

Differential Pressure Detector

QBM81-...

for monitoring of air pressure



Differential pressure detector for ventilation and air conditioning systems

- For monitoring of air filters, air flow, fan belts
- For monitoring of pressure in clean rooms, kitchens etc.
- Easy to mount

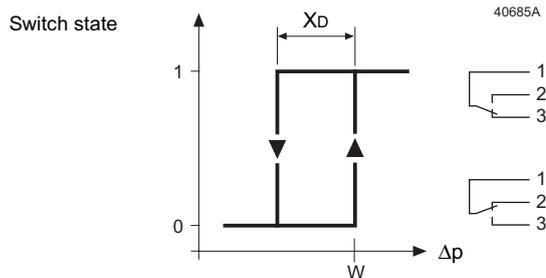
Use

The QBM81-... differential pressure detectors are used to monitor differential pressure, under- and overpressure in ventilation and air conditioning plants. By measuring differential pressure, they monitor the state of air filters, prevailing air flows, damaged fanbelts and overpressure in clean rooms, kitchens etc.

Functions

The differential pressure between the two pressure connections deflects a spring-loaded diaphragm. This special diaphragm ensures long-term stability of switching points. Each type is engraved with individual scales for highly accurate adjustment. The options for adjustment are illustrated in the 3 diagrams on the next page.

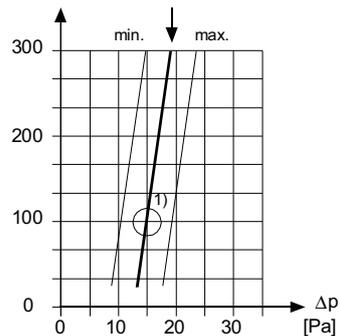
Function diagram



Switching points

Pressure range
20 ... 300 Pa

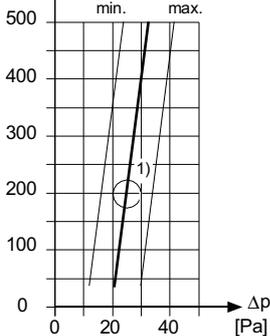
Cut-in pressure [Pa] Switching differential



1) Factory setting

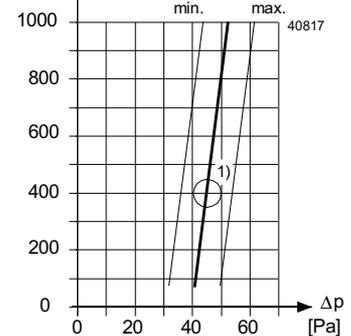
Pressure range
50 ... 500 Pa

Cut-in pressure [Pa]



Pressure range
100 ... 1000 Pa

Cut-in pressure [Pa]



Type summary

3 differential pressure detectors are available, differing in the pressure range they measure.

Type	Pressure range
QBM81-3	20 ... 300 Pa (0,2 ... 3 mbar)
QBM81-5	50 ... 500 Pa (0,5 ... 5 mbar)
QBM81-10	100 ... 1000 Pa (1,0 ... 10 mbar)

Ordering

The differential pressure detector type QBM81-... and, if required, the duct probes type FK-PZ... must be ordered separately.

When placing an order, please specify the quantity, product description and type code.

Example:

1 differential pressure detector QBM81-5 and 1 set of duct probes FK-PZ2

Mechanical design

The differential pressure detector QBM81-... consists of:

- Housing and cover
- Diaphragm
- 1 sheet-steel mounting bracket

Connection kit (supplied with each switch):

- 2 duct adaptors
- 4 fixing screws
- 2 m tubing, \varnothing 5 / 8 mm

Accessories

For difficult conditions or cases where high-precision measurements are required, two other kits are available (see data sheet CA1N1589E) :

FK-PZ1	Set of 2 duct probes (Inox) with rubber grommet
FK-PZ2	Set of 2 duct probes (aluminium) with aluminium fixing rosettes and 4 fixing screws

Mounting notes

Mounting instructions are enclosed with the pressure detector (No. 604.15011).

Important note on orientation : Mounting positions other than vertical affect the cut-in pressure. Refer to the 'Commissioning notes' below.

connection tubes can be of any length, but the response time will increase if they are longer than 2 metres.

The pressure detector should be mounted so that it is above the pressure connection points. To prevent the accumulation of condensation, the tubing must be routed so that there is a gradual incline from the pressure connection points to the pressure detector (no looping).

Commissioning notes

The required setpoint can be selected on the setpoint knob [5] located under the cover (see figures under 'Dimensions').

The pressure detector is factory-calibrated in the vertical position. If installed horizontally, this will affect the switching point as follows:

- With cover facing upwards: Switching point is 11 Pa higher than scale.
- With cover facing downwards: Switching point is 11 Pa lower than scale.

