



Differential pressure sensors

QBE61.3-DP...

for neutral or slightly aggressive gases and liquids

- Operating voltage AC 24 V or DC 18...33 V
- Output signal DC 0...10 V
- Connecting male thread G 1/2"
- 3 versions covering a total differential pressure range of 0 ... 10 bar
- Ceramics measurement system
- High level of safety against overpressures

Use

For acquiring the differential pressures in HVAC plant.

Suited for use with the following types of media:

- Neutral or slightly aggressive gases
- Neutral or slightly aggressive heating water and cold water (with or without additives, such as hydrazine or glycol)

Type summary

Type reference	Measurement range	Max. overload on one side	Nominal pressure
QBE61.3-DP2	0...2 bar	±12 bar	PN 40 bar
QBE61.3-DP5	0...5 bar	±20 bar	PN 40 bar
QBE61.3-DP10	0...10 bar	±20 bar	PN 40 bar

Accessories

Description	Part no.
Water trap pipe, for medium temperatures above 85 °C (steam) or below – 15 °C	4 286 1652 0

Ordering and delivery

When ordering, please give name and type reference of the unit, for example:

1 differential pressure sensor QBE61.3-DP2.

The sensor is supplied without the water trap pipe.

Equipment combinations

The differential pressure sensor can be used with all devices or systems capable of handling the sensor's output signal of DC 0...10 V.

Mode of operation

The differential pressure sensor uses a ceramics measurement system. The pressure is measured by making direct contact with the medium. The pressure signal is electronically converted to a linear DC 0...10 V signal (3-wire connection) and made available at output "U".

The output signal is proportional to the measurement range.

Mechanical design

The differential pressure sensor consists of:

- plastic housing with removable cover
- mounting bracket
- 2 threaded connections G ½
- measurement system consisting of casing with an embedded ceramics element and a printed circuit board with electronics
- strip with the connection terminals

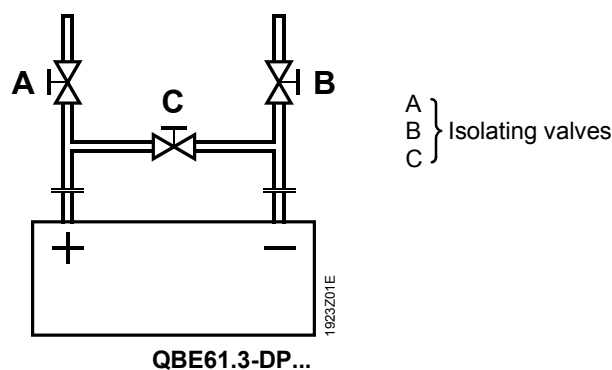
The cable enters through a Pg 9 cable gland.

Engineering notes

The QBE61.3-DP... and all interconnected devices must be wired to the same G0/G– (measuring neutral). Also refer to the Data Sheets of the devices to which the sensor is connected.

The differential pressure at the sensor may never exceed the permissible overload on one side (refer to "Type summary").

High static pressure can destroy the sensor if it acts on only one side of the measurement system. This can be prevented by using the following layout:



Mounting and installation notes

Mounting position: optional.

Medium temperatures above 85 °C (steam) or below –15 °C make it necessary to install a water trap pipe between piping and sensor.

Connection "+" : higher pressure/smaller vacuum.

Connection "-" : lower pressure/higher vacuum.

When used for acquiring the differential pressure in liquids, the following must be noted:

- Mount the sensor below the level of pressure measurement
- Mount the sensor on a vibration-free surface
- System venting is mandatory

The differential pressure sensor is supplied with Mounting Instructions.

