Model 101B(f)
Flush-Diaphragm Pressure Sensors

Description

The model 101B(f) pressure sensor features a flush diaphragm made from 316L stainless steel, which contacts directly to pressure medium when the sensor is in operation. Compared to 101B(a19F, a19G, a19L)-series pressure sensors, the 101B(f) pressure sensors possess G1/2 threads for pressure connection by SW27 hexagon for mechanical installation. As a result, the 101B(f) pressure sensor can be easily turned into a pressure transmitter by adding both an SSC (sensor signal conditioner) at its backside and a housing via its M25x1 threads.

Like 101B(a19F, a19G, a19L)-series pressure sensors, inside the 101B(f) pressure sensors a piezoresistive pressure sensor die (e.g., model SE103) is bonded on a sensor header and is completely surrounded and covered by un-compressive oil. The oil is fully filled in a cavity which is formed by the flush diaphragm and the sensor header. Therefore, when pressure is applied to the flush diaphragm the oil transfers the pressure to the sensor die, and the sensor die measures the pressure.

Thanks to the feature of the stainless steel flush diaphragm, the 101B(f) sensors are able to measure pressure of either viscous paste or fluids containing solid particles. The pressure medium can be corrosive or conductive as long as it is compatible to 316L stainless steel.

Features

- pressure types & ranges:
  gauge: 0.2, ..., 35 bar
  absolute: 1, ..., 35 bar
  sealed gauge: 35, ..., 100 bar
- full-welded construction
- no O-ring inside the housing
- either with or without temperature compensation
- outstanding reliability
- excited by either current or voltage

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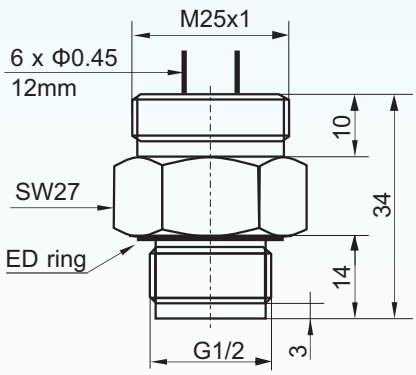
Applications

- process control systems
- liquid level control
- pneumatic and hydraulic controls
- biomedical instruments
- ship and marine systems
- aircraft and avionic systems

Environmental Specifications

- position effect: < 0.1% of zero offset shift in any direction
- vibration effect: no change at 10 g (RMS), 20~2000 Hz
- shock: 100 g, for 10 millisecond

Dimensions



Notes:

1. All dimensions are in mm.
2. Standard mechanical interface is G1/2 and M20x1.5 threads. Other thread types are available on request. In such a case, there might be some modifications in the other dimensions of the sensor. Contact BCM SENSOR to have more information.

BCM SENSOR TECHNOLOGIES BVBA

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Technical Data

Parameter		Units	Specifications	Notes
pressure medium			viscous fluid or media containing solids	1
pressure references & ranges	gauge	bar	0~0.2, ~0.35, ~0.7, ~1, ~2, ~3.5, ~7, ~10, ~20, ~35	2
	absolute	bar	0~0.7, ~1, ~2, ~3.5, ~7, ~10, ~20, ~35	
	sealed gauge	bar	0~35, ~70, ~100	
overload pressure		%fs	200	3
full scale output (fso)		mV	≥ 60, option: 10%~90%Vs ratiometric, I^2C, SPI	4 & 5
excitation	voltage	Vdc	5 (max. 10)	
	current	mA	1 (max. 2)	
zero offset		mV	⩽ ±2	5
accuracy		%fs	⩽ ±0.25, ⩽ ±0.5 (standard)	6
long-term stability		%fs/year	⩽ ±0.2	
input resistance		kΩ	3.5~6	
output resistance		kΩ	3.5~6	
insulation resistance		MΩ	500 @100Vdc	
compensated temperature range		°C	0~70	
operating temperature range		°C	-40 ~ +125	
storage temperature range		°C	-40 ~ +125	
temperature coefficient of zero offset		%fso/°C	⩽ ±0.03	7
temperature coefficient of span		%fso/°C	⩽ ±0.03	7
life time		cycles	10^8	
response time		ms	⩽ 1	8
mechanical interface			G1/2 male	
electrical interface			4 colored flying wires, PVC, 100mm (standard)	
			4 conductor flat-cable, 100mm	
			6 gold-plated copper pins, Φ0.45mm, 12mm	
housing connection			M25x1 male	
pressure diaphragm			316L SS	
wetted parts material			316L SS	
filling oil			silicone oil	
net weight		gram	~131	