Technical data

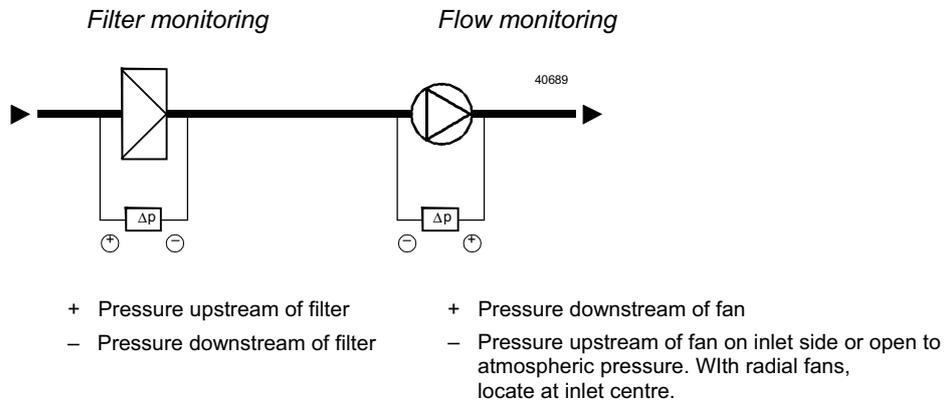
Electrical interface	Type of switch	Single-pole change-over, multi-layer contact
	Contact rating	AC/DC 24 V, > 0.01 A AC 250 V, max. 5 A res. max. 3 A ind., $\cos \varphi > 0.6$ (0.8 A starting current sixfold, $\cos \varphi > 0.6$)
	– Voltage against earth	Max. AC 250 V
	Switching differential (Δp)* Reset Service life	Adjustable Automatic >1 000 000 switching operations
Product data	Measuring range	See 'Type summary' page 2
	Repeatability	
	Range 20 ... 300 Pa	< ± 2.5 Pa
	Range 50 ... 1000 Pa	< ± 5 Pa
	Max. overload on one side	5000 Pa
	Admissible media	Air and non-corrosive gases
Materials	Housing	Fibre-glass reinforced polycarbonate
	Cover	Polycarbonate
	Diaphragm	Silicone (low-swell rubber, no ABS)
	Mounting bracket	Sheet-steel (galvanised)
	Duct adaptors	ABS
	Tubing	PVC, soft
Connections	Electrical connection	3 screw terminals
	Cable entry	PG11 cable gland
	Pressure connections	Male, $\varnothing 6.2$ mm
Weight / dimensions	Weight (including packaging)	0.19 kg with mounting bracket
	Dimensions	See 'Dimensions'
General ambient conditions	Ambient temperature:	
	– Operation	–20 ... +85 °C
	– Storage	–40 ... +85 °C
	Ambient humidity	< 90 % r.h. (non-condensing)
Mounting	Orientation	Any; see 'Commissioning notes'
Safety	Protection class	II according to EN60730
	Protection standard	IP 54 to IEC529
	Combustion class	to UL94
	– Pressure casing and housing	V-0
	– Cover	HB
	– Plastic tubing	V-2
	– Duct adaptors	HB
	Conformity	Meets the requirements for CE marking as defined in EC directive low voltage 73/32 / EEC

*1) The switching differential is factory-set to a fixed value (see page 2).

Connection terminals

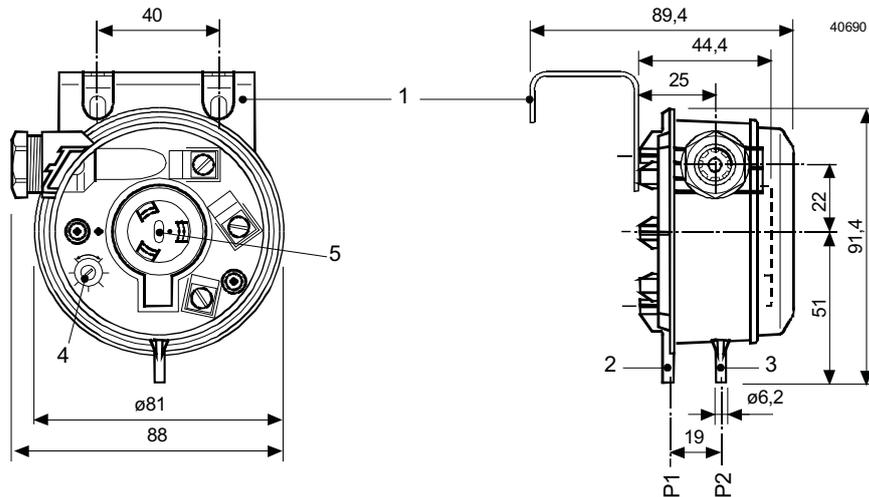


Application examples



Dimensions

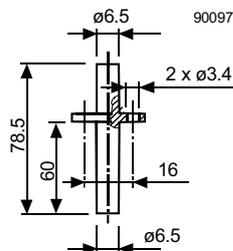
Dimensions in mm



Key:

- 1 Mounting bracket
- 2 P1 connection, higher pressure
- 3 P2 connection, lower pressure
- 4 Pressure differential scale (factory-sealed with paint)
- 5 Setpoint knob

Duct adaptor



2 duct adaptors are supplied with the pressure switch.