Technical data

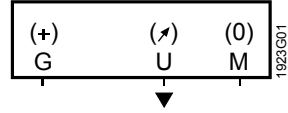
	Operating voltage (SELV)	AC 24 V ± 15 %, 50/60 Hz or DC 18...33 V
	Power consumption	< 150 mVA
	Output signal	DC 0...10 V (short-circuit-proof and reversed polarity protection)
	Voltage burden	> 10 kΩ
	Measurement range	refer to "Type summary"
	Sensing element	ceramics
	Measurement accuracy at 20 °C Sum of linearity, hysteresis, and reproducibility	(FS = Full Scale)
	QBE61.3-DP2, QBE61.3-DP5	< ± 1 % FS
	QBE61.3-DP10	< ± 0.5 % FS
	Zero point	< 1% FS
	Response time	< 5 ms
	Max. overload on one side	refer to "Type summary"
	Nominal pressure (system pressure, connected to both "+" and "-")	PN 40
	Bursting pressure	1.5 times the nominal pressure
	Media	not oleiferous, neutral or slightly aggressive gases and liquids
	Perm. temperature	– 15...+ 85 °C (steam with water trap pipe)
	Degree of protection of housing	IP 54 to IEC 60 529
	Safety class	III to EN 60 730
	Electrical connections	
	Connection terminals	no screws (WAGO), for max. 1.5 mm ²
	Cable gland	Pg 9
	Pressure connections (externally threaded)	G ½"
	Weight (incl. packing)	1.64 kg
Environmental conditions	Perm. ambient temperature Operation	– 15...+ 85 °C (medium) – 15...+ 70 °C (electronics, terminals)
	Transport and storage	– 40...+ 80 °C
	Perm. ambient humidity	< 90 % r. h. (non-condensing)
Materials and colours	Components getting in contact with the medium	stainless steel (1.4305), ceramics, copper, brass
	Sealing material	EPDM
	Housing and cover	plastic ABS, light-grey (RAL 7035)
	Cable entry	PA glassfibre re-inforced, NBR (seal)
	Mounting bracket	stainless steel
	Pressure connection	brass
	Sensor	silicon-free
Directives and standards	Product safety Automatic electrical controls for household and similar use	EN 60 730-1
	Electromagnetic compatibility	
	Immunity	EN 61 000-6-2, EN 61 326-1
	Emissions	EN 61 000-6-3, EN 61 326-1
	CE conformity to EMC directive	2004/108/EC

Environmental compatibility

Environmental product declaration
 CE1E1923en provides information on environmentally compatible product design and assessment (RoHS compliance, composition of substances, packaging, environmental benefit, disposal).

ISO 14001 (environment)
 ISO 9001 (quality)
 SN 36350 (environ. compat. products)
 RL 2002/95/EG (RoHS)

Connection diagram



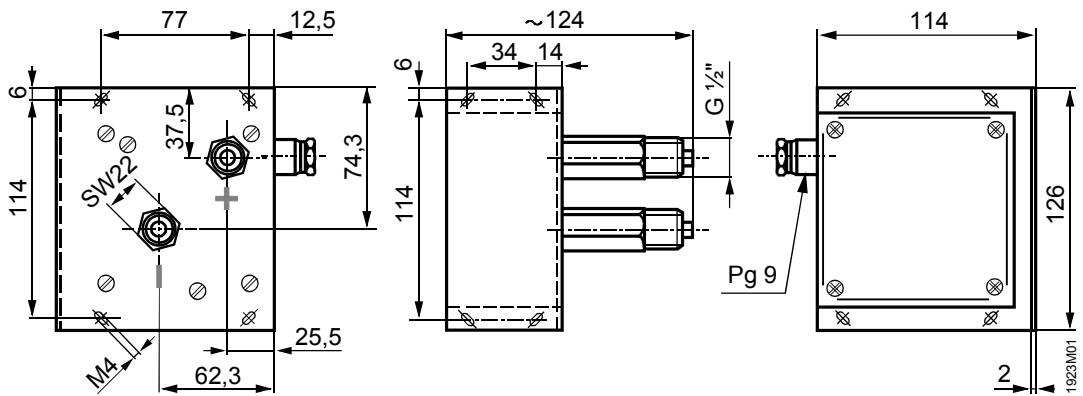
Legend

G (+) Power supply AC 24 V or DC 18...33 V
 U (↗) Measured signal output DC 0...10 V
 M (0) G0/G-, measuring neutral

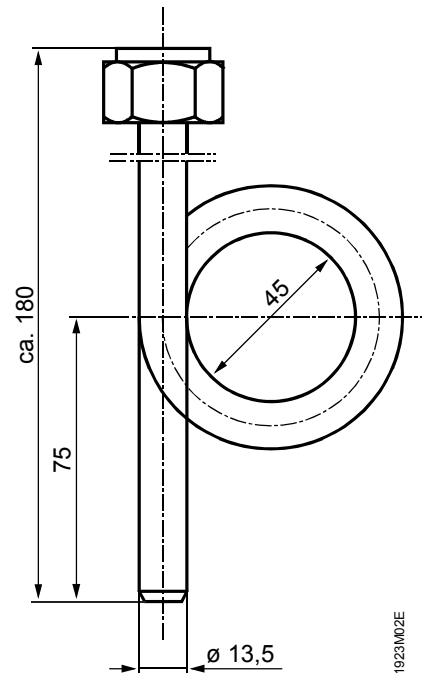
Note: the symbols in parenthesis correspond to the terminal marking on the terminal block

Dimensions (in mm)

QBE61.3-DP...



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Water trap pipe