

Differential pressure sensor

QBM2130-..



For air and non-aggressive gases.

- Pressure-linear characteristic with selectable pressure measuring range
- Operating voltage DC 8...33 V
- Output signal 4...20 mA.
- Zero-point adjustment
- Simple and fast mounting thanks to integrated fixing angle bar in the housing
- Maintenance free
- Calibrated and temperature-compensated measuring signal
- Supplied with connection set

Application

The differential pressure sensor acquires differential, over and under pressure of air and non-aggressive gases.

Fields of application

- Measuring the slightest differential pressures in ventilation and air conditioning ducts
- Check air flows
- Monitor filters and control fans

Technical design

Mode of operation

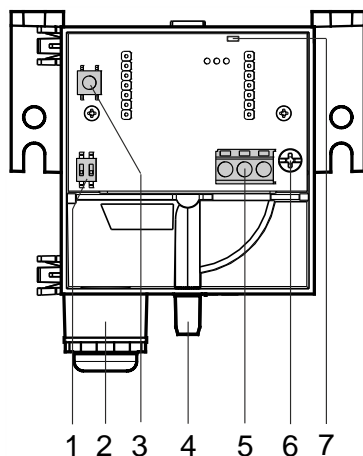
The sensor acquires the differential pressure using a silicon rubber membrane and ceramic bar. The sensor generates as per the deflection, a linear output signal 4... 20 mA.

Mechanical design

The differential pressure sensor consists of:

- Sensor housing with mounting bracket, cable entry, and removable snap-on cover with safety screw
- Pressure chamber with membrane and ceramic lever
- Printed circuit board with connection terminals and DIP switch for selecting measuring range (see section "Commissioning [► 6]")
- Zero-point adjustment key (see section 'Commissioning [► 6]')

Display, setting, and connection elements



Key

1	2 DIP switches for selecting the measuring ranges	5	Connection terminals
2	Cable entry gland Pg 11 (without cable strain relief)	6	Safety screw for hinged cover
3	Button for zero-point adjustment	7	LED to display zero-point adjustment
4	Probes (see section 'Installation [► 5]')		

Type (ASN)	Ordering number (SSN)	Pressure measuring ranges			Output signal
		Measuring range 1	Measuring range 2	Measuring range 3	
QBM2130-1U	S55720-S559	±50 Pa	±100 Pa	0...100 Pa	4...20 mA
QBM2130-5	S55720-S560	0...200 Pa	0...250 Pa	0...500 Pa	4...20 mA
QBM2130-30	S55720-S561	0...1000 Pa	0...1500 Pa	0...3000 Pa	4...20 mA

Conversion:

100 Pa = 1 hPa = 1 mbar

Ordering and delivery

When ordering a differential pressure sensor, please specify the quantity, type, order number, and product designation.

Example

Type (ASN)	Order number (SSN)	Product designation
QBM2130-1U	S55720-S559	Differential pressure sensor

The differential pressure sensor is supplied with a connection set consisting of:

- 2 m PVC tubing
- 2 air duct probes (ABS)
- 4 attachment screws

Additional accessories may be ordered separately.

Accessories

Additional sets of air duct probes are available depending on measuring requirements. Various mounting brackets are also available depending on installation location.

Type	Name	Data sheet
AQB2000	Mounting bracket, for mounting sensors in isolated air ducts	N1590
AQB21.2	Top hat rail adapters (5 pieces) for DIN top hat rails, HT 35-7.5	N1590
FK-PZ1	Air duct probe, short, stainless steel, with elastic lead-through	N1589
FK-PZ2	Air duct probe, long, aluminum, with orifice plates for precise measuring requirements	N1589



Product documentation

Topic	Title	Document ID
Mounting instructions	Differential pressure sensor QBM2130-..	A6V13427764



Related documents such as the environmental declarations, CE declarations, etc., can be downloaded from the following Internet address:



www.siemens.com/bt/download

Safety

 CAUTION	
	National safety regulations Failure to comply with national safety regulations may result in personal injury and property damage. <ul style="list-style-type: none"> Observe national provisions and comply with the appropriate safety regulations.

Engineering


 WARNING	
	Voltage Injury from electrical shock <ul style="list-style-type: none"> Use a transformer for safety extra-low voltage SELV with separate windings, suited for 100% duty to power the sensor. Observe permissible cable lengths. Use shielded cables.

 CAUTION	
	Power supply by SELV or class 2 power supply with limited output of 15 W or less. <ul style="list-style-type: none"> Use only copper wiring

Installation

The differential pressure sensor is suited for direct mounting on air ducts, walls, ceilings, or in control panels.