General conditions for measurements: media temp. = 25°C ±1°C, ambient temp. = 25°C ±1°C, humidity = 50%RH ±10%RH, barometric pressure: 86~106 kPa, vibration = 0.1 g (1m/s/s) max.

Notes:
1. The pressure medium should be compatible with wetted parts material and pressure diaphragm.
2. For customized pressure ranges, consult BCM.
3. "fs" refers to full scale pressure or rated pressure.
4. Measured at full scale pressure.
5. Measured at 5Vdc excitation.
6. Accuracy = sqrt (non-linearity^2 + hysteresis^2 + repeatability^2).
7. Calculated as a rate of output change between 25°C and 70°C, and normalized by the output at 25°C, when the sensor is not temperature compensated.
8. Response time for a 0 bar to fs step change, 10% to 90% rise time.

The listed specifications and dimensions are subject to change without prior notice.

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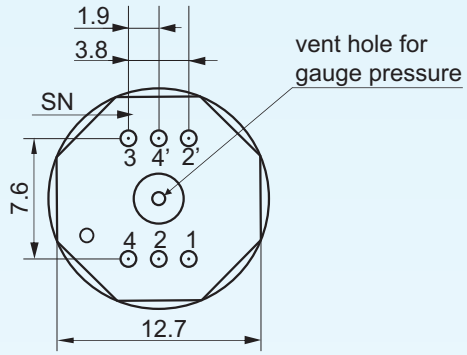
Electronic Interface

6 gold-plated copper pins or 4 wires



pin	connection	wire color
1	signal +	yellow
2	excitation +	red
3	excitation -	black
4	signal -	blue
2'	no function	no wire
4'	no function	no wire

Notes: In case of alterations, refer to the label on the package.

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Ordering Information

position (pos.) 1: model

101B(f)

pos. 2: pressure ranges and references

0.2bar	G	3.5bar	G, A	70bar	S	G: gauge pressure
0.35bar	G	7bar	G, A	100bar	S	A: absolute pressure
0.7bar	G, A	10bar	G, A			S: sealed gauge
1bar	G, A	20bar	G, A			
2bar	G, A	35bar	G, A, S			

pos. 3: output signal

60mV (standard) 10%/90%Vs I^2C SPI

pos. 4: accuracy

0.25%fs 0.5%fs (standard)

pos. 5: compensation

T1 = 0~70°C (standard)
NT = no temperature compensation

pos. 6: mechanical interface

G1/2 = G1/2 male threads other thread types available on request

pos. 7: housing connection

M25x1 = M25x1 male threads
other thread types available on request

pos. 8: electrical interface

4F = 4 colored flying PVC wires, 100mm (standard)
4C = 4 conductor flat-cable, 100mm
6P = 6 gold-plated copper pins, 13mm
If the required output signal is not mV, the electrical interface will be adjusted as the way confirmed on request.

pos. 9: excitation

v = 5Vdc (standard) c = 1.5mA

pos. 10: customized specifications

"(*)" is necessary only if any customized parameter is required, otherwise it is neglectable.

pos.1	pos. 2	pos. 3	pos. 4	pos. 5	pos. 6	pos. 7	pos. 8	pos. 9	pos. 10

Examples of Ordering Code

- standard sensor:

  101B(f)-3.5barG-60mV-0.5%fs-T1-G1/2-M25x1-4F-v

- customized sensor:

  101B(f)-3.5barG-10%/90%Vs-0.5%fs-T1-G1/2-M25x1-3F-v

  (*): - Customized output signal = 10%~90%Vs ratiometric
  - Electrical interface = 3 colored flying wire.

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