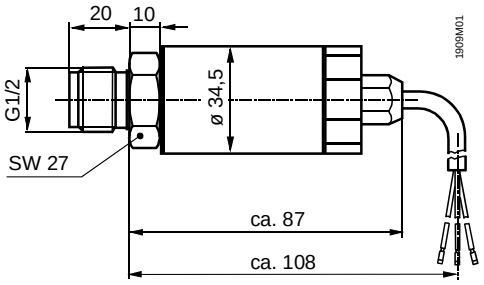
QBE2102…



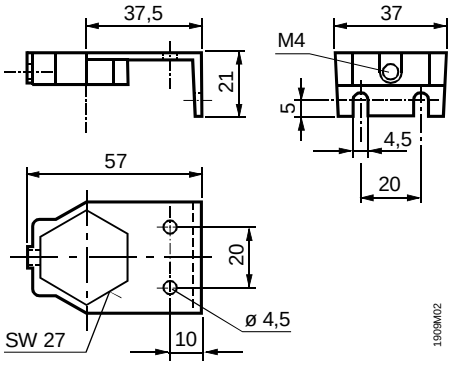
BT terminal marking	*Color of core*	*Meaning*
G (+)	Brown	Supply voltage DC 11...33 V
I (↗)	Green	Output signal DC 4...20 mA

Dimensions

QBE2002-P…
QBE2102-P…



AQB22.1



Dimensions in mm