The supplied 2 meter plastic tubing can be modified to the duct connection on the plant.

NOTICE	
	Condensation in sensor Device damage <ul style="list-style-type: none"> Point the pressure connection nipples in the down position. Ensure that the pressure connection nipples are higher in the ducts than the sensor probes.

Connect pressure tubing

Connect the pressure tubing for the sensor probes to the differential pressure sensors as follows:

On the air duct side	On the pressure sensor side
Tubing with higher pressure side (lower vacuum)	Connect to pressure nipple 'P1' or '+'
Tubing with lower pressure side (higher vacuum)	Connect to pressure nipple 'P2' or '-'

The sensor is supplied with mounting instructions.

For more information, see section 'Product documentation [► 4]'.

Commissioning



The values indicated under 'Technical data [► 8]' apply only to vertically mounted differential pressure sensors (connection nipples pointing down).

Sensor calibration



Value deviations are possible when mounted horizontally (housing cover on top or bottom). Use zero-point adjustment to compensate for deviations.




Zero-point adjustment

- Wiring connection terminals Do not connect pressuring tubing at this time.
- Press the zero-point adjustment button for more than 2 seconds.
⇒ The LED turn on for a short period.
- Connect pressure tubing.

Set measuring range


A DIP switch is used to individually adjust the pressure measuring range.

The various DIP switch positions are described on the inside of the hinged cover.

DIP setting	QBM2130-1U	QBM2130-5	QBM2130-30
 *	0...100 Pa	0...500 Pa	0...3000 Pa
	+/- 100 Pa	0...250 Pa	0...1500 Pa
	+/- 50 Pa	0...200 Pa	0...1000 Pa

*) Factory setting

Disposal

	<p>This symbol or any other national label indicate that the product, its packaging, and, where applicable, any batteries may not be disposed of as domestic waste. Delete all personal data and dispose of the item(s) at separate collection and recycling facilities in accordance with local and national legislation.</p> <p>For additional details, refer to Siemens information on disposal.</p>
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Electrical interface	
Power supply	Safety extra low voltage (SELV/PELV)
Operating voltage	DC 8...33 V
Power consumption	<0.5 VA
Power consumption	<10 mA
External fusing of supply line	Non-renewable fuse slow to a max. 10 A or Circuit breaker: Max. 13 A type B, C, D per EN 60898 or Power source with current limitation of max. 10 A
Output	4...20 mA $R_{Load} < \frac{\text{Supply Voltage} - 8 \text{ V}}{0.02 \text{ A}} \quad [\Omega]$ 2-wire, short-circuit proof, protected against reverse polarity

Functional data	
Measuring range	See Section 'Type summary [► 3]'
Sensing element	Piezo-resistive (silicone membrane, ceramic bar)
Measuring accuracy at recommended mounting position and 25 °C ambient temperature <ul style="list-style-type: none"> • Total error • TC zero point • TC sensitivity 	(FS = Full Scale) <ul style="list-style-type: none"> • <±3 % FS • <±0,1 % FS/°C • <±0,06 % FS/°C
Reaction time	1 s
Tolerable overload on one side <ul style="list-style-type: none"> • At P1 • At P2 	<ul style="list-style-type: none"> • 5,000 Pa (10,000 Pa for types QBM2130-5 and QBM2130-30) • 400 Pa
Bursting pressure <ul style="list-style-type: none"> • 0...70 °C • At room temperature 	<ul style="list-style-type: none"> • 1.5 x overload • 2 x overload
Media	Air and non-aggressive gases
Permissible medium temperature	0...70 °C
Maintenance	Maintenance free

Pins	
Electrical connection <ul style="list-style-type: none"> Screw terminals for cable lead 	Max 1.5 mm ² (wire or stranded wire) Cable gland entry Pg 11 (without cable strain relief)
Pressure connection	PVC nipples Ø 6.2 mm

Degree of protection	
Degree of protection of housing at recommended installation	IP42 as per EN 60529
Protection class	III as per EN 60730-1

Ambient conditions	
Permissible ambient temperature <ul style="list-style-type: none"> Operation Storage/transport 	<ul style="list-style-type: none"> 0...+70 °C -10...+70 °C

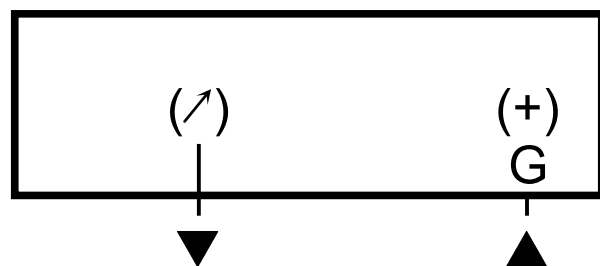
Standards, directives and approvals	
Electromagnetic compatibility (application range)	For residential, commercial and industrial environment
EU conformity (CE)	See EU declaration of conformity *)
UK compliance (UKCA)	See UK declaration of conformity *)
RCM Conformity	See RCM declaration of conformity *)

Environmental compatibility	
The product environmental declaration *) contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).	

