



Differential Pressure Sensor

QBM3460-3

for air and non-aggressive gases

- Linear pressure curve
- Compact design
- Zero-point adjustment
- Connection terminals for VAV¹⁾ box and volume flow controller

1) VAV = Variable air volume

Use

The differential pressure sensor is suitable for volume flow measurements on round and angular VAV boxes. The VAV box and volume flow controller can be directly connected to the connection terminals of the sensor and wired there.

Type summary

Product No.	Stock number	Pressure range		
		0...3 mbar	0...300 Pa	0...1.2 inH ₂ O
QBM3460-3	S55720-S118			

Ordering

The quantity, name and type designation must be indicated when ordering.

Type	Name
QBM3460-3	Differential pressure sensor

Accessories

Three different air duct connection pieces are available for connecting the differential pressure sensor directly to air ducts (without a VAV box). Refer also to the data sheet CA1N1589E:

Type	Name	Description
FK-PZ1	Connection pieces, with adjustable submersion depth	Set of two sensor tubes made from stainless steel with rubber grommets
FK-PZ2	Connection pieces, with adjustable submersion depth and orifice plate	Set of two sensor tubes with aluminum mounting rosettes
FK-PZ3	Connection pieces, with fixed submersion depth	Set of two plastic sensor tubes with 2 m connecting hose

Equipment combinations

The differential pressure sensor can be combined with devices and systems that can process a sensor output signal measuring DC 0... 10 V.

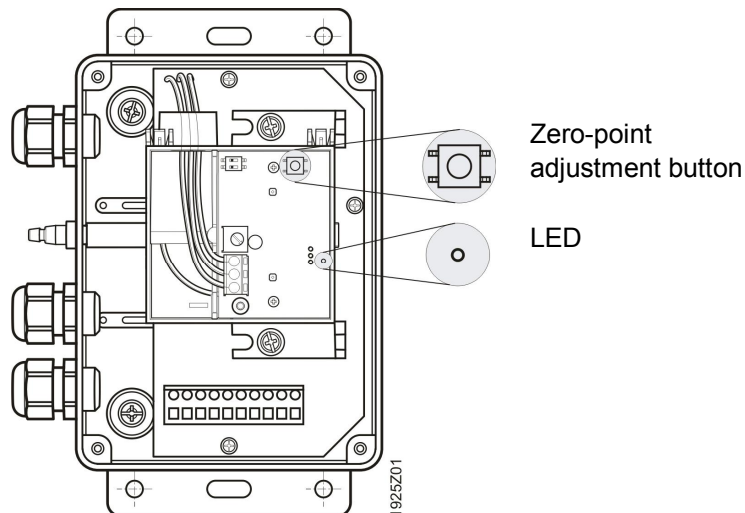
Technical design

The sensor measures the difference in pressure across a silicon diaphragm and a ceramic cantilever. The sensor generates a linear, temperature-compensated output signal of DC 0... 10 V according to the detected deviation.

Mechanical design

The sensor comprises the following:

- Sensor housing with mounting plate and cable inlets
- Pressure measurement housing with silicon diaphragm and ceramic cantilever
- Printed circuit board with sensor element and connection terminals
- Zero-point adjustment button and LED (see "Commissioning notes")



Engineering notes

A transformer with a separate coil is to be used for safety extra-low voltage (SELV) and for 100 % on-time. The mandatory security requirements apply to the measurement and protection of the transformer. The permissible line lengths should be observed. Shielded cables must be used for cables exceeding 50 m in length in parallel to power lines.

Mounting notes

The differential pressure sensor is suitable for direct installation on round and angular VAV boxes. The VAV box and volume flow controller can be directly connected and wired in the sensor housing to the connection terminals. An appropriate power supply is required for all connected devices.

To achieve the housing protection class specified under "Technical data", the pressure connector pieces must face downwards. The pieces should also be positioned higher than the sensor probes in the air duct.

 Caution

If the pressure connector pieces face upwards or are lower than the sensor probes in the air duct, condensation can collect in the sensor, eventually destroying it.