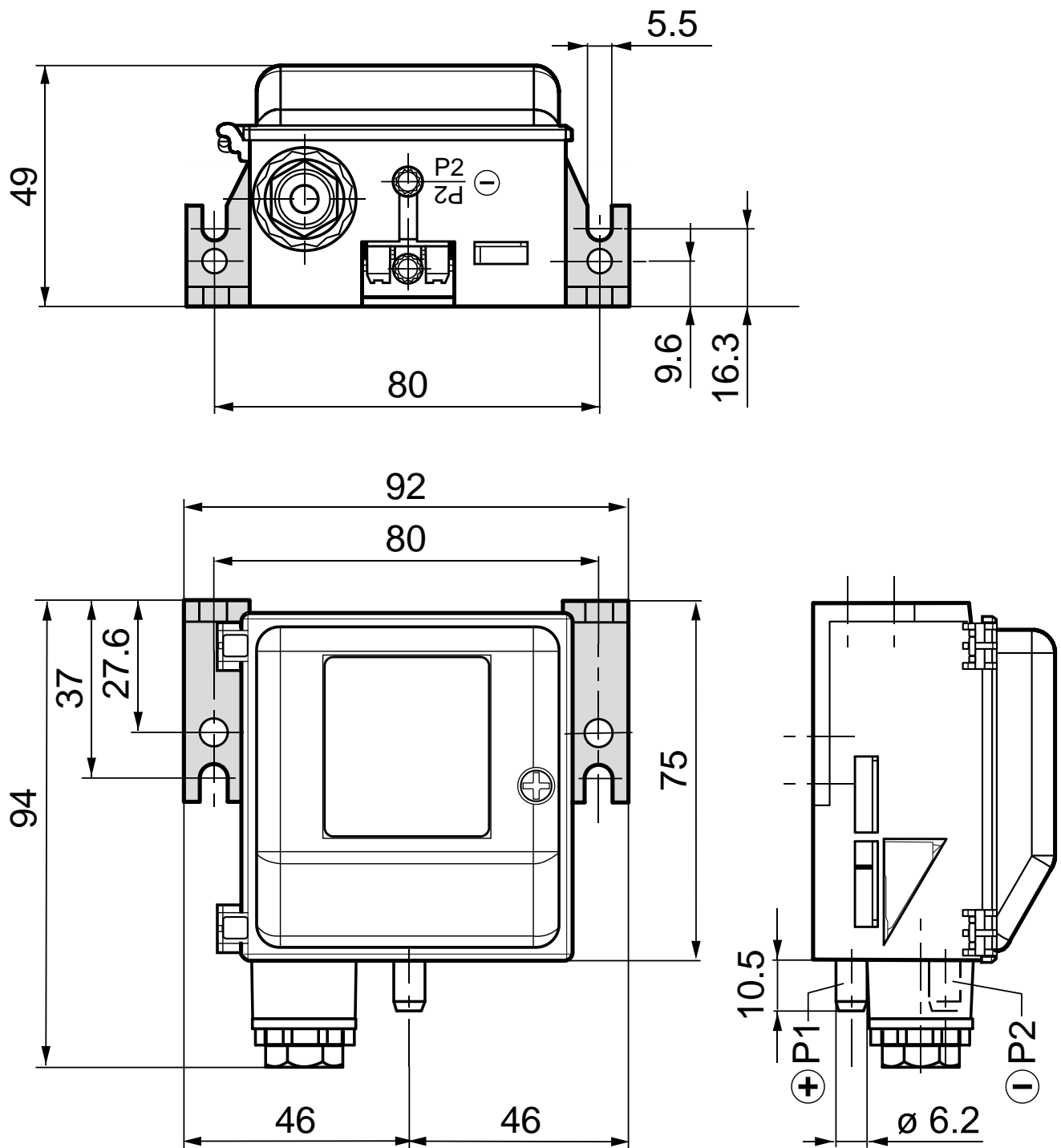
Dimensions (weight)	
Weight (with packaging)	0.183 kg

*) The documents can be downloaded at www.siemens.com/bt/download.

Terminals



G(+) Supply voltage DC 8...33 V.
(↗) Measuring signal DC 4...20 mA



Dimensions in mm

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