Note

The pressure hoses of the sensor probes must be connected to the differential pressure sensor as follows:

<i>Air duct side</i>	<i>Pressure sensor side</i>
Hose on the higher pressure side (lesser vacuum)	On pressure connection piece "P1" or "+"
Hose on the lower pressure side (greater vacuum)	On pressure connection piece "P2" or "-"

Commissioning notes

 Caution

Sensor calibration

The values specified under "Technical data" only apply when the differential pressure sensor is installed vertically (pressure connection pieces at the bottom). Deviations in measured values are possible if the sensor is installed horizontally (housing cover is on top or at the bottom). These deviations can be compensated by a zero-point adjustment by pressing the corresponding button on the installed sensor until the LED lights up briefly (see the figure shown under "Mechanical design").

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 connections	Power supply Operating voltage ¹⁾ Power consumption	Safety extra-low voltage (SELV, PELV) AC 24 V ± 15 %, 50/60 Hz or DC 13.5...33 V < 10 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, R _{Load} > 10 kΩ (not galvanically isolated, three-conductor technology, short-circuit and reverse polarity protection)
	Looped signals Operating voltage ¹⁾	2 signal lines VAV actuator
Functional data	Pressure range	0...300 Pa, see "Type summary"
	Measurement precision Total of linearity, hysteresis and reproducibility	(FS = Full Scale) < ± 1.0 % FS
	Zero-point offset	< ± 0.7 % FS
	Long-term stability according to IEC 60770	< ± 1.0 % FS
	Temperature drift TK zero point	< ± 0.05 % FS/K, typical < ± 0.02 % FS/K
	TK sensitivity	< ± 0.05 % FS/K, typical < ± 0.02 % FS/K
	Response time	< 20 ms
	Nominal pressure	Relative pressure according to "Type summary" table (differential measurement for ambient pressure)
	Max. permissible overload in overpressure range in underpressure range	10 kPa on P1, 400 Pa P2 -400 Pa on P1, -10 kPa on P2
	Bursting pressure	2 x overload at room temperature
	Media	Air and neutral gases
	Temperature Medium and environment Storage	Without condensing 0...+70 °C -10...+70 °C
	Maintenance	Maintenance-free
Mounting positions	Vertical (pressure connection pieces facing down) or horizontal (housing cover facing up or down), zero-point adjustment possible	
Line connections	Electrical connections Spring terminals Cable inlet	10 × 1.5 mm ² PG cable threaded joint or conduit threaded joint
	Pressure connectors	Hose connector piece Ø 6.2 mm

Degree of protection	Protection degree of housing	IP54 according to EN 60529
	Protection class	III according to EN 60730-1
Standards, directives and approvals	Product standard	EN 61326-x Electrical equipment for measurement, control and laboratory use. EMC requirements. General requirements
	Electromagnetic compatibility	For residential, commercial, and industrial environments.
	EU Conformity (CE)	CE1T1925xx ²⁾
	RCM Conformity	CE1T1910en_C1 ²⁾
	EAC Conformity	Eurasia conformity
Environmental compatibility	The product environmental declaration CM1E1925 ²⁾ contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).	
Materials	Measuring element	Ceramic (96%) / glass
	Diaphragm	Silicon
	Housing	Polycarbonate
	Mounting plate	
Dimensions	See chapter "Dimensions"	
Weight	including packaging	0.61 kg

¹⁾ The operating voltage should be chosen to correspond to the requirements of the differential pressure sensor and any connected VAV actuator.

²⁾ The documents can be downloaded from <http://siemens.com/bt/download>.

Connection terminals

○	○	○	○	○	○	○	○	○	○
1	2	3	4	5	6	7	8	9	10
G	G0	U	X	Y	G0	G	G0	Y	X
24VAC/DC POWER SUPPLY		CONTROL-SIGNALS				ACTUATOR			

Key:

Terminal number	Terminal designation	Connection
1, 7	G	Operating voltage AC 24 V or DC 18 ... 33 V ¹⁾
2, 6, 8	G0	GND
3	U	Differential pressure signal DC 0...10 V
4, 10	X	Position indicator signal, signal type depending on actuator
5, 9	Y	Position control signal, signal type depending on controller

Dimensions

